

An aerial photograph of a city, likely Chicago, with a dense urban landscape. A semi-transparent green filter is applied over the entire image. In the background, a city skyline with several tall skyscrapers is visible against a hazy sky. The foreground and middle ground show a grid of streets, residential buildings, and some open spaces. A white rectangular box is positioned in the upper left quadrant, containing text.

PUBLIC REALM & INFRASTRUCTURE STRATEGY - VERSION 2

the COBURG initiative

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Names of public realm locations in this document are for drafting purposes only and do not indicate formal naming of these squares.

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1. Executive Summary

The Public Realm and Infrastructure Strategy for the Coburg Initiative has been developed as a broad infrastructure implementation plan that draws upon the The Coburg Initiative (TCI) Development Principles as a vision for the centre. The strategy is one of three being prepared to deliver a Place Framework. The strategies that have been developed simultaneously with the Public Realm and Infrastructure Strategy are the Economic Development Strategy and the Built Form and Land Use Strategy.

The Public Realm and Infrastructure Strategy considers the infrastructure within the TCI area within a series of systems that exist to support community life. The strategy outlines a series of principles for each system that translate the TCI principles into infrastructure implications. The strategy also outlines the challenges within the systems. Projects have then been identified and included for each system, and consideration has been given to broad costs and timing.

The selected infrastructure projects were included because they: enable the TCI vision and delivery principles to be enacted; address the challenges posed within each of the systems as a result of the desired future goal; achieve the basic infrastructure renewal that is already required at the centre; improve the capacity of the infrastructure to support the projected population and enable the most efficient resource consumption to occur per capita.

Once the cost of projects that are fully or substantially funded by others have been removed, the total infrastructure cost is approximately \$158m over a 20-year time period. Projects funded by others include the Yarra Valley Water, Melbourne Water and VicRoads projects as well as the provision of private car parking. It is further estimated that the cost of Council-funded infrastructure in the short-term (0-5 years) is around \$35m.

Of the total \$249m worth of car parks, \$66.5m is the estimated cost for providing public car parks and \$182.5m is the estimated cost of providing private car parks associated with dwellings. Car parking has revenue generation opportunities (through metered parking at newly built sites) that can be used to fund future infrastructure projects. The details of the staging of this roll out will be important, and an initial investment will be required to unlock this revenue stream.

The development partnership between Moreland City Council and the selected developer is expected to provide for some of the projects— including car parking, streetscape projects and other projects that are directly associated with the development parcels. A Developer Contribution Plan, Special or Differential Rates Schemes can also provide for a proportion of Council funded projects.

Funding models will be further developed to address each of the projects in detail, and further refinement will occur as the TCI project progresses. The identified suite of projects provides the infrastructure requirements input into the Place Framework Strategy, at this point in time and based on the considerable research that has been undertaken to date.

2. Introduction

This strategy forms an integral part of the framework that has been developed to guide and support future development in the centre of Coburg.

Purpose

The strategy has a number of aims that, together, will contribute to the successful creation of Coburg as a place where people will want to live, work, shop, socialise and enjoy a range of activities.

Defining a strategy for the Public Realm is important for the creation of a place that people are proud of and that is accessible to all. A well-planned, high quality set of public spaces will attract people and businesses to Coburg and contribute to strengthening Coburg's sense of community.

It is important that the services infrastructure is sufficient to support the envisaged future development of Central Coburg, with large projected increases in residential dwellings, commercial business (including retail and office space) and other land uses such as health and leisure.

One of the key principles is that Coburg will be an exemplar eco-city. In conjunction with the built-form strategy, the Public Realm and Infrastructure Strategy sets exciting standards and identifies a number of forward-thinking projects and programs that will set Coburg apart and achieve exemplary levels of resource use.

Finally, the strategy has established a high-level program of works and programs, with costs, timing and dependencies, to enable a planned delivery that will correlate with and support the staged development of Coburg.

3. TCI Development Principles

3.1 Vision

Central Coburg develops as the prime shopping, living, employment and activity precinct in Moreland. The centre is transformed into an attractive system of streets and spaces. Central Coburg becomes a sought-after living environment, offering a range of housing choices, including high density housing. Most people arrive at the centre on foot, by bike or by public transport. The provision of a range of services enables people to conduct a number of different activities based on the one trip. Central Coburg is linked with networks of green space.

3.2 Delivery Brief Principles

Central Coburg will revive and capitalise on its sense of place by:-

recognising its history while building a strong economic future;

connecting all its people and generating visible local pride and ownership of place;

developing its cultural vitality and embracing entrepreneurship, creativity and innovation.

Central Coburg will support a vibrant, safe, diverse, connected and harmonious community by providing:-

A place that is economically and environmentally efficient, economically and socially equitable, and socially and environmentally healthy;

A pedestrian-oriented environment, with streets, laneways and other public spaces that are attractive, safe, inviting and lively and with a human scale, flavour and feel maintained in Sydney Road;

Streets that serve walking, cycling, public transport, delivery vehicles and private vehicles, in that order, and easy access to regular and reliable public transport services of all types;

In one accessible location, mixed use development throughout that includes a range of services, and community and cultural facilities that reflect a growing and diverse community;

Residential development that is high density, diverse, accessible and adaptable, includes affordable and social housing, and gives housing opportunities to all people;

Both public and private developments and public spaces that are accessible and allow participation by people of all abilities and ages;

A feature of high-quality open spaces with more street trees and off-street plantings, landscape features and improved links between places to allow social interaction for all ages and circumstances.

Central Coburg will be an exemplar eco-city of the 21st century by:-

Harnessing the benefits of its close proximity to the Melbourne CBD and using its significant public transport links to strengthen Coburg's role within the northern region as a principal activity centre and increasing opportunities for people to work, study and play close to home.

Contributing to an excellent built environment through quality, sustainable design, development and stewardship and developing a reputation as a smart city.

4. Precinct & Timeframe Discussion

This section considers the Coburg Initiative area in both spatial and temporal terms. The approach seeks to break the project up into smaller blocks/parcels and consider timing issues that relate to parcels within each block. This approach also acknowledges that a project of the scale of the Coburg Initiative can only be implemented in stages over a long time period, and these stages need to be sequenced carefully to keep the centre operating throughout.

Some projects are dependent on other projects being completed before they can proceed and this is a key factor that sets the timing of individual projects within each precinct. Where Council has a high level of control over the land and there is a high level of certainty relating to the infrastructure required in the area, these precincts lend themselves to shorter implementation timeframes.

The spatial breakdown of the Coburg Initiative area is provided in Figure 1, supported by discussion of the timing on these two pages. It should be noted that the projected developments and timing may be subject to change as the TCI project evolves.

Precinct 1A

3–7 years

This precinct has frontages to Bell and Waterfield Streets and is one of the key areas for development. It is likely to be developed for a mix of retail, commercial, residential and parking. Development of this area will be complicated by the Bell Street Public Acquisition Overlay.

Precinct 1B

2–4 years

This development parcel is on Council-owned land. It is likely to be one of the first areas to be developed, for residential and retail uses and a market Square. The off-street parking removed for development would need to be replaced elsewhere.

Library and Cultural Centre (Precinct 1C)

0–5 years

The new library and cultural centre is required to be built prior to demolishing the existing facility as it is a priority to maintain this important and well-used community facility. The site also has a key interaction with the market Square, Waterfield Street and existing off-street parking.

Some new retail and entertainment is also likely to be built in this precinct.

Precinct 3B

8–11 years

Located on the site of the existing library this development will trail the relocation of the library. Access to the site must be addressed, as well as its interaction with the public realm.

Civic Centre/Council Offices (Precinct 2C 18A & 18B)

7–11 years

The redevelopment of the existing offices is planned for the medium term.

Hospital or Major Medical Facility (Precinct 2A & 2B)

2–3 years

Council will be undertaking an EOI process for a hospital or major health facility which is expected to be developed in the coming 2 – 3 years.

Precinct 3

4–6 years

Located on Louisa and Munro Streets this development site is readily accessible. Appropriate services infrastructure to the site must be provided. It is likely to include a mix of retail, commercial and residential.

Precincts 4A & 4B

1–4 years

Located on the existing Russell Street off-street parking area, development of these precincts will have a key interaction with Civic Square Russell Street Site, Sydney Road and the City Oval. The development is on Council-owned land and replacement of parking is required.

Precinct 8A

3–6 years

Precincts 5A & 5B

5–10 years

Located on Harding Street, these precincts would require rezoning of parkland. Proximity to the existing Grandstand is acknowledged and needs to be considered.

Recreation & Leisure Centre (Precinct 6)

Unknown

The Leisure Centre is likely to remain in its current form for the short to medium term. In the long term it might be expanded into a regional Aquatic Centre.

The City Oval (Precinct 6)

No Development

The City Oval will remain but will be made more accessible to the community as a whole.

Aged Care Facility (Precinct 8B)

No Development

The existing Aged Care facility is assumed not to change in the short to medium term. In the long term the site has the potential to develop into a medium density residential or Aged Care facility.

Precinct 9

Long Term

This precinct is unlikely to be developed in the short term. Merri Community Health occupies a building in this precinct and is unlikely to relocate until a new community health facility is constructed. Development of this precinct will be impacted by the Bell Street Public Acquisition Overlay.

Sydney Road (Precincts 10, 11 & 12)

Long Term

Any development of the existing Sydney Road built form is uncertain for a number of reasons including land ownership.

Precinct 13

Long Term

This precinct contains a number of small properties in different ownership and is unlikely to develop in the short term.

Precinct 14A

Long Term

Land in this precinct is owned by the Uniting Church and the Greek Orthodox Church and is unlikely to be developed in the short term.

Precinct 14B

Long Term

The existing Woolworths, Dan Murphy's and Chemist site, located on the corner of Munro and Louisa Streets, is not council owned. Development remains uncertain.

Precinct 15 (Rail Corridor Development)

Long Term

Grade separation of the railway and development above the Upfield line is a long-term aspiration of TCI.

Precinct 16

Long Term

Land west of the railway is currently owned by private land-owners and VicTrack. It is envisaged that there will be medium-density residential development in the long term.

Precincts 17A, 17B & 17C

Long Term

Privately owned properties along the northern side of Bell Street (west of Sydney Road) and the western side of Sydney Road

(north of Bell Street) are not controlled by council.

The land on the western side of Sydney Road north of Bell Street is currently under rezoning amendment and will be rezoned to Business 2 Zone. Some of the sites in this area are likely to develop in the short term.

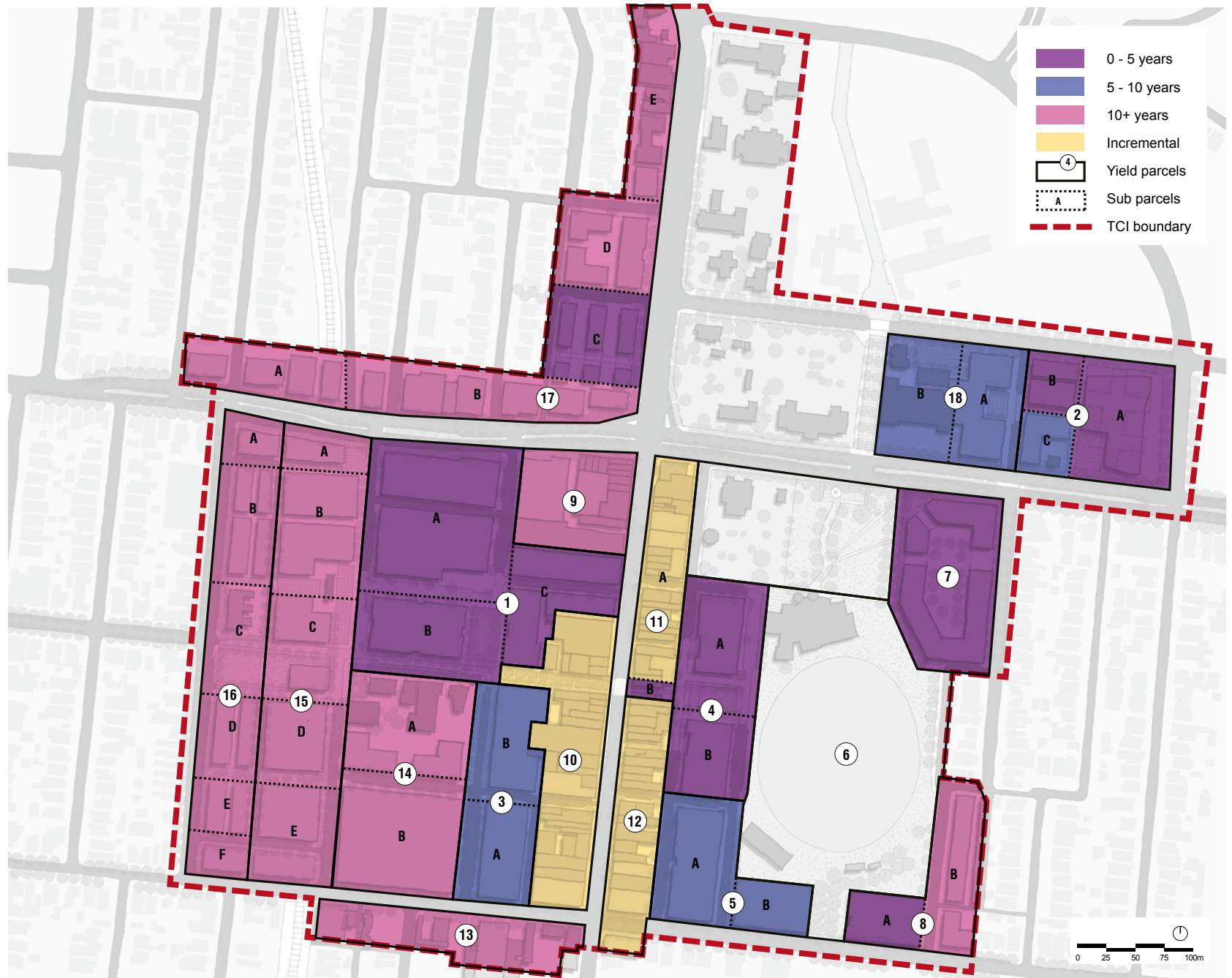


Figure 1: Staging Plan

5. Land Use Scenarios

The aim of this section is to explore how infrastructure projects are impacted by land use densities and composition and what this implies for the public realm and infrastructure environment. The future development of the TCI area includes both fixed and variable elements and has required a set of decisions or assumptions to be made.

These decisions or assumptions include:

- > Retention of the City Oval
- > Pursuit of rail grade separation as a long-term aspiration
- > Evolution of Sydney Road to a more public transport, cycling and pedestrian-friendly focus.
- > Acknowledgement of Bell Street as a State Highway and retention as a major traffic route but with adequate opportunity for pedestrian connections.
- > Evolution of travel behaviours as a reflection of the ability to live, work and recreate in the TCI area, reducing the reliance on private vehicle ownership and travel.
- > Reduction in the requirement for parking in the long term as the TCI area develops but with scope to adjust parking numbers if they are found to be required.
- > Storage of cars underground or off-street and located at the edges of the TCI area as much as possible, to minimise traffic through the centre and to reduce the negative impacts of cars on visual amenity.

Concept Plan (High)

Four development scenarios were considered for the TCI area: the Central Coburg 2020 Structure Plan, Concept Plan (Low Density), Concept Plan (Medium Density) and Concept Plan (High Density) (refer to Section 6 for details).

The Concept Plan (High) land use scenario has been selected by Council on the criteria of:

- One** Increasing land use density in a location that is well-served by public transport.
- Two** Stimulating economic growth that will, in turn, support diverse social and cultural benefits for the community.
- Three** Reducing the overall environmental impact of the TCI area and the projected increase in population.

