Canning River Residents
Environment Protection Association (Inc)

SUBMISSION TO THE CITY OF CANNING REVIEW **OF "SHELLEY**-ROSSMOYNE FORESHORE MANAGEMENT" PLAN

March 2018

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INTRODUCTION

"The original natural landscape would have been gently undulating dunes with swampy depressions with a vegetation cover ranging from open banksia to eucalyptus woodland."

This description of the lower Canning River foreshores from a 1990 report (page 15) by the former Department of Parks and Wildlife (DPaW) was applicable right through the late1950s and early 1960s when suburban development swept across what had been farmland with large bush and swamp remnants. As the foreword of the 2001 Shelley Rossmoyne Foreshore Management Plan (City of Canning) says*:"In living memory the whole area was a wilderness. Corinthian Road was a dirt track and kids ventured through the bush to reach the river".* CRREPA life member, Max Risbey, recalls visiting the area with his father in the 1950s and having to push their way through a long stretch of reeds and rushes to get to a friend's boat moored on the Canning.

Within a space of less than 30 years, the "wilderness" was gone. All that was left on the narrow foreshore reserve, squeezed between the Canning River, Riverton Drive and residential housing, were vegetation communities that mainly consisted *"of small clumps of sheoak and paperbark. These have little evidence of regeneration and the communities are stressed by lawn maintenance and weed proliferation"*, the DPaW report (1990) said*. "There are some areas of fringing rushes which add definition to the foreshore line. 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".*

It was around this time – in 1994 – that a small group of local residents formed the Canning River Residents Environment Protection Association (CRREPA) with the aim of ensuring that the Lower Canning and Bull-Creek riverine environments were restored and conserved as healthy habitats. As such, CRREPA's activities also benefit the enjoyment of the foreshore by present and future generations. As the previous descriptions and the following extract from the Management Plan (2001) foreword indicate, they faced a major challenge:*"The trees on the very edge, the paperbarks and Eucalyptus rudis and sheoaks, are not regenerating naturally. Where the reed beds are worn down or undermined, they collapse. The vegetation is ageing but there is very little sign of a new generation to replace it."*

The concluding sentence of the foreword sets out what has been CRREPA's priority over the last 24 years:" *The fringing vegetation needs protecting and replanting if the reserve is to remain stable".*

The line of foreshore vegetation remains narrow, natural regeneration remains limited and weeds proliferate each year with the winter rain. But thanks to the many thousands of hours of voluntary work by principally volunteers from CRREPA but also the Lions Club of Booragoon and on occasions Conservation Volunteers Australia, well supported by the City of Canning Natural Areas Team (NAT), there is now an almost continuous band of sedges from Yagan Reserve to Shelley Bridge that provide protection and stability for the six kilometres of foreshore. Photos taken by CRREPA volunteers over the years show that through direct intervention huge steps have been

taken in the restoration of the foreshore. This has been achieved through the combination of removal of lawn and revegetation with sedges, groundcovers and low shrubs together with natural regeneration assisted by the creation and ongoing management of a barrier strip between foreshore vegetation and lawn to enable remnant vegetation to extend naturally up the slope.

CRREPA members have recorded 79 different bird species along the foreshore (refer Appendix A) of which 37 are seen on a regular weekly basis. The birds range from the magnificent raptors like the Osprey and Australian Hobby, land birds like the Rainbow Bee-eater and Striated Pardalote to water birds like the Musk Duck and Pied Cormorant. Importantly, the list continues to grow with the most recent new sighting being the Great Crested Grebe.

But much more needs to be done to strengthen the foreshore's viability as an ecological corridor between Canning Regional Park, Yagan Wetland Reserve and the bush reserves along Bull Creek, while also providing visitors with shade and a lovely natural setting for passive recreation. This submission sets out the scientific and strategic rationale, CRREPA's vision for the foreshore reserve and the practical measures required to help bring this to fruition.

