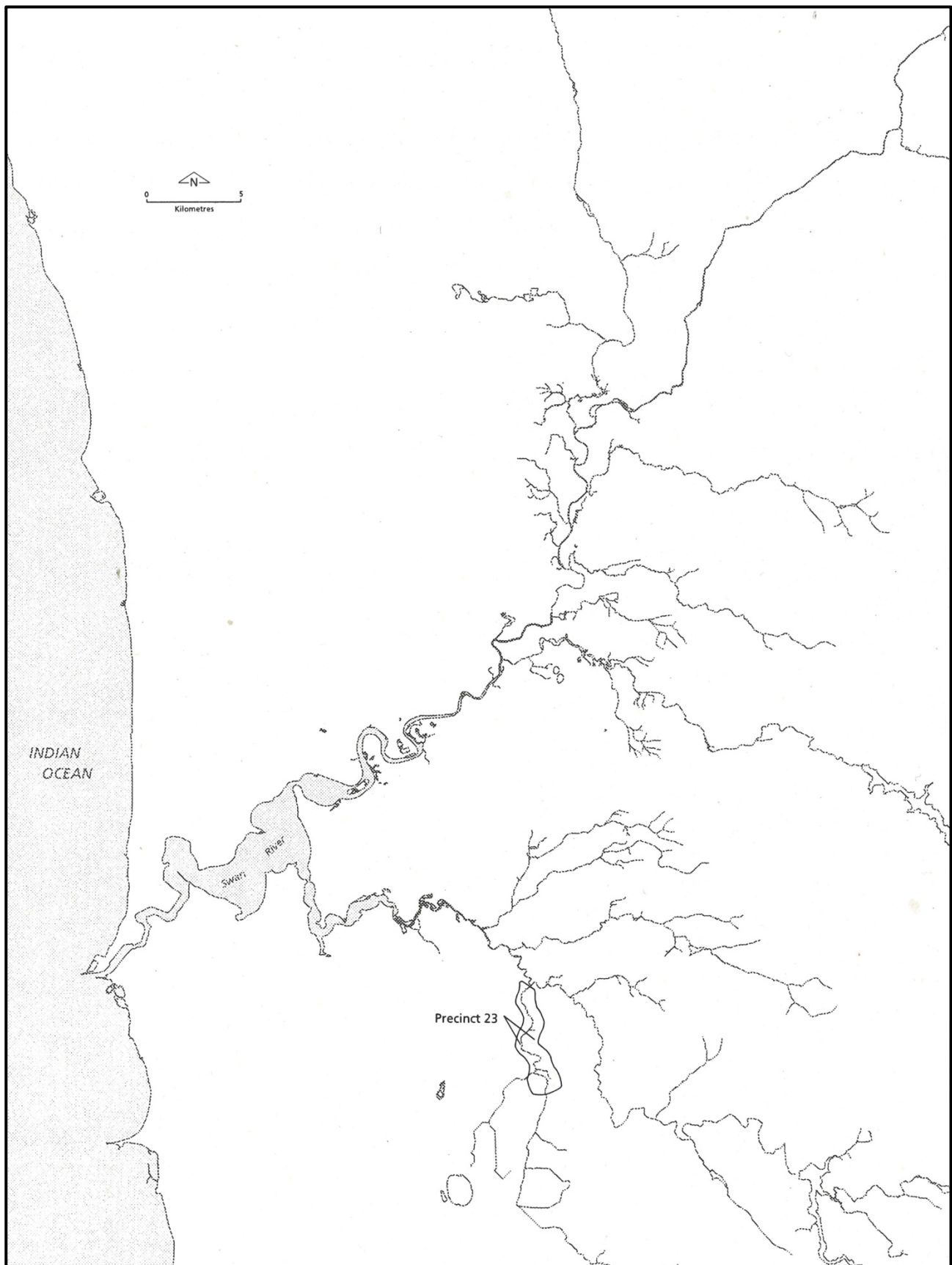


Precinct 23

Southern River – Canning-Southern River Confluence to
Allen Road Crossing



Summary

Southern River – Canning-Southern River Confluence to Allen Road Crossing

The Southern River Channel takes a highly sinuous, meandering form towards its confluence with the Canning River. The river varies in width and tends to be narrower as it meanders through the sandy embankments, rather than the flatter land where it has a broader cross section.

The river is very shallow and has wide flood plains south of Verna Street. There are several areas subject to inundation and damplands form in the sandy swales. The riparian vegetation is mainly paperbark low forest and along the downstream sections jarrah and marri communities are also present. In uncleared upstream sections of the river, the sands have a remnant marri-jarrah-banksia complex which is an attractive landscape feature.

Residential subdivisions have occurred along the Southern River since the 1970s and the areas of Huntingdale and Gosnells are located adjacent to the downstream sections of the river. Most of the houses are quite modest in style and the newer homes have very neat eclectic gardens. Rural properties are located in the upstream section of the river and are mainly used for grazing and horse agistments. Other land uses in the area include plant nurseries, poultry farms and recreation areas. The land uses tend to have limited impact on the immediate Southern River landscape due to the relative flatness of the surrounding topography and the dense scrubby nature of the immediate riparian vegetation.

Biophysical Processes

Geological Processes

The Southern River runs over the Bassendean Sand geological formation which is made up of leached dunes of quartz sand. The sand is believed to be the remains of old coastal dunes that were formed during the last two Quaternary periods of high sea level. The soils have been leached of calcium carbonate and reduced in size possibly by aeolian processes.

