Shire of Denmark

PATH DEVELOPMENT PLAN

A Plan to Guide the Construction and Maintenance of Paths, Cycleways, Share Use Paths and Trails within the Shire of Denmark.

8th January 2007
(received by Council pursuant to resolution 59/07 February 2007)
(incorporating amendments by PATAC 2008)

1. Introduction

1.1 Background

The Path, Shared use path and Trails network within the Shire of Denmark has progressed steadily since the inception of the associated plans. The current "Summary Report and Priority Schedule for the Construction of Paths and Trails" was identified for review and the Paths and Trails Committee were delegated the task.

The implementation of new infrastructure since the inception of all plans is summarized below;

Table 1 Infrastructure Status

Infrastructure Type	Total Network Length (km)	Infrastructure Installed
Paths	5.75	72%
Shared use paths	26	22%
Trails	105	80%

The Denmark Paths and Trails committee have undertaken a review of all these plans with the view of producing a strategy for managing the implementation of all infrastructures, identifying new infrastructure and defining the standards associated with that infrastructure. This strategy should be read in conjunction with those plans.

1.2 Aims

The main aim of the Shire of Denmark Path Development Plan (PDP) is to improve the Pedestrian, Cycling and Trail networks:

- coherence;
- directness;
- safety;
- comfort;
- attractiveness; and
- equity of access.

The plan also aims at providing guidance to Council and Staff in the funding, standards, priority and construction of proposed Path, Shared use path and Trail Infrastructure where identified.

1.3 Objectives

The main objectives of the Path Development Plan are:-

1. Paths and Shared Use Paths

- To facilitate improvements in the level of access and priority, particularly in areas of high demand;
- To reduce pedestrian access severance and enhance safe and convenient crossing opportunities on all roads;
- To facilitate improvements in the level of personal mobility and safety for pedestrians with disabilities and older persons through the provision of pedestrian infrastructure and facilities which cater to the needs of all pedestrians;
- To provide links with other transport services to achieve an integrated land use and transport network of facilities that comply with technical standards;
- To ensure that pedestrian facilities remain appropriate and relevant to the surrounding land use, pedestrian user groups and volume of use;
- To address Council's obligations under the Commonwealth Disability Discrimination Act 1996.
- To promote and encourage the use of alternative transport methods.

2. Trails

- To develop in integrated network of quality recreational trails in line with Local and State initiatives for the purpose of recreation, conservation, education and tourism.
- To provide for a loop trail system, where possible, with varying loop lengths within the system.
- To provide for diversity in trail experiences including variety in difficulty, terrain, environment and the exploration of interpretive opportunities.
- To link recreational opportunities within the Shire of Denmark providing for connections between parks, open space, schools, community facilities and trail systems in adjacent Shires.
- To minimize impacts to adjacent landowners from trespass, loss of privacy, damage and property loss associated with the trail.
- To locate trails with environmental sensitivity to minimize the impact to the environment.
- To promote and encourage the use of alternative transport methods.

1.4 Universal Access Principles

Universal Access Principles highlight the rights of all citizens in relation to all transport needs, including non-vehicle transport. These are presented in Figure 1.

> Universal Access is the ability of all citizens to reach every destination served by the public road and transit system. Every local road and intersection should be designed and regulated to preserve reasonably safe access to all lawfully behaving citizens as intended and expected users (i.e. all citizens are Design Users.)
> Engineering designers and policy should aim for acceptable Level of Service metrics, such as delays, that are similar for all road users – motorists, pedestrians, cyclists and mobility-impaired persons.
> Avoid road "improvements" which reduce the Level of Service below acceptable levels for pedestrians, cyclists and mobility-impaired persons.
> Provide footpaths on at least one side of all streets so that wheelchair users have accessible routes outside of vehicle travel lanes.
> Public facilities or policies that discriminate against the "car-less" violate the most basic rights described in law.
> (Acknowledgments to S.B. Goodridge)

1.5 Methodology

The methodology for the review involved a number of components including the following:

- Data review of existing plans;
- Review of existing questionnaire surveys and reports;
- Committee consultation;
- PDP routes development;
- Consideration of Council policies and funding sources.

1.6 Evaluation

1. Introduction

Planning for pedestrians, cyclist and recreational users is a relatively complex task in the Shire of Denmark due to the nature of the terrain and the expanse of the nodal settlements. Local Governments have difficulty in addressing and prioritizing construction and maintenance without a clearly established framework for assessing problems, evaluating potential actions and developing priorities and implementation programs.

A variety of objectives may exist for Path Development Plans, including:

(a) Economic objectives

- Travel time savings for pedestrians/cyclists;
- Travel time savings for other road users;
- Accident cost reduction; and
- Economic sustainability.

(b) Social and political objectives

- Mobility of all members of the community
- Redistribution of costs and benefits within community groups;
- Redistribution of costs between community groups;
- Decrease in fuel consumption;
- Equitable access to work, education and social opportunities;
- Healthy lifestyle and
- Personal physical safety

(c) Environmental objectives

- Reduction of atmospheric pollution/greenhouse gas emissions;
- Sustainability;
- Noise reduction; and
- Amenity.

Measurements of PDP performance against these objectives is challenging because the objectives are qualitative, which makes measurement difficult, and rating of the importance of different (and in some cases, conflicting) objectives is a difficult task.

2. Plan Actions

Possible actions for council to be developed as part of the PDP process are wide-ranging, and perhaps can be categorized as:

- Encouragement;
- Enforcement;
- Engineering; and
- Education.

2. Community Consultation

2.1 Review Area

The review area is defined by the Path and Shared Use Path network around the Denmark Town site and the Trail Network within the Shire of Denmark. The review

excludes the nodal areas of Peaceful Bay, Nornalup and Bow Bridge as the development of paths in these areas was not considered in any of the original plans, they require minimal infrastructure at this point of their development and can be addressed separately.

2.2 Existing Plans

1. Path Development Plan 1996

The Plan was developed by Council staff and adopted by Council in January 1996. It identified the location, specifications, development priorities and implementation requirements to progress the Path network construction in the Shire of Denmark.

2. Trails Master Plan 1999

The Shire of Denmark commissioned Maher Brampton Associates to prepare a Trails Master Plan to assist Council in decisions concerning priority of development. The Consultants liaised with the Denmark Trails Committee and other key Stakeholders in determining a priority of Trail Development. This plan included Dual Use Paths which were later identified in the Cycleway Master Plan. The plan identifies Selection Criteria, Priority Trail Development and Recommendations.

3. Cycleway Master Plan 1999

The Shire of Denmark commissioned Halpern Glick Maunsell (HGM) Consulting Engineers to provide a framework to allow the future planning of Dual Use Pathways (Cycleways) in the Shire of Denmark.

The Consultants considered the following criteria in determining the initial Dual Use Paths in consultation with Council Officers and Key Stakeholders (not listed in plan);

- Start and Termination locations;
- Primary Function of path;
- Topography;
- Primary Users; and
- Potential Conflict of Traffic.

The plan provides detail of the selections and construction priorities.

The Shire of Denmark commissioned RR Unger Consulting Chartered Engineers to co-ordinate and suitably combine the above plans.

The outcome was an acceptable priority system for the construction of all paths. No additional consultation was undertaken with this report.

