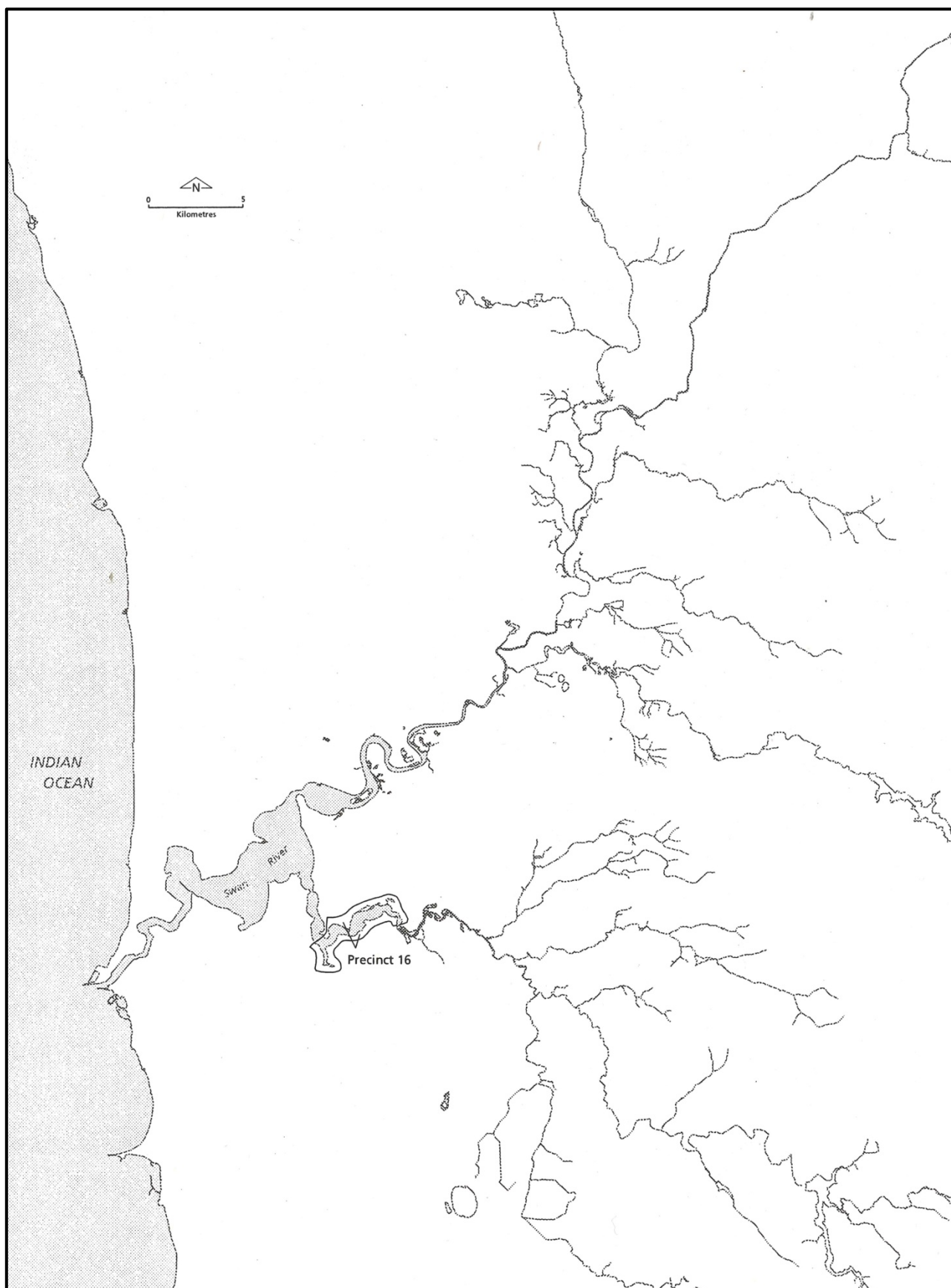


Precinct 16

Canning River – Freeway at Mount Henry to Riverton Bridge



Summary

Canning River – Freeway at Mount Henry to Riverton Bridge

This section of the Canning River forms two wide basins at Aquinas Bay and Shelley Basin. The curve of Mount Henry headland continues as a visual line with the Bull Creek confluence. Bull Creek waterform gently meanders and visually appears to be uniformly wide until its blunt river head. Upstream of Bull Creek, the estuary opens into the broad Aquinas Bay which is bound by the Mount Henry headland and Salter Point.

From Aquinas Bay one of the most prominent features is the old quarry scar which is unvegetated and characterised by yellow sand and exposed limestone pinnacles. The escarpment vegetation is low scrubland to open woodland community.

Shelley Basin forms a long and wide expanse of water and the ridge line of Mount Henry decreases to the flatter lower lying land of Salter Point and adjacent Waterford. At Salter Point there is a small circular wetland within the promontory. The wetland is fringed with rush, sheoak and paperbark communities and the water bodies of the estuary and wetland are particularly attractive. The Waterford residential area has been built on areas which originally would have been subject to inundation. The area is new and quite uniform in house and garden style. The old Clontarf Boys Home buildings are one of the most attractive along the Canning River, however much of the area has been subject to significant disturbance and weed proliferation. The least aesthetically pleasing section of this precinct is the East Clontarf and Centenary Park foreshore. As the result of rough deposition of covering soil, the landform and eroding banks are completely at odds with the adjacent flat low lying land. Rubbish and old building materials are exposed along the foreshore and wetland. The Naval Cadet and Sea Scout buildings are conspicuous landscape features at this section due to the surrounding unvegetated land. The water supply pipeline which crosses the river is also prominent due to its size and location. There is an abundance of exotic species adjacent to the water pipe and the general air is one of neglect.

The Shelley and Riverton Bridges are significant water features. While Shelley Bridge is raised above the surrounding land and is quite modern and obtrusive in the landscape, the old Riverton Bridge has a low form and wooden piles which appear to fit into the surrounding land use. The Shelley and Rossmoyne foreshores are very narrow and residential development occurs within metres of the river. Bull Creek wetland has some attractive fringing woodland vegetation despite much of the area supporting many weed species.

Biophysical Processes

Geological Processes

The Swan Coastal Plain was formed by aeolian deposition of coastal sand in linear parallel dunes. The limestone and travertine pipes were formed by cementation of calcareous sands in situ by the processes of leaching and precipitation around tree roots. Examples of cross bedded limestone and travertine can be seen on the exposed cliffs of Mount Henry and at Redmond Reserve where overlying soil has been eroded (City of South Perth, 1993).

The soils of Mount Henry were listed as Bassendean Soil Association, however this has been revised to the Cottesloe and Karrakatta Associations (City of South Perth, 1993). The soils at Mount Henry Point are shallow brown sand with limestone close to the surface and are classified as Cottesloe Association soil. At Aquinas College the soil is a deep profile which overlies the limestone and is classified as the Karrakatta Association. Behind Salter Point the soils are leached and pale and typical of the grey yellow quartz Bassendean Soil Association with sandy swamps in the low lying areas.

The Bassendean Sand is present around the Bull Creek and Rossmoyne foreshores. This formation was probably laid down on the shorelines and dunes during two or more past periods of sea level transgression. The deposits are poorly sorted quartz sand of mainly fine to medium grain size. The soil associated with this geological unit consists of white to pale grey soils at the surface and cream to yellow soils at depth. These are mainly of low nutrient status and are highly porous.

Deep alluvial estuarine sediment deposits composed of mud and silt, with abundant detritus, prevail around Bull Creek. Wide tidal flats occur along stretches of the river between Bull Creek and Riverton Bridge. They consist of muddy estuarine deposits which lie over a shell and sand substrate. Riverton foreshore area touches on the Southern River grey sand and also is characterised by intervening clayey swamps.

Topography

Mount Henry is the easternmost part of the topographical unit termed the Spearwood Dune System and it borders the Bassendean Dune System. The headland is prominent and from the western view appears to be shaped like a saddleback. The limestone outcrops and thin overlying soils are easily eroded. Sandy beaches have developed along the foot of the cliff. Salter Point has a sandy spit in which a lagoon has formed, and a narrow channel leading to the river.

