Fitzgerald Coast Canoe Trails Planning Study

an addendum to the

Shire of Ravensthorpe Trails Master Plan

Prepared for the Shire of Ravensthorpe

in November 2013 by

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Acknowledgements

Useful input to this Report was received from those members of the community who attended the project consultation meeting held in Hopetoun on Monday October 28th

Particular support and advice from the following people is gratefully acknowledged:

Matthew Hunt, Manager Recreation & Community Services, Shire of Ravensthorpe
Peter Masters, DPaW, Ravensthorpe Works Centre, Albany District

Local input to projects such as this is vital,
and the consultants thank these people for making their time available to be involved in the process.

The Shire of Ravensthorpe would like to gratefully acknowledge grant funding received from:

lotterywest supported

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EXECUTIVE SUMMARY

During the period between January and April of 2013 a Trail Master Plan was prepared for the Shire of Ravensthorpe. This document recommended 5 priority trail projects, and provided compelling and detailed information relating to their development. The five priority trails recommended were:

1. The Hopetoun Town Heritage Trail
2. The Ravensthorpe Heritage Walk
3. The Kundip Loop
4. The Mt Desmond Circuit
5. The Ravensthorpe Town Heritage Drive Trail

Further, the Executive Summary of the Trail Master Plan went on to say:

"Other potential trails that became apparent during this planning project are a set of canoe trails across the several water-bodies within the Shire…

The lower reaches of the Hamersley, Phillips, Jerdacuttup and Oldfield Rivers and the upper parts of the estuaries they join, and Dunns Swamp, are outstanding places to paddle a canoe to soak in the nature and enjoy a serene experience. Ravensthorpe Shire is very fortunate to have such an amazing group of waterways that lend themselves so well to a canoe trail network… However, the size of such an undertaking is beyond the ability and scope of this current Master Planning and trail development project."

Acting in an admirably pro-active fashion, the Shire proceeded to apply to the Lotterywest Trails Grant program for additional funding. This report is the outcome of that process, and it should be seen to be an Addendum to the Trail Master Plan. Work involved was undertaken in a streamlined fashion, being somewhat constrained by the project budget. The key steps undertaken were as follows:

a) Review of outcomes and general background as established in the Trail Master Plan;
b) Internet and telephone research, seeking useful information and examples of canoe trails elsewhere in Australia and around the world;
c) Community consultation – meeting held at Hopetoun on Monday October 28th;
d) Field work (5 days), involving exploring each of the 5 water bodies in detail via a small dinghy;
e) Follow-up consultation and review of field work outcomes.

From the outset it needs to be recognised that canoe trails are comparatively under-represented in the spectrum of recreational trails across Australia. This is particularly true in Western Australia, despite well more than a decade of funding for trail projects via Lotterywest and the Department of Sport & Recreation. Having said that, the popularity of land-based trails – and the uptake of trail-based activity by an ever-widening spectrum of the population – has now flowed on into a demand for designated "water trails" that also encourage outdoor activity by defining a place to undertake it and a route to follow, and providing information that makes the experience both safe and enjoyable.

Field work associated with this project confirmed that Ravensthorpe is indeed blessed with outstanding resources should it wish to cater for this growing market. The four rivers involved (Hamersley, Phillips, Jerdacuttup and Oldfield) all proved to offer engaging, safe and relatively easy paddle routes, and the steps involved in their development into high-quality canoe trails are set out in this report.

The fifth water-body, Dunn's Swamp, is not recommended for development. There are two clear reasons for this: firstly, it turned out to be smaller than anticipated – too small to provide a worthwhile outing – and secondly, it hosts a major waterbird nesting site along its southern shores, and it would be inappropriate to encourage paddlers into a situation where their mere presence could negatively impact this activity.

Canoe trails themselves are neither expensive nor difficult to develop. After all, the "trail" is already there! Even route marking is not required – after all, it is hard to get lost on rivers of this size. Further, interpretive signage (often a major cost component in walk trails) is not feasible on water trails, and so this information goes into the brochure instead – a much less costly process. Indeed, research into best practice around the world indicated that the provision of a high-quality and informative fold-out map (printed on waterproof paper) was the crucial step in engaging with potential paddlers.

This report contains extensive material about just what information should be provided, and highlights the need for things like clear and concise safety checklists, an easy-to-read map with distances between recognisable points, and relevant wind, weather and water condition warnings. The preparation of these brochures constitutes a significant part of the development of the proposed trails.

However, perhaps the most significant component of these projects is the upgrading and/or construction of the launch sites involved. In all cases an existing site is recommended for use – but all four require substantial work to bring them to the kind of standard necessary to support trails such as these. While the costs involved are considerable, the outcomes will benefit a far wider cross-section of the community than just visiting paddlers.

All of these (perhaps with the partial exception of the Jerdacuttup) are sites which have been used for many years – and all are suffering the ravages of time. Yet they can all be turned into places that would be a pleasure to go for a simple waterside picnic, thereby expanding the suite of nature-based opportunities available to both residents and visitors alike. And in all four cases *pre-existing issues* would be resolved via their redevelopment.

While the actual trail component of these four projects requires virtually no infrastructure, developing the access / launch points does. A number of items of hardware are recommended at each of the sites, including picnic tables, vehicle management barriers (bollards and/or post & rail), interpretive shelters and simple sealed-vault toilets.

Given the likelihood that the Shire of Ravensthorpe will be undertaking a number of site developments associated with nature-based projects in the coming years, it is strongly recommended that the Shire develop a simple "Style Guide" to guide the selection of hardware items such as these. (and more) Presenting a consistent and stylistically appropriate suite of visitor site infrastructure, hardware, materials, colours and textures right across the Shire will go a very long way to stamping Ravensthorpe as a community that fully appreciates the beauty and value of its natural landscapes – and the heritage of the townsites.

In the light of this, specific makes or models of infrastructure are not defined in this report. Rather, an allowance has been made in the cost estimates that will be sufficient to cover a range of options in each case. It is then hoped that the Shire will see fit to develop the proposed "Style Guide" via a process of community and stakeholder consultation during the next 12 months. This would then be used to select / nominate the exact items to be used at each of these sites if/when the implementation program proceeds.

It would be a great pity if hardware had to be chosen for these site developments independent of a broader planning process that could set guidelines for the whole Shire. This process should be undertaken in tandem with the "Ravensthorpe Palettes" process outlined by Sally Malone Design in the recent main street planning work, thereby producing an integrated suite of recommendations for both in-town and nature-based sites.

Ravensthorpe has the opportunity to get right something that so many others have gotten very wrong elsewhere in the state – and it is hoped that this project can be the catalyst for kick-starting that process. An allocation has been made in the table of costs for this joint Style Guide / Ravensthorpe Palette planning process, and the Shire is urged to undertake this work *prior to commencing the main-street upgrade in either Ravensthorpe, the waterfront project in Hopetoun, or any of the trail projects in this report or the Trail Master Plan.*

The four trails recommended for development in this report constitute a rare opportunity for a single Shire in the West Australian context. Flat-water, family-friendly canoe trails are rare in this state – and to have four within easy reach of a Hopetoun or Ravensthorpe further outlines the blessing that is the nature of this place.

The trails recommended for development are:

- Hamersley River, from the "old" National Park recreation site northwards: 11.88 km
- Phillips River, from the existing launch site in Phillips River reserve, northwards: 9.94 km
- Jerdacuttup River, from a formalised launch site just south of Springdale Rd, southwards: 14.80 km
- Oldfield River, from the existing launch site off Munglinup Beach Rd, northwards: 8.78 km

The table below brings together all of the costs associated with the recommendations of this Report:

Item	*Total cost*
Interpretive elements, as previously outlined (brochures, panels, websites)	74,280
Directional and informational signage – design and supply	6,180
Infrastructure and installation works – Hamersley River	28,960
Infrastructure and installation works – Phillips River	88,940
Infrastructure and installation works – Jerdacuttup River	67,140
Infrastructure and installation works – Oldfield River	75,850
Preparation of a hardware and materials "Style Guide"	40,000
SUB-TOTAL (not inc GST)	$381,350
Contingency allowance for cost increases / over-runs (10%)	$38,135
TOTAL PROJECT BUDGET (not inc GST)	$419,485
TOTAL INC GST ($)	$461,433.50

At a first glance this may seem like a *substantial* total cost for the project. However, in reviewing the table above and its implications for the future of this project, several matters are worthy of consideration:

- Site works are costed at contractor rates (as provided by the Shire), which may result in a higher overall figure than if the work was undertaken by the Shire's own crews;
- Adding toilets to this project brings a "big ticket" item that has significant impacts on the bottom line. These alone account for $75,000 of the total budget.
- It is worth remembering that four trails are involved in this project. Taken together, they form a suite of attractions that few Shires can lay claim to.
- There are a number of grants that would appear ideally suited to funding this implementation project – in particular, the Lotterywest Trail Grant program is likely to be highly amenable to supporting canoe trails, something they rarely have the opportunity to do (For information about potential funding sources and grant programs refer to the Trail Master Plan prepared for the Shire in May 2013).

- In all cases (perhaps with the exception of the Hamersley) these projects address existing river access issues. They ameliorate unacceptable environmental impacts and visitor access limitations that blight the various launch points, and will deliver benefits to a broader cross-section of the community than just those who might use these trails.
- A quite conscious decision has been made to pitch this project above and beyond the common kind of nature-based tourism attraction. This choice was always going to have ramifications in terms of cost. However, as with most things in life "you get what you pay for". An investment of this level is entirely in keeping with the world-class quality of the natural environment in the Shire of Ravensthorpe.

  However, it is also feasible that these trails could be developed without the majority of the launch site enhancement works outlined in this report. Undertaking essential works only in order to provide reasonable year-round 4wd access, providing no additional site infrastructure, and developing the interpretive component necessary to promote the trails could potentially be done for somewhere in the vicinity of $150-180,000.

  The question here is whether or not this is actually value for money; whether it delivers the kind of top-shelf outcome that this extraordinary landscape warrants.
- In the end, it must be recognised that this project has the capacity to be part the foundation of a significant district-changing process. As such, it comes at a cost. Pruning can be undertaken, but that too will have a cost. In this case, it is highly like that boldness will be rewarded, especially as the Ravensthorpe Shire is blessed with such remarkable natural attractions upon which to base projects such as this.

SECTION 1: PROJECT BACKGROUND AND BRIEF

Background to the Canoe Trails Planning Study

During the period between January and April of 2013 a Trail Master Plan was prepared for the Shire of Ravensthorpe. This document recommended 5 priority trail projects, and provided compelling and detailed information relating to their development. The five priority trails recommended were:

1. The Hopetoun Town Heritage Trail
2. The Ravensthorpe Heritage Walk
3. The Kundip Loop
4. The Mt Desmond Circuit
5. The Ravensthorpe Town Heritage Drive Trail

The Phillips River above Culham Inlet, where Phillips River Shire Reserve allows access to the river and makes an ideal launching site for canoes and kayaks

Further, the Executive Summary of the Trail Master Plan went on to say:

"Other potential trails that became apparent during this planning project are a set of canoe trails across the several water-bodies within the Shire…

The canoe trails present a particularly compelling case for development, as a unique situation and opportunity exists for a truly outstanding set of canoe trails on the four significant and beautiful rivers and their estuaries, and a freshwater swamp, spread across the southern part of the Shire. However, the size of such an undertaking is beyond the ability and scope of this current Master Planning and trail development project. With the considered importance of the canoe trails package, assistance was provided to the Shire of Ravensthorpe to develop an application to Lotterywest to fund a separate canoe trail development plan. When completed, this canoe trail plan would be an adjunct to this Master Plan."

Later in the Master Plan, Part 2 Section 2 had this to say about the canoe trail prospects:

The potential for canoe or paddling trails was investigated and it was found that a very unique opportunity exists for a quite remarkable set of canoe trails. The lower reaches of the Hamersley, Phillips, Jerdacuttup and Oldfield Rivers and the upper parts of the estuaries they join, and Dunns Swamp, are outstanding places to paddle a canoe to soak in the nature and enjoy a serene experience. Ravensthorpe Shire is very fortunate to have such an amazing group of waterways that lend themselves so well to a canoe trail network.

The Hamersley and Phillips Rivers are in Fitzgerald River National Park, and in principle support for these trails was discussed with DEC. Indeed, the Fitzgerald River National Park Management Plan supports such recreational activities. The enormity of the opportunity of the canoe trails is beyond the scope of including development plans for them in this Master Plan. However their unique potential was recognised during this planning project and a solution to their development arrived at (see next section Priority Trails). During the fieldwork for this master plan several vehicles carrying canoes and kayaks were observed, making it quite apparent that this type of activity is growing in popularity, and catering for it with a set of high quality canoe trail will be well received.

This Planning Study then, is the Addendum to the Trail Master Plan, investigating the prospect of these canoe trails, and providing detail which could potentially lead to their future development.

PROPOSED SHIRE OF RAVENSTHORPE CANOE TRAILS

The project brief

It is important to understand the Brief for this project, in order to be able to ascertain what to expect in terms of outcomes. The contract let by the Shire included the following summary of the project and the work to be undertaken:

Recreational canoeing and kayaking is booming at present – particularly among the travelling public - as was evidenced by the number of vehicles seen in either Ravensthorpe or Hopetoun with canoes or kayaks on the roof. Many of these appear to belong to families, though some are younger couples and some are folk of more mature years. Opportunities for safe, well interpreted and officially designated flat-water paddling trails are scarce right across Australia, and WA has few such facilities.

The Shire of Ravensthorpe is blessed with 5 significant bodies of easily navigable water, all within little more than a 45 minute drive of Hopetoun. This a unique situation, and one worthy of some considerable attention. These are (from west to east):

- Hamersley Inlet and River
- Phillips River (north of Culham Inlet)
- Dunn's Swamp
- Jerdacuttup River (north of Jerdacuttup Lakes)
- Oldfield River (north of the estuary)

It is important to underline the intent that these would be family-friendly flat-water canoe trails, to appeal to a broad market not desirous of the challenge of white-water paddling. As such they would most likely feature either shoreline or floating interpretation, quality trail mapping (with the possibility of downloadable gps based trail "routes" via the EveryTrails and Shire websites) and easy access to the water in order to ensure safety for both children and older folk who may not be as experienced with this manner of accessing the outdoors.

The logical extension of the development of these trails would be a canoe/kayak hire opportunity in Hopetoun, which would naturally have ongoing economic benefits for the community (in addition to the obvious benefit of giving visitors additional reasons to stay in the Shire area for longer!).

Work to be undertaken in the project

The Planning Study should include the following elements:

- General information re the project, outcomes sought and the process involved
- Review of potential trail users and "target markets"
- Community consultation – summary and outcomes
- Review / summary of land tenure issues
- Detailed route descriptions (with mapping)
- Recommendations re construction, locally specific infrastructure and installation works
- Comprehensive works list, with budget / cost estimates
- Recommended interpretive sites, themes and styles
- Recommendations regarding ongoing management and maintenance
- Funding opportunities and marketing & promotion recommendations

This Plan would then allow the project proponents to proceed directly to fundraising and then to construction, without having to undertake further planning. This is an efficient process – and the resulting Report should be highly appealing to funding agencies and potential sponsors.

This outline provides a succinct summary of the work undertaken in producing this Report.

Project process

This Planning Study was undertaken in a streamlined fashion, being somewhat constrained by the project budget. The steps undertaken are outlined below:

a) Review of outcomes and general background as established in the Trail Master Plan;

b) Internet and telephone research, seeking useful information and examples of canoe trails elsewhere in Australia and around the world;

c) Community consultation – meeting held at Hopetoun on Monday October 28th;

d) Field work (5 days), involving exploring each of the 5 water bodies in detail via a small dinghy and at times, (weather and time permitting) in a two-person Canadian canoe;

e) Follow-up consultation and review of field work outcomes;

f) Preparation of Draft Report, and submission of same to Shire for comment;

g) Submission of Final Report, incorporating comments.

Project benefits and outcomes

It is worth re-stating the outcomes sought from the development of the Trail Master Plan, as these are equally relevant to this work. Indeed it could be said that this project amplifies the potential benefits to the Ravensthorpe community, and provides added impetus for the Shire to move forward post-haste with the implementation of the recommended projects in both reports. In Part 1 Section 1 the Trail Master Plan had this to say:

"Local governments and community groups across Australia have been keen to develop trails within their communities for many years and government agencies have been providing funding for trails projects because of the broad range of benefits they provide.

Trail projects can make a positive contribution in five key areas:

1. *They can help attract visitors and – more importantly – they can keep visitors in town for longer, increasing their expenditure in local businesses (eg. accommodations, restaurants and cafes, grocery stores, souvenir shops);*
2. *They provide an ideal resource for low-impact physical activity, encouraging walking and/or jogging and potentially contributing to the health of the community;*
3. *They can prompt the community to recognise and record its human and natural heritage;*
4. *They can help bring together disparate groups within the community by providing non-threatening common-ground; and*
5. *They can contribute to a sense of pride by highlighting what is good and rich and of value to the community.*

For Ravensthorpe Shire and the Fitzgerald Coast Association, the main objective is to develop a series of trails that will attract and keep visitors longer in the towns and the region, provide recreation and information opportunities for local people, and make the most of the natural and cultural diversity and history the area enjoys. Additionally, as with most trail projects, there will be a range of benefits accruing to the communities that host the trails."

SECTION 2: SHAPING THE PROJECT

A review of existing canoe trails in Australia

Canoe trails are comparatively under-represented in the spectrum of recreational trails across Australia. This is particularly true in Western Australia, despite well more than a decade of funding for trail projects via LotteryWest and the Department of Sport & Recreation. This situation perhaps stems from a long-held view that canoeists and kayakers are happy to just go paddle whatever waterway might happen to be accessible at the time of inclination – and that the development of formal "trails" is not necessary.

Given that the actual trail "route" already exists in this case, it is easy to see why this mindset may have developed. With the more common types of trail – walking, mountain biking and (to a lesser extent) equestrian – route definition is a primary requirement, and many people are deterred from undertaking these forms of outing without a specified trail to follow.

Having said that, the popularity of the land-based trails – and the uptake of trail-based activity by an ever-widening spectrum of the population – has now flowed on into a demand for designated "water trails" that encourage activity by defining a place to undertake it and a route to follow, and that provide information that makes the experience both safe and enjoyable.

In searching for examples of how these facilities have been provided elsewhere in Australia only a limited array of options could be readily found. Here in Western Australia a number of the "major" rivers of the south-west have been paddled for decades, including the Frankland, the Deep, the Donnelly, the Warren and the Blackwood. Further up the west coast, rivers like the Harvey, the Murray and the Serpentine also see this kind of activity. Large standing water bodies like the Walpole and Broke Inlets, Lake Jasper, the Leschenault Inlet and the Peel-Harvey Estuary have also been popular, as have, of course, the Swan and Canning Rivers.

However, in terms of designated canoe trails, it appears that only the South West and Peel Regions have gone so far as to produce maps / brochures that show a series of routes with accompanying information. In the case of the South West, canoe trails are listed on the website: http://www.totaltrails.com.au/#!canoeing/cxa2. This lists the Blackwood, Warren and Donnelly Rivers as canoe trails, but it appears the Blackwood is best served with information. A detailed map / brochure can be downloaded off this website, and examples of this excellent document are shown on the following two pages (note: these form part of the brochure only).

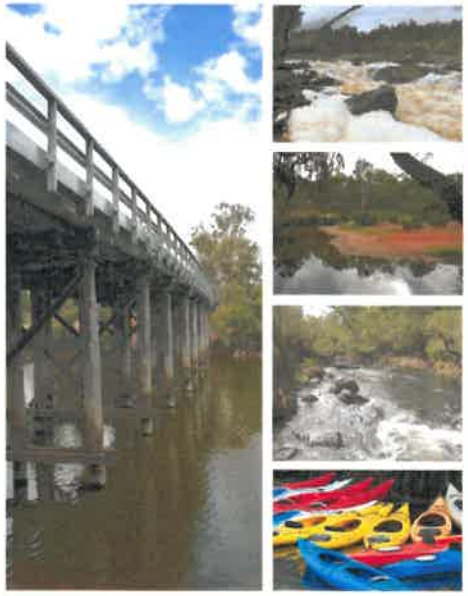
The Peel Region brochures appear to represent a much lower level of development, and even the mapping is basic at best. They should be considered the minimum that should be provided. An example of one of this suite of trails appears in the pages following the Blackwood material.

In the eastern states a number of larger rivers are now mapped and promoted as canoe trails. These include the Tumut, the Murray and the Hawkesbury-Nepean in New South Wales, and the Maroochy in south-east Queensland. No doubt others exist, but for the purpose of this backgrounding process these examples are sufficient to outline a somewhat higher level of information provision. Again, an example appears in the following pages (after the Peel Region's "Heron & Spoonbill" brochure".

It is worth noting that development of all of these trails appears to be limited to the production of a map / brochure. There is nothing to indicate that any infrastructure or signage (be it informational, directional or interpretive) has been installed. Existing conditions and/or infrastructure seem to have been deemed sufficient, with all information, interpretation and safety material contained in the brochures. This then raises the prospect of "low cost" development – pending what field conditions dictate, and pending a review of international "best practice". A summary of some existing canoe trails in the United States and Britain follows in the next section.

explore discover adventure

The Blackwood River, with 41 creeks and tributaries, is the longest river system in the South West of Western Australia. Beginning in the Southern Wheatbelt it flows 383km as it makes its way to the Southern Ocean at Augusta. The paddleable parts of the river between Arthur River and Augusta flow through farmland, pine plantations, national parks, regenerated Jarrah forests and townships (Boyup Brook, Bridgetown and Nannup). The River is considered to be one of Western Australia's premier canoeing locations. In winter, when the waterways are at their fullest, the more adventurous can go whitewater rafting. In summer there are opportunities for families to paddle the calmer waters and spend hours exploring the unique surroundings.



Indigenous Significance:
Respect the River ways. The Blackwood River and the Waugle (a snake like spirit of water) are of Indigenous mythological significance. The Waugle lives in these waters and played a part in the creation of this river, its tributaries and pools. In traditional times the Blackwood River was an access way through the forests and was known as a place to camp and gather food such as fish, marron, duck, sedges and other plants. The Blackwood River is a territorial boundary between the Pibbelmen and Wardandi language groups.