At the confluence of the Southern River and the Canning River, the Swan Soil Association occurs and is described as being red podsolic and undifferentiated alluvial fan soils. The rest of the river is within the Southern River Soil Association and is characterised by being grey sand dunes with intervening clayey swamps. It is believed that the surrounding dune sand has been blown over the alluvial soils of the river and as a consequence the swamps have a clay base.

Topography

The precinct is part of the Pinjarra Plain which consists generally of unconsolidated fluvial sediments. The surface is gently undulating to flat. Damplands, wetlands and areas of inundation form in the lower lying areas and swales. The topography is believed to have been formed by palaeo streams flowing from the Darling Scarp and creating the wide alluvial fans in front of the scarp. Much of the sediment has been reworked with palaeo sand dunes being moved by aeolian processes creating low lying dunes.

Hydrological Processes

Water features

The Southern River has a relatively shallow channel which varies in width. It has a highly irregular and sinuous meander form as it flows downstream towards the confluence with the Canning River. Upstream of Verna Street, the Southern River has a broad flood plain due to the highly erosive and low lying surrounding topography. Due to the low gradient the river is characterised by irregular meanders and has a shallow channel depth. The land is often damp and inundated adjacent to the river in winter months. Away from the river, various wetlands drain into the dune swales. The larger lakes in the area include Wright Lake, Harrisdale Swamp and Balannup Lake.

Bathymetry

The river channel is less than one metre in depth. The surrounding embankments range from very flat to 1-2 metres deep at Huntingdale. The river is entirely fluvial and has several small drainage lines entering the main water channel. Much of the surrounding land is poorly drained and water is retained in wetlands away from the Southern River.

Flooding

The area is subject to localised inundation and there are often water logged soils between Verna Street and Allen Road. The newer residential areas are set back from the hundred year flood line and as a result are in most places approximately 100 metres back from the river channel and build on landfill. There is evidence of the Southern River receiving higher than present volumes of water in the lower section of the river with palaeo flood plains being present and having established riparian vegetation.

Erosion and accretion

There is a severe point of erosion at the junction of the Southern River Road with the river itself. The loose sandy banks of the river make it particularly subject to erosion, especially during periods of high water level or in places where riparian vegetation has been removed.

Vegetation Communities

Native

Swan Complex

At the confluence of the Canning and Southern Rivers the Swan Complex is the dominant vegetation type. The complex consists of fringing woodland of flooded gum (*Eucalyptus rudis*) and swamp paperbark (*Melaleuca rhaphiophylla*) with localised occurrence of the swamp sheoak (*Casuarina obesa*). Other plants include shore rush (*Juncus kraussii*) and lake club rush (*Schoenoplectus validus*). In the wetter parts of this community the bracken fern (*Pteridium esculentum*) can be abundant, while the drier areas support green stinkwood (*Jacksonia sternbergiana*).

Southern River Complex

Further upstream of the confluence, the Southern River Complex is the dominant vegetation type (DCE, 1980). The complex is made up of open woodland of jarrah (*Eucalyptus marginata*), marri (*Eucalyptus calophylla*) and various banksia species.

Adjacent to Burslem Drive there is also a narrow belt of open forest. Along the river and creek banks the flooded gum (*Eucalyptus rudis*) and swamp paperbark (*Melaleuca raphiophylla*) can be found. There are very small remnants of various banksias, sheoak (*Allocasurina fraseriana*) and coastal Swan River blackbutt (*Eucalyptus patens*) adjacent to Jenkinson Street. The community supports firewood banksia (*Banksia menziesii*), holly leafed banksia (*Banksia ilicifolia*), and woody pear (*Xylomelum occidentale*). The lower storey has a few blackboy (*Xanthorrhoea preissii*) and zamia palms (*Macrozamia riedlei*). In the damp lands, moonah (*Melaleuca pressiana*) healthland is the dominant plant community.

Exotic

Several exotic flora species have invaded the paperbark woodlands. These include castor oil bush (**Ricinis communis*), pampas grass (**Cortaderia selloana*), bulrush (**Typha sp*), weeping willow (**Salix sp*), Japanese pepper (**Shinus terebinthifolius*), giant reed (**Arundo donax*) Victorian tea tree (**Leptospermum laevigatum*), canna lily (**Canna x orchoides*) and blackberry (**Rudus sp*). Close to Jenkinson Street, there is a large stand of exotic bullrush (**Typha orientalis*) adjacent to the banksia low open woodland. Within the Jenkinson Street remnant banksia community, there are lupins (**Lupinus cosentinii*) and Veldt grass (**Ehrharta sp*).

Historical Land Use and Resulting Environmental Changes

The original land grants along the Southern River were allocated to John Okey Davis (Location 16) and D. Scott (Location 16A). Both properties stretched from the Canning River to south of the Southern River. Scott's land was taken up by T. Helms who was an absentee land owner for some time, however by 1870s Helms was farming the land. Helms orchards and pastoral land was purchased by the developers Panton & Neubery who subdivided the land for residential purposes. John Okey Davis, property was farmed for many years and eventually purchased by the City of Gosnells for investment purposes (McDonald and Cooper, 1988).

