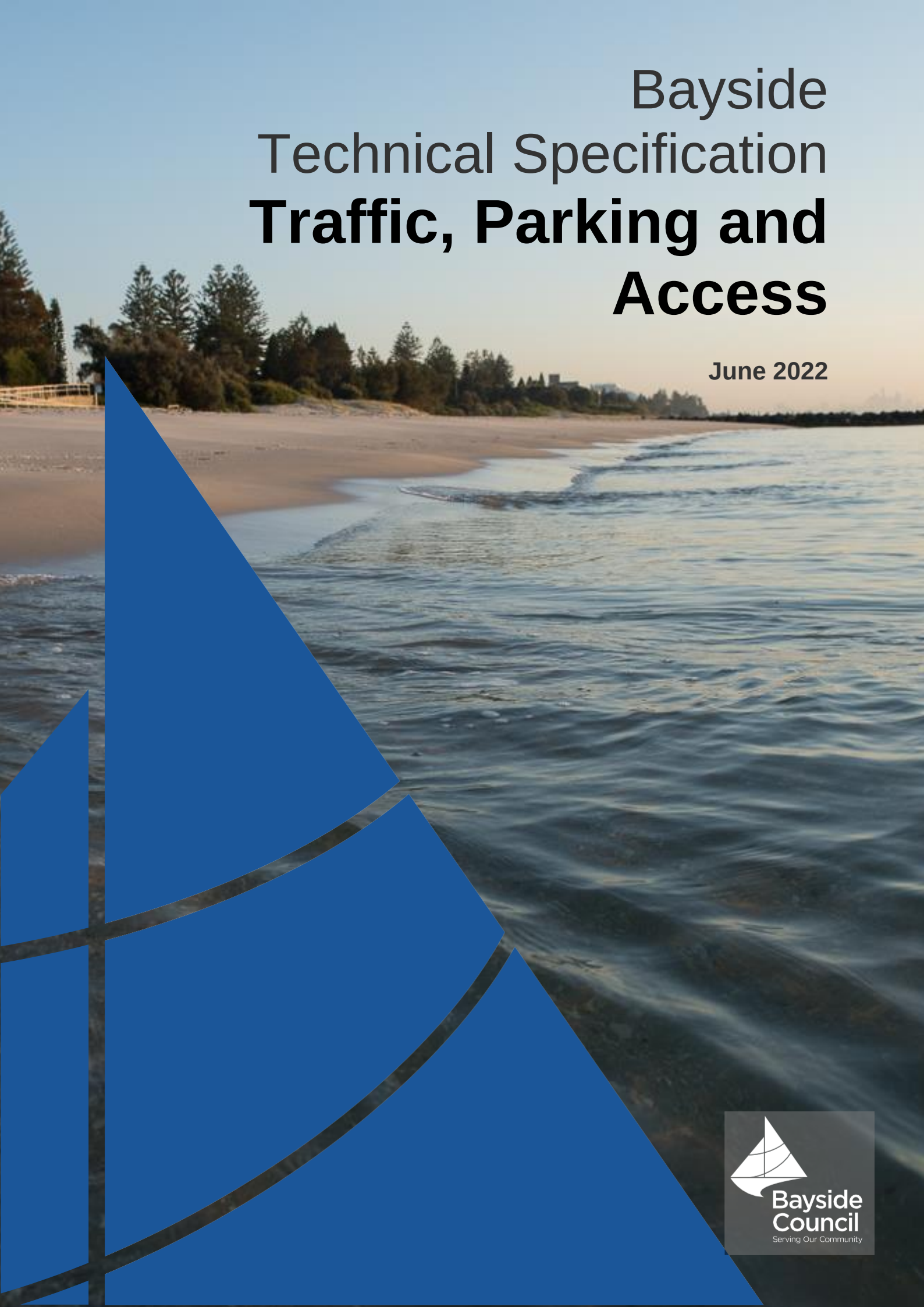

Bayside Technical Specification

Traffic, Parking and Access

June 2022

Bayside Council
Serving Our Community

Contents

1 Preliminary

1.1 Introduction

The Bayside Development Control Plan contains general principles for parking, access, and movement, including required parking rates for new development. This technical specification is developed to provide further detailed information in relation to traffic impact studies, design of parking facilities and pavement, as well as some other design considerations.

