



Foreshore Management Plan

**Springdale Beach Estate
Denmark**

Prepared for LWP Denmark Pty Ltd



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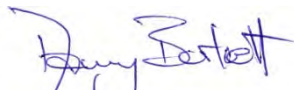
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Executive Summary

This Foreshore Management Plan (FMP) has been developed by Opus International Consultants (Opus) on behalf of LWP Denmark Pty Ltd for the development of Lot 9000 (Location 1935) South Coast Highway, Hay, Denmark (Springdale Beach Estate). The FMP outlines foreshore management measures and strategies to be implemented and incorporates preliminary comments from officers at the Shire of Denmark (SoD) and Department of Water (DoW).

The Wilson Inlet foreshore reserve lies to the south of Springdale Beach Estate. This reserve historically comprised the Denmark-Nornalup Railway (Torbay to Denmark section) which now forms the Denmark-Nornalup Heritage Rail Trail (Heritage Trail). The reserve is variable in width however is contiguous from eastern to western boundaries of Springdale Beach Estate.

The purpose of this management plan is to protect ecological and heritage aspects of the Wilson Inlet foreshore reserve from impact of the proposed development of the adjoining Springdale Beach Estate.

The objectives of this FMP are to:

- Be consistent with the Wilson Inlet Foreshore Reserves Management Plan 2008;
- Protect ecological aspects;
- Protect areas of cultural significance;
- Provide management guidelines for recreation areas compatible with sustainable use of the foreshore;
- Assess and manage the relationship and impacts on the foreshore from the adjoining Springdale Beach Estate and Tourist Site.

Management recommendation, actions and timeframes for proposed activities have been provided in Section 4 of this FMP.

It is the responsibility of LWP Denmark Pty Ltd to implement this FMP as a condition of subdivision of Lot 9000 South Coast Highway (WAPC Ref: 146458).

1 Introduction

This FMP has been developed by Opus on behalf of LWP Denmark Pty Ltd for the development of Lot 9000 (Location 1935) South Coast Highway, Hay, Denmark (Springdale Beach Estate).

The FMP has been developed for the purpose of satisfying Western Australian Planning Commission (WAPC) Application No 146458 (Application Receipt 12 July 2012) for Stage 4A:

- Condition 16: *A foreshore reserve in accordance with the approved Subdivision Guide Plan for the site, as established by survey, being shown on the diagram or plan of survey (deposited plan) as a reserve for recreation and foreshore management and vested in the Crown under S152 of the Planning and Development Act 2005. Such land to be ceded free of cost and without any payment of compensation by the Crown. (Local Government);*
- Condition 17: *Prior to commencement of site works, preparation of a foreshore management plan for the foreshore area identified under Condition 16 of this approval, consistent with the Wilson Inlet Foreshore Reserves Management Plan 2008, to Council specifications and in consultation with the Department of Water. (Local Government);*
- Advice 8: *In relation to Condition 16, the location of the foreshore reserve is to be confirmed prior to ground disturbing activities on abutting land. The foreshore reserve is to be protected from disturbance during subdivisional works.*

Consultation has been undertaken with the SoD and DoW and their advice incorporated in the FMP.

Condition 17 outlines the requirement for development of a foreshore management plan for the area of land within Lot 9000 (1 ha only) that is to be ceded to the SoD. However LWP Denmark Pty Ltd have gone above and beyond this requirement by including the existing foreshore reserve to the south of Springdale Beach Estate, in addition to the ceded area, therefore comprising an 8 ha area within this FMP.

1.1 Objectives

The purpose of this management plan is to protect ecological and heritage aspects of the Wilson Inlet foreshore reserve, from impact of the proposed development of the adjoining Springdale Beach Estate.

The objectives of this FMP are to:

- Be consistent with the Wilson Inlet Foreshore Reserves Management Plan 2008;
- Protect ecological aspects;
- Protect areas of cultural significance;
- Provide management guidelines for recreation areas compatible with sustainable use of the foreshore;
- Assess and manage the relationship and impacts on the foreshore from the adjoining Springdale Beach Estate and Tourist Site.

1.2 Current Land Use and Location

The Springdale Beach Estate comprises approximately 114 ha spanning between South Coast Highway and Wilson Inlet. This site is located approximately 3 km east of the Denmark town site (Figure 1).

Portions of Lot 9000 are zoned as 'Special Residential' (SRes 6), 'Parks and Recreation' (POS and foreshore areas), 'Tourist Area' (T 9), 'Public Use' and 'Additional Use' (A 21) under the Shire of Denmark Town Planning Scheme No 3 (District Scheme).

Land use to the north east of the development area is predominantly zoned 'Rural' and has not been cleared of vegetation. To the south east are 'Special Residential' (SR 8) lots. To the west is land zoned 'Parks and Recreation' which is largely pastured areas for use by the WA College of Agriculture – Denmark. Immediately to the north is land zoned as 'Rural' then 'Public Use' (WA College of Agriculture – Denmark and airport). The Wilson Inlet foreshore to the south of Springdale Beach Estate is reserved as 'Parks and Recreation' and is also an unmade road reserve (Rudgyard Place road reserve) (Figure 2).



Figure 1 Site Context Plan: Location of Springdale Beach Estate, Denmark.

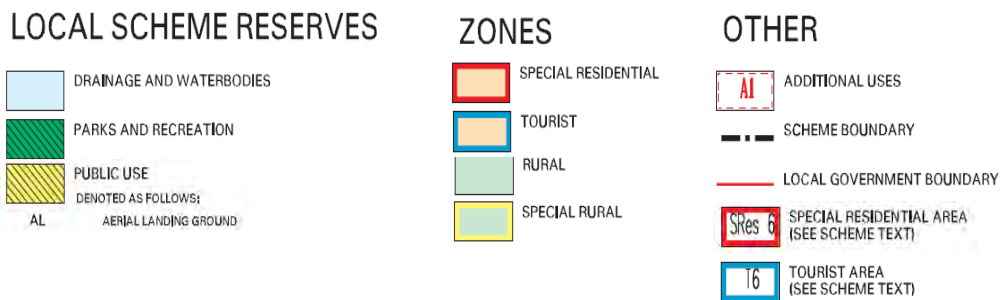
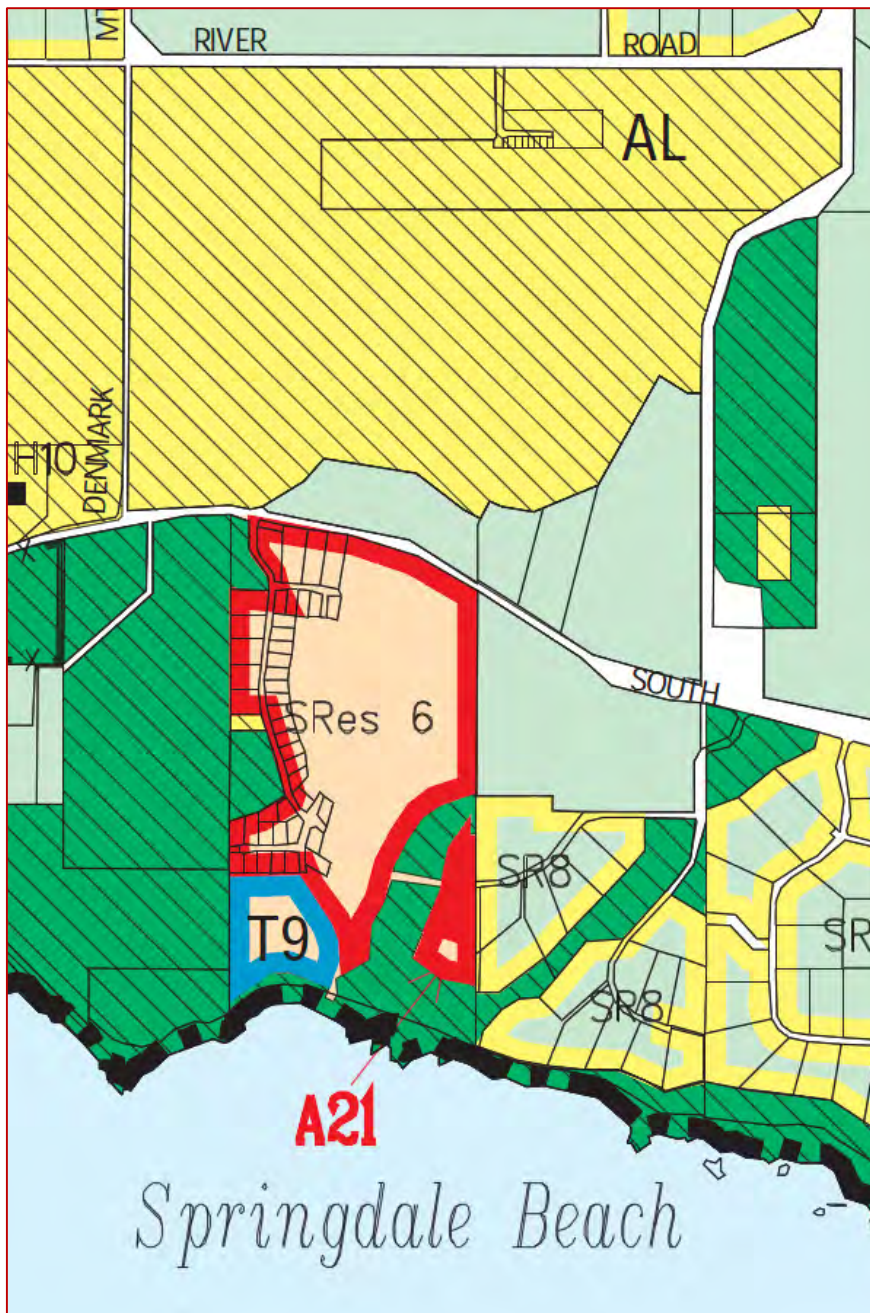


Figure 2 Zoning [Adapted from Shire of Denmark Town Planning Scheme No 3 (District Scheme) Map No 4]

1.3 Proposed Development

The Springdale Beach Estate subdivision is proposed to be undertaken in 4 stages (with Stage 4 split into 4A and 4B) (Appendix A). This subdivision is proposed to include 173 Special Residential lots, Public Open Space (POS), 1 Community Use site, 1 Tourist Zone and 1 Additional Use site. Special Residential lot sizes range from 2,672 m² to 1.2644 ha.

1.4 Foreshore Reserve

The Wilson Inlet foreshore reserve lies to the south of the Springdale Beach Estate. This reserve historically comprised the Denmark-Nornalup Railway which now forms the Denmark-Nornalup Heritage Rail Trail (Heritage Trail). The reserve is variable in width however is contiguous from eastern to western boundaries of Lot 9000.

To the south of the Tourist Site, within Stage 4A, the existing foreshore reserve abutting Wilson Inlet varies in width from 89 m at the western extremity to 65 m to the east, where Beaufortia Gardens meets the foreshore reserve. In between the minimum width is 60 m.

