65771 D031 Smiths Beach SRE Risk Assessment (Rev 1)

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Smiths Beach Project Yallingup Coastal Tourism Village: Short Range Endemic Invertebrates – risk assessment

Purpose and Scope

The purpose of this memorandum is to provide Smiths 2014 Pty Ltd (the Proponent) with supporting information for the comments (item 9, 10 and 11) made in the Response to Submissions regarding Short Range Endemic invertebrates (SREs).

Specifically, this memo will address the risk to SRE taxa that were identified in the Biologic Environmental Survey (Biologic) desktop assessment (Biologic 2024).

This memorandum will address both potential and confirmed SRE taxa identified in the desktop assessment as being likely or highly likely to occur within the Development Envelope (DE). Conservation Significant species including the Cape Leeuwin Freshwater Snail (CLFS) (Vulnerable [VU]: *Biodiversity Conservation Act 2016* [BC Act 2016]), the Western Pygmy Trapdoor Spider (P3 Department of Biodiversity, Conservation and Attractions [DBCA] listing), and *Bothriembryon irvineanus* (P2 DBCA listing) will also be discussed in this memorandum.

Background

Terrestrial Fauna is a Key Environmental Factor that was identified for the Proposal. As part of the Terrestrial Fauna Key Environmental Factor, consideration of the SREs in the DE is required. The Western Australian Environmental Protection Authority (EPA) objectives for SREs are to:

- Ensure the protection of key habitats for SRE species;
- Maintain the distribution, abundance and productivity of populations of SRE taxa; and
- Ensure that the conservation status of SRE taxa is not adversely changed as a result of development proposals.

Biologic undertook a desktop assessment for the Proposal which extended to include a 40 km radius (Biologic 2024). The desktop identified 83 confirmed or potential SRE taxa as likely to occur within the study area. The likelihood of occurrence within the DE was ranked as "highly unlikely", "unlikely", "possible", "likely", or "highly likely". This was based on the habitat present as well as distance of known records from the DE.

The desktop identified 14 taxa as being "likely" or "highly likely" to occur within the DE. Three conservation significant taxa were identified. These taxa have also been addressed in this risk assessment given their significance.

Risk Assessment

Ranking

The 14 taxa that were identified as being "likely" to occur or higher, as well as the three conservation significant taxa found in the Biologic (2024) report have been ranked as either "Low", "Moderate" or "High"

Risk. These risk rankings are based on the key direct impact that has been identified which is loss of habitat through clearing, as well as the likelihood of presence within the DE:

- **Low Risk**: Implementation of the Proposal will not impact the biological diversity of SREs within the DE and the ecological integrity (composition, structure, function, and processes) of the environment supporting SREs can be maintained. The EPA's objective for this factor can be met, and if required, standard management conditions may be applied, with the natural variation taken into consideration.
- **Moderate Risk:** The EPA's objective for SREs may be met, however there are one or two aspects which may require further consideration (in the assessment of significant residual impacts). A further level of consideration is required to provide confidence that the residual impact will not be significant and can be mitigated with the information presented at the time of assessment.
- **High Risk**: Following consideration of the information provided at the time of assessment, implementation of the Proposal, *without further mitigation*, will result in a significant residual impact. The EPA will be required to set conditions which require compliance in order for the proposal to be implemented.

Rationale

Table 1 below outlines the rationale behind the risk level attributed to each taxon. This table includes a cross reference to the vegetation types (VTs) that may support the microhabitat types required by SRE taxa, provided in Figure 1; and the higher level broad habitat SRE mapping in Figure 2. The vegetation descriptions are provided in Attachment 1.

The assigned habitat in Table 1 considered the following general habitat preferences:

- Myglamorph spiders (trapdoor spiders) - prefer undisturbed soils, often near fallen trees and can be displaced where heavy weed infestation;
- Land snails - require high levels of calcium as well as leaf litter, so tend to prefer limestone rocky outcrops ; typically within the coastal shrubs and heath;
- Freshwater snail - requires seepage films or splash zones flanking small freshwater streams and springs draining from limestone near the coast;
- Centipede, pseudoscorpions, millipedes, harvestmen - require damp leaf litter, logs, tree bark, rocks; and
- Insects including grasshoppers, the weevil and wasp, which require flowering vegetation; with the wasps nesting in the bark of trees, particularly the Peppermint.

