

Shrubby Foothill Forest (EVC 45)



Shrubby Foothill Forest was the dominant EVC in this LU, where it occupied most of the central and northern areas. This EVC is characterised by a medium to tall forest (25 - 40m tall) dominated by a range of eucalypts over a tall shrub layer and a relatively species-poor ground layer. Brown Stringybark was generally restricted to this EVC.

Location	Refer to Figure 4
Dominant Overstorey Species	Brown Stringybark (<i>Eucalyptus baxteri</i>) Mountain Grey-gum (<i>Eucalyptus cypellocarpa</i>) Messmate Stringybark (<i>Eucalyptus obliqua</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>)
Dominant Understorey Species	Prickly Currant-bush (<i>Coprosma quadrifida</i>) Bushy Needlewood (<i>Hakea decurrens</i> subsp. <i>physocarpa</i>) Manuka (<i>Leptospermum scoparium</i>) Austral Bracken (<i>Pteridium esculentum</i>)
Dominant Ground Cover	Trailing Ground-berry (<i>Acrotriche prostrata</i>) Slender Tussock-grass (<i>Poa tenera</i>) Forest Wire-grass (<i>Tetrarrhena juncea</i>)
Condition	Good (structurally intact, <1% weed cover)
Habitat Hectare Score	83/100 (High ⁴⁴ conservation significance)
Issues	Good condition forest with scattered hollow-bearing trees. Minimise impact area.
Threatened Species	One threatened species was recorded, <i>Acacia leprosa</i> (type variant) (Eastern Cinnamon Wattle) (poorly known in Victoria) (13 individuals from three sites). High potential for additional threatened species to occur.

⁴⁴ Increased from Medium to High conservation significance as it is likely to provide at least the remaining 50% of habitat for threatened species in Victoria (NRE 2002).



Fauna Summary

Three habitat types were identified within the Toolangi South LU. These are; dry forest, exotic and non-indigenous/planted vegetation and farm dams (See Appendix G for details).

Sixty-two fauna species {34 birds, 18 (3) mammals, 4 reptiles and 6 amphibians} were detected during field investigations within the Toolangi South LU (Appendix H, 0). Two threatened fauna species; Brown Treecreeper, *Climacteris picumnus*, and Common Bent-wing Bat, *Miniopterus schreibersii oceanensis*, were detected during the current assessment. In addition to threatened species, species which confirm the presence of the FFG-Listed 'Temperate Woodland Bird Community' (Table 16) were detected within this LU throughout remnant areas of native vegetation. Six species listed as Marine under the EPBC Act were recorded within Toolangi South.

Toolangi South occurs along the top of a ridge and there is a steep embankment either side of the central track. Fauna habitat within this area is dominated by an overstorey of eucalypt species such as Red Stringybark, *Eucalyptus macrorhyncha*, Messmate, *Eucalyptus obliqua* and Narrow Leaf Peppermint, *Eucalyptus radiata*. Whilst the species composition is very similar to the northern section of Toolangi and Toolangi South is much drier. There is a limited mid-storey of small shrubs in the Toolangi South LU and the understorey is comprised of mainly scattered dry bracken (which has begun to dieback due to the dry conditions) and a dense layer of leaf litter and fallen debris. Two major fauna survey sites are located within the Toolangi South LU (.

Moderate to high diversity of typical wet-forest fauna, with notable inclusions of species more commonly found in drier wooded habitats (e.g., Scarlet Robin, Brown Treecreeper, and Olive-backed Oriole). A range of robins, which are a group considered to be in decline (New Atlas of Australian Birds 2003), were detected throughout the LU including; Scarlet Robin, Pink Robin and Eastern Yellow Robin.

The dense leaf litter and reasonable ground cover throughout the Toolangi South LU provides good habitat for a range reptile and frog species. A medium sized constructed water body within the survey corridor also provides a permanent water source for fauna within the area and permanent habitat for a suite of frog species.

There are a few large dead stags present within Toolangi South, however; generally the trees within the survey corridor lack hollows. Despite this, there is suitable habitat for a range of arboreal mammals, and the survey corridor is utilised by a range of ground dwelling mammals and microbats. This habitat also provides a water source for a range of small mammals, including microbats, which use the area for foraging.

The fauna habitat throughout this area contains good wildlife corridor values by linking private properties within the local area. Due to the species diversity, the wide variety of fauna habitats and

the wildlife corridor values, the habitat within this site has been ranked as being of a high condition.

4.7.10 LU 10: Melba Hwy South Agricultural Zone/Dixons Creek Flats (Sections F and G)

General Description

The Melba Hwy South Agricultural Zone LU contains a range of mixed landscapes, which have been cleared for a range of uses, including farming. Throughout these areas native vegetation has been largely removed, except for large block of forest on the western side of the Melba Highway, which connects with Kinglake National Park.

A total of eight EVCs occur in this LU - Lowland Forest (EVC 16), Grassy Dry Forest (EVC 22), Herb-rich Foothill Forest (EVC 23), Valley Grassy Forest (EVC 47), Swampy Riparian Woodland (EVC 83), Creekline Herb-rich Woodland (EVC 164), Reed Swamp (EVC 300), and Gully Woodland (EVC 902). These EVCs are summarised below.

Flora Summary

Lowland Forest (EVC 16)



This dryish forest type is restricted to a small area of the Melba Highway road reserve in the northern section of this LU. The area is intact, with a mixed eucalypt overstorey, moderately dense shrub layer and a species-poor ground layer.

