This Information Paper examines broad concepts of integrated transport and land use planning. Related areas such as accessibility, environment, commercial freight movement and the location of industrial areas are examined in other Information Papers.

The Paper provides a brief overview of integrated transport and land use planning, and examines some practical examples of the relationship between transport and land use planning.

**what is integrated transport and land use planning?**

Transport is a derived demand; it flows from our need to undertake other tasks, including travelling to work and school, visiting family and friends, and shopping. In defining where these different uses are located, land use planning processes influence where we travel, our travel distances, times and modes.

To date, land use planning regulations have promoted use and development without sufficient regard to wider transport and infrastructure impacts, leading to expanded and sometimes duplicated transport and infrastructure networks that have not necessarily resulted in increased efficiencies, cost savings or met user demand. A planned approach that more equitably balances development demand with infrastructure supply is required.

The dominant type of transport, and its availability to the general population, strongly influences land use and development patterns. Similarly, land use patterns and the location of houses, services and facilities strongly determine the mode of transport chosen or available to access these facilities and services.

At a basic level, integrated transport and land use planning is about locating land uses and activities in areas that maximise accessibility, efficiency and safety and minimise impacts to the wider community.

**what are the broad land use relationships?**

By shaping the pattern of development and influencing the location, scale, density, design and mix of land uses, planning can help to facilitate an efficient transport-land use system by:

- Reducing the need for motorised travel
- Providing a choice of travel modes, including walking and cycling
- Reducing the distance that people need to travel
- Making it safer and easier for people to access services
- Reducing the impact of transport upon communities
- Reducing the pressure on valuable open space and industrial land
- Improving freight access to key terminals and reducing the negative impact of freight transport on the community
- Reducing the overall infrastructure burden on all levels of government.

At the level of individual sites, integrated land use and transport planning issues may involve ensuring that:

- commercial activities provide sufficient on-site or local parking to reduce demands for on-street parking; and
- residential lots can safely access the road network.

At the level of towns and cities/local governments, integrated land use and transport planning issues may involve:

- planning for high traffic-generating industrial activities in ways that maximise access to key arterial roads; and
- ensuring vehicle-oriented commercial activities, such as bulk goods stores, are located in areas that minimise use of the local road network.

At regional/State levels, integrated land use and transport planning may involve the:

- protection of major ports, airports and industrial areas from encroachment by residential or other activities that may compromise their function; and
- promotion of higher density residential and commercial development in areas that support public transport.

**urban systems**

Whilst the concepts of integrated transport and land use planning are generally well understood and accepted, many jurisdictions have found the practical realisation of these concepts extremely challenging. In part, these difficulties reflect the myriad of factors - policy, regulatory, financial and political - and stakeholders that influence transport networks, modes and behaviours and land use planning processes.
External socio-economic, environmental and economic drivers have a significant impact on transport and land use but tend not to be well understood, analysed and/or articulated, making their incorporation into planning processes, particularly long-term strategic planning, difficult.

Urban systems are themselves planned and managed in a complex policy environment. Whilst transport is an essential component of an urban system, it is only one component of this system. Urban areas are planned in a multi-policy environment that attempts to meet a range of sometimes conflicting social, economic and environmental objectives. For example:

- Maximising employment opportunities.
- Ensuring accessibility for marginalised groups and individuals.
- Providing affordable housing.
- Providing water and sewage infrastructure provision.
- Supporting the development of industrial and business enterprises.
- Protecting environmentally-sensitive areas (e.g. skylines).
- Providing essential services such as schools and hospitals.
- Providing recreational and social facilities, including parks and clubs.
- Facilitating efficient freight movement.

Consequently, urban areas tend to focus the challenges inherent in achieving integrated transport and land use planning.

Figure 1 shows the complex inter-relationships that affect transport and land use planning, and illustrates the myriad of activities and stakeholders that contribute to the wider urban system.
car-based settlements

As the dominant transport mode within most countries, cars form a significant focus of discussions of and approaches to integrated transport and land use planning. Most urban areas in industrialised countries have developed in response to private cars and road-based transport.

In Tasmania, the factors contributing to our car dependence include:

1. Land use planning

Density
Tasmania has the most dispersed settlement pattern in Australia, with over 60% of the population living outside the capital city. Our population is spread across a relatively high number of small population centres.

- At a state and regional level, Tasmanian are moving from remote, rural and inland areas to urban and coastal settlements.
- At a local level, a preference for low-density housing with good access to major urban centres (Hobart, Launceston, Burnie and Devonport) is strongly evident.
- Detached single dwellings on private lots, including larger lots, remain the preferred housing type.

Land use mix

- Separation of land use types based on car travel.
- Historic location of large public housing areas in fringe and satellite suburbs.
- Affordable housing in outer urban areas has facilitated the outward spread of residential development.

Tasmania's planning regulations support the separation of uses. Whilst separation is appropriate in some circumstances, providing a mix of land uses or the ‘clustering’ of compatible activities and facilities can:

- Support non-motorised transport, particularly for short journeys;
- Decrease total number of car based trips, by concentrating uses in one location; and
- Provide a critical mass for public passenger transport services.

2. Housing choices and preferences

In outer urban areas, there is a need to distinguish between households living in fringe locations due to the high cost of housing in more central locations; and those households who choose to live in inaccessible locations for lifestyle reasons. Where people elect to live in outer areas, there may be a tradeoff in terms of access to public transport services and increased travel times.

Where people's housing location decisions are driven by socio-economic disadvantage, governments can attempt to mitigate this disadvantage by:

- Providing physical access to a public transport system that enables people to meet their essential travel needs; and
- Taking a considered approach to service provision that ensures essential services are located in areas with good access to public passenger services, and/or are locally decentralised where there is clear user need.

3. Strategy for transport and urban infrastructure provision

- Significant investment in urban arterial roads has improved mobility for people with cars, while at the same time has assisted in promoting fragmented, low-density urban settlements that are not conducive to non-car based transport.
- Subdivision in fringe locations without appropriate regard to the possible (including future) infrastructure costs.

Growth and development in outer urban areas has generated increased traffic volumes along core arterial roads. Fixed infrastructure such as the arterial road network has a limited capacity to adapt to major population shifts, growth or development demands. Bridge linkages, such as Hobart's Tasman Bridge and Devonport's Victoria Bridges, and major highway intersections, combined with the slower road speeds of built up areas, contribute to temporary bottlenecks and reduced traffic speeds.

New and upgraded infrastructure has formed the historical response to transport movements. This response has proven to be unsustainable and has been termed the 'vicious cycle of road congestion.' It is now clear that this response has had little beneficial long term impact tending to increase the:

- use of the road, as users previously travelling over other routes divert to a new and better alternative; and
- long-term traffic volumes, as a greater numbers of people move to the area ‘opened up’ by the road.