1 blackwood river

The Canoe/Kayak:

- Check the canoe/kayak for fixed buoyancy, comfort when sitting, strength and quality

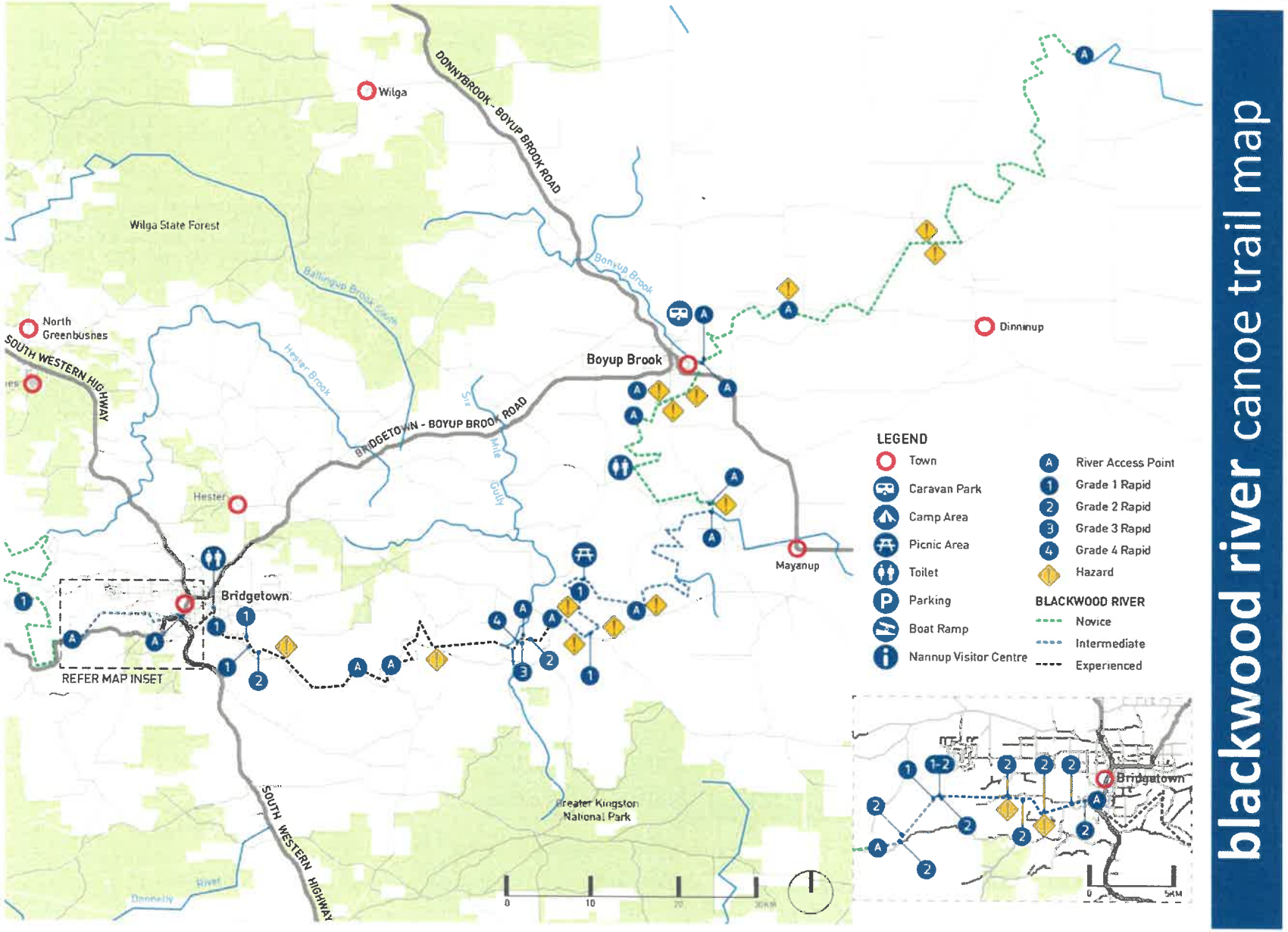
The Paddler:

- The paddler must be a proficient and confident swimmer in the clothing which is worn while paddling
- The paddler must always wear a Personal Flotation Device (PFD - either Type 2 or 3)
- Be honest with yourself about your ability, as paddling a canoe on quiet water doesn't qualify you for more difficult trips or conditions
- The waters of rivers, lakes and oceans are all very different and they demand different levels of knowledge and skill. Develop your paddling incrementally, preferably with people more skilled than yourself
- Cold water and weather extremes can be dangerous. Swimming ability and PFDs cannot protect against the effects of very cold water
- Be equipped for the conditions that could occur. Secure your spectacles, wear appropriate footwear and protect yourself against the effects of the sun, wind and rain
- Learn how to capsize and rescue yourself and others. Learn first aid so that you are prepared for an emergency
- Seek training. We recommend the AC Basic Skills Award as a minimum. AC Instructors are available through many canoeing clubs and other bodies
- Before accepting an invitation to undertake a trip, enquire about the group organising it, the leader and the trip itself
- Give the leader a frank assessment of your skill and experience and your full cooperation

The Equipment:

- Make sure your canoe/kayak is in good condition and that it is the right craft for the trip
- Test new and unfamiliar equipment before undertaking hazardous assignments. This includes alterations to gear
- The canoe/kayak, when filled with water, must be able to support its crew and sodden gear in deep water. Use expanded plastics or buoyancy bags or sealed air tight compartments
- Use spray covers whenever there is any possibility of water entering the canoe/kayak. The cover release must be immediate and function perfectly. If spray covers are used it is essential to have practised getting out of the canoe/kayak if it capsizes
- Carry appropriate repair equipment, torch, map, compass and survival kit
- Leave a plan of your trip with a responsible person and an expected time of arrival at your destination

2 safety guidelines


blackwood river canoe trail map
Wilga
DONNYBROOK - BOYUP BROOK ROAD
Wilga State Forest
Boyup Brook
Dinninup
North Greenbushes
SOUTH WESTERN HIGHWAY
BRIDGETOWN - BOYUP BROOK ROAD
Hester
Bridgetown
Mayanup
REFER MAP INSET
Greater Kingston National Park
SOUTH WESTERN HIGHWAY
LEGEND
Town
Caravan Park
Camp Area
Picnic Area
Toilet
Parking
Boat Ramp
Nannup Visitor Centre
River Access Point
Grade 1 Rapid
Grade 2 Rapid
Grade 3 Rapid
Grade 4 Rapid
Hazard
BLACKWOOD RIVER
Novice
Intermediate
Experienced
Bridgetown
0
10
20
30KM
0
5KM

WELCOME TO THE HERON & SPOONBILL TRAILS

The Serpentine River shapes these trails as it slithers its way down from high up in the Darling Ranges, falls down the Scarp, snakes across flood plains, forms pools, back waters and lakes, twists, then disappears into the Peel Inlet.

The Heron Trail a tidal all year round trail, on the river's lower section is a mixture of she oaks, paper barks, river gums, bushland, some beaches, back waters, reserves, jetties and residences. Power boating is popular during holidays but not as hectic as the Murray River. There are two familiar herons on this trail. The two-toned grey white faced heron is easily seen as it stalks along the river edges. The rufous night heron with chestnut-brown back and sides, cream belly and three white plumes from its blue black head is harder to see as it roosts during daylight in riverbank trees. Other bird life abounds with whistling kites, mountain ducks, stilts, egrets, grey teal, black ducks and many more. Dolphins regularly appear on fishing patrols, one spectacular method used is to concuss fish by smashing them with wave breaking force against the river banks.

The Spoonbill Trail is also tidal and algae may be present, therefore canoe only in winter and spring, after good rains. The shallow lakes appeal to canoeists who like a remote and easily accessed trail. Samphire flats, low bush, trees, narrow linkages between the lakes also give the paddler an exploratory feeling. The only reliable comfort or rest sites are those shown on the guide map. Yellow spoonbills when feeding constantly move their heads from side to side as though vacuuming the shallow fringes and beds as they filter and consume water insects, crustaceans, fish and molluscs. The birds on this trail include the ones from Trail 3, and more, including musk ducks, avocets, ospreys, pelicans, and the occasional white breasted sea eagle.

When you explore and enjoy these trails, please respect private and public property.

The Canoe and Kayak Guide to Western Australia by Martin Chambers is a suggested reference book for canoeists and kayakers for trips from Esperance to Exmouth.
Copies are available from canoe retailers, outdoor suppliers and direct from the author:

Martin Chambers
7 Boscastle Avenue,
City Beach WA 6015
Phone: 9385 8371

11/05

TRAIL HINTS

Before using this trail guide, canoeists and kayakers should:

1. have received instruction from a qualified instructor (contact Canoeing WA for details of instructors);
2. be familiar with the Boating Rules and Regulations contained in the official *Western Australian Boating Guide* produced by the Department for Planning and Infrastructure, copies available from the department's Marine Office in Mandurah and from boating retailers;
3. know their capabilities, as paddling on calm waters does not qualify anyone to undertake more difficult paddling tasks;
4. be able to swim confidently wearing paddling attire;
5. keep to the right in boating channels and canals;
6. check weather reports, as wind can create hazardous waves, especially on inlets, estuaries, lakes and pools;
7. use open canoes only in the calmest of conditions;
8. be aware of submerged or semi-submerged hazards such as trees and logs;
9. in summer months check with the Shire of Murray or the Mandurah City Council for information about algal bloom;
10. be careful when rivers are flowing fast as more effort is then required to paddle upstream, particularly in narrow river branches;
11. take care if using boat ramps as they can be very slippery;
12. recognise that paddling conditions are generally calmer in the morning than the afternoon;
13. let a responsible person know of their trip plans;
14. when planning trips on calm waters allow for a speed of 4 km/h for adults and less for young or inexperienced canoeists; and
15. use insect repellent and/or cover up to protect against mosquitoes.

Phone contacts

Police:
- Life-threatening emergency only 000
- Mandurah 9581 0222
- Pinjarra 9531 1666

Hospitals:
- Mandurah, Peel Health Campus 9531 8000
- Pinjarra Hospital 9531 1144

Local government:
- Mandurah City Council 9550 3777
- Shire of Murray 9531 7777

SERPENTINE RIVER CANOE GUIDES NOS. 3 & 3A

The Heron Trail

&

The Spoonbill Trail

Compiled & Paid for by

CANOE TRAIL FRIENDS OF MANDURAH & PINJARRA INC

Canoe Trail Friends of Mandurah & Pinjarra inc is a non profit organisation run by volunteers who wish to promote the establishment and maintenance of recreational canoe trails on the waterways of the Peel Regional Park and to advocate awareness of and care for the natural environment.

The Canoe Trail Friends of Mandurah & Pinjarra inc does not accept any responsibility or liability for any loss, injury, death, damage, liability, cost or expense that may be suffered, sustained or incurred by any person relying on any aspect of this guide or making use of any trail named or described herein.

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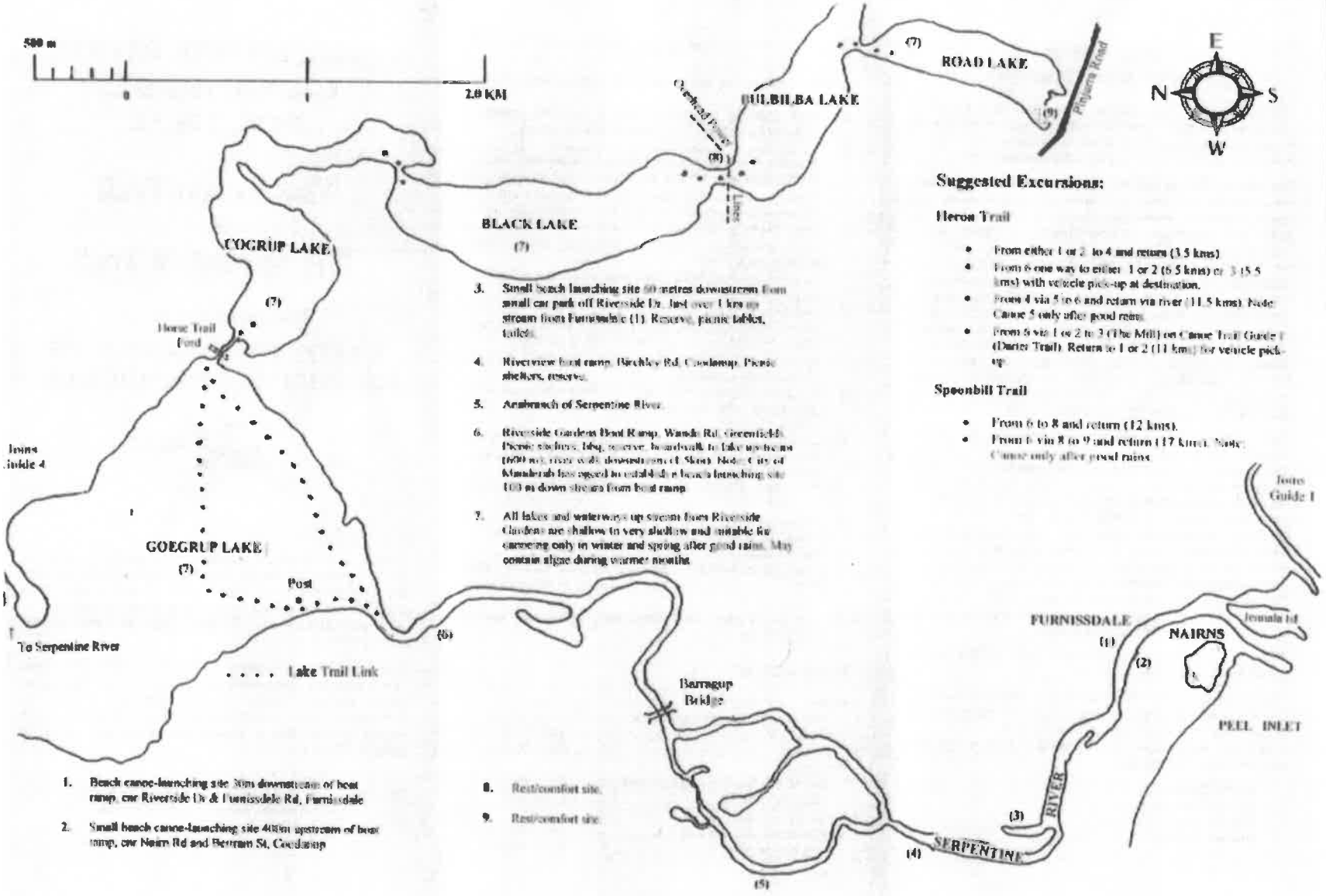

500 m
0
1
2.0 KM
BULBILBA LAKE
ROAD LAKE
Pingerup Road
(7)
(8)
(9)
E
N
S
W
BLACK LAKE
(7)
COGRUP LAKE
(7)
Horse Trail Ford
Lines
Suggested Excursions:
Heron Trail
From either 1 or 2 to 4 and return (3.5 kms)
From 6 one way to either 1 or 2 (6.5 kms) or 3 (5.5 kms) with vehicle pick-up at destination.
From 4 via 5 to 6 and return via river (11.5 kms). Note: Canoe 5 only after good rains.
From 6 via 1 or 2 to 3 (The Mill) on Canoe Trail Guide 1 (Darter Trail). Return to 1 or 2 (11 kms) for vehicle pick-up.
Spoonbill Trail
From 6 to 8 and return (12 kms).
From 6 via 8 to 9 and return (17 kms). Note: Canoe only after good rains.
3. Small beach launching site 60 metres downstream from small car park off Riverside Dr. Just over 1 km up stream from Furnissdale (1). Reserve, picnic tables, toilets.
4. Riverview boat ramp, Birchley Rd, Cooloomup. Picnic shelters, reserve.
5. Arm/branch of Serpentine River.
6. Riverside Gardens Boat Ramp, Wandi Rd, Greenfields. Picnic shelters, bbq, reserve, boardwalk to lake system (600 m), river walk downstream of Shop. Note: City of Mandurah has agreed to establish a beach launching site 100 m down stream from boat ramp.
7. All lakes and waterways up stream from Riverside Gardens are shallow to very shallow and unstable for canoeing only in winter and spring after good rains. May contain algae during warmer months.
Jones Guide 4
GOEGRUP LAKE
(7)
Post
To Serpentine River
Lake Trail Link
(6)
Barragup Bridge
Jones Guide 1
FURNISSDALE
(1)
NAIRNS
(2)
Jennala Rd
PEEL INLET
RIVER
(3)
SERPENTINE
(4)
(5)
1. Beach canoe-launching site 30m downstream of boat ramp, cnr Riverside Dr & Furnissdale Rd, Furnissdale.
2. Small beach canoe-launching site 400m upstream of boat ramp, cnr Nairn Rd and Herman St, Cooloomup.
8. Rest/comfort site.
9. Rest/comfort site.

MAROOCHY RIVER TRAIL

discover a new world on water

TRAIL SECTIONS AND PADDLING TIMES

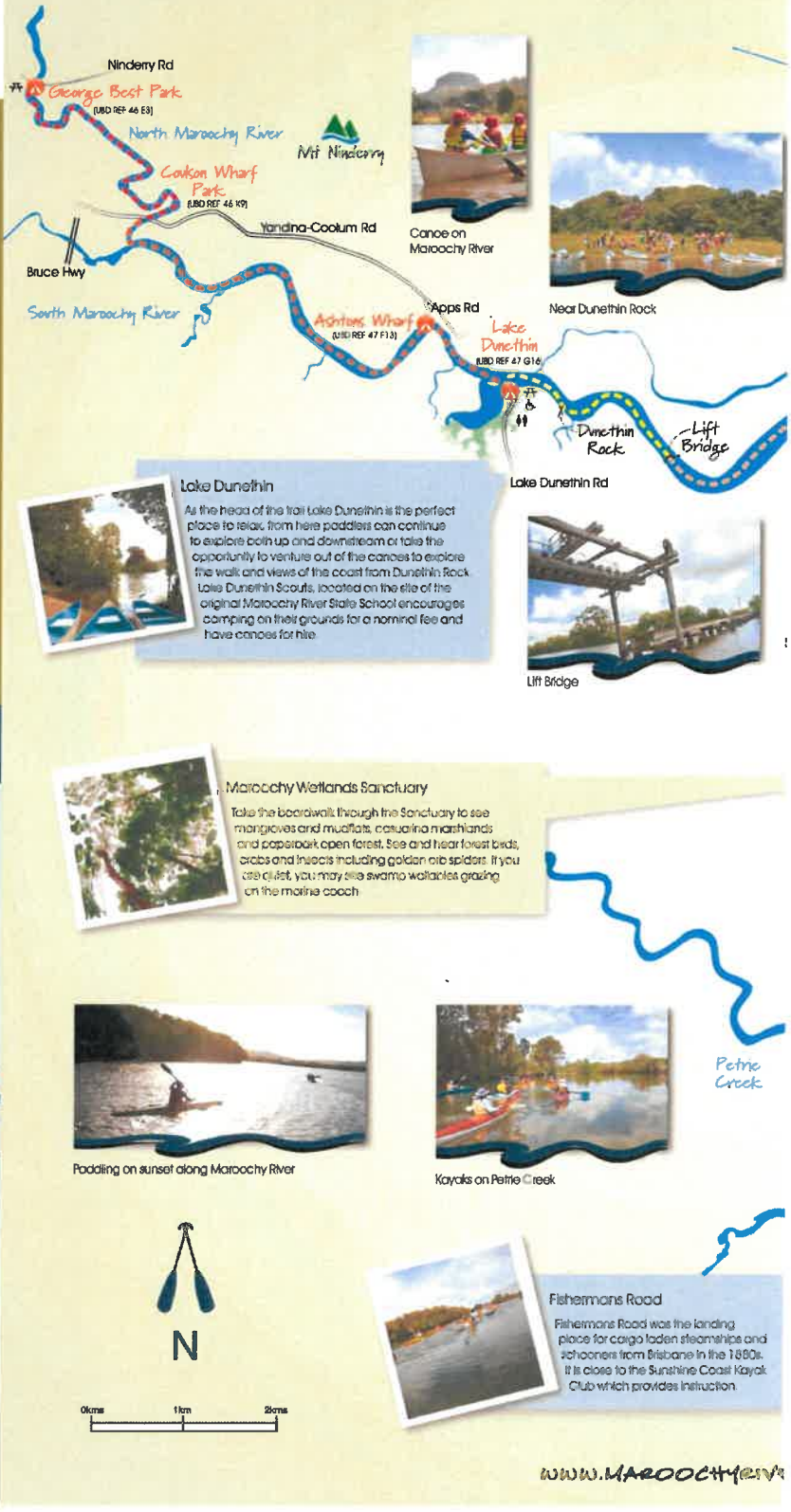
Most paddlers can cover approximately 4km per hour in ideal weather and tidal conditions.
Colour is indicated on map

- George Best Park to Coulson Wharf Park — 3.5km — 50 minutes
- Coulson Wharf Park to Lake Dunethin — 5.5km — 80 minutes
- Lake Dunethin to Lift Bridge — 2km — 30 minutes
- Lift Bridge to Coolum Creek Confluence — 5.5km — 80 minutes
- Coolum Creek Confluence to Coolum Creek Landing — 1km — 15 minutes
- Coolum Creek Landing to Old Cane Train Bridge — 1.5 km — 25 minutes
- Coolum Creek Confluence to Mchy Wetlands Sanctuary — 5km — 75 minutes
- Maroochy Wetlands Sanctuary to Muller Park — 2km — 30 minutes
- Muller Park to Fishermans Road — 3km — 45 minutes
- Fishermans Road to Nojoor Road — 3.5km — 50 minutes
- Fishermans Road to Cotton Tree — 5km — 75 minutes

GETTING HERE

LEGEND

River
Native Vegetation
Island
Mountain
Bridge
Access Point
Disabled Access Point
Rest Area water, bbq, tables
Toilets



ACCESS POINTS

THAT ARE ACCESSIBLE BY VEHICLE

Kayaks and canoes can be launched from all highlighted access points. Be careful. Heavy rain can cause major flooding upstream of the north and south Maroochy River junction. Near the river mouth tides can be strong and water depth can change suddenly.

- George Best Park
- Ashtons Wharf Road
- Lake Dunethin
- Coolum Creek Landing
- Stoney Wharf Road
- Muller Park Ramp
- Fishermans Road
- Bradman Ave Boat Ramp
- Thomas Road
- Picnic Point Esplanade
- Nojoor Road
- Cotton Tree

PADDLER'S CHECKLIST

What to do prior to launch:

- ✓ Be aware of water levels and currents as tides and winds can significantly affect the difficulty of the trip.
- ✓ Wear a properly fitted Personal Floatation Device (PFD).
- ✓ Watch for motorboats. Paddle to the nearest shore.
- ✓ Respect anglers. Paddle away from their lines.
- ✓ Bring a mobile phone in case of an emergency.
- ✓ Consider the fitness level and experience of your entire group before choosing section(s) to paddle.
- ✓ Groups of at least three or four people are recommended - especially for longer sections.
- ✓ It's also a good idea to nominate a leader just in case a difficult situation arises.
- ✓ Check weather reports before you set off.
- ✓ Recommended items to take include: water, food, sunscreen, mobile phone, medication, maps, waterproof jackets, hat, warm clothing and a first aid kit.
- ✓ Carry plenty of food and water in a water proof container.
- ✓ Take insect repellent to ward off mosquitos.

Visit www.weather.com.au/qld/sunshine-coast and www.coastwatch.com.au for all weather and tide information.

A review of existing canoe trails elsewhere in the world

The one-page map/brochure below epitomises the UK system of developing and promoting canoe trails. It is simple, but provides essential information for would-be paddlers.

The United States of course has numerous canoe / water trails, with many different levels of development. Some are short – as little as 2-3 km in length, while others (such as the Northern Forest Canoe Trail) are over 1000 km long! While different states offer different outcomes, there has been some attempt to "standardise" information and facilities through the work of the National Parks Service. This agency has produced a number of design documents which could be of use in developing the Fitzgerald Coast Canoe Trails. Examples of these can be found elsewhere in this Report.

The Elkhorn River Canoe Trail in Nebraska is one "middle ground" example of a US "water trail".

Elkhorn River CANOE TRAIL

NEBRASKA GAME AND PARKS COMMISSION
PO Box 30370, Lincoln, NE 68503
402-471-0641 • www.outdoornebraska.org

GENERAL INFORMATION

The Elkhorn River originates in lush hay meadow land in the north-central counties of Holt and Rock and ends near Gretna at its confluence with the Platte River. Flows vary considerably along its entire length depending on snow melt, rainfall and irrigation demand. Normally, the best times to canoe are spring and fall. Spring rains can produce destructive flooding, causing more damage along the Elkhorn than any other river basin in Nebraska.

SECTION DESCRIBED

Upper Elkhorn River - Norfolk to U.S. 275 Bridge (north of Scribner) — 58 miles.

Lower Elkhorn River - U.S. 275 Bridge (north of Scribner) to Waterloo — 60 miles.

CHARACTERISTICS

The Elkhorn is a smooth flowing, meandering river and the channel varies from year to year. You will encounter numerous sandbars and areas too shallow to canoe during the summer. Some skill is needed for reading the flow of the water to reduce the amount of walking. River travelers might encounter snags, large limbs and logs which may partially block the river channel. Canoeists should exercise caution and stay clear of these obstructions; portage when necessary.

Water levels can change overnight because of storms, which may rapidly raise water levels. The lack of rainfall along with irrigation practices can cause water levels too low to canoe.

ACCESS SITES AND POINTS OF INTEREST

UPPER ELKHORN RIVER

Start south of **Norfolk at TaHaZouka Park,** which is located on the east side of U.S. 81. The launch site is on the southeast corner of the park. Camping, restrooms and showers are available in this park. Fees vary according to services used. From Norfolk to **Wood Duck Wildlife Management Area (WMA)** is 11 river miles (4-5 hours). Only primitive camping is available. There are no restroom facilities and no open fires are allowed. There is parking and river access. From Wood Duck WMA to **Stanton** is 5 river miles (2 hours). There is river access near the fairgrounds in Stanton; you may need to portage a hundred yards to the river and the ramp may be muddy and difficult to use. Maskenthine Lake and Recreation Area, about 5 miles north of Stanton, has camping facilities available. Fees vary according to the services used.

Stanton to the **Nebraska 15 Bridge,** (south of Pilger), is 9 river miles (3-4 hours). The launch area is on the northeast, or downstream side of the bridge. Follow the trail road located north of the bridge on the east side of the road. Park behind the safety fence. On the southeast, or downstream side of the bridge is the **Red Fox Wildlife Management Area (WMA),** with parking and primitive camping available. No open fires are allowed. Red Fox WMA to **Black Island Wildlife Management Area (WMA)** is 3 river miles (1+ hours). This WMA is on the north, or left hand side of the river, and has access to the river after about a 300 foot portage. Road access to Black Island WMA is by a connecting county road east from the town of Pilger to U.S. 275 northwest of Wisner. Primitive camping and parking are available. No open fires are allowed.