This Technical Specification must be read in conjunction with Bayside Development Control Plan (DCP) and any environmental planning instruments that apply to the land.

1.2 Objectives

To provide further details and assist the DCP in relation to:

- Ensuring that the processes for assessment of traffic impacts, and the preparation of traffic studies, are well defined;
- Ensuring that the design of parking facilities meets acceptable standards;
- Ensuring that the requirements of pedestrians, signage, drainage, landscaping, and lighting are satisfied; and
- Providing guidance on the preparation of documents that support the parking facility design.
- Ensure that the demand for transport generated by development is managed in a sustainable manner.
- Ensure that bicycle parking is considered in all development and provided in appropriately scaled developments with facilities such as change rooms, showers, and secure areas for bike parking.
- Design vehicle access and basement layouts and levels to maximise pedestrian safety and create high quality ground level relationships between the building and the public domain.

1.3 Application of the Technical Specification

This Technical Specification shall be applied to the design and construction of parking facilities associated with development within the area of Bayside Council.

This Technical Specification shall be considered as the policy and specifications of Bayside Council in relation the exempt development provisions for vehicle and driveway crossings in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

1.4 Glossary

Access Driveway has the same meaning as AS2890.1.

Domestic Driveway has the same meaning as AS2890.1

Domestic Property has the same meaning as AS2890.1, and generally a Dwelling House, a Dwelling House with a Secondary Dwelling, and a Dual Occupancy are each considered to be a Domestic Property.

Narrow Street means a street where the distance measured from boundary to boundary is 12.2 m or less.

Residential Property has the same meaning as AS2890.1, and generally a Residential Property is property other than a Dwelling House, a Dwelling House with a Secondary Dwelling, and a Dual Occupancy.

Stack Parking means two or more parking spaces that are provided in line, one vehicle behind another, and occupancy of the parking space nearest the parking aisle or driveway obstructs access to the other space or spaces.

2 Traffic and Parking Impact Assessment

The consideration of traffic, parking and access impacts of a development are an integral part of the assessment of development. A traffic impact study (also known as a traffic impact assessment) provides an outline and an appraisal of the traffic, parking, and access issues for a development. The information within it enables Council to assess the impacts.

All traffic impact studies (assessments) shall be undertaken in accordance with the New South Wales Roads and Traffic Authority's Guide to Traffic Generating Development.

Due to the technical approach that is required in the preparation of a traffic impact study, the study should be undertaken by a suitably qualified professional. Typically, this requires the traffic impact study to be prepared by an experienced and qualified Traffic Engineer or Transport Planner.

2.1 When is traffic impact study required?

It is not necessary for all Development Applications to undertake a detailed traffic impact study. However, a traffic impact study should be carried out for development in the following circumstances:

- When a development is Traffic Generating Development and therefore subject to Clause 2.121 of State Environmental Planning Policy (Transport and Infrastructure) 2021; or
- When the type, size, or location of the proposal results in potential impact on the local transport systems; or
- Where the proposal is adjacent to a state road, and/or an important public transport facility;
- Where the development is for a childcare centre; or
- Where required by the Bayside DCP.

2.2 What information is included in a traffic impact study?

The RTA Guide to Traffic Generating Development (2002) states:

> *Information collected in (traffic) studies should reflect the size and type and location of the development as well as its relationship to surrounding developments and the adjacent transport network.*

Therefore, a varied approach should be taken to identifying the extent of a traffic impact study for development of different types, and scales.

Generally, traffic impact studies should cover the topics as specified in the RTA Guide to *Traffic Generating Development.* These topics are summarised as follows:

- Introduction - background to the proposal, scale, mix.
- Existing context - including accessibility by all modes.
- Proposed development- the trip generation across all modes (including cars, commercial vehicles, etc), expected modal split and parking requirements.
- Transport impacts - how the traffic and trips generated by the new development will affect the existing conditions.
- Parking – requirements for off-street, impacts to on-street.
- Mitigation of impacts - what measures the proposal has incorporated to ensure minimal negative impact on the existing transport system in light of additional generated trips, and that promote alternatives to the car.