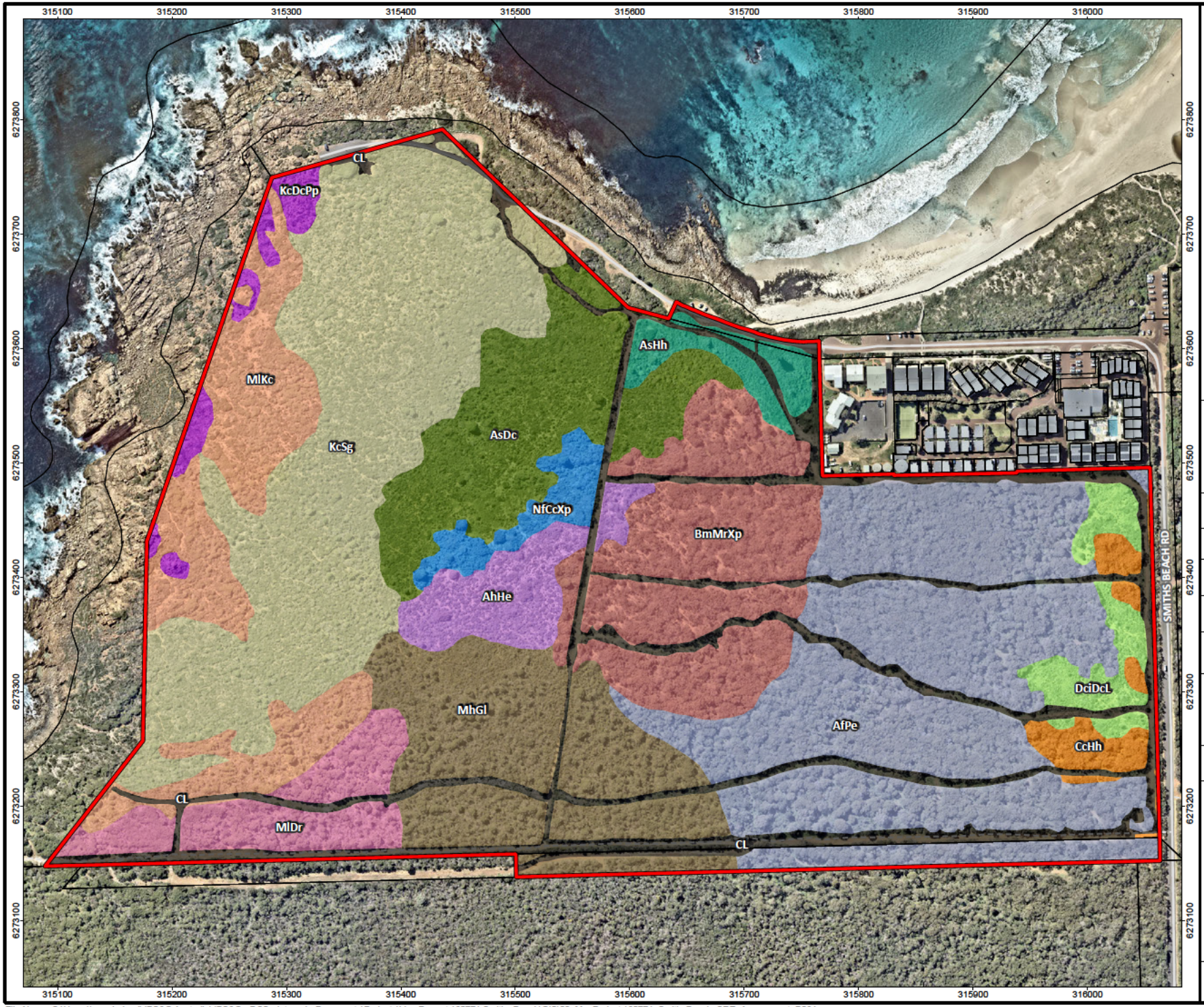
Table 1: Taxon Risk Rating Rationale

Taxon	Risk Rating	Rationale	Broad Habitat Mapping (Biologic 2024)	Habitat occurring within the DE as per VT (Figure 1)
Conservation significant taxa				
Bertmainius opimus (Araneae: Migidae) P3 (DBCA listing) (Western Pygmy Trapdoor Spider)	Low	*B. opimus* is a member of the Mygalomorph spiders and was recorded 27 km south of the DE. *B. opimus* constructs its nests in the bark of karri (*Eucalyptus diversicolor*) and blackbutt (*Eucalyptus patens*) trees preferentially and occasionally fallen jarrah (*Eucalyptus marginata*) logs, some individuals were found in nests constructed in soils on a creek bank (Harvey *et al.*, 2015). None of these habitats are present in the proposed DE. *B. opimus* has the widest range of the *Bertmainius* genus, being found as far west as Gracetown and as far east as Shannon River with likely further populations in the intervening areas (Harvey *et al.*, 2015). *B. Opimus* has been assigned a "low" risk rating the DE does not support known habitat and the majority of populations have been found to the east and north of the DE.	No suitable mapped habitat	
Bothriembryon irvineanus (Onychophora: Bothriebryontidae) P2 (DBCA)	Low	*B. irvineanus* (land snail) has been recorded 9.7 km north of the DE. This suggests that it shares similar habitat to other *Bothriembryon* species which are found in coastal areas. A new species closely related to *B. irvineanus* (*B. sophiarum*) was identified in coastal scrub and heathlands near Esperance (Whisson and Breure, 2016) which reflects the habitat type present in the western portion of the DE. Land snails also require high levels of calcium to maintain the strength of their shells and preferred limestone to other rock types to inhabit due to its calcium concentration and availability (Juřičková *et al.*, 2007). *B. irvineanus* has been assigned a "low" risk rating as the area in which it is most likely to occur (low coastal scrub and heathland) in the DE is being conserved.	Kunzea and Melalueca Closed shrubland	MlKc, KcS
			Open Coastal Shrubland	AsDc, NfccXp, AhHe, AsHh
			Melaleuca over Hakea Shrubland	MlDr, MhGl
Austroassiminea letha (VU; BC Act 2016) (Cape Leeuwin Freshwater Snail)	Low	The Cape Leeuwin Freshwater Snail (CLFS) (*Austroassiminea letha*) (VU; BC Act 2016) was recorded at Canal Rocks south of the Development Envelope in 2007. The only other records of this species occur at five other locations south of the Development Envelope within the Leeuwin-Naturaliste National Park. It is noted that the CLFS is an SRE and that the known range of the CLFS is within small, discontinuous habitats with an area of occurrence over a distance of 80 km from Canal Rocks (Cape Leeuwin) to Cape Naturaliste (Onton 2009). It is also recognised that increased sampling effort may identify more locations. The CLFS has been found to inhabit seepage films or splash zones flanking small freshwater streams and springs draining from limestone near the coast (Burbidge 