Black Island WMA to **Wisner River Park** is 5 miles (2-3 hours). The park offers good river access, camping, potable water and restroom facilities. Fees vary. The park extends along the river and river access is available using a small concrete ramp or using the riverbank on the quarter mile stretch of river access bordering the park. From Wisner to the **Nebraska 32 bridge at West Point,** is 16 river miles (6-7 hours). The river may be accessed on the southwest or upstream side of the bridge, with parking available behind the safety fence. Camping and restroom facilities are available on the east side of the river at the **West Point Riverside Park.** West Point to **U.S. 275 bridge, north of Scribner** is 9 river miles (4 hours). Access to the river is on the southwest or upstream corner of the bridge which is directly north of the **Powder Horn Wildlife Management Area (WMA),** where parking is available. Parking along the highway is not recommended. Safely carrying canoes and gear to the WMA is not difficult. **Upper Elkhorn canoe trip ends.**

STARTING THE LOWER ELKHORN CANOE TRIP

Dead Timber State Recreation Area (SRA) and camping is 3 miles north from the Powder Horn WMA parking lot. There is no river access from this site. Begin at the **U.S. 275 bridge** north of Scribner. The trip to the **Scribner Riverview Park** is 5 river miles (2 hours). River access is on the southwest or upstream side of bridge. **Scribner** to the bridge, north of **Hooper** is 8 river miles (3-4 hours). Access is on the southeast or downstream side of the bridge but is not recommended because of the proximity to the public roadway. Use this site as a drop-off area because there is no parking. Hooper to the **County Road Bridge east of Winslow** is 7.5 river miles (3 hours). Canoe acccess is on the northwest or upstream side of the bridge. Limited parking is available along this road. **Note:** This could be a good spot to end a day trip from Hooper or to start a day trip to Arlington.

Winslow's east county road bridge to the **Nebraska Highway 91 bridge east of Nickerson,** is 7 river miles (2-3 hours). Access at this bridge is possible on the northeast or left side but it is difficult. Nebraska 91 bridge to the **second primitive campsite** near Arlington is 10 river miles (3-5 hours), and is located on the east or left-hand side of the river. Three miles downstream is the U.S. 30 Bridge.

From the second primitive campsite to the **U.S. 30 Bridge, west of Arlington** is 3 river miles (1 hour). Access the river is on the northeast or upstream, left side of the bridge. There is a large parking area; however, there is rock riprap between the parking area and the river. U.S. 30 bridge west of Arlington to **Elkhorn Crossing Recreation Area (3 miles south of Nebraska 36)** is 11 river miles (4-5 hours). This is an access area located on the west or right side of the river and offers camping, a boat ramp, picnic facilities and restrooms.

From Elkhorn Crossing Recreation Area to the **Maple Street Bridge in Waterloo** is 9 river miles (3-4 hours). There is a good launch area on the southeast or downstream left side of the bridge. Access to this area is from the east-bound lane only. Vehicles can be parked off the highway. Exercise extreme caution whenever using river access along a public roadway. **Trip ends.**

SCENERY

Along the river corridor you will canoe past a hilly area with moderate to steep slopes and rounded ridge crests composed of glacial till mantled with loess. Along the river, there are open woodlands and dense forested areas interspersed with farmland in the cleared lowlands. Cottonwood and willow trees dominate the woodlands. Shrubs include black currant, false indigo, red osier, rough-leaved dogwoods and others. Wildlife thrives in this setting.

COMMUNITY AND AREA INFORMATION:

Madison County Visitors Bureau (Norfolk) (402) 371-2932
Dead Timber State Recreation Area (402) 664-3597
Schramm Park State Recreation Area (402) 332-3901
Platte River State Park (402) 234-2217
Louisville State Recreation Area (402) 234-6855

Madison County Sheriff (Norfolk) (402) 370-3573
Stanton County Sheriff (Stanton) (402) 439-2212
Cuming County Sheriff (West Point) (402) 372-6019
Dodge County Sheriff (Fremont) (402) 727-2700
Washington County Sheriff (Blair) (402) 426-6866
Douglas County Sheriff (Omaha) (402) 444-6641
Sarpy County Sheriff (Papillion) (402) 583-4111

MEDICAL ASSISTANCE:

Faith Regional Health Services (Norfolk-Hospital) (402) 371-4880
St. Francis Memorial Hospital (West Point) (402) 721-2404
Fremont Area Medical Center (Fremont-Hospital) (402) 721-1610

Dial 911 to reach emergency personnel in the area.

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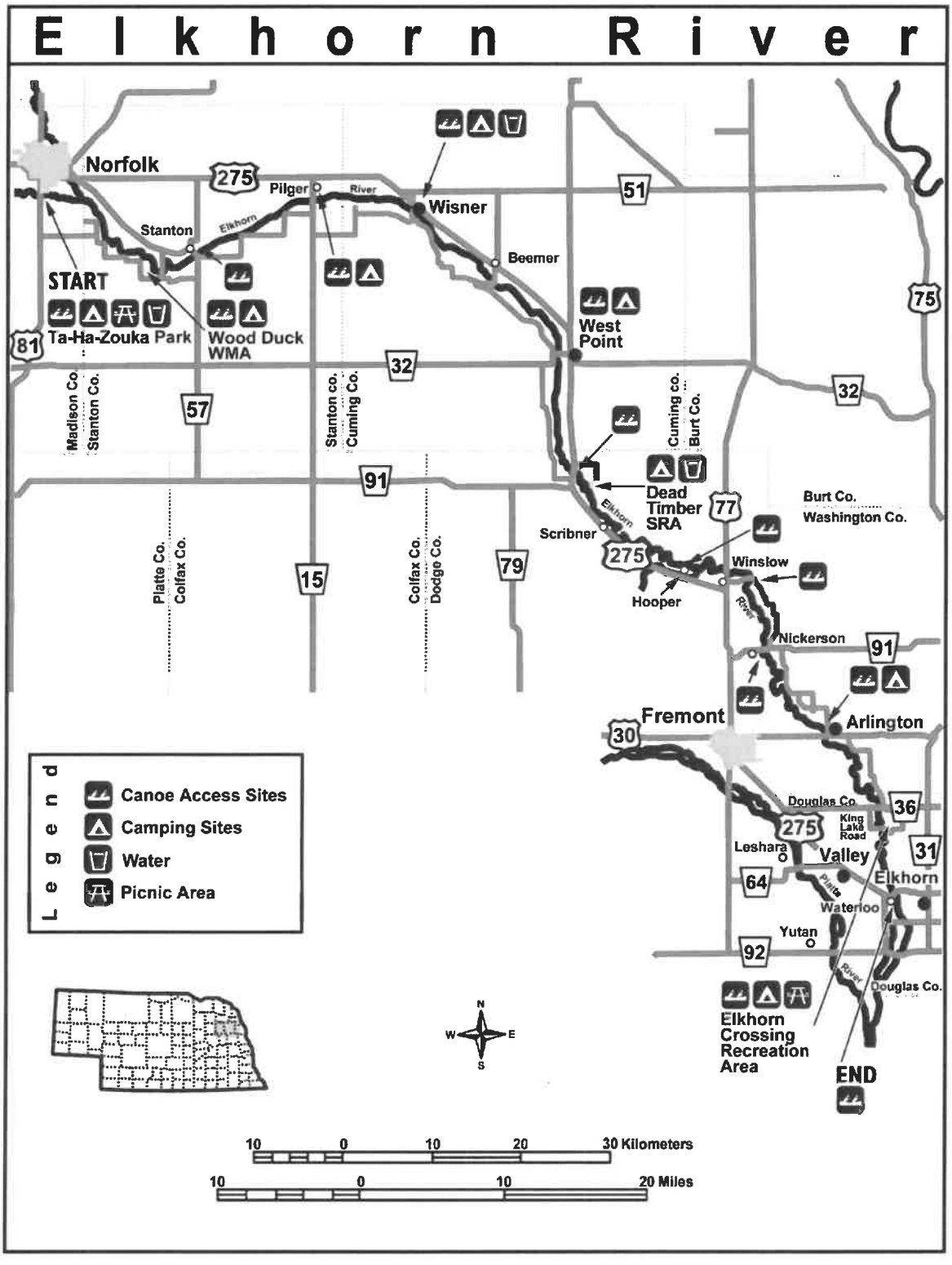


This trail differs from many others in that campsites are provided along the route – which is not surprising, given that it traverses almost 200 km! What is perhaps a little more surprising is the limited amount of information provided for a trail of this length. It may be that more detailed sectional maps are available, but these have not been found at this point in this project.

Summary of key points arising from this review process

In reviewing various documents and websites during this background research process a number of points were noted as being of potential interest / importance to the work in hand:

Information provision – paddler preparation

- Detailed but clear *mapping is a primary and vital source of information.* This should be readily available both via the internet and in local outlets close to the trails;
- It is vital to clearly inform potential users of the *degree of difficulty* of the trail;
- *Wind and weather warnings* should be provided in all literature (ie: "Do not attempt this trail if wind is above (say) 30 kph");
- All trail literature must provide relevant *warnings relating to safety* and preparedness (see next section of this report for sample listings);
- Almost all canoe trails have *significant seasonal variations* in terms of flow and water condition – these must be clearly stipulated on all information, with recommended seasons specified;
- If tides impact any of these water bodies paddlers should be advised as to how to find tidal flow information;
- If possible, would-be paddlers should be directed to a reliable source of current water heights or river conditions, if these are known. This might be via a regularly updated website, or a phone call to a nominated place or person, or a notice board that is kept up to date;
- Maps should indicate that as with all water travel, paddlers should travel on the right-hand side of the watercourses;
- Encouraging paddlers to wear bright clothing to aid visibility is wise;
- The likely presence of power boats should be noted in all trail literature;
- Paddling conditions are generally calmer in the morning than in the afternoon, and this too should be clearly set out in all information;
- It should be expected that some / many paddlers may wish to fish during their outing – if permits are required this information must be included on all maps and websites;

Information provision – practical / on the water

- Mapping should contain information about how to get to launch sites, and what facilities should be expected there;
- The relative level of accessibility – the *ease of access to the water* body itself – must be clear in all promotional literature;
- If a trail offers more than one launch point and paddlers are encouraged to put in at one point and take out at another, then downstream travel is always recommended;
- If trails only offer one launch point then it must be made clear if "upstream" paddling will be required (ie: is the water flowing?) – and if so it should be noted that this will require much greater effort and will take longer;
- If algae is known to occur (even occasionally) this should be noted in all trail literature, and information should be provided about the safety or risk of the same;
- If it is known that obstructions such as downed trees or rock bars can impact trail routes this must be made clear in all information;
- If *portages* are required this information must be made clear prior to paddlers setting out;
- Sections of river that can be fast flowing (and potentially dangerous) after heavy rain should be marked on maps;

- Paddlers may need "comfort stops" or toilet breaks during their outing, and information about the availability (or not) of the same should be provided on mapping;
- Some canoe trail maps identify "safe havens" (for use in storms) – this is usually more relevant when paddlers have to cross wide expanses of water;
- If it is known that snakes can be seen swimming in these water bodies this information must be provided on trail literature (perhaps with some idea of how to avoid being boarded!);
- In some situations private property boundaries can extend to – or beyond – the high-water line, and therefore paddlers should be advised to not land in these places, and to respect privacy of neighbouring landowners;
- If aquatic weeds are (or could be) a problem paddlers must be advised to clean down their boats and equipment before leaving the trail in question;

Launch points & infrastructure

- Most canoe trails *do not provide in-situ "way marking"*, but instead rely on clear mapping to enable paddlers to traverse the trail route;
- Attention needs to be paid to the *functionality of parking areas* at launch points, and consideration should be given to the type of vehicles likely to be involved and the ease of lifting canoes down;
- It is worth considering installing *"canoe hitches"* so that paddlers can tie up their boat after it has been put in the water;
- Consideration should be given to providing disabled access to an appropriate selection of launch sites in any given trail suite;

Signage

- Both interpretive and informational signage can be installed on either floating buoys or on the bank alongside the trail. Both options have significant issues associated with them, but on-land signage is generally seen to be preferable (and cheaper) where shore signage would be in the open and visible;
- Floating (buoy-based) signage can constitute visual pollution as most buoys are bright colours (so they are visible) and this introduces a discordant element into the landscape;
- Simple signage carrying large easily-read numbers can be placed on the banks and noted on trail mapping – this can then be used to provide location-specific information or interpretation;
- The width of the water body or river defines the height of lettering needed for visibility when on-land signage is used;

General information

- Most paddlers cover about 4 kilometres in an hour, in good conditions;
- In the USA "river miles" are calculated from the river mouth, and these figures are used on trail maps – so a trail might start at (say) Mile 52.1 and end at (say) Mile 27.8. This is not likely to be relevant to the Ravensthorpe situation;
- A book called "The Canoe and Kayak Guide to Western Australia" by Martin Chambers may be a useful reference document for paddlers;

Most of these points have been addressed in the preparation of this Report, and many appear as recommendations relating to future development of the trails in question (in particular, in the listings of what information should be provided on trail maps / brochures).

Factors influencing paddler's choices

A substantial report into the economic and sustainability impacts of the 1180 km Northern Forests Canoe Trail provides a very useful summary of the factors that influence paddler's choices of destination:

Important considerations for users	Reasons for recreation in the region	Barriers to increased recreation
• Clean water • Scenic beauty • Safe environment • Sufficient water quantity • Available campsites • Fishing opportunities • Peace and quiet • Good public access	• Good previous experience • Love of the area • To be close to nature • To relax physically • For social experiences • To get away from the city	• Lack of time • Intervening opportunities • Lack of personal knowledge • Poor restrooms

Reviewing this table underlines the merit of undertaking this Planning Study, as the area and trails in question fit very well into this matrix of desires.

Canoe trails or "water trails"?

Facilities such as these in the United States are referred to as "water trails". The reason for this is that it is assumed that there may be other user groups who might also wish to follow the trail route and enjoy the outing on offer. Possible users are considered to include:

- Canoeists
- Kayakers
- Surf-ski / sit-on-top paddlers
- Stand-up paddle boarders
- Power boat enthusiasts
- Jet ski / personal watercraft users
- Small sail boat users

While it may be tempting to quickly discard all but the first two groups, some consideration at least should be given to whether there is any merit in expanding the potential pool of users on one or more of these trails to include some or all of the other groups. Naturally, other issues come into play when the user group is widened, and safety on what is then a "shared trail" becomes of paramount importance.

This issue – and the matter of desired / target user groups – was discussed at the community meeting, and the outcomes are presented in Section 5 of this report. For the purpose of this document the terms can be used to mean the same thing, though in most situations reference is made to "canoe trails".

Water trails – a useful American summary

Back in 2006 the US "River Network" published a very useful summary of "water trails" in their periodical called "River Voices". It – and their website (www.bluetrailsguide.org) provides a number of very useful pointers as to what is involved with developing a successful water trail. Some factors thought relevant to this project are listed below:

- Blue trails are the water-based equivalent of hiking trails, and share many of the same elements;
- They are not necessarily just for paddlers (see section above);
- More information can be found on www.americaswatertrails.org.

Guiding Principles

- Partnerships (Cooperating and sharing);
- Stewardship (Leaving no trace);
- Volunteerism (Experiencing the joy of involvement);
- Education (Learning by experience);
- Conservation (Protecting our natural and cultural heritage);
- Community vitality (Connecting people and places);
- Diversity (Providing opportunities for all);
- Wellness and wellbeing (Caring for self and others).

Traits of successful trails

- Safe and legal launch sites (ideally not too far apart);
- Safe and sufficient trailhead parking;
- Places to rent boats and equipment;
- Lockup facilities at access points;
- Places to visit and learn about;
- Nearby places to stay (and spend money).

Content of a water trail plan

Planning a water trail requires maintaining a careful balance between protecting the resource and responding to the needs of trail users and landowners. Such a plan could contain:

- Information as to why the trail is important;
- A statement of trail identity and theme;
- List of stakeholders and community leaders;
- Summary of opportunities and constraints;
- Inventory of trail features and facilities;
- Statement of feasibility of the project;
- Description of any site improvements, infrastructure and information requirements;
- A schedule for implementation;
- Framework for maintenance and natural resource protection.

Signage and information

- Trailhead / launch sites: major information via large clear signs;
- Limited on-shore signage, primarily for distances, way-finding or locational needs;
- All other information and interpretation should go into detailed and waterproof maps.

SECTION 3: SAFETY – CHECKLISTS & GRADINGS

Canoe trails are inherently significantly more dangerous than (most) land-based trails. The simple fact that trail users are out on open and / or flowing water introduces a level of risk not found on most walk or bike trails. The environment is less controlled, and changes in the weather can have a far greater impact. Mistakes – or the impact of rough / changing weather or water – can quickly escalate to life-threatening situations.

This makes *safety, preparedness and personal responsibility* critically important in planning, developing and promoting canoe trails. This is borne out by the dominance of *warnings* and *safety / preparedness checklists* in literature associated with canoe trails here in Australia and overseas. Should these trails be implemented it will be crucial that a clear and concise list of warnings is included on all literature, be it in paper form or on the internet. Key warnings can be reaffirmed at launch sites, via standardised signage (see later section).

Fortunately – and not surprisingly – good canoe trail checklists abound. Two excellent examples are shown here to illustrate the kind of messages that need to be delivered to would-be paddlers. The first appears on NSW canoe trail brochures, and the second is from the United Kingdom:

SAFE CANOEING CHECKLIST

Before you go

- Always check the river levels BEFORE your trip. Daily river levels are available on www.waterinfo.nsw.gov.au
- Always let someone know of your trip plans and ensure your support vehicle is aware of your intended rendezvous point and how to get there
- Canoeists/kayakers should be proficient in moving water. Beginners and children should become competent canoeists/kayakers on still water before attempting moving water
- GPS coordinates have been supplied to help you locate the reserves. Set up your GPS for the GDA datum and enter the coordinates of the reserves in advance
- Ensure you have enough fuel, food and water for the trip

On the river

- Make sure you have all your gear when you set off as the river's flow may be too strong to paddle back upstream
- Avoid travelling alone and stay in contact with other canoes/kayaks in your group
- Be alert for hazardous overhanging trees and snags
- If you capsize, hold on to your canoe or kayak until you can beach safely. If the water is freezing leave your craft and head for the bank immediately
- If in doubt about a rapid or obstacle ahead pull into the bank and check on foot
- Mobile phone reception is not always reliable along the canoe & kayak trails
- To avoid overheating, paddle early in the morning or late evening with a break in the hottest part of the day
- To fish in NSW waters, you must pay a fee and carry the receipt showing payment. For more information visit www.dpi.nsw.gov.au

Safety gear

- A high visibility Personal Floatation Device - Type 2 with a whistle attached should be worn at all times on the water
- Hat and sunscreen
- Map, compass and GPS
- Spare paddle and repair kit
- Adequate drinking water and food for 5-8 hrs
- A first-aid kit and basic knowledge of CPR
- Waterproof containers for food and warm/dry clothing
- Appropriate footwear for water and rocks
- All canoes/kayaks should have fixed buoyancy with securing loops at each end
- A rope or throw line should be carried for rescue purposes

At the campsite

- Practice low impact camping – take out what you take in
- Do not drink the river water without boiling or treating it. Carry adequate supplies of drinking water with you
- Light fires in fire places provided and extinguish completely before leaving. Observe any fire bans that are in place
- Bury your waste at least 50 m from the river if there are no toilets
- Do not interfere with vegetation, gates, fences or stock
- Do not use soaps or detergents in the river
- Respect other canoeists/kayakers and campers

Canoe & kayak trail is published by NSW Land and Property Management Authority

This booklet is designed as a reference guide only and is not to be used as a teaching aid. Canoeists/kayakers use the trail at their own risk.

Paddling Safety

Spending an afternoon canoeing can be a fun way to experience nature, get a great workout and spend time with friends and family. It can also be a dangerous journey, if appropriate safety guidelines are overlooked. Always follow these basic rules.

Wear appropriate clothing

Always wear shoes. Rocks, rough terrain and river beds present serious hazards to boaters without the proper attire. Nearly 90% of all boating injuries are attributed to lack of proper footwear. Other canoe safe clothing includes hats, additional dry clothing, towels, and layered items which can easily be removed.

Know the weather forecast

Find out the weather forecast before you set out on your Canoe Trail. The Met Office, BBC Weather and Local Marina Offices will have an up to date forecast.

Local area

Familiarise yourself with the local area, its sensitive places and protected areas.

Be sure to:

- Leave the environment as you find it.
- Take your litter home with you.
- Keep noise to a minimum.
- Avoid damaging bank side vegetation when launching or landing.
- Where possible keep to any designated paths or launching points.
- Canoe a safe distance away from wildlife.

Check your equipment

Use the checklist below to make sure you have everything you need.

Checklist:

1. Boat
2. Paddle
3. Bailer/sponge
4. Buoyancy Aid
5. Small First Aid kit
6. Penknife
7. Mobile telephone (in a waterproof bag)
8. Fresh drinking water
9. Sun cream, hat and sunglasses
10. Light waterproof/ jacket
11. Footwear

ALWAYS be certain to let others know where you're going and when you're expected to return.

Contact:
Watersports Development Officer
Sports Hampshire & IOW
Hampshire County Council
Castle Avenue, Winchester
SO23 8UL
info@sporthampshireiow.co.uk

Also relevant to this project is the Australian Canoeing Safety Code, prepared by the Education & Safety Technical Committee of Canoeing Australia. This is worth including in total, though some of this material is more relevant to use in future trail brochures. It does nonetheless provide a thoroughly rounded review of all safety issues associated with recreational paddling.

Australian Canoeing Safety Code

The general rule is 'you got yourself into this: you get yourself out of it.' Safety is risk management and knowing your limitations and working within them. The Australian Canoeing Safety Guidelines will give you an outline on what you should do (or not do).

Australian Canoeing recommends that all canoeists (canoe, kayak and sit-on-top paddlers) read the Australian Canoeing Safety Guidelines.

This Safety Code is for any current or prospective paddler written by Australian Canoeing Inc.

Purchasers of Kayaks, Sit On Tops or Canoes

1. *Decide what you want to do with your canoe or kayak. You may want to:*
   - *paddle in lakes and lagoons*
   - *paddle in the sea*
   - *paddle in white water*
   - *buy a craft for your children*
2. *Seek advice about which craft you will best do what you want from endorsed canoeing experts. Any canoe club or its members will be eager to assist.*
3. *Check the craft for fixed buoyancy, comfort when sitting, strength and quality.*
4. *Don't expect to do more with your craft than the purpose you bought it for. Kayaks and canoes are quite specialised*

The Paddler

1. *Be able to swim confidently and be confident in water, even with the clothing you will wear paddling.*
2. *Always wear a Personal Flotation Device (either Type 2 or 3).*
3. *Be honest with yourself about your ability. Paddling a canoe on quiet water doesn't qualify you for more difficult trips or conditions.*
4. *The waters of rivers, lakes and oceans are all very different. They demand knowledge and skill. Develop your paddling incrementally, preferably with people more skilled than yourself. Clubs are wonderful.*
5. *Beware of cold water and weather extremes. Swimming ability and PFD's cannot counteract for long the effects of very cold water. Wetsuits may sometimes be essential for safety.*
6. *Be equipped for the conditions that could occur. Secure your spectacles, have appropriate footwear, allow for protection against the sun, wind, and rain.*
7. *Learn how to capsize, to rescue yourself and others and learn first aid, so that you are prepared for an emergency.*
8. *Seek training. We recommend the AC Basic Skills Award as a minimum. AC Instructors are available through many canoeing clubs and other bodies.*
9. *Before accepting an invitation to undertake a trip, enquire about:*

- *the group organising it*
- *the leader*
- *the trip itself*
- *If you accept, give the leader a frank assessment of your skill and experience and your full cooperation.*

Equipment

1. *Make certain you have the right craft for the trip!*
2. *Test new and unfamiliar equipment before undertaking hazardous assignments. This includes alterations to gear.*
3. *The craft must be in good condition before starting a trip.*
4. *If sea canoeing, carry a spare paddle in a position where you can get at it quickly.*
5. *The craft, when filled with water, must be able to support its crew and sodden gear in deep water. Use expanded plastics or buoyancy bags or sealed air tight compartments.*
6. *Use spray covers whenever there is any possibility that water may come into the craft in quantity. The cover release must be immediate and function perfectly.*
7. *Carry appropriate repair equipment, torch, map, compass and survival kit on wilderness trips. Leave a plan of your trip with a responsible person and an expected time of arrival at your destination.*

The Leader

1. *The leader should describe the conditions that could be experienced to prospective participants, prior to acceptance of invitations.*
2. *The leader should not allow persons to participate beyond their proven ability, nor allow inappropriate craft to start.*
3. *The leader must know the range of weather conditions which may occur and their influence on the water conditions*
4. *Before starting and at any appropriate time, the leader should make it clear that his or her decisions in the interest of safety are final.*
5. *The leader nominates the functions of other group members and the formation on the water.*
6. *By example the leader should impart knowledge, skill and confidence.*

On Rivers

1. *Each participant should be aware of group plans, formations, the general nature of the river ahead, the location of any special gear and the signals to be used.*
2. *The lead boat crew scouts all doubtful parts of the river, sets the course, and is never passed.*
3. *The rear boat is equipped and trained for rescue.*
4. *Each craft has a responsibility to the craft behind. It should not lose visual contact. It passes on signals, points out obstacles and tries to prevent its own errors being repeated.*
5. *The party needs to be compact. Large formations should sub-divided into independent groups with an overall plan.*

On Lakes or the Sea

1. *Do not travel beyond a returnable distance from shore under the worst conditions possible.*

2. *Know the weather range. Have a current forecast. Conditions can change within minutes. Beware of off-shore winds*
3. *Have a sound knowledge of the effects of tides.*
4. *Formation positions should be nominated to prevent craft from being dangerously dispersed.*
5. *Kayak paddlers, prior to an ocean expedition, should practise rolling and all canoeists should perfect team rescue drill so that a capsized craft can be righted, emptied and the crew re-embark.*

In the Event of a Capsize

1. *Keep calm but very much alert.*
2. *Stay on the upstream side of your craft.*
3. *Be aware of your responsibility to assist your partner (in the case of pairs).*
4. *Follow your rescuers" instructions.*
5. *Leave your craft only if this improves your safety. If rescue is not close at hand and the water is dangerously cold or worse rapids follow, then swim in the appropriate direction for the nearest point of personal safety. The loss of the finest craft is not worth even the risk of personal safety.*
6. *If swept into a rapid, then swim feet first on your back. Keep your head clear of the water for good visibility*

As a Rescuer

1. *Go after the crew. The craft can wait until the crew and you are safe .*

Canoe trail "grading" systems

One vital way of helping ensure would-be paddlers do not get themselves into danger is to provide a clear system of "grading" the relative degree of difficulty of various trails. In the United Kingdom this is done via a 5 level ranking system (from the website: http://www.gocanoeing.org.uk/go/index.cfm/things-to-do/trails/):

Trail Types

To help you work out which Canoe Trails are best suited to your ability and experience, we have graded all trails with a level indicator, shown below. This will help you decide which Canoe Trails are best for you.