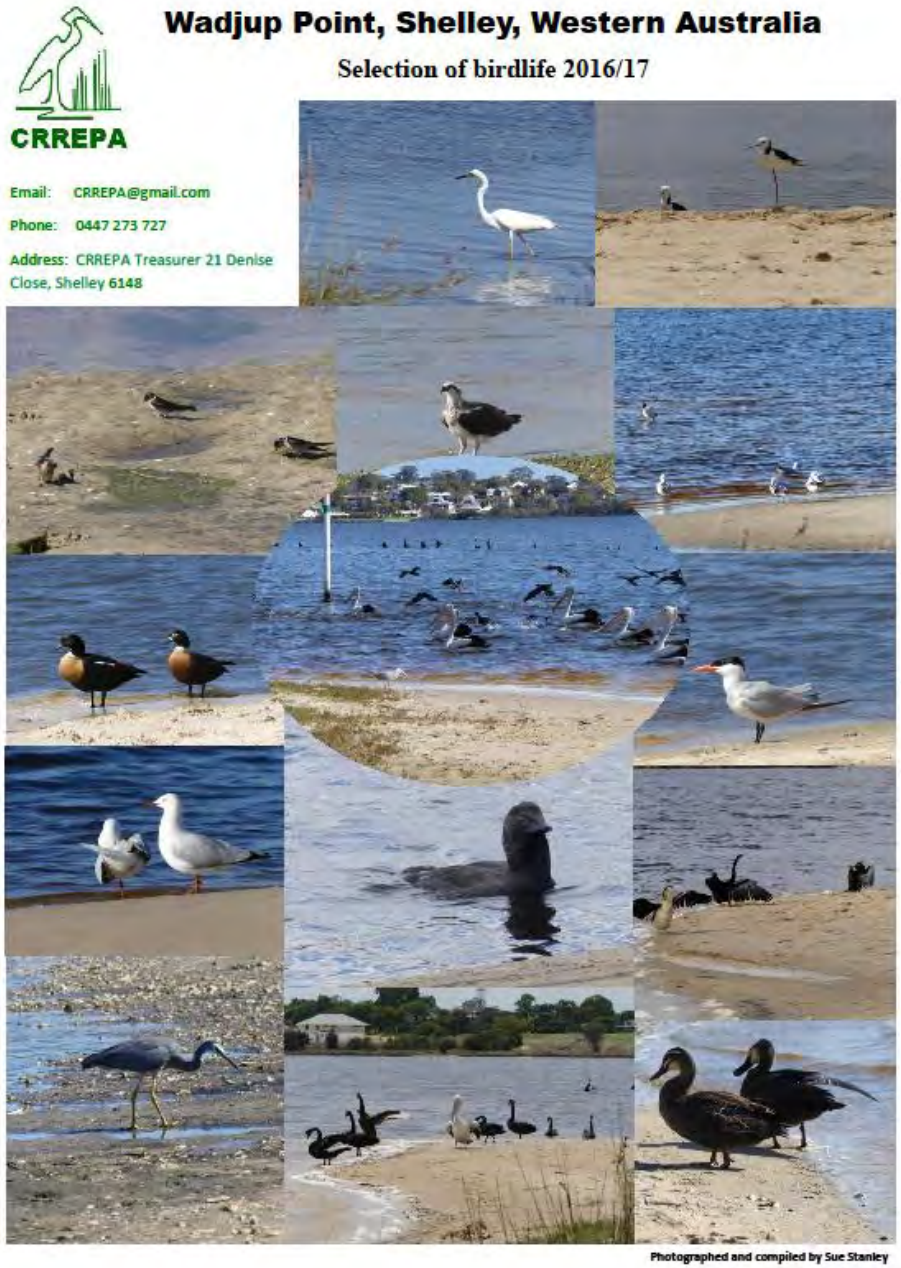
PICTORIAL OF ACHIEVEMENTS IN FORESHORE RESTORATION

Halophila Bay – CRREPA Site 23 (opp 135-137 Riverton Drive, Rossmoyne)

Grecian's Spit – CRREPA Site 16 (Beatrice Avenue, opp 241 Riverton Drive, Shelley)

Beryl Avenue – CRREPA Site 09 (opp 301-303 Riverton Drive, Shelley)

Wadjup Point – CRREPA Site 12 (opp 347-355 Riverton Drive North, Shelley)




FAIRY TERNS, Wadjup Point Photo: Sue Stanley


LITTLE EGRET, Wadjup Point Photo: Sue Stanley

THE STRATEGIC AND SCIENTIFIC RATIONALE

1/ Reports, plans, policies and strategy documents

There are already numerous complementary reports, plans, policies and strategy documents, many prepared for and endorsed by the City of Canning, which provide a strong and consistent rationale for the continuing enhancement of local environmental values:

- *2001 Yagan Wetland Reserve Management Plan* – prepared by Brooker 1996, revised by Rigo 2000
- *2001 Shelley Rossmoyne Foreshore Management Plan*
- *2006 Watercourse Reserves Management Strategies*
- *2009 Conservation of Flora and Fauna Policy ET520 (2009)* – Objective: To conserve natural flora and fauna.
- *2009 Subdivision and Developments – Environmental Policy ET512* – Objective: To assess environmental issues.
- *2009 Subdivision Landscaping Policy ET526 (2009)* – Objective: To provide an acceptable standard of reserve to be handed over to the City.
- *2009 Urban Revegetation and Greening Policy ET527 (2009)* – Objective: To improve the urban revegetation and greening of the City
- *2014 Environmental Management Strategy* – prepared by Essential Environmental
- *2014 Water Management Strategy* – prepared by Essential Environmental
- *2015 Climate Change Adaptation Plan* – Recent climate predictions suggest rainfall in Perth will decrease 10-40%, with the temperature set to increase by 0.6-3.0˚C in the next 100 years. This rise in temperature and decrease in rainfall has the potential to impact our native plants and animals through heat stress, thirst and an increased number of bushfires. In addition, climate change is predicted to result in a sea level rise and contribute to an increase in the frequency and magnitude of extreme weather events. Such events will likely increase the requirement for riverbank stabilising techniques to minimise erosion and risk to public safety. (CoC website).
- *2015 Environmental and Community Group Organisational Manual* – prepared by Ecoscape
- *2016 Sporobolus virginicus (Marine Couch) Distribution and Density Mapping (v1*) – prepared by Natural Area Consulting Management Services
- *2017 Our City, Our Future* – including grow natural areas where people and wildlife flourish
- *2017 Draft Local Biodiversity Strategy*
- *2017 Urban Forest Strategy* (under development)
- *2018 Draft Street Trees Strategy - a* recent "Canning's 1 to 10" highlighted that "*the Urban Forest Strategy will transform the streets of Canning. It will guide the City in identifying opportunities to increase the urban canopy in parks, streetscapes, conservation areas and on private property. The City's urban forest provides economic benefits as well as promoting better environmental, community and health outcomes for our residents. Trees visually make our City a more pleasurable place to live. Our 50,000 street and park trees work for us every day, improving our environment and quality of life*."