At the time the property was rezoned (October 2001), it was agreed that an additional 1 ha of land abutting the existing foreshore would be ceded to the Shire at no cost as part of the WAPC conditions. The area to be ceded was generally depicted on the Subdivision Guide Plan which formed part of the rezoning documentation (Appendix A).

This extension of the foreshore will enable the most steeply sloping vegetated land to be incorporated into the foreshore reserve, particularly the area towards the western boundary of the property.

The enlarged foreshore will provide a buffer between the Inlet and the proposed tourist development with the foreshore width being increased to 158 m at the western boundary, 80 m at Beaufortia Gardens and a minimum of 80 m in between. The foreshore reserve area has been mapped in Figure 3 based on the existing Denmark cadastre. The additional ceded area and the existing foreshore area is referred to as the Springdale Beach Estate foreshore reserve.



Legend

- Springdale Beach Estate
- Springdale Beach Estate Foreshore Reserve
- 1 ha Area to be ceded for foreshore reserve
- cadastre



Figure 3 Springdale Beach Estate Foreshore Reserve

1.5 Legislation and Policies Applicable to the Site

This report has been prepared to comply with the following legislation, policy and guidelines:

- DoW (2008) *Operational Policy 4.3: Identifying and Establishing Waterways Foreshore Areas*, Government of Western Australia, Perth;
- Environmental Protection Authority (2008) *Environmental Guidance for Planning and Development Guidance Statement No 33*, Environmental Protection Authority, Perth;
- Shire of Denmark (2008) *Guidelines for Development and Subdivision of Land*, Shire of Denmark, Denmark;
- Shire of Denmark Town Planning Scheme No 3;
- Shire of Denmark (2008) *Wilson Inlet Foreshore Reserves Management Plan 2008*, Produced by Green Skills for the Shire of Denmark;
- WAPC (2013) *State Planning Policy 2.6 State Coastal Planning Policy*, Government Gazette WA, 30 July 2013;
- WAPC (2013) *State Coastal Planning Policy Guidelines*, Western Australian Planning Commission, Perth; and
- WAPC (2006) *State Planning Policy 2.9 Water Resources*, Government Gazette WA, 19 December 2006 pp 5709-5724.

1.6 Consultation Prior to Preparation of this Plan

A meeting was held onsite with the following representatives' on 7 May 2014 to discuss issues regarding the foreshore reserve and its management:

- Karen McKeough, A/Program Manager – Water and Land Use, DoW – South Coast Region;
- Donna Sampey, Sustainability Officer, SoD;
- Nick Ayton, Ayton Baesjou Planning;
- Dr Danny Burkett, Business Manager and Technical Principal Water, Opus;
- Vicki Davies, Environmental Team Leader, Opus.

The outcome of the consultation undertaken has been:

- Strategic fire break/ access to be constructed around future tourist site;
- DoW to provide Wilson Inlet Management Advisory Group (WIMAG) meeting minutes to Opus regarding the foreshore reserve – provided;
- Road and carpark area to be sealed;
- Further east of the lot 9000 boundary in the foreshore reserve dieback has been identified. The Foreshore management plan will be required to include management recommendations for dieback control;
- Restrict number of access points to beach from the heritage trail – formalise pedestrian access with limestone pathways (x2);
- Chain across access point to the beach from the heritage trail (or something similar to prevent access by horses);
- Weed control required in the foreshore reserve particularly on the beach;
- Opus to check if fishing platform consistent with Wilson Inlet Foreshore Management Plan recommendations;
- Formalise access to concrete seat on eastern end of beach and continue steps down to the beach (consistent with existing);
- Where informal access points are closed weed control and revegetation will be required;
- Close access at one location – potential to install a seat and make a small lookout;
- SoD to provide Opus with a shapefile of the location of access tracks to beach - provided;
- Approximately 15-20 existing well established pine trees are causing a land slip of the upslope vegetation likely due to loss of native vegetation which stabilises soils as they have been smothered by pine needles. The Shire recommends the pine trees are removed.

2 Biophysical Environment

2.1 Climate

Denmark has a typically mild Mediterranean climate with wet winters and warm to hot, dry summers. The mean maximum temperature in the January reaches 25.9°C and a mean minimum of 13.5°C. The mean maximum temperature in July is 16.1°C with a minimum of 6.9°C. Average rainfall in the Denmark locality is 995.9 mm. Most rain falls seasonally from low bearing depressions through the months of April to October (Bureau of Meteorology, 2014).

In the summer months easterly to south easterly winds prevail over the area due to the frequent high-pressure systems. Differential heating of the land and sea produces on-shore sea breezes to the area. In the winter months the dominant winds are westerly to north westerly due to northern high pressure belts, and low bearing depressions from the south west.

2.1.1 Climate Change

The Department of Transport guidelines for ‘*Sea Level Change in Western Australia Application to Coastal Planning*’ recommended that a vertical sea level rise of 0.9 m be adopted when considering the setback distance and elevation to allow for impact of coastal processes over a 100 year planning timeframe (2010 to 2110) (Department of Transport, 2010). Therefore when considering climate change all new infrastructure should be positioned at greater than 0.9 m above the existing high water level.

Water levels within Wilson Inlet are subject to influence from rainfall levels from the catchments of two main rivers: Denmark River and the Hay River. The DoW (2009) study on ‘*The Impact of Climate Change on Rainfall and Streamflow in the Denmark River Catchment*’ indicates that based on climate predictions of drier conditions in the south-west region, rainfall decline is likely to result in a reduction in streamflow and therefore outfall to Wilson Inlet.

The Inlet is also subject to tidal influence when the sandbar, at the mouth, is open to the sea. It is considered likely that the water levels within the Wilson Inlet would be influenced by sea levels rises attributed to future climate change when open to the sea (predominantly via artificial means).

The high water level has been estimated based on the DAFWA 2 m contours dataset as between 2 m and 4 m AHD and therefore it is considered that there is sufficient vertical separation to lots, road and drainage infrastructure within Springdale Beach Estate (approximately 8 m AHD at the southern end of Beaufortia Gardens road reserve) (Figure 5).

2.2 Geology and Soil Units

The Geological Survey of Australia (2008) describes the subject site as “*Czl Lateritic Duricrust – Pisolitic, nodular or vuggy ferruginous laterite; some lateritic soils; ferricrete; magnesite; ferruginous and siliceous duricrusts and reworked products, calcrete, kaolinised rock, gossan; residual ferruginous saprolite*”.

Desktop assessment indicates that there are four soil units present within the Springdale Beach Estate Foreshore Reserve (Table 1 and Figure 4).

Table 1 Map Units with Soil Types and Predicted Vegetation (Department of Agriculture and Food WA, 1987)

Code	Name	Summary Description	Land-form	Geology	Soil	Vegetation
254KdDMs	Dempster Slope Phase	Sands and gravels on smooth slopes; Albany blackbutt-sheoak low forest.	Gentle slopes	Sandy deposits deeply weathered siltstone	Duplex sandy gravels, Pale deep sands, Gravelly pale deep sands and Deep sandy gravels	Jarrah-Albany blackbutt-sheoak-banksia woodland with heath
254KdDMc	Dempster Crest Phase (Kentdale)	Sands and laterite on elongate crests; Jarrah-Albany Blackbutt-Marri forest.	Broad convex crests of sandy and lateritic spurs and ridges	Deeply weathered siltstone	Duplex sandy gravels, Pale deep sands, Grey deep sandy duplexes and Shallow gravels	Heath with scattered jarrah
254KdS7h	Minor Valleys S7 (Kentdale) slope Phase	Slopes of broad valleys in sedimentary rocks; 30 m relief; smooth slopes. Deep sands and iron podzols on slopes; Albany blackbutt-jarrah-sheoak woodland. Podzols and yellow duplex soils on floors; paperbark woodland, teatree heath.	Sideslopes of U-shaped minor valleys	Weathered mantle over sedimentary rocks	Pale deep sands, Grey deep sandy duplexes and Semi-wet soils	Jarrah-sheoak-banksia woodland
254KdS7f	Minor Valleys S7 (Kentdale) floor Phase	Swampy floor.	Swampy floors of U-shaped minor valleys	weathered mantle over sedimentary rocks	Wet soils and Semi-wet soils, Pale deep sands and Grey deep sandy duplexes	Mixed heath



Legend

- Springdale Beach Estate
- Springdale Beach Estate Foreshore Reserve
- cadastre



Figure 4 Desktop assessment of soil-landscape subsystems of the site (DAFWA, 1987)

2.3 Topography

The highest elevation within the foreshore is located at approximately 38 m AHD on the western boundary. The lowest point is approximately 2 m AHD in the eastern boundary and water's edge (Figure 5).



Figure 5 Topography within Springdale Beach Estate Foreshore Reserve (DAFWA 2 m contour dataset)

2.4 Acid Sulfate Soils

Limited Acid Sulphate Soil (ASS) Risk Mapping (WAPC, 2009) is available for the Denmark area however mapping has been undertaken for estuaries within this locality. Existing mapping indicates that Wilson Inlet, directly to the south of the site, has a high to moderate risk of ASS occurring <3m from the soil surface. There is some encroachment of this risk mapping into the foreshore area and the southeast corner of Springdale Beach Estate (Figure 6).

If less than 100 m³ of soil is proposed to be disturbed and no dewatering is required in an area of ASS risk no specific management is required as per the WAPC ASS Self-Assessment Form.



Figure 6 Desktop Assessment of Acid Sulfate Soil Risk of the Springdale Beach Estate Foreshore Reserve (DEC, 2006)

2.5 Wetlands and Water Ways

The foreshore reserve is located within the Wilson Inlet Catchment in the Denmark Coast Basin, in the South West Division (DoW, 2008). Two natural drainage lines (perennial minor water courses) flow to and converge at the eastern end of the foreshore reserve (Figure 7).



Legend

- Springdale Beach Estate
- Springdale Beach Estate Foreshore Reserve
- Watercourse - minor, perennial



Figure 7 Desktop Assessment of Catchments (DoW, 2008)

2.6 Stormwater Runoff from Springdale Beach Estate – Water Quality and Quantity

Stormwater runoff from the adjacent development of Springdale Beach Estate is proposed to be managed with regard to water quality and quantity. Stormwater management infrastructure is proposed to be constructed during each stage of development based on detailed design and engineering calculations.

The 1:1 year ARI events will be treated in road side swales which will have a combination of rock lining (to reduce velocity and provide some sediment removal) and planting of native sedges (to provide some nutrient uptake and sediment removal) where practicable.

The volume difference between pre and post development flows are proposed to be attenuated for a 1:10 year ARI event in retention basins within POS across Springdale Beach Estate to allow predevelopment flows to maintain the downstream ecological water requirements.

All stormwater treatment and attenuation is proposed within POS outside the foreshore reserve.