Canoe Trail grading

VERY EASY	Flat water, distance up to two miles.
EASY	Flat water, distance up to 12 miles, close to urban areas.
MODERATE	Flat water, distance up to 20 miles, a fair balance of urban/rural.
[illegible]	Flat water distance up to 25 miles, more urban than rural can include tidal/flowing/open waters.
CHALLENGING	Flat water, distance up to 30 miles, more rural than urban can include tidal/flowing/open waters.

Here in WA the peak body "Canoeing WA" subscribes to what is termed the **International River Grading System**. This is outlined in the Australian Canoeing document called "Safety Guidelines" as follows:

The International River Grading System has been designed to provide an indication of the degree of difficulty of a rapid and/or river. It is not an absolute scale and should be used with the understanding that the scale does not indicate the full extent of hazards that may be encountered on a river.

- *The degree of remoteness, overhanging trees and other elements that add risk to the trip that aren't actually part of the river, are not accounted for in this system*
- *Rivers tend to be graded by the grade of the majority of the rapids they contain, but there may be one or two much harder rapids on the river*
- *The skills needed to paddle, for example, technical Grade 4 rivers are very different from the skills needed to paddle big volume Grade 4 rivers*
- *It should be remembered that the higher the grading the greater the risks involved in swimming*
- *Paddling one very difficult rapid, say Grade 4, presents a different level of risk than paddling an entire river of continuous Grade 4 rapids*
- *The degree of difficulty of rivers can change significantly at different water levels*
- *Slight variations in the interpretation of the grading will exist in each local region according to the nature of the rivers found there.*

Experienced local paddlers are the best source of information about rivers. The following descriptions are a basic guide to each grade.

Grade 1: Easy

Slow to medium flowing water with very small, regular waves or riffles. Relatively few obstacles, with an easy path to find and follow. Suitable for novices.

Grade 2: Medium

Rapids are straightforward with medium sized, regular waves. The path through rapids can be clearly seen from the water and is often indicated by well-defined chutes or Vs of water. There are some obstacles that require manoeuvring around, but paddlers with a good command of basic strokes can easily miss them.

Grade 3: Difficult

Rapids have moderate, irregular waves and strong currents. Manoeuvring is required to follow the preferred route. Small to medium sized stoppers may have to be negotiated. The route is difficult for inexperienced paddlers to see and scouting is advisable. Suitable for experienced white-water paddlers, with the ability to roll an advantage.

Grade 4: Advanced

Rapids have large waves and powerful confused, currents. Drops are big and stoppers can be large and unavoidable. Fast manoeuvres may need to be made. The route is not clear, and scouting may be needed. Suitable only for very experienced white-water paddlers with consistent skills and reliable rolls.

The Phillips River canoe trail – like almost all of the others in this project – is a Grade 1 experience

Grade 5: Expert

Extremely long, obstructed or powerful rapids. Rapids may contain very large unavoidable drops, waves, and stoppers and turbulent, unpredictable currents. Fast and accurate manoeuvring is necessary. Eddies may be very small, turbulent and scarce. The route is complex and scouting is highly recommended.

Suitable only for expert paddlers, who are willing to accept the higher level of risk. Rolling in adverse conditions is essential. Swimming is very dangerous.

Grade 6: Extreme

Rapids are extremely technically difficult, powerful and unpredictable. They are rarely paddled, and if they are paddled successfully they are usually downgraded to Grade 5 plus.

The river cannot be paddled without severe risk to life.

Clearly, much of this is irrelevant to the water bodies in question in this project! All sections of all trails fall within the first two classes, with the great majority being considered "Grade 1, Easy", and Grade 2 only appearing in limited locations in near-flood conditions.

Other safety matters

Visibility is a key factor in canoeing safety – especially in cases where waterways may be shared by powerboats which travel at much greater speeds. Australian Canoeing's "Safety Guidelines have a useful box outlined key aspects of this matter:

Be seen—be safe

Canoes and kayaks are very small vessels, very hard to see, especially at night and at dusk and dawn. Do all you can to make yourself visible to avoid conflict with other traffic.

Some recommendations:

- Wear bright outer clothing (especially PFDs and hats)
- Carry a light at night
- Keep out of channels where possible—hug shores
- Stay in a group—create a bigger target
- Paddling through moorings may give some protection, however it also hides you from people who may need to see you are there
- At dusk and dawn, keep in mind you are very hard to see against the sun.

Remember also the general rule: if it's bigger, faster, or more expensive than your craft, keep out of its way.

Again, this will be of most use when it comes to preparing information and brochures for the proposed trails, but as with all of the other safety information provided above it does help give pointers to issues that are relevant to these development plans.

SECTION 4: COMMUNITY CONSULTATION

Stakeholder and agency consultation

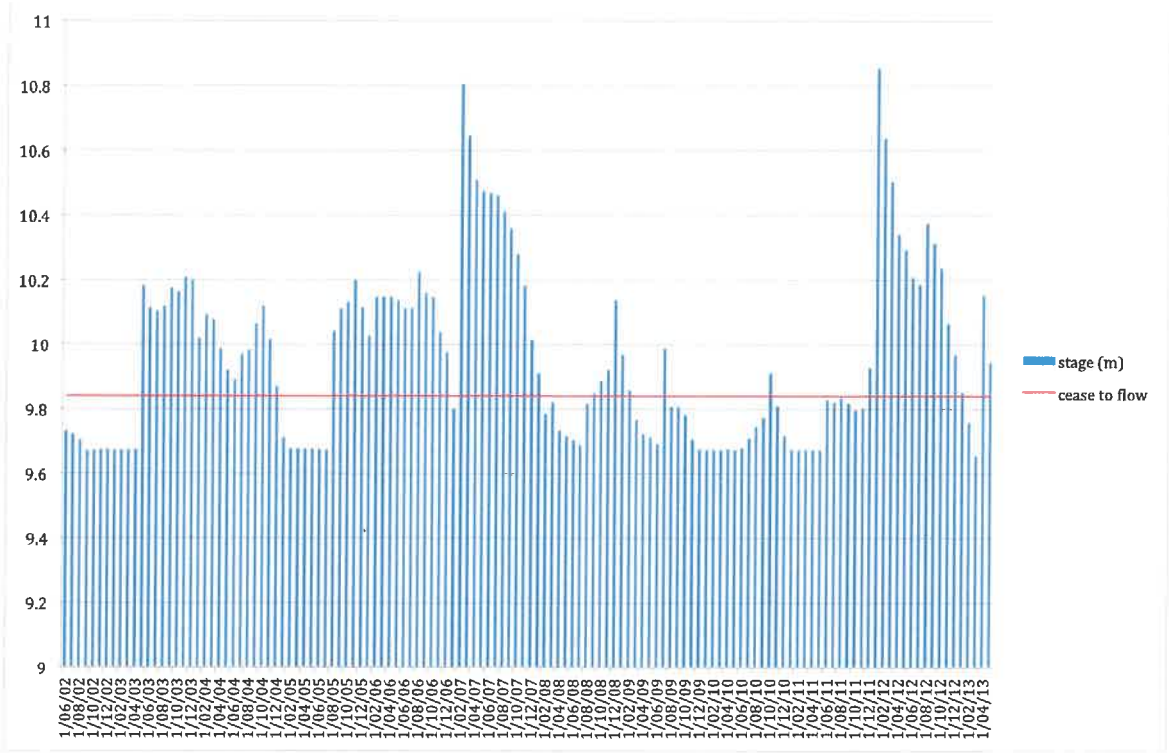
Key relevant agencies and organisations were contacted prior to and during the field trip, in order to ascertain their views on this project – and to draw out any useful information that they may be able to provide:

Department of Water, Albany – Tracy Calvert

Tracy Calvert is Section Leader, Water and Land Use, in the Albany office of Dept of Water. She has extensive personal experience of most of the waterways in question in this project, and provided a significant amount of background material. Her key comments were as follows:

- The Hamersley River water levels can get low, but it is generally possible to canoe as far up as the rock bank most of the year;
- The upper section of the Hamersley Inlet can drop to around 500 mm depth, but then the river deepens further upstream again;
- There are submerged rocks on the westward flowing section of the Hamersley – should not trouble canoes but can be an issue for powerboats;
- The Hamersley sometimes looks green due to algae, but this is not the toxic kind. It is very salty.
- The Phillips River (lower) and Culham Estuary can also appear greenish, but again this is not a toxic form of algae;
- The Phillips can get very salty – up to 2 or 3 times as salty as sea water;
- The Philips can probably be canoed as far up as the rock bund just south of the Pitchie Richie gauging station, and features beautiful slate rock walls in its higher reaches;
- The Philips ceases to flow during dry periods of most years (see graph below), and it may become a series of pools during these periods – which may be problematic for paddlers;
- The Culham Estuary can also virtually dry out during long spells without rain;
- Dunn's Swamp was subject of a water quality study in 2008, which reported high nutrient levels and some significant deaths among fringing vegetation (possibly due to dry conditions);
- The Jerdacuttup River north of the Springdale Road crossing is mostly just pools (the proposal is to stay south of this crossing, so this should not be an issue);
- Jerdacuttup River was the subject of an "Action Plan" prepared in 2004 – this has been supplied, and forms useful background information;
- The Oldfield River has a long canoe-able section stretching north from the estuary, though there are some submerged rocks in the upper reaches which can be a danger to powerboats;
- The Oldfield is relatively "clean" and sweet – far less salty than others in this project, though it does turn quite dark from the amount of tannin in the water;
- The Oldfield can show greenish tinges from the same non-harmful algae;
- The Oldfield River Action Plan of 2001 highlighted the merits of enhancing community awareness of and appreciation for the river and estuary.

Among the many useful background documents supplied was an interesting graph of water levels at the Pitchie Richie gauging station on the upper Phillips River. This shows (via the red line) the level at which the river ceases to flow – and it shows the expected seasonal variations through this 10 year period:



Department of Transport, Albany – Noel Chambers

- The Department has no legislative controls over the establishment of canoe trails, and is unaware of any specific legal requirements or implications for the project;
- If a canoe hire business was to be established it would need to comply with Departmental regulations;
- The Department produces local/regional "Boating Guides", but none are relevant to the waterways in question in this project;

Department of Parks and Wildlife – Peter Masters and Mike Shephard

- Fitzgerald River National Park Management Plan considers and supports non motorised access to the Hamersley by vessels such as canoes;
- A key driver for nature appreciation is via nature trails – such as canoe trails;
- Offered in-principle support for canoe trails proposal, and looked forward to seeing the development plans when completed;
- Use of "old" recreation site would need to be negotiated with DPaW and relevant indigenous groups as it has been nominally set aside as a camping area for them once the new site is open.

Department of Sport and Recreation – Steve Bennett

- Indicated that to the best of his knowledge relatively few "well developed and well promoted" canoe trails exist in WA at present, and that the Department would be keen to see more;
- Suggested the Peel Region as one that had prepared canoe trails, and that the Blackwood River was another which had long been canoed;
- Recommended talking to Canoeing WA as the peak body representing paddlers, though did comment that their main focus was on competitive paddling;

- Supported the goal of making these trails "family friendly" as distinct from white-water experiences, as this would appeal to a different market, and one not so well catered for.

Canoeing WA – Zac Acott (Development Officer)

- Indicated that the Association had undertaken the Blackwood River mapping mentioned earlier in this Report;
- Have also undertaken information gathering for soon-to-be-released mapping for the Swan and Canning Rivers, though the release date of this material is not known;
- Recommended the use of quality GPS equipment to log waypoints on trails for use on maps;
- Trail maps should alert users to launch sites, key features and any dangers that might be involved, and the language used should be simple so that it is easily understood by beginners;
- Close to 50% of individual members represented by the Association are recreational paddlers (somewhere around 500 people) who belong to affiliated clubs (see below);
- Club membership – and the prevalence of roof carriers on so many cars – indicates that there is a strong demand for recreational paddling opportunities;
- A range of courses are offered, including flat and white water paddling skills, expedition leadership, rescue methods etc;
- Clubs affiliated with Canoeing WA are listed in the panel to the right;
- All club events are covered under Association insurance policies.

Ascot Kayak Club

Bayswater Paddlesports Club

Canning River Canoe Club

Champion Lakes Boating Club

Denmark Riverside Canoe Club

Indian Ocean Paddlers Club

Mandurah Ocean Club

Mandurah Paddling Club

Perth Canoe Polo Club

Perth Paddlers

Sea Kayak Club WA

Stand Up Paddlers WA

Swan Canoe Club

Shire of Esperance – Rod Hilton, Director Community Services

The boundary between the Shire of Ravensthorpe and the Shire of Esperance is in the middle of the Oldfield River. As the best access point is on the east (Esperance) side, it was appropriate to consult with the Shire of Esperance regarding the possible development of this trail. Comments made were as follows:

- As access to the river would be through Shire land it would be important to engage with the Shire of Esperance over any proposed trail development;
- Understood and supported the concept that as the Shire of Ravensthorpe would be proposing the development of these trails – and would be seeking funding for the same – there would be no expectation of financial contributions from Esperance;
- The camping area near the mouth of the estuary gets very busy during holiday periods, and this can cause some environmental impacts. Information should be provided to possible trail users to alert them to the fact that space may well not be available, especially during summer;
- Much of the river and estuary is in an A-Class Reserve vested in the Shire, and this may have implications for trail development;
- A Coastal Management Plan is currently being prepared for the whole of the Shire, thought this would be unlikely to deal with the area in question;
- In future there may be prospects of extending the project eastward to cover waterways in the Shire of Esperance.

Community meeting

A community meeting was held in Hopetoun on the evening of Monday October 28th. This was publicised via a flyer sent out by the Shire to all relevant community groups, and through an editorial in the local "Community Spirit" newsletter. The following people attended the meeting:

- Peter Masters (DPaW)
- Jeff Stone (Ravensthorpe DHS)
- Anne Brandenburg (Community)
- Matthew Hunt (Shire)
- John Tucker (Culham Inlet Group)
- Graham Richardson (Adjacent landowner)
- Frank Green (Adjacent landowner)
- Mary Smith (Hopetoun CRC)
- Mel & Kay Wilson (Adjacent landowners)
- Mary Richardson (Adjacent landowner)
- Jan & John Fletcher (Community)
- Marnie Lawrence (Munglinup Community Group)
- Di Belli (Hopetoun)
- Keith Rowe (Ravensthorpe SES)
- Christine Rowe (Ravensthorpe Progress Association)
- Michael Hall (Munglinup Caravan Park)
- Karen Campbell (Hopetoun Progress Association)
- Brenda Tillbrook (Fitzgerald Coast Tourism)
- Rod Daw (various community organistations)

Community meeting, Hopetoun, October 28

General points raised:

- Kayaks are faster than canoes (in most hands) – for canoes around 3 km per hour is a good average pace, where kayaks can double that;
- These trails should be for these two user-groups only (canoes and kayaks) – and should not encourage power-boats as they disturb native wildlife and can cause river bank erosion;
- Canoe trails "fit" very well with a broader desire to market the Ravensthorpe Shire as an outdoor nature-based adventure destination.

Key points raised about individual water bodies were as follows:

Hamersley River & Inlet

- The "new" campsite & launch point on the Shire reserve is well south on the Inlet, and requires a long paddle to get to the mouth of the river proper;
- The lower inlet is exposed to windy conditions, which can generate substantial chop – poor conditions for canoes and kayaks;
- Using the "old" DPaW recreation site may be a better launch point, but would require permission from the Department and negotiation with relevant Noongar groups;
- The Hamersley is a risky place to take power boats (due to submerged rocks), and putting a disclaimer on the brochure and signage might be a good idea;

- Best to use shallow draft canoes and kayaks without "under slung" rudders, as these will more easily negotiate rock bars etc at low water levels.

Phillips River

- At present access to the "main" launch site off Phillips River Road is difficult due to a large bog-hole and recent wet weather – road will need attention to make it all-weather serviceable;
- Two-wheel drive access is further compromised by the steep eroded slope leading down into the launch site – this too would require attention;
- Canoes have been put in at Pitchie Ritchie but this site is in the National Park and is not favoured by the Department of Water, who have a gauging station there;
- Bird-life on the Steere River is often very rich – but accessing the Steere means a considerable paddle down the Phillips from the launch site and then around the top end of the Culham Inlet;
- The Culham Inlet is shallow and gets very choppy when the wind comes up, and is not considered a safe place for canoeing in these conditions.

Dunns Swamp

- Known to be an important waterbird nesting site, with birds nesting from June right through to November each year;
- Tree deaths around perimeter of water body have been caused by rising water table and nutrient inflow from surrounding agriculture;
- Actual "lake" is quite small, and does not offer a significant canoeing experience;
- Access after wet seasons can be problematic;
- General agreement that this should be taken off the list of trails to be developed.

Jerdacuttup River

- Currently access is possible from Springdale Road, but this location is potentially dangerous due to poor sight lines hiding approaching traffic;
- Many river users are accessing the water by driving down West Bank Close and then using firebreaks on private property to get through to the river reserve. This situation needs to be resolved, and neighbouring landowners are open to discussion with the Shire about creating "proper" public access via this route (see submission outlined below);
- Use of the river is increasing, and as the access point is not formalised this is causing some environmental damage to the site and the river banks;
- The "old cannery" site was suggested as a possible public access point, but this is in a Nature Reserve, and consequently developing a launch point would not be possible under the vesting of this land;
- Local landowners are very keen that power-boats not be encouraged, and asked that the access point be "carry in" only;
- Access to the river bank can be gained via the road reserve at the south end of Daniels Road, but there is a steep 10 metre drop to the water, and this would not work as a launch site;
- Swimming tiger snakes and floating dead cows can occasionally be "hazards" in the river;
- The river does not flow opening into the lakes at the south end – rather, it floods through a broad marshland area that is not traversable by boat or canoe;
- The river south of Springdale Road never dries up – it is constantly fed by two large fresh-water springs on the east bank;
- North of Springdale Road is a series of pools – not worth investigating.

Oldfield River and Inlet

- Launch point on east bank is in Shire of Esperance, and will require negotiation with them. The two Shires have done joint projects in the past, so this should not present a problem;
- It may be possible to "grow" the canoe trails network eastward into the Shire of Esperance in the future;
- Water levels can get quite high before sandbar to ocean breaks;
- Upstream sections can be shallow when water levels are low, and paddlers will then be confined to a narrow channel and may need to watch out for overhanging branches;
- The river has never been known to dry out completely, and should be usable the great majority of the time;
- Algae (non toxic) and mosquitoes can be a perceived problem (NB – this applies to all rivers). Need to inform users of non-dangerous form of algae and the need to use insect repellent;
- Downstream of launch point it is only a relatively short paddle to the "open water" of the Inlet, which can get quite choppy when windy.

Personal submission by M & K Wilson

A two-page hand-written submission was provided by Mel and Kay Wilson, landowners whose property abuts the Jerdacuttup River at the end of West Bank Close. A summary of key points follows:

- Have a 33 year association with river systems in the Hopetoun area;
- Fully aware of the benefits of tourism to Shire and community;
- In general, support canoe trail proposal – with some reservations:
- Canoe trail could impinge our lifestyle and security, but we accept that that is progress;
- Adequate and legal access needs to be provided, with parking suitably contained to prevent incursion onto private property (open to negotiation with Shire re use of firebreak tracks). Current access patterns see visitors illegally accessing our property;
- Ideally, would like launch site equipped with toilet, rubbish bins and gas barbeque;
- Erosion of sand tracks and damage to vegetation and moss on rock at launch site are issues;
- River has been over-fished by those using nets, and rarely provides "size" bream now;
- Paddling hazards include tiger snakes (either swimming or in overhanging branches), mosquitoes, flies and other insects, the occasional dead cow in the river, and possible agricultural chemicals;
- Would prefer motorised vessels banned from using river (all non-motorised forms acceptable – no pollution, limited impact on river, and personal health benefits);
- Water quality is good now, but may need to be monitored as both bird life and fish come and go;
- Always an enjoyable paddle!

As was the case with the Trail Master Plan community meetings, the input from those who attended was extremely valuable, and has helped establish a clear basis for proceeding with these Development Plans for "canoe trails" as distinct from the broader option of "water trails". Information about launch points and access to the same was particularly useful, and has been incorporated into the recommendations in this report.

The firebreak access track between Wilsons and the river reserve

SECTION 5: SUMMARY OF FIELD WORK

Potential trail users / target markets

As outlined earlier in this Report, facilities such as these are commonly called "water trails" in the USA, and a broad and inclusive group of possible users are catered for, including:

- Canoeists
- Kayakers
- Surf-ski / sit-on-top paddlers
- Stand-up paddle boarders
- Power boat enthusiasts
- Jet ski / personal watercraft users
- Small sail boat users

This scenario – and the whole question of possible user groups – was discussed at the community meeting, and evidence of this is to be found in the notes in the previous section. In summary, it was the feeling of the community (supported by the consultants) that these trails should cater for paddlers only – primarily those with canoes and kayaks, but not excluding other simple paddle-craft such as surf-skis and sit-on-tops. There was a strong feeling that power-boats should *not* be encouraged.

This has clarified – and simplified – the target market, and will make production of promotional and informational literature more streamlined (and less expensive).

Land tenure

With assistance from Shire of Ravensthorpe staff and the Department of Parks & Wildlife the detailed land tenure surrounding each of these water bodies has been ascertained. This information, and discussion of any ramifications, follows:

Hamersley Inlet and River

- Hamersley Inlet waters (inlet only to start of river): UCL (Unallocated Crown Land);
- Inlet east bank: Shire of Ravensthorpe Recreation Reserve, and Fitzgerald River National Park;
- Inlet west bank: Fitzgerald River National Park;
- Waters of Hamersley River: Fitzgerald River National Park.

As noted elsewhere in this Report, the original "target" launch site for this trail was within the Shire Reserve on the east bank of the Inlet. However, this is too far south and necessitates an extra 2 km of paddling across exposed open water – and therefore it is proposed that the launch site be located at the old DPaW recreation site as described in the section that follows.

This will necessitate negotiations between the Shire and DPaW (and possibly representatives of the local Noongar group too) to enable access to this site. There is nothing in the current Management Plan for the National Park to preclude a canoe trail from being promoted here – indeed, the Plan supports this kind of low-impact non-motorised recreational access.