Some of the most relevant conclusions from these documents are, at the broadest level, ***2017 Our City, Our Future*** which demonstrated clearly the high value the Canning community place on the natural environment:

The relevant objectives identified by the 1500 people surveyed were: well managed natural areas supporting recreation and biodiversity and an increase in urban forest with performance indicators that the natural area management program is implemented, there is no overall decrease in natural vegetation condition and that the annual revegetation program is implemented with an increase in canopy cover.

The ***2017 Draft Local Biodiversity Strategy*** highlights the disturbing fact that the City's vegetation cover is at less than 7%, far below the 30% pre-European extent of ecological communities that is required for a healthy, sustainable natural ecosystem. Four of its five principal objectives (page 7) are directly relevant to the Shelley Rossmoyne Foreshore:

- *To increase the protection status of significant biodiversity in the City, including on local government managed or owned lands, and on private land.*
- *To appropriately manage local natural areas to reduce threats to biodiversity.*
- *To increase the viability and resilience of natural areas by establishing buffers and ecological linkages; considering the impacts of climate change.*
- *To increase the distribution and abundance of fauna, including threatened fauna.*

The ***2014 Environmental Management Strategy*** also referred to the importance of natural corridors: *Increasing revegetation activities will help to establish corridors that link natural areas via Public Open Spaces*. (page 24)

The documents most immediately relevant to the Shelley Rossmoyne foreshore are of course the 2001 *Shelley Rossmoyne Foreshore Management Plan,* the *Watercourse Reserves Management Strategies 2006 and* the *2014 Water Management Strategy.*

While the Management Plan is well out of date, many of its conclusions and recommendations are still relevant and still need to be implemented.

Just as the Management Plan's five-year term of implementation was coming to a close, the City's ***Watercourse Reserves Management Strategies*** was released and provided a powerful strategic foundation for continuing protection of the foreshore. Some of its key observations include:

> *The remnant native riparian vegetation fringing the Canning River is one of the most important components of the watercourse environment and serves a number of functions. It:*
> - *Provides food and habitats for wildlife;*
> - *Acts as a natural bio-filter to remove unwanted nutrients from surface water, stormwater and groundwater before it enters the river;*
> - *Contributes to the oxygen/carbon cycle;*
> - *Maintains the natural microclimate of the watercourse reserve;*
> - *Contributes to the visual amenity of the riparian landscape;*
> - *Supports and stabilises banks against erosion, and slows floodwater flow;*
> - *Is part of the unique gene pool of the remnant vegetation of the Perth Region.*
> - *Is a "green" corridor for fauna movement.*

When the riparian vegetation is compromised, it cannot fulfil these functions; functions that are necessary for the continuing health, amenity and biological diversity of the watercourse reserves. The importance of many of the physical characteristics of riparian vegetation has been overlooked in the past but changing community attitudes and levels of understanding and awareness are resulting in a new appreciation of its significance. (page 15)

> *Watercourse reserves are particularly well suited for the development of wildlife corridors, as they:*
> - *Link reserves and areas of urban bushland, allowing animals to travel*
> - *Provide feeding, resting and breeding refuges for wildlife*
> - *Maximise biodiversity*
> - *Provide drought refuge*
> - *Provide buffers against adjoining development.* (page 15)

The critical importance of remnant native riparian vegetation is not well understood in the general community. Wilful damage to vegetation which degrades habitats occurs for various reasons including improving access to water, enhancing views from private property, construction of cubbies and BMX tracks and wanton vandalism. (page 16)

The conversion rate of turf to bush should be carefully controlled so that the revegetation process includes a sufficient commitment of resources and time for successful establishment, before the conversion of new areas commences. Weeds can quickly reinvade newly planted areas. Effective weed control is critical to enable desirable species to form a complete cover to help suppress further weed growth. Planting up larger areas than can be properly established usually leads to a degradation of the quality of the landscape ecologically and aesthetically. (page 19)

Eight years later the ***Water Management Strategy*** (Essential Environmental 2014) recognised the value of a *"program of drainage outlet modifications where direct piped discharges into the River are shortened so that they discharge to land further up the riverbank, thereby providing opportunities for water quality of low flows to be improved prior to discharge into the river."* (page 25) Many of these projects were funded by the former Swan River Trust (now Rivers and Estuaries Division of the Department of Biodiversity, Conservation and Attractions) through its Riverbank Funding Scheme. The report recognises that: *"An opportunity to reduce the load of nutrients and other contaminants entering the Swan Canning River system is the disconnection or retrofit of water sensitive urban design systems into local drainage to promote at-source infiltration and reduce groundwater export."* (page 25)

2/ Strategic and scientific considerations for ecological linkages

Del Marco *et al* (Local Government Biodiversity Planning Guidelines, 2004) highlight that "Quite apart from ecological reasons, the protection of locally significant natural areas (LSNAs) is an essential part of maintaining a sense of place in the areas we live and work, providing opportunities for everyone to experience nature first hand, within walking distance of their homes and places of work. The importance of natural areas for passive recreation and relaxation cannot be underestimated. Perth is envied the world over for its natural setting and lifestyle opportunities. An important part of this is that natural areas allow people to encounter native plants and animals, often in their own backyard. Most people strive hard to create green, tranquil places on their own property or value such areas in public parks. Retaining natural areas that provide these values as well as protecting biodiversity is a cost efficient way to meet human needs for an aesthetic living environment, places for passive recreation and a connection with the land (Seddon 1972). Natural areas cost relatively little to 'develop' and cost far less to maintain than landscaped parks (Kaesehagen 2001 and Ecoscape 2003) (See Section 10.4).