It is proposed that a stormwater retention basin will be positioned within POS (outside the foreshore reserve) at the cul-de-sac end of Beaufortia Gardens. All stormwater from Beaufortia Gardens will be directed to the retention basin at the detailed design stage (ie directional cross fall, swales) with

an appropriate conveyance method. The stormwater basin will be designed to retain 1:10 year ARI storm events as per standard guidelines. Erosion/ scour protection measures will be designed at the outfall of the basin to the POS where it will enter existing vegetation and follow the natural drainage line in the POS area.

Refer to the Urban Water Management Plan (Opus, 2014) for further information regarding stormwater management proposed within Springdale Beach Estate.

2.7 Vegetation Community

The foreshore reserve lies in the Hay System Association within the Warren IBRA Region (Thackway and Cresswell, 1995-). The pre-European Vegetation Association is listed by Shepherd *et al.* (2002) within the site is Hay 3: ‘*Medium forest; Jarrah-Marri*’. To the south lies the Denmark 125: ‘*Bare Areas; salt lakes*’ (Wilson Inlet).

The pre-European extent of the Vegetation Association 3 within the Hay System Association in the Warren IBRA Region was 11,106.76 ha, the current extent being 6,166.71 ha, with the estimated remaining extent being 55.52 %. The pre-European extent of Vegetation Association 3 within in the Warren IBRA Region was 250,262.66 ha, the current extent being 196,094.45 ha, with the estimated remaining extent being 78.36 % (GoWA, 2013).

EPA Position Statement No. 2 (EPA, 2000) with regard to clearing native vegetation states that:

- i) The “*threshold level*” below which species loss appears to accelerate exponentially at an ecosystem level is regarded as being at a level of 30% of the pre-clearing extent of the vegetation type;
- ii) A level of 10% of the original extent is regarded as being a level representing “*endangered*”.

The estimated remaining vegetation within the Hay System Association and Vegetation Association 3 are greater than the EPA (2000) “*threshold level*”.

Desktop assessment of aerial photography and site inspection identified that the majority of native vegetation is intact within the foreshore reserve with previous clearing for the Heritage Trail and some weed invasion (Pine trees). The foreshore vegetation is predominantly low open shrubland at the water’s edge (Peppermint trees dominate overstorey), grading to Sclerophyll Woodland, dominated by Marri, Jarrah and Peppermint along the ridge areas.

Areas of Melaleuca/ Taxandria swamp are present to the north of the foreshore reserve in the southeast POS within the Springdale Beach Estate. These areas of native vegetation have been retained and provide a vegetation corridor for the creekline which ultimately flows to the foreshore reserve.

2.8 Introduced Weed Species

At the time of a site inspection by Opus in May 2014 there had been a significant level of weed invasion (e.g. *Chenopodium* sp.) on the beach which is likely to have resulted from consistently low Inlet levels as the beach would not have been inundated by salt water. This may have resulted due to low summer rainfall levels in 2013/2014.

Further site inspection by Diane Harwood (Denmark Weed Action Group - DWAG) and Albert Adams (Ecologic Tree Services) in June 2014 noted that there are scattered seedlings of *Asparagus scandens*, *Phytolacca octandra* (Inkweed), *Watsonia* sp. and *Solanum laciniatum* (Kangaroo Apple) present. These species will require hand weeding in September / October following spring germination (Plate 1 to Plate 4).

Specimens of the pine tree species *Pinus radiata* are located throughout the Springdale Beach Estate (due to previous land use as a pine plantation) and in a relatively localised area within the foreshore reserve. Pine trees have wind driven seed dispersal, which contributes to the large distances pine trees can invade into native vegetation. Approximately 20 pine trees of varying maturity are present adjacent to the Heritage Trail (Appendix C and Plate 6). At this location smothering of native vegetation by pine needles has occurred which may have resulted in erosion and land slip (Plates 5 and 6). It is recommended that all individuals are removed from the foreshore area to prevent further spread of pines and erosion.

A follow-up site inspection in August 2014 identified the weeds listed in Appendix D. Locations of weeds identified at time of site inspection been mapped and management recommendations made their control (Appendix D). Whilst it was noted that there are patches of weed presence, it is considered that there is less than 10% weed coverage within the entire Springdale Beach Estate foreshore reserve.



Plate 1 Weed invasion on Springdale Beach – view east to historical jetty



Plate 2 Weed invasion on Springdale Beach – view to western end of beach



Plate 3 Weed invasion on Springdale Beach – view north



Plate 4 Weed invasion at western end of Springdale Beach – view south



Plate 5 Pine trees on either side of the Heritage Trail view west



Plate 6 Land slip likely due to presence of pines on northern side of Heritage Trail

2.9 *Phytophthora* Dieback

The Wilson Inlet Foreshore Reserves Management Plan 2008 indicates that evidence of *Phytophthora* dieback has been reported within the Heritage Trail reserve adjacent to Lake View Place and the foreshore area at Hay River (SoD, 2008).

Phytophthora susceptible species were identified in the site inspection by Opus in 2014. Increased use of the Heritage Trail and Springdale Beach due to the development of Springdale Beach Estate poses an increased risk to the foreshore reserve of the spread of dieback.

2.10 Mosquitoes

Wetlands attract midges and mosquitoes and this can affect the residential area health requirements. Mosquito-borne diseases known to the south west of WA include Ross River Fever and Barmah Forest Disease although Ross River Fever is the more prevalent of the two.

Advice provided by the SoD indicates that mosquitoes have not been identified as an issue in the local area. This is likely due to the lack of tidal flows in the Wilson Inlet that may promote mosquito breeding.

2.11 Fire Management

The SoD advised that the Heritage Trail forms the strategic firebreak for the local area. Desktop assessment of aerial photography and limited site inspection by Opus in May 2012 did not identify any evidence of recent fire within the reserve. The Shire has indicated that it has been longer than 13 years since a fire has been recorded in this location.

For the purpose of development within Springdale Beach Estate it is proposed to install firebreaks as per those recommended in the Fire Management Plan (FirePlan, 2014).

3 Social Environment

3.1 Aboriginal Heritage

A search of the Department of Aboriginal Affairs (DAA), Aboriginal Heritage Inquiry System revealed there is an Aboriginal Heritage site to the south east of the subject site. This is known as Springdale Arrangement Site Id 4643 (Appendix B). However no Aboriginal sites are recorded within Springdale Beach Estate or the foreshore reserve to the south.

Four heritage surveys have been previously undertaken in the vicinity however none have been undertaken within Springdale Beach Estate (Appendix B).

3.2 European Heritage

The Denmark-Nornalup Railway (Torbay to Denmark section) alignment was historically situated within the existing foreshore reserve. The railway formation has since been de-commissioned, and the alignment now serves as the Denmark-Nornalup Heritage Rail Trail (Heritage Trail). This site is listed on the inHerit Places database as Place Number 14310 (Heritage Council State Heritage Office, 2014) (Appendix B).

Two historical concrete benches (Plate 9) are located at Springdale Beach which were constructed by Charlie Smith in 1934 and nestle under a sheltered arbour near what was once the scene of a busy railway siding (Plate 7 and 8). These are referred to as the “Reso Seats” (Number 303) on the Shire of Denmark Municipal Heritage Inventory (SoD, 2011).

The Inventory also lists the Springdale Beach Ochre Source (Number 301) which is linked to the Springdale Stone Arrangement Aboriginal site, which is located outside the study area to the southeast. However the Ochre Source site is not listed on the DAA Aboriginal Heritage Inquiry System.

Springdale beach historically housed a jetty, which may have been used for Wilson Inlet fishermen and for people to visit the Springdale Beach from the water. This structure has not been maintained and now sits as a remnant in the foreshore area (Plate 10).



Plate 7 Heritage Trail shelter in the Springdale Beach foreshore reserve



Plate 8 Existing limited interpretive signage at the Springdale Beach Heritage Trail shelter



Plate 9 Concrete bench built in 1934 located at the Heritage Trail shelter (“Reso Seats”)



Plate 10 Remnants of the historical jetty

The Springdale Tunnel is located at the eastern end of the Springdale Beach Estate foreshore reserve. Access to the Springdale Tunnel and adjacent beach, on the southern side of the Heritage Trail, is via a set of wooden steps with a partial handrail. These steps are in a degraded state and require refurbishment of the steps and handrail with similar materials.



Plate 11 Springdale Tunnel located at eastern end of Springdale Beach Estate Foreshore Reserve



Plate 12 Access to the Springdale Tunnel to the south of the Heritage Trail requires upgrade of steps and handrail

3.3 Existing Access

Approximately seven informal and semi-formal paths lead from the Heritage Trail to Springdale Beach Estate and to the water's edge (Appendix C). These pathways are subject to uncontrolled usage by the public and are likely, over time, to steadily degrade the adjacent vegetation due to trampling and erosion of sandy soils.

A semi-formal access path leads from the Heritage Trail to the beach and Heritage Trail Shelter at the eastern end of the Springdale Beach (Plate 13). This trail is partially stepped towards the beach. Where the steps are in place the trail is in good order however towards the beach the trail widens with no formal direction and has become degraded at this location (Plate 14).

Two well utilised, but informal, access tracks exist at both the eastern and western ends of the beach (Plate 15 and 16). Three of the other tracks are minor informal tracks and a well-established track at the eastern end of the foreshore leads to private property to the north of the Heritage Trail and is gated.



Plate 13 Access entrance to Heritage Trail shelter at Springdale Beach



Plate 14 Stairs to the Heritage Trail shelter



Plate 15 Well utilised but informal access trail to eastern end of Springdale Beach



Plate 16 Well utilised but informal access trail to western end of Springdale Beach

3.4 Recreation

As outlined in Section 3.2, the Denmark-Nornalup Railway (Torby to Denmark section) alignment forms the Heritage Trail in the foreshore reserve (Appendix C). The Wilson Inlet foreshore reserve is used for a variety of onshore pursuits compatible with a Conservation and Passive Recreation designation. The Wilson Inlet Foreshore Management Plan identifies such pursuits as “*walking, horse riding, cycling, sitting, picnicking, photography, bird watching, painting and exercising dogs*” (SoD, 2008).

The Heritage Trail is a well-used recreational area for walking, cycling and horse riding. However no motorbikes and vehicles (excluding SoD approved for maintenance) are permitted on the trail.

The Heritage Trail within the foreshore reserve has, since 2013, been utilised as a component of the Munda Bididi Trail (Appendix C). The Munda Bididi Trail is a cycling trail over 1000 km in length with the northern terminus in Mundaring and the southern terminus in Albany. Access to the trail has been formalised from Springdale Beach Estate at the cul-de-sac end of Beaufortia Gardens. At this location a Munda Bididi Trail shelter dedicated to CE (Charlie) Smith who first ran the Springdale Beach guesthouse has been provided by LWP Denmark Pty Ltd and was opened 20 May 2012 (Plate 15 and 16).