2004). This habitat type was the focus of the monitoring program as stated in Onton (2009). This habitat has not been observed within the Proposal Development Envelope. Hydrological investigations completed for the Proposal identified this waterhole located in the western portion of the Development Envelope (refer to Figure10-1 in the ERD). This waterhole is intermittently referred to as a waterhole and/or a spring in the supporting document (Appendix U and V). This waterhole was excavated nearly 60 years earlier and is groundwater fed. A comparison of the groundwater levels at the boreholes GB4 and GB5 with that of the waterhole/spring indicated that the waterhole is likely to be groundwater fed from a perched watertable as these boreholes are to the west of paleochannel (Golder 2024a). Groundwater flow was identified as in an easterly direction. This western area overlies sandy gravel, sand, clayey sand or sandy clay geologies. This area also has exposed gneiss and while close to the coast, limestone is not present. The waterhole/spring does not originate from seepage of limestone origin. A man-made waterhole which is groundwater fed, potentially from a perched aquifer which overlies gneiss and filters through sand is located in the western portion of the Development Envelope, near the coast. The waterhole is surrounded by grasses and small shrubs. This may be similar vegetation to that found at the Canal Rocks site where the CLFS was found. . It would be expected that if this was a natural waterhole then the likelihood of the CLFS was justifiably high, and an assessment warranted. However, as the waterhole is of anthropogenic origin, with a recent time scale, it is unlikely that the waterhole supports relict population of this species, unlike the population found at Canal Rocks and the sites south; and therefore is assigned a "low" risk rating	No suitable mapped habitat	
Taxon "Highly Likely" to occur in the DE				
Proshermacha sp.indet (Potential SRE)	Moderate	*Proshermacha* is a genus of mygalomorph spider which was recorded less than 1 km from the DE. Mygalomorph spiders build burrows in undisturbed soils and are often displaced from locations with an overabundance of weeds (*WA Museum Collections*, 2025). The areas which are marked to be cleared within the DE are the areas with the highest concentration of weeds (Emerge, 2019). This suggests that the areas which have the highest quality habitat for *Proshermacha sp. Indet* are the areas which are to be retained for conservation on the western side of the DE. The risk rating for this taxon is "moderate" as there are still some areas to be cleared within the DE which have habitat for this taxon. However, there is continuity of habitat within the DE and to the south of the DE which limits habitat fragmentation and allows for movement out of the impact areas.	Rocky Outcrops (high suitability)	KcDcPp
			All other broadly mapped habitat types, except Cleared/Disturbed provide moderate suitability	All other VTs, except CL, provide suitable habitat