Del Marco *et al* (2004) also provide general principles for assessing and determining local ecological linkages (LEL) that the CoC has used in developing the Draft Local Biodiversity Strategy (2017):

- Choose continuous corridors of native vegetation with a minimum width of 500 m where these are available. Thin corridors along roads mainly consisting of trees over a highly disturbed understorey are of little value except for already highly mobile species.
- If suitable continuous corridors of native vegetation are not available, choose a linkage made up of natural areas that form stepping stones between larger intact
- Aim for a linkage where the maximum distance between natural areas is no more than 500-1,000m on average (the closer the natural areas, the better) and where most of the natural areas are at least 1-4ha in size. Avoid crossing major regional roads or transport routes as these are significant barriers to fauna movement.
- Include as many natural area stepping stones within each linkage as possible.

- Include the widest range of habitat types as possible within the linkages, with similar habitats no more than 500 m to 1000 m on average apart.
- Maximise the number of linkages to any given natural area as this improves overall connectivity across the landscape and long-term viability of individual natural areas.
- Aim to maximise the width, connectivity and structural complexity of vegetation in linkages as much as possible to make them suitable for a broad range of fauna and flora. Consider the following areas as a high priority for inclusion in a linkage:
- Natural areas forming the most direct linkages with Regionally Significant Natural Areas or Regional Ecological Linkages (e.g. Canning River Regional Park).
- Natural areas that form a network of linkages across the north-south and east-west gradients of variation in ecological communities within a Local Government area (due to soils, geology, landform and climate)
- Natural areas located within 500 m of a Bush Forever Site, CALM Managed Estate, System 6 area, other areas of regional value, protected 'Local Significant Natural Areas' (LSNA) (>10 ha); These areas buffer the large, viable, already protected natural areas and improve viability of both the large sites and the natural area acting as a buffer
- Riparian vegetation along waterways (including an appropriate buffer of non-riparian vegetation)
- Natural areas at high points in the landscape that are in the line of sight of other natural areas. These are important for the movement of song birds and butterflies (John Dell, pers. comm. May 2003, Department of Environment)
- Perth Greenways that conform to the general principles listed above; Perth's Greenways are "networks of land containing linear elements that are planned, designed and managed for multiple purposes including ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use" (Tingay & Associates 1998). Determine their suitability for ecological linkage function by considering where they are and how well vegetated they are before adopting them as part of a local ecological linkage network. To improve connectivity once the local ecological linkages are identified:
- Focus management on improving the condition and hence viability of existing natural areas (through assisted natural regeneration) within the linkage before putting resources into reconstruction or creation of continuous corridors on disturbed land.
- Use bush regeneration techniques as much as possible to increase the size of natural areas within the linkage to a minimum area of 4ha.
- Where reconstruction or creation of habitat is undertaken, aim to form continuous vegetated linkages (that is, corridors) at least 100m wide. If this is not possible, ensure stepping stones of reconstructed or created habitat are at least 2ha to 4ha in size, no more than 500m to 1000m apart in the linkage. Ensure that linkages avoid crossing major regional roads or transport routes.

The right tree canopy and plant mix to enable birds to move across the suburbs

The location, type and health of tree and shrub canopy is critical in its usefulness as a corridor for the movement of native birds, insects, reptiles and mammals. Studies and anecdotal observations indicate that in addition to providing food, the vegetation provides 'protection' as the animals move along and within corridors. As such, if it is not planned and implemented to meet specific requirements, it does not serve the purpose and thus could be a wasted investment by both the City, the community and volunteers. Getting it right is critical.

Jodi Mansell's Honours Thesis (1997) determined that *"tree canopy height was the most influential factor on the birds of urban parks. Native bird species richness and diversity increased with increasing tree height. There were slight influences on birds by park age, park size and the distance of the park to the nearest remnant. It was concluded that parks are just one component of the urban matrix, which also includes remnant bushland, streets and private gardens. Together, all components of the matrix determine the bird communities in urban areas. A number of bird species will be lost from an urban area, already poor in species richness, if managers do not adopt a holistic approach."*

In Mansell's study, "*ninety-seven (97) percent of park users thought that birds should be encouraged to inhabit suburban areas."*. The results suggest that while birds are not considered an important reason for visiting parks, most birds are liked by park users and there is a general consensus that birds should be encouraged in suburban areas. She concludes that methods to encourage birds into suburban areas include establishing habitat corridors between isolated parks and remnant bushlands, ensuring a diverse, native vegetation of differing strata levels, controlling cats and dogs, reducing lawn cover, retaining some large, old trees with suitable nesting holes and, narrowing the gap between the public's interest and their knowledge regarding birds.