6. Density and the IRM Modelling Results

It is acknowledged that there are significant impacts on resource demand, services and infrastructure under the Concept Plan (High) Scenario. The scenario has more than 500 additional residential dwellings than the Concept Plan (Medium), 26,000 m² more commercial floor space than the Structure Plan scenario and a projected residential and employment population of approximately 14,000 persons.

The four Land Use Scenarios in the panel overleaf (Structure Plan, Concept Plan – Low, Concept Plan – Medium & Concept Plan – High) were modelled in an Integrated Resource Management Analysis (IRM). This analysis compares five resource areas for each of the land use scenarios; Water, Energy, Waste, Transport & Carbon. For example, the model compares the relative water use per capita under each of the development scenarios.

Once the development scenario which results in the lowest per capita resource consumption is identified, projects can then be introduced to further reduce resource consumption – for example, introducing a water harvesting project reduces the water consumption per capita.

The outcome of the modelling demonstrates that the most efficient resource usage occurs in the highest density scenario.

The highest density scenario has the smallest resource footprint per capita (refer to IRM Appendix A3) indicating that by increasing the density of the Central Coburg community, common indicators such as water consumed, waste generated and carbon emitted per capita are reduced.

The Concept Plan (High) scenario also has benefits from locating demand in a more concentrated area, allowing services supply to

be more focused. This can increase the practicality and feasibility of new infrastructure such as on-site energy plants and water treatment facilities.

Ultimately, the Concept Plan (High) is the most efficient resource usage and has been selected from an infrastructure perspective to be the best development option.

Increasing density also results in an increased total demand for services and infrastructure.

The following points summarise some of the key issues for each system under the Concept Plan (High):

- > Increased population sharing the open space.
- > Increased demand on all transport modes placing increased pressure on pedestrian and cycling networks, public transport, roads, intersections, parking facilities (cycling and vehicle) etc.
- > Increased demand on total water consumed and waste water produced.
- > Increase in electricity and gas consumed, directly increasing the precinct carbon emissions.
- > Increase in total waste generated and in the amount of waste to landfill.

This is where the infrastructure projects become particularly important, as they mitigate the increase in resource usage.

While a higher density within the TCI area results in higher total resource usage, it also results in resources being more efficiently utilised per capita, and this presents some valuable economies of scale.

Further to this, resource demand will grow proportionately to the increase in densities across Moreland & Melbourne. A high density development located in the TCI area is more efficient for the community than the same number of residents dispersed across a wider area. This represents a better value for money outcome for the community.

6.1 Concept Land Use Scenarios

The key drivers and their implementation in concept development is summarised below.

Structure Plan

- > Based on housing demand analysis, built form testing and community consultation
- > 1,486 residential dwellings (1,390 additional multi-unit style residences)
- > Approximately 100,000 m2 of retail and commercial floor space
- > Retention of the City Oval as it is
- > No grade separation of the railway line

Concept Plan (Low):

- > Based on Structure plan densities, with additional development west of the railway and in the south-east corner of the precinct.
- > 2,203 residential dwellings, all multi-unit
- > Approximately 126,000 m2 of retail and commercial floor space
- > Reducing the size of the City Oval
- > No grade separation. However land directly adjacent to the line developed

Concept Plan (Medium):

- > Based on the Concept Plan (Low) but with some residential and commercial change
- > 2,403 residential dwellings, all multi-unit
- > Approximately 126,000 m2 of retail and commercial floor space
- > Replacing the City Oval with a town square
- > Grade separation of the Upfield Rail Line

Concept Plan (High):

- > Testing the development density of the two previous concepts by significantly increasing residential and commercial floor space.
- > 2,944 residential dwellings, all multi-unit
- > Approximately 148,000 m2 of retail and commercial floor space
- > Retaining the City Oval
- > Grade separation of the Upfield Rail Line

7. Public Realm and Infrastructure Systems

Infrastructure exists to support community life by providing a service or function to people living, working & recreating in Central Coburg. A systems approach to considering the Public Realm & Infrastructure within the Coburg Initiative area has been adopted, to acknowledge that built infrastructure exists within a series of systems to meet human needs.

The systems approach to infrastructure enables projects to be grouped together that deal with the key public realm and infrastructure issues within the Coburg Initiative. Each of the systems is defined below, explaining what it is, what purpose it fulfils and the range of assets it encompasses. An approach to these assets has been taken that enables the principles of each system to be achieved most effectively and efficiently.

7.1 Public Realm:

The public realm system includes all TCI space accessible by the public. As a system, Public Realm connects people and contributes to the development of an attractive, safe, inviting and lively place. This encompasses open space and community squares as well as footpaths, street furniture, landscaping and public art/displays. The strategy also considers the relationships between the infrastructure systems and it is acknowledged that in many cases there is an overlap.

7.2 Access & Movement:

This system encompasses the whole transport and access network and infrastructure that facilitates movement to, around and within Coburg. It is important to acknowledge the purpose of the access and movement network, as it deals with the everyday dilemma a community faces of efficiently connecting places and people. It also presents a significant opportunity to reduce the environmental impacts of daily life. Footpaths, bicycle lanes, streets, access ways,

signage and road signals are all part of the Access and Movement System as well as infrastructure such as public transport stations, stops and tracks.

7.3 Water:

The water supply and wastewater treatment system (sewage and stormwater) fulfils the everyday need to access a clean and healthy water supply, as well as the efficient and sustainable discharge of waste and storm water. Local capture, recycling and treatment facilities are key water system assets, as well as the service infrastructure (pipes and pits) that delivers and discharges.

7.4 Energy:

The energy system is defined by the demand for and supply of energy to the precinct for everyday needs. The importance of the energy system is to address demand levels and the environmental and infrastructure impacts of supply. The energy system includes service infrastructure assets as well as any potential on-site generators or renewable energy sources.

7.5 Waste:

The waste system involves the process with which waste is produced, captured and dealt with on a daily basis. It fulfils the need to treat, recycle, reuse or dispose of a community's waste in a healthy and efficient manner. This system includes infrastructure assets in the form of waste collection facilities, treatment facilities and service infrastructure that collects and removes waste from the precinct. By reducing the amount of waste being generated and collected, Council can make a significant impact on greenhouse gas reductions and reduce the need for heavy vehicle access to the area.

High Level Infrastructure Requirements

A number of key challenges for the TCI precinct have become apparent through the development and exploration of several alternative concept plan scenarios. The following high level review of the TCI public realm and infrastructure requirements aims to establish a strategy for addressing these requirements, their cost and associated risk in the short term (5 years), medium term (10 years) and long term (20 years).

A number of infrastructure requirements are needed in order to make the Concept Plan (High) scenario support Central Coburg's community life and achieve the vision for Coburg. Their performance is measured on the ability to meet:

- > The Delivery Principles,
- > The principle objectives of each system,
- > Key challenges within each system; and
- > Mitigation actions discussed in the IRM analysis.

Each of the projects is summarised in the following section identifying:

- > the key features of the project;
- > the intent of the project in delivering on the vision and objectives of TCI.

Public Realm Objectives

- > To provide a diverse range of high quality open space types that support the activities of the centre and are within 200m of all dwellings in the centre.
- > To design public spaces in a way that encourages informal leisure, social interaction and a sense of community.
- > To provide public spaces that are abundant in plant life, through their high quality landscaping and tree planting in accordance with the street landscape guidelines.
- > To ensure Public Realm design and service provision decisions are inclusive of all population groups, including people with physical or intellectual disabilities.
- > To support economic growth and after hours activity in the centre.
- > To enhance and reinforce the character of the Sydney Road corridor.
- > To support sustainable transport outcomes by linking the open space network with an attractive pedestrian spine of thoroughfares, widened footpaths, shade and resting places.
- > To minimise the negative impact of cars on the Public Realm, through provision of off-street parking at the edges of the centre, minimising the need for cars to travel within the centre and allowing storage of cars to occur out of sight.
- > To ensure the interface between public transport nodes and the Public Realm is accessible, well-designed and encouraging of sustainable transport options.
- > To express and celebrate our diverse cultural heritage and identity, incorporating public art within public and private development.
- > To practice the principles of water sensitive urban design in the streetscape and landscape.
- > To ensure private developments contribute to the safety, visual interest and vitality of the public spaces, through appropriate interface design and landscaping.
- > To ensure signage is co-ordinated, well-designed with respect to the character of buildings and public spaces and visually uncluttered.

Public Realm Projects

The Public Realm projects, when implemented in the TCI area, will address the demands of the Concept Plan (High) land use scenario on the community's public space. Each will contribute to a high quality public realm, creating a vibrant, safe, attractive and sustainable community. The key Public Realm projects are:

- 1. Civic Square Market Site**
- 2. Civic Square Russell Street Site**
- 3. Civic Square Bob Hawke Centre Site**
- 4. Coburg Station Forecourt**
- 5. Streetscape Masterplan, Design & Construction**
- 6. Public Art**
- 7. Service Galleries**
- 8. Oval Configuration**

While there will be a high social benefit from these projects, the environmental and economic impacts of the projects have also been considered and prioritised to meet the TCI Development Principles.

1. Civic Square Market Site

KEY FEATURES

The Civic Square Market Site will provide Coburg with the main meeting and gathering place for the community. It will be flanked by the Library and Cultural Centre on the east and the Market on the west, making it the heart and hub of activity in Coburg.

Landscaping and urban design are the key infrastructure requirements as well as a large amount of surface treatment. The Civic Square Market Site will be designed and constructed with high quality finishes and interfaces to the surrounds.

OBJECTIVES MET BY PROJECT

The square addresses a majority of the Public Realm objectives including locating a public space within 200m of dwellings in the area and fostering a sense of community around a market and library/cultural centre.

The Civic Square Market Site also provides a key public space located on the main east-west pedestrian spine.

ISSUES & DEPENDENCIES

The land is owned by Council. However consideration must be given to the existing shop owners and traders, in particular the Coles supermarket. The Civic Square Market Site will require significant traffic reconfiguration along Waterfield and Louisa Streets.

Flooding is an existing issue in the area. The drainage scheme project offers a solution and is identified as a project to be undertaken in the immediate future, prior to any further development of the centre.

COST & IMPLEMENTATION

\$2,948,000

(cost includes design and construction in current costs)

The square should be completed concurrently with surrounding developments including the Market and the Library and Cultural Centre, as it helps to create a sense of place and activate the land uses.

0-5 years

Implementation will require a traffic reconfiguration and staging strategy with particular focus on reassigning existing vehicle movement along Waterfield Street and redevelopment of off-street parking.

2. Civic Square Russell Street Site

KEY FEATURES

Civic Square Russell Street Site will be created as a community gathering point to the east of Sydney Road and will operate as a priority link between the extension of Victoria Mall across Sydney Road and City Oval, the Leisure Centre and the residential development in that precinct.

The Civic Square is proposed as a high grade public space. Infrastructure demands include landscaping and maintenance, a safe environment (well lit and monitored), waste management and street cleansing.

The square aims to provide an interface with adjacent development and stimulate economic growth in that area.

OBJECTIVES MET BY PROJECT

The establishment of a square in Russell Street will provide a focal point for the community on the eastern side of the TCI area and will help to foster a sense of community for people living and working in that precinct.

ISSUES & DEPENDENCIES

The land is currently owned by Council. The construction of the Civic Square Russell Street Site should be timed with other developments in the east precinct.

The location of the square will require changes to the traffic movement in the north and south sections of Russell Street.

Removing existing parking has significant consequences and needs to be addressed in the staging of the development and in the parking strategy.

Given that underground carparking will be located below the Square, the Square cannot be constructed until the carparking is complete.

The effectiveness of the square will be impacted by a direct link being made through existing shops to Sydney Road and Victoria Mall beyond. Land acquisition will be required to create this connection.

The decision to maintain City Oval in its current form does not jeopardise the form of Civic Square Russell Street Site or the function of the public space.

COST & IMPLEMENTATION

\$2,156,000

(Cost includes design and construction in current costs. Note that cost does not include underground parking or any land acquisition.)

0-5 years

(Development of land parcels to the north and south are planned within the next 1 to 5 years)

Adjoining development influences the timing significantly. Activating the square would be considerably difficult while the adjoining parcels are construction sites.

3. Civic Square Bob Hawke Centre Site

KEY FEATURES

The Civic Square Bob Hawke Centre Site will be located on a primary east-west route connecting the residential hinterland to the Activity Centre. It will create an urban park, providing for both new and existing residents, businesses and visitors.

A new children's playground will also be provided to compensate for the potential loss of the existing playground due to likely future development of VicTrack land.

OBJECTIVES MET BY PROJECT

The square will create a generous public space in a prominent site on the western side of the Activity Centre that will enhance the connection between the pedestrian railway underpass and Hudson Street.

ISSUES AND DEPENDENCIES

Council owns the majority of land that currently comprises the Bob Hawke Centre (Meals Kitchen and Senior Citizens/Planned Activity Groups), adjacent car park and laneway. A small section of land owned by VicTrack in the north-east corner, adjacent to the pedestrian underpass will need to be re-configured.

Construction of the square is dependent on resolution of the future of the Bob Hawke Centre.

COST AND IMPLEMENTATION

\$2,915,000

10-20 years

Timing is dependent on decisions regarding the Bob Hawke Centre.

4. Coburg Station Forecourt

KEY FEATURES

The Station Forecourt will be an important urban space to create an address for the Station and to further develop rail transport as an attractive and accessible option.

The redevelopment of the Waterfield Street carpark and current Coles site is critical for the Station Forecourt so that the station can be opened up towards the town centre.

OBJECTIVES MET BY PROJECT

The establishment of a forecourt to the station will provide a positive connection between the railway and the town, encouraging both locals and visitors to use trains to get to and from Coburg.

ISSUES & DEPENDENCIES

Grade separation of the rail line is at present a long term project but the improvement to the station entrance can be carried out in the short to medium term.

The land of the Station Forecourt is owned by VicTrack. Approval to the Station Forecourt works will be required from both VicTrack and the Department of Transport (DoT).

The Drainage Scheme underground detention tanks installation (refer Water Projects) should precede any Forecourt treatment works.

COST & IMPLEMENTATION

A number of project options have been developed in conjunction with key decisions around the railway line.

\$3,522,750 – prior to rail grade separation

\$482,000 – additional cost after grade separation

(Cost includes design and construction, in current costs)

The main difference in the cost is that, with grade separation, there is an opportunity to create another small square on the western side of the existing station building.

Grade separation of the railway line is an aspiration of the project and would need to be funded by the State Government.

5-10 years – (prior to grade separation)

10-20 years – (after grade separation)

(based around the timing of grade separation as a long term project)

5. Streetscape Masterplan, Design & Construction

KEY FEATURES

This project would guide, design and construct the core infrastructure associated with streetscapes in the form of footpaths, landscaping, lighting and street furniture.

As a project that addresses both the Public Realm and Access & Movement Systems, the Streetscape Masterplan will resolve connectivity and permeability issues while creating a high quality, attractive and welcoming space.

OBJECTIVES MET BY PROJECT

The streetscape is pivotal to the creation of a place that the community is proud of and that attracts business and visitors. A well-designed streetscape will also contribute to good environmental outcomes and provide safe and attractive spaces and connections that people will want to use.

ISSUES & DEPENDENCIES

Moreland City Council is the lead stakeholder. Staging and adaptability are key enablers, with Council-owned land the most likely location for early works.

The main risks to the streetscape include:

- > A service infrastructure strategy that involves underground access. This can potentially be mitigated by constructing service galleries on site.
- > Road Network planning with VicRoads and Department of Transport (DoT) and the associated disruption to the existing network.
- > Integration with all other systems (access & movement, energy, water and waste) is critical to the success of the Streetscape Masterplan.

Wayfinding between modal interchanges; access and connections for transport; street cleansing; stormwater catchment methods; lighting; water sensitive urban design; materials selection; heat island impacts; location of service galleries and security are just some of the important considerations and decisions that need to be made prior to and during the development of the plan.