Location	Refer to Figure 4
Dominant Overstorey Species	Messmate Stringybark (<i>Eucalyptus obliqua</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>) Red Stringybark (<i>Eucalyptus macrorhyncha</i>)
Dominant Understorey Species	Burgan (<i>Kunzea ericoides</i>) Austral Bracken (<i>Pteridium esculentum</i>)
Dominant Ground Cover	Thatch Saw-sedge (<i>Gahnia radula</i>)

	Forest Wire-grass (<i>Tetrarrhena juncea</i>) Trailing Ground-berry (<i>Acrotriche prostrata</i>)
Condition	Good (structurally intact, although ground layer species poor due to dense litter layer, c. 3% weed cover)
Habitat Hectare Score	NA
Issues	Good condition forest. Minimise impact area.
Threatened Species	No threatened species found. Moderate potential for threatened species to occur.

Grassy Dry Forest (EVC 22)



Grassy Dry Forest occurred in extensive sections of the Melba Highway road reserve between Toolangi South and Hunts Lane. It commonly occurs on the drier and more exposed north- or west-facing slopes within the LU. This EVC is characterised by a medium forest to 20m tall, over a sparse shrub layer (sometimes invaded by Burgan) and a relatively species-rich ground layer dominated by a range of native graminoids and forbs, including a diverse range of orchid species.

Location	Refer to Figure 4
Dominant Overstorey Species	Red Stringybark (<i>Eucalyptus macrorhyncha</i>) Bundy (<i>Eucalyptus goniocalyx</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>)
Dominant Understorey Species	Burgan (<i>Kunzea ericoides</i>) Cherry Ballart (<i>Exocarpos cupressiformis</i>) Austral Bracken (<i>Pteridium esculentum</i>)
Dominant Ground Cover	Silvertop Wallaby-grass (<i>Joycea pallida</i>) Thatch Saw-sedge (<i>Gahnia radula</i>) Black-anther Flax-lily (<i>Dianella revoluta</i>)
Condition	Good to moderate (structurally intact to modified, weed cover varies from <1 to 25%)
Habitat Hectare Score	NA
Issues	Good to moderate condition forest, with some particularly diverse areas in excellent condition. Minimise impact area.

Location	Refer to Figure 4
Threatened Species	One threatened species recorded, <i>Eucalyptus fulgens</i> (Green Scentbark) (rare in Victoria), which was found scattered (at least 15 individuals) along the Melba Highway road reserve and occasionally in private properties. Further survey is likely to record additional occurrences of this species, especially north of Hunts Lane. High potential for additional threatened species to occur.

Herb-rich Foothill Forest (EVC 23)



Herb-rich Foothill Forest occurred in extensive sections of the Melba Highway road reserve between Toolangi South and Hunts Lane. It is a forest of medium height (20 - 25m) dominated by a range of eucalypts over a moderately diverse to species-poor ground layer, with scattered shrubs (sometimes invaded by Burgan).

Location	Refer to Figure 4
Dominant Overstorey Species	Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>) Green Scentbark (<i>Eucalyptus fulgens</i>) Messmate Stringybark (<i>Eucalyptus obliqua</i>)
Dominant Understorey Species	Burgan (<i>Kunzea ericoides</i>) Cherry Ballart (<i>Exocarpos cupressiformis</i>) Blackwood (<i>Acacia melanoxylon</i>) Austral Bracken (<i>Pteridium esculentum</i>)
Dominant Ground Cover	Wallaby Grasses (<i>Austrodanthonia</i> spp.) Forest Wire-grass (<i>Tetrarrhena juncea</i>) Thatch Saw-sedge (<i>Gahnia radula</i>) Introduced species (often locally dominant) – Large Quaking-grass (<i>Briza maxima</i>), Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>), English Ivy (<i>Hedera helix</i>), Japanese Honeysuckle (<i>Lonicera japonica</i>)
Condition	Moderate to poor (often structurally modified, weed cover usually 20-50%). Localised dense weed

Location	Refer to Figure 4
	invasions (e.g. Japanese Honeysuckle).
Habitat Hectare Score	NA
Issues	Moderate to poor condition forest, often invaded by introduced species. Minimise impact area.
Threatened Species	Two threatened species recorded, <i>Dianella amoena</i> (Matted Flax-lily) (Endangered in Australia, endangered in Victoria), which occurs in two patches near Hunts Lane; and <i>Eucalyptus fulgens</i> (Green Scentbark) (rare in Victoria), which was found in two major patches (total of at least 100 individuals) and scattered elsewhere along the Melba Highway road reserve and occasionally in private properties. Further survey within this EVC is likely to record additional occurrences of Green Scentbark, especially north of Hunts Lane. Moderate to high potential for additional threatened species to occur.

Valley Grassy Forest (EVC 47)



Valley Grassy Forest is scattered in the south of the LU, where it occurs on fertile soils of the lower undulating foothills. The grassland community (tree layer previously removed) of this EVC is dominated by *Themeda triandra* (Kangaroo Grass) and a moderately species-rich ground layer characterised by a range of native graminoids and forbs, including the nationally endangered species, *Dianella amoena* (Matted Flax-lily). The woodland community is restricted to a small patch in the Gulf Road road reserve, where it is dominated by *Eucalyptus yarraensis* (Yarra Gum) (rare in Victoria), over a moderately diverse understorey, including the nationally endangered species, *Dianella amoena* (Matted Flax-lily).

