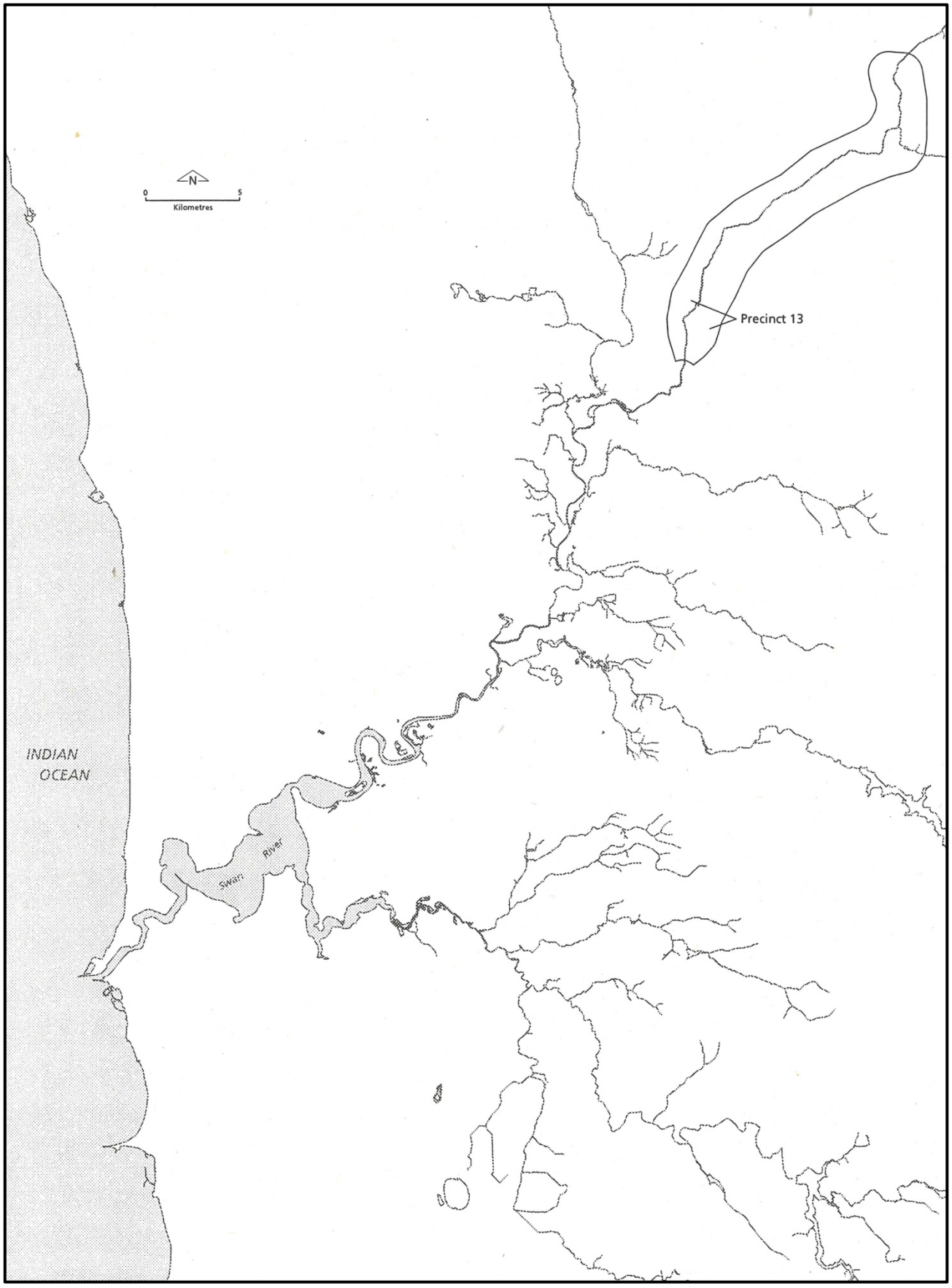
Precinct 13

Bells Rapids to Moondyne Brook



Summary

Bells Rapids to Moondyne Brook

This stretch of the Swan River is one of the most attractive precincts for its varied terrain and relatively undisturbed vegetation communities. The river flows over several exposed granite outcrops which creates small waterfalls and rapids.

In low flow periods, the smooth granite boulders which line the stream channel are exposed. The irregular shapes, different colour tones and varied rock surfaces are particularly attractive. Within the flood plain, melaleuca and sheoak trees emerge from the rocky beds which contrast with the bare banks of unvegetated orange soil.

The exposed laterite at Walyunga National Park has black and pale colours of the Ridge Hill sandstone. The major geological formation is granite which is often exposed as blocky boulders which are covered in lichens and mosses. The topography is relatively steep and deep steep valleys and rounded hills are the dominant topography of the area. The dominant vegetation along the river banks is the flooded gum, paperbark and sheoak communities. These provide an attractive tree storey against the relatively sparse understorey around the river pools. On the surrounding hillsides, marri and jarrah are the dominant trees; however wandoo, blackbutt and bullich are also very prominent due to their attractive forms. The understorey appears in relatively good condition particularly on the steeper slopes, and a range of shrubs and bushes are found.

The main land use in this area is the Walyunga National Park which provides a popular recreation location for many Perth people. The infrastructure associated with the park is visually quite low and restricted to the car park area at Walyunga and Long Pools. The other major land use is the railway which closely follows the river course.

Biophysical Processes

Geological Processes

The area consists of metamorphic belts including Glittering aluminous schists and various gneisses (DCE, 1980). These are surrounded by coarse grained granite and igneous rocks formed in the Archaean period. There are also areas of migmatite which consist of two components, an earlier gneissic rock and a younger granite portion. Along the Swan River channel, there is a mixture of rocks which include granites, migmatite and basic rock. At the confluence with Wooroloo Brook there is a small section of Ridge Hill Sandstone which is made up of ferruginised beach sand with some conglomerate. The main geological formation in this area is Precambrian granite.