COST & IMPLEMENTATION

\$31,380,000

(all costs are current costs)

The implementation plan is required to be finished by mid 2011. Design is assumed to occur shortly afterwards and construction would be staged to integrate with the TCI development program.

IMMEDIATE & ONGOING

The Streetscape Master Plan is connected to all developments and designs must be completed before any construction commences.

6. Public Art

KEY FEATURES

Public art will play an important role in the development of Central Coburg. Public art has a significant place in the urban environment in terms of its contribution to the cultural vitality of the city through ideas, interpretation and creative activity. It promotes collaboration and a shared creative vision of accessible and innovative artwork. Successful examples of public art should:

- > interpret, define and enhance the 'character' and cultural identity of a city
- > acknowledge cultural heritage and traditions
- > provide a sense of public ownership of public art objects and spaces
- > encourage positive and practical interaction between people and public spaces
- > challenge perceptions and prejudices
- > express the principles of sustainability
- > promote a sense of wellbeing by enhancing enjoyment of public spaces.

OBJECTIVES MET BY PROJECT

The Coburg Public Art Strategy will provide opportunities to enrich public spaces with innovative site-specific art and design features, enhancing these spaces for the enjoyment of public art or public performance. Well-designed artworks have the opportunity to be celebrated as landmarks and local icons.

Public art initiatives in Central Coburg will enable the various communities of Coburg to develop and celebrate their diversity. They will provide an opportunity to recognise the distinct Indigenous culture and heritage that exists in Coburg. Themes to be explored in public art installations will include:

- > Moreland's indigenous past
- > Incarceration and freedom
- > A new home
- > Coburg's future

COST & IMPLEMENTATION

\$4 million

Public art will be funded from a Development Contributions Plan for Central Coburg.

7. Service Galleries

KEY FEATURES

A service gallery is an accessible underground tunnel where all services can be reticulated.

The benefits of such a system include having everything in one location, minimising disruption when maintaining old or installing new infrastructure and reducing damage to roads and footpaths. This project would require a common path for all services.

OBJECTIVES MET BY PROJECT

Service galleries would contribute to maintaining a sense of place by minimising disruption to activities and to streetscapes from changes to the various services. There would be cost savings to both the services suppliers and to Council.

ISSUES & DEPENDENCIES

The cost is based on a past Moreland City Council project in the precinct that laid a gas line pipe through the activity centre footprint. A service gallery does have the potential to earn revenue if service providers choose to relocate infrastructure into the space.

Potential risks involved in implementing this project include:

- > Moving already existing services
- > Existing operators not relocating
- > No new service infrastructure

COST & IMPLEMENTATION

\$2 million

Note: the cost will depend on a range of factors including the extent of service gallery that is constructed.

A project of this nature could be progressively implemented. However the adaptability of the project reduces as built form is constructed throughout the site. Early construction is the most efficient way of implementing this project.

8. Oval Configuration

KEY FEATURES

The project would open City Oval to the community by removing the existing fencing and landscaping the perimeter of the oval to merge with the surrounding environment.

In addition, the existing City Oval grandstand would be refurbished to accommodate a broader range and greater intensity of community use.

A further, more significant, option would be to realign the City Oval while maintaining its relationship to the grandstand, in order to create space to the north for the redevelopment of the existing Leisure Centre as a larger facility serving a regional catchment.

OBJECTIVES MET BY PROJECT

The Oval would become accessible to all members of the community and would integrate better with the open spaces of Bridges Reserve to the north and Harding Reserve to the south.

ISSUES & DEPENDENCIES

Co-operation from the sporting clubs currently using the Oval is a key factor for the project.

COST & IMPLEMENTATION

\$2 million – Improve access to Oval

\$1.5 million – Oval realignment

Grandstand Renovation – (cost is included in the Economic Development Strategy)

5-10 years – Improve access to Oval

5-10 years – Refurbish grandstand

Timing of realignment of the Oval will depend on re-development of the Leisure Centre.



Figure 2 Civic Realm and Open Space

7.2 Access & Movement

The Access and Movement System includes all infrastructure necessary to facilitate ease of movement, both to and throughout the Coburg Initiative area. This prioritises movement for: pedestrians, cyclists, public transport, service vehicles and private vehicles in that order, as stated in the TCI Development Principles.

Coburg will have a wide range of transport alternatives, with priority given to sustainable transport modes, particularly walking, that enable residents, workers and visitors to easily and safely access the centre and undertake a range of activities on their visit.

The following list of Access & Movement challenges identifies the key issues that require resolution within Central Coburg:

- > To resolve traffic flow and safety issues at the railway level crossings
- > To enable pedestrian connectivity from west of the railway line into the town centre
- > To provide priority to trams, bicycles and pedestrians in the TCI section of Sydney Road
- > To determine the quantum and best locations for car parking in the activity centre
- > To incorporate workable cycle links through the activity centre that minimise conflict with pedestrians and other forms of transport
- > To provide adequate cycling facilities
- > To determine the access, traffic flow and connection requirements for the road network, in and around the activity centre
- > To determine the infrastructure requirements for a bus interchange in Bell Street
- > To reduce demand for car parking and increase active transport modes.

The Access and Movement System shares a number of parallels with the Public Realm System as previously discussed in the Public Realm System definition. The way the transport infrastructure connects and activates these places and the built form is a critical overlap.

For a human-centred transport system to work in the Coburg Initiative area, several critical factors must be present:

- > The creation of a diverse range of jobs within the area must occur to enable a proportion of the population to live within walking or cycling distance of their work places
- > The capacity of the public transport system must continue to be developed to enable a proportion of the population to use public transport to get to work
- > The mass parking areas must be positioned as close to the edge of the Coburg Initiative area as possible, so visitors who drive to the centre do not need to drive into or through the centre
- > The road network around the Coburg Initiative area must provide a more attractive alternative to drivers than driving through the centre, particularly via Sydney Road.

Engagement with VicRoads and the public transport owners/operators will need to continue throughout the project's implementation.

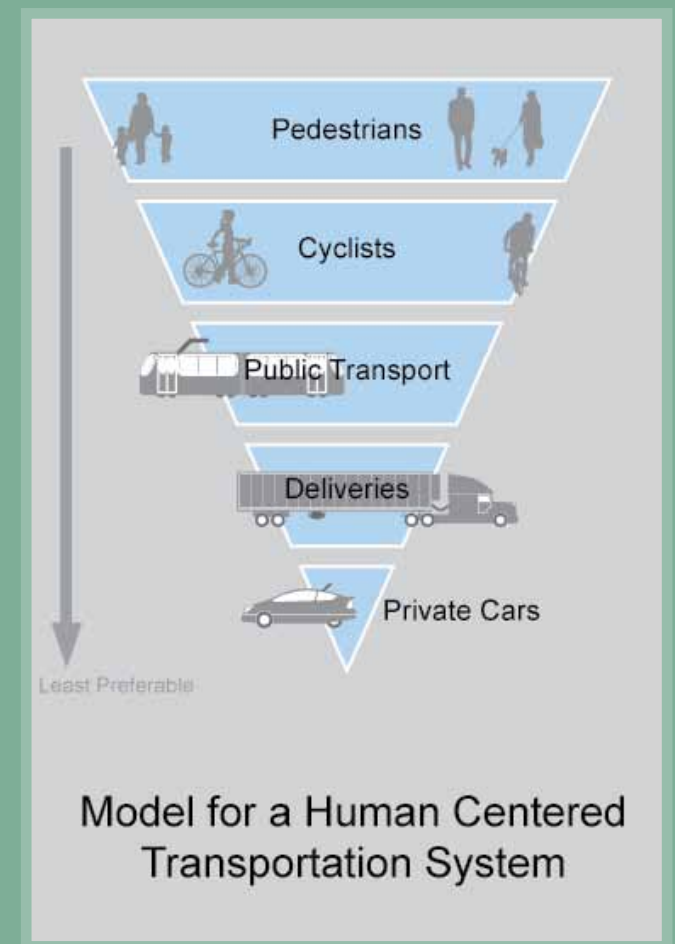


Figure 3 Typical Transport Hierarchy for Transport Orientated Development

Access & Movement Objectives

- > To provide multi-modal access to the centre, so residents, workers and visitors can access and travel around the area using a range of transport alternatives.
- > To improve links to Open Space within the centre and to the surrounding parklands (particularly Coburg Lake and Merri Creek), through the creation of a pedestrian spine and bicycle links.
- > To ensure the transport and movement networks of Central Coburg are integrated, equitable, efficient and sustainable.
- > To work with public transport service providers to renew and upgrade their infrastructure, including the development of the public transport interchange.
- > To promote and enhance sustainable transport outcomes, optimising travel modes as per the model for a human-centred transport system and providing a range of attractive sustainable travel modes.
- > To provide at least one bicycle parking facility per bedroom and ensure bicycle parking facilities and “after-trip” facilities through the centre are provided, to increase the attractiveness of cycling as a travel mode.
- > To facilitate the flow of private vehicle traffic around the centre rather than through the centre.
- > To reduce traffic speeds in the shopping centre areas along Bell Street and Sydney Road, while ensuring through traffic on Bell Street (a principal transport route) is moved through efficiently and safely.
- > To manage and improve the movement system through the creation of new streets.
- > To provide an appropriate number of public car parking spaces, located principally on the perimeter of the centre and serviced by well-connected road, pedestrian and cycling links.
- > To provide attractive thoroughfares, widened footpaths, shade and resting places, in accordance with the street landscape guidelines.

Access & Movement Projects

The following Access and Movement projects are planned for the TCI area and address the demands of the Concept Plan (High) land use scenario on the community’s transport network. The projects strive to provide a wide range of transport alternatives, placing an emphasis on sustainable modes of travel.

9. Pedestrian Connectivity

10. Cycling Network & Facilities

11. Railway Underpass

12. Bell Street Bus Interchange

13. Sydney Road Tram Super Stop

14. Street Network

15. Parking Strategy

The main advantage of providing these improvements and priorities is a movement network that is not dependent on private vehicle use and that is an attractive way for pedestrians and cyclists to easily and safely access the centre.

9. Pedestrian Connectivity

KEY FEATURES

Creating a vibrant, transit-oriented neighbourhood requires a pedestrian realm that maximises pedestrian access for local trips, using a network that links buildings, public transport and public spaces. The pedestrian realm consists of footpaths, pedestrian crossings, dedicated paths, green spaces and public squares.

The map at Figure 4 identifies the pedestrian network within TCI. It also identifies a pedestrian spine providing high quality pedestrian connection between Pentridge Village and Coburg Station. This pedestrian spine also connects all the major public spaces within TCI area.

The pedestrian network will provide wider footpaths on both sides of all new and realigned streets. Additional green connections will be provided throughout the site, and improvements to existing green connections will be made. Improvements that enhance pedestrian priority will be included on all streets.

Rather than a street pattern with, at times, long sections without pedestrian access routes, a grid pattern with more regular road spacing of 50 – 100m, with only a few roads spaced over 100m apart, will improve pedestrian access throughout the area.

A detailed streetscape masterplan will be developed to include:

- > Pedestrian-oriented streets and blocks that minimise walking distances
- > Wide and well-lit footpaths/shared paths
- > Shade and street furniture for pedestrians
- > Clearly marked pedestrian crossings
- > Kerb bulbs and pedestrian countdown signals at high pedestrian demand intersections
- > Traffic calming measures on streets where there is high pedestrian demand

OBJECTIVES MET BY PROJECT

Access to and walkability within the TCI area will be improved, with better pedestrian links, improved visual connectivity and new streetscapes.

ISSUES & DEPENDENCIES

Refer to comments under Streetscape Masterplan, Design and Construction in the Public Realm section.

COST & IMPLEMENTATION

The cost is included in the Streetscape Masterplan, Design and Construction section.

10. Cycling Network & Facilities

KEY FEATURES

Cycling is a zero-carbon emissions mode that achieves further environmental benefit by reducing traffic congestion.

The typical travel distance for a bicycle trip is up to 8 km, making it ideal for commuters who might live in Coburg and work in the CBD.

A comprehensive and well-connected network of on-street bicycle lanes and dedicated paths that connect to existing facilities, encourages cycling as a viable transportation mode.

The proposed Bicycle Network is shown in Figure 4. Dedicated bicycle lanes are proposed on all primary streets including Sydney Road, but excluding Bell Street. Signed, shared roadways are proposed, to create a continuous cycling network, on streets where low vehicular traffic is anticipated.

Bicycle boxes will be painted at intersections to improve safety and give cyclists a head start over other vehicles. The network was designed with access to transit and all major destinations in mind.

Facilities include bicycle parking (buildings and public spaces) as well as end-of-trip facilities (showers, bike lock-ups) and bike shops.

OBJECTIVES MET BY PROJECT

Optimisation of cycling connectivity both within and through the centre: improvement of links to open space within the activity centre through the creation of new bicycle links, improved visual connectivity and new streetscapes. Promotion and enhancement of sustainable transport options to relieve vehicle congestion and associated air pollution.

ISSUES & DEPENDENCIES

As the Sydney Road bicycle lane shares an interface with the tram super stop, the projects should be coordinated for construction at the same time.

All other off-road shared paths and on-road bicycle lanes and facilities should be constructed in accordance with the staged implementation of new developments and streetscapes.

COST & IMPLEMENTATION

The cost is included in the Streetscape Masterplan, Design and Construction section.

11. Railway Underpass

KEY FEATURES

This project would involve widening and improving the existing pedestrian railway underpass to provide better pedestrian access from west of the railway line to the town centre.

The underpass would be made safer and more attractive and would serve residents and passengers from the outgoing rail line.

OBJECTIVES MET BY PROJECT

Pedestrian permeability from west of the railway line into the centre is a priority. The railway line is a significant barrier to the free movement of pedestrians within the precinct.

Improving the underpass will draw more people into the town centre and provide a more visible entry for people arriving by train.

ISSUES & DEPENDENCIES

VicTrack approval is required for the underpass alterations.

Work on the underpass would need to be staged in a way that would allow train services to continue.