Neville Passmore (Perth NRM, 2017) states that while it's fine to have plenty of tree canopy cover, if there is not an understorey and ground cover, many birds will be reluctant to enter, roost or nest because the garden (or parklands) lack protection and places to hide.

Passmore also notes that there is a very strong case for protecting existing native trees in urban areas. A study of one old jarrah tree in Kings Park revealed a level of visitation that is almost incredible. This one mature jarrah tree supports 83 species of native animals, birds, reptiles and insects. Not a tree but a condominium. By way of contrast wind pollinated European trees don't have to attract wildlife to achieve pollination.

3/ Conclusion

With all this body of research, endorsed strategies and policies behind us, we undoubtedly now know quite enough about the directions we need to take. There is an imperative to now ***get on with the doing***, including bringing the community along with increased understanding of the importance of a healthy natural environment and tree canopy across foreshore, natural bushland, streets, parks, drains, businesses, institutions and private gardens. For the Shelley Rossmoyne foreshore, the critical need is a prescriptive management plan of action which fulfils the description of the 2000 Australian and New Zealand Environment and Conservation Council (ANZECC) best practice guide of management plans for protected areas:

> "……*the interpretation and integration of a range of policies, treaties, strategies, business plans and legislative requirements into a geographical overlay that provides an essential framework to guide management of a particular reserve and assure the public that the area is being responsibly managed".*

THE VISION AND APPROACH TO ACHIEVEMENT

The Shelley-Rossmoyne foreshore has the following key characteristics:

(i) Highly modified as result of suburban development, particularly land reclamation and development of Riverton Drive – including removal of wetlands and vegetation, changes in soil profile, introduction of grasses and various weeds.
(ii) Narrow line of foreshore vegetation;
(iii) Close proximity through most of its length to high-priced real estate, the value of which is strongly related to its riverside location.
(iv) Divided by the path into the foreshore strip - which has the main conservation values and is therefore primarily the responsibility of the Council's Natural Areas Team – and the strip from Riverton Drive to the path, which is primarily the responsibility of Council Parks and Gardens staff.
(v) High levels of public use for passive recreation.

Against this background, CRREPA's vision for the Shelley-Rossmoyne foreshore by 2030 is:

A reserve that is well managed to maximise its conservation and scenic values while providing excellent opportunities for passive recreation - walking, running, cycling, canoeing, nature observation and similar activities that require minimal facilities or development and have minimal environmental impact.

Between the Canning River and pathway is a largely continuous strip of healthy, multi-storey, multi-age vegetation, predominantly of local Canning region provenance that forms a viable ecological corridor between the Canning Regional Park and the bushland reserves along Bull Creek. It is therefore of environmental significance to the region as well as to the immediate Shelley-Rossmoyne locality.

Paralleling the river to path band of native vegetation is an open grass strip between the dual use path and Riverton Drive which has well-spaced, local region Eucalypts that provide good shade for residents, visitors and habitat for birds, reptiles and insects.

By continually promoting public understanding of the values of the native vegetation corridor and where necessary, fencing it, trampling and creation of informal tracks is limited. This, along with continual work by volunteers and council staff to contain the spread and limit the density of weeds, have contributed to sustained levels of natural regeneration, complemented by the creation of barrier strips for the spread of sedges and other native ground covers plants. Where appropriate, the longstanding program of turf removal and replacement with native vegetation has continued. These plantings are sustained during their first few years in dry periods by regular watering from an extended network of watering points along the foreshore.

An audit of all stormwater pipes along the foreshore that flow directly into the Canning River has determined which ones deliver water with low levels of pollutants and therefore require no modification and others which should be shortened to discharge into vegetated

biofilter trenches. These simple, low cost modifications have produced twin benefits of improving water quality of low flows before discharge into the river and creating valued habitat in the damp, thickly vegetated depressions.

Public, physical access to the River is through designated walkways, fishing jetties and beach areas that have been the subject of low profile works to protect them from erosion. The much-valued visual access to the river has been provided by a combination of measures. Small knolls, points and other spots along the foreshore that provide broad vistas of the river have been designated as viewing spots with seating provided. Trees planted along the road-to-dual use path grass strip have been selected and managed to maximise canopy cover while minimising visually obstructive lower branches. Similarly, sheoaks *(Casuarina obesa* and *Allocasuarina* sp*)* which had been spreading along the foreshore as native woody weeds forming virtual monocultures and visual barriers, are regularly trimmed of their lower branches and where necessary removed.