2.3 Parking studies

Parking studies may be used to assess the car parking demand for a proposed development where parking rates are not specified by Council's DCP or the RTA Guide to Traffic Generating Development, or there is valid justification for a variation to the parking rates.

The approach to completing a parking study should follow the same principles of a traffic impact study. Parking studies should be undertaken by a suitably qualified professional, such as a Traffic Engineer.

The objective of the parking study is to estimate parking demand by making a comparison to one or more existing development. It is important that the existing development chosen for the study is similar in terms of the issues that are likely to affect parking demand. These issues may include:

- the size of the existing and proposed developments;
- the location of the existing and proposed developments;
- the proximity to Classified Roads of the existing and proposed developments;
- the proximity to public transport of the existing and proposed developments;
- the modal split of the existing development and the expected modal split of the proposal;
- the off street parking provision of the existing development and proposed development;
- the on-street parking availability and the extent and configuration of on-street parking regulation around the existing development and proposed development;
- any adjacent developments (including approved developments that have not yet commenced) that may affect parking; and
- any potential local variations due to social or demographic issues.

Where available, comparisons should be drawn to more than one existing development. This provides greater assurance of the results.

Parking studies are required to be based on sound statistical analysis principles. Whilst it is acknowledged that it is not reasonable to conduct surveys over extended periods, analysis of available surveys must be carried out to account for any daily, weekly, and seasonal variations.

Parking studies should be undertaken in accordance with the Austroads *Guide to Traffic Engineering Practice – Part 3: Traffic Studies.*

2.4 Other surveys

In the preparation of traffic impact studies a number of other surveys may be required in order to assess the existing traffic conditions and analyse the traffic issues for the proposed development. Such surveys may include:

- Traffic volume;
- Traffic generating (for uses not covered by the RTA Guide to Traffic Generating Development);
- Commercial vehicle generation;
- Pedestrian and bicycle volumes; and
- Origin and destination.

In all cases where data collection and surveys are required, which then form the background to the analysis of traffic impacts, the data collection and surveys should be undertaken in accordance with the Austroads *Guide to Traffic Engineering Practice – Part 3: Traffic Studies.*

3 Design of Parking Facilities

Parking facilities, including all areas for parking vehicles as well as manoeuvring areas and access to parking areas, must be designed to be efficient, safe, and convenient. Taking account of the characteristics a variety of vehicles described by the Australian Standards (AS2890), the following section describes the method of design of parking facilities.

3.1 Design of off-street car parking

The design of off-street car parking facilities shall be in accordance with the Australian Standard 2890.1, except where varied by this Technical Specification. The variations contained in this Technical Specification are designed to ensure that the objectives of Section 4.6 of the DCP in relation to traffic, access and parking are achieved.

3.1.1 Classification

Off-street car parking shall be classified in accordance with Australian Standard 2890.1.

3.1.2 Parking modules

Off street car parking modules shall be designed in accordance with Australian Standard 2890.1.

In public car parks, small car spaces shall not exceed 10% of the total public car parking allocation. Small car spaces are not permitted in private car parks for employees, domestic property car parks or residential property car parks.

Where nominated in a State Environmental Planning Policy, the design of the parking spaces shall also comply with that policy.

3.1.3 Circulation roadways and ramps

Circulation roadways and ramps in car parking facilities shall be designed in accordance with Australian Standard 2890.1, except as follows:

a. Access driveway and circulation roadway widths less than 5.5m must satisfy the Australian Standard 2890.1 in relation traffic volumes, and in the case of a ramp a Traffic Management System will be required to be implemented in the development to establish a control for priority access on the ramp. Priority should be provided to the vehicle entering the ramp from the nearest frontage roadway, and the system will require automated vehicle detection and signals. Priority should be provided to the vehicle entering the ramp from the nearest frontage roadway, and the system will require automated vehicle detection and signals system.

b. The maximum gradient of straight and curved ramps, in all types of car parks, shall be in accordance with AS/NZS 2890.1.