Taxon	Risk Rating	Rationale	Broad Habitat Mapping (Biologic 2024)	Habitat occurring within the DE as per VT (Figure 1)
Cryptops sp. Indet (Potential SRE)	Moderate	*Cryptops* is a genus that is part of the scolopendromorphid centipedes. These centipedes are often found in damp environments in leaf litter or under logs (Minelli and Golovatch, 2013). This taxon could potentially inhabit much of the DE, including the section to be cleared. This taxon has been rated as a "moderate" risk as its habitat is present throughout the DE and will be partially cleared. However, there is a high level of connectivity between the area to be cleared and the conservation area within the DE and the Leeuwin-Naturaliste National Park (LNNP) to the south which limits habitat fragmentation and allows for potential movement out of the area to be cleared.	All broadly mapped habitat types, except Cleared/Disturbed provide moderate suitability	All VTs, except CL, provide suitable habitat
Trichophthalma (Lichtwardtiomyia) glauerti (Potential SRE)	Low	*T. glauerti* belongs to the family Nemestridae and is an endoparasitoid of grasshoppers in its larval stage (McAlpine, 1981). This suggests that during its mating periods it relies upon the habitat of grasshoppers (vegetated areas) to reproduce. Nemestridae is also often recorded on flowers (McAlpine, 1981) which would suggest it relies upon vegetated areas for habitat. Within the impact area there are areas which will only be partially modified (overstorey retention where possible), these areas are denoted as Asset Protection Zone (APZ), APZ – Modified, and Low threat vegetation. ~10 hectares of the impact area are to be partially retained in some form (either APZ – modified or Low threat vegetation) which means some habitat will remain for this taxon in the form of mid and overstorey vegetation. The risk rating for *T. galuerti* is low as there is habitat connectivity between the vegetated impact area the conservation area in the DE as well as the LNNP to the south. The impact area will also be partially retained allowing for some habitat retention in the impact area. Due to the nature of locomotion for this taxon, it is likely that clearing of habitat within the DE would not significantly affect the survival of this taxon in the local area if it were present.	All broadly mapped habitat types, except Cleared/Disturbed provide moderate suitability	All VTs, except CL, provide suitable habitat
Bothrienbryon naturalistarum (Confirmed SRE)	Low	*B. naturalistarum* is a land snail which was recorded 0.1 km south of the DE. While there is little information on the habitat of *B. naturalistarum*, there is evidence that closely related species such as *B. sophiarum* inhabit low coastal scrub and heathlands (Whisson and Breure, 2016). This habitat is present within the DE but is restricted to the western portion of the DE which is to be conserved. Molluscs require calcium rich substrate to maintain the strength of their shells (Juřičková *et al.*, 2007) with which the DE does not provide suitable habitat. *B. naturalistarum* is ranked as low risk due to the habitat present in the DE being limited to the conservation area.	Kunzea and Melalueca Closed shrubland Open Coastal Shrubland Melaleuca over Hakea Shrubland	MlKc, KcS AsDc, NfccXp, AhHe, AsHh MlDr, MhGl
Magilaoma sp. Indet (Potential SRE)	Low	*Magilaoma* is a genus of pinhead snail which belongs to the pulmonate gastropods. This taxon was recorded 0.1 km from the DE. The database searches undertaken by Biologic (2024) identify preferred habitat for this taxon is rocky outcrops. This is due to the complexity of the habitat which provides them protection (Biologic, 2024). The rocky outcrops are found on the far-western edge of the DE and are to be retained. Pulmonate gastropods feed on leaf litter (Janion-Scheepers *et al.*, 2016) which suggests they could also be found within other areas of the DE. Given the location of the rocky outcrops however, this is less likely to be in the impact area. This taxon has been given a "low" risk rating as its most common habitat within the DE is being retained.	Rocky Outcrops (high suitability)	KcDcPp
Catasarcus coruscus (Confirmed SRE)	Moderate	*C. coruscus* (flightless weevil) was recorded 1.3 km to the North of the DE. Weevils are known to feed on vegetation and Abbott (1991) stated that *C. coruscus* are known to occur on *Eucalyptus marginata* (Jarrah). This species was not identified to make up a key part of any vegetation community within the DE (Emerge, 2019). Although *Eucalyptus marginata* is not common within the DE, weevil species are known to be more dependent upon habitat type than feeding species (Marvaldi *et al.*, 2014). *C. coruscus* has been given a risk rating of "moderate" due to the presence of feeding species throughout the DE. There is connectivity of habitat to the west and south of the area to be cleared in which this taxon could relocate if present in the impact area.	All broadly mapped habitat types, except Cleared/Disturbed provide moderate suitability	All VTs, except CL, provide suitable habitat
Taxa "Likely" to occur in the DE				
Nunciella sp. Indet (Potential SRE)	Low	*Nunciella* is a genus of Opiliones (harvestmen). Harvestmen are known to feed on dead insects, fruit and decaying vegetable matter (Coddington and Colwell, 2004). They tend to prefer moist environments such as in leaf litter or under rocks (Coddington and Colwell, 2004). The Biologic (2024) report stated that rocky areas to the west of the DE would be the most likely habitat for SRE fauna as the habitat complexity provides safety from predators. This taxon has been given a risk rating of "low" due to its likelihood of occurring in the conservation area of the DE.	Rocky Outcrops (high suitability)	KcDcPp
Austrochthonius sp. Indet (Potential SRE)	Low	*Austrochthonius* is a genus of pseudoscorpion and was recorded 2.7 km north of the DE. Coddington and Colwell (2004) state that their flattened bodies suggest life in crevices such as under tree bark or rocks. This suggests that they could inhabit the vegetated areas to the east of the DE, which is included in the impact area, as well as the rocky outcrops in the western portion of the DE, which are included in the conservation area. Despite having habitat present in the impact area, as *Austrochthonius* is known to live under tree bark (Coddington and Colwell, 2004). Within the impact area overstorey will be retained where possible in APZ – modified and Low threat Vegetation areas. This will allow for the retention of the trees in which *Austrochthonius* would inhabit.	All broadly mapped habitat types, except Cleared/Disturbed provide moderate suitability	All VTs, except CL, provide suitable habitat