Culham Inlet and Phillips River

- Culham Inlet east bank and Steere River: mix of Shire reserves and UCL (Unallocated Crown Land);
- Phillips River, water and east bank above estuary junction (except reserve below): National Park;

- Phillips River east bank at and around launch site: Shire of Ravensthorpe Reserve;
- Phillips River north of the launch site: water and both banks National Park.

In this case the launch site is on a reserve vested in the Shire, which eases any tenure-based requirements for the upgrading of this site. The fact that much of the river and its banks along the actual trail route north of the launch site is within the National Park does not impose any limitations on the development proposed. As mentioned above, the Fitzgerald River National Park Management Plan supports this kind of recreational access.

Dunn's Swamp

Not relevant – see Field Trip notes below.

Jerdacuttup River

- West bank, from launch site south for approx. 6.15 km: Unallocated Crown Land (UCL) / foreshore reserve corridor with adjacent farmland;
- West bank, southern 1.25 km: Nature Reserve (CR 40156)
- East bank, first 1.13 km south of launch site: UCL / foreshore corridor with adjacent farmland;
- East bank, 1.13 km to 1.96 km: Reserve No 8456 vested in the shire for "parkland and recreation"
- East bank, 1.96 km to approx. 4.42 km: UCL / foreshore corridor with adjacent farmland;
- East bank, from 4.42 km southward: Nature Reserve (CR 40156).

While this appears to be a jigsaw of tenures in reality the only portion that has direct impact on the canoe trail proposal is the Nature Reserve along the southern part of the river. Legislation surrounding this class of reserve precludes the development of recreation facilities as the vesting is for the purposes of "Conservation of Flora and Fauna". This means that while a pull-out point at the old cannery site should not be a problem, it would not be possible to install (for example) picnic facilities or a toilet at this location.

Thankfully, the UCL "river reserve" is sufficient to enable the creation of a parking area etc for the launch point, provided the access issues outlined in the Field Notes and Works List that follow are resolved.

Oldfield Estuary and River

- East bank from about 200 m south of launch site northward to Springdale Rd: Reserve 31759, vested in the Shire of Esperance for purposes of "Park";
- West bank from about 200 m south of launch site northward to Springdale Rd: Reserve 31759, vested in the Shire of Ravensthorpe (purpose not ascertained);
- East bank south of Reserve 31759 (above): Reserve 32337, vested in Shire of Esperance for purpose of "Recreation";
- West bank south of Reserve 31759 (above): Reserve 32338, vested in Shire of Ravensthorpe for purpose of "Recreation"

The actual vesting of these reserves is quite conducive to the kind of recreational usage being proposed in this report. The issue for the project proponent (Shire of Ravensthorpe) is that the launch site and the east bank of the river along the route of the trail is in the Shire of Esperance. This will require a process of discussion and negotiation around the proposed upgrading works, with the goal being a joint development project driven by Ravensthorpe.

The Shire of Esperance have been informed of this planning project and are aware of (and generally supportive of) the broad aims of the project.

Field trip maps and notes

The consultants travelled each of the waterways in the week commencing Monday October 28th, and produced the following maps and notes about each prospective trail:

Hamersley Inlet and River

The majority of the Hamersley system is inside the Fitzgerald River National Park – apart from the relatively small Shire reserve on the south-eastern section of the inlet. This area has been subject to significant improvement works as part of the State Government's recovery package delivered on the closure of the major BHP nickel mine nearby. Indeed, work is still going on, with Hamersley Drive closed to public traffic and the "new" recreation site on the Shire reserve still some time away from completion.

With the support of local DPaW officers, access was enabled and the small dinghy used for this field work was launched from the "old" National Park recreation site (north of the Shire reserve). It quickly became apparent that this was by far the preferable launch site for the proposed canoe trail, as the Shire site is a further 2 km down the inlet – and this body of water is shallow and quite broad, and quickly becomes uncomfortably choppy when the wind begins to blow.

As the map on the next page shows there are two options for paddlers departing the recommended launch site. The direct route goes west and then north-west into the mouth of the river proper. The longer but more scenic route follows the northern shoreline around two embayment's, both of which are attractive and both of which appear to be favoured by significant numbers of waterbirds. This route adds some 1.6 km to the distances quoted for the direct route, but will be popular with stronger paddlers and with those who have a full day available for the paddle.

The trail then winds its way west and north till it reaches some spectacular high cliffs on the final bend before the rock bar that effectively precludes onward boat travel. These cliffs make a very special "anchor" point to the trail experience, and give a clear "destination" for this particular paddle. Taking the direct route the rock bar is 5.23 km from the recommended launch site. This means that the return paddle will be 10.46 km – or 12.05 km if the longer, scenic route is used on the way out (or on the way back), as described in the table that follows which sets out points of interest along the way.

Once in the river proper this is a delightful and relatively sheltered body of water, with varied, attractive and interesting surrounds. It is relatively clear of hazards, though it was travelled in high water conditions and there may well be more potential underwater issues in drier seasons. However, it should never pose any significant danger to visitors in canoes or kayaks as they have such a shallow draught and travel and relatively gentle speeds.

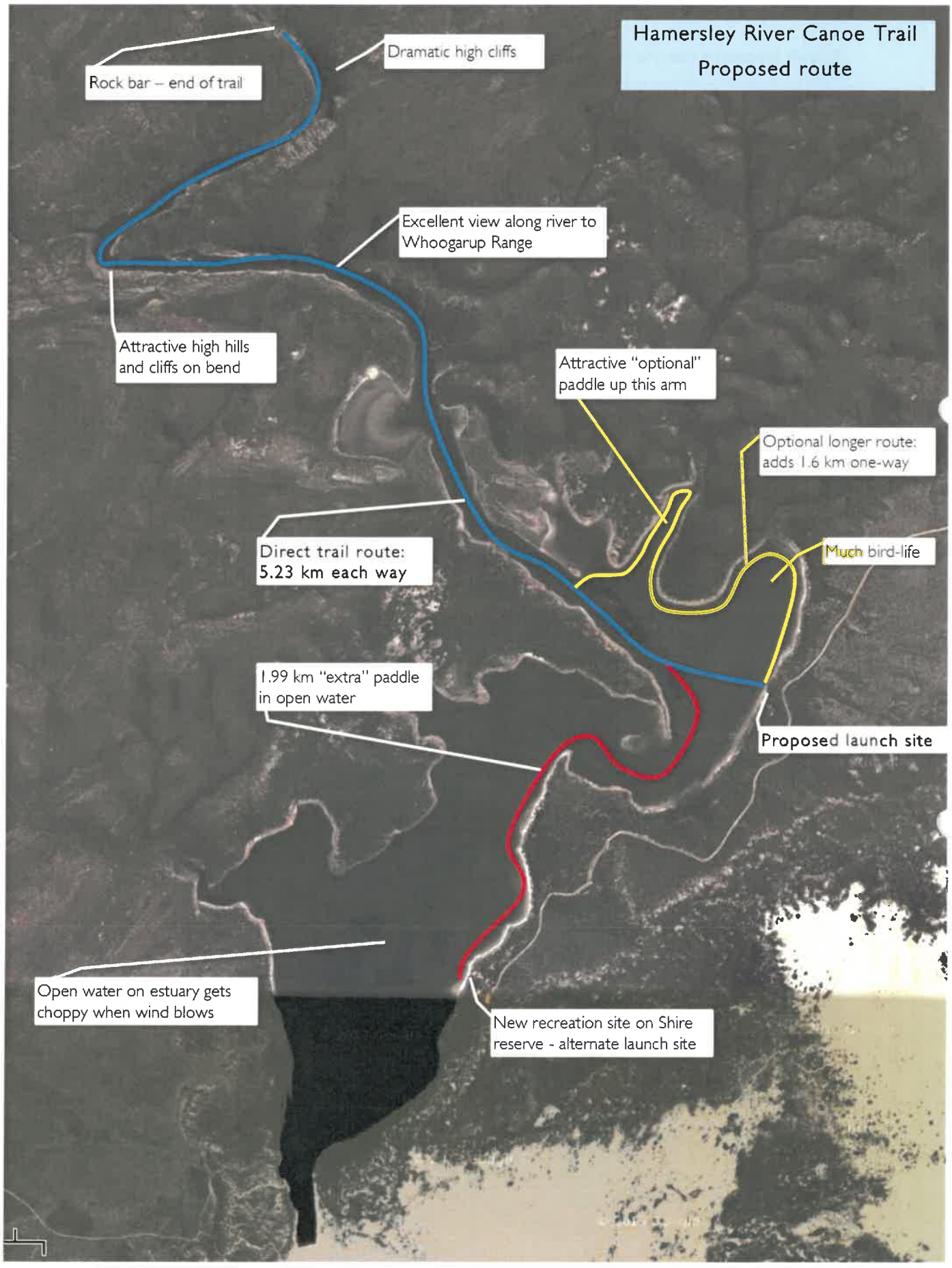
The proposed launch site is relatively well equipped, having been used as a DPaW recreation site for some years. The access track from Hamersley Drive will need attention as it is somewhat eroded toward the bottom end, but the site itself is quite flat and apart from some erosion alongside the boat ramp itself does not require significant gravelling. It has an existing pit toilet, a gas barbeque and a picnic table set in the shade. Therefore additional infrastructure is largely limited to interpretive and informational signage. These works are included in the table that follows in the "Works Lists" in the next Section of this report.

DPaW staff have indicated that this site has been nominally "set aside" as a camping place for the local Noongar community, as an outcome of negotiations around the upgrading program. However, it is considered unlikely that this usage would occur very often, and it is therefore not expected to preclude the site's use as a launch point for this trail. However, the Shire will need to enter into discussion with both DPaW and the body representing Noongar people in the area in order to arrive at a clear agreement around this matter.

Possible interpretive sites and other information of interest is set out in the table below:

Km from launch site	Note, interpretive subject, point of interest
0.0	Proposed trailhead and launch site at "old" DPaW recreation site
0.86	Head of first "bay" on north shore – many waterbirds for interpretation
1.42	Mature *Eucalyptus megacornuta* on eastern shore – for interpretiation
1.75	Head of second "bay" – very pretty, quite narrow, many grebes
2.23	Tip of headland on leaving northern bay – Peregrine falcon seen overhead
2.60	Junction with "direct route" at head of river proper
2.77	Extensive samphire flats on narrow headland north side; crested grebe nearby
3.58	Rocky headland on eastern / northern side – interpret schist geology
4.25	Beautiful view west along river to Whoogarup Range – interp opportunity
5.22	Round sharp bend with impressive quartzite and granite cliffs on west side
5.69	Extensive patch of tall swamp yate on east bank; also chestnut teal seen here
6.02	Reach base of dramatic high cliffs of sandstone on east side of bend
6.47	First of substantial submerged rocks seen below surface
6.65	Rock bar that precludes further travel upriver – beautiful "end point" to trail
10.85	Arrive back at "head" of river proper (2.60 above)
11.88	Arrive back at launch point via direct route across inlet on return leg

The dramatic cliffs near the north end of the Hamersley paddle (left) and the rock bars that bring an end to this delightful outing (right)


Hamersley River Canoe Trail
Proposed route
Rock bar – end of trail
Dramatic high cliffs
Excellent view along river to Whoogarup Range
Attractive high hills and cliffs on bend
Attractive "optional" paddle up this arm
Optional longer route: adds 1.6 km one-way
Direct trail route: 5.23 km each way
Much bird-life
1.99 km "extra" paddle in open water
Proposed launch site
Open water on estuary gets choppy when wind blows
New recreation site on Shire reserve - alternate launch site

Phillips River and Culham Inlet

The Phillips River is partially within the Fitzgerald River National Park, but the lower section of the eastern bank is outside of this jurisdiction. The recommended launch site off the end of Phillips River Road is in the Phillips River Reserve, vested in the Shire for the purposes of "recreation and conservation of flora", making access to and upgrading of this site a more straightforward process than is the case at the Hamersely.

The launch site, turn-around and parking area at the Phillips River is much in need of upgrading – but could become a beautiful nature-based visitor asset for the Shire

The launch site itself has the potential to be a very attractive nature-based visitor location in its own right, but requires some moderately substantial upgrading to achieve it's potential. The work required to deliver the desired outcomes is shown in Site Plans which follow in the next section of this Report. However, it is important to note that *it is vital that all work in locations such as this be undertaken with extreme sensitivity,* the goal being to maintain an intimate engagement between the visitor and the nature of the place. To this end, an allowance has been included in the Works List to engage a specialist "ecologist / project manager" to oversee this upgrading process.

The trail recommended to be developed stretches north from the launch site to the location known as Pitchie Ritchie, where the Department of Water has a monitoring station. During the field work the section of the river south of the launch site was also investigated, as were the northern shores of the Culham Inlet and the lower 4 km of the Steere River.

While the Steere is an attractive water body it is not proposed that it be included in the canoe trail project at this point, for two reasons: firstly, it does not have a readily accessible public launch site and therefore paddlers would need to go down river from the Phillips site, then cross a significant stretch of open water in the Inlet just to get into the river. And secondly, it is an area much favoured by waterbirds, and therefore warrants being left undisturbed at this time.

The Culham Inlet is a large body of relatively shallow water, and like the Hamersley is inclined to get choppy and therefore potentially dangerous very quickly when the wind begins to blow. It is best that paddlers not be encouraged from venturing into these circumstances.

The access route around the north and west sides of the Phillips River Reserve needs to be widened and repaired – but it is vital that this work is done with extreme sensitivity

The river north of the launch point provides another beautiful and varied paddle. While the greatest numbers of waterbirds were seen on the Steere, it was fascinating to observe both Caspian and crested terns hunting right along the length of the Phillips. Black swans and pelicans were also seen, while coots and a number of different duck species were present in reasonable numbers.

The "outside" of each of the major bends in this section have been cut into significant steep cliffs which display some of the fascinating geology of this watercourse. The Phillips River follows a shear line off the Jerdacuttup Fault, and the movement of these major formations can be seen in these dramatic rocky river banks. Large slabs of tilted schist and some amazing twisted quartzite dykes are obvious topics for interpretation, as are the folding patterns very evident in some of these rock formations.

Further north along the river the geology shifts to a granite base with accompanying changes to the riverside vegetation. Again, this is good material for inclusion in the trail brochure, with an explanation of why this has happened and what species are now present. In some cases this granite-dominated landscape is apparent on one bank while the other supports a very different ecosystem with different soils and a different geology.

Towards the top end of the navigable section of the river the channel begins to narrow and several underwater rock hazards were noted in passing. Again, as this field work was undertaken in high water conditions it is likely that there may be more of these "hazards" evident in dryer seasons – though these should not pose significant risks to visitors in canoes or kayaks.

The high water conditions made it possible to explore beyond Pitchie Ritchie, with another long pool of some 800 metres being accessible. This is not likely to be the case for much of the time, and it is expected that most paddlers will turn around at the narrow rocky section immediately below the gauging station. However, there is no reason that information about this next pool cannot be included in the trail map for the benefit of those who might visit after good rains.

Pitchie Ritchie offers two alternate haul-out sites, one at the gauging station and one at an old vehicle track some 300 metres downstream. This would offer visitors the opportunity to pause a while and perhaps eat lunch before setting out for the paddle back to the main launch point. It is just under 5 km (4920 m) to the gauging station, making a comfortable outing of about 10 km in total. Having said that, if the sea breeze comes in before the return trip is undertaken it will blow largely head-on – and will therefore make the apparently easier "down river" leg harder than might be expected!

Nonetheless, this is a safe and relatively easy paddle in a beautiful natural environment, and should be very much appreciated by paddlers of all levels of experience.

Possible interpretive sites and other information of interest is set out in the table below:

Km from launch site	Note, interpretive subject, point of interest
0.0	Proposed trailhead and launch site at Phillips River Road
0.77	Saltbush flats on west bank, and a tilted schist rock face
1.02	Broad samphire and mud flats on both banks in next 300 metres
1.15	Steep cliffs of tilted schist on east bank – extend for several hundred meters
1.75	Leave steep banks behind; soon after, a creek enters on east bank
2.15	Remarkable pink rock faces with quartzite dykes on western bank at bend

2.91	The unique "water funnelling" canopy shape of flooded yates very apparent
3.31	River narrows and soon after granite appears on west bank
3.67	Submerged rock "hazard" noted here
3.85	Creek enters on east bank
4.49	Large granite outcrops and cliffs on east bank, with granite vegetation types
4.60	Old vehicle track on east bank – possible pull-out point
4.74	River narrows appreciably and becomes quite rocky with some islands
4.92	Pitchie Ritchie gauging station – possible haul-out site

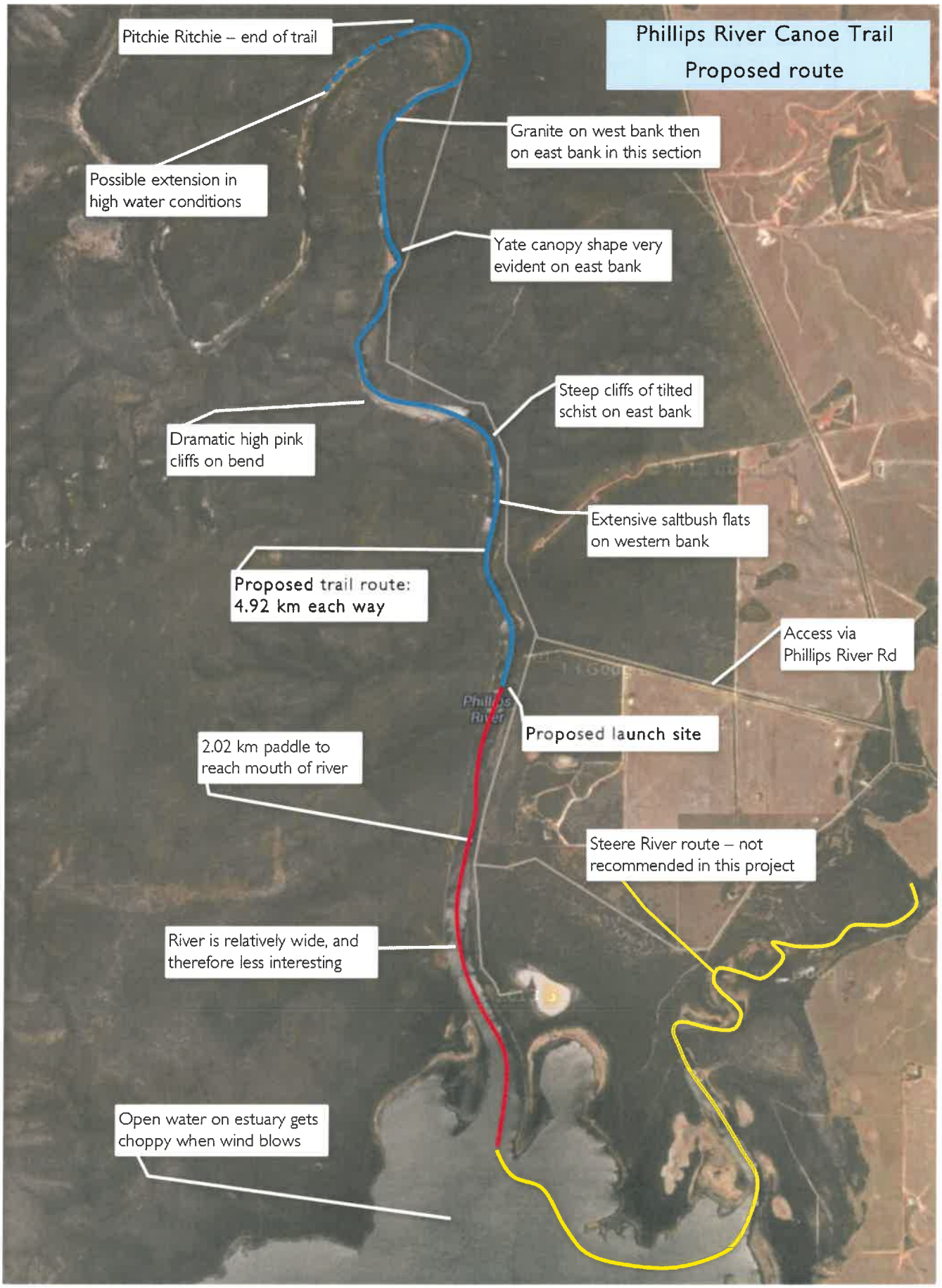
Culham Inlet Management Plan

In 2011 a Management Plan was prepared for the eastern shores of the Culham Inlet, including the reserve on which the proposed launch site is situated. This work was undertaken by Aurora Environmental for the Culham Inlet Management Group (as a subsidiary to R.A.I.N.). It contains several sections – and a number of recommendations that are relevant to the canoe trail proposal.

The Phillips River Reserve is nominated as one of only two public access points, the other being Hamersley Drive. The Management Plan recognises that as a consequence this site warrants upgrading, and makes the following recommendations:

- Improve access at this site by upgrading tracks and attending to existing erosion (taking care to avoid "accidental" clearing of orchids which are common in surrounding bushland);
- Delineate parking areas, turn-around points, launching area and picnic sites with bollards;
- Investigate options to upgrade access to two wheel drive, taking into account dieback hygiene, native flora clearing and possible impact on cultural heritage
- Sheet the boat launching site and adjacent tracks with crushed limestone to ensure a stable well-drained surface;
- Apply to DoT for funding to design and install a low-key but formal boat ramp (using materials such as GeoPro);
- Install a picnic facility with two tables and parking for 3-4 cars on the level site on the ridge above the launch point; delineate with bollards;
- Install traffic control and "no fires / no camping" signage;
- Install safety signage consistent with AS Z535 alongside or integrated into interpretive signage;
- Install interpretive signage in a shelter close to the boat launch site, and at the picnic site above (subjects suggested include commercial and recreational fishing, information about birds and animals (including the native water rat), and cultural history of the area);

While not all of these recommendations match entirely the enhancement program set out in this report, there are no significant clashes and the intent of both Plans match to a significant extent. It would be important for the Shire to engage directly with the Culham Inlet Management Group during the process leading up to the implementation of this work, to ensure both parties are satisfied with the outcomes.


Phillips River Canoe Trail
Proposed route
Pitchie Ritchie – end of trail
Granite on west bank then on east bank in this section
Possible extension in high water conditions
Yate canopy shape very evident on east bank
Steep cliffs of tilted schist on east bank
Dramatic high pink cliffs on bend
Extensive saltbush flats on western bank
Proposed trail route: 4.92 km each way
Access via Phillips River Rd
Proposed launch site
2.02 km paddle to reach mouth of river
Steere River route – not recommended in this project
River is relatively wide, and therefore less interesting
Open water on estuary gets choppy when wind blows

Dunn's Swamp

Dunn's Swamp is a relatively small lake about 5 km north-east of Hopetoun. It was the first site visited during the period of field work, and a number of issues quickly became apparent:

Just two of the many nests seen among the paperbarks around the southern and eastern fringes of the lakes

- Due to heavy recent rains the access track was flooded for a substantial distance before the launch site. This meant launching the dinghy onto what was actually the (flooded) vehicle track and paddling it about 300 metres to a point where a route could be forged through the perimeter paperbarks and onto the lake proper. Despite this being an unusually wet spring the prospect of this kind of issue was the first "negative" against this possible trail;
- Once on the lake the small size of the water body became fully apparent. It is indeed only just over 1 km from east to west (its longest axis) and is only about 400 metres north to south. This makes for what would be a very limited paddle, with a route of somewhere less than 3 km being possible;
- Fringing vegetation has died over recent decades due to a rising water-table (and likely nutrient run-off from surrounding agriculture) – and this makes the site less attractive from out on the water;
- Most importantly, it was discovered that there is a major long-time waterbird nesting site along the southern shores – and in particular in the south-eastern corner of the lake. A number of nests were still occupied at the end of October, and local observers indicate that these nests are generally in use from June through to November each year.

Given the combination of these factors it very quickly became apparent that it would not be appropriate to recommend the development of a canoe trail on Dunn's Swamp. This position was put to the community meeting and was met with widespread agreement. Therefore this proposal has been removed from the suite of opportunities that are the subject of this Development Plan.

Dunn's Swamp should be left to be the wildlife haven that it is at present, and paddlers should not be encouraged as they will inevitably frighten nesting birds.

The relatively small size of Dunn's Swamp is apparent in this photo, taken from the western end

Jerdacuttup River

The Jerdacuttup River was in many ways the "surprise packet" of this set of water bodies – a long and delightful stretch of water starting out with a narrower and more intimate section and gradually widening into expanses of flat water that attracted vast numbers of birds. If it has a particular challenge (from an implementation perspective) this revolves around accessing a functional launch point.