There are several soil units within the area which include the Helena which is characterised by very deeply incised valleys with steep rocky slopes and some shallow red or yellow earths (DCE, 1980). The tributaries are also deeply incised valleys with narrow alluvial terraces of red or yellow earths. The surrounding soils are Yalanbee lateritic uplands which are dominated by fine gravels with some duricrust on ridges.

Topography

The area is part of the Darling Range which appears as a relatively uniform series of hills in front of which form the flat alluvial fans of the Pinjarra Scarp. In this precinct, the Swan River is surrounded by deeply incised valleys with narrow alluvial terraces. The river snakes between steeply sloped hills which are up to 250 metres AHD. The steep slopes are frequently punctuated by granite outcrops which appear as smooth and dark against the vegetated steep slopes.

Hydrological Processes

Water features

The Swan River in this section is characterised by sections of rapids and turbulent water which are caused by rocky outcrops within the river channel. After each rapid, the water often forms wide pools before narrowing to a smaller channel. The larger pools have been named and include Walyunga Pool, Bungarah Pool and Boongarup. Due to the variable geology the river channel's width is irregular. The sections of river traversing soft malleable sediments are generally broader than the areas which have more stable rocky banks. The river bifurcates forming an island just below Long Pool. This is where the Swan River becomes the Avon River at the confluence of Wooroolo Brook.

Bathymetry

The channel depth is restricted by the nature of the surrounding geology which often acts as a solid rock channel floor. In the pools the depth is on average 1 to 1.5 metres while in the channels, the depth is usually less than one metre.

Flooding

Periods of high water level occur in the winter season and localised flooding often occurs leaving localised erosion and deposition of sediments and debris. Because the local catchment has retains much of the vegetation, the amount of surface run-off into the channel is less than the cleared catchments.

Erosion and accretion

Bank erosion is not a severe problem in the Walyunga area as much of the riparian vegetation has been retained. There is slope erosion near the confluence of Wooroloo Brook where the surrounding topography is very steep and until recently was subject to quite heavy pedestrian traffic. Adjacent to the pedestrian pathways the steep clayey sediments are subject to erosion and remedial measures have been put in place.

Vegetation Communities

Native

Helena Complex

Along the Walyunga valley a closed woodland of jarrah *(Eucalyptus marginata)* and marri *(Eucalyptus calophylla)* occurs with wandoo *(Eucalyptus wandoo)* scattered through the woodland. The complex ranges from heath to herbland with lichen on the granite rock.

The vegetation community from the Avon Valley National Park southern boundary to Moondyne Brook is similar to that of Walyunga National Park. The woodland slopes have parrot bush *(Dryandra sessilis)* as well as a few juvenile mangard *(Acacia acuminata)* and exotic grasses. The middle slopes dominant species tend to be prickly moses *(Acacia pulchella)* and zamia palm *(Macrozamia riedlei).* The upper slopes are characterised by stands of sheoaks *(Allocasuarina fraseriana)* and rock sheoak *(Allocasuarina huegeliana)* with a sparse understorey of prickly moses *(Acacia pulchella)* and zamia palms *(Macrozamia riedlei).* Between Brigadooon to O'Brien Road, Gidgegannup, the overstorey includes wandoo *(Eucalyptus wandoo)* and powderpark wandoo *(Eucalyptus accedens).*

Dwellingup Complex

Adjacent to the Helena Complex there is an open forest of jarrah *(Eucalyptus marginata)* and marri *(Eucalyptus calophylla).* Found within this complex are the jug flower *(Adenanthos barbigerus),* slender banksia *(Banksia attenuata),* sheoak *(Allocasuarina fraseriana),* prickly bitterpea *(Daviesia pectinata),* York Road poison *(Gastrolobium calycinum),* honey bush *(Hakea lissocarpa),* free flowering Lasioptealum *(Lasiopetalum floribundum),* sword sedge *(Lepidosperma tetraquetrum),* beard heath *(Leucopogon propinquus),* zamia palm *(Macrozamia riedlei),* bracken *(Pteridium esculentum),* and common pin heath *(Styphelia tenuiflora)*

Darling Scarp Complex

The vegetation which occurs on the Ridge Hill Shelf of the Helena River ranges from low open woodland to lichens according to the depth of the soil. Woodland components, chiefly wandoo *(Eucalyptus wandoo)* with Darling Range ghost gum *(Eucalyptus laeliae)* and marri *(Eucalyptus calophylla),* are found throughout the region. In several places, wandoo occurs as a mono specific overstorey. Other plant species which can be found at these sites are rock sheoak *(Allocasuarina huegeliana),* pincushion *(Borya nitida),* marble hakea *(Hakea incrassata),* narrow fruit hakea *(Hakea stenocarpa),* fuchsia grevillea *(Grevillea bipinnatifida),* goodenia *(Goodenia fasiculata)* and spindly grevillea *(Grevillea endlicherana).* Between Brigadoon to O'Brien Road, Gidgegannup, the overstorey includes powder park wandoo *(Eucalyptus accedens)* mixed with the wandoo.