The Bibbulmun Track is a walking track nearly 1000 km in length stretching from Kalamunda at its northern terminus to Albany in the south. Whilst the Heritage Trail is not an official leg of the Bibbulmun Track it does provide an alternate route to the inlet crossing from Denmark River mouth to the southern side of the inlet (the Nullaki Peninsula), around Wilson Inlet.

At the time of the site inspection by Opus in May 2014, evidence of horse riding was identified on Springdale Beach. As this is a small, narrow beach use of the beach by horse and riders and dog walkers may be non-compatible activities.

A site meeting held by the SoD with the Department of Planning and Infrastructure in 2008 excluded Springdale Beach as a potential boat launching site. In addition boat launching at this location was excluded in the Wilson Inlet Foreshore Reserves Management Plan (SoD, 2008).



Plate 15 Formalised track from Springdale Beach Estate at the southern end of Beaufortia Gardens road to the Heritage Trail



Plate 16 Munda Bididi Trail shelter at the southern end of Beaufortia Gardens road

Formal construction (i.e. sealed) of Beaufortia Gardens and footpath within the road reserve to the foreshore will be undertaken at the time of creation of the Tourist Site, Lots 181-183 or the balance of 5 years from the adoption of the FMP (whichever is earlier). At this time the cul-de-sac and parking bays will be sealed with provision of 6 - 7 bays (Figure 8). Until the Beaufortia Gardens road is sealed public access to the foreshore reserve will be provided via the current gravel road.

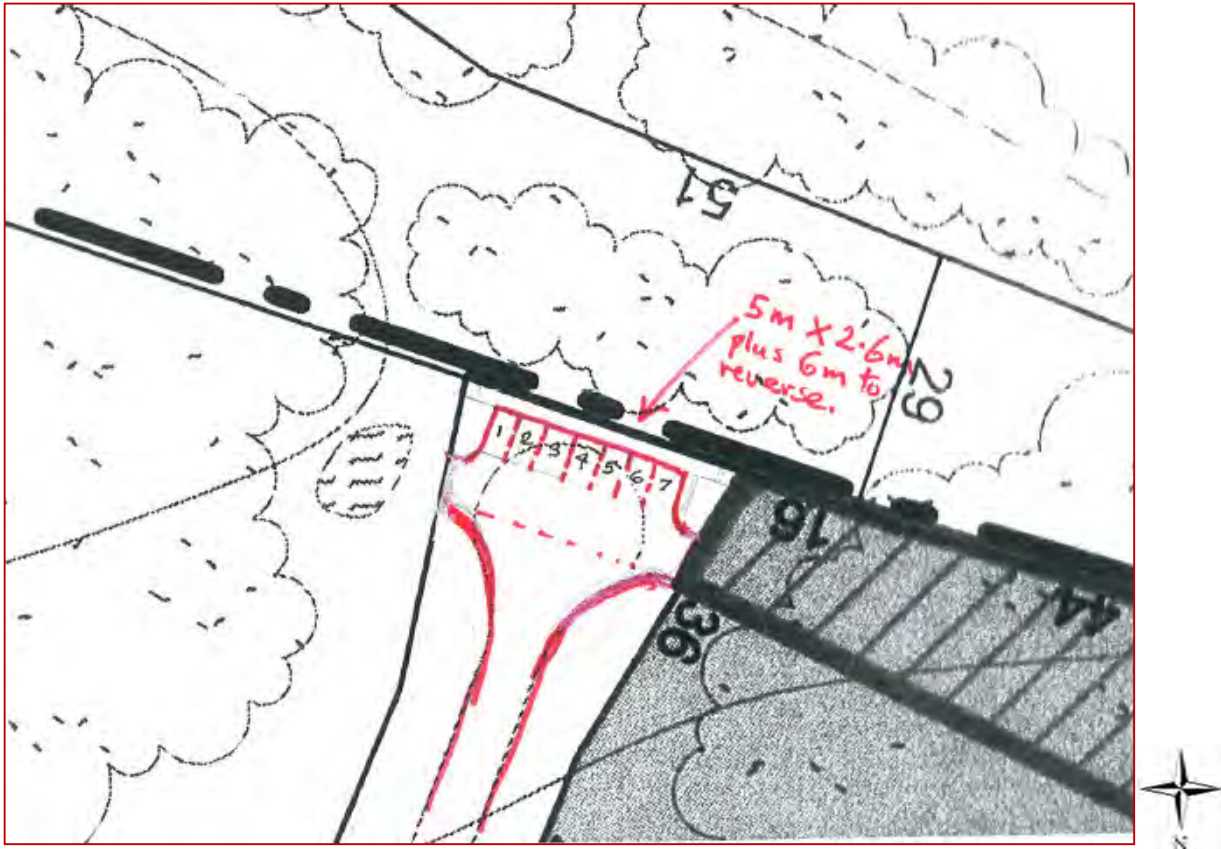


Figure 8 Indicative Location of Parking Bays at Cul-de-sac End of Beaufortia Gardens Road Reserve

3.5 Rubbish

Very little rubbish was identified within the foreshore reserve itself during the limited site inspection undertaken by Opus in May 2014. However rubbish has been previously identified by Opus (2008) within undeveloped areas of Springdale Beach Estate. With the proposed increase in population due to the development of the Estate adjacent to the Wilson Inlet there is an increased risk of rubbish and green waste dumping within the foreshore reserve area. This may lead to an increased incidence of weeds and dieback invasion in the foreshore reserve.

4 Management Recommendations, Actions and Timeframes

The Wilson Inlet Foreshore Reserves Management Plan (SoD, 2008) identifies a number of key ecological and cultural aspects within the Springdale Beach foreshore reserve area. This plan identifies the Springdale Beach Recreation Node at the eastern end of Springdale Beach based on the European heritage aspects of the site.

Table 2 outlines management recommendations, actions and timeframes consistent with the Wilson Inlet Foreshore Reserves Management Plan to be applied in general to the Springdale Beach foreshore reserve and where required specific recommendations for this site to be undertaken by LWP Denmark Pty Ltd and SoD. Recommendations and actions from the Wilson Inlet Foreshore Reserves Management Plan (SoD, 2008) are in italics and numbering of each recommendation has been retained for reference so as to achieve the objective of this FMP to *be consistent with the Wilson Inlet Foreshore Reserves Management Plan 2008*.

Management actions for activities proposed with the Springdale Beach Estate foreshore reserve have been displayed as numbered items in Appendix C. Management activities are outlined in Table 2 to the corresponding numbered item.

4.1 Roles, Responsibilities, Funding for Implementation

It is the responsibility of LWP Denmark Pty Ltd to implement this FMP for WAPC conditional approval of subdivision of Lot 9000 South Coast Highway.

Once management requirements within the foreshore reserve area are completed for sign off on WAPC conditions, the foreshore reserve will become the responsibility of the SoD and will continue to be managed in accordance with this FMP unless superseded by a new FMP for the area.

4.2 Timeframes

Lots 192-196, 180 and 184, within Stage 4A, are proposed to be constructed during September 2014. The balance of Stage 4A will be designed and constructed at a later date subject to market conditions. The 1 ha area to be included in the foreshore reserve will be ceded to the SoD in first phase of Stage 4A.

Formal construction (i.e. sealed) of Beaufortia Gardens and footpath within the road reserve to the foreshore will be undertaken at the time of creation of the Tourist Site, Lots 181-183 or the balance of 5 years from the adoption of the FMP (whichever is earlier).

LWP Denmark Pty Ltd will commence weed management works in spring 2014 during the first phase of Stage 4A. The SoD will undertake an inspection of the works within the foreshore reserve and, subject to satisfactory acceptance of the work, the SoD will confirm the commencement date of the 24 month maintenance period by LWP Denmark Pty Ltd following weed management works.

4.3 Monitoring

LWP Denmark Pty Ltd shall, on an annual basis, report to the Shire on activities undertaken within the foreshore reserve during Stage 4A and the post practical completion maintenance period for Stage 4A.

Table 2 Management Issues, Recommendation and Actions for the Foreshore Reserve

Objective	Issue	Recommendation	Management Action	Management Action Description	Outcome	Responsibility	Timeframe
Protect ecological aspects	Acid Sulfate Soil (ASS)	<ul style="list-style-type: none"> 2.3.8 It is recommended that development in an area at risk of Acid Sulfate Soils be undertaken only where essential and appropriate, and that potential adverse effects be mitigated. 	1) Ensure that any development on a Foreshore Reserve is appropriate and essential.	1a) Any works within the foreshore reserve i.e., weed control works and path formalisation, are not to disturb greater than 100 m ³ of soil.	<ul style="list-style-type: none"> Only essential works undertaken in foreshore reserve. 	LWP	When works in foreshore reserve being undertaken
						Shire of Denmark	When works in foreshore reserve being undertaken
			2) Ensure that strategies and management techniques are employed to mitigate potential adverse effects of Acid Sulfate Soils for any development on or adjacent to a Foreshore Reserve.	2a) Re-construction of the historical jetty as a fishing platform (#13) may result in a risk of disturbance of ASS. Consideration should be made for pile driven pier installation to reduce sediment disturbance as per Australian Standard AS2159-1995 Piling Design and Installation. 2b) Consideration should be made for use of a silt/ sediment curtain during construction of the fishing platform to reduce potential impact of sediment disturbance. 2c) The proposed fishing platform should, at time of design and construction, implement best practice methods to reduce ASS disturbance in Wilson Inlet.	<ul style="list-style-type: none"> Fishing platform re-constructed with minimal environmental impact. 	Shire of Denmark	At time of design and construction of proposed fishing platform
	Weeds	<ul style="list-style-type: none"> It is recommended that weed removal and control is undertaken the within foreshore reserve. 	3) Removal of pine trees within foreshore reserve.	3a) Approximately 20 pine trees to be removed within the foreshore reserve. These shall be removed with no damage to the Heritage Trail. 3b) Prior to removal of pine trees temporary notification signage will be placed at the site on the Heritage Trail. 3c) LWP will notify Shire of Denmark for advertising on the Shire notice board/ newsletter/ website to notify trail users of period of pine removal works. 3d) Stakeholders including Department of Parks and Wildlife, Munda Bididi Trail and Bibbulmun Track Foundation to be notified by LWP. 3e) LWP appointed arborist will provide signage and control public access to the heritage trail during pine removal works. 3f) Pine trees will be aerially dismantled and carefully felled by a professional arborist so as to minimise impact on native vegetation. Stumps are to be cut off as close to ground level as possible. All materials arising from works will be removed with the exception of trunks from three pine trees are located within thick native vegetation on the slope.	<ul style="list-style-type: none"> Pines shall be removed with no damage to the Heritage Trail. If damage occurs the trail shall be reinstated with appropriate materials. Minimal clearing of native vegetation is to occur to allow removal of pine trees. 	LWP	Pine removal during first phase of Stage 4A
		4) Weed control, monitoring and maintenance within foreshore reserve.	4a) Biannual hand weeding in autumn and spring. Refer to Appendix D for location map and management schedule. 4b) No chemical weed control proposed.	<ul style="list-style-type: none"> Success criteria: Weed cover will be less than 10% and no pine seedlings or Declared weed species recorded. 	LWP	Biannual weeding in autumn and spring during 24 month maintenance period, post practical completion	
					Shire of Denmark	Ongoing post-handover at expiry of the 24 month maintenance period	