Taxon	Risk Rating	Rationale	Broad Habitat Mapping (Biologic 2024)	Habitat occurring within the DE as per VT (Figure 1)
		This taxon has received a risk rating of "low" as there is potential habitat for *Austrochthonius* which is in the impact area, but large portions will be retained and suitable habitat is also present in the conservation area.		
Paradoxosomatidae sp. Indet (Potential SRE)	Low	*Paradoxosomatidae* are a genus of flat-backed millipede which were found by Mesibov and Churchill (2003) to be present within coastal heathlands. They found that paradoxosomatid species preferred open heathlands to forest habitats and were likely to roam during mating season. The western portion of the DE represents the most similar habitat to this and is to be conserved. *Paradoxosomatidae* has been given a risk rating of "low" due to any likely habitat being found in the conservation area of the DE.	Kunzea and Melalueca Closed shrubland	MlKc, KcS
			Open Coastal Shrubland	AsDc, NfccXp, AhHe, AsHh
			Melaleuca over Hakea Shrubland	MlDr, MhGl
Gasteruption fuscimanus (Potential SRE)	Low	*G. fuscimanus* (wasp) is a member of the Gasteruptiidae family which, in Australia, is known to prefer flowers with easily accessible nectar such as those in the Myrtaceae family (Parslow, Schwarz and Stevens, 2020). According to the Emerge (2019) Flora and Vegetation report, some of the Myrtaceae species found in the DE include *Agonis flexuosa*, *Melaleuca hugelii*, *Melaleuca lanceolata*, *Melaleuca systena*, *Eucalyptus marginata*, and *Corymbia calophylla*. Within the DE ~30% of these species will not be impacted as they are located in the conservation area. Within the impact area there are areas which will only be partially modified (overstorey retention where possible), these areas are denoted as Asset Protection Zone (APZ), APZ – Modified, and Low threat vegetation. Parslow, Schwarz and Stevens (2020) state that members of the Gasteruptiidae family lay their eggs in the nests of solitary bees and wasps which nest in the cavities within trees such as *A. flexuosa*. The area of the DE in which *A. flexuosa* is most common consists of APZ – modified and Low threat vegetation, this means that many individuals of *A. flexuosa* will be retained, meaning Gasteruptiidae breeding and feeding habitat will be retained in these areas. This taxon has been given a risk rating of "low" is much of its habitat within the DE is being retained and continuity with habitat to the south in the LNNP is being maintained.	Melaleuca over Hakea Shrubland	MlDr, MhGl
			Open Banksia Forest	BaMrXp
			Open Peppermint Forest	Afpe
			Closed Low Marri Forest	CcHh
Gasteruption prolongatum (Potential SRE)	Low	*G. prolongatum* (wasp) is a member of the Gasteruptiidae family. As discussed above, this family is known to prefer flowers with easily accessible nectar such as those in the Myrtaceae family (Parslow, Schwarz and Stevens, 2020). According to the Emerge (2019) Flora and Vegetation report, some of the Myrtaceae species found in the DE include *Agonis flexuosa*, *Melaleuca hugelii*, *Melaleuca lanceolata*, *Melaleuca systena*, *Eucalyptus marginata*, and *Corymbia calophylla*. Within the DE ~30% of these species will not be impacted as they are located in the conservation area. Within the impact area there are areas which will only be partially modified (overstorey retention where possible), these areas are denoted as Asset Protection Zone (APZ), APZ – Modified, and Low threat vegetation. Parslow, Schwarz and Stevens (2020) state that members of the Gasteruptiidae family lay their eggs in the nests of solitary bees and wasps which next in the cavities within trees such as *A. flexuosa*. The area of the DE in which *A. flexuosa* is most common consists of APZ – modified and Low threat vegetation, this means that many individuals of *A. flexuosa* will be retained, meaning Gasteruptiidae breeding and feeding habitat will be retained in these areas. This taxon has been given a risk rating of "low" is much of its habitat within the DE is being retained and continuity with habitat to the south in the LNNP is being maintained.	Melaleuca over Hakea Shrubland	MlDr, MhGl
			Open Banksia Forest	BaMrXp
			Open Peppermint Forest	Afpe
			Closed Low Marri Forest	CcHh
Gasteruption rugosissimum (Potential SRE)	Low	*G. rugosissimum* (wasp) is a member of the Gasteruptiidae family. As discussed above, this family is known to prefer flowers with easily accessible nectar such as those in the Myrtaceae family (Parslow, Schwarz and Stevens, 2020). According to the Emerge (2019) Flora and Vegetation report, some of the Myrtaceae species found in the DE include *Agonis flexuosa*, *Melaleuca hugelii*, *Melaleuca lanceolata*, *Melaleuca systena*, *Eucalyptus marginata*, and *Corymbia calophylla*. Within the DE ~30% of these species will not be impacted as they are located in the conservation area. Within the impact area there are areas which will only be partially modified (overstorey retention where possible), these areas are denoted as Asset Protection Zone (APZ), APZ – Modified, and Low threat vegetation. Parslow, Schwarz and Stevens (2020) state that members of the Gasteruptiidae family lay their eggs in the nests of solitary bees and wasps which next in the cavities within trees such as *A. flexuosa*. The area of the DE in which *A. flexuosa* is most common consists of APZ – modified and Low threat vegetation, this means that many individuals of *A. flexuosa* will be retained, meaning Gasteruptiidae breeding and feeding habitat will be retained in these areas. This taxon has been given a risk rating of "low" is much of its habitat within the DE is being retained and continuity with habitat to the south in the LNNP is being maintained.	Melaleuca over Hakea Shrubland	MlDr, MhGl
			Open Banksia Forest	BaMrXp
			Open Peppermint Forest	Afpe
			Closed Low Marri Forest	CcHh
Punctidae sp. Indet (Potential SRE)	Low	Punctidae is the family of pinhead snails which belongs to the pulmonate gastropods. It was recorded 2.8 km from the DE. The database searches undertaken by Biologic (2024) reveal that the locations in which this taxon is found are most often rocky outcrops. This is due to the complexity of the habitat which provides them protection (Biologic, 2024). The rocky outcrops are found on the far-western edge of the DE and are to be retained. Pulmonate gastropods feed on leaf litter (Janion-Scheepers *et al.*, 2016) which suggests they could also be found within other areas of the DE. Given the location of the rocky outcrops however, this is less likely to be in the area to be cleared. This taxon has been given a "low" risk rating as its most common habitat within the DE is being retained.	Rocky Outcrops (high suitability)	KcDcPp