Location	Refer to Figure 4
Dominant Overstorey Species (where present)	Yarra Gum (<i>Eucalyptus yarraensis</i>)
Dominant Understorey Species	Blackwood (<i>Acacia melanoxylon</i>) <1% cover
Dominant Ground Cover	Kangaroo Grass (<i>Themeda triandra</i>) Wallaby Grasses (<i>Austrodanthonia</i> spp.) Veined Spear-grass (<i>Austrostipa rudis</i> subsp. <i>rudis</i>) Sheep's Burr (<i>Acaena echinata</i>)
Condition	Good to moderate (structurally intact grassland or woodland, weed cover varies from 5 to 50%)
Habitat Hectare Score	NA
Issues	Good to moderate condition grassland or woodland,

	with the grassland providing a unique habitat in the local area. Minimise impact area.
Threatened Species	Two threatened species found: <i>Dianella amoena</i> (Matted Flax-lily) (Endangered in Australia, endangered in Victoria) and <i>Eucalyptus yarraensis</i> (Yarra Gum). Matted Flax-lily occurs in four patches along the Melbourne Water Aqueduct and a single locality within the Gulf Road road reserve. Further targeted survey may locate additional records of this species within this EVC in the Melba Highway South Agricultural Zone / Dixons Creek LU. Yarra Gum occurs at a single locality on Gulf Road, where 26 individuals are present. Given their presence there is a high potential for additional threatened species to occur.

Swampy Riparian Woodland (EVC 83)



Swampy Riparian Woodland has a limited occurrence within the LU, being restricted to Dixons Creek and its associated riparian vegetation. This EVC has been heavily modified by past clearing of the canopy tree layer and weed invasion. It is now dominated by a canopy of wattles, over a degraded understorey.

Location	Refer to Figure 4
Dominant Overstorey Species	None present
Dominant Understorey Species	Silver Wattle (<i>Acacia dealbata</i>) Black Wattle (<i>Acacia mearnsii</i>) Blackwood (<i>Acacia melanoxylon</i>) Swamp Paperbark (<i>Melaleuca ericifolia</i>) Hop Goodenia (<i>Goodenia ovata</i>)
Dominant Ground Cover	Common Reed (<i>Phragmites australis</i>) Spiny-headed Mat-rush (<i>Lomandra longifolia</i>) Introduced species – Blackberry (<i>Rubus fruticosus</i>), Radiata Pine (<i>Pinus radiata</i>), Japanese Honeysuckle (<i>Lonicera japonica</i>)
Condition	Moderate to poor (structurally modified due to removal of eucalypt canopy and weed invasion, >40% weed cover).

Location	Refer to Figure 4
Habitat Hectare Score	NA
Issues	Moderate to poor condition swampy riparian woodland. Minimise impact area.
Threatened Species	No threatened species found. Low potential for threatened species to occur.

Creekline Herb-rich Woodland (EVC 164)



Creekline Herb-rich Woodland has a very limited occurrence within the LU, being restricted to a single locality on Gulf Road, where it occupies a swampy drainage line. This EVC has been heavily modified by clearing of the midstorey and complete invasion of the ground layer by introduced species.

Location	Refer to Figure 4
Dominant Overstorey Species	Yarra Gum (<i>Eucalyptus yarraensis</i>)
Dominant Understorey Species	None present
Dominant Ground Cover	Introduced species – Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>), Paspalum (<i>Paspalum dilatatum</i>), Yorkshire Fog (<i>Holcus lanatus</i>)
Condition	Poor (canopy layer intact, but ground layer totally modified due to removal of midstorey and weed invasion, >90% weed cover in ground layer).
Habitat Hectare Score	NA
Issues	Poor condition woodland. Minimise impact area.
Threatened Species	One threatened species recorded, <i>Eucalyptus yarraensis</i> (Yarra Gum) (rare in Victoria), which was found in a grove (11 individuals) within the Gulf Road road reserve. Low potential for additional threatened species to occur.

Reed Swamp (EVC 300)



Reed Swamp has a limited occurrence within the LU, being restricted to Steels Creek where it crosses Gulf Road and the Melbourne Water Aqueduct. This EVC is likely to have been derived following modification of the creekline in the past. It is now dominated by a dense layer of *Phragmites australis* (Common Reed).

Location	Refer to Figure 4
Dominant Overstorey Species	None present
Dominant Understorey Species	Blackwood (<i>Acacia melanoxylon</i>)
Dominant Ground Cover	Common Reed (<i>Phragmites australis</i>) Slender Knotweed (<i>Persicaria decipiens</i>) Introduced species – Blackberry (<i>Rubus fruticosus</i>)
Condition	Moderate to Good (<5% weed cover).
Habitat Hectare Score	NA
Issues	Moderate to good condition swamp. Minimise impact area.
Threatened Species	No threatened species found. Moderate potential for threatened species to occur.

Gully Woodland (EVC 902)



Gully Woodland is restricted to relatively steep-sided gullies that feed into Dixons Creek in the north of the LU. This EVC has been modified by past clearing and weed invasion. It comprises a forest to 20m that is dominated by a range of eucalypts, often including the state significant species, *Eucalyptus fulgens* (Green Scentbark), over a relatively species-poor ground layer, with scattered shrubs and tree-ferns.

Location	Refer to Figure 4
Dominant Overstorey Species	Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>) Green Scentbark (<i>Eucalyptus fulgens</i>) Messmate Stringybark (<i>Eucalyptus obliqua</i>)
Dominant Understorey Species	Blackwood (<i>Acacia melanoxylon</i>) Prickly Currant-bush (<i>Coprosma quadrifida</i>) Burgan (<i>Kunzea ericoides</i>) Introduced species – Blackberry (<i>Rubus fruticosus</i>)
Dominant Ground Cover	Austral Bracken (<i>Pteridium esculentum</i>) Forest Wire-grass (<i>Tetrarrhena juncea</i>) Tall Sword-sedge (<i>Lepidosperma elatius</i>)
Condition	Moderate to poor (often structurally modified, with dense weed infestations in the gully, usually Blackberry).
Habitat Hectare Score	NA
Issues	Moderate to poor condition forest, almost always invaded by Blackberry. Minimise impact area.
Threatened Species	One threatened species recorded, <i>Eucalyptus fulgens</i> (Green Scentbark) (rare in Victoria), which was found in four Gully Woodland patches (total of at least 20 individuals) in both private and public land along the Melba Highway north of Hunts Lane. Further survey within this EVC may record additional occurrences of Green Scentbark, especially north of Hunts Lane. Moderate potential for additional threatened species to occur.