Objective	Issue	Recommendation	Management Action	Management Action Description	Outcome	Responsibility	Timeframe
Protect ecological aspects	Rehabilitation	<ul style="list-style-type: none"> It is recommended that areas where weeds have been removed and tracks closed that these areas are rehabilitated 	5) Undertake revegetation of areas where weeds have been removed with dieback free native flora of local provenance.	5a) Pine removal area - revegetate with <i>Agonis flexuosa</i> (Peppermint), <i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Banksia seminuda</i> (River Banksia), <i>Banksia littoralis</i> (Swamp Banksia) and <i>Callistachys lanceolata</i> (Wonnich) (1 stem per 3 m ²) and allow natural regeneration of understorey species in conjunction with biannual hand removal of weed species in autumn and spring. 5b) Close existing tracks (#9, #10, #11) with trunk from removed pine trees (appropriately sized for width of access track to be closed). 5c) Revegetate closed tracks with <i>Agonis flexuosa</i> (Peppermint) seedlings (1 stem per 3 m ²) and allow natural regeneration of understorey species in conjunction with biannual hand removal of weed species in autumn and spring. 5d) Planting will be undertaken in winter months (June, July). Supplementary watering may be required in first summer following planting. 5e) Seedlings will locally sourced as cells/ tubestock from local nurseries as commercial stock. 5f) Tree guards will be installed for each seedling to help protect from predation and trampling. 5g) Temporary signs installed indicating "Area Under Repair".	<ul style="list-style-type: none"> Success criteria: 80% of the species planted represented. Weed coverage will be less than 10% and no pine seedlings or Declared weed species present. Natural regeneration of native species observed in visual inspections during weed maintenance. Replacement planting to meet success criteria as required. 	LWP	June, July 2015
			6) Undertake monitoring and replacement planting of missing, dead and unhealthy plants in areas of revegetation.	6a) Monitor revegetation areas on a biannual basis during weed maintenance (autumn and spring). 6b) If no natural regeneration of understorey species observed consider revegetation with appropriate species. 6c) Results of rehabilitation will be reported to the Shire on an annual basis in a form of a report on all activities.	<ul style="list-style-type: none"> Success criteria: 80% of the species planted represented. Weed coverage will be less than 10% and no pine seedlings or declared weed species present. Natural regeneration of native species observed in visual inspections. Replacement planting to meet success criteria as required. 	LWP	In autumn and spring during 24 month maintenance period, post practical completion
	Dieback	<ul style="list-style-type: none"> 2.3.6 It is recommended that steps be taken to prevent further assisted spread of <i>Phytophthora Dieback</i>. 	7) Continue to follow the Shire of Denmark Policy No. 1 Dieback Management.	7a) Include information regarding <i>Phytophthora</i> risk and spread at the interpretive signage #1 to inform community in dieback susceptible areas of the disease and how to minimise impact.	<ul style="list-style-type: none"> Increased community awareness of dieback disease risk in the foreshore reserve. 	LWP	During first phase of Stage 4A
			8) Implement the recommended actions from the <i>Phytophthora Dieback</i> study.	7b) Limit access by vehicles to the Heritage Trail for maintenance activities and pine tree removal during dry soil conditions only (usually December to March). 7c) Greenstock for landscaping or revegetation purposes should be from nurseries accredited by the Nursery Industry Association of WA as having used recommended dieback control measures. Organic materials for landscaping or similar use should consider only well composted materials which will be less likely to harbour the dieback fungus. 7d) Maintenance activities (fencing, slashing, weeding, track construction, flora and fauna surveys etc) to minimise soil disturbance, be undertaken in dry soil conditions, have clean equipment before and after entering foreshore reserve, dispose of material at approved disposal site (Shire landfill site). 7e) Use brush and sodium hypochlorite solution to clean shoes and hand tools prior to entering areas of native vegetation. 8a) No soil movement or extraction within reserve. 8b) No unauthorised vehicular access to reserve (Shire approved access only for maintenance activities). 8c) Introduced soil to be purchased from accredited supplier and or tested to be guaranteed as <i>Phytophthora</i> (or dieback) free. 8d) LWP and Shire Ranger to monitor reserve for illegal introduction of soil (dumping of soil) and remove access points or implement penalties.	<ul style="list-style-type: none"> Minimise risk of dieback infestation within native vegetation in the foreshore reserve. 	LWP	As required
						Shire of Denmark	As required
						Shire of Denmark	As required

Objective	Issue	Recommendation	Management Action	Management Action Description	Outcome	Responsibility	Timeframe
Protect areas of cultural significance	Aboriginal Heritage	<ul style="list-style-type: none"> 2.5n) It is recommended that the Shire and relevant management bodies restrict any development or major disturbance at Springdale Beach to avoid impact on heritage sites. 	<p>9) Ensure that development proposals do not adversely impact on heritage sites.</p> <p>10) If any new evidence of Aboriginal sites are identified within the Springdale Beach Estate foreshore reserve all works shall cease and appropriate heritage consultation and investigations should be undertaken.</p>	<p>9a) All works proposed are located in previously disturbed areas. No ground disturbance is proposed or clearing of native vegetation within the foreshore reserve (with the exception of removing the pine trees).</p> <p>10a) All works shall cease if new evidence of Aboriginal sites are identified and appropriate consultation with the Department of Aboriginal Affairs undertaken immediately.</p>	<ul style="list-style-type: none"> No disturbance of Aboriginal heritage. 	<ul style="list-style-type: none"> LWP Shire of Denmark 	<ul style="list-style-type: none"> When works in foreshore reserve being undertaken Ongoing post-handover of foreshore reserve
	European Heritage	<ul style="list-style-type: none"> 2.3.11b) It is recommended that information and photographs relating to the European history of Springdale Beach be included in the display at the Heritage Trail Shelter. 	<p>11) Develop and display interpretive information on the European history of Springdale Beach at the Heritage Trail Shelter.</p>	<p>11a) Additional information to be added to existing signage at end of Beaufortia Gardens (#1) including: information regarding dieback disease risk, 'take rubbish with you', domestic animals, no camping, no boat launching, no dinghies on Springdale Beach.</p> <p>11b) Upgrade signage #2 to include distance to Denmark and to Crusoe Beach.</p> <p>11c) Upgrade interpretive signage #3 regarding history of the Denmark – Nornalup Railway and the now Heritage Trail.</p> <p>11d) Upgrade interpretive signage #4 with information and photographs relating to the history of Springdale Beach, the historical jetty, cement benches and local flora and fauna.</p>	<ul style="list-style-type: none"> New interpretive signage at #1, #2, and #3 to provide information to the community. New interpretive signage within the Heritage Trail shelter (#4) to inform the community on the history of the site. 	<ul style="list-style-type: none"> LWP LWP 	<ul style="list-style-type: none"> During first phase of Stage 4A At time of creation of the Tourist Site, Lots 181-183 or the balance of 5 years from the adoption of the FMP (whichever is earlier)
Provide management guidelines for recreation areas compatible with sustainable use of the foreshore	Conservation and Access	<ul style="list-style-type: none"> 2.3a) It is recommended that any path development in a Conservation Zone conform to the relevant management objective. 	<p>12) Install appropriate signage to indicate that domestic animals should be restricted from accessing the Conservation Zones</p> <p>13) Keep paths well-defined, marked and maintained to ensure that users of these facilities are encouraged to use them appropriately.</p> <p>14) Install 6 – 7 car park bays at southern end of Beaufortia Gardens, of which design is to be approved by the Shire's Director of Infrastructure Services prior to commencement of work.</p> <p>15) Establishing wheelchair-accessible walk trails up to the adjacent subdivisions.</p> <p>16) Ensure that path construction and maintenance activities follow minimum disturbance guidelines.</p>	<p>12a) Upgrade signage at point #2 to include information regarding domestic animals i.e., restrict horse access on Springdale Beach and dogs on leads at all times.</p> <p>12b) Chain (or similar) across width of path (#5, #6) to restrict access by horses to Springdale Beach.</p> <p>13a) Formalise existing access point #14 from Springdale Beach Estate to the Heritage Trail as a shared use path with stabilised limestone gravel, 150mm deep. No other access points from Springdale Beach Estate to the Heritage Trail.</p> <p>13b) Formalise existing access point #5 and #6. Access path standard – 1.5 m wide stabilised limestone gravel, 150mm depth, path to follow natural contours.</p> <p>14a) When Beaufortia Gardens is formalised and sealed, provision will be made for 6 – 7 car parking bays (sealed) at the cul-de-sac end and footpath (sealed) on the western side of road connecting to the subdivision.</p> <p>14b) Until Beaufortia Gardens is sealed the existing gravel track will be provided for public access to the foreshore reserve.</p> <p>15a) Construction of a sealed shared use path alongside Beaufortia Gardens suitable for wheelchair access.</p> <p>16a) Continue wooden steps (#7) (of similar material) from the Heritage Trail to the Heritage Trail shelter at the recreational node.</p> <p>16b) Refurbish steps and handrail, with similar materials, at access path to Springdale Tunnel (#15).</p> <p>16c) Access point #8 – no action required.</p> <p>16d) Close access points #9, #10 and #11 – see Rehabilitation.</p>	<ul style="list-style-type: none"> No evidence horses and riders accessing Springdale Beach. Formalise existing access paths to have a path at the eastern and western ends of Springdale Beach. Provision of formalised (sealed) Beaufortia Gardens, 6 – 7 parking bays and footpath, of which design is to be approved by the Shire's Director of Infrastructure Services prior to commencement of work. Wheelchair access from Springdale Beach Estate. Improved access to the Springdale Beach Heritage Trail shelter and Springdale Tunnel. No new access paths to be constructed. Minimise risk of dieback disease spread and vegetation disturbance. 	<ul style="list-style-type: none"> LWP LWP LWP 	<ul style="list-style-type: none"> During first phase of Stage 4A At time of creation of the Tourist Site, Lots 181-183 or the balance of 5 years from the adoption of the FMP (whichever is earlier) June, July 2015