Forrestfield Complex

The vegetation ranges from open forest of jarrah *(Eucalyptus marginata),* wandoo *(Eucalyptus wandoo)* and marri *(Eucalyptus calophylla)* on the gravelly soils along the downstream section of the precinct. Near the river and streams are fringing woodland of flooded gum *(Eucalyptus rudis)* and swamp paperbark *(Melaleuca rhaphiophylla).* On the gravelly soils bull banksia *(Banksia grandis),* woody pear *(Xylomelum occidentale),* parrot bush *(Dryandra sessilis),* zamia palm *(Macrozamia riedlei)* and blackboys *(Xanthorrhoea preissii)* are found. In the sandier areas, there are remanent pockets of sheoak *(Casuarina fraseriana),* slender banksia *(Banksia attenuata),* bull banksia *(Banksia grandis),* blueboy *(Stirlingia latifolia),* semaphore sedge *(Mesomelaena tetragona)* and Christmas bush *(Nuytsia floriabunda).*

Other understorey species include Wilson's grevillea *(Grevillea wilsonii),* Swan River myrtle *(Hypocalymma robusta),* prickly moses *(Acacia pulchella),* parrot bush *(Dryandra sessilis),* hairy jugflower *(Adenanthos barbigerus),* yellow buttercups *(Hibbertia preissii),* common hovea *(Hovea trisperma),* bacon and eggs *(Oxylobium capitatum)* purple tassels *(Sowerbaea laxiflora),* red ink sundew *(Drosera erythrorhiza),* painted sundew *(Drosera zonaria),* and Mangles kangaroo paw *(Anigozanthos manglesii).*

Orchids such as cowslip orchid *(Caladenia flava),* white spider orchid *(Caladenia patersonii),* common donkey orchid *(Diuris longifolia),* and blue china orchid *(Caladenia gemmata)* are also found in the complex.

A similar community occurs at the Avon Valley National Park to Moondyne Brook where the river banks and valley floor are dominated by flooded gum and paperbark. Along the banks of Wooroloo Brook, there are dense: stands of prickly moses *(Acacia pulchella),* parrot bush *(Dryandra sessilis)* and some stunted swamp paperbark *(Melaleuca rhaphiophylla).* On the high western slopes of Walyunga National Park, the slender blackboy *(Xanthorrhoea gracilis)* is interspersed with the common blackboy *(Xanthorrhoea preissii).*

Yarragil Complex

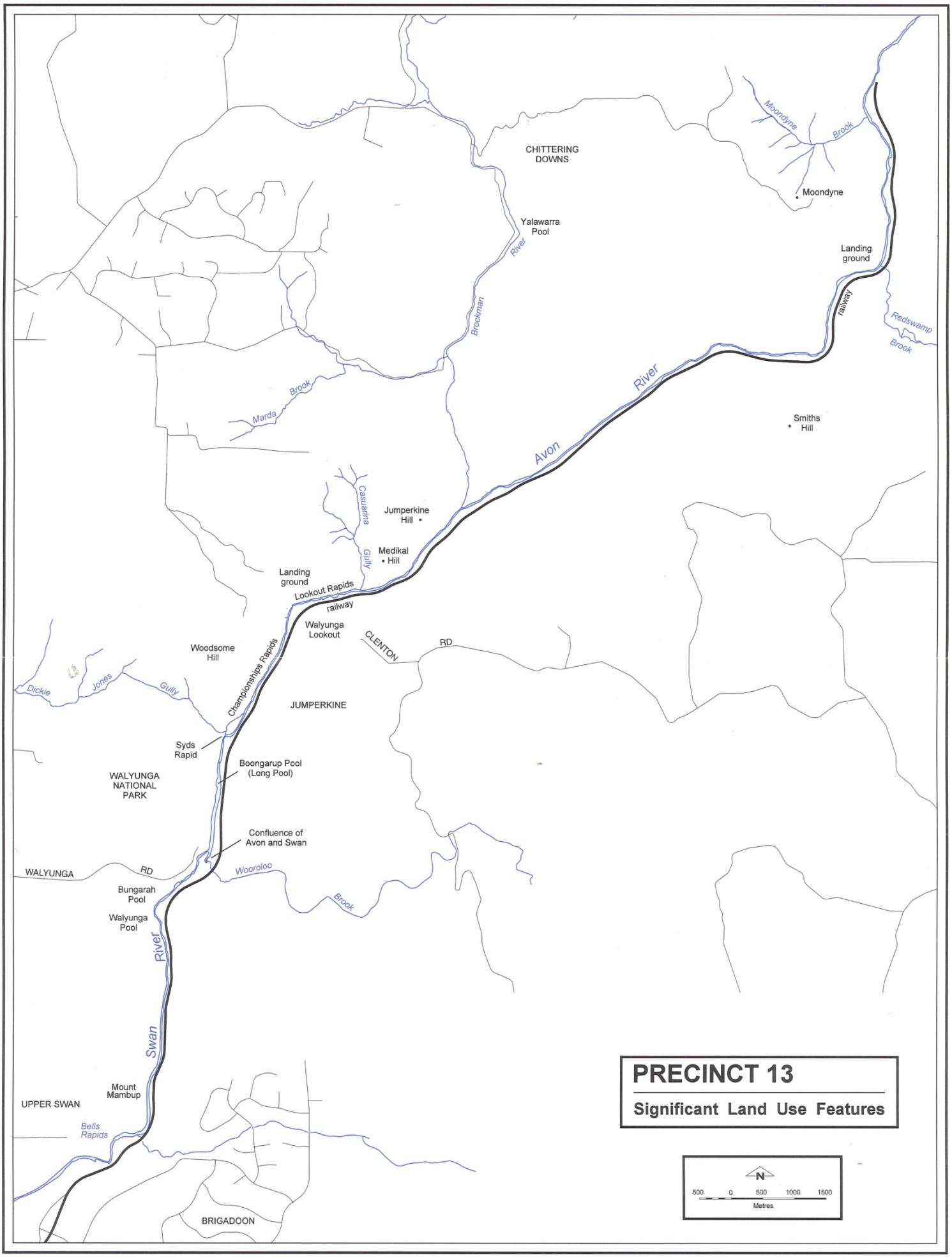
There are isolated pockets of jarrah (Eucalyptus marginata) *and marri* (Eucalyptus calophylla) *on upper slopes. On the valley floors Swan River blackbutt* (Eucalyptus patens) *and bullich* (Eucalyptus megacarpa) *are found with the other eucalyptus. Other species include moonah* (Melaleuca preissiana), *swamp* banksia *(Banksia littoralis),* camphor myrtle *(Baeckea camphorosmae),* winged-stem dampiera *(Dampiera alata),* silky parrot-pea *(Dillwynia cincerascens),* rams horn *(Hakea cyclocarpa),* currant bush *(Leptomeria cunninghamii),* semaphore sedge *(Mesomelaena tetragona),* and common pinheath *(Styphelia tenuiflora).*