COST AND IMPLEMENTATION

\$12 million

5-10 years

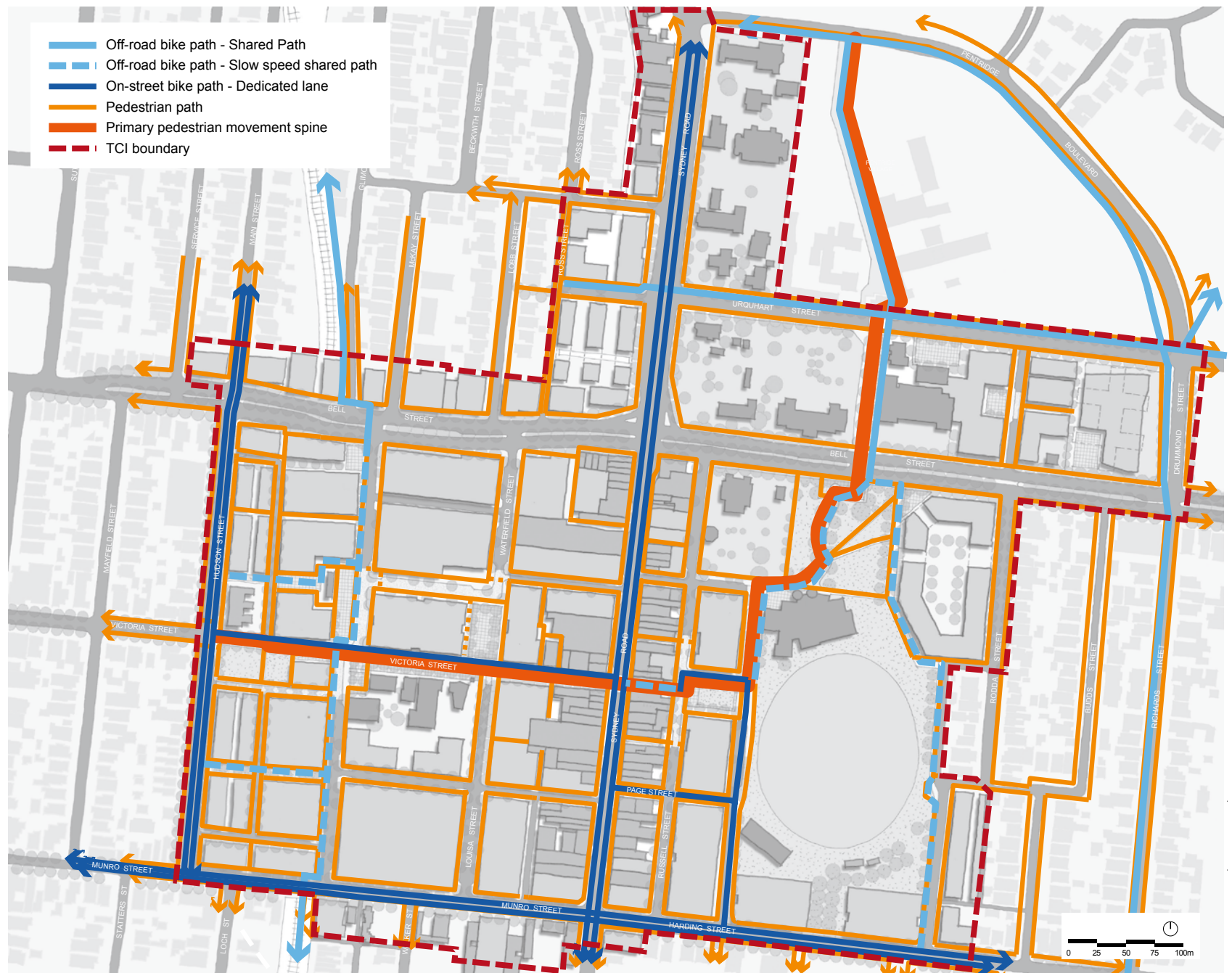


Figure 4 Pedestrian and Cycle Network

12. Bell Street Bus Interchange

KEY FEATURES

The Metlink Origin/Destination (OD) Survey and Rail Car Park Survey 2006 shows that 21% of the passengers surveyed at Coburg Station arrived at the station by bus. This is a sizeable portion of interchanging passengers, which is expected to grow as the TCI area redevelops.

The existing bus facilities are located close to the rail crossing on Bell Street, which provides good access to Coburg Station and is close to the signalised pedestrian crossing where the Upfield Bikeway crosses Bell Street.

This project includes moving the pedestrian and Upfield bike path signals eastward and converting them to a signalised intersection at the junction of Bell Street and the new north-south road to the east of the railway line. It also sees an upgrade to the bus stop facilities to include maximum shelter for passengers.

OBJECTIVES MET BY PROJECT

An improved bus interchange will contribute to integrated, equitable, efficient and sustainable transport and movement networks and reduce reliance on the car.

ISSUES & DEPENDENCIES

The effectiveness of improved bus facilities would be supported by locating pedestrian signals next to the interchange to allow pedestrians to efficiently and safely cross Bell Street. This issue will be tackled in partnership with VicRoads.

COST & IMPLEMENTATION

\$2 million – interchange improvements.

Cost of traffic signals is included in the Streetscape Masterplan, Design and Construction section.

5-10 years.

13. Sydney Road Tram Super Stop

KEY FEATURES

The Sydney Road Tram Super Stop is proposed to be a kerbside access stop, where the current kerb line is extended to meet the tram and is constructed at the same level as the tram floor, to promote same level easy access. The stop will be located in the centre of the TCI area at the Victoria Street Mall.

This takes advantage of the existing signalised pedestrian crossing for safe access onto the tram from both sides. This stop location was also selected given its central location within the heart of Coburg and because it provides convenient access to Victoria Street Mall, Coburg Leisure Centre, Bridges Reserve and Coburg Station.

Footpath widening treatments are proposed in association with the Kerbside Access Stop to maximise opportunities for greening the street, and for transforming Sydney Road in this section into a transit-priority street with opportunities to improve the pedestrian realm.

OBJECTIVES MET BY PROJECT

The superstop will improve accessibility and attractiveness of the public transport alternatives within the TCI precinct in line with the principles and objectives. The construction of a superstop in this location will mean it could become the gateway to Coburg for many residents, workers and visitors and as such, should provide a brand and identity that people can associate with Coburg.

ISSUES & DEPENDENCIES

Sydney Road is currently classified as an Arterial Road under the control of VicRoads. Department of Transport is also a major stakeholder and maintains some control over changes to the road corridor.

Further, more rigorous traffic impact analyses need to be undertaken to test the impact of the superstop and associated road changes on the performance of the adjacent road network, so that any required mitigation strategies can be implemented, to the satisfaction of all controlling agencies and stakeholders.

COST & IMPLEMENTATION

\$0.8 – 1.2 million

The cost is a broad indicative estimate based on current project costs for similar stops in Melbourne. No other road or public realm treatments are included. (These costs are included in the Public Realm costs.)

0-5 years

14. Street Network

KEY FEATURES

Streets within a road network are defined according to a number of physical and operational characteristics such as:

- > Types of street users
- > Pedestrian, transit and private vehicle property access and movement
- > Pedestrian connectivity
- > Vehicle speeds and capacity
- > Landscaping
- > Footpath activity
- > Presence of bicycle lanes
- > Street edge treatment
- > Adjacent development
- > Signal and intersection spacing

The street network has been designed with traffic flow, access and connectivity in mind. The framework used in the planning of the street network for the TCI area seeks to broaden the range of functions considered in designating street types, to include the role that streets play as public spaces and community resources.

The network is designed to optimise access and movement throughout the centre while at the same time contributing to the development of a high quality place.

The transport and circulation networks are shown in Figure 17.

OBJECTIVES MET BY PROJECT

The street network will ensure that transport and movement both to and within the TCI area are integrated, equitable, efficient and sustainable. Pedestrian and cycling access and connectivity will also be optimised.

ISSUES & DEPENDENCIES

A technical analysis of the projected vehicle types and traffic volumes is being undertaken to test the capacity of the street network to meet anticipated needs. The street network is designed to flow traffic around the TCI area as much as possible, to minimise the amount of through traffic. Changes to Bell Street and Sydney Road will be resolved in conjunction with VicRoads and the Department of Transport.

COST & IMPLEMENTATION

The cost is included in the Streetscape Masterplan, Design and Construction in the Public Realm section.

Implementation of the street network will need to be phased with the staged implementation of development in the centre.

See designs of the different street types on the following pages

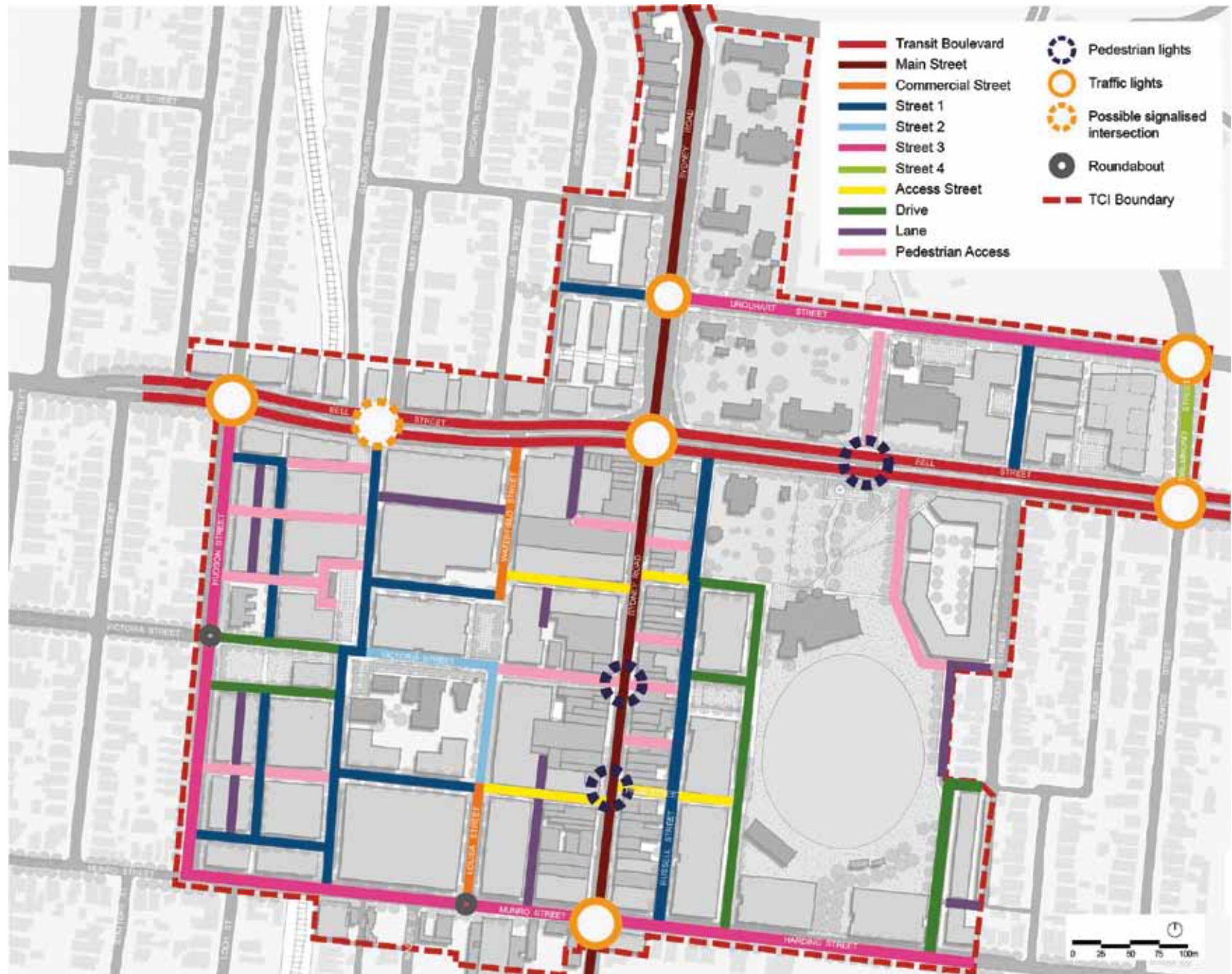


Figure 5 Road Network. See designs of the different street types on the following pages.

TRANSIT BOULEVARD

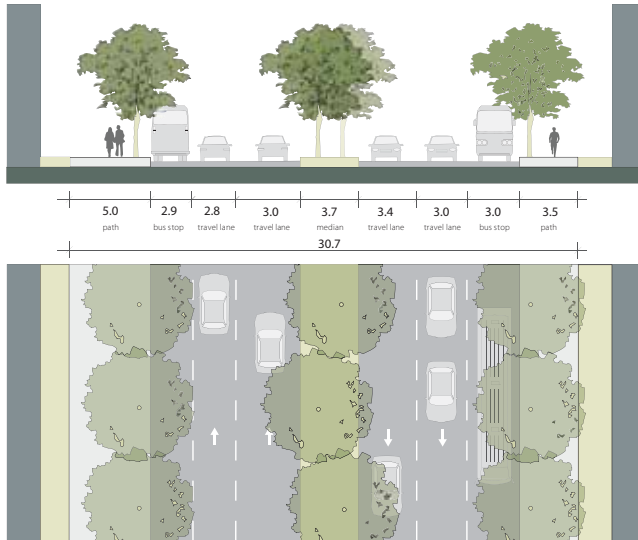


Figure 6

MAIN STREET

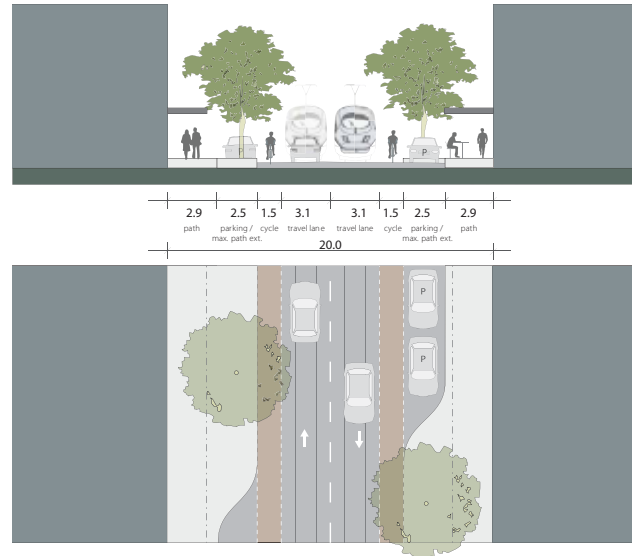


Figure 7

COMMERCIAL STREET



Figure 8

STREET 1



Figure 9

STREET 2

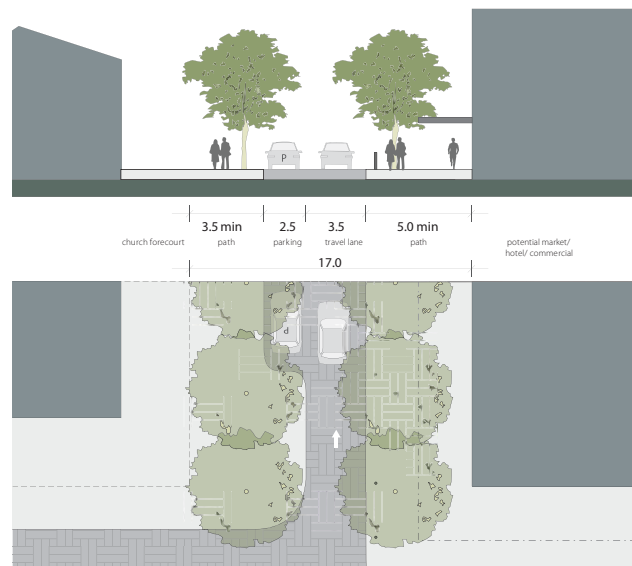


Figure 10



Figure 11



Figure 12

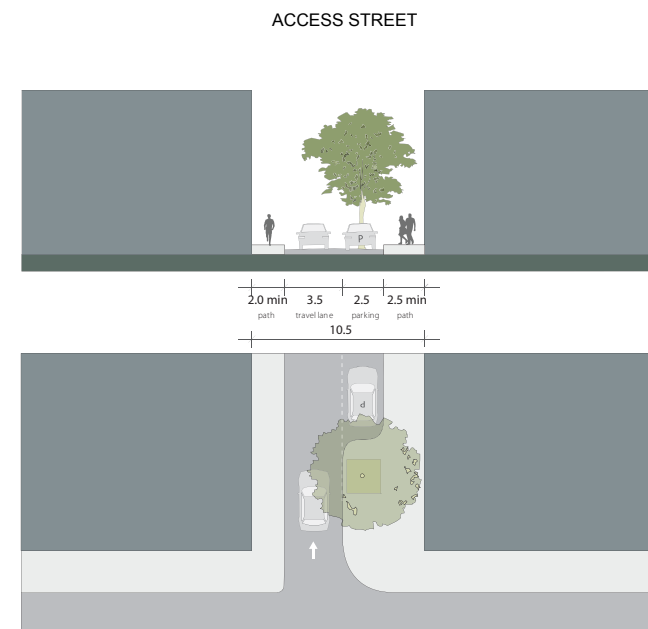


Figure 13



Figure 14

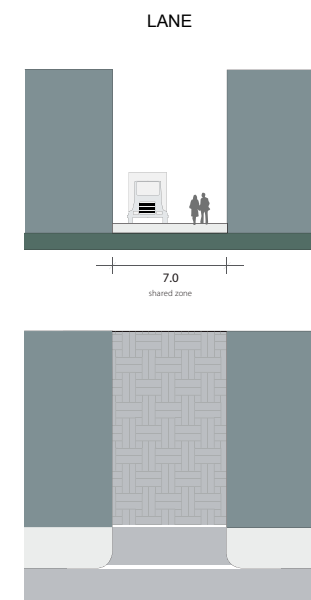


Figure 15



Figure 16

15. Vehicle Parking Strategy

KEY FEATURES

Parking is a key component in any development project and the approach to parking in the TCI area is governed by the following principles:

- > Acknowledgement that, as urban densities build, a successful activity centre must be less vehicle focused and more focused on pedestrians, cycling and public transport.
- > At the same time, it is acknowledged that the conditions that enable people visiting or living within the activity centre to travel via less automobile-centric modes of travel will take some time to establish.
- > Having an under or over supply of parking spaces at any point as the activity centre evolves, has a serious impact on the viability of the activity centre and the amenity for residents and visitors. It is difficult to adjust parking supply after the area is developed without substantial costs being involved.
- > The approach to managing parking supply is characterised as; supporting and encouraging lower car rates and more environmentally sustainable modes of travel, while retaining the capacity to adjust parking supply if there is an under or over supply.
- > The ability to live, work and recreate in the TCI area is anticipated to reduce the demand on private vehicle use in day-to-day life and certainly reduces the number of vehicle trips required by the average future resident of the centre, as compared to residents in suburban Melbourne generally.
- > Where private vehicles are used, their storage should occur underground or off-street with entry to car parks at the edges of the TCI area. Visitors to the centre leave their cars at the edge and walk comfortably to various different places within the centre.
- > A developer contribution to the parking future fund would be established for each waived car spot. Additional space for more parking may occur at a range of sites, including under the City Oval, where an additional 1600 cars can be stored on two levels below the Oval. The future fund would be the source of funds for these developments.
- > Private vehicle parking is provided on a user pays basis and may be either fully supplied within each individual building development or may be supplied on nearby sites within the centre. This approach may enable a proportion of residents to determine if they purchase one or more car spots with their residence, or if they wish to forego a car spot in its entirety.
- > Car share schemes will also be actively encouraged, and may provide a basis for the reduction of parking supply within individual building developments.