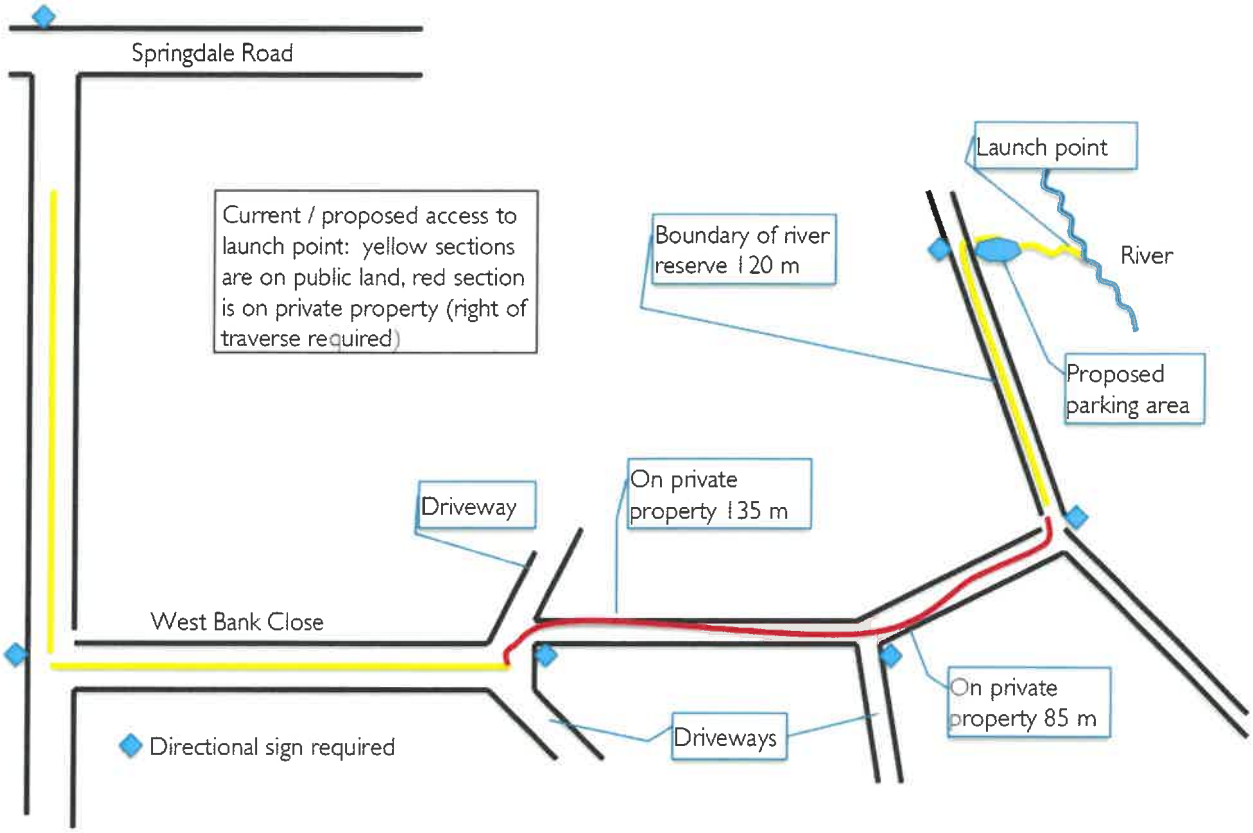
The upper sections of the Jerdacuttup are relatively narrow, and provide a delightful and intimate experience of the river

Currently two options are being used. One is immediately adjacent to the Springdale Road crossing, on the south side. Here there is a small gravel slip-road which allows a single vehicle to reverse down to close to the water's edge. While actually getting to the water is relatively straightforward here, the site has two significant issues: parking is limited to one or two vehicles, with little room for expansion, and the entry/exit onto or from Springdale Road is notably dangerous. The line-of-site to the west is very short and during the field visit it was observed that vehicles approaching from that side appear very quickly and at speed. Taken together, these issues virtually rule out expanded and publicly promoted use of this location.

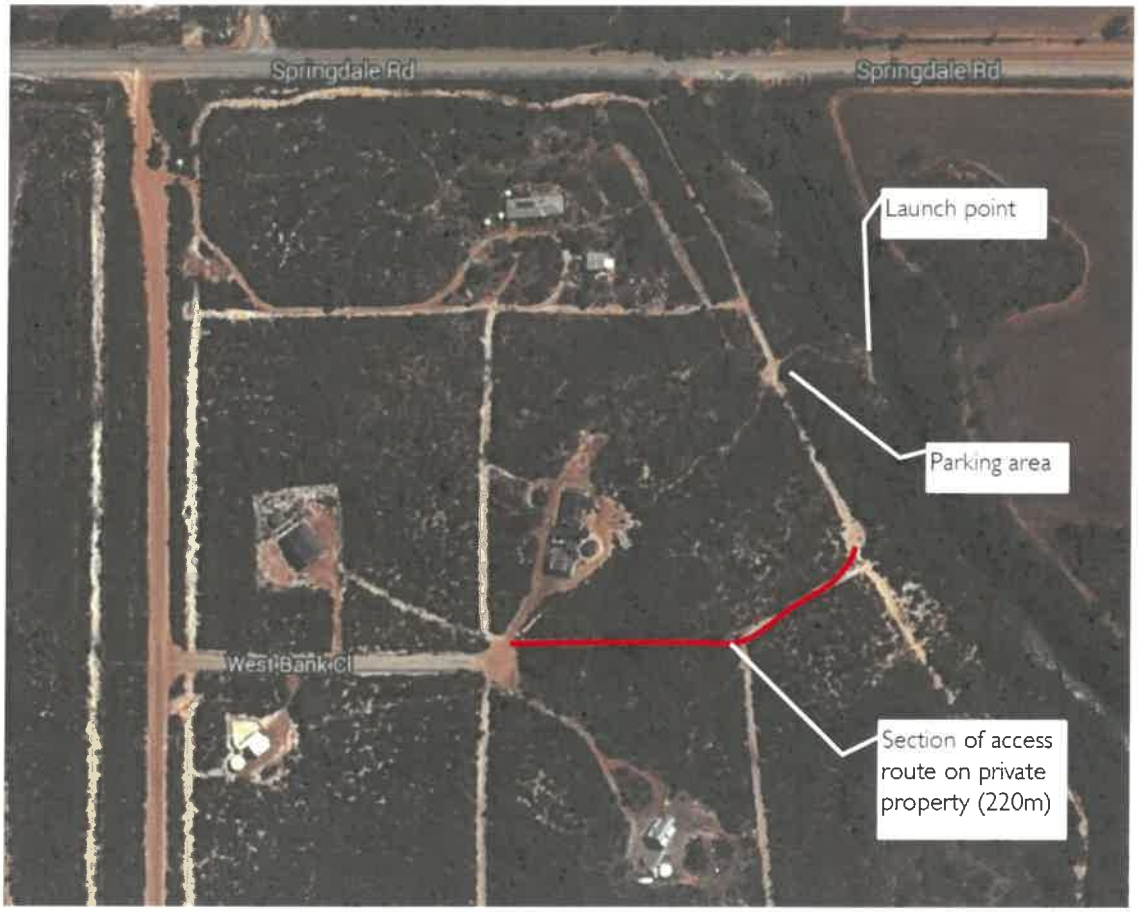
Birdlife is extensive in the lower reaches of the river (left), while the southern extremities currently carry an extraordinary growth of swan-grass (Ruppia), as can be seen on the right. This photo also shows how the river simply melts into the swampland at this point, bringing to an end the journey downstream

The second site in common use is a little further south, again on the west bank of the river. It is accessed via West Bank Close and then along private property boundaries to reach the river reserve. Here the track follows a firebreak along the reserve boundary to the north till it reaches the access point, where a rudimentary track leads down a sloping rock face to the water's edge. The issue here is that currently visitors have to "trespass" on private property to reach this point.

This is clearly indicated on the simple plan of this access route and the aerial photo which appear on the next page.



Jerdacuttup River launch point access issues (above and below)



Given that this launch point would require resolution of the access across private property, a thorough assessment of any other possible access point was made. Two alternatives were considered: one, recommended at the community meeting, was the old cannery site near the south end of the navigable section of the river. This was ruled out almost immediately as it is in the Nature Reserve, and the legislation pertaining to this tenure does not permit the development of recreation facilities.

The second alternate option considered was at the river-bank end of the east-west section of the Daniels Rd road reserve. This has good public access right to the bank – but the water is some 10 metres below the parking area and the bank is very steep, sufficiently so to require a safety rope in order to scramble down. Some time was spent considering whether or not switch-backs could be cut into this face, or if a mechanical "slide" of some kind could be constructed to enable visitors to lower their boats to the river, but both options were abandoned as impractical and/or unsafe. This is most unfortunate, as the access to a potential parking area at this site already exists and is all on public land.

Having said this, resolving the access issue at the recommended site is not particularly difficult either. Neighbouring landowners on the north side (Mel & Kay Wilson) have indicated that they are happy to negotiate a permanent "right of traverse" or easement along the boundary breaks that are currently being (illegally) used. Given this, it should not be too onerous to resolve this matter in a means that satisfies the private property owners need to know that they are not at any liability risk while giving the Shire a permanent public route to the river foreshore.

It is important that this "right of traverse" or easement is permanently attached to the title of the property(s) involved, so that it extends beyond the current owners, should they ever sell. It is also important that in working through the resolution of this issue any other concerns held by the landowners are also addressed. The recommendations for signage and the new proposed parking area facilities should go a long way to resolving any outstanding concerns that might exist, but the neighbours should be consulted before the implementation process is commenced to ensure any legitimate requests are met.

The proposed parking / picnic area is all within the river reserve, and the site plan shows a line of bollards preventing cars from being parked to the west of the boundary track, as is currently occurring (this being on private property). Fortunately very little vegetation needs to be cleared to create this new facility, and some substantial yate trees are on hand to provide shelter for a picnic table and toilet. Another line of bollards prevents vehicles being driven down the rock slope as is happening at present – this is to protect the fragile environment involved, and will serve an important secondary purpose in making in impossible to launch motorised vessels from this site.

The trip down the river is, as mentioned at the outset, a delightful one. This will be the longest of the four trails, with a return trip distance of around 15 km. Yet there is much to engage paddlers along the way, as can be seen from the annotations on the route map on the following page. This river differs from those further west in that private property abuts the banks for some substantial sections, creating a different ambience entirely. Further, the presence of the old cannery site towards the south end of the paddle gives some fascinating cultural history that can be interpreted – and the site itself offers an ideal pull-out point at which to stop and perhaps eat a picnic lunch.

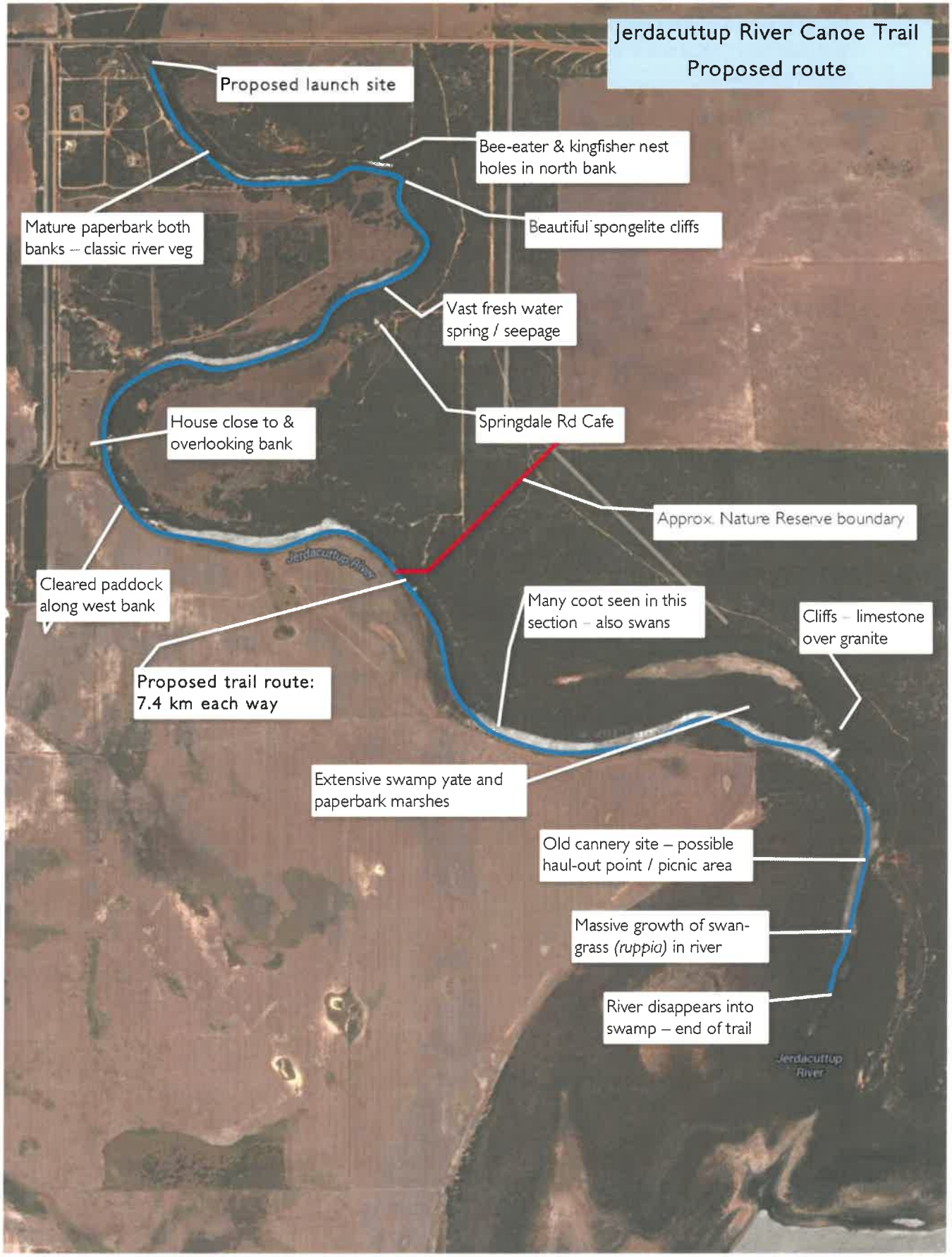
Curiously, the river does not flow out into the Jerdacuttup Lakes. Rather, it dissolves into a broad swamp yate marshland, with some of the flow going underground and the remainder spreading out and filtering through the trees and the tussocks of reeds and sedges. When visited in October 2013 the southern-most kilometre of the river supported a heavy growth of swangrass *(Ruppia spp)*, which almost clogged the channel but which was a sign of very healthy water conditions.

This is not surprising, as the river is fed by two permanent freshwater springs. One of these, just below the Springdale Road Café, is one of the largest known along the south coast, and is in its own right a prime interpretive topic.

The Café and associated visitor facilities also promise to be an attraction to paddlers coming to this river, and it is possible that the proprietor may offer canoes for rent as part of the overall business operation. This kind of development can only add to the appeal and the availability of the Jerdacuttup River Canoe Trail. Such is the quality of this experience that it well and truly warrants the resolution of the access issues and the installation of the parking and picnic facilities shown on the Site Plan.

Possible interpretive sites and other information of interest is set out in the table below:

Km from launch site	Note, interpretive subject, point of interest
0.0	Proposed trailhead and launch site as shown and outlined above
(0.20 north)	(Sandbar appears here in dry seasons, precluding access from Springdale Rd)
0.33	Mature paperbarks both sides – healthy, intact riverine vegetation
0.53	Fallen tree in river channel – potential boating hazard
0.80	Logs / branches create hazards both banks – keep to centre channel
0.93	Bee-eater and kingfisher holes in east bank
1.13	Attractive spongelite cliffs on bend, east side of river
1.45	Large freshwater spring / seepage begins on east bank – extends over 200 m
1.96	Possible pull-out point below Springdale Rd Café
2.59	House on banks overlooking river on west side
2.85	Swamp yate marsh along east bank
3.03	End of Daniels Rd road reserve (alternate launch point investigated)
3.38	Open farming paddock on west bank – continues for several km to the south
3.96	Paperbark-lined bay on east bank – many coot seen in this section
4.42	Approximate boundary of Nature Reserve
4.61	Old vehicle track on east bank – possible pull-out point
5.62	Waterbirds abound – coot, heron, chestnut teal, black duck etc
6.15	Another "arm" of river extends to north – lined with paperbarks
6.20	Limestone-over-granite "cliffs" on east bank
6.71	Old cannery site – possible pull-out point and interpretive site
7.40	Approximate "end" of flowing river (massive *Ruppia* growth north of here)


Jerdacuttup River Canoe Trail
Proposed route
Proposed launch site
Bee-eater & kingfisher nest holes in north bank
Beautiful spongelite cliffs
Mature paperbark both banks – classic river veg
Vast fresh water spring / seepage
House close to & overlooking bank
Springdale Rd Cafe
Approx. Nature Reserve boundary
Jerdacuttup River
Cleared paddock along west bank
Many coot seen in this section – also swans
Cliffs – limestone over granite
Proposed trail route: 7.4 km each way
Extensive swamp yate and paperbark marshes
Old cannery site – possible haul-out point / picnic area
Massive growth of swan-grass (ruppia) in river
River disappears into swamp – end of trail
Jerdacuttup River

Oldfield River

The Oldfield River is quite different to the three others involved in this project. Being a fair distance further east, it passes through a landscape and geology that is thoroughly distinctive. Instead of deeply incised and often stony banks the Oldfield has shallow flat surrounds. Instead of following a fault line or an erosion channel in rock it has cut its path through the sandplain that dominates this part of the world.

This gives a very different feel to the river, and one that benefits both from its own unique environment and from the sheer contrast with the three rivers further west. While the immediate surrounds may not be as spectacular as can be found elsewhere, this distinctive landscape does offer a host of new and interesting interpretive opportunities.

The launch point is on the east bank of the river, and is therefore actually in the Shire of Esperance (the river itself being the shire boundary). This means that developing this site will need to be by negotiation between the two shires. It is understood that there is an existing history of joint projects, so this should not be too onerous to organise. In situations like this it is common practice for the proponent – in this case the Shire of Ravensthorpe – to take the lead role. Indeed, there are examples of councils actually undertaking works on their neighbour's land at their own cost, if this is required to fulfil the overall objectives of a much broader project, but it is to be hoped that a joint project can be negotiated as both Shires will benefit.

The launch site requires some moderately significant repair work, as erosion has taken a toll over the years. The access track was very wet in October 2013, and some large bog-holes will need to be filled. The site plan prepared for the location shows a significant reshaping and reorganising of vehicle movement patterns, to try to minimise the length of downhill track that needs to be maintained in coming years. It also shows the creation of a longer parking area higher on the slope where the ground is basically level. This site will most likely continue to be used to launch small powerboats, and therefore space has been created to accommodate parking a vehicle with a trailer.

Other infrastructure includes a toilet located behind a row of blue mallee trees to the east of the parking area, and a picnic table high on the slope where visitors will have a fine view over the river and inlet. Unfortunately there is no shade in this area so it has been recommended that the table be installed under a simple shade shelter. The two large interpretive panels are proposed to be installed in their own shelter adjacent to the picnic facilities.

The Oldfield River and Inlet are open to the ocean more often than the others involved in this project. This means that more fish species are likely to be present, offering another interpretive opportunity. Despite this, the water quality in the river is generally very good, though as with other rivers in southern WA it does have a dark tannin-stained colour to it. The Department of Water has indicated that occasional algal blooms have been noted in this waterway, but that these are non-toxic.

The flat, low-level sandy banks so common along the Oldfield are clearly apparent in this photograph of a possible haul-out / picnic point

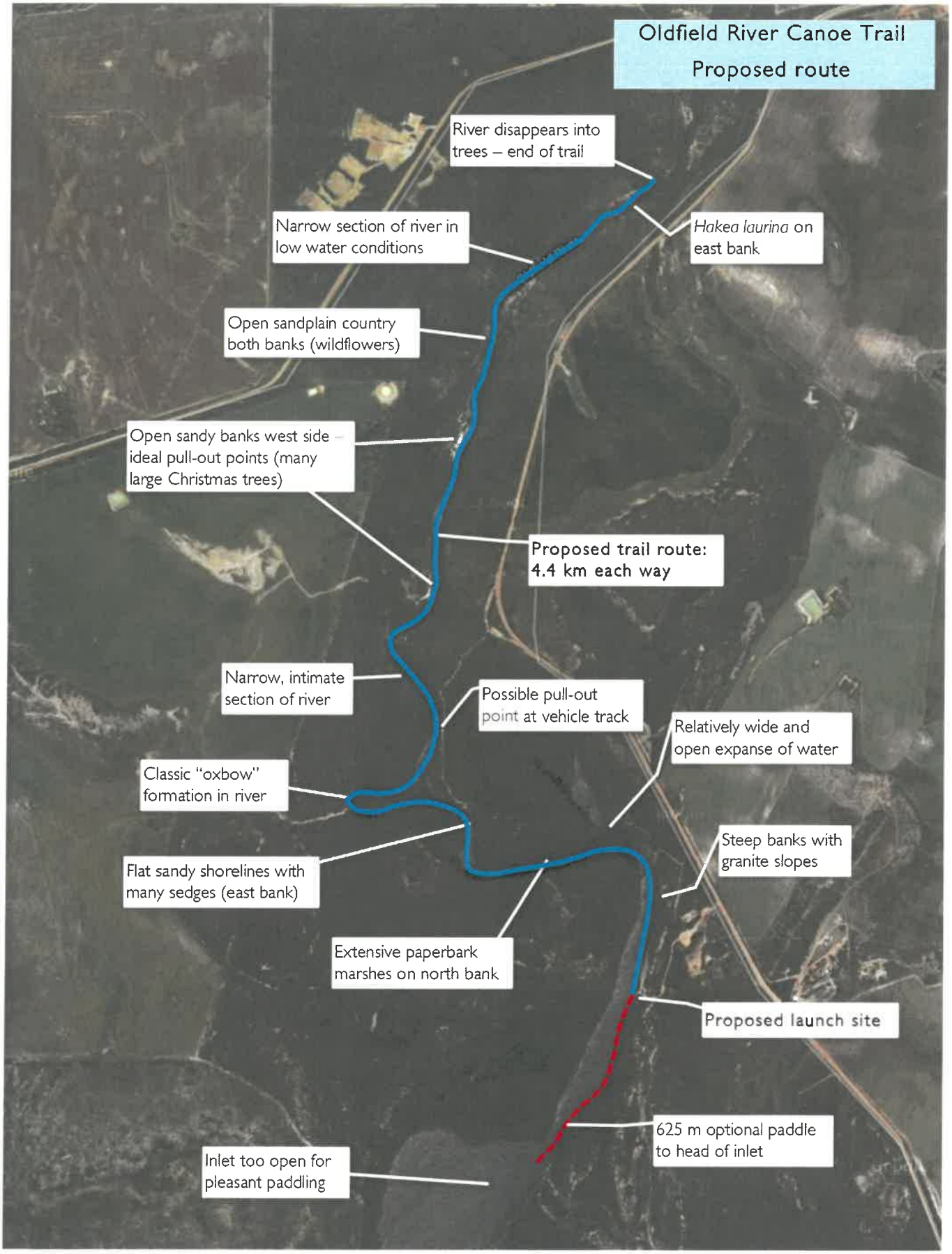
The launch point is some 625 metres north of the head of the inlet. This section of the river is quite wide and is of relatively low interest, and the inlet itself is too exposed to be considered as a canoeing option. Therefore the trail sets off northward along the river, soon turning west at a point where a wide but short "arm" branches to the north. These lower reaches are flanked by mature paperbark and swamp yate woodlands.

The flat and open sandy banks are soon apparent as the river heads around a superbly defined oxbow formation. The neck of this is little more than 20 metres wide, and the river may well cut through in the next significant flood event. At this point though, it offers an excellent opportunity to engage visitors in some classic riverine geography via interpretation in the map / brochure.

As the trail winds northward the channel narrows and with the banks being so low it is possible to see quite far back across and through the neighbouring sandplain vegetation. Huge Christmas trees *(Nuytsia floribunda)* can be seen scattered along both banks in the upper reaches of the river, and are especially present around several locations that offer easy haul-out (picnic / rest stop) locations. Eventually, about 4.4 km north of the launch point, the river shrinks until the way forward is blocked by trees. At a 9 km return paddle with few hazards and no chance of rapids (due to the absence of rock) this is a delightful and easily achievable water trail route that should appeal particularly to family groups and those wanting an easy but rewarding outing.