At the turn of the Century Location 16 was sold to the Gosnells Estate Company, which aimed to subdivide the property into individual titles of differing acreage (McDonald and Cooper, 1988). The Company became associated with many financial problems and several unreliable managers. People who had paid for their land were often unable to obtain their titles because the Company had no cash to arrange for the issue of the title deeds. Several of the properties were reserved for goldfields people and several auctions took place in Kalgoorlie with purchasers often unaware of the physical attributes of the land.

One such man was Joseph Michel, who was attracted by the idea of owning a riverfront block of the Southern River (McDonald and Cooper, 1988). The land was shown on the map as being near infrastructure such as railways, tramways, streets as well as being good agricultural land. The Southernwood property proved to be a sandy swamp; however his wife and family struggled to establish an orchard, while Michel returned to the goldfields.

Much of the land around the Southern River has been used for small agricultural properties which included orchards, poultry and dairy goods. More recently, these properties have been subdivided or used for light industrial purposes.

Present Land Use and Social Patterns

The land adjacent to the Southern River in this precinct is mainly used for urban purposes. There are community facilities such as schools, health centres and recreational areas adjacent to the river and residential blocks. The houses are typically modest and the newer homes in particular have very neat eclectic gardens, almost all with a large expanse of lawn.

Towards the southern section of the precinct rural blocks are located right to the river reserve. Most are fenced paddocks with remnant bushland in places. The properties are mainly horse agistments, although a few remaining orchards do exist.

Other land uses include the growing and distribution of plants for metropolitan nurseries. Many of these nurseries have diverted water from the Southern River and the used water is returned to the river through a series of drains.

There are at least five poultry and egg farms in the area. A dog kennel is another non residential land use in the area.

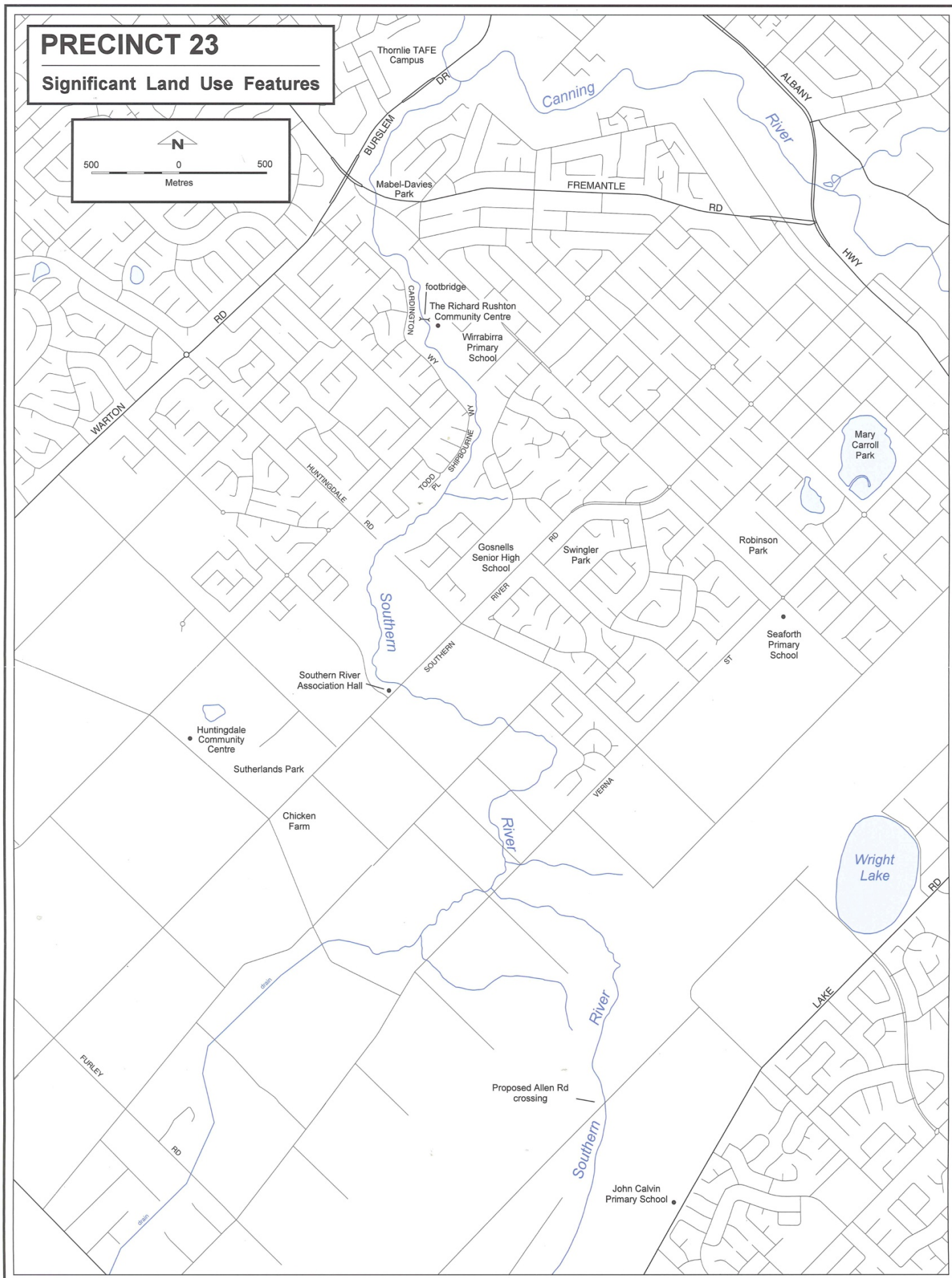
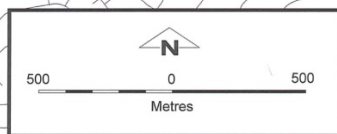
During the mid 1970s subdivisions for residential areas occurred creating the suburbs of Gosnells and Huntingdale. However east of the Huntingdale residential area a poultry farm and a few orchard areas remained.