The Clontarf foreshore is flat low lying and swampy with a low sandy ridge behind the shore. The low lying and swampy land continues to Riverton Bridge. The southern banks are low lying and gently undulating in particular at the confluence of Bull Creek and the Canning River.

Hydrological Processes

Water features

The Canning River forms two basins in this section of the river, Aquinas Bay and Shelley Basin. These sections of water are quite wide and have a river bed composed mainly of mud, but closer to the river banks the sediments become increasingly sandy and clayey with large shells present. At Mount Henry, Aquinas Bay, Salter Point and Munns Point there are significant shell deposits. Wide shallow estuary margins are present on the northern banks and a wetland is present at Clontarf and Salter Point.

The Cloverdale groundwater mound occurs between the Canning and Swan Rivers and the outer fringe of the flow system occurs at the Mount Henry foreshore. At Bull Creek, the groundwater is less than two metres from the surface, while at Clontarf wetlands there is a freshwater spring flowing from the groundwater mound.

Modifications to the river hydrology have included infilling and dredging of the south side of the river between Fifth Avenue and Shelley Bridge. The construction of the Canning, Mount Henry and Shelley Bridges has altered the banks of this section of the river (SRT, 1994).

At Clontarf the wetland was originally more extensive and extended closer to Manning Road. The Waterford residential development was part of the wetlands until quite recently and was partially submerged with sandbars, low dunes and salt marshes. Bull Creek was swampy and filled with stagnant waters and surrounded by extensive mud flats. At present, the wetlands drain into Bull Creek through four surface storm water drains; only the Bull Creek Main Drain has water in all year round.

Bathymetry

This section of the river has an average bathymetry of 1.2 metres. There are several deeper pools of around 2 metres adjacent to the Shelley Sailing Club and Mount Henry Bridge. The Swan estuary system experiences a mean daily tidal range of 0.36 metres at the Barrack St Jetty (SRT, 1994). The Kent Street Weir which is about 3 km upstream from the Riverton Bridge is the limit of the tidal influence on the Canning River.

Flooding

There is seasonal inundation at Aquinas Bay foreshore which often results in an accumulation of algae on the foreshore. Flood prone areas exist adjacent to the Clontarf foreshore and the eastern bank of Shelley Bridge (SPCC, 1989). At Clontarf there is a predicted 100 year flood level of 1.24-1.29 metres. This would mean that all the foreshore strip would be submerged up to Brother Keaney's Gardens at Clontarf.

Erosion and accretion

Water skiing has contributed to bank erosion in Aquinas Bay. Only deep water take off is permitted in the bay, however water users often ignore this regulation. Erosion of the river banks is occurring adjacent to Tuscan Street and Riverton Drive West, Rossmoyne. Along Mumms Point removal of riparian vegetation has resulted in significant erosion of the banks. The eastern foreshore immediately north of the Shelley Bridge and the banks adjacent to the T.S. Canning Naval Cadets building is also bank erosion problem areas. At Salter Point on the downstream side accretion has made navigation difficult.

Vegetation Communities

Native

Bassendean Complex

The indigenous flora of this precinct is classified as being as part of the Bassendean Complex (DCE, 1980). The vegetation ranges from woodland of jarrah (*Eucalyptus marginata*), sheoak (*Casuarina obesa*), and various banksia species (*Banksia* species) to sedge lands on the moister and lower sites. The various communities which make up this complex are described below.

Sarcocornia and *Halosarcia* communities

In isolated sections of the Clontarf and Centenary Park foreshores, beaded glasswort (*Sarcocornia quinqueflora*) and samphire (*Halosarcia* sp) complexes occur (South Perth City Council, 1994). Adjacent to these monospecific stands, several other species are found including coast sword sedge (*Gahnia trifida*), seablight (*Suaeda australis*), and seablite (*Atriplex* sp). This section of the river foreshore supports several areas of the exotic saltwater couch (*Paspalum vaginatum*) which is sometimes mixed with creeping brookweed (*Samolous repens*).

Juncus communities

The shoreline community of shore rush (*Juncus kraussii*) is present along Salter Point, Clontarf, Centenary Park and Bull Creek foreshores. It occurs either in monospecific stands or mixed with melaleuca. Adjacent to the shore rush communities at Clontarf there are monospecific large flowered bogrush (*Schoenus grandiflorus*) stands.

Casuarina-Melaleuca communities

The swamp sheoak (*Casuarina obesa*), freshwater paperbark (*Melaleuca raphiophylla*) and shore rush (*Juncus kraussii*) are the dominant species of this community. Other understorey species include marsh club rush (*Bolboschoenus caldwellii*), creeping brookweed (*Samolous repens*) and slender myoporum (*Myoporum caprarioides*). The *Casuarina-Melaleuca* complex is found on the southern bank of Salter Point and also on the northern section of the Clontarf foreshore. A small disturbed section occurs adjacent to Centenary Park water pipeline.

Melaleuca-Juncus communities

The swamp paperbark (*Melaleuca raphiophylla*) and the shore rush (*Juncus kraussii*) occur together as an important foreshore complex. In this precinct, it is found at the Bull Creek confluence and as a large stand at the northern section of the Clontarf plant community (City of Canning and City of Melville, 1994).

Melaleuca Swamp community

The *Melaleuca* swamp community occurs in two separate stands at Clontarf and is found inland of the *Melaleuca-Juncus* community. In this precinct it is also found around permanent and seasonal wetlands in Bull Creek, Salter Point Lagoon, Clontarf, Waterford and Shelley Basin. The dominant species includes a band of saltwater paperbark (*Melaleuca cuticularis*) with occasional swamp and stout paperbarks (*M. raphiophylla* and *M. preissiana*). The swamp sheoak (*Casuarina obesa*) is also present.

Eucalyptus-Melaleuca community

At Waterford, the vegetation includes flooded gum (*Eucalyptus rudis*), and swamp paperbarks (*Melaleuca raphiophylla*) and an understorey of sedges (Pen, 1983). Swamp peppermint (*Agonis linearifolia*) is the one of the dominant species occurring at Bull Creek. The understorey includes shrubs such as bracken fern (*Pteridium esculentum*) and swamp wattle (*Albizzia lophantha*) the latter is rare on the Coastal Plain. Other prominent species include the coastal saw sedge (*Gahnia trifida*), seablite (*Suaeda australis*), river pea (*Oxylobium lineare*), triangle leaf thistle (*Chenopodium flaucum* and *C. album*) and the creeping brookweed (*Samolous repens*).

Banksia communities

Remnants of the Bassendean woodland of jarrah (*Eucalyptus marginata*), sheoak (*Casuarina fraseriana*) and various banksias occur on the sandy higher land. Most of the jarrah (*Eucalyptus marginata*) has been logged at Mount Henry, while a few banksia individuals occur including firewood banksia (*Banksia menziesii*), slender banksia (*Banksia attenuata*) and holly leafed banksia (*Banksia ilicifolia*).

On the low sandy slopes near Salter Point are Christmas tree (*Nuytsia floribunda*), spearwood (*Kunzea ericifolia*), grey stinkwood (*Jacksonia furcellata*), and pineapple bush (*Dasypogon bromeliifolius*). On the sandy slopes of Mount Henry there once was a jarrah-banksia woodland which has since been cleared or degraded. Isolated pockets of *Hovea chorizemifolia* also occur on the sandy slopes and are rare this far north on the Swan Coastal Plain.

The limestone embankment at Mount Henry supports parrot bush (*Dryandra sessilis*), basket bush (*Spyridium globulosum*) and cockies tongues (*Templetonia retusa*). On the limestone rocks there is a unique species of lichen which is unnamed (City of South Perth, 1993). Fire has increased the number of young specimens of parrot bush (*Templetonia retusa*), blueboy (*Stirlingia latifolia*) and zamia palms (*Macrozamia riedleii*).