2.3 Committee Consultation

Due to the extensive amount of public consultative work undertaken in previous plans the revision of that information was conducted by the Paths and Trails Committee. The Committee has a broad range of representative groups and key stakeholders including;

- Shire of Denmark Councillor
- Shire of Denmark Staff
- Green Skills
- Historical Society
- Denmark Environment Centre
- 3 x Community Representatives

In addition, representatives were invited from the following Committees:

- Denmark Roadwise Committee
- Injury Prevention Committee
- Disability Services Committee
- Denmark Seniors Association

Consultation sessions held with the representatives of the above committees identified additional path infrastructure, determined priority selection criteria, evaluated proposed and existing paths and made recommendations relating to the future direction of the management of the Path Network.

2.4 Review Process and Criteria

In determining a method for critically analysing each proposed path facility, it was determined that the Paths and Shared use path would be assessed on measurable criteria. A rating score was defined in order to rate each Path Facility against each other. The rating of Trails was not achievable under this method and a logical process of construction priority was adopted based on the existing Trails Master Plan "Priority Selection Criteria".

The committee developed and adopted the technical selection criteria designed to accommodate a number of factors for the prioritization of Path Facilities. The criteria rating system was based on principals drawn from the "How to Prepare a Pedestrian Access and Mobility Plan" by the Roads and Traffic Authority, NSW.

The criteria were modified to suit conditions in Denmark and also reflected the requirements of the associated funding bodies, such as the Assessable Pathway Grants Scheme, Country Pathways Grant Scheme and the TrailsWest Grant Program.

The following factors were identified as important factors in determining a technical basis for the analysis of one facility versus another.

1. Existing Facilities

The Shire of Denmark faces two key problems. The age of infrastructure in general, and footpaths in particular, means that many are either in poor condition because of their age and repeated repair over the years, or age of old-style designs with high barrier kerbs, no pram ramps and no tactile warning devices.

All traffic management devices should consider the use of areas by pedestrians. Local Area Traffic Management (LATM) devices, with careful design, can be beneficial to pedestrians. Local streets often provide attractive routes for pedestrians, particularly when running parallel to State or Regional roads.

The existing facilities have not been included in the review and it is recommended that an audit be undertaken of the facilities with the view of identifying infrastructure that requires Capital Upgrades, Scheduled Maintenance or Immediate Action.

2. Selection Criteria

The selection criteria used to rate each path included the following key areas;

3. Land Use

The land use types in the review area vary greatly and a number of criteria were used to define the performance of an area.

(a) Trip Generators and Attractors

A number of trip or pedestrian generators and attractors are located within the review area. Pedestrian generators and attractors include schools, child care and aged care centres, community centres, shopping centres and retail strips, recreation facilities (eg pools, sports facilities and parks), licensed clubs, places of worship and public transport facilities. The prioritization of the pedestrian network is closely linked to the proximity to facilities.

Major generators and attractors located within the study area include:

- Denmark CBD, along South Coast Highway and Strickland Street
- Denmark Recreation Centre, Brazier Street
- Denmark Primary and Pre-Primary School, Mitchell/Brazier/Buckley/Thornton and Offer Streets.

- Denmark High School, South Coast Highway
- Steiner School, Scotsdale Road
- Berridge and Norm Thornton Parks, Holling Road
- Ocean Beach/Prawn Rock Channel, Ocean Beach Road
- Housing Estates.

The location of trip generators and attractors were central to the PDP network development and the prioritization of the Action Recommendations.

(b) Land Use Type

The priority land use types were defined as Schools, Commercial/Retail and Residential in that order.

(c) Proximity to Generators

The distance from generators and attractors allows the determination of potential usage and potential linkages. The distances utilized are based on Ped. Shed principles of the Liveable Neighbourhoods, developed by the Department of Planning and Infrastructure.

(d) Future Development

An allowance for the future development of land has been incorporated. The Denmark Structure Plan identifies the location and zoning of the land, which has been used to determine potential future land generators and attractors.

4. Traffic Impact

The factors affecting the traffic impact on pedestrians and cyclists on a particular route are defined by the Road Hierarchy, Traffic Volumes and the Heavy Vehicle Use. The identification of these criteria helped determine the necessity to separate vehicles and alternative transport modes, and the safety of the route.

(a) Road Hierarchy

The primary State and Regional roads in the Study Area include:

- State Roads: South Coast Highway, Denmark – Mt Barker Road
- Regional Roads: Ocean Beach Road, Scotsdale Road, Parker Road, Nornalup Tindale Road, McLeod Road, Valley of Giants Road, Hazelvale Road.
- Local Road/Access: All other roads in the Shire of Denmark.
- State and Regional roads often present problems in crossing opportunities for the pedestrians due to high traffic volumes. State and Regional roads are often the most direct route to retail and commercial centres and therefore are suitable for pedestrians.

(b) Traffic Volumes

The volume of traffic (AADT – average annual daily traffic) was supplied by counts undertaken by the Shire of Denmark. The volumes indicate the potential high conflict areas and type of traffic using a particular road. Where roads had no count available estimates were provided, based on the adjacent land use and similar sized roads.

(c) Bus/Truck Route

The identification of a road as a high use truck or bus route was also used in determining the potential high conflict roads and the safety of those roads.

5. Safety

The importance of safety for the pedestrian or cyclist along a particular route was identified as an important factor in determining the priority of construction. Denmark is built in a hilly area, with roads ranging from long straights to winding sections. The combination of local hazards, road alignment and width were used to define the safety aspects of a route.

6. Other

Other criteria to be included in the technical analysis of the criteria rating were;

(a) Facility Benefits

Areas Identified as having a high use of pedestrians or cyclists were considered to have a higher priority.

(b) Continuity of Routes

The use of paths that link into existing paths to create a larger network provide greater access over paths that are isolated and therefore attract a higher need for construction.

3. Network and Facility Standards

The development of the facility standards for Paths and Shared use paths are defined by a variety of Australian Standards and Austroads Standards. These include;

- Austroads; Guide to Practical Engineering – Pedestrians
- Austroads; Guide to Practical Engineering – Bicycles
- Australian Standards; AS1428 – Design for Access and Mobility
- Australian Standards; AS1742 – Manual of Uniform Traffic Control Devices
- Australian Standards; AS1158 – Public Lighting Code
- Australian Standards; AS1743 – Road Signs
- Australian Standards; AS1744 – Standard Alphabets for Road Signs
- Australian Standards; AS2700 – Colour Standards for General Purposes
- Australian Standards; AS2890 – Parking Facilities
- Institute of Municipal Engineers Australia – Local Government Guidelines for Subdivision Development.
- Department of Planning and Infrastructure – Liveable Neighbourhoods (Draft Operational Policy)

3.1 Paths and Share Use Paths

Definition

Paths are designed to accommodate the access for the exclusive use by pedestrians, Cycleways are designed to service cyclists only and Shared Use Paths offer the use to both pedestrians and cyclists.

The purpose of the Paths and Shared Use standards are to:

- Ensure equitable and safe access for pedestrians and cyclists.
- Ensure infrastructure is designed and constructed to a standard that improves the level of personal mobility for pedestrians with disabilities, older construction standards.
- Minimise maintenance costs.
- Avoid or minimise disturbance to the natural environment.
- Reduce liability exposure to the Shire of Denmark.

3.1.2 Specifications

The general facility standard guideline is developed based on information reviewed in the Austroads and Australian Standards.