OBJECTIVES MET BY PROJECT

Reduced car parking emphasis and restriction of parking to the edges of the TCI area will help to promote and enhance sustainable transport options to relieve vehicle congestion and associated air pollution. Fewer vehicles travelling through the TCI area will result in greater priority for pedestrians and cyclists and enhance the quality of place.

ISSUES & DEPENDENCIES

The next stage in the parking strategy will be to:

- > undertake a commercial assessment of the parking demand to ensure viability from a financial standpoint and then to determine how the parking will be provided over the staged development of TCI, to ensure there is adequate parking provided at each stage of construction.
- > prepare a detailed Parking Precinct Management Plan that addresses the supply and management of parking throughout the life of the project, including the likely gradual change to less vehicle demand.

COST & IMPLEMENTATION

\$66.5m – public parking

\$182.5m – private parking

The cost of providing this quantity of parking is significant. Costs vary for underground or above-ground spaces and are approximately:

Underground – one level \$49,000 per space

Underground – two levels \$48,900 per space

Multi-storey \$21,000 per space.

Paid car parking will be an important part of the funding mix.

Timing - will be determined in line with the staged development of the TCI area.





Water Objectives

- > To work with water authorities and service providers to ensure adequate capacity within the potable water, stormwater and sewerage infrastructure for the targeted level of development in the centre.
- > To ensure capacity issues are identified and addressed before service infrastructure is completed to minimise the need to dig up newly constructed infrastructure.
- > To reduce the demand, per capita, for potable water, through water saving measures, water harvesting in public and private development projects and through working with local business groups to implement water saving and harvesting programs.
- > To establish the use of recycled stormwater in both the public and private realms for non-potable water uses, maximising on-site stormwater collection, treatment and re-use.
- > To protect private and public property against the negative impacts of climate change, such as high intensity rainfall events, through harvesting, detaining, providing adequate infrastructure and safe overland flow paths.
- > To ensure the capacity of the sewerage system by working with authorities to prevent stormwater ingress to the system.
- > To improve water quality through implementing water sensitive urban design principles and implementing best practice stormwater treatment.
- > To minimise the impact of construction works on water quality and other environmental impacts.

Water Projects

The following Water projects are planned for the TCI area and address the demands of the Concept Plan (High) land use scenario on the water supply and infrastructure network.

16. Storm Water Harvesting & Reuse

17. Flooding Resolution

18. Storm Water Ingress to Sewerage System Solution

19. Community Water Conservation

20. Water Sensitive Urban Design (WSUD)

Managing water as a valuable resource is a priority and reducing the use of potable water and treating the waste water produced are priority objectives.

The benefits are a water network that is not entirely dependent on the potable water supply, minimisation of the environmental impacts of stormwater and resolution of the flooding problems in the centre.

Further details of the major water projects will be captured in an Integrated Water Management Plan to be developed in consultation with Yarra Valley Water, Melbourne Water and other key stakeholders. The purpose of the Plan would be to ensure that the most cost effective and appropriate solutions to address the major water challenges occur.

16. Stormwater Harvesting & Reuse

KEY FEATURES

Yarra Valley Water, in conjunction with Moreland City Council, plans to install a 14ML stormwater capture and treatment facility underneath McDonald Reserve, with a second pipe infrastructure spine around Pentridge Boulevard, across the town centre, down to Bridges Reserve and up to De Chene Reserve.

The capacity of the system is restricted by the geological constraints of the McDonald Reserve site. Initial calculations show that 53.6ML per annum would be supplied to the TCI precinct and up to 213ML per annum to the wider Structure Plan area. Yarra Valley Water (YVW) has advised that the built form has priority access to the non-potable water supply.

This project addresses the challenge to reduce the precinct's demand on potable water.

OBJECTIVES MET BY PROJECT

This project will significantly reduce the demand for potable water within both the TCI area and the Activity Centre as a whole.

ISSUES & DEPENDENCIES

This system would treat water to a Class A standard (non-potable) and require all future developments to incorporate second pipe plumbing. The second pipe would allow the Class A water to be provided for laundries, toilets, garden watering and car washing.

The project is dependent on some funding from the Federal Government, on Melbourne Water allowing connections to stormwater drains and VicRoads approval to lay pipe under Bell Street and Sydney Road.

Resource implications include an energy demand from water treatment and pumping facilities. These are considered minimal compared to the benefits of the facility.

Council needs to incorporate requirements for developers to connect to the scheme in Planning Scheme Amendment documentation. Ordinarily second pipe projects in Greenfield sub divisions use the provisions within clause 56 of the Planning Scheme which are not available for this project.

Council will develop a memorandum of understanding with YVW to connect projects to the scheme i.e. all Council projects will also be required to connect into the scheme.

COST & IMPLEMENTATION

This project is a Yarra Valley Water project and the direct cost attributed to the project is funded by the water network operator. However, Council is required to allow YVW to use McDonald Reserve for construction of storage tanks and treatment plant.

\$12.6 m

(cost of project as advised by Yarra Valley Water)

The stormwater capture system is recommended to be installed prior to any development beginning. This allows for second pipe infrastructure to be included in development properties and connected to the system.

0-5 years

17. Flooding Resolution

KEY FEATURES

Melbourne Water is currently undertaking a flood catchment study to determine a drainage scheme and strategy for the precinct.

Preliminary reports from Melbourne Water suggest that the preferred infrastructure project would require two underground detention tanks to hold back the amount of stormwater entering the drains above 20 year average recurrence intervals (ARI).

Council will need to work with Melbourne Water to implement options to address flooding issues, for example, a 5,420 cubic metre tank would be located on the west of the rail line just north of Munro Street and a 2,280 cubic metre tank would be located between Waterfield Street and the railway line. This project would address the existing issue of flooding in Coburg that occurs in the town centre. The main areas of flooding are either side of the railway, south of the Bell Street at-grade crossing.

A range of drainage infrastructure options are available for flood mitigation, Council will work with Melbourne Water to prioritise and cost projects for implementation.

OBJECTIVES MET BY PROJECT

The current flooding problems experienced in the centre would be eradicated.

ISSUES & DEPENDENCIES

The most suitable locations for the tanks are on VicTrack land. Therefore the project is dependant on approval from VicTrack.

If not acted upon then the flooding would have implications for development planned in this precinct as well as the streetscape and pedestrian/cyclist accessibility to the area.

The Civic Square Market Site, underground parking and new developments would all be affected by flooding if they are completed prior to a solution being implemented.

Previous investigation indicates that flooding originates outside the TCI precinct therefore is not controlled by the level or density of development within it.

COST & IMPLEMENTATION

Melbourne Water has indicated that it will contribute to the cost of flood mitigation works.

\$2,500,000

(Cost estimate based on Melbourne Water investigation to date)

The timing of this project is important to successful development in the TCI area (public realm in particular). It is an existing issue and requires immediate attention.

0-5 years

18. Stormwater Ingress to Sewerage System Solution

KEY FEATURES

Currently in heavy rainfall events, stormwater ingress into the sewerage system is exceeding the pipe capacity.

Yarra Valley Water is currently undertaking an assessment of the issue and working on potential mitigation strategies. If the stormwater problem is resolved, the sewerage system will have capacity for the predicted demands arising from future development.

Resulting infrastructure is likely to be in the form of 4 detention tanks that capture the excess sewage / stormwater and release it slowly through the egress system post the rainfall event.

OBJECTIVES MET BY PROJECT

The capacity of the sewerage system to cope with the demands of increased population density would be assured.

ISSUES & DEPENDENCIES

This project is dependent upon YVW. Other alternatives include augmenting the existing pipes and identifying and rectifying the sources of water ingress. Identifying the source would have significant difficulties associated with it as it would require access to private land.

COST & IMPLEMENTATION

\$6 to \$7 million (cost to Yarra Valley Water)

(current cost based on advice from Yarra Valley Water)

Timing is critical, due to the nature of the issue, for environmental, health and economic reasons.

5-10 years

It is important to address this issue as wastewater volumes are expected to increase significantly.

Staging could potentially be in parallel with the McDonald Reserve Stormwater facility to combine infrastructure treatments, including a new pipe network.

19. Community Water Conservation

KEY FEATURES

This project requires regulation of water efficient appliances and fixtures in new developments (and retro-fitting of the existing environment). This form of demand management is common in Melbourne communities today, usually in the form of a government-run installation program and regulatory development guidelines.

To implement this project, Council will need to incorporate these requirements into a planning scheme. Council can also influence these outcomes where projects are on Council owned land.

Community Engagement

The Community Water Conservation project will also work with community to address behaviours around reducing the use of potable water reduction, promote grey water use and consider water re-use options. Council will work with YVW to develop a community education and promotion program as well as investigate community bulk buy options.

OBJECTIVES MET BY PROJECT

Implementation of this initiative will reduce the future demand for potable water within the TCI area.

ISSUES & DEPENDENCIES

The main risk involved in implementing the project is failure to govern standards set by Moreland City Council.

COST & IMPLEMENTATION

No Infrastructure Cost

Immediate

(The project should be implemented in the immediate future to enable maximum benefits from future development.)

20. Water Sensitive Urban Design (WSUD)

KEY FEATURES

This project involves the modelling of stormwater pollutant loads treatment, scenario testing and preparation of a strategy to incorporate WSUD into TCI to achieve best practice stormwater outcomes.

The products of the strategy would be the incorporation of appropriate stormwater quality treatment measures (e.g. bio-retention systems, permeable paving etc) in both the public and private realms, including during construction, through the implementation of construction management plans.

OBJECTIVES MET BY PROJECT

Best practice stormwater treatment will contribute to positive environmental outcomes in the TCI area by helping to achieve the following best practice stormwater quality targets:

- > 80% retention of suspended solids
- > 45% retention of total phosphorous
- > 45% retention of total nitrogen
- > 100% reduction in litter
- > Maintain discharges for the 1.5 year ARI at pre-development levels

ISSUES & DEPENDENCIES

Potential to regulate practice for private development through a Planning Scheme Amendment.

COST & IMPLEMENTATION

\$30,000 – Testing and Strategy

(maximum estimate for consultancy services)

\$2 million - Implementation

The extent and cost of the treatments is yet to be determined. However, initial modelling of the Coburg stormwater reuse scheme suggests that it will achieve between 50% and 75% of best practice stormwater quality requirements for the Harding Street catchment and therefore the TCI area itself. It is expected that between 1000m² and 2000m² of bioretention treatment will be required at a cost of between \$700,000 and \$2.4 million staged with the development of the TCI area.

Implementing WSUD in the TCI area is dependent on the public realm treatment and infrastructure. Investigation of WSUD options should occur prior to, or in parallel with, the development of the Streetscape Design Masterplan so that appropriate treatments can be incorporated into it.

Immediate

(To contribute to the Streetscape Masterplan and other Public Realm projects)

Energy Objectives

- > To work with electricity and gas authorities and service providers to ensure adequate capacity within the electricity and gas networks for the targeted level of development in the centre, offset by planned energy projects.
- > To reduce peak energy demand and greenhouse gas emissions through efficient energy use.
- > To ensure all public and private projects meet international best practice standards (currently 6 star Green Star) and work towards a carbon neutral goal.
- > To retrofit renewable energy technologies and energy efficiency improvements with existing businesses and residents.
- > To work with established local business groups to implement environmental programs.
- > To utilise low emission technologies, such as co-generation and tri-generation, to provide precinct-scale energy supply.
- > To support the sustainable travel initiatives in the TCI area to assist in meeting carbon neutral and greenhouse gas emission reduction targets.
- > To maximise the creation of local jobs matched with residential accommodation to reduce energy usage associated with transport.
- > To maximise the use of environmentally preferable construction materials.
- > To maximise passive solar exposure in public and private spaces.

Energy Projects

The following Energy projects will address the demands of the Concept Plan (High) land use scenario and will significantly contribute to achieving the environmental targets established for the centre. Each project endeavours to reduce the dependency on non-renewable energy sources and the overall carbon footprint of the TCI area.

21. Co-generation/Tri-generation Plants

22. Renewable Energy Sources

23. Residential & Commercial Energy Demand

24. Community Behaviour Programs

The benefits of these projects are environmentally significant and contribute to meeting Moreland City Council's objective of Zero Net Emissions by the year 2020.

21. Co-Generation / Tri-Generation Plants

KEY FEATURES

Co-generation and tri-generation plants are less greenhouse-intensive forms of power generation than brown coal, as they are fuelled by gas. They are also more energy-efficient as they produce both heat and power (co-gen) or heat, power and cooling (tri-gen).

This infrastructure project is to investigate the feasibility of constructing an on-site energy source in the form of co-generation/tri-generation plants to provide part of the energy for the site from an alternative low emission energy supply.

For co-gen and tri-gen, our approach has been:

- > To identify a series of projects that would provide the most significant CO2 reductions.
- > To determine potential locations and costs so they can be considered as each development parcel is rolled out.
- > To undertake further Business Case work to identify financing sources so these projects may be ready at the appropriate times during development of the TCI area.

Onsite Co-generation projects typically save approx 30% of ongoing operational costs and have a payback period of less than 10 years.

Preliminary investigation indicates that there are a few potential sites and sizes for energy plants where there is significant concentration of demand to justify further investigation (refer to Projects One to Five below).

OBJECTIVES MET BY PROJECT

A reduction in greenhouse gas emissions.

A reduction in reliance on energy from the main grid, therefore increased energy security.

ISSUES & DEPENDENCIES

Service infrastructure for a co-generation plant supplying multiple buildings would need to be considered. Currently the flexibility to connect excess energy back to the grid does not exist.

The approximate area required for each system is 136 m², depending on the size of the plant required.

Regulatory requirements in crossing title boundaries with energy infrastructure is an issue that needs addressing. Installing precinct-wide heating and cooling pipework also requires regulatory feasibility analysis.