Exotic

Veldtgrass (**Ehrharta* sp) is prolific on the spit and point of Mount Henry. Kikuyu (**Pennisetum clandestinum*) and couch grass (**Cynodon dactylon*) are also abundant and have replaced many indigenous understorey species. Watsonia (**Watsonia bulbilifera*) and cape tulip (**Homeria breyniana*) are common on the foreshores. Morning glory (**Ipomoea indica*) and lantana (**Lantana camara*) are often found flourishing in the paperbark stands. There are extensive infestations of golden dodder (**Cassytha* sp) and grasses throughout the paperbark stands around Bull Creek and Rossmoyne. The introduced bulrush (**Typha orientalis*) occurs around water drainage outlets mixed with the endemic species or as a homogenous stand in more disturbed areas. A notable area is on the eastern bank between the Shelley and Riverton Bridges and at Centenary Park.

Historical Land Use and Resulting Environmental Changes

Mount Henry was named after John Henry, 2nd Lieutenant of HMS Challenger who with Captain Fremantle explored the river system in 1829 (Seddon, 1970). There was little development south of Manning Road due to its inaccessibility.

The east bank of the Canning River (between just north of the present day Canning Bridge and east to Centenary Avenue) was originally granted to Thomas Middleton who sold it to B. Vigers in 1843 for five shillings. In 1851 the land was resold to Middleton who sold it to 'Henry Manning of High Holbourn in the City of London' five years later. It was transferred to Lucius Alexander Manning of Fremantle, and the land was passed to a number of generations of the Manning family until 1935. Prior to 1935 there was no access by road into the dense bush.

Thomas Middleton also owned Lot 28 at Bull Creek (Carden, 1968). The Middleton's farmed on their land until 1860s, however they only resided on their land for five years and left their residence by 1935. The neighbouring properties were allocated as follows: Lot 27 Adams, Lot 26 Bull, Lot 25 Morgan and Lot 27 Willet. John Morgan described his land as one tenth very fair but the remainder not even worth walking over. Morgan, James Adams and Henry Bull did not reside on their land after 1835 (Carden, 1968). Captain Willet's land remained undeveloped for many years and it is doubtful whether he ever lived on it. The land south of Adams and Bull's property was owned by The Bateman's who farmed cattle and cut timber for sale. Their homestead, 'Grassmere', was built in 1886 at the head of Bull Creek and was lived in by the Bateman family until the 1970s (City of Canning and City of Melville, 1994). Today the homestead is a private residence. During the first half of this century much of the land in this area was clear felled for timber including the site of the present day Richard Lewis Park which has now regenerated to a dense rivergum and paperbark area. The banksia woodland behind the low lying area was also clear felled and only remnants are found.

The river upstream from Mount Henry was inaccessible to all but flat bottom barges (City of South Perth, 1993). During 1850s convicts and ticket of leave men were employed in the district. The area opposite Salter Point was chosen to be a convict settlement and a camp called 'Fig Trees' was established. The convicts were housed on the dredge 'Black Swan' and they built wattle and daub huts at 'Fig Trees' or possibly further upstream at Mumms Point. The convicts at this site were mainly local men who had been arrested for drunk and disorderly behaviour. They were employed to clear a channel and build the pole and wattle 'fence' used to transport and guide jarrah logs downstream. The fence was built in 1866 and additions and repairs were made in 1869, 1872, 1887 and 1888. Within this area, Francis Bird and Mason Bird and Company employed a large number of men to run their milling operations which would receive the logs from the Darling Ranges (Carden, 1968).

One of the first boats built on the Canning was the 'Dugong'. This was built by the officer in charge of the Fig Trees convicts, Henry Passmore, his son, an Asian carpenter and some of the convicts. The ungraceful boat, despite fears that it would sink, served many years transporting stores and produce.

The Irish Christian Brothers established the Clontarf Boys' Home in September 1901, having moved from Highgate to a new site which was held by the Manning family (Crowley, 1962). The site was purchased by the Catholic Bishop of Perth, Dr Gibney. The buildings were designed by Brother Bodkin and also Marie Jackson of Cavanagh and Cavanagh Architects and were recognised as one of the most modern public buildings in the State. The limestone was bought by barge from Cottesloe (South Perth City Council, 1994). Brother Keaney added the chapel and other buildings to the original structures. To build the home, the land was completely cleared from Manning Road to the foreshore. The gardens, orchards, paddocks and grounds were used to give the boys a training in horticulture and farming. Landfill was deposited on the wetlands to raise the ground levels, to protect the built environment and to provide ovals for the boys. Brother Keaney established a garden in front of the home adjacent to a freshwater spring and both the spring and garden are still present, although the garden is not in good condition (South Perth City Council, 1994).

In the 1920s a tram line was opened to Como. This allowed holiday makers to access the beach between Como and Mount Henry (Carden, 1968).

In 1935 the Christian Brothers purchased land including Mount Henry promontory from the estate of the late Victor Manning and Aquinas College was transferred from St Georges Terrace to Mount Henry in 1983. The point at Mount Henry was used as a quarry prior to the purchases by the Christian Brothers. The school's cadets used the quarry as a rifle range, and as the site of army huts (City of South Perth, 1993). The site was also a popular playing spot for the schoolboys. Around 1955 a golf course was cut through the bushland on the ridge, however it was not retained and it reverted back to a scrubby bushland. Pylons are all that remain of the old Aquinas Bay boatshed which was opened in 1934. The boatshed was replaced by a new land based boatshed in 1971.

The foreshore at Clontarf was used as a rubbish dump and much of this rubbish is exposed along the foreshore.

The Riverton Bridge was commenced in December 1910 by the Jandakot Road Board and was funded by the local settlers (Carden, 1968). The central spans of the bridge were designed to allow loaded barges to pass beneath during high water mark.

The official name was the Watts Road Bridge. In 1912 it was proposed to be named after a local market gardener, Fred Riley, however Riley suggested the name change to Riverton Bridge. Despite this locals still called the bridge Riley's Bridge for many years.

Present Land Use and Social Patterns

Most of the land use around this section of the river is residential. The Salter Point area remained relatively undisturbed until the building boom in the 1950s. There have been several releases of land since the 1960s, and these have been developed as small blocks which overlook the river. The linear development of Shelley and Rossmoyne has resulted in little foreshore reserve. At Waterford and Salter Point the roads are set back resulting in a difference in depth of foreshore reserve.

In 1972, the Public Works Department dredged a turning basin near the Curtin Rowing Club and pumped sand ashore to form a platform for the 1st Salter Point Parade Scouts. An access channel was dredged to join the southern bank channel.