The design of circulation roadways in Multi Dwelling Housing development should avoid straight sections of roadway by providing curved roadways and siting buildings with a staggered effect to create interest. In larger Multi Dwelling Housing developments, the design of circulation roadways should consider the principles of road design as they relate to subdivision of land, and an appropriate road hierarchy should be established within the development.

3.1.4 Domestic driveways

Domestic driveways shall be designed in accordance with Australian Standard 2890.1, except as follows:

a. The width of a domestic driveway crossing shall be a minimum of 2.7m wide and a maximum of 4.5m wide. The minimum internal driveway width is to be 3.0m minimum, unless the driveway is a curved driveway. Internal driveway widths less than 3.0m may be permitted provided that the minimum pavement width is not less than 2.4m and clearance is provided to obstructions, as for a circulation roadway or ramp section in Australian Standard 2890.1.

b. Where high obstructions are present either side of a driveway leading to a parking space/garage, the minimum width is 3.6m.

c. The gradients of a domestic driveway between the frontage roadway and the property boundary, and over a footpath, shall be as determined by Council upon submission of a Vehicular Entrance / Driveway Application.

d. The maximum gradient of a domestic driveway shall be 1 in 4 (25%). Where a steep driveway is proposed, all vehicles shall be able to enter and exit the parking space(s) in a forward direction via the use of a turning bay or mechanical turntable. This is required because the steep driveway reduces pedestrian sightlines for reversing vehicles which creates a safety issue. In these instances, below ground garages will typically need to be enlarged to accommodate the turning movements.

3.1.5 Access driveway width, location, and layout

An access driveway is the roadway/driveway extending from the edge of the frontage roadway (typically defined by kerb and gutter) to the property boundary. An access driveway may also be referred to as a footpath crossing or vehicular entrance. A layback or gutter crossing is used in conjunction with an access driveway to allow vehicles to cross the gutter whilst maintaining the drainage function of the frontage roadway.

The following design principles are to be considered when planning for vehicular access points:

- Minimise the loss of on-street parking
- Minimise risk of vehicles queueing on a public road reserve

Access driveways shall be designed in accordance with Australian Standard 2890.1, except as follows:

a. Access driveway width shall be in accordance with the following:

(i) Single unit dwellings (including secondary dwelling developments)

For a property with a single road frontage, vehicle access may be provided by:

- A single access driveway of maximum width 4.5m at the boundary, or
- Two access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb (Figure 1).
- In all cases the minimum access driveway width is 2.7m.