Ten to twenty years after construction of a new road, peak congestion is generally back to or worse than the initial situation that prompted the infrastructure response.

4. Impediments to public passenger transport

- Tasmania's dispersed population leads to thin patronage, which require high subsidies.
- Public passenger services are critical but are only one component in meeting accessibility. The ability of Tasmania's public passenger network to cater for the complex and flexible transport needs of many Tasmanian is constrained.

Cars have provided significant levels of mobility and travel flexibility for the majority of individuals. Whilst other transport modes offer competitive choices in terms of flexibility in some jurisdictions and under certain conditions, generally no other transport mode has been able to match the advantages of cars in meeting the full range of travel needs.
Consequently, notwithstanding recent increases in the cost of fuel, concerns about congestion and the significant social and environmental externalities associated with car usage, the personalised and flexible mobility provided by private cars means that they are well placed to match the growing diversity of geographical and temporal movement emerging in today’s society, and are likely to continue to be the Tasmanian community’s preferred mode of transport into the foreseeable future.

Tasmania’s land use planning framework

Strategic planning, zoning and use and development decisions affect the pattern of development and the location, scale, density, design and mix of land uses, and can influence the:

• need to travel
• length of journeys
• safety and ease of access to services
• impact of transport on communities
• access and freight flows
• efficient distribution of goods and services
• choice of travel modes; and
• flexibility to meet demands of a changing economy and market environment.

In Tasmania, land use planning and development approval processes are undertaken by local governments acting as planning authorities under the Land Use Planning and Approvals Act 1993. There are 29 local governments in Tasmania, and approximately 43 planning schemes. The Southern Region has approximately 23 planning schemes across 12 local governments.

Planning schemes are the main mechanisms through which wider policy objectives are translated into practical outcomes, and local governments outline their policies and strategies in relation to the use and development of land. Under the Land Use Planning and Approvals Act 1993, planning schemes should be consistent and coordinated with planning schemes applying to adjacent areas, and must have regard to the use and development of the region as an entity in environmental, economic and social terms.

As in other jurisdictions, planning processes in Tasmania have promoted land use and development without effectively integrating transport and infrastructure issues. The historical situation of infrastructure responding to demand, that is, continued expansion of transport infrastructure networks to service increasingly dispersed, low-density developments, is unsustainable. A strategic, regional approach, that aligns development with existing infrastructure supply and is supported by strong planning controls, is required.

National Charter for Integrated Transport and Land Use Planning

Improved integration of transport and land use planning is a key objective of the Tasmanian Government. The Government is a signatory to the National Charter for Land Use and Transport Planning, which provides a strategic, national approach to issues of transport and land use planning. Implementation of the Charter depends on commitments made by all levels of government.

The Charter has nine aims:

1. Integrated and inclusive processes
2. Linked investment decisions
3. Increasing accessibility by widening choices in transport modes and reducing vehicle travel demand and impacts
4. Making better use of existing and future infrastructure and urban land
5. Protecting and enhancing transport corridors
6. Creating places and living areas where transport and land use management support the achievement of quality of life outcomes
7. Increase opportunities for access in both the present and longer term
8. A safer and healthier community
9. Recognising the unique needs of regional and remote Australia.

how might the Charter be interpreted in Tasmania?

Planning Advisory Notes are prepared by the Resource Planning and Development Commission (RPDC) to explain statutory provisions, and provide guidance on the operation of the planning system.

In July 2004, the RPDC issued a Planning Advisory Note on Integrated Land Use and Transport Planning. The purpose of the Note is to ensure that integrated land use and transport is considered when preparing and amending planning schemes and in the assessment of permit applications.

The Note interprets the principles of the National Charter in the context of Tasmania’s land use planning processes:

1. Integrated and inclusive processes
   - Consult with road and transport authorities when preparing a draft planning scheme or amendment, or assessing a use or development with traffic or transport implications
   - Develop an on-going dialogue and partnership approach with road and transport authorities on important transport and related land use issues

2. Linked investment decisions
   - Encourage, through planning scheme strategies and controls, the development of services and industries at regional centres
   - Ensure effective transport connections between centres, ports, airports and industrial areas in a region
3. Increase accessibility by widening choices in transport modes and reduce vehicle travel demand and impacts
   • Ensure through the planning scheme that location, type and density of activities are linked to accessibility and transport infrastructure
   • Increase the proportion of residential and commercial activities in centres and urban areas
   • Facilitate more effective and efficient public transport, walking and cycling access and networks
   • Integrate fringe development with existing and new public transport routes
   • Give priority to sustainable transport in new land use and transport decisions
   • Ensure that use and development which could detract from compact urban areas is not allowed unless it can be fully justified and will be in the public interest

4. Make better use of existing and future infrastructure and urban land
   • Promote new development where it will support existing transport facilities
   • Ensure compact urban development
   • Reduce parking requirements where public transport, walking and cycling options are available

5. Protect and enhance transport corridors
   • Adapt land use and access controls to the through traffic function on major commuter, freight transport and tourist corridors
   • Restrict residential and commercial development in rural areas

6. Create places and living areas where transport and land use management support the achievement of quality of life outcomes
   • Work with road and transport authorities in the preparation of planning schemes to determine the desired future role, function and character of individual roads having regard to the land use environment
   • Plan for local road networks that achieve a balance between access and mobility and creation of precincts where traffic does not dominate
   • Promote urban design and street layouts which provide continuity for pedestrians, cyclists and public transport and encourage healthy outdoor activity

7. Increase opportunities for access in both the present and longer term
   • Consider future land use and transport options and encourage changes of travel behaviour in all decisions
   • Consider the walking, cycling and public transport needs of all people in all areas in order to promote a more inclusive society

8. A safer and healthier community
   • Consider the effects of noise and air pollution and provide for the development of convenient and attractive pedestrian and cycle networks and infrastructure
   • For all new urban development consider safe and direct routes for pedestrians and cyclists to schools, shops, recreation and other activity areas and to public transport stops.

9. Recognise the unique needs of regional and remote Australia
   • Encourage development in centres and protect improved transport links to remote communities
   • Consider those without access to cars and adapt centres to enhance pedestrian amenity and safety and a sense of place.

Table 1 shows some conceptual and practical changes associated with a traditional versus integrated approach to transport and land use planning.

what might an integrated approach to land use and transport planning look like?

Figure 2 shows conceptually how key activities that make up an urban system might be planned and located under a more coordinated and integrated transport and land use planning system. The two scenarios can be described as follows.

Scenario one (traditional approach)
This approach is typical of the way many Australian cities have developed.