1. Path Provision

Path surface and dimensions standards and guidelines are addressed in Austroads Part 13: Pedestrians, Austroads Part 14: Bicycles and in the Australian Standard 1428 series. According to Austroads, all roads (with the exception of an Access Place) should have some type of walking facility out of the vehicle path. A separate walkway is preferable; however a roadway shoulder can also provide safer pedestrian accommodation than walking in traffic lanes.
The building edge should be kept clear of any obstructions such as outdoor dining areas, retail activities, and other structures for the same reason. For location where such obstruction is necessary, the clear width of the remaining footpath should meet the minimum standard and the obstruction should be delineated from the footpath with structure that is solid along the ground.

2. Path Surface

Surface treatment should be stable, firm, even and relatively smooth but slip resistant. It is also important for many people that surfaces be flat. General comments in Austroads in some common paving materials are provided below in Table 1.

Table 1 Surface Treatments

Surface Treatment	Comment
Concrete & Asphalt	***** Generally the most functional appropriate. * Preferred where a footpath is on a gradient, especially where it can become wet. * Concrete and other light coloured surfaces are preferred in hot climate as they radiate less heat. * Concrete is preferred on roads that are kerbed. * Asphalt is preferred on roads that have no kerbing.
Pavers & Bricks	***** Glazed surfaces can become slippery when wet, therefore pavers and bricks used on footpaths in external areas should not be glazed. * The provision of a firm well-compacted base (preferably concrete) is essential when used for pedestrian paths. * People with sight impairments frequently use difference in pavement colour as a means of guidance. They can find the variation of colour that occurs in surfaces composed of pavers confusing. * Pavers are preferred in recreational reserves and identified Streetscape areas like the CBD.
Loose surface	***** Avoid the use of exposed aggregate, gravel, soil, sand, grass and tanbark surfacing

materials	on pedestrian routes, other than recreational routes. Even though they can be less expensive, and more aesthetic, some people find them difficult to walk on and they can impose severe difficulties for people in wheelchairs. * Where these surfaces are used adequate crossfall should be provided to ensure that good drainage occurs.

Source: Austroads part 13: Pedestrian, p24 * local preferences applicable to Denmark.

3. Path Dimensions

Path dimensions are addressed in AS 1428 and Austroads Part 13 & 14. The clear requirements outlined in these documents are provided in Table 6.

Table 2 Width Requirements for Paths

Type of Use	Required width
General minimum width	1.2 m
Absolute minimum width	0.9 m
High pedestrian volumes	2.4 m or greater
For wheelchairs to pass	1.8 m
Absolute minimum	1.5 m
For people with disabilities	1.0 m to 1.8 m
For shared (joint use with bicycles) where Cyclist passing in opposite directions are rare	2.0 m
Two way cyclists are common, minimal pedestrians	2.5 m
Two way cyclists and pedestrians are common	3.0 m

Source: Austroads Part 13: Pedestrian, p18

In general a minimum footpath width of 1.2 m is considered adequate. However, in high demand locations, such as transport nodes, commercial and main retail locations and entrances to schools, etc., a minimum width of 2.4 metres is recommended.

AS 1428 adopts a minimum height clearance of 2.0m above the trafficable surface with a preferred height clearance of at least 2.4m.

In addition to this, AS 1428 also lists requirements for the design of sloped footpaths. The requirements for landings of at least 1.2m long and maximum lengths of sloped footpaths are dependent on the gradient of the slope. These are included in Table 3 below.

Table 3 Design Requirements for Sloped Walkways

	Gradient (constant along whole length)	Maximum length between landing
Slope	1 in 33 1 in 20	25m(1) 15m(1)

	Between 1:33 and 1:20	Linear interpolation from above
Ramp	1 in 14(2) Between 1:20 and 1:14(2)	9m Calculated by linear interpolation

(1) Maximum length can be increased by 30% if one side of a walkway is bounded by handrail as specified in AS 1428.1.
(2) Handrails as specified in AS 1428.1 shall be provided on both sides of the ramp.

Furthermore, crossfall on footpaths should be as flat as practicable, consistent with achieving an adequately drained surface. Excessive crossfall causes problems for some people. AS 1428 specifies that any crossfall should not exceed 1:100. Steeper crossfalls may be provided if drainage problems are expected, but should not exceed 1:40.

4. Tactile Ground Surface Indicators (TGSI)

According to AS 1428.4, TGSI can be used to "alert people who are blind or vision impaired to pending obstacles or hazards on, or changes indirection and location points of, the continuous accessible path of travel, where those hazards or changes could not reasonably be expected or anticipated using existing tactile and environmental cues. Tactile tiles or grooving (as outlined in AS 1428.4) should be provided at road crossings to indicate the edge of the roadway to pedestrians with sight impairments.

5. Cross Facilities

At all road crossings, kerb ramps should be provided for pedestrians to gain access to roadway with minimum impediment. They are also essential for people in wheelchairs and other pedestrians with mobility impairments. Kerb ramps should be aligned in the direction of travel.

Due to the topography and the established nature of the Denmark area, it may not be possible to install the standard kerb ramp. For example, compliance on the maximum ramp grade and ramp length requirement may be difficult along some steep streets and location of a kerb ramp may be compromised by existing services that would be difficult and costly to replace. In these circumstances, a best-fit solution may be the only reasonable solution. For non-standard kerb ramp design and placement, the following should be satisfied:

- The ramp path should be at least 1 metre wide,
- The ramp should land within the pedestrian crossing zone and not into vehicle paths. This is of particular concerns for kerb ramps at corners.
- There should be no lip of step.
- The link between the path of travel and the offset kerb ramp should be paved.

- There should be at least 1 metre clear width of footpath around the kerb ramp to allow most wheelchairs to pass without being affected by the grade changes in the kerb ramp.

Determining the appropriate crossing facility to install is mostly dependent on pedestrian and traffic volumes as well as the nature of the surrounding area. According to Austroads the provision of formal pedestrian crossing facilities should be considered when at least one of the following conditions exist:

- Whenever there is the need for increased visibility and designation of the crossing area, where pedestrian cross at numerous locations along a short section of road and a formal crossing would serve to channel pedestrian crossing activity to a single point;
- Where there is substantial conflict between motorist and pedestrian movements;
- Where the best location for pedestrians to cross may be unclear due to geometric or traffic operational conditions; and
- At locations recommenced as part of the "Safe Routes to Schools" scheme.

Australian Standard 1742.10 specified installation guidelines in the form of numerical warrants for the establishment of a crossing.

In addition to these numerical warrants, Austroads also provides a guide to the most appropriate crossing type for each road classification. This guide is included in Table 4.

Table 4 Suitability of Crossing Type

Facility	**Road Classification**			
	Primary Arterial (non-freeway)	**Secondary/ Sub Arterial**	**Collector Road/ Local Crossing Road**	**Local Street**
Pedestrian operated signals	A	A	C	Pedestrian device should not be needed
Pelican	B	A	C	
Pedestrian operated school signals	A	A	B	
Pedestrian (zebra) crossing	C	B	B	
Children's crossing	C	B	A	
Pedestrian refuges	B	B	A	
Footpath (kerb) extension	C	B	A	
Road narrowing indented parking kerb extension, line marking	C	C	A	
A Most likely to be appropriate treatment				
B May be an appropriate treatment				
C Inappropriate treatment				

Source: Austroads Part 13: Pedestrian, pp 28 – 29

It should be noted that neither numerical warrants, nor the guidelines provided above should be taken as the sole criteria for determining the requirement for a particular facility. Austroads recommends that a careful engineering study be conducted, considering matters such as safety and capacity to fully determine the need for a crossing facility.