There are a number of potential risks in introducing this form of plant on-site including:

- > Staging
- > Utility prices
- > Capital Cost

A developed business case would be required to define the full costs and implications of installation of co-generation or tri-generation plants.

The following are potential options for installation of co-generation plants:

PROJECT ONE: Commercial Zone – Large Scale

This plant would supply a major amount of the electricity needs for the commercial precinct including the future market, library, cinema and Coles supermarket. These figures are approximate and based on supplying large quantities of power to numerous sites within the precinct. Once building developments are confirmed, further co-generation feasibility will be undertaken.

A 2MW dual fuel gas engine with potential to utilise waste from the supermarket / market using a gasifier. Fuel used to power the plant is commonly gas. However there is a possibility of using bio-gas from on-site bio-digesters. This method uses biodegradable waste which produces Methane for fuel. It also offsets waste to landfill for the precinct. (Refer to the Anaerobic Digester project in the Waste section.)

PROJECT TWO: Hospital/Major Health Facility/Council Offices/Leisure Centre

A 4MW Gas turbine generator would supply a large amount of energy for these facilities.

Note: Installation of projects One and Two would provide approximately 80% of the energy required for the TCI area.

Small scale co-generation and tri-generation opportunities

The following projects demonstrate that smaller co-generation opportunities exist within the precinct for various greenhouse emission reductions, capital and operating costs.

PROJECT THREE: Hospital or major health facility

There is an opportunity to place a co-generation plant on-site to meet the hospital's or medical facilities needs.

PROJECT FOUR: Leisure centre & 3 small community centres

115 kW co-generation Plant. Energy savings per year are approximately \$90,000 and the payback 5 years. This project would be a Council project and includes the savings of Greenpower.

PROJECT FIVE: Council offices / Leisure centre / Residential development (500 apartments)

The plant would need to be 130kW in size to meet minimum electrical demand.

Energy savings per year total \$124,000 and the payback period is approximately three and a half years. This project could be a Council-owned initiative. However an energy supply contract to the apartments would be required.

COST & IMPLEMENTATION

These are approximate costs and further feasibility will need to be undertaken to demonstrate the positive environmental and financial benefits of these projects.

\$7 million – Project One

\$14 million – Project Two

TBA Project Three (developer cost)

\$470,000 – Project Four

\$455,000 – Project Five

(costs are estimates in current costs)

Some uncertainty lies around the price and affordability as a price on carbon is set to be established at a federal level in coming years.

Timing comes down to the location and capacity of the plants. All investigated locations include developments planned to occur in the short term. Further investigation is also required in regard to the installation, ownership and operation of the system. This may include direct Council projects, a BOOT (build, own, operate, transfer) scheme, or a partnerships approach.

22. Renewable Energy Sources

KEY FEATURES

In order to achieve the Moreland City Council target of Zero Net Emissions by 2020, renewable energy sources would be required to be used.

Renewable energy can either be generated on-site through various methods such as photovoltaic cells, geothermal or biogas plants or purchased from an off-site supplier.

TCI - Zero Carbon implementation Plan and Offset Policy

As part of an overall ESD Implementation Plan, Council will develop a Zero Carbon and offset strategy for TCI to investigate the most cost effective and efficient method to reduce energy use, install renewable energy and offset options.

Local renewable energy projects

Council will work with the Northern Alliance for Greenhouse Action (NAGA) on opportunities for community bulk buy projects to boost the number of solar PV installations within the precinct.

As part of the Moreland Energy Partnership, Council will work with the Moreland Energy Foundation Limited to investigate innovative business models such as community investment and local offsetting to increase the amount of local renewable generation.

Council will look into other mechanisms to incorporate solar PV into the built form, i.e. Planning Scheme Amendments and projects that are developed on Council owned land.

Off-site generation

A potential project to be considered that would significantly reduce emissions would be to enter a contract with a wind-power generation company for the supply of wind power to Central Coburg. A 2x2MW wind turbine has the potential to offset 16,433 tonnes CO₂ per annum which is approximately 85% of the emissions gap.

No further infrastructure would be required on site as the energy produced from a wind farm would utilise the existing grid. This project could be an alternative to the installation of co-generation or tri-generation plants.

OBJECTIVES MET BY PROJECT

A reduction in greenhouse gas emissions.

ISSUES & DEPENDENCIES

The energy supply calculations are done based on 80% of energy being supplied from co-generation plants within the TCI activity centre and behaviour change programs reducing demand.

If other energy projects are not implemented the demand on renewable energy sources becomes greater.

COST & IMPLEMENTATION

No infrastructure cost

Generating energy from renewable resources is an advancing technology and future costs are difficult to predict. Prices and affordability of renewable energy will also vary greatly in the next few years as a price on carbon is established at a Federal level.

5 years

23. Residential & Commercial Energy Demand

KEY FEATURES

Energy demand management for new residential and commercial development in TCI can be controlled through implementing building standards through Planning Scheme Amendments. Where land is owned by Council, mechanisms such as lease agreements and land sale requirements can also influence built form outcomes.

This action is acknowledged as a part of the Energy System objectives to reduce energy demand and towards Zero Net Emissions (by 2020).

The impact on the energy system is a reduced demand on service infrastructure, minimising any future service installations. This program also reduces the demand on energy supply infrastructure such as co-generation plants or renewable energy technology.

OBJECTIVES MET BY PROJECT

This program will result in a reduction in greenhouse gas emissions and a reduced peak energy demand through the construction of energy efficient buildings.

ISSUES & DEPENDENCIES

Reduced demand will impact on the extent of the co-generation plant and cost, as well as the renewable energy investment required.

COST & IMPLEMENTATION

A further feasibility study will be undertaken to demonstrate the benefits of Environmentally Sustainable Design (ESD) in the built environment. Costs will include both the building and operating costs and will assist in the development of the Planning Scheme Amendment and business case for exemplar ESD.

No Infrastructure Cost

This project does not require any additional infrastructure costs. It is acknowledged that, if managed well, a number of savings can be made.

Immediate

The project should be pursued in the immediate future to enable maximum benefits.

24. Energy Community Behaviour Programs

KEY FEATURES

This project involves running community schemes to encourage energy behavioural change and reduce the demand for electricity.

MEFL is currently contracted by Council to supply these services to the broader Moreland community until 2015.

PROJECT ONE: Neighbourhood-based workshops where locals are invited to participate in activities that include information on how to calculate your carbon footprint and how to create an action plan.

PROJECT TWO: Personal Engagement, tailored auditing tools and action plans offered to businesses within the TCI area.

Working with people in their neighbourhoods and homes to tackle climate change is an opportunity to enhance community development and engage with the community about a modern day issue.

Direct advantages include a reduced energy demand in the precinct, greater knowledge on environmental issues and community identity and pride.

PROJECT THREE: Installation of real-time energy use display equipment in public places to encourage awareness and behaviour change.

OBJECTIVES MET BY PROJECT

Efficient energy use resulting in greenhouse gas reduction and a reduction in peak energy demand.

Development of community capacity to take action to reduce environmental impact. Work with the community to identify barriers and develop strategies to overcome issues to ensure that environmental targets and principles are met.

Implementation of environmental programs by established local business groups. Retrofitting of renewable energy technologies and energy efficiency improvements by existing businesses and residents.

COST & IMPLEMENTATION

\$38,500/yr – Project One (1,000 households)

\$16,500/yr – Project Two (200 businesses)

\$30,000 - Project Three

Implementation of programs under Projects One and Two would not have to begin until the current contract expires (2015)

Projects One and Two:

5-20 years

Project Three:

0-5 years



7.5 Waste

Waste system infrastructure encompasses waste capture and storage; separation of different types of waste; recycling; composting and transport of waste.

Waste will be minimised at all stages of the waste creation and disposal cycle through efficient building and infrastructure design, reuse of materials and reduction of waste generation from the operation of buildings and infrastructure.

The following list of Waste challenges identifies the key issues that require resolution within Central Coburg;

- > To minimise the amount of waste produced and requiring collection from the centre.
- > To provide the most efficient facilities for removal/treatment of recyclable materials generated in the centre.
- > To provide practical and efficient facilities for removal of waste generated in the centre.
- > To ensure that adequate and appropriate facilities are provided in the public areas for waste collection and separation at the source.
- > To provide appropriate infrastructure to enable optimum cleansing of all public areas.
- > To ensure that the waste/recycling/cleansing facilities are adequate to meet the predicted future demands.

The Waste System overlaps with the Public Realm, Access and Movement and Water Systems. Waste capture facilities, waste trucks and street cleansing vehicles are all integrated into the Waste System.

Reduction, re-use, and recycling underpin the challenges of a waste system to actively minimise waste. How infrastructure projects accomplish this includes a combination of effectiveness, efficiency and education.

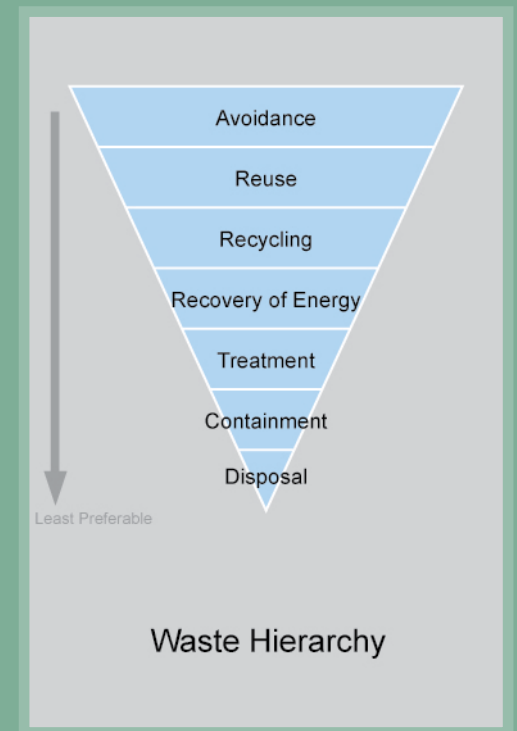


Figure 19 Common Waste Hierarchy of preferred programs.

Waste Objectives

- > To ensure timely and orderly provision of infrastructure to service the waste system at the centre, ensuring the public health and sanitation outcomes for the community, using environmental best practice infrastructure and minimising waste to landfill.
- > To ensure adequate and accessible space is provided for effective separation of waste streams and to maximise recycling and safe collection.
- > To ensure private and public developments include a waste management plan that maximises recovery and recycling and minimises waste to landfill.
- > To minimise the environmental impacts associated with site construction practices and maximise the use of environmentally friendly materials.
- > To work with established local business groups to minimise waste to landfill and maximise composting and recycling opportunities.
- > To ensure the design and selection of materials for public infrastructure caters for waste and cleansing vehicles and maximises the ease of keeping the TCI area clean.
- > To reduce the negative impacts of litter and dumped rubbish on amenity and the environment.

Waste Projects

The following Waste Projects are planned for the TCI area and will address the demands of the Concept Plan (High) land use scenario on the community's waste process. The need to minimise waste in all stages of the waste life-cycle has led to the identification of the following reducing, recycling, reusing and treatment projects.

25. Public Place Recycling

26. Residential Composting Hubs

27. Graffiti Management

28. Anaerobic Digester

29. Litter Abatement

30. Construction & Demolition Waste

Environmental benefits are significant in sustainable handling of waste. Social and economic benefits will also be achieved by reducing waste to landfill and creating a waste-free and waste-conscious community.

25. Public Place Recycling

KEY FEATURES

Public Place Recycling allows recycling practices to extend into public places and allows people to make the choice to recycle waste when in transit or enjoying public spaces in the TCI area. Sites to install Public Place Recycling (PPR) should be those with higher eating and drinking patterns i.e. outdoor-eating areas and areas where people congregate i.e. parks, squares and transport hubs.

Bins must have effective signage which conforms to Sustainability Victoria's Away From Home Waste Signage Guidelines, be highly visible to ensure people have the time to make the choice to recycle and can easily see the options available.

OBJECTIVES MET BY PROJECT

Public Place Recycling (PPR) within the Coburg precinct will reduce the amount of waste going to landfill.

Providing recycling facilities within the 'away from home' setting also increases the capacity of residents for positive environmental behaviour.

ISSUES & DEPENDENCIES

Appropriate data - Gathering waste and usability data as part of the feasibility assessment of public place recycling will be essential to ensure that the solution is developed in the context of the data. Early engagement of stakeholders will assist in determining which materials will be collected through the PPR system. Traders will have a huge impact on the materials generated and stipulating that all take-away containers used in the precinct must be recyclable or compostable will be considered.

As no waste generation data for the area is currently available, it may be necessary to add or move infrastructure once peaks and flows can be determined.

COST & IMPLEMENTATION

Cost is dependent on further analysis of waste generation in the public realm which is informed by land uses and activity generated.

\$1,600/bin enclosure

\$1,000/bin enclosure for additional signage and installation

\$7 per bin/lift

(costs are all based on current costs)

Implementation should be part of the urban design process for streetscapes and public squares/forecourts. As the Streetscape Masterplan is an immediate action a public place recycling agenda should be developed in tandem with it.

Immediate & Ongoing

26. Residential Composting Hubs

KEY FEATURES

This project requires residential dwellings to be equipped with a composting facility to collect organic food waste separately from recyclables and general rubbish.

A feasibility assessment will be undertaken to locate composting hubs close to sites where the waste is generated. At least 1 – 2 square metres per dwelling should be made available for food waste collection and treatment. The feasibility assessment will also take into account issues such as odour and pest control.

To reduce waste to landfill and greenhouse gas emissions, access to composting facilities or worm farms for residents needs to be included in all residential developments occurring in the Coburg precinct.

30% - 50% of the average household garbage bin is comprised of food waste. To achieve the State Government's Towards Zero Waste target of recovering 65% of the municipal solid waste stream by July 2013, food waste must be addressed.

Compost produced through collection and on-site or off-site treatment is to be used on garden plots, communal grounds or nearby parks and gardens.

OBJECTIVES MET BY PROJECT

This project will ensure that appropriate storage facilities are provided for the separation of food waste from the waste stream, further minimising the amount of waste going to landfill.

A further benefit is the provision of compost for use on gardens and parkland.

ISSUES & DEPENDENCIES

Residential composting hubs may not be required if an anaerobic digester is installed in the centre.

Management of the composting hubs should be the responsibility of individual householders or the body corporate.

COST & IMPLEMENTATION

\$50 - \$150/compost bin or worm farm

This would be a cost to the developer

\$30 - \$50/hour – Maintenance Cost

(minimum of 2 hours per week per multi unit development) This would be a cost to the body corporate.

27. Graffiti Management

KEY FEATURES

This project aims to treat all public art works and pervious surfaces with an anti-graffiti coating to enable ongoing and easy graffiti removal.

Private developers will also be encouraged to use anti-graffiti treatments on vulnerable sections of their developments and surrounds.

OBJECTIVES MET BY PROJECT

The effective control of graffiti in the TCI area is an important aspect of achieving and maintaining a place that the community feels proud of and that will grow and prosper.

ISSUES & DEPENDENCIES

Nil

COST & IMPLEMENTATION

\$Unknown

The cost of anti-graffiti treatment of public buildings and spaces is directly attributable to Council.

Ongoing

Implementation of this project would be an ongoing process as development is realised in the precinct.

28. Anaerobic Digester

KEY FEATURES

To reduce waste to landfill and greenhouse gas emissions it may be possible to install an anaerobic digester plant in Central Coburg that would produce biogas from food waste generated by markets, supermarkets, cafes, restaurants and households.

The ultimate intent is to use waste as a resource within the precinct.

OBJECTIVES MET BY PROJECT

This project has a large number of benefits including reducing emissions, reducing landfill tonnage and providing an environmentally effective fuel supply to local co-generation plants.