Murray and Bindoon Complex

The Murray and Bindoon Complex is represented along the Darlington valley floors. The vegetation type ranges from open forest jarrah *(Eucalyptus marginata),* and marri *(Eucalyptus calophylla)* with some Swan River blackbutt *(Eucalyptus patens),* to low open forest of flooded gum *(Eucalyptus rudis)* to swamp paperbark *(Melaleuca rhaphilophylla)* on the drainage lines. Other plants include hairy gland flower *(Adenanthos barbigerus),* honey bush *(Hakea lissocarpa),* sword sedge *(Lepidospermia angustatum)* and common pin head *(Styphelia tenuiflora).*

Exotic

The exotic grasses which have invaded the area include wild oats *(*Avena fatua)* and one sided oats *(*Avena barbata).* There are stands of African feather grass *(*Pennisetum macrourum),* lesser blowfly grass *(*Briza minor)* and beard grass *(*Polypogon* sp). The grasses are particularly evident along the railway line.


CHITTERING DOWNS
Moondyne Brook
Moondyne
Yalawarra Pool
Brockman River
Landing ground
railway
Redswamp Brook
Marda Brook
Avon River
Smiths Hill
Casuarina Gully
Jumperkine Hill
Medikal Hill
Landing ground
Lookout Rapids
railway
Walyunga Lookout
CLENTON RD
Woodsome Hill
Championships Rapids
Dickie Jones Gully
JUMPERKINE
Syds Rapid
Boongarup Pool (Long Pool)
WALYUNGA NATIONAL PARK
Confluence of Avon and Swan
WALYUNGA RD
Wooroloo Brook
Bungarah Pool
Walyunga Pool
Swan River
Mount Mambup
UPPER SWAN
Bells Rapids
BRIGADOON
PRECINCT 13
Significant Land Use Features
N
500 0 500 1000 1500
Metres

Historical Land Use and Resulting Environmental Changes

Due to the limitations of transport and the relative unsuitability of the Walyunga area for agricultural purposes, much of the land remained a camping site for the Nyungar people until the late 1800s. It is believed that part of the land belonged to the Sam Copley and was called the Woodsome Estate (Bourke, 1987). It is believed that the bushland was used for cattle grazing and although there was no clearing of the bushland the grazing has introduced several weeds into the area. Local residents recall that there was a small citrus orchard near the river, however there is no evidence of this orchard today.

The Coulston and Woburn Park Estates were located at the southern section of the precinct last century (Battye, 1912).

In 1965, the eastern railway was constructed along the eastern banks of the Swan River. The railway closely follows the river. The valleys have been infilled to allow a relatively straight route to be formed.

In 1969, the pastoral property was bought by the State and made the Walyunga National Park.

About thirty years ago a number of rocks were moved in the river channel at Long and Walyunga Pool to increase the flow of the river (CALM, pers com, 1995). This made the pool suitable for kayaking. However in 1991 the rocks were returned to their natural position which reduced the cutting of the Walyunga Pool bank. A rock retaining wall was constructed to reduce bank erosion at the pool.

Much of the Darling Ranges was selectively logged for jarrah and in some instances wandoo; however it is believed that very few trees were logged in this area. It is likely that the only timber that was cut was for fencing for the property.

Present Land Use and Social Patterns

The railway line runs parallel to the Swan River for the entire section of the precinct. Built in 1965, the railway is located on the ridge line and provides an important transport route into the area. There is a small quarry adjacent to the eastern side of the railway in line with Walyunga Pool. Several gravel quarries occur near Walyunga Road and most of these quarries are no longer used. Small farms dot the Darling Range in areas such as South Chittering and Moondyne Brook. As a result much of the land has been cleared and its natural vegetation replaced with pasture and several fruit orchards. Some areas have retained a tree storey, but the under storey has been used for grazing.

Adjacent to Jumperkine Hill there is a landing ground surrounded by cleared land.

Recreation nodes

Walyunga National Park has several attractive picnic areas adjacent to the Swan River. The car parks are quite large but are partly screened with landscaped islands of indigenous vegetation. Camping can be arranged with the park ranger. There are two formal picnic areas at Walyunga Pool and one at Long Pool which is the headwater of the Swan River and the confluence of the Avon River. To reduce gullying there has been careful fencing of steep slopes to ensure that pedestrians do not damage the vegetation.

One of the most popular attractions to the area is the Avon Descent which is a power boat and paddle craft event. The event attracts many contestants and spectators every year. Between Moondyne Brook and Bells Rapids there are several spectacular white water areas which provide a challenge to the boat users.

Public access

Much of the river is accessible through walk trails and informal paths at Walyunga National park. There is a lookout on the which overlooks the Walyunga National Park from O'Brien Road which provides a spectacular view of the river.

Sites of Nyungar & Wider Australian Community Significance

Nyungar significance

This general area was used extensively by the Whudjag tribe for campsites. Archaeological evidence suggests that the area has been used by regional tribal groups for over 6 000 years (Pearce, 1983). Quartz and dolerite form rocks strewn in river beds and hills were used by Nyungars for a variety of tools. The abundance of food and the high quality mylonite and quartz made the site an ideal camping area.

The well drained sandy area west of Walyunga Pool is believed to be an old Nyungar camping site Nyungars say that the Waugal took a wrong turn at this part of the river. The Waugal squeezed through a crack in the range, stopped and vomited, leaving the stone for tools. It then comes out onto flat land below the range. Here the river bed was formed (CALM, walktrail information).

Nyungars believe that Warrdarchi still live in the Walyunga area. According to tradition, these little hairy creatures caused mischief especially towards misbehaving children (CALM, walktrail information).

The area north of the study area is known as *Chittering,* meaning 'the place of the willy wag tail' (Glauert, 1950).