RECOMMENDATIONS TO HELP ACHIEVE THE VISION

1/ Summary

- Protect high conservation areas along the foreshore from people, dogs off leash and watercraft, including:
    - Yagan Wetland
    - Bull Creek
    - Pleasant Place Dampland
    - Grecian's Spit – resting and foraging area for waterbirds opposite Beatrice Avenue
    - Wadjup Point – resting and foraging area for waterbirds
    - Wide sedgebanks – from Park Beach Close to Shelley Bridge including lagoon.
- Continue to work in partnership with CRREPA, the local volunteer, community conservation group.
- Maintain 'ranch-style fencing' that delineates points access to river and protects the adjoining natural areas.
- Identify which areas are best suited to revegetation through removal of grass and planting local native sedges, groundcovers and low shrubs; these will require boundary fencing, follow-up weeding, watering and replacement planting for a period of approximately five years.
- Maintain the barrier strip between foreshore vegetation and lawn, thus enabling the remnant vegetation to naturally regenerate up the slope, reducing investment costs of active rehabilitation.
- Substantially increase the number of trees – particularly local region Eucalypts - along the foreshore (both in Natural Areas and Parkland), and maintain succession planting for senescing trees before they die.
- Maintain existing river access points. Monitor for erosion and undertake preventative/restorative measures as needed. If informal tracks are to be retained and are subject to erosion, they need to be hardened.
- Review location of sheoaks *(Casuarina obesa* and *Allocasuarina* sp) in relation to their impact on understorey and ultimately foreshore stability. For example, the allelopathic effect of sheoaks inhibits the growth of other species such as at Beryl Avenue. (Refer Appendix 1). Prune lower branches or remove as necessary.
- Audit all stormwater pipes along the foreshore that flow directly into the Canning River to identify which ones deliver water with low levels of pollutants and therefore require no modification and others which should be shortened to discharge into vegetated biofilter trenches. Retain some stormwater pipes as is, so that birds are able to access fresh water (eg opposite 189 Riverton Drive, Shelley) frequented by Black Swans, Ducks (Pacific Black, Mountain and Musk) and Silver Gulls).

2/ Specific recommendations

This recent CRREPA contribution collates details of a foreshore walk from Yagan Wetland to Shelley Bridge to review the effectiveness of existing foreshore and parkland vegetation as a local ecological linkage (LEL) (CoC Draft Local Biodiversity Strategy, 2017).

Section	**Location** (Riverton Dr)	**Recommended management actions**
1	Yagan - 1	Given their ages and important role in both stabilising the bank and providing habitat, monitor melaleucas and arrange succession planting where necessary
1	9-13	Plant Saltwater Paperbark *(Melaleuca cuticularis)* among the Sea Rush (*Juncus kraussii)* to connect melaleucas downstream and upstream of this stretch Priority: high - mainly because the management action requires minimal effort - planting - with little or no follow-up maintenance action so that trees should become well established in the life of the management plan.
1	35-39	Rehabilitate understorey where the foreshore path used to be located with *Facinia nodosa*, *Centella asiatica* and *Melaleuca preissiana*. Remove sheoak opposite No. 37 (refer Appendix B).
2	51-65	To ensure continuity of the Canning River ecological link, it is essential that this long section be successfully revegetated with a mix of ground covers, shrubs and trees (including Flooded Gum *(Eucalyptus rudis)*) while still affording nearby residents views of the river and Mt Henry bridge. • Soil testing to identify deficiencies that may need to be rectified to enable long-term survival of native plants • Further trial plantings of species including Club Rush (*Facinia nodosa)*, *Conostylis* sp and *Dianella revoluta* to identify those that have greatest prospects of long term, good growth • Ongoing communication/consultation with nearby residents to seek their understanding of and support for the revegetation initiatives • Compliance action in response to acts of vandalism and theft including installation of signs similar to those used by the former Swan River Trust and installation of CCTV cameras with signs advising of their use in the area. Priority: high - given the lack of trees along the path to road section and the time required for them to establish and mature.
3	75-79	To ensure continuity of tree cover, plant Flooded Gum *(Eucalyptus rudis)* in the parkland area and *Melaleuca cuticularis* (Saltwater Paperbark) n the sedges.

Section	Location (Riverton Dr)	Recommended management actions
3	87	Cut back drain to end in a swale that will act as a bio-filter for the stormwater.
3	91-97	Undertake appropriate works to prevent further erosion of the beach area opposite Tuscan St Plant Eucalypts between the dual-use-path and road to address the severe deficiency, to complement the vegetation in the river corridor and provide shade for the path. Replace dead and senescent paperbarks *(Melaleuca rhaphiophylla)* In the current tree cover gaps above the sedges, plant Saltwater Paperbark *(Melaleuca cuticularis).* Priority: high - given the lack of trees along the DUP to road section and the time required for them to establish and mature.
3	99-105	Tuscan Street reserve with playground - monitor trees for succession planting
3	109-111	Bank erosion – remove grass and revegetate with sedges *Juncus krausii* and *Baumea juncea*.
3	113-115	One of the original CRREPA sites. The sword sedge *(Lepidopsperma gladiatum)* holds the banks really well. Sheoaks need to be actively managed with thinning and pruning up.
3	Corinthian Rd - 117	Erosion management required on steep slope (Note: road run-off from Corinthian Road could be dispersed to reduce impact.
3	119	Community Rivercare Program Grant: Rehabilitation of grassed area between sedges and dual use path planned for 2020
3	131	Very narrow foreshore section that is eroded. Access path needs logs or something to prevent further erosion
4	133	Newly planted slope needs tree cover at base of the slope and dead paperbark (*Melaleuca cuticularis)* needs replacing.
6	151 - Second Ave	Major beach area opposite Second Avenue – mainly used by water-skiers. Needs trees *(Eucalyptus rudis)* for shade as well as ecological linkage. Check on status of exposed pipe. It is subject to erosion. Rail fences to be maintained.
6	155-161	Natural area has good understorey and mid-storey but requires overstorey of Flooded Gum *(Eucalyptus rudis)* in the parkland area.