ISSUES & DEPENDENCIES

To determine the viability of this project, a feasibility study would need to be undertaken to determine biomass availability, cost, location, transportation, treatment and disposal.

The anaerobic digester is also dependent on on-site energy sources such as co-generation plants (see Energy projects).

The small scale of the project adds complexity and cost. An alternative to be considered is transporting food waste to an already existing plant within the municipality or metropolitan area.

Implementation is highly dependent on the ability to use the fuel. If co-generation plants are installed within the short to medium term then the project could be introduced in parallel.

COST & IMPLEMENTATION

Finding a project partner to increase economies of scale and potentially operate the facility would be financially advantageous to Council.

\$10,000

(estimate of cost of feasibility study)

\$1,000,000

Cost of a bio-digester.

5 to 10 years

(assuming the market and Coles Supermarket developments are realised within this period)

29. Litter Abatement

KEY FEATURES

To reduce litter produced in the construction and demolition process, all waste is to be contained onsite, materials are to be separated and temporary bins provided for construction staff.

Effective stormwater pollution mitigation systems are required on all construction sites within the Coburg precinct – refer to Environmental and Civic Assets Local Law.

To reduce litter entering the stormwater system and the Merri Creek during and following the construction phase, gross pollutant traps are to be installed in consultation with Street Cleansing – refer to stormwater quality management (Water section).

All design features are to consider cleansing vehicles and operations and minimise opportunities for litter accumulation.

OBJECTIVES MET BY PROJECT

Requiring appropriate waste management plans and controls for construction sites will minimise litter and waste arising from developments and reduce the amount of pollutants entering the stormwater stream.

ISSUES & DEPENDENCIES

Regulation and compliance is difficult to manage and monitor.

To ensure effective street cleansing, all street furniture belonging to traders is not to be permanently secured to the footpath or left out overnight.

To enable flushing down of pavements, access to recycled water is to be provided to Street Cleansing.

To minimise leaf litter, non-deciduous tree species should be chosen and located with sufficient spacing for street cleaning vehicles to easily move around bases.

COST & IMPLEMENTATION

Cost to Council is subject to a frequency of cleansing schedule based on level of activity. This is an ongoing task in urban realm environments within the Moreland City Council.

Immediate & Ongoing

It is important to implement these best practice procedures from the initial stages of development and on an ongoing basis.

30. Construction & Demolition Waste

KEY FEATURES

Materials to be recycled are to include, but not be limited to: concrete, timber, aluminium, steel, bricks, asphalt, tiles and plasterboard.

Where practicable, materials including soil and clay from demolition sites are to be salvaged and reused either onsite or within another development.

To reduce the amount of materials wasted as off-cuts and through over-ordering during construction, design should be to standard sizes and suppliers engaged who will take-back unused materials.

Effective stormwater pollution mitigation systems are required on all construction sites within the Coburg precinct including but not limited to: containment of stockpiles and sediments, sediment control fences, retainment of grassed areas and vegetation, erosion control and removal of mud from tyres on-site – refer to stormwater quality management (Water section).

OBJECTIVES MET BY PROJECT

The amount of waste to landfill generated during the demolition and construction process will be reduced and there will be effective at-source waste separation at all construction sites.

ISSUES & DEPENDENCIES

A requirement for appropriate waste management on construction sites will need to be included in the planning scheme.

COST & IMPLEMENTATION

Cost to developer. Timing: during construction phase.

INFRASTRUCTURE PROJECTS LIST

Public Realm

1. Civic Square Market Site
2. Civic Square Russell Street Site
3. Civic Square Bob Hawke Centre Site
4. Coburg Station Forecourt
5. Streetscape Masterplan, Design and Construction
6. Public Art
7. Service Galleries
8. Oval Configuration

Access & Movement

9. Pedestrian Connectivity
10. Cycling Network and Facilities
11. Railway Underpass
12. Bell Street Bus Interchange
13. Sydney Road Tram Superstop
14. Street Network
15. Vehicle Parking Strategy

Water

16. Stormwater Harvesting and Re-use
17. Flooding Resolution
18. Stormwater Ingress to Sewerage System Solution
19. Community Water Conservation
20. Water Sensitive Urban Design

Energy

21. Co-generation/Tri-generation Plants
22. Renewable Energy Source
23. Residential and Commercial Energy Demand
24. Energy Community Behaviour Programs

Waste

25. Public Place Recycling
26. Residential Composting Hubs
27. Graffiti Management
28. Anaerobic Digester
29. Litter Abatement
30. Construction and Demolition Waste



Figure 20 Infrastructure Project Locations



A1 Concept Plans



Structure Plan



Concept Plan 2 (Medium)



Concept Plan 3 (High)

A2 Land Use Summary

LANDUSE	STRUCTURE PLAN PRECINCTS	EXISTING (CENTRAL COBURG AREA)		CC STRUCTURE PLAN 2020 (CENTRAL COBURG AREA)		CONCEPT PLAN 1 (LOW)		CONCEPT PLAN 2 (MEDIUM)		CONCEPT PLAN 3 (HIGH)	
		FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES
Residential	Precinct 1		Westlink Data 28/05/2010 Trim No. D10/100995 (Includes 35 Age care)		1390 (New - Central Coburg 2020 Structure Plan Vol-2, Pg 52, 59, 71, 78, 91, 105) + 96 (existing including 35 age care)		1912 Anticipated TCI yield + 500 Residential + 61 existing - 363 DZ2 (Includes 125 Age Care)		2112 Anticipated TCI yield - 363 DZ2 = 1749 + 500 Residential + 96 existing (125 Aged care)		2653 Anticipated TCI yield + 500 Residential + 61 existing - 363 DZ2 (Includes 125 Aged Care)
	Precinct 2										
	Precinct 3										
	Precinct 4										
	Precinct 6										
	Precinct 8										
	Sub-Total										
	TOTAL	96 dwellings		1486 dwellings		2203 dwellings		2403 dwellings		2944 dwellings	
Retail	Precinct 1	160	Westlink Data 28/05/2010 Trim No. D10/100995		40424(Existing) + 25000 (Additional as per the structure plan report Vol. Pg. 5)		500sqm reduced from DZ6.2 & 6.3, 500sqm added along the rail corridor		40424 (Existing) + 44390 (Anticipated TCI yield) - 780 (DZ2) - 9662 (Precinct 2 Existing)		As per Concept Plan Medium. No increase in ground floor footprint.
	Precinct 2	9662									
	Precinct 3	26423									
	Precinct 4	56									
	Precinct 6	4123									
	Precinct 8	0									
	TOTAL	40424		65424		74372		74372		74372	
Hotel	Precinct 1,3,4,6,8	0	No existing hotels within the TCI	0		0	As indicated in F2 drawings in precinct DZ 1.3	0	As indicated in F2 drawings in precinct DZ 1.3	0	As indicated in F2 drawings in precinct DZ 1.3
	Precinct 2	0		0		10920		10920		10920	
	TOTAL	0		0		10920		10920		10920	
Recreation & Leisure		3000	Coburg Leisure Centre	3000	Coburg Leisure Centre	8500 + 250 car spaces	Coburg Regional Aquatic centre with a 50m outdoor pool Trim No. D09/180532	3000	Coburg Leisure Centre	3000	Coburg Leisure Centre
Industrial: Light		1838	Westlink Data 28/05/2010 Trim No. D10/100995	0	No provision for industrial uses	0	No provision for industrial uses	0	No provision for industrial uses	0	No provision for industrial uses

LANDUSE	STRUCTURE PLAN PRECINCTS	EXISTING (CENTRAL COBURG AREA)		CC STRUCTURE PLAN 2020 (CENTRAL COBURG AREA)		CONCEPT PLAN 1 (LOW)		CONCEPT PLAN 2 (MEDIUM)		CONCEPT PLAN 3 (HIGH)	
		FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES	FLOOR AREA (SQM)	NOTES
Office		19798	15771 (Westlink Data 28/05/2010 Trim No. D10/100995) + 5187 Existing civic centre	37445	27145 (Table 8.2 Pg 23 GTA report) + 10300 New civic centre	41086	500sqm added along the rail corridor to the Concept plan medium scenario	40586	15771 (Existing) + 14515 (37335 Anticipated TCI yield Concept plan yield - 11900 CCH - 10900 Hotel) + 10300 (New Civic Centre)	63436	15771 (Existing) + 37365 (Anticipated TCI yield Concept plan yield - 10900 Hotel - 11900 CCH) + 10300 (New civic centre)
Community facilities		6274	Childcare centre, existing library, churches, town hall, historical society, church community centre	6274	Childcare centre, existing library, churches, town hall, historical society, church community centre	9356	New Coburg Childrens Centre + New Library and community Centre, churches, town hall, historical society + Church community centre	9356	New Coburg Childrens Centre + New Library and community Centre, churches, town hall, historical society + Church community centre	9356	New Coburg Childrens Centre + New Library and community Centre, churches, town hall, historical society + Church community centre
Education		5338	St. Pauls Primary and Coburg Primary	5338	St. Pauls Primary and Coburg Primary	5338	St. Pauls Primary and Coburg Primary	5338	St. Pauls Primary and Coburg Primary	5338	St. Pauls Primary and Coburg Primary
Health		6200	Westlink Data 28/05/2010 Trim No. D10/100995	7500	Social, cultural and leisure needs assessment for Central Coburg - final report - March 2005	36392	Hospital or major health facility + Combined community Health Centre (Excluding Carparking) + 50% (Approx 3100 sqm) of existing as private medical establishments	36392	Hospital or major health facility + Combined community Health Centre (Excluding Carparking) + 50% (Approx 3100 sqm) of existing as private medical establishments	43282	Hospital or major health facility + Combined community Health Centre (Excluding Carparking) + 50% (Approx 3100 sqm) of existing as private medical establishments
Utilities & Infrastructure		720	579 (Substation at intersection of Hudson & Victoria St) +150 (Railway Maintenance yard)	570+	Substation at intersection of Hudson & Victoria St. + Any new utility or infrastructure provided due to increased density like co-gen plant, phone exchange, etc.	570+	Substation at intersection of Hudson & Victoria St. + Any new utility or infrastructure provided due to increased density like co-gen plant, phone exchange, etc.	570+	Substation at intersection of Hudson & Victoria St. + Any new utility or infrastructure provided due to increased density like co-gen plant, phone exchange, etc.	570+	Substation at intersection of Hudson & Victoria St. + Any new utility or infrastructure provided due to increased density like co-gen plant, phone exchange, etc.
Transport		200	Existing Station buildings	200	Existing Station buildings	200	Existing Station buildings	200	Existing Station buildings	200	Existing Station buildings
Open Space		52845	Bridges Reserve+Oval = 51450 , Victoria Mall = 1395	54145	Bridges Reserve+Oval = 51450 , Victoria Mall = 1395, Station square = 1300	47799	Bob Hawke square-1950, Station square East-1300, station square west-390, station entry square-494, market square-1215, russell square-1700, victoria st mall-1350, bridges reserve-39400	59849	Bob Hawke square-1950, Station square East-1300, station square west-390, station entry square-494, market square-1215, russell square-1700, victoria st mall-1350, bridges reserve + oval -51450	59849	Bob Hawke square-1950, Station square East-1300, station square west-390, station entry square-494, market square-1215, russell square-1700, victoria st mall-1350, bridges reserve + oval -51450

A3 Integrated Resource Management (IRM) Analysis

The IRM Tool

SUMMARY

IRM is a tool that provides performance indicators linking design objectives to sustainability objectives in a common data model. This in turn integrates resource flow parameters with different technical disciplines. It can be applied to the design and development of a plan whether for a region, city or locality to rapidly test different development scenarios and options. IRM uses performance outputs to inform the design process in order to optimise and mitigate the design (design continuous improvement through an iterative process of define, evaluate, refine, & optimise).

BENEFITS

- > Transparent input/output structure; very responsive to input changes
- > Aligns technical streams of information
- > Ensures balance between supply and demand
- > Provides a high level analysis; effective for strategic review

LIMITATIONS

- > Managing process of obtaining data from technical disciplines early on can be challenging.
- > Cannot account for impacts from “fuzzy” resources such as biodiversity, archaeology and landscape.
- > Does not have the capability to make scenarios that are incrementally investigated over time.

The Coburg Initiative IRM Analysis

PURPOSE

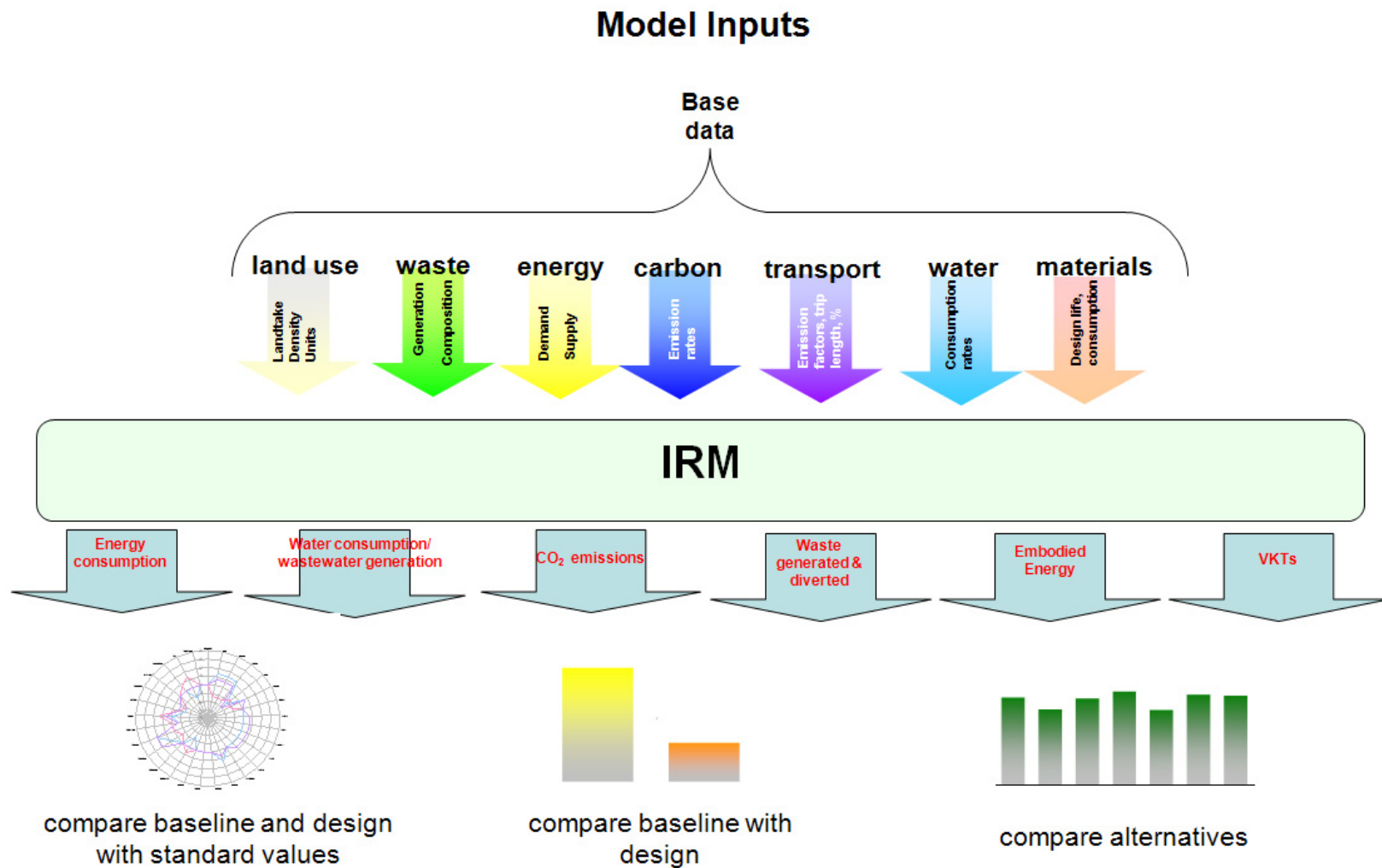
Within the TCI Public Realm and Infrastructure Strategy the IRM tool has been used to assist in the decision making process. Aligning the systems of water, energy, waste, transport and carbon, the TCI team had the ability to explore the resource implications of a number of land use scenarios and the impact of various infrastructure projects on the supply and demand outputs at a high level.