Fauna Summary

There are fourteen identified habitat types within this LU. These are riparian woodland, dry woodland, dry forest, damp forest, scattered indigenous trees and shrubs, native grassland (with negligible exposed rocks), rocky grassland, exotic and non-indigenous/planted vegetation, constructed features, permanent rivers, ephemeral waterways, ephemeral wetlands, channels, farm dams (See Appendix G for details).

A total of 123 fauna species {97 (9) birds, 18 (5) mammals, 3 reptiles and 5 amphibians} were detected within the Melba Highway South Agricultural Zone/Dixon's Creek LU (Appendix H, H.6.10). The large area contained within this LU contributes to this high species diversity. Several threatened and EPBC listed migratory species including Hardhead, Pied Cormorant *Phalacrocorax varius*, Brown Treecreeper, Cattle Egret *Ardea ibis* and Clamorous Reed-warbler were detected during the current assessment. In addition to these threatened species, species which confirm the presence of the FFG Listed 'Temperate Woodland Bird Community' (Table 16) were detected within this LU throughout remnant areas of native vegetation. A large diversity of mammals exists within the Melba Highway South Agricultural Zone/Dixon's Creek LU. The large number of bats and larger mammals is probably due to the abundance of water sources within each property. Thirteen species listed under the EPBC Act as Marine were detected during the current assessment.

The Melba Highway South Agricultural Zone/Dixon's Creek LU is dominated by species typical of wet-forested habitats, but overall, a diverse mix of species typical of wet-forested habitats, drier wooded habitats and agricultural/wetland habitats. A high diversity of raptors was detected within this LU and it is expected that they are using cleared agricultural areas for foraging. A range of water/wetland birds (ducks, gallinules, ibis, herons, egrets) utilise the ephemeral wetlands and farm dams within this LU.

A series of high quality roadside reserves, all of which provide valuable wildlife corridors throughout the area, run the length of the Melba Highway South Agricultural Zone. These wildlife corridors provide suitable habitat for a range of native species and have the potential to support a suite of significant species as they move throughout the general area. Whilst much of this LU contains fauna habitat considered to be of low quality, the series of roadside reserves are considered to contain high quality fauna habitat values.

4.7.11 LU 11: Hunts Lane Rise (Section G1, 2)

General Description

Hunts Lane Rise LU zone contains a range of mixed landscapes, where native vegetation has been mostly cleared for a range of agricultural land uses. The agricultural areas include occasional scattered native trees however they are largely dominated by both introduced pasture species and weeds of pasture, or native grasses and forbs in areas of unimproved pasture. This LU crosses a

small rise, which contains largely intact native vegetation. The vegetation present here is likely to provide a range of fauna habitats and consequently support a relatively diverse range of fauna species. The vegetation present here is likely to also serve as a relatively important corridor for fauna movement from larger areas of vegetation nearby as it connects with Kinglake National Park. A narrow area of riparian vegetation runs along Steels Creek, towards the western end of this LU zone. The riparian zone and adjacent floodplain support larger eucalypts, some of which retain a high conservation value due to their age and hollow bearing nature. These trees provide in-situ habitat and would also act as a corridor for fauna moving along the Steels Creek corridor.

A total of two⁴⁵ EVCs occur in this area: Valley Grassy Forest (EVC 47) and Gully Woodland (EVC 902). These EVCs are summarised below.

Valley Grassy Forest (EVC 47)

Flora Summary



Valley Grassy Forest is the dominant EVC within the LU, where it occurs on the fertile soils of the valley running parallel to the north of Hunts Lane. A grassland community (tree layer previously removed) of this EVC occurs in private land where the pasture has not been 'improved' by application of fertilisers. The woodland community is largely restricted to the Hunts Lane road reserve, where a range of eucalypts are common, including *Eucalyptus fulgens* (Green Scentbark) (rare in Victoria), over a moderately diverse understorey,

Location	Refer to Figure 4
Dominant Overstorey Species (where present)	Messmate Stringybark (<i>Eucalyptus obliqua</i>) Red Stringybark (<i>Eucalyptus macrorhyncha</i>) Green Scentbark (<i>Eucalyptus fulgens</i>)
Dominant Understorey Species	Sweet Bursaria (<i>Bursaria spinosa</i> subsp. <i>spinosa</i>) Austral Bracken (<i>Pteridium esculentum</i>)

⁴⁵ It should be noted that the major vegetation remnant occurring on Hunts Lane Rise has not been surveyed. Other EVCs such as Grassy Dry Forest (EVC 22) are likely to also be present within this LU but are not reported here as they have not been assessed at the time of writing this report.

Location	Refer to Figure 4
Dominant Ground Cover	Kangaroo Grass (<i>Themeda triandra</i>) Thatch Saw-sedge (<i>Gahnia radula</i>) Tussock Grass (<i>Poa</i> spp.) Introduced species – Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>)
Condition	Good to moderate (generally modified grassland or woodland, with weed cover varying from 5 to 40%)
Habitat Hectare Score	NA
Issues	Good to moderate condition grassland or woodland. Minimise impact area.

Threatened Species	One threatened species recorded, <i>Eucalyptus fulgens</i> (Green Scentbark) (rare in Victoria), which was found scattered along Hunts Lane and in the adjacent private property to the west of the north-south running hills near the east end of Hunts Lane (total of at least 60 individuals). Further survey within this EVC along Hunts Lane is likely to record additional occurrences of Green Scentbark. High potential for additional threatened species to occur.
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Gully Woodland (EVC 902)



Gully Woodland is restricted to a single gully at the western end of Hunts Lane. This EVC has been heavily modified by past clearing and weed invasion; however, recent revegetation efforts with locally indigenous species have helped to improve the quality of this remnant. It comprises a forest to 20m that is dominated by a range of eucalypts, including the state significant species, *Eucalyptus fulgens* (Green Scentbark), over a relatively species-poor ground layer.