6. Other Facilities

(a) Bus Shelters

Austroads recommends that all bus stops should be provided with adequate signage, lighting, and related treatments to clearly identify them. All shelters should be adequately lit, have Australian Standard seating and be as draft proof as possible. All bus stops should also be accessible.

(b) Street Furniture

According to AS 1428.2 all items of street furniture should be positioned away from the path of travel and should be of a colour which contrasts with its background. Where possible, furniture should not be positioned along the building line as it is used as a physical cue for people with sight impairments.

In addition, AS 1428.2 states that in areas of high use by people with ambulatory disabilities, such as areas frequented by elderly peoples, seats should be provided no more than 60m apart alongside the path of travel.

(c) Directional Signage

The issue of directional signage placement is addressed in Austroads part 13. For a standing person signs should be placed less than 10° above or below eye level; for a seated person signs within 15° of eye level are acceptable. Signs mounted between 900mm and 1.5m from the group level provides the most appropriate compromise between the requirements of seated and standing people. All signs should be placed within 30° horizontally of the direction of travel to allow them to be easily read while maintaining a clear path of travel.

Add reference to need for provision of Bike Racks at suitable locations to further encouraging cycling.

3.1.3 Path Development Priority

Table 5 below lists the priority of construction for the development of the Path network.

Note:
The cost estimates are based on average construction costs for the past 3 years. The costs are to be used as a guideline only, fine tuning will be required prior to funding applications and Budget allocations.

Note:

The tables has now been divided into localities (moreover townsites) to facilitate locality based priorities and potential integration into future Community Infrastructure Planning. At present (2009) footpaths have been divided into the two townsites that have footpaths planned, being Denmark and Peaceful Bay.

Reference to '?' and initials following refers to action by that individual to confirm whether the works have been completed or whether further reference to the project is required.

Table 5 Paths Development Priority

Path Number	Location	Start	End	Material	Length	Width	Cost Estimate (3)	Rating	Priority Number	Patac Changes	Construction Year
Denmark Townsite											
P1	Sth Coast Hwy North	Hollings Road	Ocean Beach Road	Concrete	370	1.8	$28,000.00	88	10	L	(1)
P1	Sth Coast Hwy (S)	Hollings Road	Ocean Beach Road	Concrete	370	1.8	$28,000.00	1	11	Imme diate	(1)
P29	Holling Road (W)	Walker Street	Barnett Street	Concrete	190	1.8	$ 5,000.00	79	12	L	2007
P30	Holling Road (E)	Annie Harrison Pk	Berridge Park	Concrete	250	1.8	$29,000.00	79	13	H	2007
P39	Shadforth (S)	Millar Street	Entry to Lions Village-Hardy Street	Concrete	210	1.8	$13,000.00	76	1	H? Done ? DH	2008
P35	Chiltern Road	Ocean Beach Road	Minsterly Rd	Concrete	460	1.5	$16,000.00	76	6	L	2008
P25	Mitchell Street	Strickland Street	Short Street	Concrete	200	1.5	$ 5,000.00	75	7	L	2008
P3	Hollings Road	Norm Thornton Park	Under bridge to Berridge Park	Brick Paving	65	1.5	$ 7,000.00	74	8	M	2008
P34	Middleton Street	Buckley Street	Zimmerman Street	Concrete	400	1.8	$30,000.00	72	9	M	2009
P6	Price Street (E)	Sth Coast Hwy	Mitchell Street	Concrete	115	1.5	$ 7,000.00	69	4	H	2009
P33	Buckley Street	Offer Street	Thornton Street	Concrete	180	1.5	$11,000.00	69	2	Done ? JH	2010

P5	Backlane	Millar Street	Sth Coast Hwy	Concrete	85	1.5	$ 5,000.00	67	5	M	2010
P28	Price Street	Mitchell Street	Barnett Street	Concrete	190	1.5	$12,000.00	66	14	L	2010
P31	Millar Street (E)	North Street	Welsh Street	Concrete	150	1.5	$ 9,000.00	60	16	L	2011
P41	Rushton Street	Scotsdale Road	Rockford Road	Concrete	270	2	$22,000.00	57	17	L – done? JH	2011
P27	Bent Street	Strickland Street	Price Street	Concrete	70	1.5	$ 4,000.00	51	18	H	2011
P4	Berridge Park	Hollings Road	Public ablutions	Brick Paving	160	1.5	$13,000.00	46	19	Done ? DS	2012
P38	Payne Road	Payne Road	Walk Trail	Gravel	120	1.5	$ 2,000.00	45	20	L	2012
P40	Tysoe Close (through reserve 42724, but subject to access through private property (H Falconer)).	Jamieson Heights	Tysoe Close	Gravel	250	2	$ 2,000.00	45	21	H – Tenure? DS	2012
P32	Peace Street or North?	Hollings Road	Strickland St	Concrete	120	1.5	$ 7,000.00	44	22	M (done ?) DH	2012
P37	Rainbow Close	Minsterly Road	Trail	Concrete	170	1.5	$ 5,000.00	43	23	L	2012
P36	Cotswold Road	Ocean Beach Road	Minsterly Road	Concrete	150	1.5	$ 9,000.00	43	24	L	2012
new	Thornton St	Pre-Primary	Buckley St		26					M	
new	Thornton St	End of Existing Path around corner new kerbing	Brazier		14					H	
new	Strickland St	End of existing path	Barnett St		8					H	
Peaceful Bay Townsite											
	Rame Head Rd	Williams Rd	Oval / Peaceful Bay North Rd						1	H	
	Peaceful Bay North Rd	Oval	First Ave						2	H	
	Peaceful Bay North Rd	First Ave	Caravan Park						3	M	
	Path *South* of First Ave	from intersection of First Avenue and Peaceful Bay North Rd	To Hall and Shop						4	M	
	Peaceful Bay North Rd	northwards from Oval to form link around Town	Via Peaceful Bay Rd to join up at Shop						5	L	

Peaceful Bay Townsite notes:

Peaceful Bay townsite footpath network has been formulated in conjunction with priorities determined by the Peaceful Bay Progress Association. The Association also notes that the community prefers paths that help retain a less 'urban' form, such as red oxide treatments and not necessarily abutting kerb lines or sealed roads. Of particular importance is the adopted Conservation Plan (Local Planning Policy Number 35, which directs the form and type of infrastructure and development in the Leasehold area to retain the seaside holiday village 'character'.

Redo with costs / methodology update after confirmed priorities. Concrete vs...etc

Inspect these after finished to confirm connectivity – develop map – existing versus new / priorities...then test against CIP process / staging through Councils DIS and DP&S.

Develop for CIP process (developer's contributions)

1. Shared Use Development Priority

Table 6 below lists the priority of construction for the development of the Shared Use Path network.

Note:

(1) The development of the Shared Use path on Ocean Beach Road is subject to the development of the adjacent Sub-division on the east side of Ocean Beach Road. The developers will be responsible for the installation and construction of this section of the Shared Use Path. Alternative Routes will be promoted until the Shared Use Path is installed.

(2) The cost estimates are based on average construction costs for the past 3 years. The costs are to be used as a guideline only, fine tuning will be required prior to funding applications and Budget allocations.