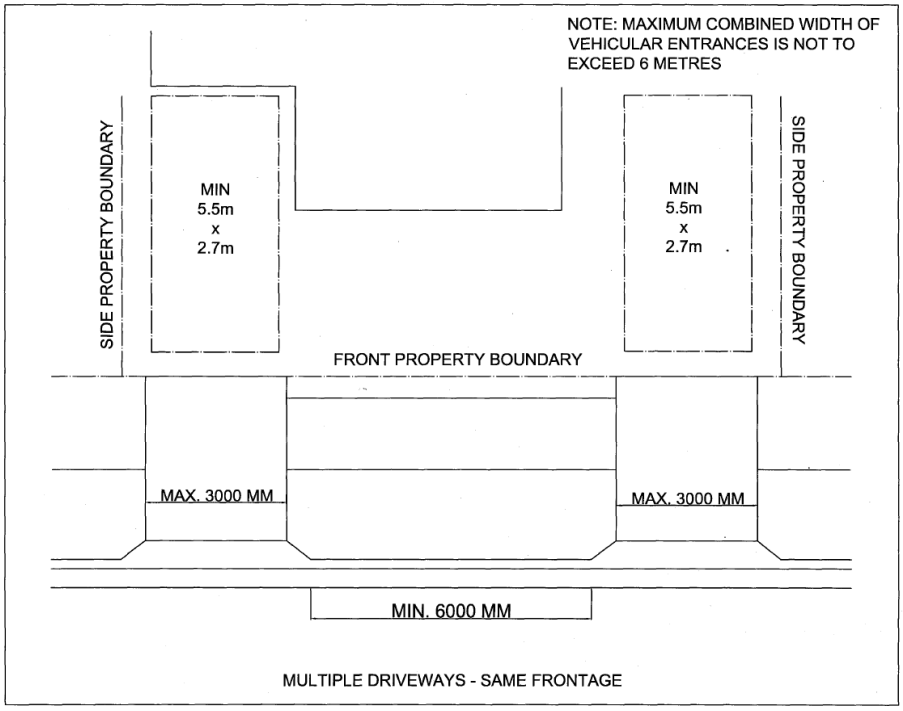

Figure 1

For a property with dual road frontage at the corner of two roads, vehicle access may be provided as for a property with a single road frontage and the additional option as follows:

- Two individual access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb, with preferably one driveway on each frontage (Figure 2).

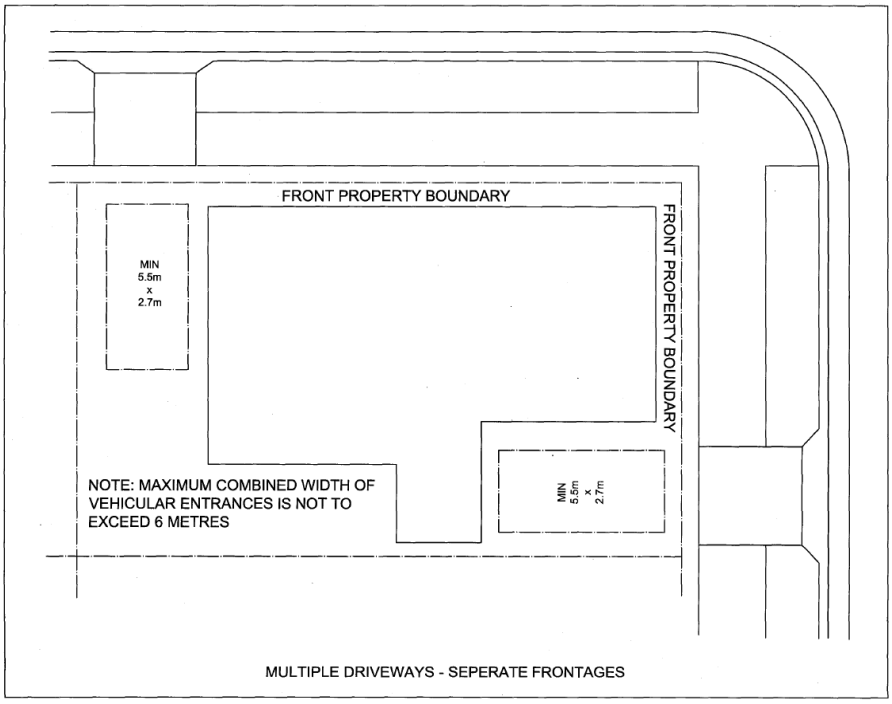

Figure 2

For a property with dual road frontage, where one frontage is a road and one frontage is a narrow street, vehicle access may be provided as for a property with a single road frontage and the additional options as follows:

- Two individual access driveways of maximum width 3m each at the boundary, where one access driveways is from the road and one access driveway is from the narrow street, or
- A single access driveway of maximum width 6m at the boundary where the access is from the narrow street only.

(ii) Dual Occupancies and Semi-Detached Development

For a property with a single road frontage, vehicle access may be provided by:

- A combined single access driveway of maximum width 5.0m at the boundary, or
- Two individual access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb.
- In all cases the minimum access driveway width is 2.7m.
- Council may consider individual access driveways of minimum 2.7m in width and separated by at least 5.4m along the kerb/boundary for smaller constrained sites (existing lot width less than 14m) in order to preserve on-street parking.

For a property with dual road frontage at the corner of two roads, vehicle access may be provided as for a property with a single road frontage and the additional option as follows:

- Two individual access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb, with preferably one driveway on each frontage.