Other significance

Between 1877-78 Lord John Forrest and his survey team undertook an extensive triangulation survey of the Swan and Avon Valley. The Walyunga Survey Heritage Trail recognises the difficult conditions under which these surveys were made by outlining the route taken by Forrest and includes two original cairn and pole markers constructed during the original survey.

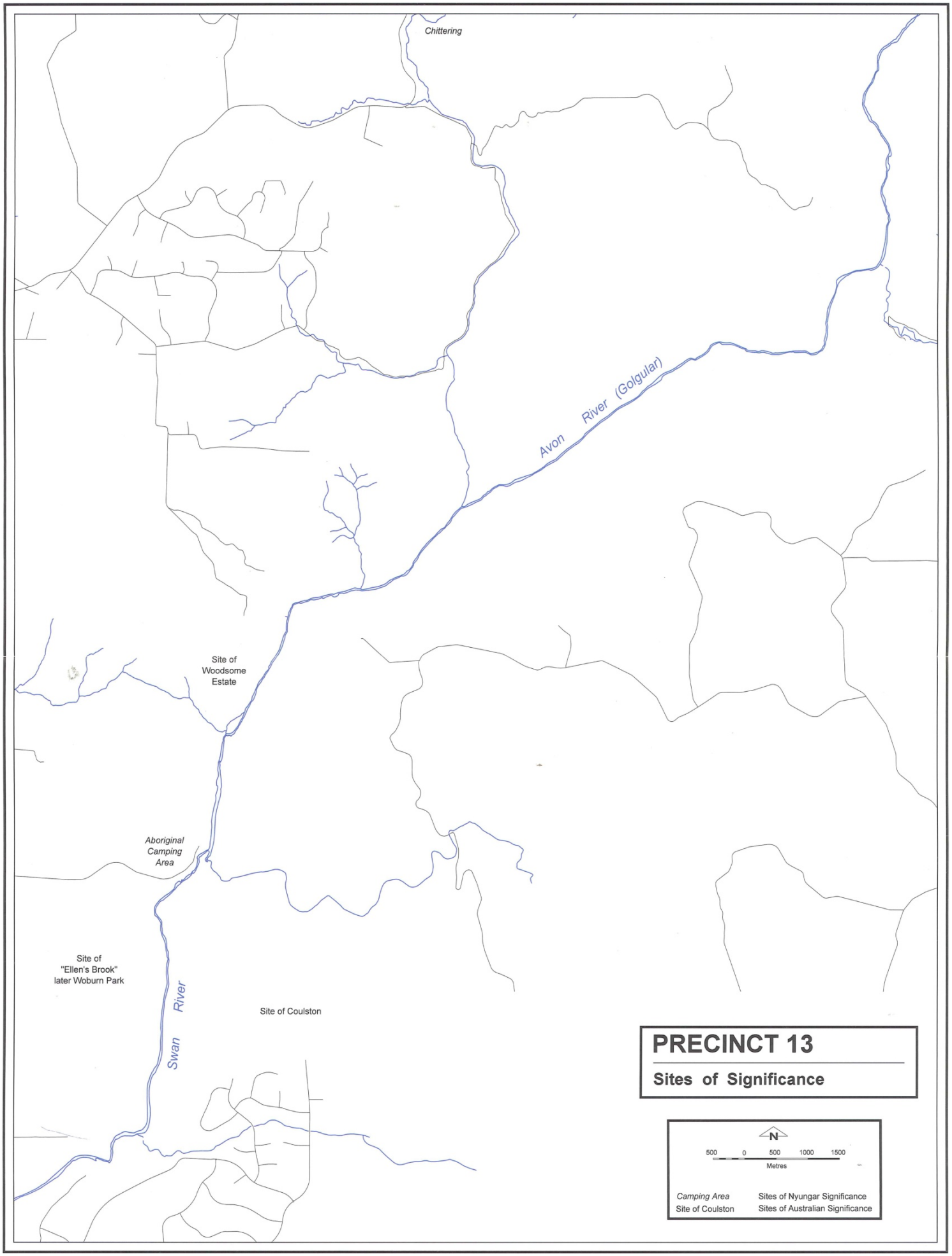
Woodsome Hill is named after Sam Copley's estate Woodsome.

Conservation Areas

System 6

M18 Walyunga National Park

The recommended area is situated about 40 km north-east of Perth and comprises the National Park and some adjacent land. The area is partly within the Ellen Brook and Wooroloo Brook catchments, both potential sources of water supply. The National Park contains some highly picturesque landforms. It lies along the Darling Scarp and is deeply dissected by the Swan River. Its highest point is 250 metres above sea level dropping very steeply to 30 metres at the river. Wooroloo Brook joins the Swan River within the National Park. The area is covered with woodland and open forest and also contains granite outcrops. Jarrah is common on the lateritic uplands, associated with marri on deeper soils. The understorey is characterised by Wilson's grevillea and hairy jugflower. Wandoo replaces marri and jarrah in pockets of flooded gum presumably sustained by seepage, on some slopes high above the valley floor. Shallow soils in the park especially around the granite outcrops support examples of the Darling Scarp heathlands. The area has high conservation and recreation values and constitutes an area of open space of regional significance.


Chittering
Avon River (Golgular)
Site of
Woodsome
Estate
Aboriginal
Camping
Area
Site of
"Ellen's Brook"
later Woburn Park
Swan River
Site of Coulston
PRECINCT 13
Sites of Significance
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Metres
Camping Area
Site of Coulston
Sites of Nyungar Significance
Sites of Australian Significance

Precinct Description

Waterform and natural riparian zone

This stretch of the Swan River is one of the most attractive precincts. In several places, river flows over exposed granite outcrops creating small waterfalls and rapids. In high flow periods, pools and rocks form swirling eddies and currents creating attractive water patterns and eroding processes. In flow periods, the small smooth granite boulders which line the stream channel are exposed. The irregular shapes, different colour tones, coarse rock surfaces and contrasting reflective surfaces, are particularly attractive. The fringing paperbark has a soft brushy texture which provides a pleasing contrast between the smooth river boulders. Several swamp sheoaks grow on the flat rocky flood plains and exposed gnarled roots stretch between the smooth boulders.