Table 6 Share Use Path Development

Path Number	Location	Start	End	Material	Length	Width	Cost Estimate (3)	Rating	Priority Number	Patac Changes	Construction Year
Denmark Townsite											
1	Sth Coast Hwy	Hollings Road	Flay Street	Concrete	450	2	$37,000.00	88		Immediate	2007
15	Sth Coast Hwy	Denmark Tavern	Harpendene Rise	Concrete	250?	2	$35,000.00	88		H	2007

3	Scotsdale Road	Existing SUP	Steiner School	Chip Seal	1000	2	$33,000.00	81	3	H	2008
19	Shadforth Road	Millar Street	Peace Street	Concrete	620	2	$51,000.00	81	4	M	2008
13	Inlet Drive	Williams Property	Blue Wren Lane	Chip Seal	760	2	$25,000.00	80	5	H	2009
13	Inlet Drive	Blue Wren Lane	Inlet Crescent	Chip Seal	820	2	$27,000.00	80	6	M	2010
1	Ocean Beach Road	Prawn Rock Jetty	Lookout	?	?	2	?	69	9	H	2010
C20	Scotsdale Road	North Street	Horsley/ Holling Rds	Asphalt	400	2	$28,000.00	68	10	L	2011
C28	Zimmerman Street	Ocean Beach Road	Hodgson Street	Asphalt	620	2	$43,000.00	67	11	L	2011
C29	Hodgson Street	Zimmerman Street	Patterson Street	Asphalt	270	2	$19,000.00	67	12	L	2012
C19	Mt Shadforth/ Hardy/Jamieson	Peace Street	Kearsley Road	Asphalt	450	2	$31,000.00	63	13	L (developer)	2012
C18	Hardy Street	South Coast Hwy	Amaroo start	Concrete	150					L(D)	
C10	Berridge Street	Campbell Road	Anning Road	Concrete	400	2	$33,000.00	57	17	L	2015
C8	Lights Road	Ocean Beach Road	End of Residential Area	Chip Seal	550	2	$18,000.00	54	18	L	2014
C17	Kemsley Place	Ocean Beach Road	South Coast Hwy	Concrete	550	2	$46,000.00	52	19	L	2015
C30	Patterson Street	Hodgson Street	Kingdon Street	Asphalt	40	2	$ 3,000.00	52	20	Completed?? LD	2014
C33	Little River Road	Ocean Beach Rd	Walk Trail	Asphalt	450	2	$31,000.00	50	21	L	2014
C12	Anning Road	Berridge Street	Braidwood Elbow	Concrete	300	2	$25,000.00	48	22	L	2014
C7	Harington Break	Ocean Beach Road	End	Chip Seal	800	2	$27,000.00	47	23	L	2016
C6	Unnamed Road	Ocean Beach Road	Little River Walk Trail	Chip Seal	1100	2	$36,000.00	46	24	?? location DB	2016
C22	Horsley Road	Scotsdale Road	End	Concrete	700	2	$58,000.00	45	25	M(D)	2017
3	Scotsdale Road	Existing SUP	Steiner School	Asphalt Only	1000	2	$36,000.00	81	27	H	2018
C9	Minsterly Road	Ocean Beach Road (N)	Ocean Beach Rd (S)	Chip Seal	1050	2	$35,000.00	41	29	L	2018
13	Inlet Drive	Wilson Heritage Trail	Williams Property	Asphalt Only	920	2	$33,000.00	80	30	Completed? DS	2020
C21	Smith Street	Horsley Road	Mt Shadforth Road	Concrete	650	2	$54,000.00	44	31	L(D)	2020
13	Inlet Drive	Williams	Blue Wren	Asphalt	760	2	$27,000.00	80	32	M(D	2021

		Property	Lane	Only						)	
13	Inlet Drive	Blue Wren Lane	Inlet Crescent	Asphalt Only	820	2	$29,000.00	80	33	M	2021
C24	Rockford Road	Horsley Road	Rushton Street	Concrete	350	2	$29,000.00	40	34	L(D)	2021
C9	Minsterly Road	Ocean Beach Road (N)	Ocean Beach Rd (S)	Asphalt Only	1050	2	$38,000.00	41	35	L	2022
C14	Blue Wren Lane	Inlet Drive	North Section of "T" Junction	Concrete	350	2	$29,000.00	34	36	L	2022
C11	Crowea Road	Berridge Street	Inlet Drive	Concrete	650	2	$54,000.00	36	37	L	2023
C23	Bavin Street	Horsley Road	Rushton Street	Concrete	350	2	$29,000.00	34	38	L	2023
	South Coast Hwy	McLeods Rd	Denmark Tavern	On Rd (shoulder)						L	
	Scotsdale Road on Road (shoulder) Cycle Route	Steiner School	Freds Rd	On Rd (shoulder)						Stage it – first To Harewood ? M (and developer)	
	South Coast Hwy	Springdale Beach	Country Club							L-M	
	McLeod & Freds Rd	Scotsdale Rd	South Coast Hwy	On Rd (shoulder)						L	

3.1.4 Funding and Implementation

In previous years the construction of a path was dependent on the funding of that path, in that, if it was not funded then generally it would not be built. In order to achieve the aims of the development plan a change in methodology in this area needs to be adopted. The existing process of applying for funds will still remain and the funding of paths will be of the highest priority to ensure Council is utilising funding sources available. The change will come in the construction of those paths not funded.

The new methodology would see the construction of lengthy paths to a lesser standard with the preferred standard of construction scheduled in as an upgrade on the deterioration of that path at a later date. This is best seen in the example of constructing a long Asphalt Shared Use Path, where a Chip Seal can be installed as the first treatment, arguable lasting 10-15 years, before the Asphalt Seal is installed. This methodology has the following benefits;

- Reduces the requirement for staged construction of long asphalt paths, due to the increased length gained by installing a Chip Seal path first.

- Reduces the cost of funding applications and therefore improves the possibility of receiving funding.
- Allows for the monitoring of any failures in constructed paths which can be rectified prior to the preferred Asphalt seal finish.
- A chip seal is acceptable as path surface for low volume pedestrian and cycling traffic. The increase in traffic volumes in future years would then be accommodated by the installation of an asphalt seal.
- Improves the rate of the network expansion.

The negatives of installing a chip seal initially include;

- Susceptible to mirroring uneven pavement surfaces, therefore producing an uneven trafficable surface.
- Susceptible to higher maintenance due to low traffic volumes.

The selection of the construction year was based on Council funding construction to the value of $30000 for paths and $80000 for Shared Use Paths each budget year. Each development priority was then grouped in a development year according to the Council funding. This will allow the flexibility if installing path infrastructure within the time frame outlined in Tables 5 and 6 without the reliance on funding bodies. If a path is funded then Council has the flexibility of bringing forward a path to the current construction year.

1. Funding Schemes

Additional funding of Paths and Shared Use Paths is available though the State Government initiatives of the Country Pathways Grant Scheme (CPGS) and the Accessibility Pathway Grant Scheme (APGS).

The APGS is aimed at the metropolitan area for the improvement of public transport access, but applications from country areas are accepted. The principles of the scheme include;

- The provision of an accessible pathway where no pathway presently exists.
- The upgrade of an existing pathway to enable compliance with the Scheme criteria. Funding is available on a 50/50 cost share basis with the maximum funding value of $15000.

The CPGS provides funding assistance to Local Government Authorities and community groups to assist in planning, development and promotion of shared-use pathways and cycling facilities in Regional Western Australia.