Section	Location (Riverton Dr)	Recommended management actions
		Exclusion fence not to be removed.
7	171-185	Establish more Flooded Gums *(Eucalyptus rudis)* in the parkland area for both shade and movement of birds across this expansive recreation area.
7	187-189 (pipe)	Expand the sedge bank (*Juncus kraussii* and *Baumea juncea*) and plant Saltwater Paperbarks *(Melaleuca cuticularis)* in sedges. Retain stormwater drain as freshwater supply for water birds.
7	Rob Bruce	Need trees to link Rob Bruce Park better with foreshore. Flooded Gums *(Eucalyptus rudis)* in parkland and Saltwater Paperbarks *(Melaleuca cuticularis)* in sedges.
~~7~~	197-203	Encourage natural regeneration
7	203-205	Manage the grassed area of the beach access to be ensure it does not invade the adjoining natural areas. Succession planting of Saltwater Paperbarks *(Melaleuca cuticularis)* in sedges.
7	205-207	Spray grass and weeds to encourage spread of *Juncus kraussii* up the bank.
7	207-211	Encourage natural regeneration to extend toward the dual-use-path.
7	225	Living Drain - cut pipe back to create living drain. Open pipe, NOT bubble-up pit. Replace dead Saltwater Paperback *(Melaleuca cuticularis).*
7	227-Pleasant	Very important remnant Dampland of high conservation value. Note: Swamp Sheoak *(Casuarina obesa)* suckers are a significant problem, need to be actively managed.
7	Pleasant Place	Living Drain - cut pipe back to create living drain. Open pipe, NOT bubble-up pit. Replace dead Saltwater Paperback *(Melaleuca cuticularis).*
7	229-231	Revegetate steep slope with *Hakea prostrata* (similar to NAT project opposite 133). Replace dead and scenescing Saltwater Paperback *(Melaleuca cuticularis).*
8	239-241	Community Rivercare Program Grant: Rehabilitation of grassed area between sedges and dual use path planned for 2018.

Section	Location (Riverton Dr)	Recommended management actions
8	243-Beatrice	Grecian's Spit – continue to protect this important resting and foraging area for waterbirds. This is also important freshwater access site for waterbirds and bushbirds. Exclusion fence not to be removed. Investigate small, low-impact bird viewing platform.
9	Shelley Beach Park	Establish more Flooded Gums *(Eucalyptus rudis)* and *Tuarts (Eucalyptus gomphocephala)* in the parkland area for both shade and movement of birds across this expansive recreation area. Also establish more Saltwater Paperback *(Melaleuca cuticularis)* in sedge bank
10	The Paddock	Establish more Flooded Gums *(Eucalyptus rudis)* and *Tuarts (Eucalyptus gomphocephala)* in the parkland area for both shade and movement of birds across this expansive recreation area
11	Dog Beach and associated parkland	Expand the sedge bank (*Juncus kraussii* and *Baumea juncea*) and plant Saltwater Paperbarks *(Melaleuca cuticularis)* in sedges. Exclusion fence not to be removed.
11	Sailing Club to Fishing Jetty and associated parkland	High level erosion area. Monitor and infill plant the existing rehabilitation projects of the former Swan River Trust (Sailing Club to Spit) and City of Canning, CRREPA and Rossmoyne Primary School Bushrangers' rehabilitation (around the fishing Jetty). Exclusion fences not to be removed.
	Fishing Jetty-293	Encourage natural regeneration. More trees needed on foreshore to continue canopy up to the corner of Riverton Drive where the Casuarinas start again.
12	293-307	Encourage natural regeneration and establish trees (Flooded Gum or Tuart) in parkland area.
12	311-317	Encourage natural regeneration and replace dead and senescing trees.
13	323-343	Encourage natural regeneration and plant *Melaleuca cuticularis* in the sedge bank.
14	345-347	Needs soil enrichment to encourage growth of ground cover.
	Wadjup (347-355)	North-west facing beach – future rehabilitation of grassed area. North-east facing foreshore – Community Rivercare Program Grant: Rehabilitation of grassed area behind sedges in 2018.

Section	Location (Riverton Dr)	Recommended management actions
14	357	Eroded beach – retain grassed area, but requires erosion control work on bank.
15	359-363	Encourage natural regeneration and replace dead and senescing trees.
15	367-369	Remove grassed area and rehabilitate from sedge bank to dual use path.
15	371	Passive encroachment of Sheoaks will replace the grass between sedge bank and dual use path. Rehabilitation with local native species is not recommended due to growth inhibiting influence of Sheoaks (refer appendix B)
16	Zenith Park	Replace lawn with local native trees, shrubs and understorey as important local ecological link.
16	Park Beach Close	Park Beach Close parkland - increase trees and shrubs to include eucalypts *(Corymbia calophylla, Eucalyptus todtiana, E. gomphocephala* and *E. rudis)* and Banksias *(Banksia littoralis, B. menziezii* and *B, attanauta).*
16	Parallel to Leach Highway	Protect the high conservation value of the wide sedge banks.
16	Shelley Bridge Lagoon	Protect this important local lagoon. Establish Saltwater Paperbarks *(Melaleuca cuticularis)* on bank.

