4.2 Ecological Principles

Introduction

The overall character of the campus is one of open woodland in which locally and regionally indigenous tree species predominate. The colours, textures and quality of light specific to the region are an everyday feature of the campus. This local distinctiveness, while familiar to Sunshine Coast residents, is an experience for visitors unique to the regional environment. Within the main building area a more varied series of sub characters are possible, although these are held within the strong landscape framework of the open campus green and the cross axial tree lined avenues. Throughout the campus the landscape exhibits an uncluttered, casual and understated quality which complements the buildings and facilitates, enabling full enjoyment of the benign climate which supports outdoor living.

The general principles regarding fauna, hydrology and fire management which were outlined in the original Environmental Guidelines are still generally valid, are likely to remain so over the next five years and their principal observations are restated below, with some additional topics appended.

Fauna

Due to its limited vegetation the site supports little habitat of significance to fauna. Common farmland bird species live in the grassland and scattered trees on the site. This group include Australian magpies, grey butcherbirds, paleheaded rosellas and torresian crows. The grassland area supports a small population of red-backed wrens and quail.

The campus is used by eastern grey kangaroos and groups have been seen entering the site from the National Park.

Tracks and markings indicate the use of the area by dogs and foxes. Characteristic diggings of a short beaked echidna have been identified on the north side of the campus. Wallum froglets, clicking froglets and introduced cane toads have been located in puddles along the southern part of the campus.

Reptiles are uncommon, though a rough scaled snake and eastern tiger snake have been collected from the site in previous decades.

Hydrology

The site has considerable water retention characteristics due to its generally flat catchment slope and porous soils with significant surface runoff only likely to occur after heavy or prolonged rain. Due to site retention / infiltration properties, ground water release or base flow comprises a major component of the waters passing from the site. This flow is likely to continue for significant periods, from days to weeks, after the cessation of rainfall. The quality of the water leaving the site could be described as highly coloured, acid, and with low nutrient levels.

No specific legal point of water discharge has been sought for the property. The wetlands and current discharge point at the southeast boundary has been established naturally and is historically defined.

Investigations into the flood effects of the Mooloolah River have indicated the site would not be directly affected by the 100 year average recurrence-interval flood / rainfall event in the Mooloolah River.

Agricultural pursuits have required the construction of earth field drains (swales) to improve the drainage of the property. These furrows have generally followed the natural low contour profiles leading to the wetland at the south-east boundary.

Fire Management

As with much of the Australian landscape, fire is an integral part of the ecology of coastal lowland vegetation. Prior to more intensive development of the coastal lowlands of southern Queensland, little of the vegetation has traditionally escaped burning for more than five years. According to a 1994 draft Report for Environmental Guidelines, the desirable fire frequency for the promotion of biodiversity would be five to eight years.

Flora

Plant species are predominantly those indigenous to the Sunshine Coast Region. The Bushland Zone is exclusively species which are locally indigenous, with plants being propagated from local seed sources. The Parkland Zone is a mix of locally and regionally indigenous trees with a minor component of other species.

Within the Central Campus Zone a more eclectic approach is appropriate in response to the wide ranging needs of specific spaces and micro-climatic conditions. Here, locally and regionally indigenous species are mixed with native and a small proportion of exotic species. As noted in the original Sunshine Coast University College Site Environmental Guidelines (WBM 1994), the University is sited on soils with a low nutrient status and therefore species that are tolerant to these conditions will be most suitable for landscape elements. Exotic species that have high nutrient requirements should therefore be avoided due to the likelihood of increased nutrient runoff if fertilisers are used to sustain such species.

Habitat Corridors

The campus has a number of significant habitats for a range of fauna species. These areas are likely to increase in importance as development occurs around the University periphery. In particular, the development of the Town Centre to the north of Sippy Downs Drive is likely to displace many fauna species As a consequence, habitat 'corridors' provided by the University will be critical in enabling fauna to move to other protected areas, either on campus or in the adjacent National Park, helping to maintaining the ecological sustainability of the area. These corridors will also serve to integrate pockets of tree species and grassland areas that are currently disconnected by informal drainage lines and temporary car parking.

The restoration of habitat connections through planting with suitable species will allow for fauna movement at appropriate locations, limiting the need for fencing beside roads and reducing the need for fauna species to move through the open campus green itself. It is recommended that the habitat corridors be defined through an appropriate mix of habitat types, such as grassed areas, understorey plants and suitable tree species at an appropriate spacing.