Objective	Issue	Recommendation	Management Action	Management Action Description	Outcome	Responsibility	Timeframe
Provide management guidelines for recreation areas compatible with sustainable use of the foreshore	Conservation and Access	<ul style="list-style-type: none"> 2.3b) It is recommended that recreational activities in a Conservation Zone be monitored to ensure compliance with the relevant management objective. 	17) Monitor activities in Conservation Zones and ensure compliance with the relevant management objective.	17a) LWP and Shire Ranger to monitor evidence of horses on Springdale Beach. 17b) Check paths on a 6 monthly basis for erosion and vegetation damage. 17c) Undertake annual vegetation maintenance as required to keep tracks clear for unimpeded access. 17d) Undertake path reinstatement with appropriate soil in areas where erosion has occurred.	<ul style="list-style-type: none"> Monitoring results reported to the Shire by LWP on an annual or as required basis in the form of a report on all activities. No evidence horses and riders accessing Springdale Beach. Paths clear and well maintained for public use with infrequent complaints from community. 	LWP	<ul style="list-style-type: none"> On a 6 monthly basis within 24 month maintenance period, post practical completion
					<ul style="list-style-type: none"> No evidence horses and riders accessing Springdale Beach. Paths clear and well maintained for public use with infrequent complaints from community. 	Shire of Denmark	<ul style="list-style-type: none"> Ongoing post-handover at expiry of the 24 month maintenance period
Conservation and Passive Recreation - Recreational Development		<ul style="list-style-type: none"> 2.5m) It is recommended that development at the Springdale Beach Recreation Node provide low-impact recreational facilities. 	18) Consider the following low-impact recreational facilities for development at the Springdale Beach Recreation Node: <ul style="list-style-type: none"> - Restoring the historic jetty, in keeping with its heritage aesthetic, as a fishing platform - Redeveloping the shelter and the surrounding area (with minimal clearing) to provide seats and picnic facilities and pedestrian access to the fishing platform - Erect barriers and signs to ensure that there is no public vehicle access from the subdivisions adjoining Springdale Beach. - Ensure that no boats or dinghies are left on Springdale Beach. - Erect signs indicating that camping is not permitted on any Foreshore Reserve managed by the Shire. 	18a) Shire to consider re-establishing historical jetty (#13) as a fishing platform (structure to be determined at a later date by the Shire) and allow pedestrian access from the Heritage Trail shelter.	<ul style="list-style-type: none"> Use of a re-established fishing platform by the community. 	Shire of Denmark	<ul style="list-style-type: none"> Dependent on Council approval and budget resources
				18b) Refurbish existing Heritage Trail shelter, picnic table and wooden benches at the Springdale Beach Recreation Node (#12) with similar materials and minimal clearing. No additional picnic settings are required at this location.	<ul style="list-style-type: none"> Use of a re-furbished Heritage Trail shelter by the community. 	LWP	<ul style="list-style-type: none"> At time of creation of the Tourist Site, Lots 181-183 or the balance of 5 years from the adoption of the FMP (whichever is earlier)
				18c) Interpretive signage point #1 – add additional information to signage to indicate no vehicle access or camping within the Heritage Trail, no dinghies or boat launching on Springdale Beach.	<ul style="list-style-type: none"> No camping, vehicle access, dinghies or boat launching on Springdale Beach. 	LWP	<ul style="list-style-type: none"> During first phase of Stage 4A
				19) Keep shelters, benches and picnic tables well maintained.	19a) Annual inspection of infrastructure including the Heritage Trail shelter, picnic table and benches and fishing platform (if and when constructed). 19b) Undertake maintenance of structures as required with similar materials.	<ul style="list-style-type: none"> Structurally sound infrastructure in well maintained condition. 	LWP
						Shire of Denmark	<ul style="list-style-type: none"> Ongoing post-handover at expiry of the 24 month maintenance period

Objective	Issue	Recommendation	Management Action	Management Action Description	Outcome	Responsibility	Timeframe
Provide management guidelines for recreation areas compatible with sustainable use of the foreshore	Tenure	<ul style="list-style-type: none"> Update tenure of the Springdale Beach Estate foreshore reserve. 	20) Shire to update the tenure for the current section of the foreshore to the south of Springdale Beach Estate from a road reserve (Rudgyard Place) to Crown reserve.	20a) Shire to seek change of tenure in foreshore area from road reserve to Crown reserve i.e. closure of road reserve and amalgamation into adjoining Crown reserve.	<ul style="list-style-type: none"> Springdale Beach Estate foreshore reserve tenure changed from road reserve to reserve for "Parks and Recreation". 	Shire of Denmark	As soon as possible
			21) LWP to cede 1 ha as shown on Subdivision Guide Plan to foreshore reserve.	21a) LWP to cede 1 ha area as shown on Subdivision Guide Plan to the Shire of Denmark.	<ul style="list-style-type: none"> 1 ha area ceded to Shire of Denmark and 	LWP	In first phase of Stage 4A
			21b) Shire to seek to identify 1 ha area as a reserve and amalgamate into adjoining Crown reserve. 21c) Shire to then secure reserve under its management.	<ul style="list-style-type: none"> 1 ha area amalgamated into the Wilson Inlet foreshore reserve. 	Shire of Denmark	Following ceding of 1 ha area and change of tenure to Crown reserve	
Assess and manage the relationship and impacts on the foreshore from the adjoining Springdale Beach Estate and Tourist Site	Rubbish	<ul style="list-style-type: none"> Rubbish dumping including green waste to be cleaned up on a regular basis. 	22) Install signage to include "take rubbish home with you"	22a) Include 'take rubbish home with you' on signage at end of Beaufortia Gardens (signage #1).	<ul style="list-style-type: none"> Reduced rubbish identified within foreshore reserve 	LWP	During first phase of Stage 4A
			23) 6 monthly inspection of foreshore reserve.	23a) Inspection of Heritage Trail, paths and Springdale Beach on a 6 monthly basis to assess if rubbish dumping is occurring.	<ul style="list-style-type: none"> 6 monthly inspections undertaken 	LWP	As required until foreshore reserve handed over to Shire of Denmark
					<ul style="list-style-type: none"> Shire of Denmark 	Ongoing post-handover of foreshore reserve	
			24) Rubbish clean-up where required.	24a) Shire to approve vehicle access to the Heritage Trail to collect rubbish from the foreshore reserve. 24b) Rubbish clean-up as required following site inspection and after any community complaints are received by the Shire. While LWP is responsible for maintenance of the site the Shire shall notify LWP regarding any complaints received. 24c) In the event that asbestos materials are identified within the foreshore reserve an approved asbestos removal contractor shall be employed to remove asbestos and dispose offsite as required by DER and undertake appropriate site remediation.	<ul style="list-style-type: none"> No rubbish left, if identified, for more than 1 week before it is removed. Rubbish to be disposed of to an approved waste disposal site depending on the materials recovered. 	LWP	As required until foreshore reserve handed over to Shire of Denmark
Fire Management	<ul style="list-style-type: none"> A fire access way is constructed through Lot 9000 to provide access to the foreshore reserve. The Heritage Trail is maintained as a Shire strategic fire break. 	25) Implement fire management strategies and firebreak within Springdale Beach Estate as per the Shire approved Fire Management Plan for Lot 9000 South Coast Highway.	25a) As per Fire Management Plan for Lot 9000 South Coast Highway. 25b) Fire service access way to be constructed between Beaufortia Gardens and the Heritage Trail (#14) with a locked gate at the northern end of the access for emergency vehicle ingress/egress (6 m wide with a 4 m trafficable limestone gravel surface). This will be dual purpose to allow for pedestrian access.	<ul style="list-style-type: none"> As per Fire Management Plan for Lot 9000 South Coast Highway. 	LWP Shire of Denmark	As detailed in fire management plan	
		26) Maintain the Heritage Trail as a strategic firebreak via annual maintenance.	26a) Annual inspection of the Heritage Trail within the foreshore reserve prior to the fire season 26b) Removal of vegetation (branches) on the Heritage Trail to 4 m x 4 m high to allow fire vehicle access.	<ul style="list-style-type: none"> Annual inspection of the Heritage Trail and removal of vegetation as required. 	LWP	Within 24 month maintenance period following post practical completion	
				<ul style="list-style-type: none"> Shire of Denmark 	Ongoing post-handover of foreshore reserve		

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Wilson Inlet Management Advisory Group (WIMAG) (2008) Minutes of meeting held 25 June at the Shire of Denmark Reception Room at 1.00PM.

6 Limitations

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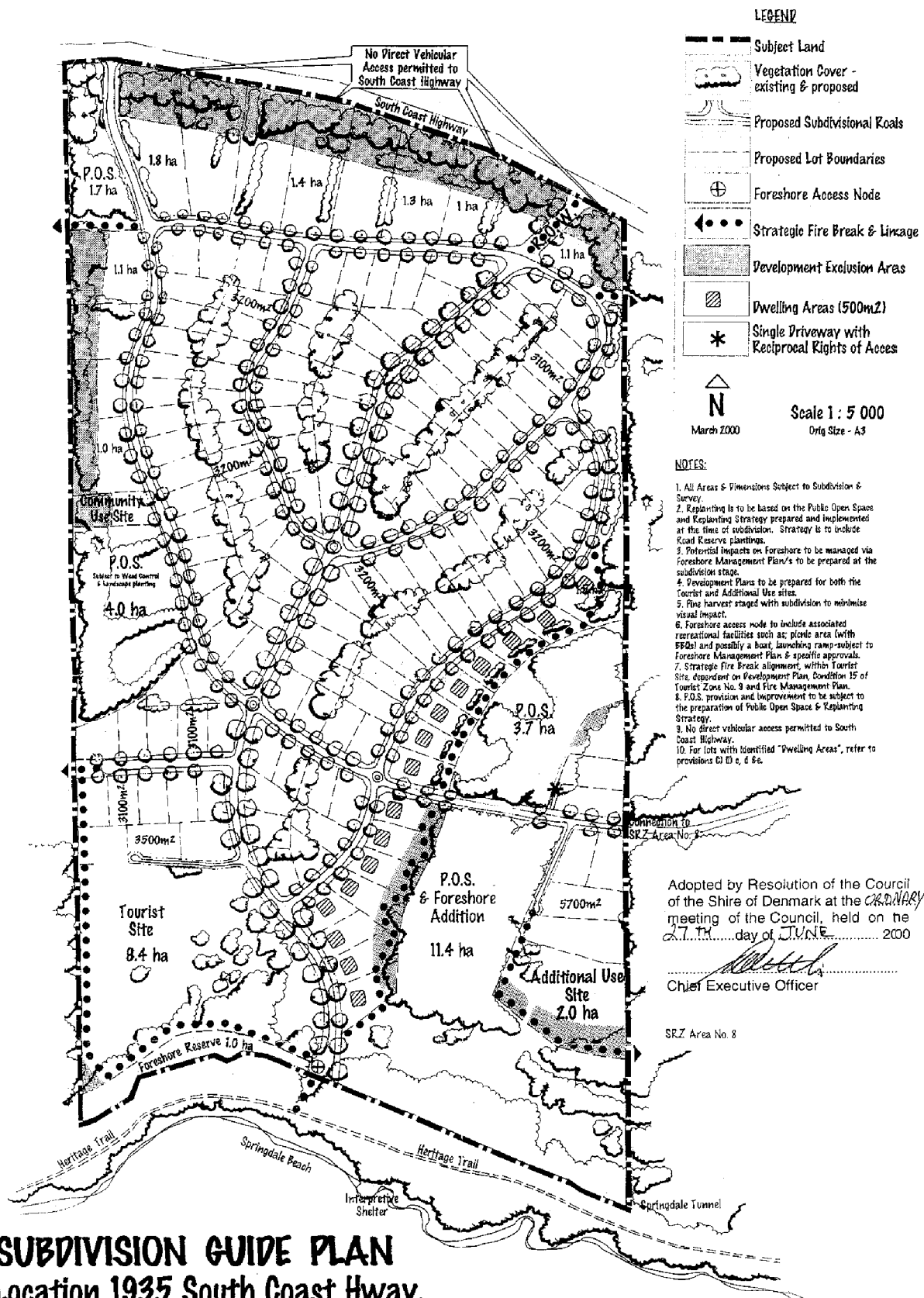
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- The report is based on limited visual inspections with no, or limited, intrusive inspections except as otherwise stated.
- No material testing has been undertaken unless noted otherwise.
- Verification of assumed structural elements is based on the information provided and drawings provided by the Client, or those available from historical archives. The assumptions in this report are based solely on such information and drawings. Information or drawings not known to Opus at the time of completing this report, which provide further and/or different detail, may affect these assumptions and the findings of the report.
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- No calculations, other than those noted within, have been undertaken in support of the conclusions of this report.
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APPENDICES