The CPGS Program's primary aims are to:

- Encourage the integrated planning of shared-use paths and on-road bike lanes.

- Develop an integrated network of shared use paths and on road bike lanes.
- Provide safe access to schools, sport, recreation and community facilities, and
- Improve the safety of cyclists, pedestrians and other path users.

Funding is available on a 50/50 cost share basis with the maximum funding value of $50000.

Further information on the funding criteria for this scheme is available at: http://www.dpi.wa.gov.au/regional/cycling_regional/index.html

2. Implementation

The design and construction of all paths and shared use paths in the Shire of Denmark will be undertaken by the Shire of Denmark Engineering Department. Contractors may be used to facilitate the construction process pending budgetary requirements.

3.1.5 Map

Refer to Appendix 1 *?? find...*for the Plan of the Path and Shared Use locations.

3.2 Trails

3.2.1 Definition

Trails are designed to accommodate a number of recreational uses including walking, off road cycling and horse riding.
The purpose of the Recreational Trail Standards is to:

- Ensure trail safety by:
  a. Minimising trail hazards, including natural & vehicular interface;
  b. Minimising trail deterioration; and,
- Protect the rights of adjacent landowners, thus making the trail a sought after amenity.
- Minimise maintenance costs.
- Provide for a consistent trail identity that maintains the unique flavour of each neighbourhood yet presents a cohesive trail system.
- Avoid or minimise disturbance to the natural environment.
- Maximise the enjoyment of users through a diversity of experiences.
- Reduce liability exposure to the Shire of Denmark.

3.2.2 Specifications

Trails shall be installed per the following standards and shall be designed and constructed in as natural a condition as possible.

1. Trail Surface

The trail path pavement can be constructed of a variety of materials and will be guided by trail access, material available on site, the local features and site drainage. Pavement material may include, but is not limited to, laterite gravel, limestone, sand, timber and natural soil.

2. Trail Dimensions

(a) Travel Path Width:

The preferred travel path width is 2400mm, although 1800mm may be utilised, with 600mm by 4.5m turnouts every 400 metres.

A narrow width may be utilised in natural open space or environmentally sensitive areas, where areas immediately adjacent to the trail can provide level spaces for turnouts as necessary.

(b) Easement Width:

The preferred easement width is 4.0m. All easements will require approval from the Shire of Denmark.

(c) Grade:

Trail segments shall be 12% or less. However, slopes above this for short distances will be allowed using the following requirements:

- Under most circumstances slope should not exceed 20%.
- 15% to 20% slopes should be no longer than 75 metres with 3.0 metre long breaks in grade which do not exceed 5%.
- 12% to less than 15% slopes should be no longer than 150 metres with 3 metre long breaks in grade which do not exceed 5%.
- To decrease grade, utilise terrace steps. Terrace steps should not be utilised on trails which are designated as handicap accessible.

Water bars should be installed where trail gradient and soil types indicate that erosion will compromise the trail tread surface.

(d) Crossfall:

Should not exceed 2%. Low grades help prevent drainage problems; steep grades allow the water to run faster, building up erosive force and erosion.

(e) Sight Distance:

The design speed for trail travel should not exceed 15 kilometres per hour. With this assumption, sight distance should be no less than 15 metres.

(f) Vertical Clearance:

The vertical clearance should be a minimum 4.5 metres beneath structures or tree limbs.

(g) Weed Control:

As weeds appear, they shall be controlled chemically, mechanically, or culturally. There must be strict supervision of the applicator(s) to ensure that chemical applications are confined only to the trail path. Light mulch may be used on the trail paths to control weeds.

(h) Erosion Control:

Water bars shall be installed where trail gradient and soil types indicate that erosion will compromise the trail path surface. If minor rivulets appear over time, water bars shall be installed to decrease the chances of more serious erosion.

Effective water bars minimise the speed, volume and distance travelled by water down a trail. The actual number and spacing of water bars depends on the steepness of slope, the amount of water entering a trail, the construction of the tread (hillsides or steps), and the availability of places to divert water. Generally, the greater the slope and the more water channelled by a trail, the greater the need for water bars. Placement should be near the top of the slope to catch water before it gains momentum.

(i) Vegetation:

Vegetation adjacent to the trail tread shall be preserved as much as possible to protect the aesthetic quality of the trail. Vegetation should be cleared to a height of 4500mm and a width of 2400mm feet within the trail easement. Pruning along trails should be selective.

Stumps may be treated to prevent sprouting. Dead and dying limbs and snags which may fall on the trail should be removed. Groundcover plants and low shrubs should not be cleared except from the actual trail tread. Where a trail is on a side slope, the vegetation on the uphill side will be more invasive and should be cut back more severely than vegetation on the downhill side.

(j) Fencing:

Trail fencing shall be constructed of a material as approved by the Shire of Denmark, and shall be installed where the protection of natural features, private property or for public safety reasons. Fencing may not be necessary or desired where the trail is located in open space areas where a fence would be visually obtrusive to the natural environment, or in less natural areas, where vegetation, non-trail fencing, or other physical features provide adequate delineation of the trail.

Fencing material may include, but is not limited to, post and rail, brush, mesh. Fencing material should be compatible in character with the physical location of the trail and shall be designed to safely accommodate the expected users of the trail segment. In general, fences shall be installed:

- In areas where side slopes exceed 3:1;
- On switchbacks in order to prevent short-cutting;
- On the trail side of retaining walls;
- Along flood control channels or other hazards; and,
- At street intersections to delineate the trail entrance. The entry fence should consist of a section on either side of the trail tread of two rail segments long.

(k) Signage:

Trail markers shall generally be installed every 400 metres. Signage should occur at all street and trail intersections and at trail heads. Trail markers shall have symbol decals affixed to both sides in the same position. Signage should alternate from one side of the trail to the other and signs shall be installed clear of the trail tread.

Appropriate warning signs should be installed to detail hazards, clearance requirements, approaching intersections, the need to stop or yield, and staging and rest areas. Street signage warning motorists of trail crossings should be located in advance of trail crossings. Signs should meet City, County and State standards.

(l) Barriers:

All proposed trails are restricted to use by pedestrians, equestrians and bicyclists only, and can be made difficult for use by motorcyclists by creating a barrier at trail entrances if motorcycle use becomes a problem. The barrier should consist of a treated 75mm CCA rail set 300mm to 900mm above the ground. Affixed to the barrier should be highly visible reflective materials which will enable trail users to see the barrier at night. The barrier shall be regularly maintained to ensure maximum visibility. These barriers are difficult to cross with a motorcycle, but may be stepped over by hikers and riders.

Installation of barriers shall occur where motorcycle use becomes a problem.

(m) Underpasses:

Underpasses or culverts used for trail undercrossings should conform to the following standards:

- Height: 4500mm minimum
- Width: 3600mm minimum

In underpasses 15 metres or longer, illumination should be installed in the passage to provide a minimum of one uniform foot candle. The specific designs for underpasses should meet the individual situation and should be designed by a registered engineer and submitted to the City for review and approval.