For a property with dual road frontage, where one frontage is a road and one frontage is a narrow street, vehicle access may be provided as for a property with a single road frontage and the additional option as follows:

- Two individual access driveways per dwelling of maximum width 3m each at the boundary, where one access driveway is from the road and one access driveway is from the narrow street, or

- A single access driveway per dwelling of maximum width 6m at the boundary where the access is from the narrow street only.

(iii) Multi Dwelling Housing Development

For a property with a single road frontage, vehicle access may be provided by:

- A single access driveway of maximum width 3.5m at the boundary, or
- Two individual access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb.
- In all cases the minimum access driveway width is 3.0m.
- Larger access driveway widths, in accordance with the Australian Standard 2890.1, may be permitted for developments that have driveway movements in excess of 30 vehicle trips per hour in the peak hour, or a connecting roadway in excess of 30m, or restrictions to sight distance.

For a property with dual road frontage at the corner of two roads, vehicle access may be provided as for a property with a single road frontage and the additional option as follows:

- Two individual access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb, being a maximum of one driveway per road frontage.

For a property with dual road frontage, where one frontage is a road and one frontage is a narrow street, access may be provided as for a property with a single frontage, but access is to be restricted to either the road frontage or the narrow street frontage only.

(iv) Residential Flat Buildings, Mixed Use Developments, Commercial Development, and Industrial Development

Access may be provided by a single access driveway designed in accordance with AS2890.1 and AS2890.2. Multiple driveways are discouraged and should be amalgamated into one driveway. Service vehicle access is to be combined with parking access

(v) Child Care Centres

For a property with a single road frontage, or a property with dual road frontage at the corner of two roads, access may be provided by:

- A single access driveway of maximum width 6.0m at the boundary, or
- Two individual access driveways of maximum width 3m each at the boundary and separated by a minimum of 6m along the kerb if on the same frontage, or one driveway per road frontage.

b. In addition to the access driveway location requirements of the DCP (i.e. restrictions on access to Classified Roads), access driveway location shall be in accordance with the Australian Standard 2890.1. Driveway access is not permitted within any area designated as a *prohibited location*, as identified in Australian Standard 2890.1. When an application for development is lodged and the continuation of use of an access driveway that is located within a *prohibited location* is proposed, the request for re-use is subject to a determination by Council, and dependant upon the following:

(i) Whether access would be physically impossible if use of the driveway in the *prohibited location* was denied, or the driveway is a domestic driveway that is excluded from a prohibition by the Australian Standard;

(ii) The sight distances available for vehicles and pedestrians;

(iii) The volume of traffic using the driveway;

(iv) The off-site conditions of the road environment.

Where Council considers that the request for re-use of the driveway in a prohibited location is not acceptable, the development must be designed in accordance with Australian Standard 2890.1.

c. Sight lines for pedestrians shall be in accordance with the following:

(i) For a domestic property driveway, a 0.9m x 0.9m triangle shall be provided with no obstruction greater than 1.0m above boundary level. Where a low-level driveway is proposed, a 0.9m x 0.9m triangle shall be provided with no obstruction above boundary level.

(ii) For all other developments other than domestic residential property, pedestrian sightlines shall comply with AS2890.1 and AS2890.2.

d. The layout of the access driveway should attempt to minimise the hard stand area whilst permitting a functional design. The vehicular entrance layout shall be perpendicular to the line of the kerb and gutter. The layback component needs to function as part of the gutter for adequate drainage whilst permitting vehicles to pass across it. The access driveway layout may include 500mm splays on either side of the crossing, between the path and the layback. The layback shall be 450mm wide with 450mm wings. The typical access driveway layout is shown in Figure 3.