Refer Diagram 4.2.1

No-Development Zones

The careful location of future development is crucial to the maintenance of a high quality, legible landscape and healthy site ecology. The 2012 Campus Master Plan nominates those areas which are to be explicitly excluded from future development as building sites or car parking areas. Their scope has primarily been determined by the need to provide sufficient spatial connectivity for the ecological functioning of the campus habitat corridors, and the protection of high amenity native or indigenous vegetation. This is intended to enable the movement of fauna to and through the site, and the optimal management of storm water through the campus' swales and water bodies, while protecting essential habitat areas and minimising the need for barrier plantings to restrict fauna movement.

Refer Diagram 4.2.2

Views

The parkland nature of the campus landscape supports open views throughout. However, a series of designed views also contributes to a sense of order and orientation within the landscape.

The principal designed view is along the central spine. This view is the major organising experience within the Central Campus Zone, allowing a sense of connection with the lakes and the wider landscape, while providing a strong spatial experience of the built form of the campus.

Views to the lakes from throughout the campus are important in providing a sense of orientation within the wider landscape.

Generally visual links with surrounding development, as with physical connections, are encouraged to allow maximum integration of the campus with the wider community. This is balanced with the need for some screening along Claymore Road and the school boundary to the south west.

The Lake

The westernmost of the two campus lakes terminates the major building axis and open campus green. It provides for a significant visual focus, and offers potential for a number of recreational activities. Some major University building sites are proposed to address the two lake fronts. The 2012 Campus Master Plan proposes buildings of campus wide significance at these locations.

The northern lake shore further provides a large area for public gathering or outdoor events, and will be fronted by a terraced amphitheatre terminating the open campus green.

Earthworks

Each grid section within the main building area progresses down the slope along the open campus green with a 500mm difference in level.

This level difference allows for a gradual terraced sequence down the main axis. It does however present challenges in the manner in which this level change is either taken up within the length of the building or accommodated within the path corridor between buildings.

Each building should resolve this issue within its own footprint, while contributing to the negotiation of the level change within the abutting path corridor.

Wherever possible, fill or the removal of topsoil from site should be avoided. The proposed future undercroft parking area provides an exception to this principle: refer section *6.4 Undercroft*.

Localised Earth Mounding

Within the uniform and gently sloping campus landscape, localised mounding should be used sparingly in order to create special landscaped spaces, screen buildings, direct drainage or compliment adjacent excavated water bodies. Utilised carefully, rises and depressions can be used to considerable dramatic effect in an otherwise uniform ground-plane such as the campus site.

Sippy Downs Drive

The Parkland Zone of the campus should extend to Sippy Downs Drive. As this road is developed during the construction of the proposed Town Centre, it will be flanked by an avenue of large scale trees. The most appropriate integration with the campus' landscape will occur if such future road-side planting is of a species which is prevalent within the University Parkland Zone, such as a large Eucalypt.

Mooloolah River National Park

The Mooloolah River National Park lies to the east of the University and is separated from the campus by Claymore Road. The Park protects remnants of Wallum heath, open Eucalypt woodlands and Melaleuca swamps and woodlands near the Mooloolah River. The management intent of the Park is to protect the extremely high conservation values of these plant communities and associated fauna. In order to retain the integrity and high conservation value of these communities and threatened species, pedestrian access is restricted and recreational use of the National Park limited to low key activities, such as bushwalking and bird watching along the Park's fire management trails. There are two underpasses along Claymore Road to allow for the passage of fauna between the University grounds and the National Park.

Landscape guidelines in the 2011 Campus Master Plan aim to maintain the status of the National Park as a safe habitat for the native fauna and its natural landscape. In support of this, a 50m wide dense buffer of indigenous plantings should be grown along the Claymore Road boundary to provide a natural fence to the National Park, and to limit human movement, whilst allowing local fauna movement into its valued habitats. With similar intent, a green corridor has been developed and should be maintained, enabling ease of movement for native fauna, extends from the University Park in the north-west of the University campus, through the University's grounds and into the National Park.

A key management priority of the National Park is to prevent uncontrolled fires spreading to the National Park habitats of high conservation value. The cleared and slashed power line easement along the eastern boundary of the campus acts as a firebreak between the campus and the National Park. The electricity supply company has responsibility for ensuring that fire hazard is minimised within this easement.

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Diagram | 4.2.1

Habitat Corridors

Diagram 4.2.2

No-Development Zones