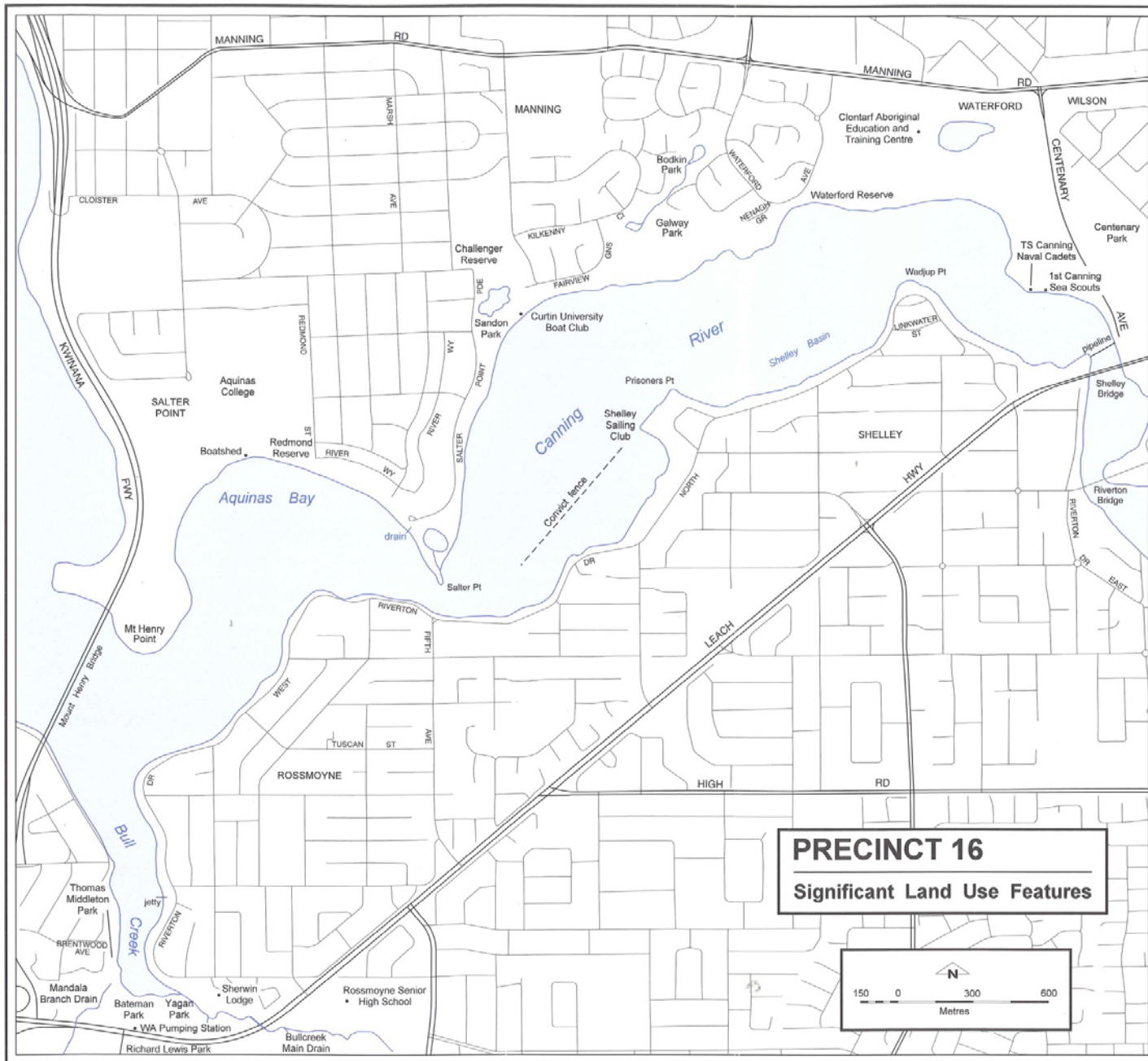
In 1975, the Environment Protection Authority recommended that the City of South Perth landfill the southern section of Clontarf not being used by the Christian Brothers on condition that the paperbark area was saved. By the late 1970s the plans for the Waterford residential area were finalised.

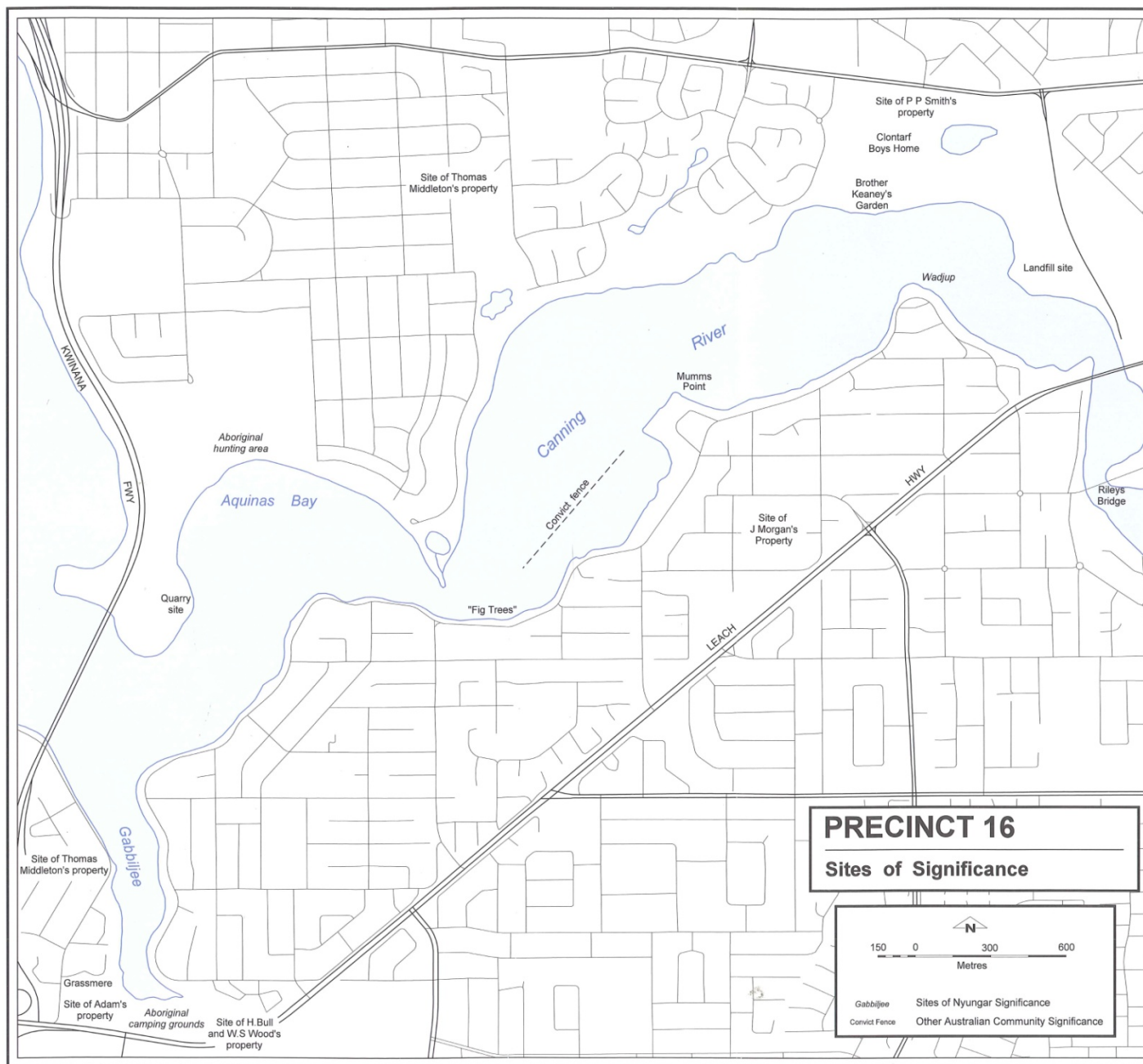
Landfilling occurred at Salter Point Parade in 1977 which decreased the riparian vegetation.

The Shelley Bridge was opened in 1978 and diverted the Leach Highway traffic which once used the Riverton Bridge. The Shelley Bridge has a superstructure of precast concrete and supports four lanes of traffic.

The reserves associated with Bull Creek have been recently recommended to be gazetted as 'conservation' status, as this wetland has been recognised as an important area for flora and fauna conservation within the urban environment. Much of the area was cleared during the first half of this century and despite this some of the lower lying areas have been regenerated.

The western portion of the Clontarf Estate was recently sold for residential development. The Waterford Estate was built on part of the Canning River wetland which was originally submerged with sand bars low dunes and salt marshes. Clontarf has recently become a centre for Aboriginal education and is called 'Clontarf Aboriginal College' and includes branches of TAFE, Skillshare and Abmus. The Christian Brothers continue to use the chapel and residences. The Skillshare Program has developed a small





community market garden adjacent to Manning Road. The old rubbish dump area presently encroaches on the wetlands and foreshore of Clontarf, much of the old rubbish is exposed to the open and the area is particularly lumpy and difficult to access.

The vegetation communities at Bull Creek and Aquinas have recently been subject to frequent fires which encourage the proliferation of weeds. Recently due to the high nutrient load in the Canning River there have been blooms of the benthic blue-green alga *Microcystis littoralis*. Nuisance levels of the macroalga *Chondria* and *Gracilaria* have also occurred. Rotting algae on the foreshore has produced offensive odours which affect the residents and river users.