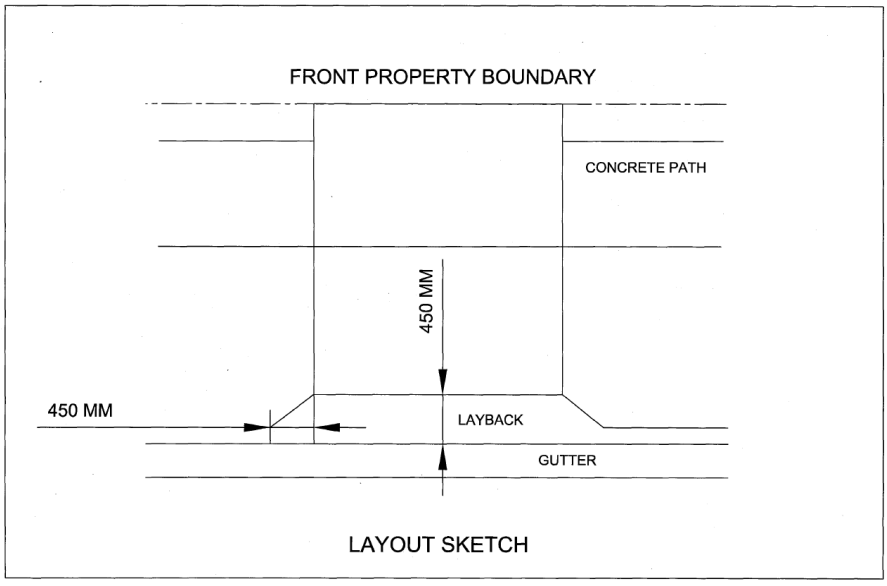

Figure 3 – Layout of an access driveway

e. The footpath or footway area between the front property boundary and the kerb contains assets owned by Council and other parties. At times, an access driveway may be proposed adjacent to an asset or in a conflicting location with an asset, thus requiring relocation or modification of such an asset. However, Council may not allow relocation or modification of its assets, for example modification of extended kerb inlet lintels. Other assets may be owned by other authorities or public utilities. Access driveways shall be located with clearances to objects as follows:

(i) Trees:

- An access driveway shall not be located closer than 1.2m to a tree trunk or within the canopy drip line, whichever is greater. For trees that are listed as Heritage Items the location of the driveway shall be determined by a Heritage Impact Statement.
- Applications that require the removal of an existing mature tree will need to be referred to Council. Council's Tree Preservation Officer will determine whether the tree can be removed or must be preserved.
- The layout of an access driveway adjacent to an existing tree may only be modified by removing the splay. No further modification will be permitted.
- If approval is obtained for removal of the tree, the cost shall be borne by the applicant. Payment will be required prior to commencement of work

(ii) Drainage structures:

- Where a proposed access driveway impacts a drainage structure, the matter will be referred to Council for determination. All determinations are at Council's discretion, and must consider the local drainage requirements.

- If approval is obtained for relocation or alteration to the drainage structure, the cost shall be borne by the applicant. Payment will be required prior to commencement of work by Council.
- Certain types of drainage structures can not be modified, or can only be modified with significant difficulty or cost, and in such cases modification will not be permitted, for example extended kerb inlet lintels.

(iii) Traffic Facilities

- Where a proposed access driveway impacts a traffic stem and sign, the matter will be referred to Council for determination. All determinations are at Council's discretion and must consider the local traffic management requirements.
- If approval is obtained for relocation of the stem and sign, the cost shall be borne by the applicant. Payment will be required prior to commencement of work by Council.
- Where a proposed access driveway conflicts with a traffic facility, other than a traffic stem or sign, the access driveway proposal will be required to be amended, since modification of the traffic facility is generally not permitted.

(iv) Redundant Access Driveways

- Where an application for an access driveway involves relocation of an existing access driveway, the existing access driveway shall be made redundant and converted to normal footpath area i.e. Removal of the layback and replacement with kerb and gutter, including removal of all concrete, and replacement of turf.

(v) External Authority and Utility Installations

- Utility pits, manholes, overhead cabling poles, etc, are assets that are owned and managed by external authorities.
- Where an application for an access driveway conflicts with a utility pit, manhole or overhead cabling pole, the asset must be relocated to a position outside of the access driveway. The minimum clear distance is shall be 0.5m.
- In the case of pits and manholes only, Council may accept an official exemption from the relevant authority, or their authorised representative, stating that they do not object to their asset being located within the access driveway. This exemption does not apply to overhead cabling poles, such as electricity and telecommunication poles.