APPENDIX A

Subdivision Guide Plan



SUBDIVISION GUIDE PLAN
 Location 1935 South Coast Hwy.
 Shire of Denmark TPS No. 3 Amendment 66

APPENDIX B

Heritage Search Results



Search Criteria

1 Other Heritage Places in Custom search area (5); 534500.28mE, 6129843.66mN (zone 50) : 536447.80mE, 6132254.19mN (zone 50)

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Coordinate Accuracy

Accuracy is shown as a code in brackets following the coordinates.

Terminology (NB that some terminology has varied over the life of the legislation)

Place ID/Site ID: This a unique ID assigned by the Department of Aboriginal Affairs to the place

Status:

- o **Registered Site:** The place has been assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*
- o **Other Heritage Place which includes:**
 - **Stored Data / Not a Site:** The place has been assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972*
 - **Lodged:** Information has been received in relation to the place, but an assessment has not been completed at this stage to determine if it meets Section 5 of the *Aboriginal Heritage Act 1972*

Access and Restrictions:

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- o **Boundary Restricted = No:** place location is shown as accurately as the information lodged with the Registrar allows.
- o **Boundary Restricted = Yes:** place location is shown as accurately as one or more two-kilometre-square boxes.

The Department of Aboriginal Affairs maps the locations of all sites and heritage places, including sites and heritage places where the boundary is restricted, as accurately as the information lodged with the Registrar allows. However, to preserve the confidentiality of sites and heritage places where the boundary is restricted their locations are published in reports from the Register and displayed on the Aboriginal Heritage Inquiry System within one or more two-kilometre-square boxes. These 2 km boxes act as indicators for the presence of sites or heritage places rather than the exact location of the place.
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 - **Female Access Only:** Only females can view restricted information

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.








List of Other Heritage Places with Map

ID	Status	File Restricted	Boundary Restricted	Restrictions	Place Name	Type	Knowledge Holders	Coordinates	Legacy ID
4643	Lodged	No	No	No Gender Restrictions	SPRINGDALE ARRANGEMENT	Man-Made Structure	*Registered Knowledge Holder names available from DAA	536300mE 6130087mN Zone 50 [Unreliable]	S02384



Legend

Selected Heritage Places

-  Other Heritage Places
-  Aboriginal Community Occupied
-  Aboriginal Community Unoccupied
-  Town
-  Search Area

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Search Criteria

4 Survey Areas in Custom search area (2); 534377.65mE, 6129706.25mN (zone 50) : 536620.46mE, 6132319.27mN (zone 50)

Disclaimer

Heritage Surveys have been mapped using information from the reports and / or other relevant data sources. Heritage Surveys consisting of small discrete areas may not be visible except at large scales. Reports shown may not be held at DAA. Please consult report holder for more information. Refer to www.daa.wa.gov.au/heritage for information on requesting reports held by DAA.

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Access

Some reports are restricted.

Spatial Accuracy

The following legend strictly applies to the spatial accuracy of heritage survey boundaries as captured by DAA.

Very Good	Boundaries captured from surveyed titles, GPS (2001 onwards) submitted maps georeferenced to within 20m accuracy.
Good / Moderate	Boundaries captured from GPS (pre 2001) submitted maps georeferenced to within 250m accuracy.
Unreliable	Boundaries captured from submitted maps georeferenced to an accuracy exceeding 250m.
Indeterminate	Surveys submitted with insufficient information to allow boundary capture.



Survey Report 27218

Title An Aboriginal Heritage Survey of the South Western Highway between Wetherell Street, Manjimup and Coalmine Beach Road, Walpole Western Australia

Authors Gifford, Peter.

Lead Consultant Brad Goode & Associates Consulting Anthropologists and Archaeologists

Survey Types Ethnographic

Related Survey Areas for Survey Report 27218

Area Number	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
1	Ethnographic	South Western Highway between Manjimup and Walpole (SLK 280 - 400) between Wetherell Street, Manjimup and and Coalmine Beach Road, Walpole.	Good	Field and Desktop

Survey Report 102074

Title Western Australia Regional Forest Agreement Aboriginal Consultation Project. Vol.1. Nov.1997.

Authors Centre for Social Research.

Lead Consultant Edith Cowan University

Survey Types Ethnographic

Related Survey Areas for Survey Report 102074

Area Number	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
1	Ethnographic	Regional Forest Agreement Aboriginal Consultation Project as shown in Figure 1.	Unreliable	Field only



Survey Report 103672

Title Final Report on Archaeological Investigations at Lake Jasper and at Estuaries, Offshore Islands and other Features on the Southern Ocean Coast, South-Western Western Australia, 1993-1995.

Authors Dortch, Charles.

Lead Consultant C. Dortch

Survey Types Archaeological

Related Survey Areas for Survey Report 103672

Area Number	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
1	Archaeological	The survey area comprises sites/locations at Lake Jasper, with lats and longs as per page 48, 49, 50. Also points along the Southern Ocean Coast as per page 50 and 51. The extent of each site/heritage location is not known.	Unreliable	Field and Desktop

Survey Report 103982

Title Report to the W.A. Heritage Committee & The Australian Heritage Commission for the Quarter Ending 22 October 1987.

Authors Bradshaw, E.

Lead Consultant Department of Aboriginal Sites, Western Australian Museum

Survey Types Archaeological and Ethnographic



Related Survey Areas for Survey Report 103982

Area Number	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
1	Archaeological and Ethnographic	The survey area comprises the following DIA sites: 4666, 4664, 4665, 3570, 4882, 4643. The survey area location and extent are as per the AHMS.	Unreliable	Field and Desktop



Legend

Selected Heritage Surveys

-  Heritage Survey
-  Aboriginal Community Occupied
-  Aboriginal Community Unoccupied
-  Town
-  Search Area

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Search Criteria

0 Registered Aboriginal Sites in Custom search area; 534494.34mE, 6129824.99mN (zone 50) : 536457.16mE, 6132251.93mN (zone 50)

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- o **Boundary Restricted = Yes:** place location is shown as accurately as one or more two-kilometre-square boxes.
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 - **Female Access Only:** Only females can view restricted information

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.








List of Registered Aboriginal Sites with Map

No Results



Legend

Selected Heritage Sites

-  Registered Sites
-  Aboriginal Community Occupied
-  Aboriginal Community Unoccupied
-  Town
-  Search Area

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Torbay-Denmark Rlwy - Denmark-Nornalup Rlwy

AUTHOR Shire of Denmark

PLACE NUMBER 14310

LOCATION

Denmark

LOCATION DETAILS

Torbay-Denmark Railway and Denmark-Nornalup Railway Phase 1 - 4092 Phase 2 -
14537/14133/11447/5467/14635/14534

OTHER NAME(S)

Disused Railway Reserves and Bridges

LOCAL GOVERNMENT Denmark

REGION Great Southern

CONSTRUCTION DATE 1896, 1929

DEMOLITION YEAR N/A

Statutory Heritage Listings

TYPE	STATUS	DATE	DOCUMENTS
Town Planning Scheme	YES	26 Apr 1999	

Other Heritage Listings and Surveys

TYPE	STATUS	DATE	GRADING/MANAGEMENT
			CATEGORY
Municipal Inventory	Adopted	26 Apr 1999	High level of protection - TPS
Municipal Inventory	Adopted	01 Jan 1800	Considerable Significance

Statement of Significance

The railways were significant in the creation of the Denmark townsite for the timber industry and as transport before roads were built. The sites (tracks) are associated with the movement of timber goods and people within the Shire. The Torbay-Denmark Railway was constructed by the Millar Brothers Timber Company to transport the timber felled in the Denmark area to market. Markets were found for the timber in England as street block pavers. In 1929, after the Denmark district expanded with many Group Settlers, a railway was built between Denmark and Nornalup. The 61km line opened up timber, dairying and potato country after taking nearly two years to complete. The railway became a vital link for the isolated group settlement communities. Fishermen also used the service by freighting their catch from places like Parry Beach. With the increased use of motor vehicles and better roads, the railway became less used, finally resulting in the closure of the service in 1957. Today the railway lines cannot be found as most have been dismantled. However, roads and tracks often follow the old routes and many have become part of the heritage trails in the Denmark district.

Physical Description

There are various lengths of disused railway tracks throughout the Shire of Denmark from Hay River to Nornalup.

History

There were three phases of railway construction. The first, during the Millars' Timber milling era, was built between Torbay and Denmark in c1896. The second era started in 1929 when the railway between Denmark and Nornalup was built. While the lines are no longer evident as they have been removed since closure in 1957, many roads/tracks have been built on these routes.

Associations

NAME	ASSOCIATION TYPE	DATE FROM	DATE TO

WAGR	Builder	1927	-
C & E Millar (Millars Timber Co.)	Builder	1896	-

References

REF ID NO	REF NAME	REF SOURCE	REF DATE
	R McGuinness;"Elleker-Denmark_Nornalup: The railway extended west but never met."	Cinnamon Coloureds-Denmark WA	2007

Creation Date 15 Oct 1999

Last Update 27 Feb 2012

Viewing Status Approved

Disclaimer

This information is provided voluntarily as a public service. The information provided is made available in good faith and is derived from sources believed to be reliable and accurate. However, the information is provided solely on the basis that readers will be responsible for making their own assessment of the matters discussed herein and are advised to verify all relevant representations, statements and information.