Recreation nodes

This section of the river is a popular recreation area due to its sheltered nature. Jet skiing has been restricted to an area north of the spit. The estuary is used for boating, canoeing, rowing, surfcat boating, skiing and power boating. Land based activities include cycling and walking. The Shelley Sailing Club occupies a small part of Mumms Point and has approximately 60 boats associated with the club which use the water between Salter Point and Riverton Bridge. Aquinas Boat Club and Curtin Boat Club (1971) are situated on the northern banks of this section of the river. The 1st Salter Point and 1st Canning Sea Scouts have their clubhouses on the river banks and use the water for boating experience.

The Mumms Point recreation area is an important recreation node. There is play equipment, toilets and shade and it is a popular spot for beginner windsurfers. Motor bike riders have in the past used Clontarf foreshores.

Bull Creek provides opportunities for various recreational pursuits including passive fitness activities, nature watching and a play area. The local schools also use the areas for educational purposes.

Public access

Vehicle access exists at Salter Point. There is private foreshore access at Aquinas College boatshed. Pedestrian access is possible adjacent to the Kwinana Freeway due to the dual use pathway and the path is heavily used for recreation and commuting. An unlicensed jetty was built by a local resident at Brentwood Avenue, Bull Creek, 15 years ago. There are over thirty informal paths scouring the cliff face at Aquinas Bay and these are quite detrimental to the vegetation communities.

Sites of Nyungar & Wider Australian Community Significance

Nyungar significance

There are records of Nyungar occupation in the Bull Creek area and South Perth area. Many Beeliar Nyungar families considered the Canning River foreshores as part of their 'run' which was the part of the route once travelled. At the time of colonisation the Bull Creek area (*Gabbiljee*) was of considerable importance as the wetlands were present in summer and provided many foods compared to other surrounding drier areas.

There are three recorded archaeological sites of Nyungar significance in the Bull Creek area. These are important due to the scattering of quartz artefacts (O'Connor et al, 1989). Henry Bull, who was granted a property at Bull Creek in the early 1830s, appears to have had an understanding of Nyungars in the area and developed a trusting friendship with Yagan. However as described earlier, relationships with other settlers were less amicable.

All Nyungars were prohibited from entering the City of Perth from 1829 and 1854. This restricted many local families' 'runs'. The latter years of this period of restriction saw the prohibition zone decreased to the city centre. Despite this, many Nyungars who were associated with the land have retained the knowledge and beliefs associated with the area. The Mount Henry area was a Nyungar hunting and fishing ground (City of South Perth, 1996).

Other significance

Clontarf was established in the early 1900s using barges to transport building materials by water up and down the Canning River. The gardens established by Brother Keaney are considered of historic value and at present are in a state of degeneration. Vandalism, rubbish dumping and lack of maintenance, have all contributed to the loss of the islands and lake forms created by the Brother. The area has potential to be restored to the intended form and due to its historic value this should be done.

Mount Henry was named after John Henry, Second Lieutenant, HMS Challenger, who sailed up the river on 3 May 1829 with Captain Fremantle. In June 1829, Henry led an overland expedition to trace the headwaters of the Canning River.

Salter Point was named after a contractor associated with early shipment of timber from Masons Timber Mill at Cannington. It is believed that a convict barge built in 1866 was sunk in this stretch of water. The Mayflower which was built in 1908 and used as a ferry was sunk on the western side of Bull Creek.

The Python built in 1907 is believed to be sunk adjacent to Violet Street at Shelley.

Conservation Areas

Wetlands

The Australian Heritage Commission identified the Canning River wetlands as 'an area of high conservation and recreation value contributing to open space of regional significance'. At Clontarf the original wetland was more extensive than what is present to day. Landfill has been deposited on the wetlands to raise the ground lands.

System 6

M66 Mount Henry Manning

The recommended area comprises the whole of the Mount Henry peninsula including the freehold land owned by the Christian Brothers and the foreshore reserve. The area occupies a prominent limestone outcrop headland. It is covered by open woodland of tuart, marri, jarrah and Christmas tree with a very varied understorey including woollybush (*Adriana quadripartita*) and *Daviesia juncea*. At the base of the hill there is a small stand of swamp cypress (*Actinostobus pyramidalis*). Along the river foreshore there are wetland species, such as, *Juncus kraussii*, *Scripus nodosus* and *Suaeda australis*. The area supports over a hundred native species in all. The area is significant for its potential for educational studies and landscape feature and because of its high conservation and recreational value.

M67 Canning River Foreshore -Salter Point to Clontarf

The area is recommended for its high conservation value and recreation value. At the centre of Salter Point there is a lagoon which is connected to the river by a narrow channel. The lagoon is surrounded by a dense band of sedges and samphire and there are several stands of swamp sheoak and paperbarks. The northern portion of the reserve includes the swamps tea tree *Astartea fascicularis* and rare *Melaleuca leptoclada*. There are also several stands of salt water paperbark. The Clontarf foreshore is flat and has several sedges and shrubs species. This freshwater lagoon is unique to the southern Canning River section.

M74 Bull Creek

Bull Creek flows into the Canning River and has an important natural drainage function. It also contains remnants vegetation which is reminiscent of what much of the surrounding area was like prior to urbanisation. The vegetation contains not only fringing paperbark and sedge communities but also low woodland communities. There are several uncommon species present including the orchid *Eriochilus*.

Landscape Description

Precinct Description

Waterform

The water's edge is in symmetry as the curve of Mount Henry is reflected in the southern bank. The convex bulge of the Mount Henry shoreline is in line with the Bull Creek confluence. Bull Creek itself has a number of gentle meanders in its waterform and stays a visually uniform width until its blunt river head. Here the land has been infilled and open drains replace the original tributaries to the creek. Upstream of Bull Creek, the river widens to the broad Aquinas Bay which is bounded by the Mount Henry headland and Salter Point. The convex curve of Rossmoyne shoreline nests into the concave form of the bay. The river narrows at Salter Point and once again widens to a second wide body of water which gently undulates into small curves and bays on the northern bank. The southern waterform is relatively straight sections of shoreline due to infilling. The narrow promontories at Mumms Point and the point at Linkwater Street jut from the southern bank into the water. At the western side of Shelley Bridge, the river becomes narrow due to the Riverton bank forming a point. The reverse occurs at Riverton Bridge, as the Manning foreshore forms a point opposite the straight foreshore of Riverton.

There are several boat wrecks which have extremities exposed during low water tides. However the dominant water feature is the convict fence which extends from Salter Point to Mumms Point and as a few miles upstream. It is a landscape feature of historic significance and it is important in giving this river section an identity and a link with its heritage.

Natural riparian zone

At Mount Henry headland, the riparian zone is made up of a fringing sedge and woodland community. The steep nature of the headland has meant that there is little beach, rather a simple continuation of the steep curve of the headland to the water junction. The area adjacent to the quarry has several localised earth slides which have overrun the foreshore forming a gently sloping foreshore.

The steep embankment continues to Salter Point where low lying wetlands have formed. On the western side of the point, a white sandy beach is present during periods of low water level. Behind this the riparian vegetation is dense with a continuous band of sedges along the water section. The triangle shaped promontory has a circular shaped wetland which is filled with water throughout the year. A thin channel enters the river on the eastern side of Salter Point. Salter Point is particularly attractive as it gives the impression of naturalness within the river system.

The two water bodies of the wetland and river are interesting to the viewer due to the two waterforms and the division of these landforms by the thin band of riparian vegetation. The rest of the riparian zone has been greatly altered or is so narrow as to be greatly influenced by adjacent land uses, and will be discussed in the riparian land use section.

Landform

Mount Henry is the most prominent landform feature in the area. It has a steep limestone escarpment which has several limestone outcrops which are exposed between the vegetation cover. The escarpment reaches a height of 15 metres and rises quite steeply from the foreshore in the line of a convex hill. The old quarry is exposed due to its lack of vegetation. Here several pinnacles and cuts into the limestone provide vertical rough textured shapes against the soft dusty vegetation and yellow sand. The sand from the quarry is eroding and small land slips have spilled out onto flat ridges and the water foreshore. The sand appears quite yellow when dry and when wet is almost orange in colour and therefore is a very prominent feature. From the quarry the rest of Aquinas Bay becomes more gently sloped. Lower areas which have been subject to small land slips in front of Aquinas College have a more bulging landform closer to the water compared with the relatively linear steep faces which have remnant vegetation. In front of Redmond Street Reserve, the escarpment face is almost vertical and has been recently subject to erosion on its cliff face.

