

3.0 Existing Environment

3.1 Description of the Study Zone

3.1.1 Watercourses

Four watercourses pass through the corridor, Yebri Creek south of Kallangur, Black Duck Creek south of Murrumba Downs, Freshwater Creek and Saltwater Creek that both drain into Hays Inlet.

Hays Inlet is a declared Ramsar wetland of international importance and is protected under the *EPBC Act*. The Ramsar wetland extends along Hays Inlet / Saltwater Creek to the point where it is crossed by Anzac Avenue (illustrated in Figure 2). The character of the creeks is largely influenced by urban development. Urban stormwater is channelled through the creeks and they are strongly influenced by rainfall within the catchment. Saltwater Creek is the only watercourse impacted by tidal influences.

3.1.2 Vegetation

The riparian corridors have been heavily modified in places, yet largely support healthy macrophyte and faunal communities. The Freshwater Creek catchment supports mangroves, melaleuca forests, and segments of dry sclerophyll forest. The main vegetation type along Saltwater Creek and its tributaries is paperbark forest with saltmarsh and mangroves occurring in the low-lying areas of Hays Inlet. Open remnant eucalypt-dominated forests are present in the upper reaches of Saltwater Creek.

The study zone is located in a low-lying coastal area where much of the original vegetation has been cleared for rural, residential and some industrial land use. Preserving the proposed public corridor has retained terrestrial, freshwater and saltwater vegetation communities representative of the local area prior to clearing. The three broad vegetation types present include:

- Dry, open forests with pink bloodwood (*Corymbia intermedia*), grey ironbark (*Eucalyptus drepanophylla*), scribbly gum (*Eucalyptus racemosa*), Queensland blue gum (*Eucalyptus tereticornis*), brush box (*Lophostemon confertus*) and swamp box (*Lophostemon suaveolens*) with an understorey of acacias and grasses.
- Freshwater wetlands with broad-leaved paperbark (*Melaleuca quinquenervia*) forests with an understorey of brackens, sedges and grasses.
- Saltmarsh and mangroves with swamp she-oak (*Casuarina glauca*), broad-leaved paperbark (*Melaleuca quinquenervia*), saltwater couch (*Sporobolus virginicus*), river mangrove (*Aegiceras corniculatum*), grey mangrove (*Avicennia marina*), yellow mangrove (*Ceriops tagal*) and milky mangrove (*Exoecaria agallocha*).

Planted vegetation comprising both native and exotic species is found in parks, gardens, schools and along watercourses and roads.

A full list of flora species recorded within the study area is presented in Appendix B of the FIASR (2003). No additional species were recorded during this study.

3.1.3 Fauna

The study zone provides foraging, roosting and habitat values to a variety of native and feral fauna. The FIASR (2003) identified a minimum of 207 species including 19 mammal species, 138 birds, 26 reptiles, 11 frogs (both native and exotic) and 13 fish. A full list of fauna species is provided in Appendix B of the FIASR (2003).

Macropods and koalas have been recorded through much of the study zone. Eastern grey kangaroo (*Macropus giganteus*) and red-necked wallaby (*Macropus rufogriseus*) are possibly restricted to areas east of the Bruce Highway and swamp wallaby (*Wallabia bicolor*) are most commonly found in the Freshwater Creek area (FIASR, 2003).

The diversity of bird species recorded can be attributed to the diversity of habitats within the study zone (riparian, mangroves and eucalypt forest) and the provision of feeding, breeding, and roosting resources.

Twenty-seven common, native reptilian species have been recorded during previous surveys by MHGCOAR, FIASR and are noted on both the Queensland Museum and Wildlife Online records. The Queensland Museum and Wildlife Online suggests that a further seven terrestrial and aquatic species can be commonly found in the area.

In addition to the ten native frog species found, several significant species could potentially be present along the study zone. The endangered barred frog (*Mixophyes iteratus*), the vulnerable tusked frog (*Adelotus brevis*) and the rare green thighed frog (*Litoria brevipalmata*) have historically inhabited the general area. However, it should be noted that these species are not expected to occur within the study area due to the historical and on-going impacts of urban development and from the impacts associated with exotic *Bufo marinus* (cane toad).

3.1.4 Acid Sulphate Soils

Acid sulphate soils (ASS) occur naturally over extensive low-lying coastal areas, predominantly below five metres Australian Height Datum (AHD). Disturbance to ASS can lead to impacts upon watercourses and those flora and fauna dependent upon them.

ASS contain iron sulphides (mainly pyrite), which can generate large amounts of sulphuric acid when exposed to air. These soils formed naturally over the last 10,000 years, and are safe unless they are disturbed, usually through excavation and drainage.

Historically, large scale drainage of coastal flood plains for flood mitigation, urban expansion and agriculture has exposed large areas of ASS. Acid leachate, plus the aluminium, iron and other heavy metals that are subsequently released from soils, can cause significant environmental and economic problems.

ASS may be found close to the natural ground level, but may also be found at depth in the soil profile. All disturbances to the groundwater hydrology or surface drainage patterns in coastal areas below five metres AHD, including the subsoil or sediments below five metres AHD where the natural ground level of the land exceeds 5 metres AHD, should be investigated, designed and managed to avoid potential adverse effects on the natural and built environment (including infrastructure) and human health from ASS.

The Department of Natural Resources and Mines (now DERM) has mapped large areas of acid sulphate soils throughout Queensland. The following information is based upon that mapping.

ASS is expected to predominantly occur within the eastern sections of the study zone. Large areas of potential ASS occur in association with the estuarine areas of Hays Inlet (Figure 3). Further to this, potential ASS is associated with the tidal systems of Freshwater and Saltwater Creeks in the central sections of the alignment of the study zone, as well as Yebri Creek and the North Pine River in the western sections of the study zone.

3.1.5 Flora

Twelve vegetation communities were identified within the study zone. These communities are briefly described below (vegetation descriptions adapted from the FIASR (2003) and were verified by Maunsell in 2007).

The following vegetation descriptions should be read in conjunction with the vegetation mapping provided in Figures 3A to 3F. They are consistent with that provided by the EPA (now DERM) in 2007. This mapping represents the extent of all vegetation within the study zone including regrowth vegetation and allows for comparison to vegetation mapped under the RE mapping to which legislative controls apply. The mapping undertaken for this report also allowed an assessment of the habitats' significance for threatened flora and fauna species of the vegetation within the study zone.

3.1.6 Vegetation Communities of the Study Zone

Scribbly Gum open forest

E. racemosa open forest on remnant Tertiary surfaces (RE 12.5.3)

Floristic: The dominant tree in this community is *Eucalyptus racemosa*. Other species include *Corymbia intermedia*, *Eucalyptus siderophloia*, *Eucalyptus microcorys*, *Eucalyptus resinifera* and *Angophora leicarpa*. *Melaleuca quinquenervia* occurs on lower slopes. This community is listed as an endangered regional ecosystem.

Distribution: This community occurs in several small patches, either isolated or as part of a larger mosaic of RE ('of concern' and 'not of concern'). It occurs in two patches of forest on the AMCOR site (along Yebri Creek east of Petrie Street and south of Dohles Rocks Road opposite School Street); south of Freshwater Creek Road adjacent to Grace Court; and south of Buchanan Street between Gynther Road and Mewes Road. A patch also occurs on Lot RP200652 north of Dohles Rocks Road which is not currently mapped as an RE.