(n) Creek Crossings:

On trails and paths which will be utilised by pedestrians, equestrians, and bicyclists, provide a bridge or culvert over creeks or drainages, the design of which shall be performed by a Civil engineer using the following standards:

Bridge Width:	2400mm minimum travel path width.
Grade:	Bridge and ramp slopes: 8% maximum.
Surface Material:	Non-skid or non-slip surface such as wood, textured concrete or asphalt.
Rails:	Install protective side railings.
Culverts:	For small drains, culverts should have a 375mm minimum diameter for ease of cleaning. They should have 200mm minimum cover and be sloped approximately 2%. The size, slope and cover of culverts should be calculated to ensure that the trail is passable at all times. In general the material above the culvert should be a minimum 200mm deep compacted decomposed granite or native soil. Soil should be protected with rip-rap from concentrated flows, particularly at culvert outlets. Headwalls and outlets should be protected and concealed with boulders where possible.

(o) Low Lying Areas:

Where wet areas exist that are not feasible to drain, utilise turnpike construction. Turnpike technology involves a raised tread bound by treated log sides bordered by a trench on each side of the tread. This will enable the trail tread to be raised to a height above the water level. In unusually wet areas, turnpike construction will prove to be

unsatisfactory. Puncheon construction should therefore be used. A puncheon consists of a deck, or flooring, approximately 2400mm wide using treated planks or landscape timbers laid on stringers. The stringers should be set on mud sills and should generally be placed at each edge of the widened trail at about 1000mm centres.

The mud sills should be set at right angles to the trail at 1800mm to 2400mm intervals. Proper sub soil drainage should be provided under the stringers and mud sills. The decking should then be securely spiked to the stringers. Cover the deck with a layer of decomposed granite or native soil to cushion the traffic and save wear and tear on the deck planks caused by shod horses.

The specific designs for turnpikes and puncheons should meet the individual situation and should be designed by a Civil Engineer and submitted to the Shire of Denmark for review and approval.

(p) Intersection Design:

The design of intersections where vehicles and the trail interface shall require that both the motorist and trail user and informed of the potential conflicts. "Roadway Intersection Ahead" signs shall be posted to inform trail users that they are approaching a roadway intersection. Signage and road markings shall also be utilised to inform vehicles of the trail crossing.

(q) Trail Difficulty Standards:

The following standards should be used in determining the degree of difficulty a trail user will encounter on any given trail:

Not Difficult

- Majority of the trail is on a 0% - 8% slope. No slopes exceed 10%.
- Trail is well marked, maintained, cleared, and graded.
- Frequent access points, so that there is a possibility of any length of trip.
- Great for leisure hikes and would present no difficulty for equestrians or bicyclists.

Moderate

- Majority of the train is on an 8% - 12% slope. No slopes exceed 15%.
- Less clearance and more climbs.
- Less access points.
- Better for the intermediate rider or bicyclist or experienced hiker.

Difficult

- Majority of the trail is on a 12% or greater slope the trail has slopes which exceed 15%.
- Requires one to be in good physical condition and an experienced rider.
- May require bicyclists to have advanced skills.

3.2.3. Table 7 - Development Priority

Project	Construction Status	Remarks	Rating	Priority Number	Construction Year	Patac Changes	Construction Responsibility
Bibbulmun Track	100%	Part of the National Parks Scheme	-	-	-		CALM
Denmark Nornalup Heritage Rail Trail	50%	An application is in for further construction in 2005/06 from Nornalup to Peaceful Bay Road. Surface upgrades and bridging areas required - break into sections – Louise / Basil..?	H	1	2006	M?	DENMARK
Harewood Forest Track	30%	Northern section of track still to be defined and constructed	L-M	5	2009	M	CALM
Wilson Headland Loop	0%	Requires definition of alignment and construction	M-H	4	2008	M	DENMARK
Karri Walk Trail	70%	Requires additional work to complete the loop and formalisation of existing route	-	-	-	H-M	DENMARK
Poison Point Walk Trail	0%	May tie in with a current proposal to establish a finger jetty on the reserve	L-M	6	2010	M	DENMARK
Mt Lindesay Walk Track	CALM	Park of the National Parks Scheme	-		-	H	CALM
Mokare Heritage Trail	100%	Requires work to avoid sections being under water for winter months	H	2	2007	H	DENMARK
Monkey Rock Circuit/Mt Hallowell Loop	0%	Seen as low priority and long term project	L-M	10	2014	L	DENMARK
Wilson Inlet Heritage Trail	80%	An application is in for further construction in 2005/06 from Rudgyard Beach to Hay River. Mtce of shelters and signage required	M-H	3	2006	M-H completed? LD	DENMARK
Little River Trail	100%	Signage and Maintenance schedule required	-	-	-	Inspection required	DENMARK
River ? Trail	30%	Ocean Bch Rd to Denmark Nornalup Rail Trail				new	DENMARK
Silver Road Trails	0%	Further information required from Jessie McIver – Low Priority	L-M	8	2012	L	DENMARK
Hay River Trail	0%	Low Priority – existing roads to define trail with link to Heritage Trail	L-M	9	2013	L	DENMARK

Possum Trappers Cave Trail	CALM	Part of the National Parks Scheme	L-M	-	-	Query Peter Bidwell (RL)	DENMARK
Falls of Forth Trail	CALM	Part of the National Parks Scheme	L-M	-	-	Query Peter Bidwell (RL)	CALM
Wetlands Centre Trail	0%	Internal paths complete, a link to the Heritage trails desired	L-M	7	2011	Mtce – high Extension - low	DENMARK
Mt Lindesay Walk Track – Granite Outcrop	CALM	Part of the National Parks Scheme	-	-	-	H – letter to	CALM
Mt Romance Trails	CALM	Part of the National Parks Scheme	-	-	-	H	CALM
Sotto Hills Loop	CALM	Part of the National Parks Scheme	-	-	-	H	CALM
Nornalup River Walk	0%	Part Council Recreation Reserve / Part DEC Marine Park. From Boat launch to Riverside Drive (Nornalup Community Centre)				new	DENMARK / DEC
Nornalup River Walk	0%	Part Council road reserve / Part DEC Marine Park. From Nornalup Community Centre to end of Riverside Drive? (Opportunity for loop?)				new	DENMARK / DEC

Sort by priority....?

*** Refer to Master Trails Report**

3.2.4. Funding and Implementation

1. Council Funding

In the past Council has not set specific annual expenditure on the installation of Trails. The preferred option is to utilise Council Plant and Labour as in-kind contributions to the overall cost of installing a new trail. This does not rule out Council allocating funds for the cash component of the proposed funding and these requests are assessed on a site by site basis.

2. Funding Schemes

There are a variety of opportunities for funding of trails, the majority of scheme require a 50% contribution from Council.

Trails West, a funding scheme promoted by the Department of Sports and Recreation, is the most popular funding body.

The following essential criteria must be met for all Trails Grants Program grant applications:

- Groups eligible to apply for the Trails Grants Program from the Lotteries Commission are those which are not for profit, community organisations including local government authorities.

- Projects must have documented support from their Local Government or land manager, contain maps, photos and visual aids to assist in grant assessment.

Funding of up to $50,000 may be sought under the following categories only:

- Trail Construction
- Upgrade of existing trails
- Trail Promotion and Marketing
- Trail Planning (feasibility, consultant work)

Refer to the Department of Sports and Recreation web site for further information on the Trails Grant Program.

http://www.dsr.wa.gov.au/programs/trailswest/funding.asp

3. Implementation

The design and construction of Trails in the Shire of Denmark can be implemented by any Not for Profit organisation with the approval of the Shire of Denmark. The application for the installation of a Trail must be in line with the Development Priority. The Shire of Denmark, Engineering Department, is to be consulted with regards to budgeting Council Plant, Labour and Materials.
Council encourages local community groups to take a pro-active role in the implementation of the Trail Development Strategy and will consider support for projects on a case by case basis.