Location	Refer to Figure 4
Dominant Overstorey Species	Green Scentbark (<i>Eucalyptus fulgens</i>) Swamp Gum (<i>Eucalyptus ovata</i>)
Dominant Understorey Species	None naturally occurring (all revegetation)



Location	Refer to Figure 4
Dominant Ground Cover	Tall Sedge (<i>Carex appressa</i>) Introduced species – Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>)
Condition	Moderate to poor (structurally modified, weedy).
Habitat Hectare Score	NA
Issues	Moderate to poor condition forest. Minimise impact area.
Threatened Species	One threatened species recorded, <i>Eucalyptus fulgens</i> (Green Scentbark) (rare in Victoria), which was found scattered (at least 15 individuals) throughout the EVC in private land at the west end of Hunts Lane. Moderate to low potential for additional threatened species to occur.

Fauna Summary

There are nine identified habitat types within the Hunts Lane Rise. These are riparian woodland, dry woodland, dry forest, scattered indigenous trees and shrubs, native grassland (with negligible exposed rocks), exotic and non-indigenous/planted vegetation, constructed features, ephemeral waterways and farm dams (See Appendix G for details).

Seventy-four fauna species {62 (4) birds, 5 (2) mammals, 5 reptiles and 2 amphibians} were recorded within the Hunts Lane Rise LU during the current assessment (Appendix H, 0). No threatened species were recorded from within this LU, however there is ample habitat for a range of listed species. The FFG Listed ‘*Temperate Woodland Bird Community*’ was confirmed to occur within this LU throughout remnant areas of native vegetation with the detection of bird species which confirm the presence of this community (Table 16). Six species listed as Marine under the EPBC Act were detected during the field investigations.

There is one major fauna survey site within the Hunts Lane Rise LU⁴⁶. Overall, there is a diverse mix of species typical of wet-forested habitats, drier wooded habitats and agricultural/wetland habitats within the Hunts Lane Rise LU. Several fauna species which were unique to the southern sections of the survey corridor were detected within this LU including; White-throated Gerygone *Gerygone olivacea*, Tree Dragon *Amphibolurus muricatus* and Crescent Honeyeater *Phylidonyris pyrrhoptera*.

The fauna habitats within Hunts Lane Rise have the potential to contain a suite of significant species and they provide strong habitat links between Kinglake National Park, Toolangi State

⁴⁶ Major fauna survey was generally not conducted on private property due to land access and animal welfare issues, however, due to the high quality habitat present along Hunt's Lane, major fauna survey occurred at one site.

Forest and other private properties contain remnant vegetation. For both of these reasons, fauna habitat throughout the majority of Hunts Lane Rise LU is considered to be of a high value.

4.7.12 LU 12: Steels Creek Flats (Section G1, 2)

General Description

The Steels Creek LU zone contains a variety of landscapes, where native vegetation has been mostly cleared for a range of agricultural land uses. Despite this a number of habitat types still exist within this zone, including patches of Open Forest, Riparian Forest and Open Woodland. The agricultural areas include occasional scattered native trees; however these areas are largely dominated by exotic herbs and pasture grasses. A narrow area of riparian vegetation runs along Steels Creek. The riparian zone and adjacent floodplain support larger Eucalypts, some of which retain a high conservation value due to their age and hollow bearing nature. In addition, some damper or swampy sections of the floodplain area are likely to support some frog and bird species. These trees provide in-situ habitat and would also act as a corridor for fauna moving along the Steels Creek corridor. Areas of open woodland and open forest are more confined to steeper sections of this zone including to the west of Steels Creek Road and further east of Steels Creek.

Only one EVC was recorded within this LU: Riparian Forest (EVC 18), which is summarised below.

Flora Summary

Riparian Forest (EVC 18)



Riparian Forest is restricted to the riparian zone of Steels Creek and its associated alluvial terraces (where they have not been cleared for agriculture). The only surveyed occurrence of this EVC within the LU is in the vicinity of Hunts Lane however, Riparian Forest occurs along the length of Steels Creek until the area where the creek bends westward near Steels Creek Road, south of Pinnacle Lane. This EVC has been heavily modified through weed invasion. It comprises a forest to 40m tall, which is dominated by large hollow-bearing *Eucalyptus viminalis* subsp. *viminalis* (Manna Gum), over a shrub layer and relatively species-poor ground layer.



Location	Refer to Figure 4
Dominant Overstorey Species	Manna Gum (<i>Eucalyptus viminalis</i> subsp. <i>viminalis</i>)
Dominant Understorey Species	Blackwood (<i>Acacia melanoxylon</i>) Victorian Christmas-bush (<i>Prostanthera lasianthos</i>) Tree Everlasting (<i>Ozothamnus ferrugineus</i>)
Dominant Ground Cover	Austral Bracken (<i>Pteridium esculentum</i>) Introduced species – Creeping Buttercup (<i>Ranunculus repens</i>), Blackberry (<i>Rubus fruticosus</i>)
Condition	Moderate to poor (structurally modified, 30-70% weeds).
Habitat Hectare Score	NA
Issues	Moderate to poor condition forest with some very large and old hollow-bearing trees. Minimise impact area.
Threatened Species	No threatened species found. Moderate potential for threatened species to occur.

Fauna Summary

There are seven identified habitat types within the Steels Creek Flats LU. These are Riparian Woodland, Scattered Indigenous Trees and Shrubs, Native Grassland (with negligible exposed rocks), Exotic and non-indigenous/planted Vegetation, Constructed Features, Permanent Rivers and Farm Dams (See Appendix G for details).