Upstream of Bells Rapids, the river channel is broad and has a irregular winding path. Just before Walyunga Pool the river channel narrows and is surrounded by the steep slopes of the Darling Range. Here the river is untrained with several trees and other debris blocking the river. The rocky outcrops in the river channel and on the flood plain disrupt the flow creating areas of white water. From Walyunga Pool, the river is very narrow and meandering with thick patches of trees and a few small rapids. Walyunga Pool is approximately 50 metres across and is enclosed by low lying rocks which create a waterfall on the northern section. On the southern section of the flood plain the area has small rocks and pebbles scattered in a flood scree on the southern section. Within the flood plain, melaleuca and sheoak trees emerge from the rocky bed while on the eastern section of the pool there is there is a bank of alluvial soil which is partly unvegetated, creating bands of dark brown orange soil above the sediment. The area is surrounded by high quality riparian vegetation which has few weeds apart from watsonia which is quite abundant on the eastern bank.

Upstream of Walyunga Pool, several small pools occur which often simply appear as a slightly broader and deeper section of the river channel. Upstream of Burungah Pool is the headwaters of the Swan River which becomes the Avon River at the confluence of Woorooloo Brook. In the centre of the Avon River channel, an island forms at the centre of the river. At Long Pool the river bed is gravel and there are a large number of trees across the channel. The next most spectacular feature upstream is Syds Rapid which is approximately a hundred metres long and is a mass of rocky outcrop.

Landform

The exposed laterite on the section of Walyunga National Park closest to Great Northern Highway has lack and pale colours of the Ridge Hill Sandstone. These boulders have a very thin layer of soil; however the pale weathered stone often makes an attractive element highlighted by surrounding wandoo. The major geological formation in the area is the granite which is often typified by large exposed rock surfaces. Commonly, the granite has broken into blocky boulders which have sheared in straight plains. The edges have been smoothed and rounded by exfoliation and often the rock is mottled by lichens and mosses. Upstream at Walyunga Lookout, the topography is relatively steep with Medikal Hill and Jumperkine Hill being prominent landscape elements on the northern river bank while the lookout itself is also a prominent feature of the southern section.

Vegetation

In this precinct, the vegetation along the Swan and Avon Rivers is relatively undisturbed. Close to the waters edge, the paperbark and sheoak form soft brushy textures against the rocky boulders and gravelly banks. The understorey is relatively sparse where the land is subject to flooding and introduced grasses often occur. Around Walyunga Pool the dominant tree is the flooded gum which has an attractive smooth barked and twisted branch form. The soft grey and pink light bark and loose canopies contrast with the dark green and shaded texture of the sheoak foliage.

On the higher rocky sandstone, wandoo occurs in mono specific stands and is a prominent and attractive tree. The red old bark peels exposing a white smooth surface which is particularly attractive as a backdrop to the similarly mottled sandstone. Other attractive trees found in the area are the blackbutt which is recognisable by its fire blackened trunk and heavy foliage and thick branches. In contrast, the bullich is a slender branched tall straight tree with open canopy of long shiny trees. The bark is pale and smooth and makes it easily identifiable.

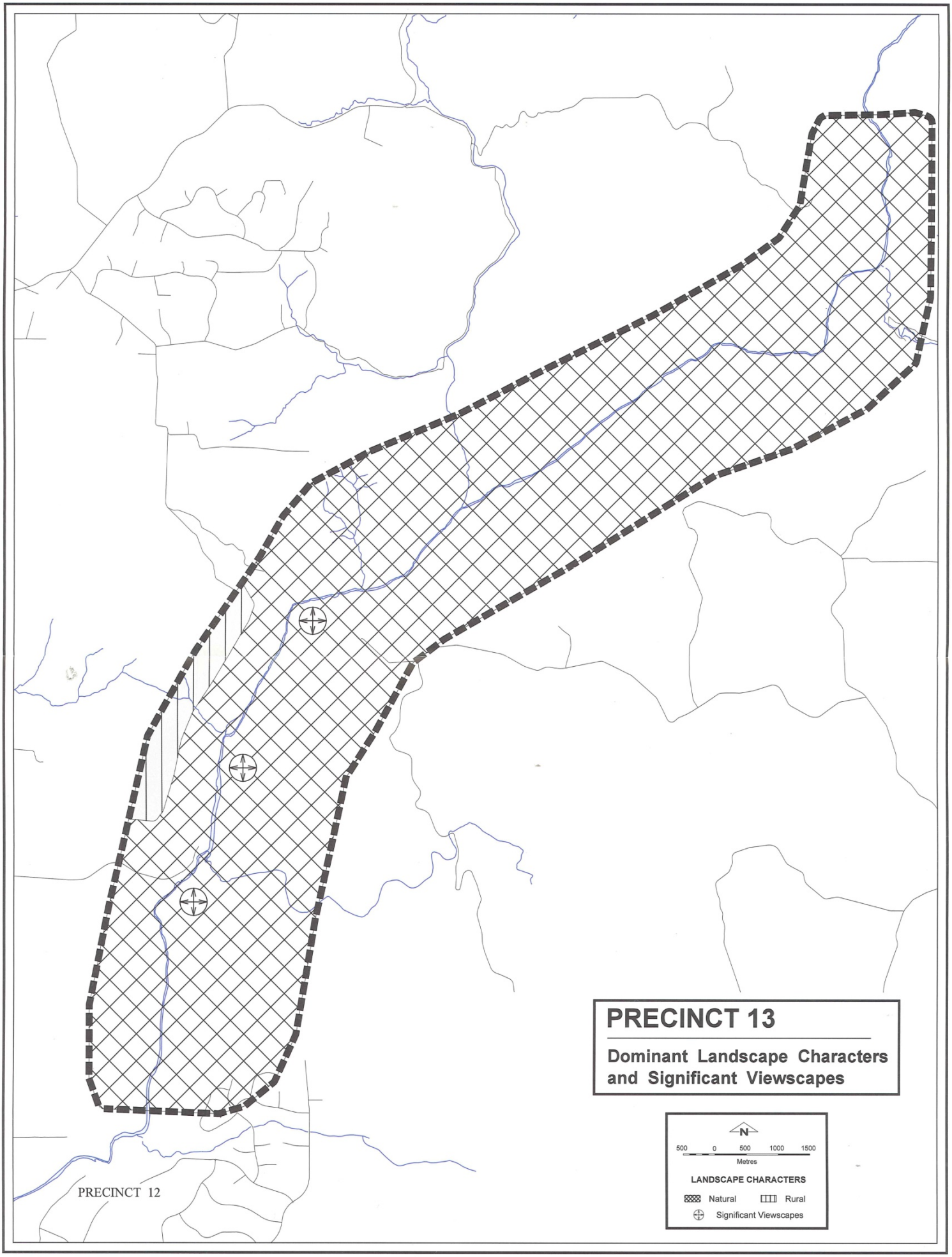
The dominant overstorey on the Darling Range is the marri and jarrah woodlands. The understorey is particularly attractive with a range of bushes and shrubs which have visually interesting foliage and textures including the blackboys, grevilleas, zamia palms, sedges and banksias. In spring, the delicate flowers of myrtle and grevillea are particularly spectacular.