The ridge line merges into the lower land of Salter Point. The wetland at Salter Point forms a triangular point around the small headland-like higher land. From Salter Point the land is flat and would have been originally subject to inundation. Any ridges in the wetlands have been infilled to allow residential development to be raised above the wetland and foreshore. The flat land has also been infilled at Clontarf to allow the buildings and ovals to be constructed. However the foreshore has remained subject to frequent inundation due to its low lying nature. The Centenary Park area was until recently used as land fill and as a result the rough deposition of covering soil and eroding edges are quite obviously unnatural. The old dumpsite is a rounded hill which also is at odds with the adjacent low lying flats at Clontarf, Wilson and Riverton Bridge. The Wilson landform has been greatly altered due to the construction of the Shelley Bridge. The interchange area rises above the natural low lying areas.

The Shelley area is very flat and so any slight changes in the foreshore topography become apparent due to residential construction. Adjacent to the Bull Creek confluence the land becomes gently undulating and is slightly topographically higher than the adjacent Shelley area.

Towards the Bull Creek head water, the land once again becomes low lying with ridges between areas subject to inundation. The Mount Pleasant area is slightly higher in topography than the Shelley area. From the foreshore the landform rises slowly to the gently undulating western foreshore of the Canning River.

Vegetation

The vegetation at Mount Henry is quite dense. Due to the high number of different understorey species there are several shades of grey green and various different forms, from loose open bushes, to dense dusty clumpy bush forms. The banksia trees rise above the bushes in several places and their canopy is spreading and open giving a soft edge to the form of the cliff. At the base of the headland the fringing sedges are brush like and they clump together in nodes of soft texture. There are dead tree trunks protruding above the bushes throughout the headland community. The dead trees have white- grey branches and an interesting form which provides a visual focus in the community. This soft bushland is disrupted at the quarry face where the vegetation has not regenerated. The Aquinas oval has been planted with lawn which encroaches over the embankment and has degraded the remnant vegetation communities. The bright green stands out against the softer green-grey of the natural vegetation. Around Redmond Reserve, the foreshore vegetation has been destabilised causing embankment erosion.

Redmond Reserve has a number of the original banksias present, among introduced trees and the lawn understorey.

Salter Point has a quite healthy stand of fringing paperbark and sheoak. These have soft feathery canopy textures and are coloured dark green. The peeling white trunks of the paperbarks stand out against the green leaves and the dark brown blocky textures of the sheoak trunks. The fringing rushes form a dense line along the water's edge and due to their clumpy form the foreshore has subtle indentations in the vegetation. The road reserve is lawn and in several places the bright green kikuyu grass has grown over stands of sedge and therefore the attractive brushy soft green forms is lost amongst the short vivid green grass.

At Sandon Park, stands of reeds and paperbark are present in lower lying areas, however most of the park is lawn and the effect is of landscaped parkland. The fringing vegetation has been kept at Waterford residential area. In many places such as Bodkin Park the understorey has been replaced with lawn and the attractive forms of the trees have been left as isolated specimens. Clontarf's Brother Keaney's Garden has a few of his remaining planted trees. The garden had originally transformed

the wetland into a series of lakes and islands with trees such as willows and palms, which created the type of ideal English parkland. Unfortunately, his garden has been neglected and only a few trees remain. The eastern Clontarf foreshore has a few remnant sheoaks and river gum. These have been recently burnt and there is a proliferation of weeds among the remaining stands. The fringing rush forms a band of soft texture right along the foreshore and in small clumps at the area of inundation in front of Centenary Park. Centenary Park consists of kikuyu grass, sour sob and other low form weeds. There are no trees or bushes. A small samphire-sheoak community is present at the Wilson foreshore, the colours and textures are attractive, although many of the lower bushes are covered in golden dodder. At the Shelley water pipe there is a proliferation of weed bulrush and castor oil plants, which suggest to the viewer a highly disturbed and neglected vegetation community.

The Shelley and Rossmoyne vegetation communities occur on the narrow infilled foreshore and mainly consist of small clumps of sheoak and paperbark. These have little evidence of regeneration and the communities are stressed by lawn maintenance and weed proliferation. There are some areas of fringing rushes which add definition to the foreshore line. Mumms Point has a quite dense stand of sheoaks adjacent to the foreshore with little evidence of understorey or regeneration. The Shelley Foreshore Reserve west of Mumms Point has a lawn with introduced species including willows, cape lilacs and poplars. There are also several planted white bark gums which are evenly spaced on the roadside reserve. They have an attractive individual form, but are not indigenous to the area.

Bull Creek has a relatively undisturbed paperbark- shorerush complex which appears dense and in relatively good condition to the viewer. However particularly at the western side of the creek head there are so many weeds, including tall stands of bamboo and pampas grass, that from the roadside the viewer cannot see the river or the natural community. For much of the Mount Pleasant foreshore there are stands of paperbark and sheoak with a shore rush understorey. These occur in a narrow strip and are very close to the road.

Riparian land use

The sheltered nature of this area has made it a popular spot for water based activities. There are rowing and several other water activity clubhouses on the foreshore. Curtin Rowing Club is brick with a curved corrugated iron roof. Curtin Rowing Club and Shelley Sailing Club are well maintained and have planted trees to mute their building forms on the foreshore.

The Shelley Sailing Club is made of wood and corrugated iron and has been designed to have minimal impact on the environment. In sharp contrast, the 1st Canning Sea Scouts and the T.S. Canning Naval Cadet Buildings appear prominent to the water user due to the disturbed riparian vegetation and the barren Centenary Park mound. There is also a great deal of rubbish, unused scrap equipment, prominent pick up bins and rubbish drums adjacent to the foreshore.

The aboveground water pipe which crosses Shelley Basin and the associated Sump filled with weeds also visually degrade this corner of the basin. The skyline is also detracted from by the tall metal power supply towers on either side of the Shelley Basin River bank. The old rubbish dump area at Centenary Park has non biodegradable rubbish exposed at the foreshore and in the Clontarf wetland. There are car bodies, metal sheets, plastics and building materials scattered in areas of low lying land and inundation.

There is a dual use path along the southern foreshore and eastwards from Sandon Park on the west. In places along the Shelley and Rossmoyne foreshore the path is particularly close to the foreshore. The foreshore vegetation is already stressed as most of the vegetation was disturbed by infilling and there is an abundance of lawn species encroaching on the communities. There are several points along the Shelley foreshore where erosion of the banks is destabilising mature trees and consequently their roots are exposed and the visual amenity is reduced. At Mount Henry, Shelley and Wilson there is also pressure from water skiing, and from small boats which when launched from the beach damage fringing vegetation. The result is a non-continuous community of sedges albrig; the foreshore which detracts from the area. In comparison, at Salter Point, the sedge species are not only visually attractive but are ecologically important.

The Shelley Bridge is a modern concrete structure which is raised above the surrounding land and as a consequence is the highest point on the landscape from most positions along this section of the river. Unlike Mount Henry Bridge, the flat nature of the background landform means that the line of the bridge shows a band of sky beneath it. Riverton Bridge is an attractive wooden bridge which is low lying and painted white. The adjacent land use is open parkland with lawn and single trees. The kiosk is prominent although it is painted in neutral colours. The planting of exotic trees around the car park is unfortunate as local species would be visually more pleasing and small shrubs could reduce the car park impact on the foreshore without obscuring the views of the river.

There are several conspicuous drains in the area. At Salter Point the drain head on the western bank detracts from the line of fringing reeds. The raised WAWA drain at the Mumms Point Reserve at Shelley greatly detracts from the aesthetics of the area. A small wooden jetty at Alton Court and the remains of a jetty at Brentwood Avenue, Bull Creek, are attractive man-made riparian features which enhance the water by providing visual interest points.