Taxon	Risk Rating	Rationale	Broad Habitat Mapping (Biologic 2024)	Habitat occurring within the DE as per VT (Figure 1)
Succinea sp. Indet (Potential SRE)	Low	*Succinea* is a genus of pulmonate gastropod (land snail). It was recorded 2.1 km from the DE. The database searches undertaken by Biologic (Biologic, 2024) reveal that the locations in which this taxon is found are most often rocky outcrops. This is due to the complexity of the habitat which provides them protection (Biologic, 2024). The rocky outcrops are found on the far-western edge of the DE and are to be retained. Pulmonate gastropods feed on leaf litter (Janion-Scheepers *et al.*, 2016) which suggests they could also be found within other areas of the DE. Given the location of the rocky outcrops however, this is less likely to be in the area to be cleared. This taxon has been given a "low" risk rating as its most common habitat within the DE is being retained.		



Legend

- Development envelope
- Cadastral boundary (LGATE-002)

Vegetation type

- AfPe
- AhHe
- AsDc
- AsHh
- BmMrXp
- CcHh
- DciDcL
- KcDcPp
- KcSg
- MhGl
- MlDr
- MlKc
- NfCcXp
- CL

Roads (LGATE-195)

- Minor road
- Track

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Job No: 65771

Client: Smiths 2014 Pty Ltd

Version: A	Date: 22/09/2025
Drawn By: bsunderland	Checked By: RM

Scale 1:4,500 at A4

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Lot 4131 Smiths Beach Road Yallingup, WA