Possible interpretive sites and other information of interest is set out in the table below:

Km from launch site	Note, interpretive subject, point of interest
0.0	Proposed trailhead and launch site as shown and outlined above
0.25	Steep bank east side with substantial granite slopes
0.55	Broad embayment / arm of river extends north; canoe trail goes west
1.12	Extensive sandy flats (east bank); many native sedges & *Gahnia triffida*
1.53	Notably under-cut bank on outside of bend in river (erosion at work)
1.64	Head of very obvious "oxbow" formation – classic river geography
2.04	Old vehicle track on east bank – possible pull-out point
2.20	Narrow section of river – gives a pleasant "intimate" feel to the route
2.41	Sharp bend eastward with open paperbark bay on north side
2.65	Open sandy patch on west bank with large Christmas trees – pull-out point
3.22	As above – long sandy stretch on west bank – likely wildflower spot in spring
3.49	Large *Macrozamia dyeri* on west bank (unusual)
3.78	Creek enters rive from north
3.85	River narrows – would be potentially shallow and narrow in low water
3.84	Huge Christmas trees on both banks
4.06	*Hakea laurina* thicket on east bank
4.39	Watercourse is engulfed by trees – end of trail


Oldfield River Canoe Trail
Proposed route
River disappears into trees – end of trail
Narrow section of river in low water conditions
Hakea laurina on east bank
Open sandplain country both banks (wildflowers)
Open sandy banks west side – ideal pull-out points (many large Christmas trees)
Proposed trail route: 4.4 km each way
Narrow, intimate section of river
Possible pull-out point at vehicle track
Relatively wide and open expanse of water
Classic "oxbow" formation in river
Steep banks with granite slopes
Flat sandy shorelines with many sedges (east bank)
Extensive paperbark marshes on north bank
Proposed launch site
625 m optional paddle to head of inlet
Inlet too open for pleasant paddling

SECTION 6: IMPLEMENTATION PROGRAM

Infrastructure, interpretation, directional signage and other items required for the development of each of the recommended trails follows in this section of the Report. Costs are provided for the development of interpretive material and the design and supply of directional signage, however the cost of installing these items is included in the Works List tables that follow. A table summarising all costs is then provided at the end of this section of the Report.

Interpretation: enriching the experience

"Standard" interpretive signage

Interpretation on land-based trails is dominated by in-situ signage, and rightly so – it remains the simplest and most long-lasting and cost-effective form of engaging with visitors. This means of interpreting a place is quite obviously problematic on a water trail!

Having said this, some time was spent investigating the option of installing floating interpretive signs, using buoys anchored in the river / estuary / lake with etched aluminium panels attached to one face. Very quickly it became apparent that there were two issues with this approach:

- The cost of each installation would be very substantial – the buoy itself, the anchoring system and the work involved in the installation of the unit would dwarf the cost of the actual interpretive panel, and would make this an expensive exercise, and
- As buoys need to be bright yellow to be visible on public waterways they would inevitably introduce a significant element of "visual pollution" to what are largely pristine and natural places.

Examples of the type of buoy involved are shown in the image above. While these have text on them they do not show an attached interpretive panel. However, it is not hard to envisage how this would look – and to understand the implications of this option.

This option was discussed at the community meeting, with the general feeling being very clear that this was not a desirable outcome due to the visual impacts involved, and the costs associated with such installations.

Local, interstate and international evidence all points to quality mapping / brochures as the best means of providing both practical information and interpretive stories for canoe trail users, supported by substantial signage at the launch point of each trail, and it is combination that is recommended for these trails.

Brochures, maps, written guides

After signage, brochures or written guides are perhaps the most common form of interpretive material – especially at natural sites and on heritage trails. They can effectively combine interpretation with a promotional purpose to deliver added value for money, and are often seen to be a "memento" of the visit, thus spreading the "message" further afield as they are shared with family and friends.

Brochures and guides can range from simple folded cards to complex and weighty books. The purpose of the printed matter must be carefully defined to ensure the product meets the intended market. If this is done, clever design and writing can produce an appealing and informative document for relatively low cost. Distributing such an item can be challenging, unless visitors have to pass through a central entry station to get onto the site in question. Then they can have almost 100% saturation, making them highly effective in sharing both interpretive and management messages.

In this case it would be crucial to use tear-resistant waterproof paper as inevitably some of these documents are going to get wet. This does not impose limitations on the design process and only marginally pushes up the final price of the product.

While it is tempting to combine all trails onto a single document (to ease distribution issues) this would result in a quite substantial item that could prove unwieldy out on the water. Therefore it is recommended that each trail have its own brochure, but that they be packaged and distributed as a "pack", meaning there is only one item to post or hand to possible trail users. Naturally, they should be designed as a "set" so that they complement each other, and to the greatest possible extent they should capture the "feel" of the Fitzgerald Coast.

Each of these brochures should carry the following informational material (list prepared with extensive review of national and international best practice):

Preliminary / preparation

- Length and duration of trail
- Degree of difficulty of trail
- Wind and weather warnings
- Safety "do's and don'ts"
- Seasonal variations in water levels
- Tidal impacts, and source of tide times
- Source of current water level information
- Keep right on the water
- Wear bright (visible) clothing

Trail brochures must provide clear directions to enable visitors to easily find launch points (Oldfield River)

- Presence or otherwise of power boats
- Morning V afternoon conditions
- Fishing permits required?
- Approximate times for distances

Practical / on the water

- How to get to launch sites
- Ease of access to water
- Travel downstream if two launch sites
- Upstream paddling will take more time/effort
- Presence of algae / any danger involved
- Location of obstructions (on maps)
- Location of any portages (on maps)
- Fast flowing / potentially dangerous sections
- "Comfort stops" – presence or otherwise
- Location of any "safe havens" (for storms)
- Likelihood of snakes in water (& response)
- Private property – mark clearly & avoid
- Clean down if aquatic weeds are present

Cliffs like these on the Phillips River are excellent material for interpretation in the trail brochure

Interpretive information

As with all trails, provision of interpretive information significantly enhances the visitor's experience. All of these trails pass through fascinating and beautiful landscapes, and most have intriguing aspects of cultural history associated with them. Instead of putting this material on signs it is proposed that the great majority of it is delivered on the trail maps/brochures. As most interpretive signage only carries 2 or 3 paragraphs of information and an illustration / image, this should not overwhelm the essential practical aspects of the document.

Consideration was given to installing simple riverbank signage carrying just a large number in order to "locate" trail users on their map and to anchor a particular interpretive story to this location – however, field work suggested that this was not necessary, and that it too could prove to be visually disruptive in such pristine landscapes. Physical features are sufficiently apparent that most trail users will be able to accurately locate themselves along the route at all times – and therefore will be able to read interpretive material relevant to that particular site or section of river.

During the field work consideration was given as to whether or not a "Key Theme" could be nominated for each of these rivers (as thematic interpretation is generally favoured where this is possible). However, the nature of the landscape and the variety of possible interpretive topics makes this impossible, and it is recommended that a more pragmatic "site specific" program of interpretation be undertaken. This allows those features that will attract the paddler's attention to be interpreted in each case, without attempting to fit this information into an arbitrary thematic framework.

A list of interpretive topics was prepared for each trail, and these have been incorporated into the Field Notes presented in the previous Section. This should not be taken to be a full and final list of topics – further field work is required to refine this information, and to cross-check observations made during this field work. This process has been included in the cost estimates for the brochures set out below.

Mapping

Naturally, this information needs to be supported by clear and concise mapping. The Blackwood River map on pages 9 & 10 of this report is a good example of what should be delivered. This mapping should not only show the trail itself, but how to get to the launch site(s). It should show interpretive sites (numbered), and should clearly indicated distances and any features or hazards along the way.

Promotional brochure

Those attending the community meeting felt that in addition to producing individual trail brochures displaying the relevant route finding and interpretive information for each water body, it would also be useful to have a single overall promotional brochure which could be used to alert visitors – and potential visitors – to the suite of trails involved.

This should be a simple double-sided A4 document, full-colour and folded to the standard DL size. It will not be expensive to produce and yet should prove a very useful tool in promoting what may well be one of the most attractive sets of canoe trails in Western Australia. It too, could be downloaded from the internet, but more importantly it should be distributed widely to "feeder" Visitor Centres to raise awareness of the trails before travellers make decisions about where they might go. Places such as Esperance, Albany, Kalgoorlie, Bunbury and Perth would be obvious targets.

Launch site interpretive signage

As each of these trails only has one nominated launch site it makes sense to provide key trail information and safety messages via substantial signs at these points. These signs should also tell the over-arching interpretive "story' for the trail, setting the scene for what paddlers might see and experience out on the water. Mapping should be provided, to give an overview of the trail, and this should show distances between points of interest or features / hazards along the way (similar content to that which should appear on the brochure maps).

Each launch site should have two large (800x1200) full colour interpretive panels installed side-by-side in a simple shelter, similar to that shown in the photo to the right. One should carry the primary safety / route finding information and the other should deal with the key interpretive theme.

Website enhancement

It would be highly appropriate for these trails to be featured on relevant local websites once they are established. Much of the material written or prepared for brochures and launch-site interpretive signs should be readily transferrable for web-based usage, so costs associated with this process should be relatively contained.

Two options are immediately apparent – the Shire of Ravensthorpe site (which already has a "Paths, tracks and trails" page) and the Fitzgerald Coast site, which features trails under the "Activities" drop-down tag. There is no reason why new trails – be they these canoe trails or walk trails developed from the Trail Master Plan – should not appear on both websites. The budget for this project includes an allowance to cover this outcome, though the two bodies will need to engage in discussions about the appropriateness of this course of action before embarking on any such website development.

Depending on the final size and shape of the brochures produced for each trail, either the whole brochure or key parts of it should be downloadable from whichever sites carry this information. Consideration should also be given to providing regularly updated water level / canoeing condition information on these pages – but this should only be done if there is a firm timetable established for this updating and a clear commitment to ensuring that it is done.

Cost estimates – all interpretive elements

The estimates in the tables below are based on 2013 costs, with an additional allowance of 5-10% added in to accommodate any price rises that might ensue prior to implementation. They are provided in good faith as *estimates* – but should not be considered to be accurate quotes. These are based on costs established in other similar projects in Western Australia - consequently, they should be sufficiently accurate for funding purposes, but will obviously need to be confirmed during the implementation phase (in case of materials increases, for example steel or aluminium).

Costs have been calculated on the basis of *all 4 of the these trails being developed at the same time.*

Item	*Number*	*Unit cost*	*Total cost*
Field trip to refine / finalise design and interpretive content, and confirm mapping details & distances	10 person-days	n/a	9,800
Brochure development & supply: 4 @ A3 double-sided, full colour on waterproof paper, 5000 copies of each	4	7720	30,880
Promotional brochure: write, design & print 10,000 copies A4 double-sided folded to DL	1	4680	3,680
Launch site interpretive panels: 8 @ 800x1200 panels, not including shelters (costed in Works Lists)	8	2530	20,240
Website enhancement: 2 websites, 4 trails	2	5640	11,280
General project management, community liaison etc	Na	-	1,200
TOTAL (not inc GST)			$77,080

Directional and informational signage

There is little point developing these trails if would-be users cannot find the launch points. Therefore a simple suite of brown-and-white directional signage is recommended, as outlined in the table below. The majority of these would be standard "fingerboard signs" like the Heritage Trail example shown to the right.

Similarly, there is a limited selection of informational signage that is required to ensure paddlers move around the various launch sites in an appropriate fashion – these too, are outlined below.

Directional and information sign – numbers and locations

A summary of the location and usage of these signs is set out in the table below:

Sign Type	Locations
Hamersley River	
Double-sided fingerboard	Cnr Hamersley Drive & Hamersley Inlet Rd (drop down tag beneath existing road sign)
Single-sided fingerboard	Cnr Hamersley Inlet Rd and site access track
Large "Launch Site" sign	By water's edge at launch point (so that paddlers can easily locate the site as they return across the Inlet)
Phillips River	
Double-sided fingerboard	Cnr John Forrest Rd and Hopetoun Ravensthorpe Rd
Single-sided fingerboard	Cnr John Forrest Rd and Phillips River Rd
"Launch site 250 m" sign (left arrow)	At top of closed access track to launch site
"Car parking" sign	At end of dedicated cars-only parking area
"Trailer parking" sign	At end of dedicated trailer parking area
Jerdacuttup River	
Double-sided fingerboard	Cnr Springdale Rd and Daniels Rd
Single-sided fingerboard	Cnr Daniels Rd and West Bank Close
"Straight ahead" directional	At end of West Bank Close / start of easement (include "no direct river access / no powerboat access" information too)
As above	At junction with driveway on easement
Single-sided fingerboard (left)	At T-junction with river reserve firebreak
Single-sided fingerboard (right)	At parking area entry
"Keep left"	At parking area island, as shown on site plan
Launch point / Parking sign	As shown on site plan, by bollards at top of rock slope
Oldfield River	
Double-sided fingerboard	Cnr Springdale Rd and Munglinup Beach Rd
Double-sided fingerboard	Cnr Munglinup Beach Rd and access track to launch point
"Parking / launch point" sign	At head of southern "island" in launch site – see site plan
"Keep left"	At head of small island near water, as shown on site plan

Cost estimates – directional and other signs

A number of the sign styles detailed above are actually the same size and shape (fingerboard and Keep Left signs in particular) – these are combined into the cost table below as they will have the same unit cost. Prices quoted are as per recent projects plus approximately 10% for the passage of time, and include posts and fittings but *do not* include installation or concrete for the same (in Works Lists):

Item	*Number*	*Unit cost*	*Total cost*
Double-sided fingerboards (1800x200)	5	240	1200
Single-sided fingerboards (1800x200)	5	220	1100
Large "Launch Site" sign (1000x2000)	1	860	860
Rectangular directional signs (1200x600)	5	360	1800
Parking area signs (800x300)	2	170	340
Keep left signs (400x600)	2	140	280
Freight to Ravensthorpe	na	na	600
TOTAL (not inc GST)	20		$6180

Infrastructure and hardware

While the actual trail component of these four projects requires virtually no infrastructure, developing the access / launch points does. A number of items of hardware appear at each of the sites, including:

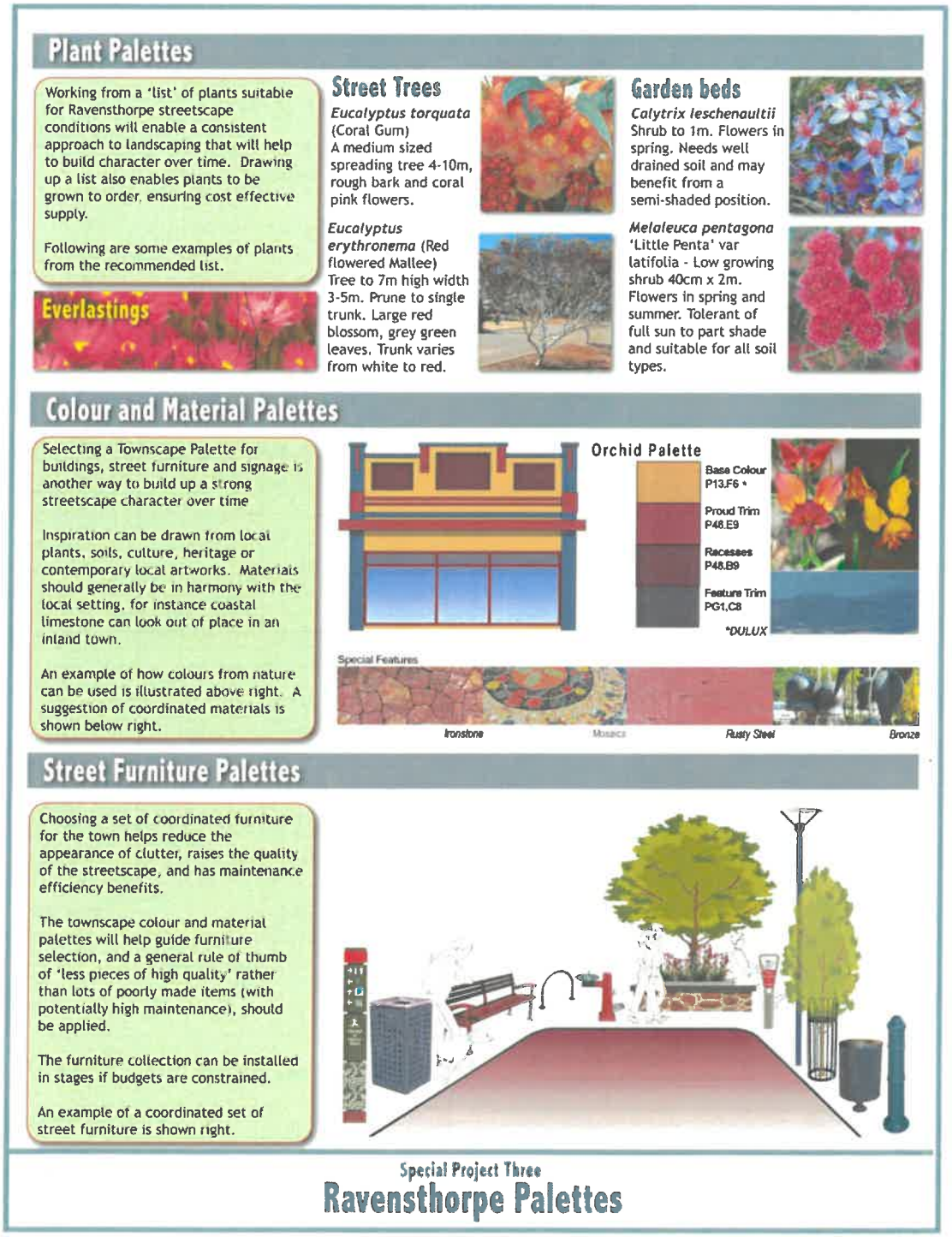
- Picnic tables
- Vehicle management barriers (bollards and/or post & rail)
- Interpretive shelters
- Sealed-vault toilets

Given the likelihood that the Shire of Ravensthorpe will be undertaking a number of site developments associated with nature-based projects in the coming years, it is strongly recommended that the Shire develop a simple "Style Guide" to guide the selection of hardware items such as these. (and more) Presenting a consistent and stylistically appropriate suite of visitor site infrastructure, hardware, materials, colours and textures right across the Shire will go a very long way to stamping Ravensthorpe as a community that fully appreciates the beauty and value of its natural landscapes.

In the light of this specific makes or models of infrastructure are not defined in this report. Rather, an allowance has been made in the cost estimates that will be sufficient to cover a range of options in each case. It is then hoped that the Shire will see fit to develop the proposed "Style Guide" via a process of community and stakeholder consultation during the next 12 months. This would then be used to select / nominate the exact items to be used at each of these sites if/when the implementation program proceeds.

It would be a great pity if hardware had to be chosen for these site developments independent of a broader planning process that could set guidelines for the whole Shire. This process should be undertaken in tandem with the "Ravensthorpe Palettes" process outlined by Sally Malone Design in the recent main street planning work, thereby producing an integrated suite of recommendations for both in-town and nature-based sites.

Ravensthorpe has the opportunity to get right something that so many others have gotten very wrong elsewhere in the state – and it is hoped that this project can be the catalyst for kick-starting that process. An allocation has been made in the table of costs for this joint Style Guide / Ravensthorpe Palette planning process, and the Shire is urged to undertake this work *prior to commencing the main-street upgrade in either Ravensthorpe, the waterfront project in Hopetoun, or any of the trail projects in this report or the Trail Master Plan.*



The "Ravensthorpe Palettes" project sheet from main-street design work done by Sally Malone Design

Works lists for individual trails

Notes re cost estimates:

- The information and costs set out below *does not include* the preparation of maps / brochures – and *nor does it include* the preparation, design and supply of interpretive and informational signage or directional signage (leading to launch sites). This is contained in the section immediately above. Costs and information relating to the *installation* of signage is however included in the Works tables below (labour and concrete required).
- It has been assumed that installation work will be undertaken by contractors, not by the Shire works crews (as it is understood that they are fully booked far into the future).
- Costs have been calculated on the basis of *all 4 of the these trails being developed at the same time.* Not doing so may result in higher overall costs, due to economies of scale being lost.
- All figures in the table are excluding GST.

Hamersley River

Required works	*Units*	*Total Cost*
• Negotiate use of site with DPaW and Noongar representatives (Shire staff with support from knowledgeable consultant. Note: staff time not costed)	2	2,400
• Install directional signs x 3, as set out above	3	740
• Repair erosion and fill / gravel / grade access track to site	300 m2	7,500
• Repair erosion and fill / gravel / grade launch area and parking	400 m2	10,000
• Install 2 large interpretive panels in shade under trees immediately north of picnic table – no shelter is required (installation only)	2	420
• Renovate DPaW toilet as required	NA	1,400
• Replace existing picnic table (or install new one as additional to site)	1	2,900
• Specialist ecological / site planning advice during site upgrade	3	3,600
SUB-TOTAL		$28,960

Phillips River

Required works	*Units*	*Total Cost*
• Install directional signs x 5 as set out above	5	900
• Fill 80 metre "bog hole" on Phillips River Rd (840 m from John Forrest rd); dig out, under-fill with rock, raise up road bed and gravel over top to prevent further ponding	400 m2	6,000

Required works	Units	Total Cost
• Prune road-side vegetation along 615 metres of road commencing at north-east corner of Phillips River Reserve (road surface is 5 m wide, so adequate for bi-directional travel once vegetation is cut back)	615 m	2,000
• Collect fill material from substantial berms along road section bordering north side of Phillips River Reserve	600 m x 2	1,500
• Repair erosion on downhill slope to bend just above river; where fill is required here and at site use material above but cement stabilise	150 m2	1,500
• Cut back fringing vegetation over 300 metre section parallel to river, to launch site area; install three 25 m long pull-over bays on east side of track to enable vehicles to pass	300 m	4,500
• Widen and upgrade 260 m of "loop track" at site, as shown in Site Plan; do not remove significant trees; remove rock where possible and fill over where not in 40 m section shown on Plan	260 m	7,800
• Close steep eroded track down into launch site (with bollards or boulders); rip, brush and allow to revegetate	30 m	1,500
• Relocate existing interp signage from top of ridge down into launch site, as shown on Site Plan	1	340
• Supply and install picnic table in shade on level area above launch site, as shown on Site Plan	1	2,900
• Formalise parking for 3-4 vehicles adjacent to table above and use bollards to preclude unwanted ingress into surrounding vegetation	n/a	2,500
• Sheet boat launch site and turn-around with compacted limestone to provide a stable well-drained surface	300 m2	7,500
• Clear low (saltbush) vegetation at east side of turn-around to create parking for cars and trailers, as shown on site plan; sheet if required	140 m2	3,500
• Remove sections of existing post-and-rail fence as shown on Site Plan and utilise to contain/limit traffic and parking as shown (will require additional fencing too)	n/a	2,200
• Supply and install picnic table under trees at north side of turn-around area; bench out level before installing, and remove section of fence to provide access	1	2,900
• Install new 2-panel interpretive shelter with signage, as shown on Site Plan (signage to incorporate A.S. Z535 safety information); cost here is for shelter and installation only – signage costed elsewhere	1	4,400
• Install sealed-vault toilet as shown on Plan, with path if required		25,000
• Specialist ecological / site planning advice during site upgrade	10	12,000
SUB-TOTAL		$88,940

Jerdacuttup River

Required works	Units	Total Cost
• Negotiate easement with neighbouring landowners (Shire staff – time not costed here)	n/a	0
• Install 8 directional and site signs as per list above	8	1,440
• Grade (carefully) access tracks from the end of West Bank Close; sheet with crushed limestone (or gravel) where necessary	330 m	13,200
• Install line of bollards on west side of firebreak track to prevent parking under trees on private property – see site plan	25	2,500
• Clear low vegetation and grade parking area as shown on site plan; lay crushed limestone if required and compact	280 m2	7,000
• Install line of bollards to prevent vehicles driving down-slope onto rock or to river bank, as shown on site plan	25	2,500
• Install new 2-panel interpretive shelter with signage, as shown on site plan (signage to incorporate A.S. Z535 safety information); cost here is for shelter and installation only – signage costed elsewhere	1	4,400
• Supply and install picnic table under trees, as shown on site plan	1	2,900
• Install sealed-vault toilet as shown on site plan	1	25,000
• Create crushed limestone (or gravel) paths to table and toilet	n/a	1,000
• Specialist ecological / site planning advice during site upgrade	6	7,200
SUB-TOTAL		$67,140

Oldfield River

Required works	Units	Total Cost
• Negotiate joint development arrangements with Shire of Esperance (Shire staff – time not costed here)	n/a	0
• Install 4 x directional signs as outlined above	4	720
• Fill bog holes (50 m) and lightly upgrade 400 m access track	n/a	7,000
• Remove old "Walk Trail" sign near entry to launch site parking area	1	80
• Repair erosion channels and cut spoon drains; fill, gravel and grade sloping access track and turn-around area as shown on site plan	340 m2	8,500
• Clear low / open vegetation at top of two "islands" and around east side of parking area; gravel and grade as required	350 m2	8,750

Required works	Units	Total Cost
• Install two lines of bollards as shown on site plan to prevent further use of "alternate" tracks north of main access route	45	4,500
• Spread cleared vegetation on closed tracks and allow to regenerate		1,000
• Install picnic table under simple shade shelter as shown on site plan (shade shelter to be an expanded version of interp shelter)	1	8,700
• Install new 2-panel interpretive shelter with signage, as shown on site plan (signage to incorporate A.S. Z535 safety information); cost here is for shelter and installation only – signage costed elsewhere	1	4,400
• Install sealed-vault toilet with pathway, as shown on site plan		25,000
• Specialist project management during site upgrade	6	7,200
SUB-TOTAL		$75,850

Summary table – ALL project costs

The table below brings together the totals of the table above, and adds in interpretive and directional signage costs, and any other single line-items that have not yet been accounted for:

Item	Total cost
Interpretive elements, as previously outlined (brochures, panels, websites)	74,280
Directional and informational signage – design and supply	6,180
Infrastructure and installation works – Hamersley River	28,960
Infrastructure and installation works – Phillips River	88,940
Infrastructure and installation works – Jerdacuttup River	67,140
Infrastructure and installation works – Oldfield River	75,850
Preparation of a hardware and materials "Style Guide"	40,000
SUB-TOTAL (not inc GST)	$381,350
Contingency allowance for cost increases / over-runs (10%)	$38,135
TOTAL PROJECT BUDGET (not inc GST)	$419,485
TOTAL INC GST ($)	($)461,433.50

At a first glance this may seem like a *substantial* total cost for the project. However, in reviewing the table above and its implications for the future of this project, several matters are worthy of consideration:

- Site works are costed at contractor rates (as provided by the Shire), which may result in a higher overall figure than if the work was undertaken by the Shire's own crews;

- Adding toilets to this project brings a "big ticket" item that has significant impacts on the bottom line. These alone account for $75,000 of the total budget.