APPENDIX C

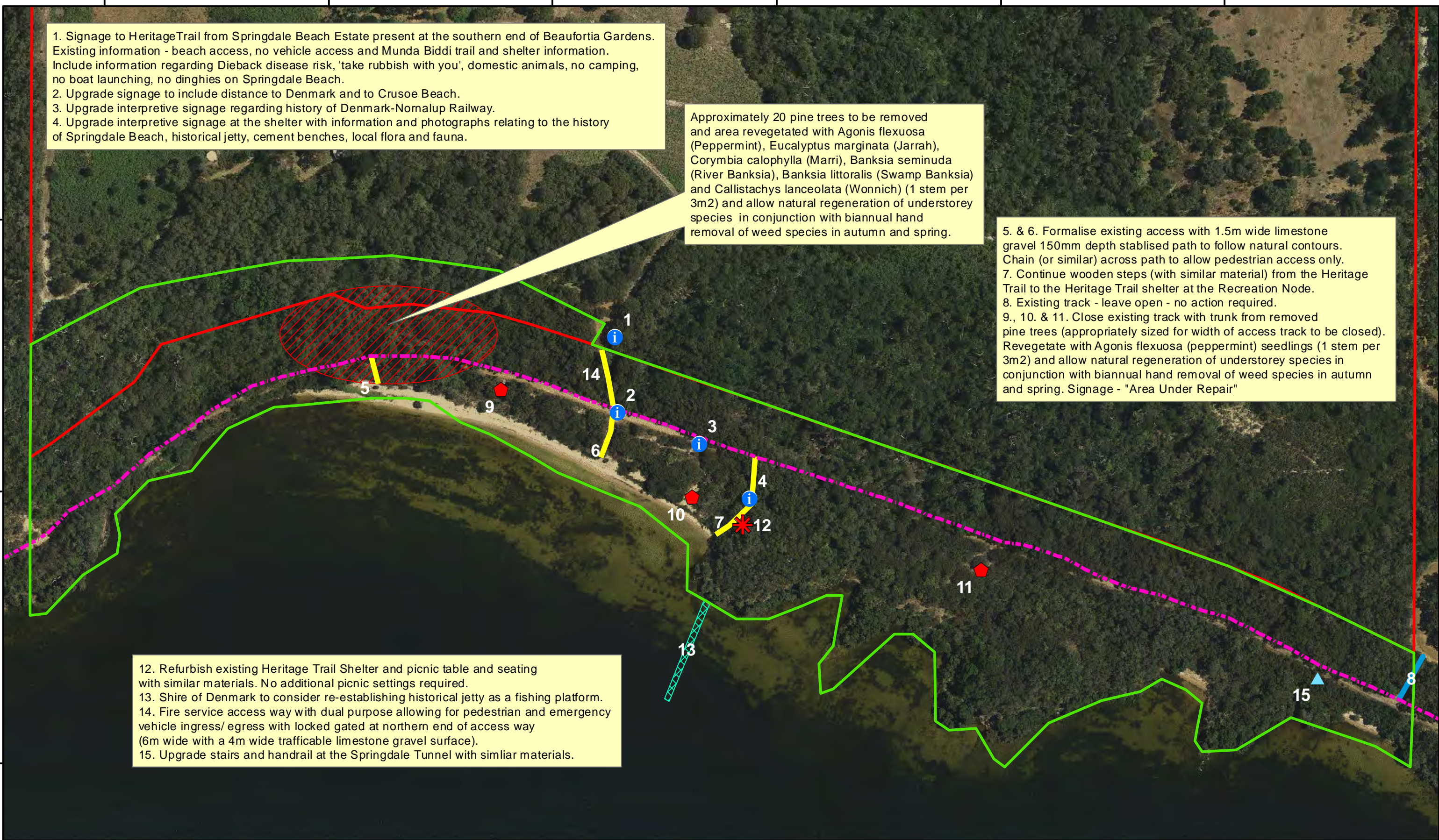
Springdale Beach Estate Foreshore Reserve Management Actions

1. Signage to Heritage Trail from Springdale Beach Estate present at the southern end of Beaufortia Gardens. Existing information - beach access, no vehicle access and Munda Biddi trail and shelter information. Include information regarding Dieback disease risk, 'take rubbish with you', domestic animals, no camping, no boat launching, no dinghies on Springdale Beach.
 2. Upgrade signage to include distance to Denmark and to Crusoe Beach.
 3. Upgrade interpretive signage regarding history of Denmark-Nornalup Railway.
 4. Upgrade interpretive signage at the shelter with information and photographs relating to the history of Springdale Beach, historical jetty, cement benches, local flora and fauna.

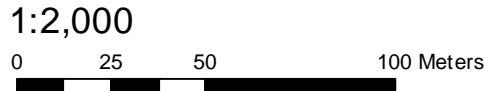
Approximately 20 pine trees to be removed and area revegetated with *Agonis flexuosa* (Peppermint), *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri), *Banksia seminuda* (River Banksia), *Banksia littoralis* (Swamp Banksia) and *Callistachys lanceolata* (Wonnich) (1 stem per 3m²) and allow natural regeneration of understorey species in conjunction with biannual hand removal of weed species in autumn and spring.

5. & 6. Formalise existing access with 1.5m wide limestone gravel 150mm depth stabilised path to follow natural contours. Chain (or similar) across path to allow pedestrian access only.
 7. Continue wooden steps (with similar material) from the Heritage Trail to the Heritage Trail shelter at the Recreation Node.
 8. Existing track - leave open - no action required.
 9., 10. & 11. Close existing track with trunk from removed pine trees (appropriately sized for width of access track to be closed). Revegetate with *Agonis flexuosa* (peppermint) seedlings (1 stem per 3m²) and allow natural regeneration of understorey species in conjunction with biannual hand removal of weed species in autumn and spring. Signage - "Area Under Repair"

12. Refurbish existing Heritage Trail Shelter and picnic table and seating with similar materials. No additional picnic settings required.
 13. Shire of Denmark to consider re-establishing historical jetty as a fishing platform.
 14. Fire service access way with dual purpose allowing for pedestrian and emergency vehicle ingress/ egress with locked gated at northern end of access way (6m wide with a 4m wide trafficable limestone gravel surface).
 15. Upgrade stairs and handrail at the Springdale Tunnel with similar materials.



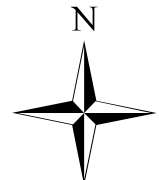
Opus Ref: W-A1207.01



Legend

- Springdale Beach Estate Foreshore Reserve
- Springdale Beach Estate
- Existing historical jetty
- i Interpretive Signage
- Heritage Trail_Munda Biddi_Alternate Bibbulmun Track
- ✱ Springdale Beach Passive Recreation Node
- Formalise existing access track to Springdale Beach
- Pine trees & land slip
- Existing access - no action required
- ▲ Springdale Tunnel
- ⬠ Close existing access track

Title: Springdale Beach Estate Foreshore Reserve Management Actions



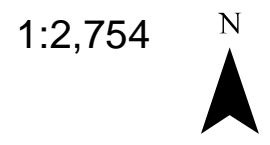
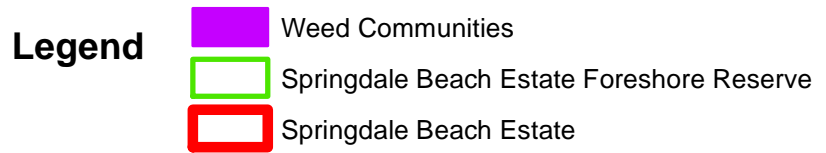
APPENDIX D

Springdale Beach Estate Foreshore Reserve Weed Management Plan

Springdale Beach Estate Foreshore Weed Communities (to be used with map)

Common Name	Latin Name	Weed Community																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Asparagus fern	<i>Asparagus scandens</i>																			
Blue gums	<i>Eucalyptus globulus</i>																			
Dock	<i>Rumex crispus</i>																			
Dune arctotheca	<i>Arctotheca populifolia</i>																			
Fat Hen	<i>Chenopodium spp</i>																			
Flatweed	<i>Hypochaeris glabra</i>																			
Fleabane	<i>Conyza sumatrensis</i>																			
Freesia	<i>Freesia alba x leichtlinii</i>																			
Gladioli	<i>Gladiolus spp</i>																			
Grass	POACEAE																			
Inkweed	<i>Phytolacca octandra</i>																			
Kikuyu	<i>Pennisetum clandestinum</i>																			
Kangaroo apple	<i>Solanum laciniatum</i>																			
Pines	<i>Pinus spp</i>																			
Sea spurge	<i>Euphorbia spp</i>																			
Sheep thistle	<i>Carduus tenuiflorus</i>																			
Soursob	<i>Oxalis spp</i>																			
Sowthistle	<i>Sonchus oleraceus</i>																			
Umbrella sedge	<i>Cyperus spp</i>																			
Veldt Grass	<i>Ehrharta spp</i>																			
Wall fumitory	<i>Fumaria muralis</i>																			
Watsonia	<i>Watsonia spp</i>																			





Springdale Beach Estate Foreshore Weed Management Schedule

Common Name	Latin Name	Control	Responsibility	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Asparagus fern	<i>Asparagus scandens</i>	Handweed	DWAG												
Blue gums	<i>Eucalyptus globulus</i>	Mechanical	DWAG												
Dock	<i>Rumex crispus</i>	Handweed	DWAG												
Dune arctotheca	<i>Arctotheca populifolia</i>	Handweed	DWAG												
Fat Hen	<i>Chenopodium spp</i>	Handweed	DWAG												
Flatweed	<i>Hypochaeris glabra</i>	Handweed	DWAG												
Fleabane	<i>Conyza sumatrensis</i>	Handweed	DWAG												
Freesia	<i>Freesia alba x leichtlinii</i>	Handweed	DWAG												
Gladioli	<i>Gladiolus spp</i>	Handweed	DWAG												
Grass	<i>POACEAE</i>	Handweed	DWAG												
Inkweed	<i>Phytolacca octandra</i>	Handweed	DWAG												
Kikuyu	<i>Pennisetum clandestinum</i>	Chemical	Contractor												
Kangaroo apple	<i>Solanum laciniatum</i>	Handweed	DWAG												
Pines	<i>Pinus spp</i>	Mechanical	Ecologic												
Sea spurge	<i>Euphorbia spp</i>	Handweed	DWAG												
Sheep thistle	<i>Carduus tenuiflorus</i>	Handweed	DWAG												
Soursob	<i>Oxalis pes-caprae</i>	Handweed	DWAG												
Sowthistle	<i>Sonchus oleraceus</i>	Handweed	DWAG												
Umbrella sedge	<i>Cyperus spp</i>	Handweed	DWAG												
Veldt Grass	<i>Ehrharta spp</i>	Handweed	DWAG												
Wall fumitory	<i>Fumaria muralis</i>	Handweed	DWAG												
Watsonia	<i>Watsonia spp</i>	Handweed	DWAG												

Reference: <http://florabase.dpaw.wa.gov.au/> Optimum Treatment periods





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