Land use

Aquinas College is for the most part set back from the edge of Mount Henry. The buildings are mixed styles and the gardens generally well maintained. Redmond Park is a small park which has attractive river views from its raised position. Due to the escarpment erosion it has been necessary to have wire and pine barriers constructed along the ridge line. The park itself has a few native banksias and the lawn maintained. The enclosed nature and high topography of this little reserve makes it an attractive park. Sandon Park has remnants of the fringing paperbark-reed communities. The lawn has encroached onto these areas which do detract from the naturalness of these pockets. There are pine bollards which protect the vegetation and give the viewer the impression of a parkland with fenced borders. The areas which have stump like vertical bollards without the horizontal bars are less intrusive. The appealing feature of the park is that it is subject to inundation and the flooded water makes an attractive form in the riparian zone.

The Waterford residential area consists of houses built from the late 1980s to very recently. As a consequence they are of similar design and taste. The gardens are relatively unestablished or of the fashionable lawn, conifer and palm landscaping which are very neat and 'treeless'. As the area was built on a wetland, a drain runs through the residential area leading to Bodkin Park. The park has a small channel and parkland which has lawn and local tree species. There are small bridges over the water channel and play equipment. This area is more attractive than the Waterford Reserve which has a linear band of grass and a linear band of fringing rushes.

The Clontarf buildings are attractive, but, they require some maintenance and the gardens have lost the formal style and high degree of pride they had when the Christian Brothers ran the boys home. They are an important element in the river section with their wide open ovals, and mature trees and the buildings are old and have a historic quality. This is a welcome break from the suburban developments which have encroached on the wetlands and foreshores.

Precinct 16 - Canning River - Freeway at Mount Henry to Riverton Bridge

The Shelley and Rossmoyne foreshore houses were built from approximately twenty years ago, although many are quite recent. They generally have a high degree of urban pride. At Rossmoyne and Bull Creek the rise in topography has allowed many houses to be set back into the landform and there is multi layerings of roof lines as the houses are set on stepped blocks.

The Leach Highway crosses the Bull Creek wetlands and has severed its natural drainage paths. To the water user there is little visual evidence that the freeway is only metres away from the dense vegetation. However the foreshore user has only restricted access to the water due to the difficulty of crossing the freeway and drains.

Landscape Interpretation

Dominant Landscape Character

The original natural landscape would have been gently undulating dunes with swampy depressions with a vegetation cover ranging from open banksia- eucalyptus woodland. At present, only isolated pockets of the precinct remain as a relatively natural landscape. At Mount Henry, the banksia woodland appears to be relatively natural despite weed invasion and an old quarry site.

There are three other locations along the foreshore which have remnant riparian vegetation which appears relatively natural in the context of the surrounding parkland and suburban landscapes. These natural landscapes have remnant riparian species such as sedges and paperbarks and in some sections have relatively little weed invasion.

Much of the foreshore of this precinct has a recreational/parkland landscape. On the southern section of the precinct, the foreshore reserve is very narrow; however some remnant fringing vegetation occurs along the dual use paths. On the northern section of the river much of the indigenous vegetation has been cleared or only a few remnant trees occur with lawn. In several sections, exotic trees have been planted in parks and recreational areas for shade.

Most of the landscape character type in the precinct is suburban. The houses range in age, but most have been built since the 1950s and as a consequence the suburban landscape is relatively modern. Houses close to the river have a high degree of urban pride and there is a range of garden styles.

Significant Viewscapes

There are a number of significant viewscapes of the Canning River at this precinct. The views which are attractive focus on the open water and the opposite banks of the river. Areas which are adjacent to sections of relatively natural vegetation and which are framed with a bay shaped foreshore are visually pleasing. The confluence of Bull Creek with Canning River is particularly attractive as the creek has some quite dense fringing vegetation which, although weed infested, has a screening effect which creates a sense of expectation. Bull Creek is relatively broad which suggests that it was originally a long natural drainage line.

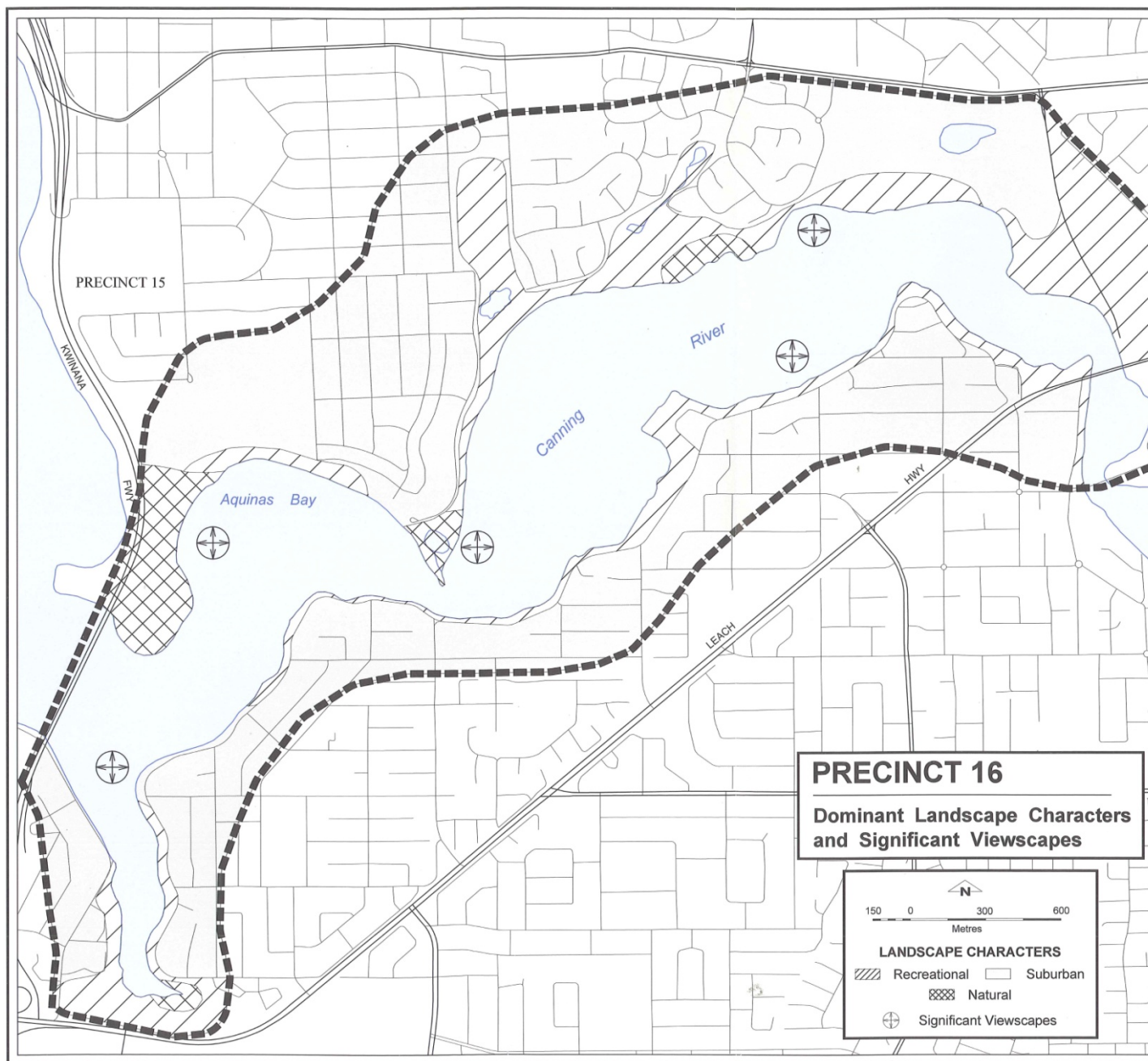
Conforming and Non Conforming Elements in the Landscape

The foreshore around Centenary Park is at present unattractive and there are plans to upgrade the amenity. At present, the main detracting factor is the unnatural rise of the old land fill site. The form of the hill is out of context with the local landform and the rubbish is exposed at several places along the foreshore and in the Clontarf wetlands. The Clontarf wetlands are extremely valuable as a wildlife habitat, however scattered iron rubbish, car bodies and old building materials are present adjacent and within areas of inundation. There is an abundance of bird fauna in the area and rehabilitation of the site would not only improve the quality of the wetland but would also improve the aesthetics of the area. Removal of the landfill and creation of a low lying wetland and lake system would be the most aesthetically pleasing and visually consistent land use in the area. Communities such as flooded gums and paperbarks could be re-established using community groups and local government assistance. The simple pathways and viewing points could be constructed to allow foreshore access.