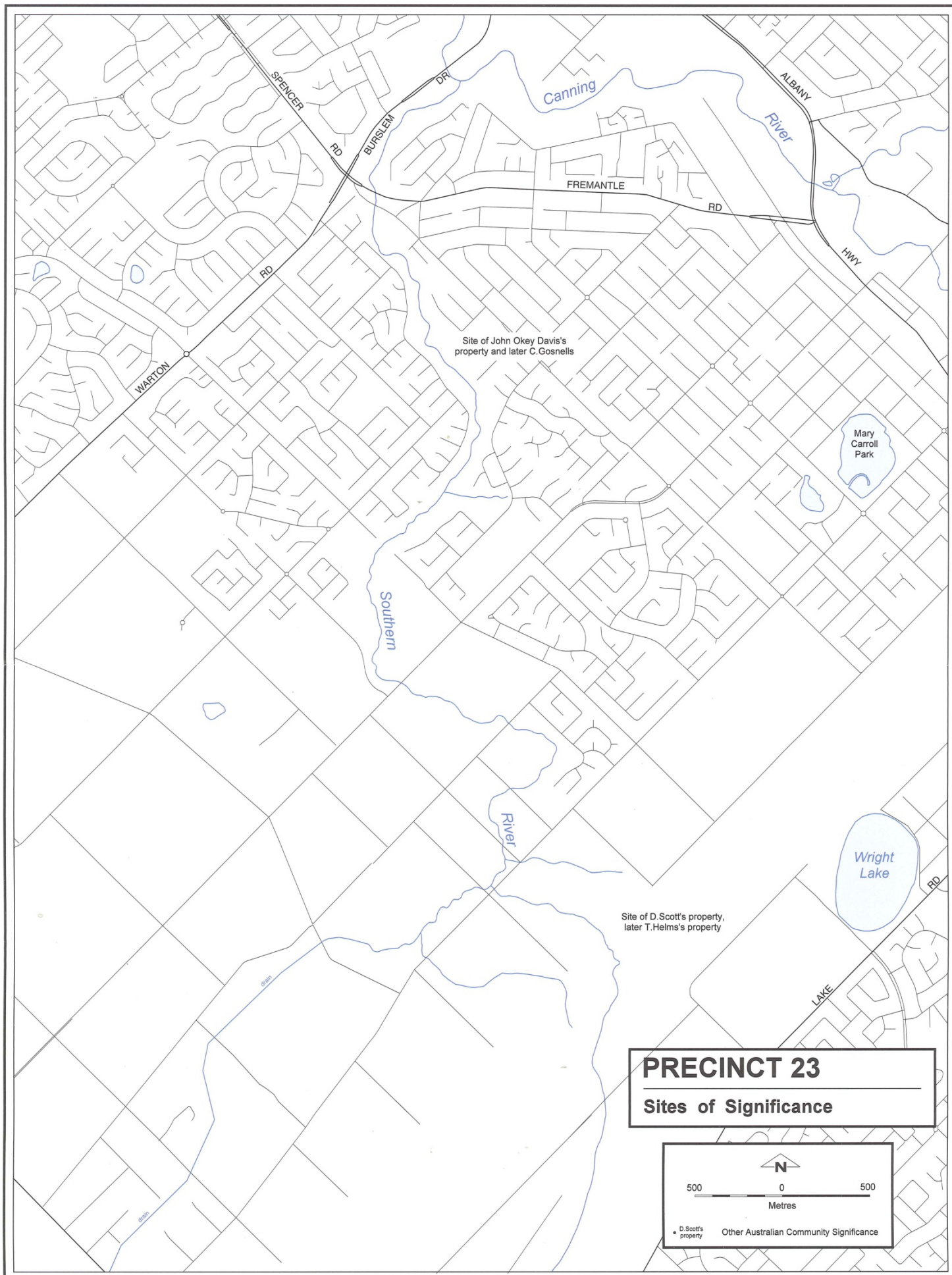
A property on the corner of Southern River Road and Furley Road was owned by the City of Gosnells and was used as a liquid waste disposal site between 1969 and 1981. Known wastes included brewery effluent, septic sludge and night soil, oils and other industrial waste.

Many of the original wetlands around Southern River have been subject to infilling and clearing of their fringing vegetation. Balannup Lake has been partly infilled and excavated and its fringing vegetation on the southern section has been cleared.

PRECINCT 23

Significant Land Use Features





Many of the roads in the upstream section of the river are unsealed and several are sandy tracks while in contrast the Gosnells and Huntingdale areas are entirely urbanised. There are several river crossings in the area the most major being the Spencer Road Bridge which is part of an important traffic intersection. The second major crossing is at Southern River Road which is a low form wooden piled traffic bridge.

The Wungong Dam was completed in November 1979 and has altered the stream flow in the Southern River catchment area. Flooding regimes and flow volumes have changed and there is less water than previously in the Southern River section.

Recreation nodes

Mabel Davis Park is maintained by local residents. The park has a play equipment area, shade trees and lawn as well as a commemorative plaque.