MODEL DEVELOPMENT

- > The IRM model is a spreadsheet based system that has built in base data and formulas to quantify resource demands from a given land use program.
- > The model was set up adapting various base data inputs to Australian levels and standards.
- > Land use scenarios were then encoded into the model, setting up the 2020 Coburg Structure Plan as the baseline. The three land use scenarios tested against the baseline include the low, medium and high density options as defined in appendix A1.

TCI LIMITATIONS

- > One of the main limitations in developing the Coburg IRM is the current uncertainty around land use. As an existing urban space there is uncertainty around the implementation schedule and lack of detail in the land use schedule.
- > The Coburg IRM cannot measure some aspects of the masterplan, such as impacts on biodiversity, archaeology and landscape, so improvements to or mitigations for these elements are not included.



RESULTS FROM LAND USE SCENARIO TESTING

The results from the TCI IRM model are summarised in this section. The results presented here offer a high level assessment of the site's resource characteristics rather than the results of a rigorous technical analysis. The relative impacts are important; not the numeric values.

Increasing the development density means more commercial and population development which comes with increased demands for resources (eg water, energy) and production of waste. However, increased density can be designed to decrease these demands on a per capita basis as evidenced by the TCI scenario testing.

The scenario testing identified a number of key findings as shown opposite and outlined below.

- > Proportionately, water decreases the most in comparison to the other components (energy, waste, transport and carbon) due to the large decrease in open space which is traditionally a high water consumer from activities such as irrigation and cleansing.
- > The high energy rates of the office/commercial and residential land uses result in an increase disproportionate to the other indicators between Concept Plan 2 and Concept Plan 3.
- > Carbon is closely related to the energy fluctuations, so the reduction is the greatest going from Concept Plan 2 (Medium) to Concept Plan 3 (High) as per energy.
- > The total of vehicle kilometres travelled increases between the Structure plan and Concept Plan 1 due to the increase in commercial land uses such as office and retail which are typically large generators of trips.
- > Concept Plan 1 (Low) and Concept Plan 2 (Medium) are very similar land use models and experience little change in all components (energy, water, waste, transport and carbon).

It is important to remember that IRM is only measuring direct resource implications of a defined land use profile and does not consider the social, cultural or financial implications of developing the conceptual plans.

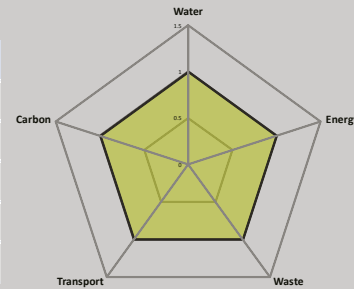
What is a resource footprint?

A resource footprint is a reference to the average resource consumption of an individual within a precinct population. Potable water consumed, energy demand, waste generated, vehicle kilometres travelled and carbon emission per capita are the key performance indicators represented on the footprint.

All values have been standardised to the baseline (Structure Plan) and result in a change of the footprint by percentage increased or decreased on the baseline. For example if in Concept Plan 1 (Low) all indicators are reduced by 20% on a per capita basis compared to the Structure Plan then the green footprint will reduce to 80% of the original.

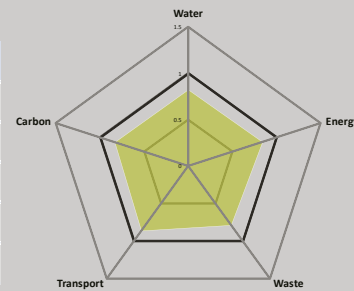
Structure Plan Results & Resource Footprint (per capita)

		Per Capita	Units	Total	Units
Water	Potable Water Used	203	L/capita/day	1.3	ML/day
Energy	Energy Demand	5.4	MWh/capita/year	36	GW/yr
Waste	Waste Generation	4.1	kg/capita/day	27	t/day
Transport	Vehicles Travelled	37,244	PKT/capita/year	247	x 10 ⁶ PKT/yr
Carbon	CO2 Equivalent Emitted	9.1	tonnes/capita/year	61	Mt/yr



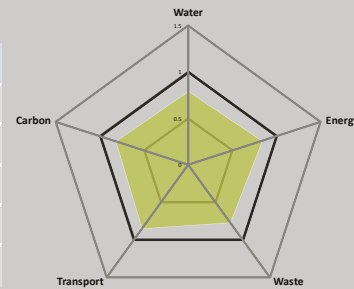
Concept Plan 1 (Low) Results & Resource Footprint (per capita)

		Per Capita	Units	Total	Units
Water	Potable Water Used	167	L/capita/day	1.9	ML/day
Energy	Energy Demand	4.6	MWh/capita/year	51	GW/yr
Waste	Waste Generation	3.2	kg/capita/day	36	t/day
Transport	Vehicles Travelled	32,068	PKT/capita/year	360	x 10 ⁶ PKT/yr
Carbon	CO2 Equivalent Emitted	7.6	tonnes/capita/year	85	Mt/yr



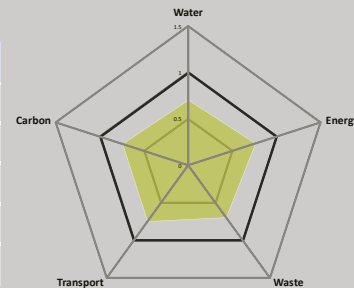
Structure Plan Results & Resource Footprint (per capita)

		Per Capita	Units	Total	Units
Water	Potable Water Used	161	L/capita/day	1.9	ML/day
Energy	Energy Demand	4.5	MWh/capita/year	52	GW/yr
Waste	Waste Generation	3.1	kg/capita/day	36	t/day
Transport	Vehicles Travelled	31,577	PKT/capita/year	364	x 10 ⁶ PKT/yr
Carbon	CO2 Equivalent Emitted	7.5	tonnes/capita/year	87	Mt/yr



Structure Plan Results & Resource Footprint (per capita)

		Per Capita	Units	Total	Units
Water	Potable Water Used	142	L/capita/day	2.0	ML/day
Energy	Energy Demand	4.1	MWh/capita/year	59	GW/yr
Waste	Waste Generation	2.8	kg/capita/day	40	t/day
Transport	Vehicles Travelled	27,747	PKT/capita/year	397	x 10 ⁶ PKT/yr
Carbon	CO2 Equivalent Emitted	6.8	tonnes/capita/year	97	Mt/yr



MITIGATION ANALYSIS

The results of the scenario testing were presented to Council officers and Project Managers at the Public Realm and Infrastructure workshop 2 held at Council offices June 21, 2010. At this meeting, it was agreed to take the Concept Plan (High) as the emerging preferred land use scenario and test it against various mitigation measures. Project managers for the five systems identified mitigation measures (infrastructure projects) across the five resource categories: water, energy, waste, transport and carbon.

The projects incorporated in the model are as follows:

WATER: Local Water Harvesting, Water Efficient Practice (low flow fixtures)

ENERGY: Residential & Commercial Built Form Standards, Community Behavioural Change Programs

WASTE: Waste Education Scheme, Composting, Waste to Energy

TRANSPORT: No direct link (transit orientated development does decrease the trip generation though it's quantity is not commonly known.)

CARBON: Indirectly affected by all projects

Note that these projects provide an indicative level of mitigation only and represent an approximate impact on the resource use of the precinct.

RESULTS FROM MITIGATION ANALYSIS OF CONCEPT PLAN 3 (HIGH)

The mitigation modelling identified a number of key findings as shown below. The resource footprint represents the mitigated case (dark green) in comparison to the unmitigated case (light green) and relative to the baseline (Structure Plan).

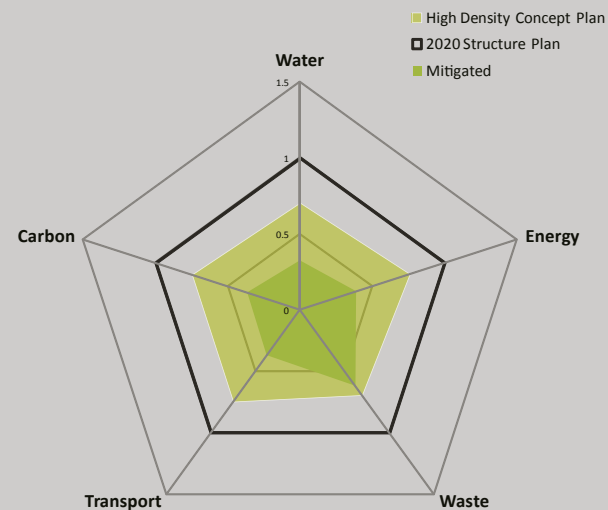
- > Energy and water use per capita drops considerably from the base levels.
- > Consequently the CO₂ equivalent emitted decreases significantly.
- > Waste has a 10% change which is comparably less than water and energy but not insignificant.
- > Totals for water and energy use, as well as transport and carbon, reduce below that projected for the 2020 Structure Plan.
- > Totals for waste remain greater than that projected in the 2020 Structure Plan despite the introduction of the infrastructure projects.

Concept Plan 3 (High) Results and Resource Footprint from Mitigation - RESOURCE USE per CAPITA

		Structure Plan	High Density	Mitigated	Units	% Change
Water	Potable Water Used	1.3	2.0	0.9	ML/day	-54%
Energy	Energy Demand	36	59	30	GW/yr	-49%
Waste	Waste Generation	27	40	36	t/day	-10%
Transport	Vehicles Travelled	247	397	199	x 10 ⁶ PKT/yr	-50%
Carbon	CO2 Equivalent Emitted	61	97	48	Mt/yr	-51%

Concept Plan 3 (High) Results from Mitigation - TOTAL RESOURCE USE

		Structure Plan	High Density	Mitigated	Units	% Change
Water	Potable Water Used	203	142	66	L/capita/day	-54%
Energy	Energy Demand	5.4	4.1	2.1	MWh/capita/year	-49%
Waste	Waste Generation	4.1	2.8	2.5	kg/capita/day	-10%
Transport	Vehicles Travelled	37,244	27,747	13,874	PKT/capita/year	-50%
Carbon	CO2 Equivalent Emitted	9.1	6.8	3.3	tonnes/capita/year	-51%



The graphs represented on the opposite page show the reduction in energy (gas and electricity) and total water and waste demands for the Concept Plan 3 (High) and Mitigated Concept Plan against the Structure Plan. The step down graphs on the left show the reduction in resource demand from various mitigating strategies.

A limited number of targets specific to TCI were supplied and have been placed into the model. Some of these have also been represented in the step down graphs on this page. Some key observations include:

ENERGY

- > As shown by the bar chart on the left, the total water demand in the mitigated scenario is still higher than in the Structure Plan.
- > The combined impact from implementing all the energy projects based around behavioural change and building regulations reduces the energy consumed by approximately 50% as shown by the step down graph.
- > Moreland's target of Zero Net Emissions by 2020 would however require further action to be realised.
- > Co-generation and on-site energy production could contribute to a reduction in carbon emissions. However, unless fuelled by a renewable source the generators would emit some levels of carbon.
- > Off-setting emissions with renewable energy could be required to achieve Zero Net Emissions.

WATER

- > The combination of low-flow fixtures (water demand) and rainwater harvesting mitigation techniques show the Concept Plan 3 (High) achieving the water target level.
- > Potable water consumed is decreased significantly by the rainwater harvesting project dropping the level of l/day below the Structure plan levels as can be seen in the bar graph.

WASTE

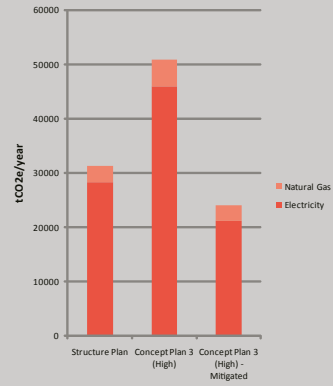
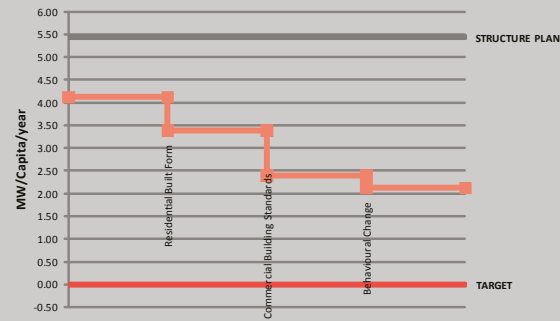
- > No target was set for waste. Waste targets at a State level are currently being investigated and are not including in the IRM model.
- > The waste education program reduces waste generation by approximately 10%.
- > As total waste generated is almost twice that of the structure plan, further projects potentially need to be explored to reduce the amount of waste produced.

SUMMARY

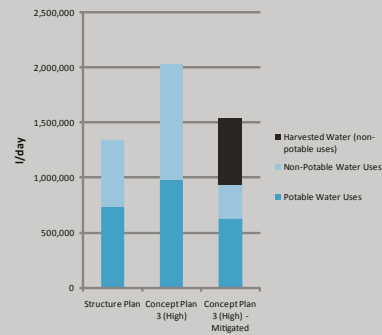
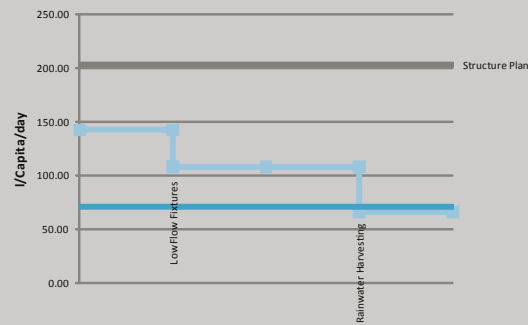
The TCI IRM tool is an interactive program and is not a static source of information. Assumptions made in the investigation of the Public Realm and Infrastructure Strategy have been made to provide an insight into the characteristics of the potential development. The key findings include:

- > Concept Plan 3 (High) is the most efficient resource consumer and generator of the three options evaluated and is approximately 20-30% more efficient than the Structure Plan.
- > Without the introduction of any of the proposed infrastructure projects (business as usual) the total resources consumed and generated increases by approximately 40-60%.
- > Introducing a number of the infrastructure projects to the Concept Plan 3 (High) scenario reduced the total consumption and generation of water and electricity to a lower quantity than projected under the Structure Plan Scenario.

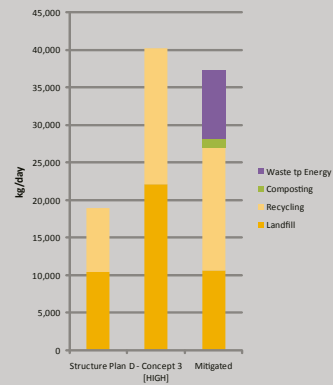
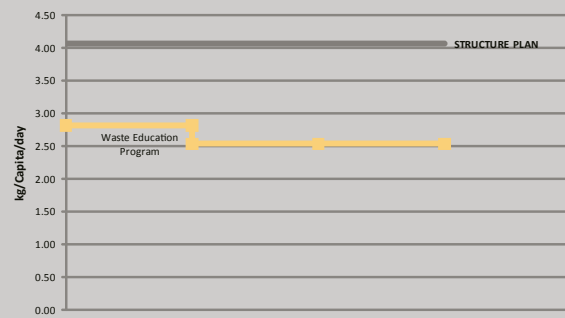
ENERGY



WATER



WASTE





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