Different land uses tend to be separated with car-based travel the major form of transport. The various stakeholders with responsibility for land use or transport planning and/or who are able to influence outcomes tend not to work in a coordinated way. Regulatory frameworks do not support integration between different stakeholders or between different planning considerations (e.g. environment, social housing provision, public transport provision).

Key elements include:
• Affordable housing is located in outer urban areas.
• Inner city housing tends to be high cost.
• Public transport is focused on meeting urban commuter needs.
• Infrastructure solutions form the major approach to congestion issues.

Scenario two (integrated approach)
The approach provides for essential services in both inner and regional areas, and focuses on improving transport accessibility to key services from outer urban areas. An urban growth boundary is established, and commercial and industrial areas are consolidated in a single location, supporting the provision of public transport to and from this key node.
The consolidation of residential development and focus on key commercial and industrial modes provides the critical mass required to support public passenger transport, with walking and cycling options for local trips.

Key elements include:
- Consolidation of housing in inner urban areas.
- Affordable housing is provided in accessible locations.
- Consolidation of commercial and industrial activities provides a critical mass for public passenger provision.

### Table 1. Moving Toward a More Integrated Approach to Transport and Land Use Planning

<table>
<thead>
<tr>
<th>Moving from</th>
<th>To</th>
<th>How</th>
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<tr>
<td>Short term decision making, focused on the economic and financial aspects of transport</td>
<td>Improved analysis and understanding of the broader economic, social and environmental aspects of transport over the longer-term.</td>
<td>Broaden the scope of transport system analysis to integrate with long-term economic, social and environmental policy objectives.</td>
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<td>A focus on individual modes, particularly road.</td>
<td>Strategic, collaborative planning across all transport modes for system-wide and regional outcomes with a diminished focus on ownership.</td>
<td>Plan and provide for a non-mode specific statewide transport system.</td>
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<td>Discreet planning based on who owns/operates infrastructure and services.</td>
<td>Integration of land use and transport planning processes.</td>
<td>Strategic planning that cuts across geographical areas, modes and stakeholders.</td>
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<td>Separation of land use and transport planning.</td>
<td></td>
<td>Ensure those responsible for planning and development activities across Tasmania account for impacts on the transport system.</td>
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<td>Transport solutions based on network expansion and new infrastructure.</td>
<td>Innovative approaches, including better use of existing infrastructure, demand management, and technological solutions as well as innovative regulatory substitutes for infrastructure.</td>
<td>Projects that consider the costs and benefits of a range of non-infrastructure responses.</td>
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<tr>
<td>Responding to transport system demands.</td>
<td>Understanding and influencing transport demand.</td>
<td>Information technology to manage transport demand and traffic movements.</td>
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<tr>
<td>Consulting government, industry and the community.</td>
<td>Developing partnerships across government, industry and the community.</td>
<td>Influence or change the nature of the task.</td>
</tr>
<tr>
<td>A focus on vehicle movements.</td>
<td>A focus on access and mobility for people and goods.</td>
<td>Use organisational relationships to strategically address transport issues across organisational boundaries.</td>
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Adapted from Integrated Transport Planning Framework, Queensland Government.
Isolated planning focused on car-based mobility

- CBD landowners concentrate major commercial activities in city centre
- State sector services located close to CBD
- Inner residential areas – high income – resist medium density, low-income cost housing
- Individual councils plan residential settlements at variety of densities along arterial roads
- Continuous improvements and extensions to arterial roads reduce short-term impacts of congestion, but promote demand for fringe housing over the medium and long term
- Ability to own/operate a car decreases and social isolation increases with distance from CBD

Coordinated metropolitan land use and transport planning, focusing on accessibility

- Affordable housing through government land release/private subdivision/public housing
- Layout consistent with neighbourhood network plans
- Mixed uses encouraged
- Population of inner areas increases through provision of medium density housing
- Regional centre established: second tier community and commercial services at centre, primary services remain in CBD
- Urban growth boundary
- Consolidated service and industrial office complex underpins ‘third leg’ of passenger transport interchange
- Arterial street network planned to minimise impact on Highway
- Higher proportion of trips accessible using non-car modes
- Bus interchange and park and ride facilities established in regional centre
- Redundant social infrastructure assets sold – funding reallocated to improve access to services in fringe areas
- Increased use of community transport assets and car-pooling encouraged in outer fringe areas
The following section examines some practical examples of the interactions between transport and land use planning.

milk maps

Social equity and access to daily provisions is a planning aim. There is an underlying objective to provide accessible centres (by walking, cycling and driving) with a mix of activities. The ability to walk and buy a litre of milk is a basic but important activity relevant to most people and is therefore a good way of showing concepts of ‘accessibility.’

The Western Australian planning department has developed the concept of ‘milk maps.’ The maps show walking distances within a suburb to buy a litre of milk, and are based on the idea that a deli or corner shop should provide a community’s daily needs and that these shops should be accessible within a five-minute walk (400m).

The maps produced by the Western Australia government clearly showed the differences in accessibility between traditionally planned inner suburbs and newer suburbs in outer areas.

In older suburbs, shops tended to be located on key arterial routes, particularly junctions, maximising exposure to both the local catchment area and passing trade. Suburbs also tended to have better local road connectivity, facilitating walking and cycling trips.

Conversely, in outer areas residential development tended to occur in ‘isolated cells’, accessible by major arterial roads. These areas were defined by low levels of service provision and poor local road connectivity, inhibiting movement between streets and increasing total distances travelled.

Southern Region

Expanding on the milk maps concept, four suburbs in the Southern Region were examined in terms of their accessibility to five key services:
- General food store;
- Doctor;
- Pharmacy;
- Child care centre; and
- Primary schools.

The maps measure the distance from the destination services outwards, creating bands of travel distance that show the percentage of houses within a suburb that are located within a specified distance of the service.

The analysis is broadscale and indicative. It uses a 2002 audit of key services in the Greater Hobart metropolitan area undertaken on behalf of DIER, and may be slightly out-of-date in terms of service provision and location. It also does not examine:
- Public transport provision; or
- Quality/type of service offered (e.g. the location of a child care centre in close proximity to houses does not necessarily mean the centre has available places or is a preferred centre for nearby residents).

key findings

In terms of local accessibility, the traditionally planned, older suburbs of West Hobart and Bridgewater have far greater access to services over a shorter distance. There is, also, clearly more local road connectivity.

In comparison, Acton and Kingston (fringe suburb) contain none of the five key services, requiring most residents to travel over 2.5km to access services. Local road connectivity is particularly poor in Acton, and the suburb is clearly a car-dependent area. Public transport services are available, but supporting walking distances are likely to be great given the large lot sizes and geographical spread of the residential area.