Sutherlands Park was established in the 1970s by the Gosnells Council as a formal sporting complex. It is located on Southern River Road, and has several ovals and club houses.

The Southern River Association Hall provides a meeting place for several local groups. It is an old wooden hall which has been recently renovated and the car park area expanded. It is immediately adjacent to Southern River Road and the riverbank.

Cardington Way Reserve is situated on the banks of the Southern River in Huntingdale and has two tennis courts and a barbecue area. It is linked with the Richard Rushton Community Centre on the Gosnells bank.

Public access

The southern section of the river in this precinct is difficult to access due to properties being fenced to the edge of the embankment. Those sections where the pedestrian can walk down to the river have dense scrub and the area is very sandy. Informal horse riding paths are present along the boundaries of the agistment properties. Around the older residential areas near Todd Street and the Richard Rushton Community Centre, there are dual use pathways and a pedestrian bridge across the river.

Sites

Sites of Nyungar & Wider Australian Community Significance

Nyungar significance

There are no recorded sites of significance along the Southern River itself; however to the west of the river, outside this study area, there are several sites of significance including a swamp at Gosnells Golf Club Site, Lake Forrestdale, Bartram Swamp and Mather Reserve (O'Connor et al, 1989). These sites have strong associations with the Waugal which is believed to inhabit the swamps and water bodies. It is believed that at Lake Forrestdale, disturbance of the reeds could unleash the powerful Waugal associated with rain and destruction. The swamps were an important food source and camping grounds to the local Nyungar.

Other significance

The early farming families of Okey Davis and Scott lived in this precinct, however there is little evidence of their farming properties as these have since been subdivided (McDonald and Cooper, 1988).

Conservation Areas

Wetlands

The Southern River has been identified by WAWA (1993) as being a Multiple Use wetland which provides a significant number of ecological, hydrological and social functions which need to be considered 'in the context of sustainable catchment and land use planning'.

There are many wetlands and damplands in this precinct. The wetland near the corner of Holmes and Balfour Streets has been identified as significant for waterbird usage and is one of only three sites where the freckled duck (*Stictonetta naevosa*) is known to breed (EPA, 1993). Balannup Lake has been identified as being in the Conservation, Recreation and Resource enhancement categories of the Environmental Protection Authority wetland management categories (Storey et al, 1993). The other wetlands in the area have been classified as resource enhancement and multiple use categories.

System 6

M75 Upper Canning and Southern Rivers

The recommended area comprises the Canning River and its fringes from Nicholson Road Bridge to the boundary of State Forest, together with those parts of the Southern and Wungong Rivers within the City of Gosnells.

At the river's confluences with Bickley Brook and the Southern River both banks are well covered mainly with flooded gum and paperbarks. Grasses and weeds abound. The Southern River from its confluence with the Canning River to its continuation as the Wungong River is fairly well wooded with flooded gum on both banks, although the ground flora has been mostly lost. Along the lower reaches there are paperbark and *Acacia saligna* and patches of *Juncus* and *Baumea* species. Along the Wungong River remnants of woodland of jarrah and marri occur in places on the slopes above the banks with an understorey which includes large clumps of *Cyperus vaginatus* and occasional *Lobelia olata* and *Acacia saligna*. Grasses and weeds abound. The area constitutes open space of regional significance because of its high conservation and recreational values, its proximity to Perth's residential areas and regional roads passing through the area.

Landscape Description

Precinct Description

Waterform & natural riparian zone

The Southern River takes a highly sinuous, meandering channel form towards its confluence with the Canning River. The river varies in width and tends to be narrower as it meanders through the sandy embankments, compared with the flatter land where it has a broader cross section. The river is very shallow and the sand's ripple forms of the channel floor can be easily viewed. The banks being formed from loose sand are highly erosive once retaining vegetation has been removed by natural or degrading processes. The banks therefore often take clumpy forms where sand has given way and slid down the embankment. On other river sections, such as near Matison Street, the embankment is an almost vertical cut and highly susceptible to erosion. Adjacent to Cardington Drive, the river cuts into the sandy embankment and where there is no understorey growing, the banks are quite rapidly eroding. Several marri roots are exposed and the water swirls around their root forms in winter months. South of Verna Street, the flood plain is relatively broad and extends up to 200 metres in places on the curve of the meander bend. The waterform and riparian zone has a restricted viewscape due to the dense low formed vegetation and the low topography.

Landform

The landform around the river is flat and sandy, particularly in the residential areas where the gentle undulations of the Bassendean Sand have been levelled for building. The upstream section of the precinct is flat to gently undulating and is more indicative of the original landform. The slope declines towards the channel which is usually an abrupt cut in the sandy plain. Much of the land south of Verna Street is subject to inundation and is seasonally waterlogged adjacent to the river channel.

Vegetation

Along Burslem Drive, the fringing vegetation is very attractive as large flooded gums rise majestically over the small paperbarks. Mature jarrah trees edge the flooded gum complex and provide an interesting contrast in bark texture and foliage to the flooded gum. Along the edge of the natural complex is a mowed lawn, which gives the effect of a parkland. The vegetation occurs within the river embankment area which is relatively deep compared with the lawned area which is several metres above the embankment.

Along Cardington Drive, there is a similar attractive belt of vegetation. Here marri and a few younger jarrah trees, edge the river embankment and channel.