Land use

There is little riparian land use infrastructure around the precinct. The Walyunga Pool had a rock retaining wall built on the western side of the pool which has helped reduce bank erosion Amenities include a simple toilet block, silver coloured water tank and car park. The car park has recently been upgraded with native plants being planted in islands and around the car park. Slalom wires are strung across Long Pool for paddle craft.

The railway is quite prominent from some aspects of the river, however from most positions on the National Park walk trails the railway cannot be seen due to the surrounding vegetation.

Several small farms dot the Darling Range at South Chittering and Moondyne Brook. Due to the undulating terrain, these cleared and grazed properties cannot be viewed from the river valley and to the viewer it appears that most of the natural bushland remains.


PRECINCT 13
Dominant Landscape Characters and Significant Viewscapes
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Metres
LANDSCAPE CHARACTERS
Natural
Rural
Significant Viewscapes
PRECINCT 12

Dominant Landscape Character

The precinct's dominant landscape character is the natural Darling Range landscape. It is typified by steeply sloping granitic and gneissic hills and shallow soils. The immediate riparian landscape has pools and riffles of rocky outcrops. Several limited alluvial deposits can be found along the river banks. There are several vegetation communities in the precinct and most areas appear to be relatively undisturbed. However around Walyunga National Park where there has been grazing and human influence there are considerable areas which have weeds.

Significant Viewscapes

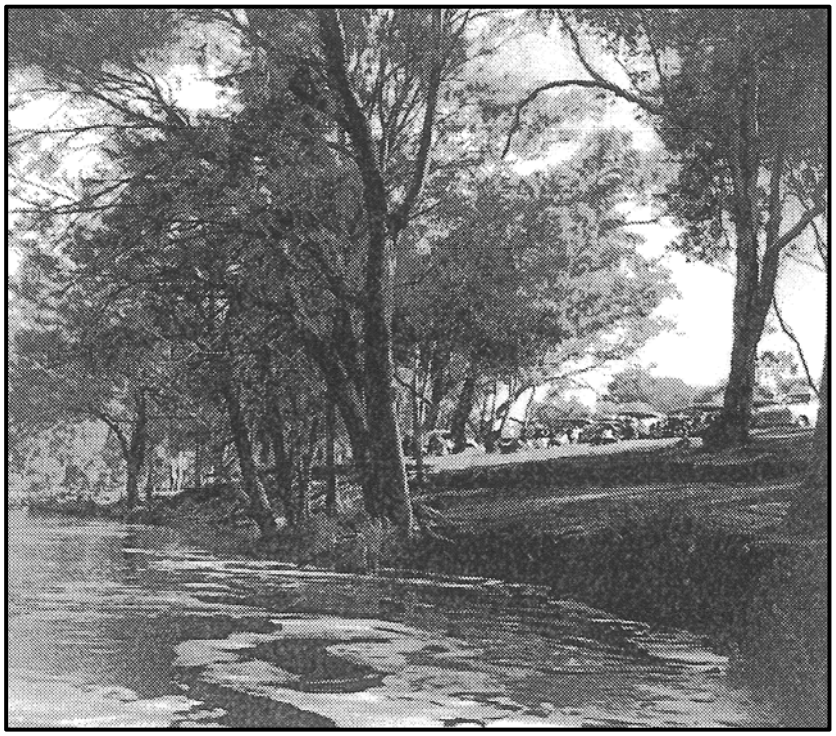
There are several attractive viewscapes in the area. The most accessible viewscapes are at Walyunga National Park and Walyunga Lookout. These panoramic viewscapes include the steep hillsides and deep valleys, the water flowing over rocks andforming pools and vegetation which appears relatively natural.