The fringe suburb of Kingston has a slightly better local road network, but is separated from Kingston by the Southern Outlet, a major arterial road. It is essentially a satellite suburb of Kingston and is also highly car-dependent.
Suburb descriptor

Bridgewater is an outer suburb of Hobart, located 22km from the city centre. It was developed as broad acre public housing estates between the 1970s and 1980s. It is a typical example of a conventional newer suburb based on cul-de-sacs rather than grid based older suburbs such as West Hobart.

Key findings

Households at Bridgewater have relatively good access to food stores and primary schools by walking, but most households would need to rely on private cars or public transport to access doctors, childcare centres and pharmacies.

Key

<table>
<thead>
<tr>
<th>Mean Distance</th>
<th>Percentage</th>
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<td>0.25</td>
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<tr>
<td>0.26 - 0.50</td>
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<td>0.51 - 1.00</td>
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<td>1.01 - 2.50</td>
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<tr>
<td>2.51 - 5.00</td>
<td>0</td>
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<tr>
<td>5.01 - 10.00</td>
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</tbody>
</table>

Pharmacy

- Limited service provision is shown in distances, with most people having to travel 1-5km to access a pharmacy.
- Walking is not an option for most.

Local Food Store

- Over 50% of households are within walking distance (1km from a food store).

Childcare

- Over 70% of households would need to use a private car or public transport to access a childcare centre.

Primary School

- Over 60% of households are within walking distance of a primary school, with 40% of households being over 10 minutes walking distance to schools.

Doctor

- Over 70% of households are not within walking distance of a doctor, and would have to rely on access to public transport or a car.
Suburb descriptor
Acton is a formerly rural area, undergoing gradual conversion to rural-residential development. It is characterised by large lot sizes, with a generally disjointed local road network.

Key findings
Acton contains none of the five key services. The majority of services are located in adjacent Lauderdale, Seven Mile Beach and Rokeby, and all require car-based trips. The overwhelming majority of trips are 2.5km or over.

- Around 90% of people must travel 2.5km or further to access a pharmacy.
- A number of general stores are located around the periphery of the area.
- Around 10% of people can access a store less than 2.5km away, but the majority of trips are 3.5km or more.
- Childcare options are limited.
- Around 10% of people can access a centre under 2.5km, but most (86%) must travel over 2.5km.
- There are a number of primary schools in the peripheral area.
- A small amount (3.1%) are accessible by less than 1km, but most are 2.5km or more.
- The majority of trips to the doctor are 2.5km or more.
Suburb descriptor
West Hobart dates back to the 1850’s, is close to the city, well established, and surrounded by other densely developed suburbs.

Key findings
The services highlighted in West Hobart are within walking distance for almost all residents, with only a small percentage having to consider accessing public transport or a private car to use these services.

- Over 70% of residents are within walking distance (1km from a pharmacy).
- Local food stores are in abundance, with over 90% of the population within walking distance.
- Childcare is well represented in and around the suburb with over 75% of the population within walking distance of a centre.
- Over 90% of the population are within 1km (walking distance) of this service provision.
Suburb descriptor
The area surveyed is a relatively new subdivision located to the east of Kingston. It is separated from the main Kingston urban area by the Southern Outlet.

Key findings
The area contains none of the five key services. The majority of services are located in adjacent Kingston, with distances suggesting most trips would be car-based.

- Most households must travel over 1km to access a pharmacy, indicating most trips are likely to be car-based.
- All households must travel at least 1km to access a local food store, meaning all potentially daily trips to buy a litre of milk or newspaper are car-based.
- Just over 50% of households travel over 2.5km to access childcare.
- No households have access to childcare services within 1km.
- Two primary schools are located in the area.
- The majority of households travel between 1 and 2.5km.
- Doctors are the most accessible service to the area, and is the only service that is accessible to any percentage of households within less than a 500m radius.
- 15% of households can access a doctor within 500m – 1km, however the majority travel between 1 and 2.5km.
**marginal cost of infrastructure**

The outward spread of cities and major towns is a critical issue in most Australian states. Urban sprawl represents an inefficient use of land, and has a range of negative social, environmental and economic consequences.

Historically, the spread of housing into outer areas has been facilitated by the construction of high-speed arterial roads and the dominance of cars for private travel. These developments have enabled people to live further from central city areas or places of employment, whilst not necessarily increasing - or significantly increasing - travel times.

In Tasmania, two trends are evident, the:
- historic establishment of low-cost housing in outer fringe areas with access to cheap land (e.g. Bridgewater and Rokeby); and
- more recent release of land, including large-scale subdivisions, with generally higher-cost lots in coastal and/or rural-residential areas in response to consumer demand.

**urban consolidation versus fringe development: previous studies**

Australian studies that have compared infrastructure costs of development at the fringe and urban consolidations have concluded that physical and/or social infrastructure costs savings would result from urban consolidation.

Examples of studies include:
- Travers Morgan (1987) – Melbourne study suggested cost savings of $29,000 per additional household (physical and social infrastructure included);
- Sinclair Knight (1993) – Brisbane study suggested cost savings of $22,000 to $25,000 per household (physical and social infrastructure included);
- Neilson Associates (1987) – Melbourne study suggested cost savings of $41,640 per household (physical and social infrastructure included); and
- Hughes Trueman Ludlow et al (1990) – Sydney study suggested cost savings of $17,000 to $31,000 per lot for physical infrastructure only.

The studies show large differences in infrastructure costs for different areas, which could be attributable to a variety of factors such as geographical and topographical features of the district or site, the proximity of development to existing infrastructure, and the capacity of existing infrastructure.

A Tasmanian study on infrastructure costs of fringe development for Kingborough, Latrobe and Westbury was completed in 1991 (Development Impact Costs and Infrastructure Funding for the Dept of Environment and Planning). This study found costs of $16,742 for economic infrastructure and $2,841 for social infrastructure per lot (only included costs of State Authorities). The study did not make any comparisons with urban consolidation infrastructure costs.

Lot size has been found to impact to a large extent upon infrastructure costs. For example, the Hughes Trueman Ludlow study found economic infrastructure costs of $31,534 for a 840m² lot, $28,026 for 660m² lot and $19,721 for a 450m² lot (i.e., a positive relationship between lot size and infrastructure cost).

Little research has been completed on the financial costs of rural-residential development. However, it would be assumed that the larger lot sizes would mean increased infrastructure costs per lot. It is assumed this would be the case even though some services such as water and sewerage are not provided in these areas.