3.2.5 Plan

Refer to Appendix 1 for the Plan of the Path and Shared Use Path locations.

4. Ecologically Sustainable Development – Transport

Ecologically sustainable development, or ESD, relates to four main objectives including:

- Improving equity within and between generations;
- Maintaining ecological processes;
- Improving individual and community well being and welfare; and
- Protecting biodiversity.

For a plan or project to be consistent with the principles of ESD, it must advance at least one objective and not adversely impact on any of the four objectives. The Shire of Denmark PDP is consistent with the principles of ESD specifically objectives one and three as listed. The PDP network, if implemented, will improve the user environment therefore encouraging people to walk with health and environmental benefits such as improving air quality, decreasing noise

levels and minimising the use of fossil fuels through the use of private vehicles. The provision of a safe and accessible pedestrian network increases personal mobility for all members of the community, particularly the elderly, persons with a disability and those who are unable to drive or cannot afford private transport.

4.1 The Promotion of Physical Activity

Wide ranging health, environmental, social and economic benefits result from increasing physical activity. Recent findings show that 30 minutes of physical activity every day result in major health benefits. This has led to the establishment of the incentives like the "Find 30 a day" on a national level to the "Stay on Your Feet Program" promoted by the Department of Health and the Department of Sports and Recreation.

4.2 Council Policy

There has been increasing recognition of the importance of walking in transport policy development. The benefits of increasing levels of walking, and in achieving mode shift from the private car for shorter journeys, have been gaining increasing prominence. If this is to be achieved, walking will clearly need to contribute and increase its mode share. To reduce the risks for vulnerable road users it is recommended that walking be promoted to encourage mode shift and increased safety. It was suggested that the means for achieving this should include more initiatives to encourage walking, broader design guidance to incorporate non-motorised modes such as walking and cycling.

4.3 Access for People with Disabilities

The Council must provide equal access for all residents and visitors to the LGA including people with disabilities.

The provision of equal services is a base tenet of the Federal Disability Discrimination Act (1992) which legislates the right for equal participation of all members of the community in daily life.

The Disability Discrimination Act has three inherent themes including:

- Equality;
- Independence; and
- Functionality.

In their current condition the areas audited do not provide equal access, and thus are questionable under the spirit and intent of the legislation. This is due to a number of barriers on the streetscape (refer to Section 5.3 The Audit Process.

A time lined physical infrastructure improvement process must be initiated to remove identified barriers for people with disabilities. Should this occur, people with disabilities will have equal participation within the LGA.

A further advantage in the development of greater access on the streetscape is the reduction of inherent design problems that create occupational health and safety issues.

To maximise access for people with disabilities, planners and designers must give consideration to relevant design guidelines, specifically the Australian Standards 1428 series with particular note of Part 2: Enhanced and Additional Requirements – Buildings and Facilities. In alignment with promotion of such design recommendations, consideration should be given to the implementation of staff training specific to functional design facilitating people with disabilities. Plan for provision of bicycles racks in Town Centre and other major nodes.

4.4 Off Road Pedestrian Facilities

Opportunities for recreational networks have only been identified in the Action Recommendations in so far as they provide links to key recreational activity generators and attractors.

4.5 Education, Encouragement and Enforcement

Encouraging walking as a mode could be tackled by the introduction of measures aimed at educating people of the benefits associated with walking. People are likely to consider alternative modes to the private care for shorter trips within the local community. Therefore, by targeting these trips, and demonstrating the environmental and health benefits of increased walking activity, benefits could be gained. Possible ways in which awareness could be raised include mobile exhibitions or demonstrations and it is considered essential that parents of children are also involved. It is recommended that Council considers introducing such initiatives which could be linked into other areas including, Safe Routes to Schools and the provision of special educational information. Social Marketing potential.

Council policy that considers these and other factors that cause the path of travel to be blocked should be regularly maintained and enforced by Council.

4.6 Security and Lighting

Public areas should be sufficiently lit at night to maintain a safe pedestrian environment. Railway stations are generally lit to daylight standards although the areas immediately surrounding stations are often in darkness. Areas such as this and other pedestrian precincts such as retail areas, parks and pedestrian underpasses should be well lit. A night time safety audit should be undertaken to ensure acceptable lighting standards are maintained. Regular maintenance checks should also be undertaken by Energy Australia or the relevant service provider to ensure sufficient lighting in public areas.

The installation of any lighting facilities in the area should be done with consideration to AS/NZS 1158.3.1 – 1999: Roadway Lighting Part 3.1: Pedestrian area (Category P) lighting Performance and installation design requirements.

4.7 New National Road Rules

New National Road Rules came into place throughout Australia on 1 December 1999. Within NSW these rules replaced the NSW Traffic Act 1909 (and amendments) and the Motor Traffic Regulations 1935. The implementation of these rules will see a change in regulation regarding the use of footpaths by cyclists. Rule 250 states that:

The rider of a bicycle who is 12 years old or older must not ride on a footpath if another law of this jurisdiction prohibits the rider from riding on the footpath.

For example, another law of this jurisdiction may provide that a commercial courier may not ride a bicycle on any footpath or any footpath in a particular area, or that an adult must not ride a bicycle on a footpath unless the adult is accompanying a child under 12 years who is also riding on the footpath.

In other words, where previously disallowed, cyclists under the age of 12, who are accompanied by an adult, will now be able to ride on the footpath. It is recommended that Council take into consideration that requirements for shared paths (AustRoads Part 13, Pedestrians, 1995 and Part 14, Bicycles, 1999) when installing any new footpath facilities within the LGA.

4.8 New Developments

Major new developments are occurring throughout the study area. As discussed in Section 6.3, Section 94 funding should be requested from developers for the provision of safe pedestrian facilities if the development will increase the number of pedestrians in the vicinity.

4.9 Special Events

A number of special events are held on an annual basis within the Shire of Denmark including:

- Market Days
- Events at McLean Park
- Events in Strickland Street

Pedestrian issues such as safety, mobility and access are major concerns for all special events that are held in public areas. Issues that should be considered in Council Policy include:

- Access for all members of the community including the elderly and people with disabilities;

- Transport to and from events including links to public transport nodes and car parking facilities and encouragement of bicycle use with parking facilities.
- Emergency evacuation procedures including access for emergency vehicles;
- Crowd behaviour and policing;
- Capacity of the area; and
- Pedestrian safety relating to the consumption of alcohol.

Careful consideration by Council should be given to pedestrian safety, access and mobility for all special events. Reference should be made to The Department of Local Government Circular to Councils "A Guide to Major and Special Events Planning", Circular No. 97/65, 1997.

4.10 Plan Review

The plan is to be reviewed biannually. Such review to be undertaken by the Shire of Denmark Recreational Trails Advisory Committee.

5. Recommendations

5.1 Recommendations

5.1.1 Audit Existing Infrastructure with the view of incorporating into the bi-annual review.
5.1.2 Prepare and Implement Paths/Trails Maintenance Plan.
5.1.3 Bi-annual Review of Path Development Plan be undertaken.
5.1.4 Incorporate Path/Trail Construction Standards the Shire of Denmark Development Standards.
5.1.5 Develop Path Signage Standards for Denmark.
5.1.6 It is recommended that the excluded areas be defined through a separate consultation process and the development of a Path Development Plan be progressed to accommodate future development.