Conforming and Non Conforming Elements in the Landscape

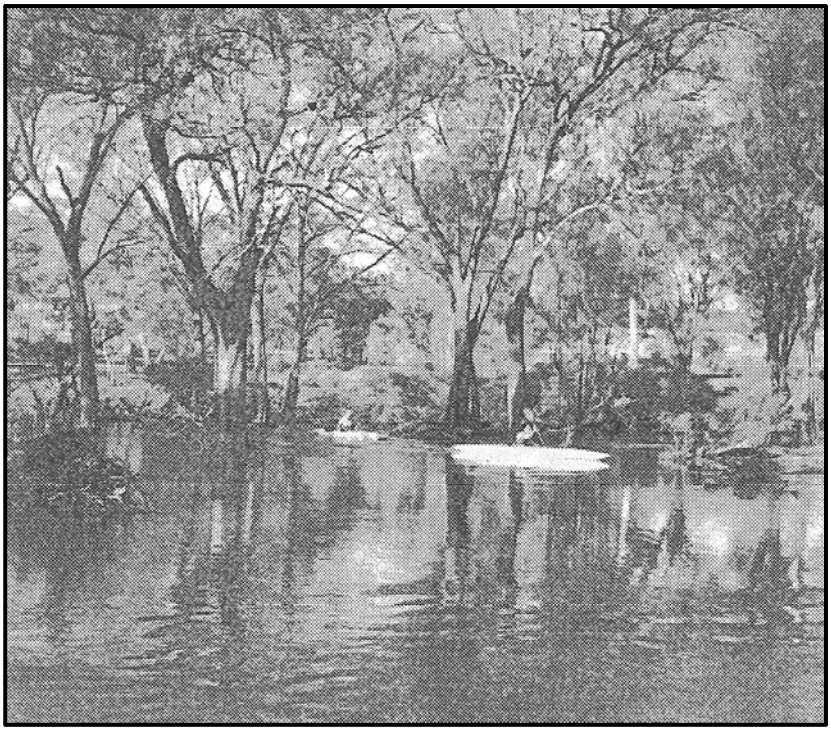
At Walyunga National Park there has been an attempt to have recreational amenities which have minimal impact on the landscape. It is important that all picnic, parking and toilet facilities to not intrude into the relatively natural landscape.

Recommendations for Maintenance and Enhancement of the Present Landscape Character

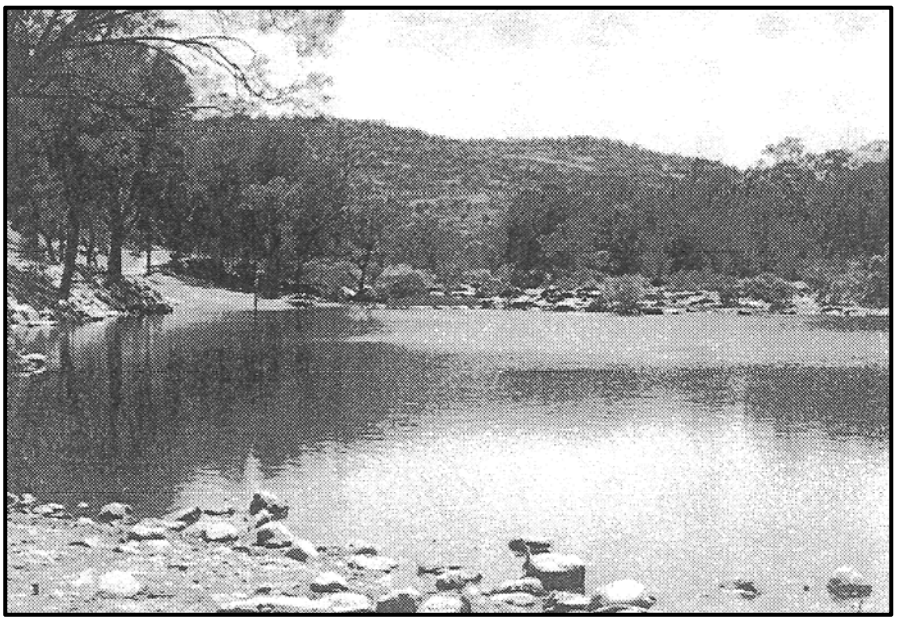
- Ensure that weed communities do not form mono-specific areas, e.g. *Watsonia,* which detract from the appearance of natural vegetation.
- Support efforts to rehabilitate the natural vegetation communities.
- Ensure that surrounding land uses do not encroach on the visual amenity of the natural landscape character.



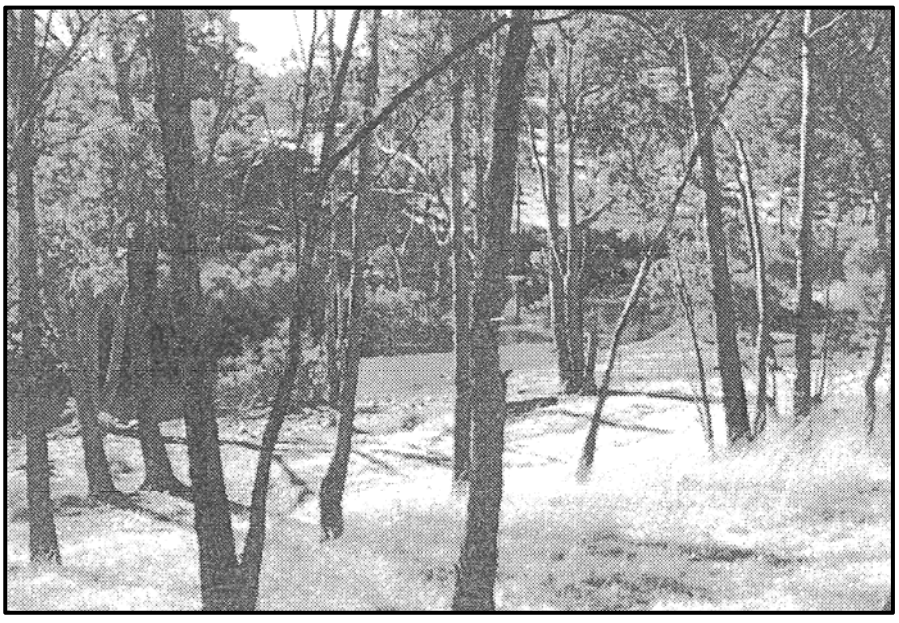
Walyunga Pool, Walyunga National Park, 1967.
Swan River Trust.



Walyunga National Park, 1967.
Swan River Trust.



Walyunga Pool, Walyunga National Park, 1995.
Swan River Trust.



Posselt Ford, Walyunga National Park, 1990.
Swan River Trust.