**regional land supply and building approvals**

A 1993 study by the then-Department of Environment and Land Management found the Greater Hobart Region had a more than adequate supply of both serviced and un-serviced land. The study found:
- **Serviced (or planned to be serviced) land**
  Supply of 35 years, equalling around 20,967 urban lots (based on a development density of around 10 lots per hectare).
- **Unserviced (rural-residential) land**
  Available supply of over 20 years, with an estimated total lot availability of 8,925 lots or 243 km².

Table 1, Figures 1 and 2 show estimated vacant land supply for southern metropolitan local governments in 2005. The following key points are made:
- Over 1,698ha (residential) and 3,695ha (rural-residential) is available in the seven local governments examined.
- Significant areas of rural-residential land are available in fringe urban areas, including Kingborough, Brighton and Clarence.
- Kingborough has the largest supply of both residential (380ha) and rural-residential (974ha) zoned land.
- Brighton, Clarence and Huon Valley all have a supply of rural-residential land in excess of 500ha.

Between 1991 and 2004, 17,977 new residential buildings were approved in the Region. Over half of these – 8,921 buildings – were approved in the period 1991-1995.
Figure 3 shows the total number of buildings by local government between 1991 and 2004. Clarence and Kingborough recorded the highest number of approvals, followed by Glenorchy and Hobart (combined single dwellings and flats).


Key observations include:

- The highest number of building approvals in terms of both numbers and percentage contribution were recorded in Clarence, Glenorchy, Hobart and Kingborough.
- While the total number of new buildings approved in Clarence, Hobart and Kingborough declined from 1991 onwards, their percentage contribution increased over time relative to the total number of building approvals for the Region.
- Glenorchy represented the exception amongst urban LGAs, with the number of new buildings declining significantly, as did its percentage of total approvals.
- Relative to total numbers, the percentage of new buildings in LGAs including Brighton, Central Highlands, Derwent Valley, Glamorgan/Spring Bay, Huon Valley, Sorell, Southern Midlands and Tasman, increased.

Table 2 examines growth in key suburbs for individual LGAs for the period 1999-2004. The highest number of new dwellings was recorded in Kingston (657), followed by the South Arm area (322) and Granton/Austins Ferry (197). These areas also recorded a high proportion of total building approvals for their respective local government areas.

Whilst overall numbers were low, areas such as the Great Lakes (43%), Swansea (29%) and the Southern Beaches (33%) accounted for a high proportion of total building approvals in their respective local government areas.

Over the medium to long term, ongoing growth in outer urban areas can create pressure for the extension of infrastructure and services into these otherwise remote areas. Where infrastructure and services are not provided, significant environmental and social issues can develop.

The relationship between remote settlements and infrastructure provision is a major issue for local government, particularly smaller local governments that have responsibilities across a number of settlement areas. Glamorgan/Spring Bay, for example, provides infrastructure and services to three major but geographically separate towns: Swansea, Triabunna and Orford.
Integrated land use and transport planning: Southern Region Background Report

Figure 3. Total number of building approvals by LGA, 1991-2004

- Brighton
- Central Highlands
- Clarence
- Derwent Valley
- Glamorgan/Vale of Glamorgan
- Glamorgan
- Hobart
- Hobart Flats
- Huon Valley
- Kingborough
- Sorell
- Southern Midlands
- Tasmania

Figure 4. Total number of building approvals by LGA, 1991-2004

- Brighton
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- Glamorgan
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- Hobart Flats
- Huon Valley
- Kingborough
- Sorell
- Southern Midlands
- Tasmania

Figure 5. Percentage of building approvals, LGA
A focus on private cars for personal transport can disadvantage individuals and households unable to own or operate a vehicle to the extent required to meet their needs. For example, a couple with children that has only one car may experience difficulties where one partner travels to work by car and the car is subsequently unavailable for use during the day. Similarly, lone person households, one parent families and couples without children may all experience mobility problems where vehicle ownership or availability is inadequate in relation to need and the availability of other transport services.

Disadvantage is dependent on a variety of factors including:
- proximity to services;
- adequacy and availability of public transport services;
- ability to use alternative methods of transport; and
- availability of friends/relatives vehicles.

Figure 6 shows the proportion of families and households in the Southern Region who have either limited or no access to a motor vehicle. It highlights that:
- Just over 25% of residents in lone person households in the Southern Region do not have a motor vehicle;
- A very small proportion of couple families with children within the Southern Region do not have a car (less than 2%), however, many of these families (19%) have only one motor vehicle; and
- Only 4% of couple families without children and 12% of one parent families with children in the Southern Region do not have a motor vehicle.

Maps 1-6 show access to motor vehicles across a range of household types.
### Table 3. Proportion of household types within each Southern Region SLA with limited or no access to a motor vehicle

<table>
<thead>
<tr>
<th></th>
<th>Lone person household</th>
<th>One parent family with children</th>
<th>Couple family with children</th>
<th>Couple family without children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No motor vehicles</td>
<td>No motor vehicles</td>
<td>1 motor vehicle</td>
<td>No motor vehicles</td>
</tr>
<tr>
<td>Percentage %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brighton</td>
<td>21.1</td>
<td>21.5</td>
<td>3.4</td>
<td>21.3</td>
</tr>
<tr>
<td>Central Highlands</td>
<td>12.1</td>
<td>3.9</td>
<td>3.2</td>
<td>16.0</td>
</tr>
<tr>
<td>Clarence</td>
<td>24.7</td>
<td>12.2</td>
<td>1.4</td>
<td>16.6</td>
</tr>
<tr>
<td>Derwent Valley Pt A</td>
<td>28.7</td>
<td>17.3</td>
<td>2.5</td>
<td>21.0</td>
</tr>
<tr>
<td>Derwent Valley Pt B</td>
<td>13.8</td>
<td>11.7</td>
<td>1.3</td>
<td>12.5</td>
</tr>
<tr>
<td>Glamorgan/Spring Bay</td>
<td>17.0</td>
<td>16.0</td>
<td>1.8</td>
<td>20.4</td>
</tr>
<tr>
<td>Glenorchy</td>
<td>31.4</td>
<td>14.4</td>
<td>1.9</td>
<td>22.3</td>
</tr>
<tr>
<td>Hobart Inner</td>
<td>39.0</td>
<td>21.4</td>
<td>0.0</td>
<td>41.2</td>
</tr>
<tr>
<td>Hobart remainder</td>
<td>30.3</td>
<td>11.3</td>
<td>1.5</td>
<td>24.1</td>
</tr>
<tr>
<td>Huon Valley</td>
<td>19.0</td>
<td>8.5</td>
<td>0.9</td>
<td>16.6</td>
</tr>
<tr>
<td>Kingborough Pt A</td>
<td>17.0</td>
<td>8.0</td>
<td>0.9</td>
<td>14.3</td>
</tr>
<tr>
<td>Kingborough Pt B</td>
<td>10.1</td>
<td>0.0</td>
<td>0.0</td>
<td>21.0</td>
</tr>
<tr>
<td>Sorell Pt A</td>
<td>15.9</td>
<td>7.3</td>
<td>1.0</td>
<td>14.8</td>
</tr>
<tr>
<td>Sorell Pt B</td>
<td>8.5</td>
<td>0.0</td>
<td>0.0</td>
<td>13.8</td>
</tr>
<tr>
<td>Southern Midlands</td>
<td>17.1</td>
<td>6.4</td>
<td>0.8</td>
<td>11.4</td>
</tr>
<tr>
<td>Tasman</td>
<td>12.2</td>
<td>4.3</td>
<td>0.0</td>
<td>19.4</td>
</tr>
<tr>
<td><strong>SOUTHERN REGION</strong></td>
<td><strong>25.7</strong></td>
<td><strong>12.3</strong></td>
<td><strong>1.5</strong></td>
<td><strong>18.8</strong></td>
</tr>
</tbody>
</table>