VEGETATION TYPES

FIGURE 1

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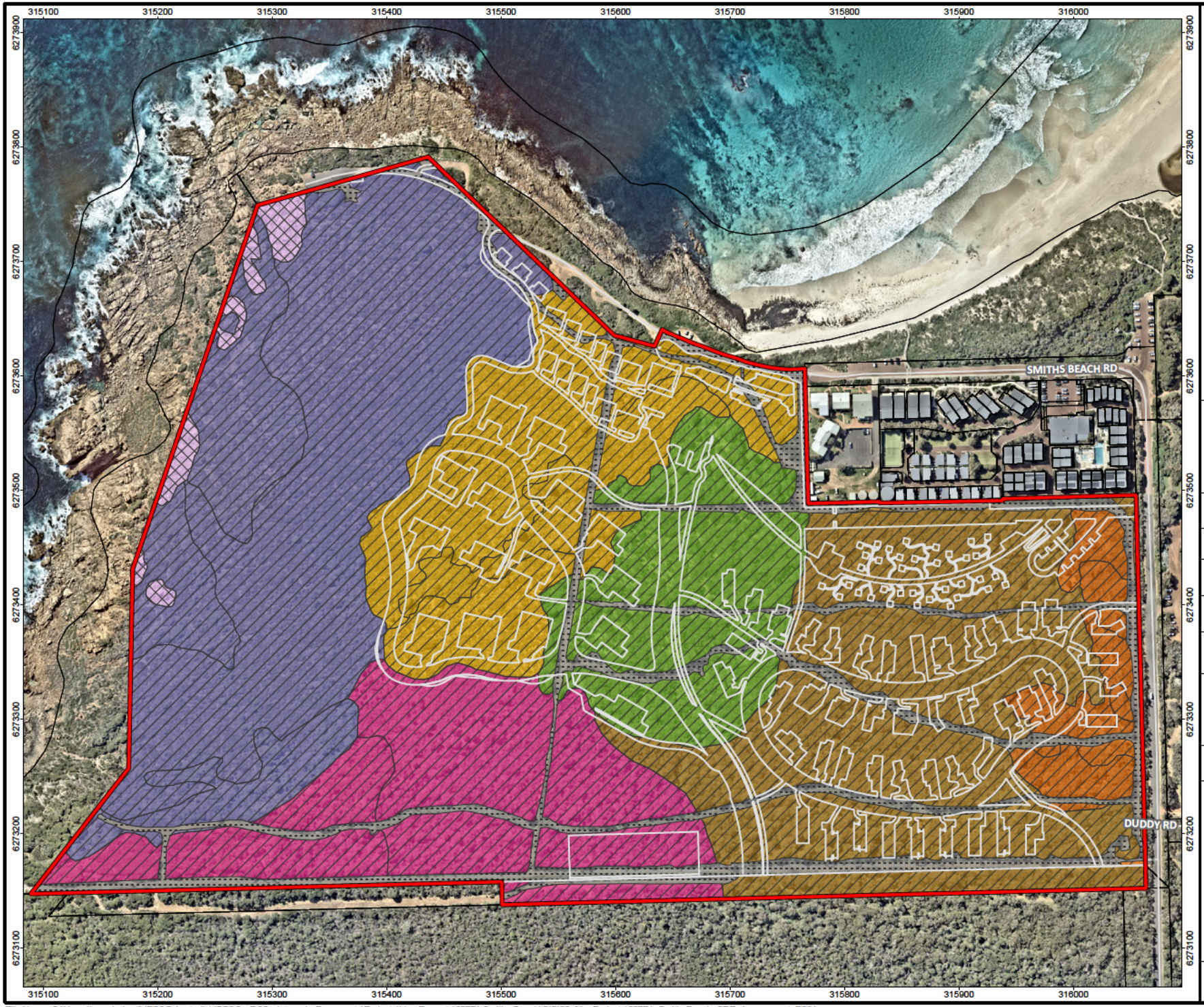
Image Reference: www.nearmap.com© - Imagery Date: 12 September 2024.
Layout: 65771_A4L_01_VegType



Legend

- Development envelope
- Proposal elements
- Cadastral boundary (LGATE-002)

SRE fauna habitat suitability

- High
- Moderate
- Low

Broad fauna habitat

- Cleared/ Disturbed
- Closed Low Marri Forest surrounded by open shrubland areas
- *Kunzea* and *Melaleuca* Closed Shrubland
- *Melaleuca* over *Hakea* Shrubland
- Open *Banksia* Forest
- Open Coastal Shrubland
- Open Peppermint Forest
- Rocky Outcrop

Roads (LGATE-195)

- Minor road
- Track

JBS&G

Job No: 65771

Client: Smiths 2014 Pty Ltd

Version: A	Date: 22/09/2025
Drawn By: bsunderland	Checked By: RM

Scale 1:4,500 at A4

0 50 100
metres

Coord. Sys. GDA2020 MGA Zone 50

Lot 4131 Smiths Beach Road Yallingup, WA

PREDICTED SRE FAUNA HABITAT SUITABILITY

FIGURE 2

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Image Reference: www.nearmap.com© - Imagery Date: 12. September
Layout: 65771_A4L_02_SRE_fauna_habitat_suitability

Conclusion

Having considered the habitat requirements of the individuals identified in the Biologic desktop study, as well as past studies and current literature, three taxa have been assigned a "moderate" risk rating, the other 12 species considered have been given a "low" risk rating. All conservation significant fauna identified by Biologic have been assigned a "low" risk rating due to the lack of habitat present within the impact areas of the DE. The taxa given a "moderate" risk rating included *Proshermacha sp. indet* (Potential SRE), *Cryptops sp. Indet* (Potential SRE), and *Catasarcus coruscus* (Confirmed SRE).