The middle storey consists of sheoak and banksia, and there is an understorey of weed species which slightly detracts from the riparian vegetation. Further upstream, the paperbark complex dominates the river landscape. This gives the river a more scrubby effect as the tallest trees are less than 10 metres high and the canopy is quite dense.

Well away from the river paperbark complex remnant marri-jarrah-banksia open woodland is an important landscape feature. Uncleared blocks of this vegetation community remain, and due to the inaccessibility of much of the river area, many of the users must go through these communities before approaching the river. The dominant trees are the slender and holly leafed banksias. The damplands are dominated by the spectacular moonah which have an attractive white bark and clumped dense green foliage. The understorey is typically low lying sedge land although much of this has been replaced by grazing grasses.

Riparian land use

At Spencer Road Bridge, a new intersection and bridge is being constructed at the confluence of the Canning and the Southern Rivers. This has temporally disturbed the embankment and fringing vegetation. A second traffic bridge occurs at Southern River Road. This is low formed and has wooden piles and has less impact on the landscape than the new Spencer Road Bridge. There is a footbridge leading to the Richard Rushton Community Centre which is constructed using steel 'H' girders. The bridge has been made as a feature point and has two 'A' frame arches above the superstructure. The orange/brown paint stands out against the riparian vegetation and the structure gives a vertical element to the surrounding landscape. The result is an interesting element in the riparian landscape which also provides easy public access across the river.

At Carrington Drive, there are some tennis courts and play equipment located adjacent to the river embankment. Several mature marri and jarrah trees have been left to provide shade in the barbecue area, and a few native species have been recently planted on the undulating sandy banks of the river and parkland. There are many informal 'rabbit' paths on the embankment which contribute to the collapsing sandy banks, due to the removal of the vegetation. The river channel banks are a popular play area for children as there are several meandering banks and logs on which to play.

Along Shipbourne Way there are remnant orchard trees in the grassed parkland. There is a small concrete pedestrian crossing at the end of Todd Road which provides important access for the local children to Gosnells Senior High School from the Huntingdale area.

The crossing area is devoid of vegetation and there are several exotic trees planted adjacent to the river channel. The adjacent houses have their back fences along the river bank.

Land use

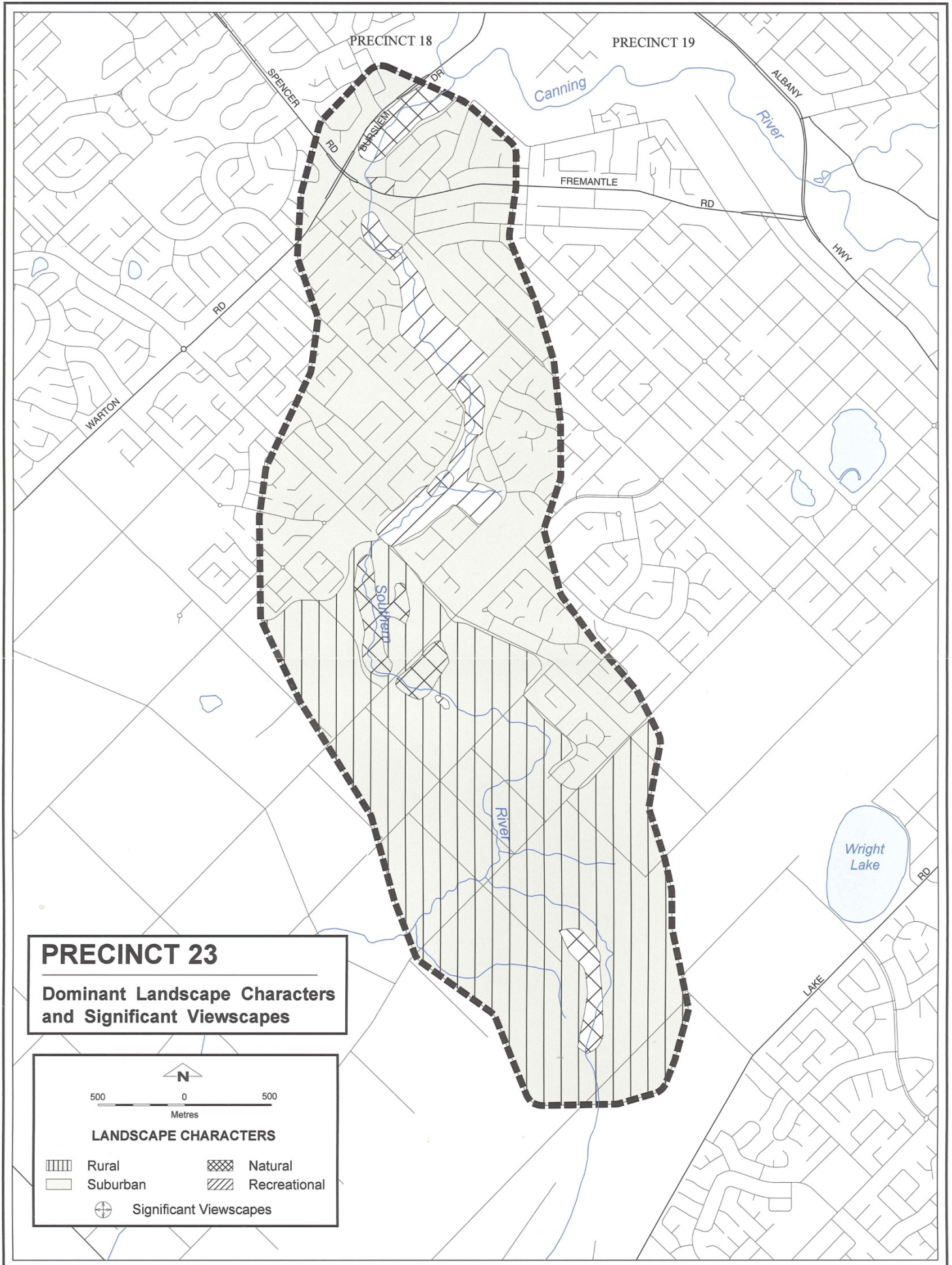
The Thornlie built up area is separated from the western bank of the river by Burslem Drive. The Thornlie TAFE campus is located on the western bank along with a number of residential blocks. The campus has been mainly planted with Australian flora which is complementary to the fringing vegetation. On the opposite bank, the Gosnells residential area is set back away from the river embankment and the Mabel Davis Park is a small block in between the houses and Fremantle Road. The park has a neat lawn and sand pit area and overlooks the river embankment. The park and residential area are separated by Windsor Drive and therefore the distinct land use change separates the riparian and residential landscapes.