### Maps

**Map 1. Lone person households with no motor vehicle**

**Map 2. One parent families with children and no motor vehicle**
map 3. couple families with children with one motor vehicle

map 4. couple families with children and no motor vehicle

map 5. couple families without children with no motor vehicle

map 6. couple families without children with one motor vehicle
The Hobart City Council aims to attract shoppers rather than commuters by providing the first hour of parking for free in its major car parks in the CBD.

- Parking in Clarence and Glenorchy is free.
- There has been an increase of almost 10,000 car parking spaces in and around the Hobart CBD since 1965.
- Various parking pricing techniques may be used to manage the demand for parking in certain areas by encouraging the use of alternative travel modes.

This paper examines the supply of car parking spaces in the Hobart, Glenorchy and Clarence City Council areas. Some disparity exists between the data sets available for these areas, probably due to the more recent growth of Glenorchy and Clarence as significant centres for business and retail and therefore more recent growth in parking demand.

The data presented here is based on car parking inventories conducted by the three local governments. The information has been updated as thoroughly and accurately as possible. However, it is not the purpose of this paper to provide comprehensive inventories of parking availability, but rather to stimulate discussion regarding car parking supply in the Greater Hobart metropolitan area and the effect of this supply on commuter travel.

### Car Parking Demand and Supply

The typical automobile is parked 23 hours a day. Where and how can make a big difference to economic development, traffic reduction, smart growth, historic preservation, and many other planning efforts.

Tasmania is a car-dependent community, with car ownership increasing steadily over the past two decades. The widespread use of private motor vehicles generates increasing demand for car parking, and the availability, convenience and cost of car parking are important determinants of travel behaviour.

Parking represents one variable cost associated with using a motor vehicle. It tends to be most at issue in the context of commuter travel, where large volumes of vehicles travel to central locations for employment.

Parking demand refers to the amount of parking that is estimated to be used at a particular time, place and price. Parking demand is affected by vehicle ownership rates, trip rates, mode split, duration (how long motorists park for), geographic location (urban centre or fringe), the quality of travel alternatives, purpose of trip (working, shopping or recreational) and other factors such as fuel price.

Abundant, free or low-cost parking contributes to a high demand for private motor vehicles because it significantly reduces the cost of car ownership.

Local governments directly control the amount, price and nature of on-street parking in order to control traffic flow and encourage turnover of use for the benefit of adjoining retail and service-oriented land uses.

Parking pricing, availability and location may all be implemented as Travel Demand Management (TDM) strategies. TDM may be understood as intervention to modify travel decisions so that more desirable transport, social, economic and environmental objectives are achieved and the adverse impacts of travel reduced.

The environmental benefits of reducing commuter trips through TDM strategies such as parking pricing may, however, be partially offset by changes in commuter behaviour. For example, commuters who shift to public transport from driving, may make additional off-peak car trips for errands they previously performed while driving home from work, while additional short trips may be made by family members with access to a vehicle left at home. If one worker in a household is car-pooling, other family commuters may need to make more circuitous trips before and after work for childcare, shopping and other errands.

Improved integration of land use and transport planning has the potential to limit these additional car trips by locating services, such as shopping centres, closer to residential developments so they are within walking distance. Additionally, planning for the provision of public transport in these areas may reduce dependence on the private motor vehicle.

The National Charter of Integrated Transport and Land Use Planning recommends the use of parking strategies as a means of influencing vehicle travel demand in and on particular locations and routes, or at particular times. The Charter also encourages decision-makers to consider the possibility of reducing the provision of on-site car parking to encourage the use of alternative transport modes.

Local government can regulate the supply and price of parking in commercial areas and areas of high visitation (e.g. a beach), as well as kerbside parking (e.g. through resident parking schemes) to influence the demand for motor vehicle travel. Often, however, businesses depend on kerbside parking for their financial viability and there is a need to balance economic requirements with policies to restrict long-term parking in certain areas.
southern metropolitan area

Car parking is generally low-cost or free within the major metropolitan areas of the Southern Region. The highest costs are associated with long-term parking in the Hobart CBD, used predominantly by work commuters rather than shoppers.

Due to the relatively small size of each CBD within the three metropolitan areas, parking on the urban fringe is a viable option for many commuters and shoppers, although not necessarily desirable from a local government parking management perspective.

car parking inventories

hobart

The Hobart City Council (HCC) commissioned the first comprehensive study of parking facilities in Hobart in 1965. Since then, parking supply information has been updated at five-to-ten-year intervals, with the latest study completed in 1995.

The HCC's general parking policy is to provide accessible and convenient short-term parking for shoppers, both on- and off-street, in order to support the Hobart CBD against its major competitors - the Northgate and Eastlands shopping centres, both of which provide free parking.

The provision of parking for commuters is less of a priority for the HCC, with private providers largely fulfilling this need in the Hobart CBD. The HCC, therefore, aims to encourage shoppers to drive, rather than people commuting to work, through incentives such as providing free parking in the first hour.

historical facts about parking in Hobart

The regulation of parking in some form in Tasmania has occurred since 1865 with the designation of certain areas in the CBD for cab stands and regulation of the number of taxis permitted to use specified stands.

Since 1927, there have been time restrictions on on-street parking in the Hobart CBD.

In 1955, Hobart was the first Australian city to install kerbside parking meters with the installation of meters on Collins Street in the CBD.

In 1965, to remain at a kerbside space over the posted time limit and continue paying the meter was unlawful.

The HCC's second five-yearly parking review, due to be completed in 1975, was not carried out until 1977 due to the Tasman Bridge disaster in 1975. The collapse of the Tasman Bridge had a significant effect on vehicles entering the CBD from Hobart's eastern shore, the effects of which would result in data not representative of general parking supply and demand trends in the last five years.