APPENDIX A – Birds sighted by CRREPA along the Rossmoyne-Shelley Foreshore (WA) 1991-2018

Canning River Residents
Environment Protection Association (Inc)

Birds sighted along the Rossmoyne-Shelley WA foreshore (Yagan Wetland to Shelley Bridge)

Which ones do you see?

Updating the list: CRREPA welcomes your contributions of bird sightings. Just contact Grecian on 9354 9734 so they can be added to the list

RAPTORS (5)
- ☐ Osprey
- ☐ Little Eagle
- ☐ Australian Hobby
- ☐ Black Shouldered Kite
- ☐ Brown Falcon

LAND BIRDS (29)
- ☐ Pallid Cuckoo
- ☐ Black Faced Cuckoo Shrike
- ☐ Red Wattlebird
- ☐ Little Wattlebird
- ☐ Rainbow Bee-eater
- ☐ Mistletoe Bird
- ☐ Striated Pardalote
- ☐ New Holland Honeyeater
- ☐ Singing Honeyeater
- ☐ Brown Honeyeater
- ☐ White-cheeked Honeyeater *(post Feb'04)*
- ☐ Silver Eye
- ☐ Red Tailed Black Cockatoo
- ☐ White Tailed Black Cockatoo *(post '04)*
- ☐ Galah
- # ☐ South Western Corella *(post Feb'04)*
- ☐ Red Capped Parrot
- ☐ Ringneck (28) Parrot
- ☐ Welcome Swallow
- ☐ Tree Martin
- ☐ Willie Wagtail
- ☐ Australian Magpie (Mud) Lark
- ☐ Magpie
- ☐ Australian Raven
- ☐ Southern Boobook *(post '04)*
- ☐ Butcher Bird *(post '04)*
- ☐ Rufous Whistler *(post '04)*
- ☐ Western Gerygone *(post '04)*
- ☐ Grey Fantail *(post '04)*

FERALS/ESCAPEES (6)
- ☐ Rainbow Lorikeet
- ☐ Feral Pigeon
- ☐ Laughing Turtle-dove
- ☐ Spotted Turtle-dove
- ☐ Cockatiel
- ☐ Laughing Kookaburra

Re Corella, origin unsure, could be crosses

WATER BIRDS (39)
- ☐ Nankeen Night Heron
- ☐ Large Egret
- ☐ Little Egret *(Dec'16 STANLEY)*
- ☐ White Faced Heron
- ☐ Pacific Heron *(Mar '15)*
- ☐ Sacred Ibis
- ☐ Spoonbill
- ☐ Black Swan
- ☐ Avocet
- ☐ Greenshank
- ☐ Hooded Plover
- ☐ Black-winged Stilt
- ☐ Common Sandpiper *(post '04)*
- ☐ Black-tailed Native Hen *(post '04)*
- ☐ Pied Oystercatcher *(post '04)*
- ☐ Sooty Oystercatcher *(post '04)*
- ☐ Clamorous Reed Warbler
- ☐ Buff-banded Rail
- ☐ Spotless Crake *(Jun '14)*
- ☐ Little Grassbird *(post '04)*
- ☐ Australasian Grebe
- ☐ Hoary-Headed Grebe *(post '04)*
- ☐ Great Crested Grebe *(Mar'17)*
- ☐ Eurasian Coot
- ☐ Maned Goose
- ☐ Musk Duck
- ☐ Pacific Black Duck
- ☐ Mountain Duck / Shelduck *(post '04)*
- ☐ Caspian Tern
- ☐ Crested Tern *(post '04)*
- ☐ Fairy Tern
- ☐ Darter
- ☐ Little Pied Cormorant
- ☐ Pied Cormorant
- ☐ Great Cormorant
- ☐ Little Black Cormorant
- ☐ Sacred Kingfisher
- ☐ Pelican
- ☐ Silver Gull

YOUR ADDITIONAL SIGHTINGS

Birds recorded 1991–2018 by Grecian Sandwell, member of CRREPA. *(updated 27th March 2018)*

WHITE FACED HERONS, Fifth Ave Photo: Colma Keating

AVOCETS, Grecian's Spit Photo: Sallie Bryant

APPENDIX B – Impact of *Casuarina obesa* (Swamp Sheoak) on understorey and bank stability

Swamp Sheoak *(Casuarina obesa)* has become invasive along the Rossmoyne-Shelley Foreshore as well as in many rehabilitation and regeneration sites on the Swan Coastal Plain. It grows from suckers along the mature roots. In some areas the 'allelopathy' (the biological phenomenon by which an organism produces one or more biochemicals that influence the germination, growth, survival, and reproduction of other organisms) has resulted in the understorey either being 'knocked off' and or restrained from growing.

Beryl Avenue Site (CRREPA Site 09b) opposite 303 Riverton Drive, Shelley dramatically highlights this problem where the once dense and healthy sedge bank is being 'wiped out' with almost half of the plot's understorey now gone. It is anticipated, that over time the foreshore bank in this area will be compromised. At a time when the city is finalising the Local Biodiversity Strategy an overarching management approach is required to cope with this woody weed that is having a detrimental effect on other species planted for habitat and foreshore stabilisation.

The photos show the site in 2002 when it was first rehabilitated with the Rossmoyne High School Bush Rangers.

2002

2005

2017

Suckering of Sheoaks from roots

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