Ninety-eight fauna species {81(7) birds, 8(3) mammals, 3 reptiles and 6 amphibians} were detected during the field investigations (Appendix H, H.6.12). The overall fauna diversity of this LU was very high and several threatened and migratory birds species were detected within the Steels Creek Flats LU, including; Hooded Robin *Melanodryas cucullata*, Hardhead and Cattle Egret. In addition to threatened species, species which confirm the presence of the FFG Listed ‘*Temperate Woodland Bird Community*’ (Table 16) were detected within this LU throughout remnant areas of native vegetation.

The range of fauna habitats within Steels Creek Flats results in a diverse mix of species typical of wet-forested habitats, drier wooded habitats and agricultural/wetland habitats. Six species of frogs were detected during the field investigations within Steel’s Creek Flats. This is a high diversity when compared with areas throughout the survey corridor and indicates that a range of habitat types are present throughout the LU. Several species of note which occur within the LU are Leaden Flycatcher *Myiagra rubecula*, Red-browed Finch *Neochmia temporalis*, Eastern Whipbird *Psophodes olivaceus*, White-winged Triller *Lalage sueurii*, Dusky Woodswallow *Artamus cyanopterus* and Olive-backed Oriole *Oriolus sagittatus*. Whilst these species are not considered

threatened, their presence indicates that high quality habitat occurs within the area. Twelve species listed as marine under the EPBC Act were detected during the field investigations.

The fauna habitats present within the Steels Creek Flats LU have the potential to contain a suite of significant species and they provide strong habitat links to surrounding areas containing remnant vegetation. For these reasons, fauna habitat throughout sections of the Steels Creek Flats LU is considered to be of a high value (e.g. Steels Creek and large patches of riparian forest to the east of Steels Creek Road), whilst most habitat throughout the LU is considered to be of moderate value (e.g. low lying wet areas throughout the LU).

4.7.13 LU 13: Christmas Hills Escarpment (Section G, H)

General Description

The Christmas Hills Escarpment LU is a steep area of land with a easterly aspect connecting the Yarra Glen Bypass and the Sugarloaf Reservoir and Reserve LUs. The area is densely vegetated and contains a broad range of habitat types.

Three EVCs occur in this area: Grassy Dry Forest (EVC 22), Herb-rich Foothill Forest (EVC 23) and Valley Grassy Forest (EVC 47). These EVCs are summarised below.

Flora Summary

Grassy Dry Forest (EVC 22)



Grassy Dry Forest occupies drier ridge tops and north facing slopes within the LU. This EVC is characterised by a medium forest to 20m tall, over a very sparse shrub layer and a species-rich ground layer dominated by a range of native graminoids and forbs.

Location	Species
Dominant Overstorey Species	Bundy (<i>Eucalyptus goniocalyx</i>) Red Stringybark (<i>Eucalyptus macrorhyncha</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>)

Dominant Understorey Species	Sweet Bursaria (<i>Bursaria spinosa</i>) Cherry Ballart (<i>Exocarpos cupressiformis</i>) *Sweet Pittosporum (<i>Pittosporum undulatum</i>)
Dominant Ground Cover Species	Kangaroo Grass (<i>Themeda triandra</i>) Spear Grass (<i>Austrostipa</i> spp.) Wallaby Grass (<i>Austrodanthonia</i> spp.)
Condition	Moderate to Good, depending on level of structural modification and understorey weed invasion.
Habitat Hectare Score	NA
Issues	Minimise impact area and disturbance to threatened species.
Threatened Species	No threatened species recorded. However, high potential for threatened species to occur.

Herb-rich Foothill Forest (EVC 23)



Herb-rich Foothill Forest is generally scattered within road reserves along Steels Creek Road within the Christmas Hills Escarpment LU. It is a forest of medium height (20 - 25m) dominated by a range of eucalypts over a diverse ground layer with scattered shrubs.

Location	Species
Dominant Overstorey Species	Messmate Stringybark (<i>Eucalyptus obliqua</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>) Candlebark (<i>Eucalyptus rubida</i>)
Dominant Understorey Species	Blackwood (<i>Acacia melanoxylon</i>) Sweet Bursaria (<i>Bursaria spinosa</i>) Cherry Ballart (<i>Exocarpos cupressiformis</i>)
Dominant Ground Cover Species	Kangaroo Grass (<i>Themeda triandra</i>) Spear Grass (<i>Austrostipa</i> spp.) Wallaby Grass (<i>Austrodanthonia</i> spp.) *Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>)
Condition	Moderate to Good, depending on level of structural modification and understorey weed invasion.
Habitat Hectare Score	NA

Issues	Minimise impact area and disturbance to areas of remnant vegetation and threatened species.
Threatened Species	Two threatened species were recorded, <i>Dianella amoena</i> (Matted Flax-lily) (Endangered in Australia, endangered in Victoria) (at least 21 patches at five sites), and <i>Eucalyptus yarraensis</i> (Yarra Gum) (rare in Victoria) (one site with one individual). Matted Flax-lily may be more common than initially recorded. High potential for additional threatened species to occur.

Valley Grassy Forest (EVC 47)



Valley Grassy Forest occupied most of the gullies and also sections of the lower slopes. Sections of this LU have been modified by tree clearing for agriculture. This EVC is characterised by a medium forest 20 - 30m tall, over a moderate shrub layer and a species-rich ground layer dominated by a range of native graminoids and forbs.