The following tables are adapted from various reports on parking supply commissioned by the HCC since 1965. These reports identify parking requirements and facilities in specified ‘zones’ within Hobart City, being the Central Business District (CBD), the Fringe area and the Outer Fringe area. The 1995 parking study also includes a Central Retail Zone located within the CBD (Map 7).

Table 4 provides an overview of parking supply in Hobart's CBD, Fringe and Outer Fringe areas from 1965 to 2005.

Overall, the number of parking spaces, regardless of zone or location, has increased each study year from 9,734 spaces in 1965 to 19,302 in 2005 - a growth of almost ten thousand new spaces.

Decreases in parking supply have generally occurred in on-street unrestricted parking in all three zones, reflecting the HCC's attempts to encourage short-term rather than long-term parking in and around the CBD.

The introduction of meters to some parking spaces in the Outer Fringe area in 1984 and the general increase in other controlled on- and off-street parking facilities reflects the spread of demand for parking into these areas.

Table 5 gives an overview of car parking supply in the Hobart Central Retail Zone, Central Business District, Fringe and Outer Fringe areas in 2005.
### Table 4. Hobart CBD Parking supply from 1965 to 1995, Hobart City Council

<table>
<thead>
<tr>
<th>Zone</th>
<th>Location</th>
<th>Ownership</th>
<th>Restrictions</th>
<th>Number of spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD</td>
<td>On-street</td>
<td>HCC</td>
<td>Metered</td>
<td>777</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCC</td>
<td>Time restricted</td>
<td>580</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCC</td>
<td>Unrestricted</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Off-street</td>
<td>HCC</td>
<td>–</td>
<td>495</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private**</td>
<td>–</td>
<td>1,470</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public**</td>
<td>–</td>
<td>1,434</td>
</tr>
<tr>
<td>Fringe</td>
<td>On-Street</td>
<td>HCC</td>
<td>Metered</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCC</td>
<td>Time restricted</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCC</td>
<td>Unrestricted</td>
<td>3,114</td>
</tr>
<tr>
<td></td>
<td>Off-street</td>
<td>HCC</td>
<td>–</td>
<td>416</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>–</td>
<td>1,199</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public</td>
<td>–</td>
<td>158</td>
</tr>
<tr>
<td>Outer fringe</td>
<td>On-street</td>
<td>HCC</td>
<td>Metered</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCC</td>
<td>Time restricted</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCC</td>
<td>Unrestricted</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Off-street</td>
<td>HCC</td>
<td>–</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>–</td>
<td>336</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public</td>
<td>–</td>
<td>155</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>9,734</td>
</tr>
</tbody>
</table>

* Private off-street parking refers to a parking facility that is owned and operated by a private person, company or Government for the exclusive use of nominated persons.

** Public off-street parking refers to a parking facility that is owned by a private person, company or Government for the use of the general public.

### Table 5. Overview of parking supply in Hobart, 2005, Hobart City Council

<table>
<thead>
<tr>
<th>General desc.</th>
<th>Ownership</th>
<th>Use and restrictions</th>
<th>Number of spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CBD</td>
<td>Fringe area</td>
</tr>
<tr>
<td>On-street</td>
<td>Public - HCC</td>
<td>Public daily use - unrestricted</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public daily use - restricted ( unmetered)</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public daily use - metered</td>
<td>1,136</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sub-total</td>
<td>1,206</td>
</tr>
<tr>
<td>Off-street</td>
<td>Public - HCC</td>
<td>Public daily use - hourly charges</td>
<td>1,924</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public restricted use - permit required</td>
<td>504</td>
</tr>
<tr>
<td></td>
<td>Public - State &amp; Federal Govt.</td>
<td>Public restricted use - visitors/customers</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>Public use - employees</td>
<td>1,324</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public daily use - hourly charges</td>
<td>2,104</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public restricted use - permit holders</td>
<td>419</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public restricted use - customers only</td>
<td>298</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private use - employees</td>
<td>701</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public restricted/Private use</td>
<td>1,147</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sub-total</td>
<td>7,469</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>8,675</td>
</tr>
</tbody>
</table>
Hobart has almost ten thousand more off-street than on-street parking spaces. The CBD contains the highest number of off-street parking spaces, while the Fringe area contains the highest number of on-street parking spaces.

Less than 1% of unrestricted on-street parking spaces are within the CBD, with the majority being split fairly evenly between the Fringe and Outer Fringe areas. The vast majority of parking spaces within the CBD are metered.

Almost one third of off-street parking spaces in the CBD, Fringe, and Outer Fringe areas are dedicated to employee parking. Of these, over 60% are for the use of State and Federal Government employees.

There has been only a minimal increase in the number of car parking spaces in the Hobart CBD and Fringe areas in the last ten years. In this time, the following changes have occurred:

- the number of public on-street spaces in the CBD has remained the same;
- while the number of on-street parking spaces in the CBD has not changed, changes in time limits on parking in some areas may have occurred;
- public off-street parking capacity in the CBD has increased by only a handful of spaces;
- the number of off-street private spaces in the CBD has increased by over 700, due to the construction of the Market Place car park in 2002;
- in the Hobart Fringe area, the number of off-street, public, daily-use spaces has increased by over 150, due to the addition of the Salamanca Square car park in 1998, and a change in the ratio of public to private off-street parking arising from the sale of the Montpelier Retreat HCC car park to a private operator; and
- car parking supply in the Outer Fringe areas has remained unchanged, although anecdotal evidence suggests a slow spread of commuter parking into residential streets. The HCC tries to manage this spread through resident parking schemes and other on-street parking restrictions.

Private companies provide most off-street, long-term parking in Hobart. The HCC provides most of the off-street, short-term parking, in line with the policy of encouraging shoppers, rather than commuters, to park in the city (Table 6).

glenorchy

The Glenorchy City Council (GCC) undertook a preliminary inventory of car parking supply in the Glenorchy CBD in December 2005. An inventory of parking supply in Moonah CBD is due to be completed some time in 2006.

GCC’s general parking policy is to provide an attractive shopping alternative to Hobart’s CBD by providing and promoting a large supply of free parking in the Glenorchy, Moonah and Claremont CBDs. All parking in the Glenorchy City Council municipal area is free.

Table 7 provides figures only for those spaces that are subject to time restrictions, drawn from the 2005 inventory. The GCC has not yet quantified all-day, on-street parking supply within the city.

Most of the parking spaces available in the Moonah and Glenorchy CBDs are provided off-street without time restrictions.