The Richard Rushton Community Centre is located adjacent to the river reserve and is constructed with a dark brick. The area is lawned with remnant marri and jarrah surrounding the building. The Wirrabirra Primary School is adjacent to the Community Centre and its oval area joins to the community centre lawn and the river fringing vegetation. Both buildings are low formed and due to the flat nature of the landform have minimal intrusion on the landform.

Most of the Huntingdale residential blocks are separated from the river reserve by a road, however earlier properties are located on the river banks, including a 1950s style home adjacent to Shipbourne Way. The new houses on Todd Avenue are well set back from the river and the slightly lower adjoining land. New smaller block housing developments have recently been built on the Gosnells side downstream to Verna Street. These are modest homes and all have very new gardens with few mature trees. Much of the land has been cleared in the past for rural land uses, however the low fertility of the soils, makes it suitable mainly horse agistments and other land uses which do not require rich soils. A few large rural private properties extend from south of Chamberlain Street, Gosnells, and south of Huntingdale Road, Huntingdale. These properties are have mostly been cleared with a few shade trees remaining.

They are mainly private residential properties with several paddocks for agistment purposes. There are two plant nursery distributor points at Huntingdale and Sunnyvale Nurseries. Orchards are being converted into residential blocks; however a few orchards still exist at Ball Road, Huntingdale. In general, the low lying topography and the vegetation limit the view of the residential areas on the riparian section.

One of the prominent skyline features is the distributor powerlines which cross the Southern River. Due to the flatness of the topography, these powerlines are visible from most parts of the riverscape.



Landscape Interpretation

Dominant Landscape Character

The suburban landscape is the dominant landscape character for the northern section of this precinct. The houses are generally modest styles with eclectic gardens. Only the older areas have mature trees, and due to the flatness of the landform, the depth of view is limited.

The natural landscape is very limited, as most of the native woodland community has been cleared. Along much of the Southern River, only grasses are present on the sandy river banks, and as a result these sites are quite degraded and are visually unattractive.

Along the Southern River, adjacent to the suburban areas, the riparian vegetation only remains in small segments. Much of the riparian area has been cleared and lawned for recreational purposes. The result is a parkland landscape which has little indigenous vegetation and as a result very little local character or identity.

At the southern section of the precinct there is quite a sharp change between suburban and rural land uses. At this section, the views are restricted by the flatness of the land and as a consequence, the landscape character is restricted to limited areas. Much of the land has been cleared in the past for rural land uses, such as orchards, however these are being replaced by housing developments. The remaining rural landscape is made up of horse agistment and pasture. There are some intensive production sites, including poultry farms and domestic plant nurseries. The rural landscape in this area is characterised by much of the land being cleared and very little indigenous vegetation remaining. The sandy soil results in a barren appearance.

Significant Viewscapes

As the landform is very flat, the viewscapes are very limited. What remains of the riparian vegetation is very dense and scrubby so that the shallow channel of the Southern River can only be viewed in places where it has been cleared. As most of the original vegetation has been cleared, the small patches of indigenous vegetation which remain are important if small elements in the landscape. They give local identity to a landscape which has few distinguishing characters.

Conforming and Non Conforming Elements in the Landscape

The footbridge adjacent to the Richard Rushton Community Centre provides an example of a structure which adds interest to a suburban landscape. The bold form and colours contrast with the riparian vegetation and surrounding suburban buildings.