Location	Refer to Figure 4
Dominant Overstorey Species	Yellow Box (<i>Eucalyptus melliodora</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>) Swamp Gum (<i>Eucalyptus ovata</i>)
Dominant Understorey Species	Blackwood (<i>Acacia melanoxylon</i>) *Sweet Pittosporum (<i>Pittosporum undulatum</i>)
Dominant Ground Cover	*Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>) Weeping Grass (<i>Microlaena stipoides</i>) Kidney-weed (<i>Dichondra repens</i>) Bidgee-widgee (<i>Acaena novae-zelandiae</i>)
Condition	Moderate. Generally structurally intact; however, heavily invaded by grassy weeds and Sweet Pittosporum in areas.
Habitat Hectare Score	NA
Issues	Minimise impact area and disturbance to areas of remnant vegetation.



Threatened Species	Two threatened species were recorded, <i>Dianella amoena</i> (Matted Flax-lily) (Endangered in Australia, endangered in Victoria) (one patch), and <i>Dianella tara</i> (Late-flower Flax-lily) (vulnerable in Victoria) (one site). Both species may be more common than initially recorded. High potential for additional threatened species to occur.
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Fauna Summary

There are twelve identified habitat types within the Christmas Hills Escarpment LU. These are riparian woodland, dry woodland, scattered indigenous trees and shrubs, native grassland (with negligible exposed rocks), rocky grassland, exotic and non-indigenous/planted vegetation, constructed features, permanent rivers, ephemeral waterways, ephemeral wetlands, channels and farm dams (See Appendix G for details).

A total of 113 fauna species {83 (15) birds, 21(5) mammals, 4 reptiles and 5 amphibians} were detected during the current survey (Appendix H, H.6.13). Three species considered to be threatened in Victoria or migratory under the EPBC Act have been detected within the study area; Rufous Fantail, Pied Cormorant *Phalacrocorax varius* and Common Bent-wing Bat. In addition to significant species, indicator species for the FFG Listed 'Temperate Woodland Bird Community' (Table 17) have been recorded within remnant vegetation within this LU. Ten species listed as marine under the EPBC Act were also detected during field investigations (Appendix H; H.6.13).

The high quality fauna habitat within the Christmas Hills Escarpment LU result in a very high diversity of wet-forest fauna (with some species uncommon in the local area e.g. Wonga Pigeon *Leucosarcia melanoleuca*, Eastern Small-eyed Snake *Rhinoplocephalus nigrescens*), and with notable additions of species more commonly found in drier wooded habitats (e.g., Scarlet Robin, Restless Flycatcher *Myiagra inquieta* and Olive-backed Oriole). A range of robins, which are a group considered to be in decline (New Atlas of Australian Birds 2003), were also detected throughout the LU including; Scarlet Robin, Flame Robin and Eastern Yellow Robin.

The fauna habitats within the Christmas Hills Escarpment LU have the potential to contain a suite of significant species and they provide strong habitat links between Kinglake National Park, Sugarloaf Reservoir and other private properties contain remnant vegetation. For both of these reasons, fauna habitat throughout the majority of Christmas Hills Escarpment LU is considered to be of a high value.

4.7.14 LU 14: Yarra Glen Bypass (Section G)

General Description

Yarra Glen Bypass occurs along southern end of Glenview Road (south of Gulf Road) and along the western end of Yarra View Road. This LU is found on the lower foothill slopes of the Christmas Hills, within the Highlands Southern Fall bioregion. This area is highly disturbed and degraded and is dominated by weedy agricultural species. Remnant vegetation in this area is highly disturbed and is classified as EVC 47 Valley Grassy Forest (Vulnerable). Remnant vegetation in this area is dominated by grassy species including Kangaroo grass (*Themeda triandra*). The overstorey component of remnant vegetation is largely missing. Scattered trees present have a Medium conservation significance. Remnant vegetation in this area is highly disturbed and is classified as EVC 47 Valley Grassy Forest (Vulnerable).

Flora Summary

Valley Grassy Forest (EVC 47)



Occasional patches of Valley Grassy Forest were located in roadside reserves. The area has been substantially modified by tree clearing for agriculture. This EVC is characterised by a medium forest 20 - 30m tall, over a moderate shrub layer and a species-rich ground layer dominated by a range of native graminoids and forbs.

Location	Refer to Figure 4
Dominant Overstorey Species	The overstorey in this landscape unit is largely absent. Some scattered trees present include; Narrow Leaf Peppermint (<i>Eucalyptus radiata</i>) Swamp Gum (<i>Eucalyptus ovata</i>) Yarra Gum (<i>Eucalyptus yarraensis</i>)
Dominant Understorey Species	The overstorey in this landscape unit is largely absent. Some present include; Black Wattle (<i>Acacia mearnsii</i>)
Dominant Ground Cover	Dominated by weedy agricultural species with patches of native grasses



Location	Refer to Figure 4
	*Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>) Kangaroo Grass (<i>Themeda triandra</i>)
Condition	Poor to moderate
Habitat Hectare Score	NA
Issues	Minimise damage and impacts to remnant vegetation and scattered trees. Avoid threatened species.
Threatened Species	Two threatened species have been recorded within this landscape zone. Yarra Gum (<i>Eucalyptus yarraensis</i>), listed as rare in Victoria, is located within the roadside reserves. Matted Flax-lily (<i>Dianella amoena</i>), listed as endangered under EPBC Act and DSE (2005), is located within road reserves and Melbourne Water aqueduct.

Fauna Summary

There are six identified habitat types within the Yarra Glen Bypass LU. These are Dry Woodland, Dry Forest, Scattered Indigenous Trees and Shrubs, Native Grassland (with negligible exposed rocks), Exotic and non-indigenous/planted Vegetation and Farm Dams (See Appendix G for details).

Eighty-nine fauna species {76(7) Birds, 6(2) mammals, 4 reptiles and 3 amphibians} were detected within the Yarra Glen Bypass LU throughout the current survey (Appendix H, H.6.14). One significant species, Great Egret, was detected within this LU. In addition to this threatened species, species which confirm the presence of the FFG Listed ‘*Temperate Woodland Bird Community*’ (Table 16) were detected within this LU throughout remnant areas of native vegetation. Nine species listed a marine under the EPBC Act have been detected within this LU during field investigations.