- *Proshermacha sp. Indet* burrows in undisturbed soils which have minimal weed presence and can be displaced by weed incursion (*WA Museum Collections*, 2025). It is expected that due to the weed concentration within the impact area, *Proshermacha sp. Indet* habitat would most likely be found within the conservation area/retention areas of the DE, however, there is still potentially a residual significant impact if this taxon is present in the impact area on the eastern side of the DE.
- *Cryptops* sp. Indet inhabits leaf litter and under logs (Minelli and Golovatch, 2013), there is no specific preference for the species which produces the litter which means there is potential for this taxon to be present in almost any area of the DE. Due to the nature of the proposed partial modification, *Cryptops* sp. Indet would be impacted negatively even in areas of high retention as the understorey level and leaf litter would be cleared/disturbed. Despite this, there is potential for this taxon to inhabit the conservation area within the DE which would result in no significant impact.
- *Catasarcus coruscus* feeds on leaves and Abbott (1991) stated that this taxon inhabits *Eucalyptus marginata*. This species is not a dominant part of the vegetation communities within the DE but was found to be present in both partially modified and conserved areas. However, it was also stated by Abbott (1991) that this taxon is more drawn to a specific habitat type than a particular feeding species. Given this information, it is possible for *C. coruscus* to be present across most of the DE. Given the nature of the partial modification process, it is possible that this taxon could be negatively impacted by the clearing, however where it may be present in the conservation areas, there would be no impact.

As discussed above, the species given a "low" risk rating are known to have habitat in the areas of the DE that are being conserved or have other mitigating factors which suggest they will not be significantly impacted by the proposal.

Cape Leeuwin Freshwater Snail (CLFS) (*Austroassiminea letha*) (VU; BC Act 2016) was considered unlikely to occur within the Development Envelope due to lack of suitable habitat. The CLFS has been found to inhabit seepage films or splash zones flanking small freshwater streams and springs draining from limestone near the coast (Burbidge 2004). A manmade waterhole (referred to as a spring) was identified within the Development Envelope. Of anthropogenic origin, with a recent time scale, it is unlikely that the waterhole supports relict population of this species, unlike the population found at Canal Rocks and the sites to the south.

References

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Attachment 1: Vegetation Type Descriptions

Vegetation Type	Description	Extent within Development Envelope (ha)	Representative photo
AfPe	Low open forest *Agonis flexuosa* over fernland *Pteridium esculentum* subsp. *esculentum* over open herbland mixed non-native species such as **Lysimachia arvensis* and **Asparagus asparagoides.*	8.76	
AhHe	Shrubland *Allocasuarina humilis* over low sparse herbland over low sparse grassland *Austrostipa mollis* and *Rytidosperma occidentale* over low open rushland *Hypolaena exsulca.*	1.24	
AsDc	Shrubland *Acacia saligna* and *Dodonaea ceratocarpa* over low herbland *Trachymene Pilosa* over low sparse grassland *Rytidosperma occidentale.*	3.32	
AsHh	Shrubland *Acacia saligna* over low open shrubland *Hibbertia hypericoides* over grassland non-native species such as **Vulpia bromoides.*	0.59	
AsScSl	Open shrubland *Acacia saligna* over low shrubland *Scaevola crassifolia* over open grassland *Spinifex longifolius.*	0.10	
BaMrXp	Low open forest *Banksia attenuata* and occasional *Agonis flexuosa* over open shrubland *Macrozamia riedlei* and *Xanthorrhoea preissii* over open mixed herbland.	4.12	
CcHh	Low forest *Corymbia calophylla* over open shrubland *Xanthorrhoea preissii* and over low shrubland *Hibbertia hypericoides* over sparse low herbland *Scaevola calliptera.*	0.68	

Vegetation Type	Description	Extent within Development Envelope (ha)	Representative photo
DciDcL	Shrubland *Darwinia citriodora* and *Dodonaea ceratocarpa* over low sedgeland *Lepidosperma* spp. over low open grassland of native and non-native species over low open herbland *Crassula* spp.	0.85	
KcSg	Closed shrubland *Kunzea ciliata* and *Spyridium globulosum* over low open shrubland *Eutaxia myrtifolia* over sparse sedgeland over low sparse herbland.	8.36	
KcDcPp	Low open shrubland *Kunzea ciliata* and *Darwinia citriodora* over low sparse herbland *Stypandra glauca* over low sparse grassland *Poa poiformis* on granite.	0.51	
MhGl	Low woodland to low open forest *Melaleuca huegelii, M. lanceolata* and *Guichenotia ledifolia* over tall open shrubland *Hakea oleifolia* over shrubland *Hibbertia cuneiformis* over low open herbland *Stylidium adnatum.*	4.13	
MlDr	Low closed forest *Melaleuca lanceolata* over sparse shrubland *Melaleuca systena* and *Spyridium globulosum* over low open herbland *Dianella revoluta* var. *revoluta* over low open sedgeland *Lepidosperma* spp. (understorey absent in areas of dense canopy cover).	1.57	
MlKc	Closed shrubland *Melaleuca lanceolata* and *Kunzea ciliate* over occasional grasses and herbs.	3.27	
NfCcXp	Low Open forest *Nuytsia floribunda* and *Corymbia calophylla* over open shrubland *Xanthorrhoea preissi* over low open mixed herbland over low open grassland native and non-native species.	0.63	

Vegetation Type	Description	Extent within Development Envelope (ha)	Representative photo
Non-native vegetation/Cleared	Heavily disturbed areas comprising tracks and non-native vegetation with occasional native plants.	3.82