The large private parking providers - Northgate and Claremont Village - have time restrictions of three-to-four hours to encourage short-term parking for shopping and discourage long-term parking by commuters.
Table 8 provides a summary of parking supply in the Clarence City Council (CCC) municipal area.

<table>
<thead>
<tr>
<th>Location</th>
<th>Ownership</th>
<th>Use and restrictions</th>
<th>No. of spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moonah CBD</td>
<td>Offstreet</td>
<td>Public</td>
<td>360</td>
</tr>
<tr>
<td></td>
<td>Onstreet</td>
<td>Public</td>
<td>140</td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Glenorchy CBD</td>
<td>Offstreet</td>
<td>Public</td>
<td>2,435</td>
</tr>
<tr>
<td></td>
<td>Onstreet</td>
<td>Public</td>
<td>260</td>
</tr>
<tr>
<td></td>
<td>Offstreet</td>
<td>Private (Northgate)</td>
<td>871</td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
<td></td>
<td>3,566</td>
</tr>
<tr>
<td>Claremont CBD</td>
<td>Offstreet</td>
<td>Public</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Offstreet</td>
<td>Private (Claremont Village)</td>
<td>352</td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
<td></td>
<td>702</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>4,768</td>
</tr>
</tbody>
</table>

clarence

Table 8 provides a summary of parking supply in the Clarence City Council (CCC) municipal area.

parking pricing

Managing parking pricing can provide a way of managing travel and parking demand in certain areas. Parking pricing requires motorists to pay directly for the use of parking facilities and can be implemented by both government and the private sector to encourage alternatives to driving.

Some parking pricing techniques are:
- charge consumers directly rather than indirectly for parking;
- if parking must be subsidised, apply comparable benefits for use of other travel modes;
- manage and price the most convenient parking spaces to favour priority users and increase turnover by charging higher rates and using shorter pricing periods;
- minimise discounts for long-term parking leases comparable to daily parking charges and avoid early-bird discounts;
- use variable rates that are higher for peak locations and times. For example, charge $1.00 per hour for parking in the CBD during weekdays, $0.75 per hour during evenings and weekends, and $0.50 per hour for parking in other locations;
- use a progressive price structure in convenient spaces to favour short-term users. For example, charge $1.00 for the first hour, $1.50 for the second hour and $2.00 for each subsequent hour; and
- set parking prices to equal or exceed public transport fares.

Pricing may be made more cost-effective, convenient and fair by improving pricing methods. For example, short-term spaces could be charged by the minute rather than the hour and long-term spaces could be charged by the day or hour rather than by the month.
These changes in pricing periods serve to increase motorists’ awareness of how much parking they use, how long they park, and cost. Charging by the day for long-term parking makes it more cost effective for commuters to leave the car at home and sometimes use another method of travel to work, as there is no longer a need to pay for days that are not used.

Some of these pricing techniques are used in the metropolitan areas of the Southern Region. Shorter time limits on parking in the most convenient spaces are used in Hobart, Glenorchy and Clarence.

### Historical parking charges in Hobart

**1965** The charge at kerbside meters is 3 pence for 15 minutes or 1 shilling for one to two hours. Average charges in off-street facilities are 6 shillings and five pence, monthly charges are 55 shillings and 9 pence.

**1971** Metered spaces are charged at 10 cents per hour for up to one hour and 5 cents per hour at two hour spaces. Off-street parking charges in the CBD range from 45 cents per day to $1.61 per day. Monthly parking charges range from $7.00 to $12 in the CBD. In fringe areas, the average charge for parking ranges from 5 cents per hour to around $6 per month.

**1984** Metered space charges range from 20 cents to 40 cents per hour in the CBD. The rate decreases with increased time limits and distance from the city centre. Average hourly charges at municipal car parks range from 30 cents to $2 per hour. Monthly charges range from $15 in fringe areas to $72 in the CBD.

**2006** Kerbside metered spaces in the CBD are charged at $1.20 per half hour. The first hour of parking is free in all HCC off-street multi-storey parking facilities, with scaled charges for each subsequent hour. The first hour of parking in private off-street car parks in the CBD range from $1 to $1.50 for the first hour with progressive charges for each subsequent hour. All-day parking in private off-street car parks is charged at around $5.50 per day. Charges for private long-term off-street parking range from $100-$176 per month. HCC residential parking permits cost $26.00 per annum.

The availability of public transport and other alternatives to driving and the availability of uncontrolled parking supplies (e.g. suburban streets, vacant lots) to which commuters may be diverted because of pricing strategies, have an impact on the effectiveness of parking pricing as a TDM strategy.

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**workplace travel plans**

Workplace travel plans are also known as access plans, green travel plans, green commuter plans, trip reduction plans or travel-for-work plans. They provide employees with detailed information about travel options - in particular, using alternative transport modes to and from work such as public transport, walking or cycling. Workplace travel plans are used to encourage changes in staff travel behaviour.

Workplace travel plans emerged in Europe in the 1980s as a method of reducing traffic congestion and to address parking problems. Although well established now in Europe, the UK and the USA, these plans are a relatively new idea in Australia. Some European countries even have legislation requiring employers to participate in workplace travel plans.

Effective workplace travel plans can change employee travel behaviour by encouraging the use of alternative means of transport for travel to and from work. Fewer private motor vehicle trips into the CBD for work means less demand for employee parking, which often occupies space that could be better utilised by short-term shopper or customer parking or alternative uses.

Desired outcomes of employee participation in a workplace travel plan include:

- an increase in the use of alternative travel modes by staff - especially walking and cycling - and therefore a decrease in the number of motor vehicle trips to and from work;
- a healthier workforce due to the increased use of active transport;
- reduced need for parking at the workplace; and
- a more environmentally-friendly focus for the business or organisation.

The process for developing a workplace travel plan includes:

- analysis of site characteristics (location, road network, public transport services, cycle paths) a survey of staff travel patterns and information needs;
- The development of a plan, and the implementation and ongoing monitoring of activities; and
- a follow-up staff survey to gauge the success of the plan and to inform planning and review.

Parking cash out is a strategy that may be used as part of a workplace travel plan to reduce the number of single occupant vehicle trips to and from work by employees. Employers offer their staff the option of receiving taxable cash in lieu of a parking subsidy. In most cases, employers offer staff the cash value of a rented parking space in lieu of the space itself. Parking cash out works best for employers who lease their parking separately from the office space. Employers offering incentives such as cash or public transport tickets to modify travel behaviour often see greater results for their workplace travel plans.

In some workplaces, a common barrier to the successful implementation of a workplace travel plan is the often necessary use of personal cars for the effective conduct of business. A viable alternative is the use of fleet vehicles during working hours, enabling staff to still make use of the regular workplace travel plan for travel to and from work.