There are several native fauna species present within the Yarra Glen Bypass LU including Australian Spotted Crake *Porzana fluminea*, Jacky Winter, White-winged Triller *Lalage sueurii*, Rose Robin, White-throated Gerygone and Tree Dragon indicates the presence of good quality habitat of varying types in the area. A high level of fauna diversity throughout the Yarra Glen Bypass LU occurs mainly within areas of roadside vegetation, including larger remnant Eucalypts and native grasses occur in this area. As remnant native vegetation has been largely cleared from this LU the roadside vegetation present is relatively important within the context of the landscape. Dams and large sources of water on vineyards and farms also provides fauna habitat for waterbirds. A typical range of wet-forest and drier woodland fauna, with a total of 15 wetland/waterbirds (e.g. ibis, cormorants) whose presence can be attributed to the presence of wetlands and farm dams in the predominantly agricultural landscape.

A series of roadside reserves, all of which provide valuable wildlife corridors throughout the area, occur within sections of the Yarra Glen Bypass. Many of these reserves have been cleared for development and have occasionally been replaced by planted trees and shrubs. These reserves provide wildlife corridors for a range of native species and have the potential to support a suite of native species as they move throughout the general area. Whilst much of this LU contains fauna habitat considered to be of low quality, the series of roadside reserves are considered to contain moderate quality fauna habitat values, particularly when compared to much of the habitat present within the LU.

4.7.15 LU 15: Sugarloaf Reservoir and Reserve (Section H)

General Description

The Sugarloaf Reservoir and Reserve LU refers to the area on the eastern side of Sugarloaf Reservoir where the pipeline is likely to enter the reservoir. This landscape unit is within the Highlands Southern Fall bioregion. A total of two EVCs co-dominate this area - Grassy Dry Forest (EVC 22) and Valley Grassy Forest (EVC 47). In addition, two other vegetation types are present and mapped for the purpose of this report. These are ‘*Acacia mearnsii* scrub’ and ‘Mosaic of non-native vegetation / *Microlaena stipoides* native grassland / *Pteridium esculentum* fernland’. These EVCs and vegetation types are summarised below.

Flora Summary

Grassy Dry Forest (EVC 22)



Grassy Dry Forest occupied most of the drier ridge tops and north or west-facing slopes within the landscape unit. This EVC is characterised by a medium forest to 20m tall, over a very sparse shrub layer and a species-rich ground layer dominated by a range of native graminoids and forbs, including a diverse range of orchid species.

Location	Refer to Figure 4
Dominant Overstorey Species	Bundy (<i>Eucalyptus gonicalyx</i>) Red Stringybark (<i>Eucalyptus macrorhyncha</i>) Red Box (<i>Eucalyptus polyanthemos</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>)
Dominant Understorey Species	Common Cassinia (<i>Cassinia aculeate</i>)
Dominant Ground Cover	Hairy Pennywort (<i>Hydrocotyle hirta</i>) Silvertop Wallaby-grass (<i>Joycea pallida</i>) Weeping Grass (<i>Microlaena stipoides</i>)
Condition	Good to moderate (structurally intact, weed cover varies from <1 to 5%)
Habitat Hectare Score	49-64/100 (Medium to High ⁴⁷ conservation significance)
Issues	Good to moderate condition forest. Minimise impact area.
Threatened Species	Two threatened species recorded, <i>Carex chlorantha</i> (Green-top Sedge) (poorly known in Victoria), which was found as a few scattered individuals in a wet depression, and <i>Hypoxis vaginata</i> var. <i>brevistigmata</i> (Yellow Star) (poorly known in Victoria), which was found growing as a single individual in herb-rich vegetation. These species are likely to be more common than initially recorded. Moderate to high potential for additional threatened species to occur.

Valley Grassy Forest (EVC 47)



Valley Grassy Forest occupied most of the more protected areas such as gullies and south- or east-facing slopes within the landscape unit. This EVC is characterised by a medium forest 20 - 30m tall, over a moderate shrub layer and a species-rich ground layer dominated by a range of native graminoids and forbs.

⁴⁷ Increased from Medium to High conservation significance as it is likely to provide at least the remaining 50% of habitat for threatened species in Victoria (NRE 2002).



Location	Refer to Figure 4
Dominant Overstorey Species	Messmate Stringybark (<i>Eucalyptus obliqua</i>) Swamp Gum (<i>Eucalyptus ovata</i>) Red Box (<i>Eucalyptus polyanthemos</i>) Narrow-leaf Peppermint (<i>Eucalyptus radiata</i>)
Dominant Understorey Species	Prickly Moses (<i>Acacia verticillata</i>) Common Cassinia (<i>Cassinia aculeata</i>) Cherry Ballart (<i>Exocarpos cupressiformis</i>) Burgan (<i>Kunzea ericoides</i>) Austral Bracken (<i>Pteridium esculentum</i>)
Dominant Ground Cover	Bulbine Lily (<i>Bulbine bulbosa</i>) Kidney-weed (<i>Dichondra repens</i>) Hairy Pennywort (<i>Hydrocotyle hirta</i>) Spiny-headed Mat-rush (<i>Lomandra longifolia</i>)
Condition	Good to moderate (structurally intact, weed cover varies from 1 to 15%)
Habitat Hectare Score	69/100 (Very High conservation significance). Moderate quality areas would all generally be Very High, with a few of the poorer quality examples being of High conservation significance.
Issues	Good to moderate condition forest. Minimise impact area.
Threatened Species	One threatened species found, <i>Carex chlorantha</i> (Green-top Sedge) (poorly known in Victoria), which was found as a few scattered individuals in a moist valley. Moderate to high potential for additional threatened species to occur.