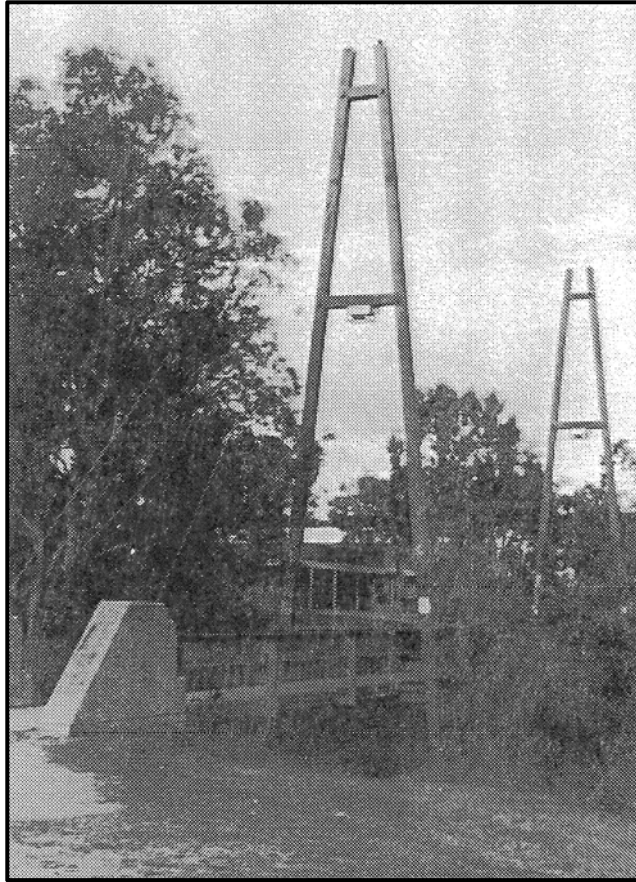
Soft leafy weeds are commonplace along the Southern River. There is opportunity to enhance the present landscape character by restoring the indigenous flora.

Recommendations for Maintenance and Enhancement of the Present Landscape Character

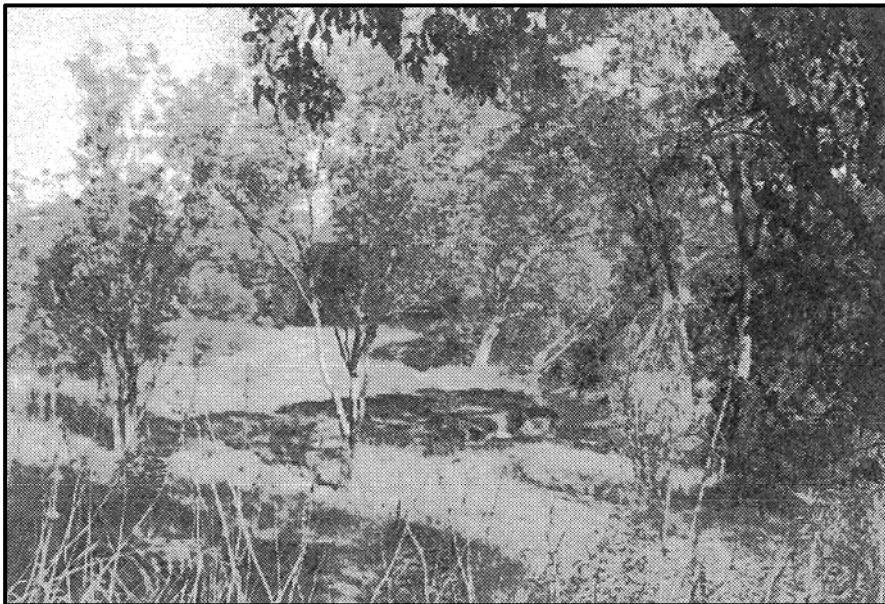
- Rehabilitation of the remnant vegetation. There is particular need to ensure that the Southern River Complex is adequately represented in this precinct. It is under increasing pressure from development and weed invasion.
- Planting indigenous species in parkland and riparian reserves which are presently mainly lawn.
- Ensure that riparian structures and developments are complementary to the landscape characters in this precinct.

Precinct Specific References

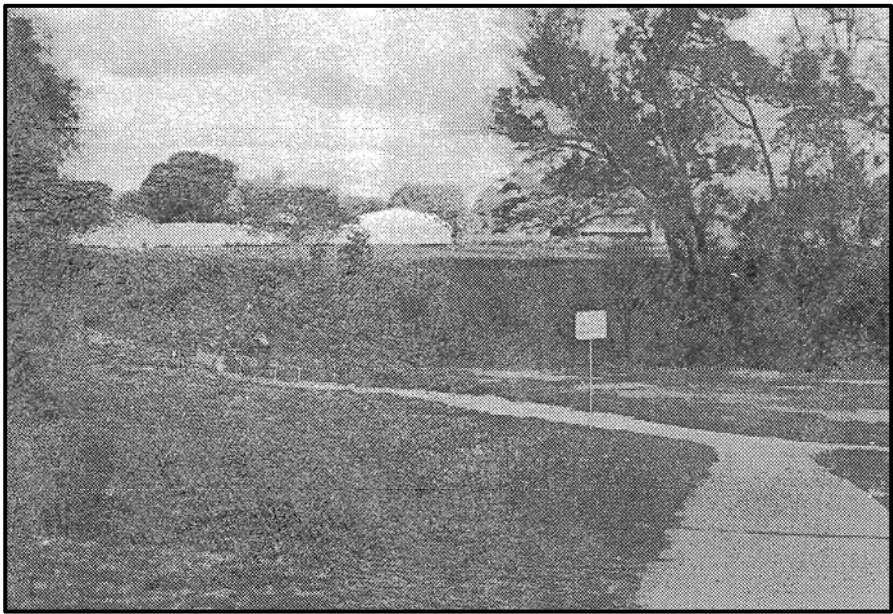
McDonald, G. and Cooper, W.S.1988. **The Gosnells Story**. City of Gosnells, Perth.



Footbridge near Cardington Way, Southern River, 1996.
Swan River Trust.



Jenkinson Street, Gosnells, Southern River, 1997.
Swan River Trust.



Footbridge near Todd Avenue, Southern River, 1996.
Swan River Trust.