The Clontarf foreshore has an attractive band of shorerush, however much of the original fringing woodland has been destroyed through past land uses. Any regeneration and removal of exotic species should be encouraged. As the old gardens of Brother Keaney still have their basic design and mature trees, it would be of local historical value to restore them to the original concept. This small garden would be in keeping with the land use of the Clontarf buildings.

The water pipe crossing at Wilson is conspicuous, and realignment to the same line as the Shelley bridge would be expensive. Simple actions, such as removing the exotic bulrush and castor oil plants, would at least improve the aesthetics of the pipe sump area. Improved vegetation planting at the Naval Cadets and Sea Scouts club houses at Wilson would improve the landscape amenity.

The remaining natural vegetation is subject to a number of management issues which are detracting from the landscape. Recreational users in the area illegally launch craft from non designated areas at Aquinas Bay. This is causing damage to the fringing rush which in turn causes erosion of the banks. The enforcement of a ban on fires could decrease damage to paperbark. The stands of paperbark require additional tree planting, and revegetation of understorey species would help. The limestone outcrops at Mount Henry are subject to heavy recreational use and the sensitive banksia woodlands are being degraded by informal paths and weed infestations. Revegetating the Mount Henry quarry site would assist in improving the landscape amenity.



At Bodkin Park, the retention of the native trees is aesthetically pleasing. Although much of the wetland has been infilled the nature and identity of the area is retained in the fringing woodland species. The low forms of the bushes and twisted paperbark trunks are attractive. Exotic trees need not be planted in the parkland and to do so would only detract from the remnant trees.

Bull Creek foreshore has been overrun by weeds, particularly at its headwaters. Removing the weeds would improve aesthetics and environment, in particular the bamboo, pampas grass and blackberry. At Salter Point, kikuyu is encroaching on the sedge community and planting of indigenous shrubs and trees would minimise the competition.

Recommendations for Maintenance and Enhancement of the Present Landscape Character

- Mowing should be restricted and ensure that it does not occur in the fringing woodland understorey. Encourage planting of native species on roadside near sensitive areas such as Salter Point and Bull Creek.
- Consider the best management practices for enhancing the landscape and improving the ecological value of Centenary Park and surrounding waters. In particular there are lots of opportunities to enhance what could be a particularly attractive foreshore with important views.
- Ensure that Clontarf's attractive buildings are maintained for their historic and aesthetic values.

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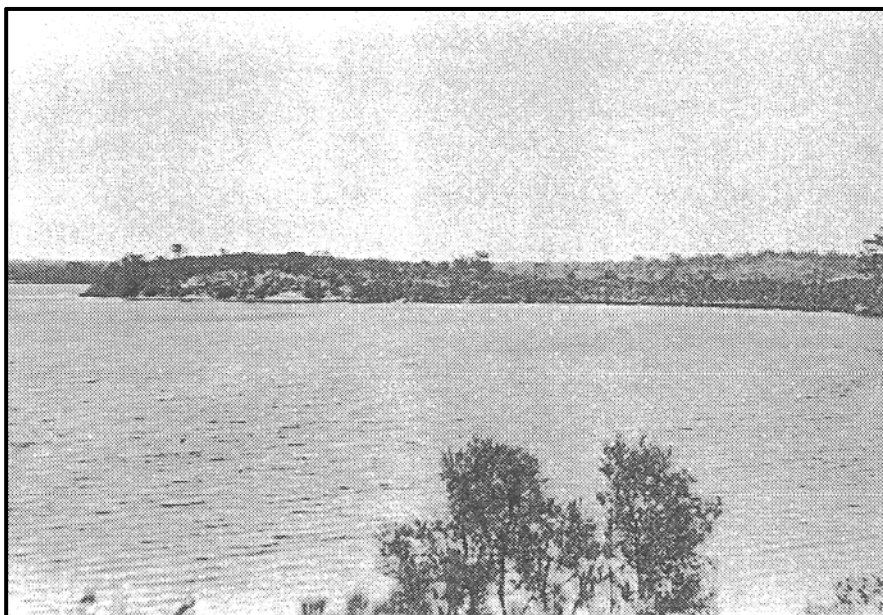
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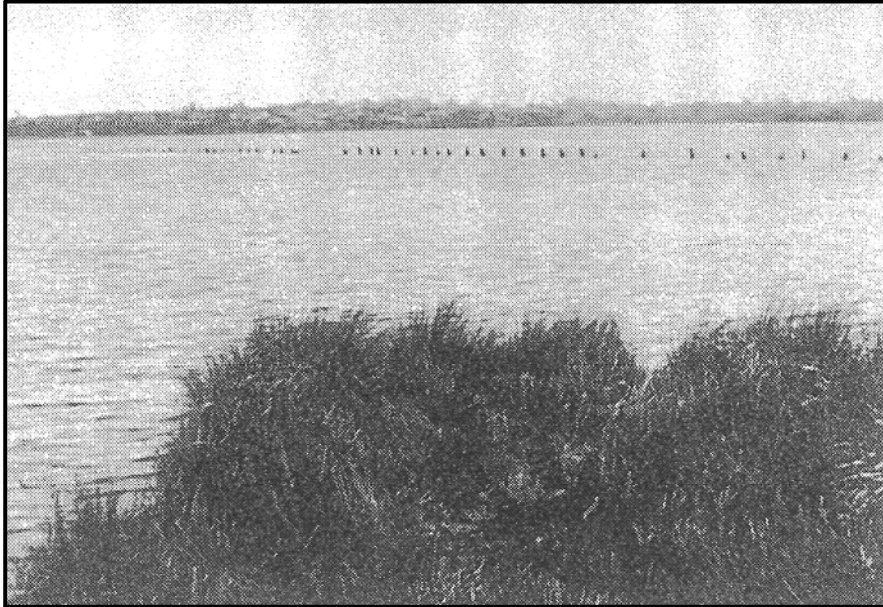
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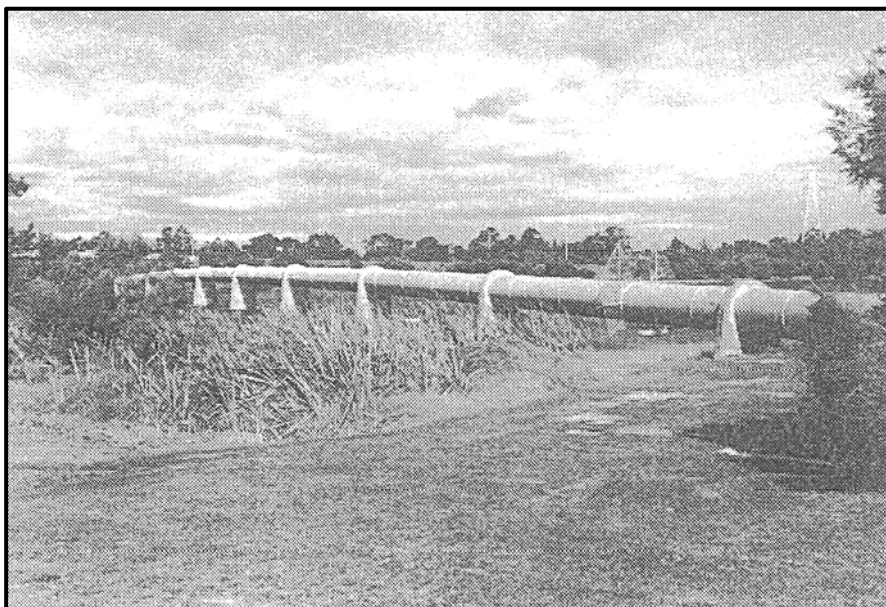
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Convict fence, Riverton, 1980
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Water pipe east of Centenary Park, 1996.
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