- It is worth remembering that four trails are involved in this project. Taken together, they form a suite of attractions that few Shires can lay claim to.

- There are a number of grants that would appear ideally suited to funding this implementation project – in particular, the Lotterywest Trail Grant program is likely to be highly amenable to supporting canoe trails, something they rarely have the opportunity to do (For information about potential funding sources and grant programs refer to the Trail Master Plan prepared for the Shire in May 2013).

- In all cases (perhaps with the exception of the Hamersley) these projects address existing river access issues. They ameliorate unacceptable environmental impacts and visitor access limitations that blight the various launch points, and will deliver benefits to a broader cross-section of the community than just those who might use these trails.

- A quite conscious decision has been made to pitch this project above and beyond the common kind of nature-based tourism attraction. This choice was always going to have ramifications in terms of cost. However, as with most things in life "you get what you pay for". An investment of this level is entirely in keeping with the world-class quality of the natural environment in the Shire of Ravensthorpe.

  However, it is also feasible that these trails could be developed without the majority of the launch site enhancement works outlined in this report. Undertaking essential works only in order to provide reasonable year-round 4wd access, providing no additional site infrastructure, and developing the interpretive component necessary to promote the trails could potentially be done for somewhere in the vicinity of $150-180,000.

  The question here is whether or not this is actually value for money; whether it delivers the kind of top-shelf outcome that this extraordinary landscape warrants.

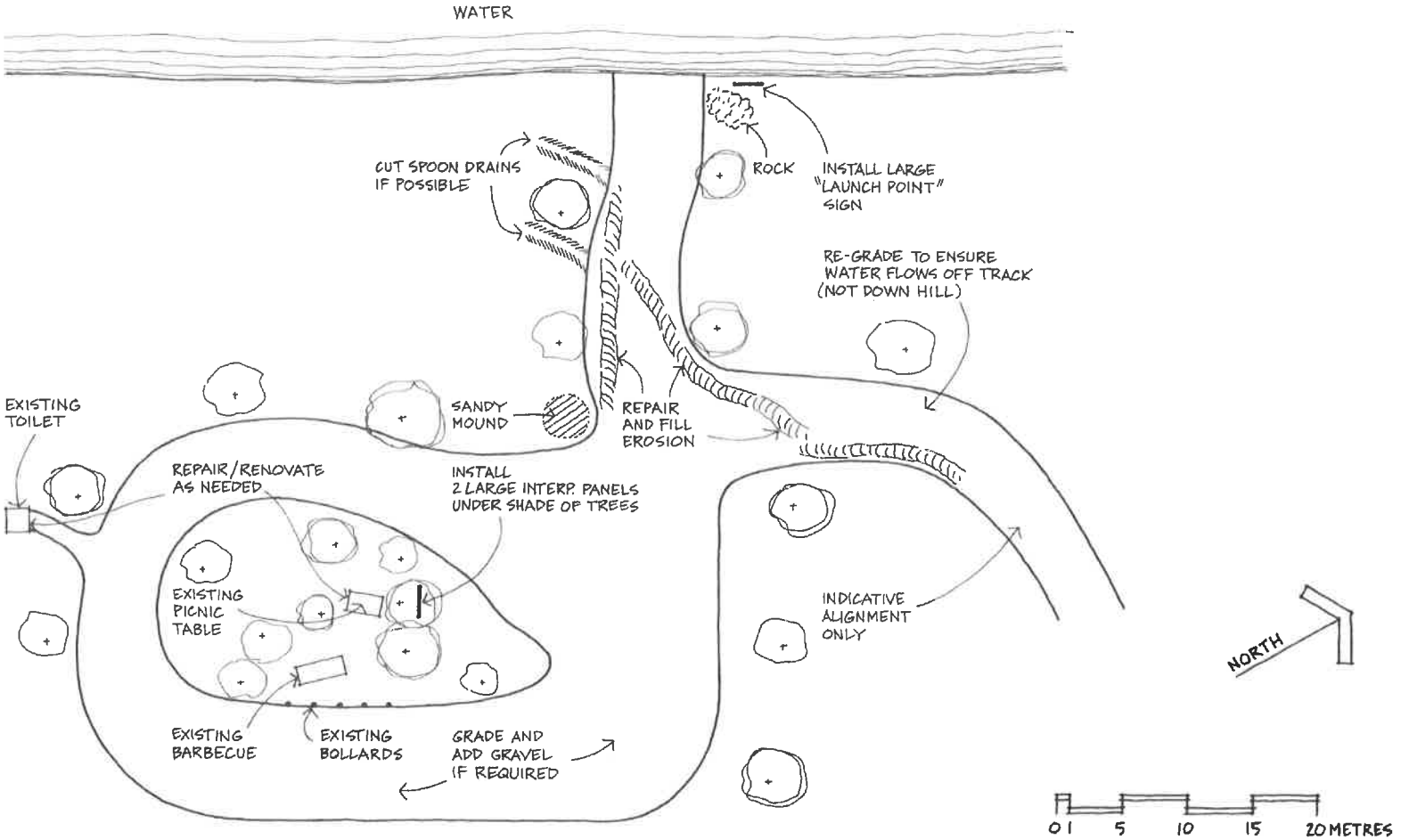
- In the end, it must be recognised that this project has the capacity to be part the foundation of a significant district-changing process. As such, it comes at a cost. Pruning can be undertaken, but that too will have a cost. In this case, it is highly like that boldness will be rewarded, especially as the Ravensthorpe Shire is blessed with such remarkable natural attractions upon which to base projects such as this.

SECTION 7: SITE PLANS

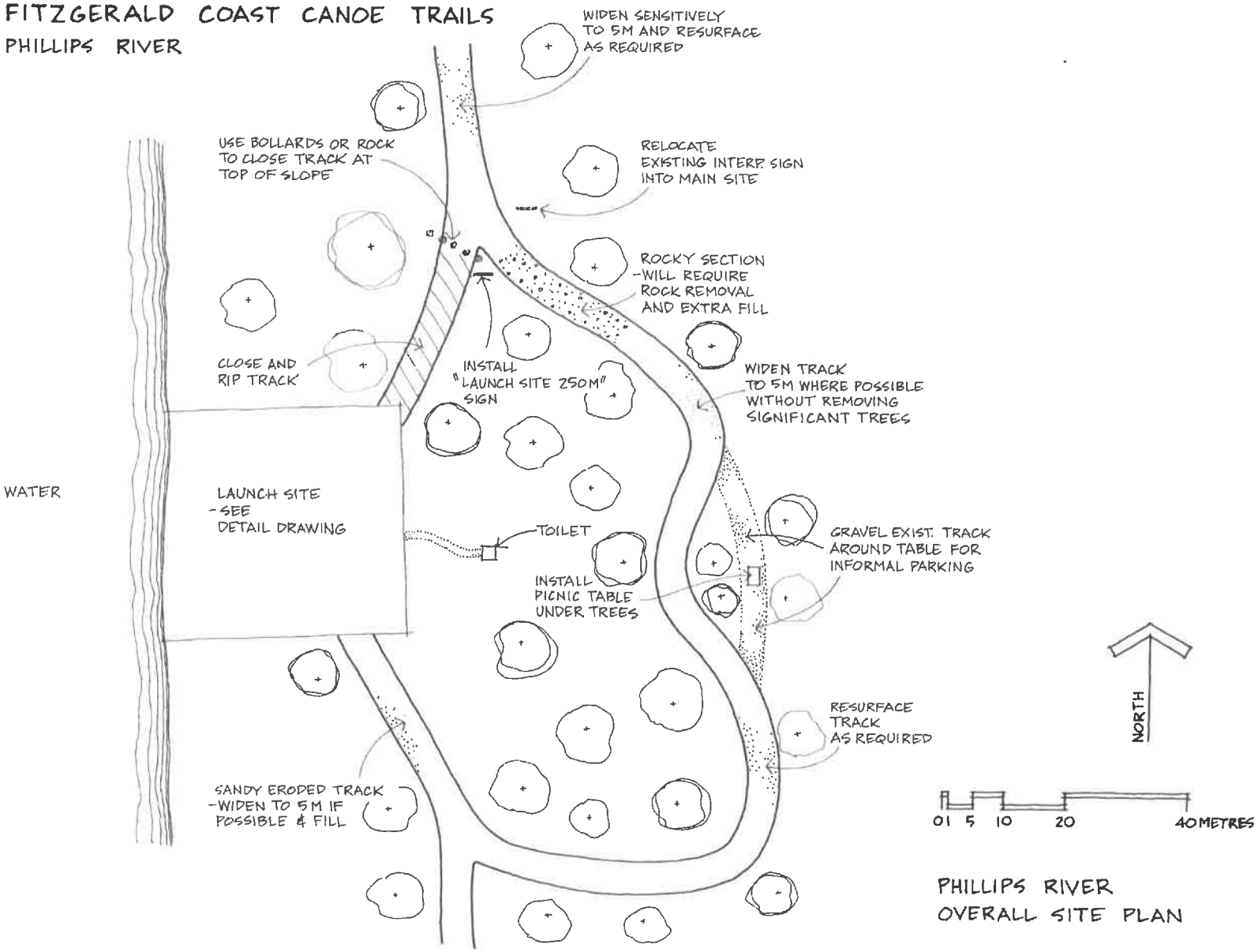
The drawings on the following pages are intended to provide clear guidance as to the layout of each of the launch sites in the project. They are not "fully engineered", but are to scale and should provide sufficient detail to enable Shire works crews (or experienced contractors) to undertake all works. They can be printed at A3 size for greater clarity, if so desired.

FITZGERALD COAST CANOE TRAILS

HAMERSLEY INLET

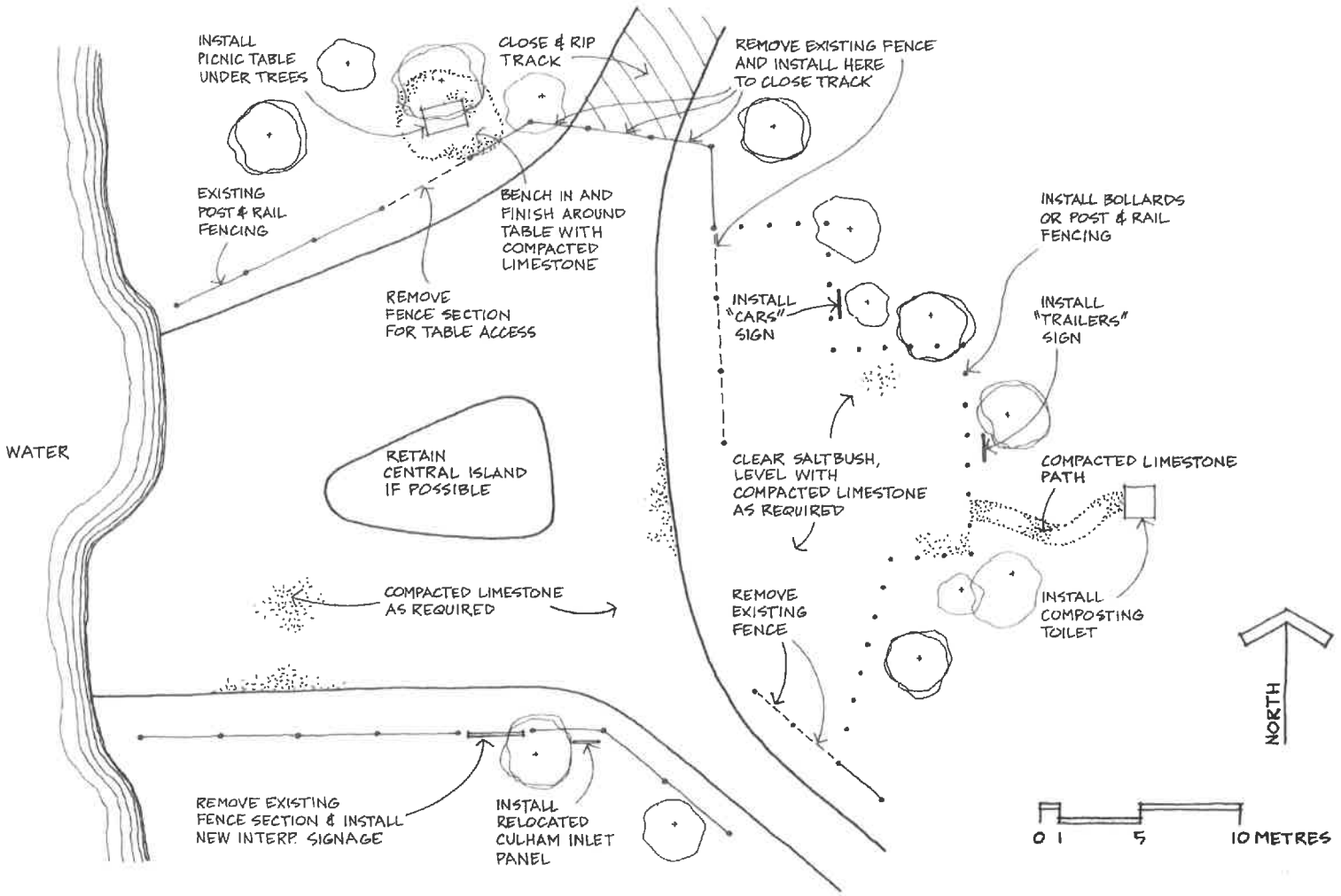


HAMERSLEY INLET
LAUNCH POINT


FITZGERALD COAST CANOE TRAILS
PHILLIPS RIVER
WIDEN SENSITIVELY TO 5M AND RESURFACE AS REQUIRED
USE BOLLARDS OR ROCK TO CLOSE TRACK AT TOP OF SLOPE
RELOCATE EXISTING INTERP. SIGN INTO MAIN SITE
ROCKY SECTION -WILL REQUIRE ROCK REMOVAL AND EXTRA FILL
CLOSE AND RIP TRACK
INSTALL "LAUNCH SITE 250M" SIGN
WIDEN TRACK TO 5M WHERE POSSIBLE WITHOUT REMOVING SIGNIFICANT TREES
WATER
LAUNCH SITE -SEE DETAIL DRAWING
TOILET
GRAVEL EXIST. TRACK AROUND TABLE FOR INFORMAL PARKING
INSTALL PICNIC TABLE UNDER TREES
RESURFACE TRACK AS REQUIRED
SANDY ERODED TRACK -WIDEN TO 5M IF POSSIBLE & FILL
NORTH
01 5 10 20 40METRES
PHILLIPS RIVER
OVERALL SITE PLAN

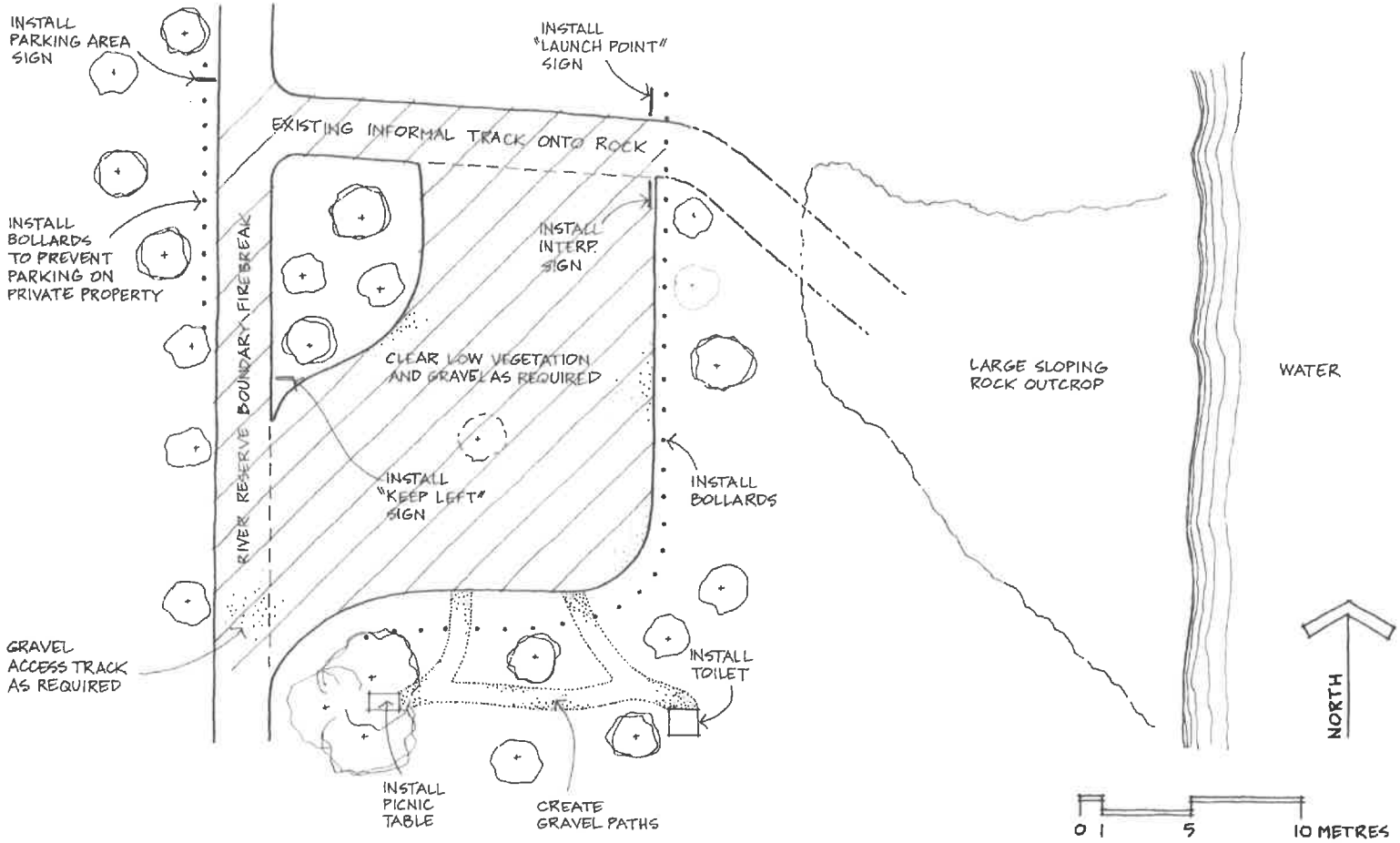
FITZGERALD COAST CANOE TRAILS

PHILLIPS RIVER



PHILLIPS RIVER
LAUNCH SITE - DETAIL

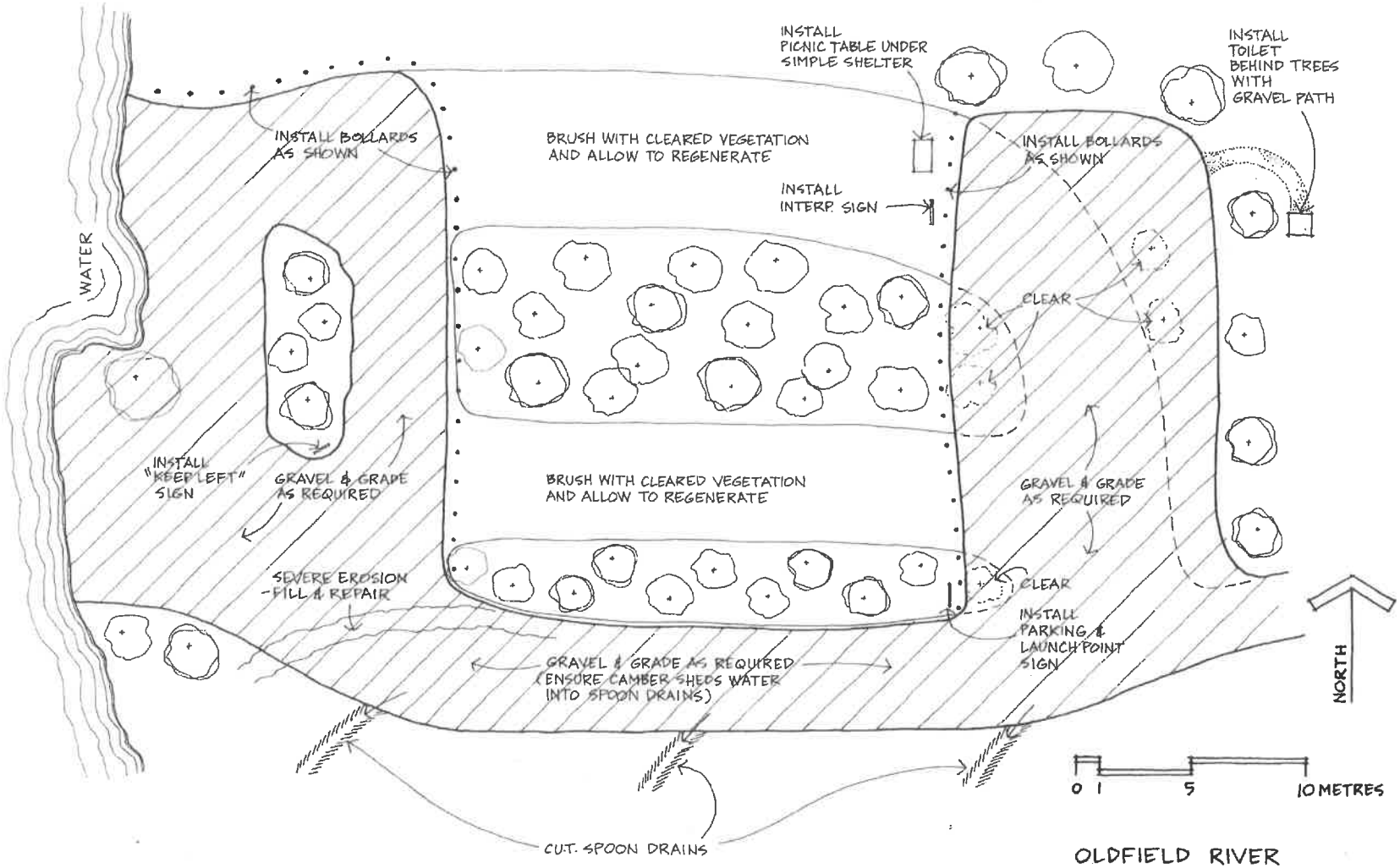
FITZGERALD COAST CANOE TRAILS
JERDACUTTUP RIVER



JERDACUTTUP RIVER
PROPOSED LAUNCH SITE

FITZGERALD COAST CANOE TRAILS

OLDFIELD RIVER



OLDFIELD RIVER
PROPOSED LAUNCH SITE