3.1.6 Gradients of access driveways

Maximum gradients on and near access driveways, other than domestic driveways, shall be in accordance with Australian Standard 2890.1, except as follows:

a. The gradients of an access driveway between the frontage roadway and the property boundary, and over a footpath, shall be as determined by Bayside Council upon submission of an application for Driveway works/frontage works.

3.1.7 Queuing areas

The design of queuing areas shall be in accordance with Australian Standard 2890.1.

3.1.8 Access to mechanical parking installations

Access to mechanical parking installations shall be in accordance with Australian Standard 2890.1.

3.1.9 Use of mechanical parking installations

Mechanical parking installations include car stackers, car lifts, car turntables and any other device that relies on a mechanical system to move, lift, lower or rotate a car.

Mechanical parking installations may be used in parking facilities servicing the following types of parking:

a. Parking for domestic property.

b. Parking for residential property, except parking for visitors.

Mechanical parking installations may not be used in public car parks, or for publicly available car spaces within car parks that are primarily for private use. Council also discourages the use of mechanical systems in private car parks for employees, since the use of mechanical systems in these instances can lead to unfavourable queuing issues.

Council requires all mechanical parking installations to be covered by a positive covenant to ensure the ongoing maintenance and long term viability of the installation.

3.1.10 Design of enclosed garages

An enclosed garage may be a either a structure erected within another parking structure or a stand alone structure, such as a garage on a domestic property.

For right angle access to a garage the required width of apron for manoeuvring purposes shall be in accordance with the Australian Standard AS2890.1 and shall be increased by 0.6m to ensure adequate manoeuvring.

Where an enclosed garage has a frontage to a narrow street or laneway the apron width shall take account of the lawful ability of a vehicle to park on-street opposite the garage, and therefore obstruct the vehicle swept path.

3.1.11 Stacked/tandem parking

Stack parking may be used in the following types of developments:

a. Residential development, if the car spaces are owned or allocated to the same owner or occupant and there is a maximum of two (2) car parking spaces in line.

b. Automotive development (e.g. vehicle body repair workshop, and vehicle repair station), if the parking available for visitors or customers of the development are the unobstructed parking spaces and there is a maximum of two (2) car parking spaces in line.

c. Office premises and other forms of commercial premises, if the parking available for visitors or customers of the premises are the unobstructed parking spaces and there is a maximum of two (2) car parking spaces in line.

d. Stack parking may be not used for parking for people with a disability or for boarding houses.

3.2 Parking for people with a disability

The design of parking spaces for people with a disability shall be in accordance with the Bayside DCP.

Where nominated in a State Environmental Planning Policy, the design of the parking spaces for people with a disability shall also comply with that policy.

3.3 Design of off-street parking for commercial vehicles

The design of off-street parking facilities for commercial vehicles, including loading bays and associated manoeuvring areas, shall be in accordance with the Australian Standard 2890.2, except where varied by this Technical Specification. The variations contained in this Technical Specification are designed to ensure that the objectives of Section 4.6 of the DCP in relation to traffic, access and parking are achieved.

3.3.1 Design vehicles

The design of off-street parking facilities shall be based on the types of vehicles defined by Table 1 and the design vehicle dimensions, including clearance height, listed in Table 2.

Design Vehicle	Description
VAN	A 99.8th percentile vehicle equivalent to the Council's large car.
SRV	Small Rigid Vehicle. The SRV represents light trucks, and large vans exceeding the 99.8th percentile vehicle dimensions (such as Mercedes Sprinter, Ford Transit, etc), to a maximum load capacity of 4.0 tonnes, and typically having a single rear axle and either single or dual tyres.
MRV	Medium Rigid Vehicle. The MRV represents the common service truck having a load capacity of 8 tonnes, and typically having a single

Design Vehicle	Description
	rear axel and dual tyres.
HRV	Heavy Rigid Vehicle. The HRV represents the maximum dimensions of a single unit truck (specialist vehicles excepted), and typically has a load capacity of 12 tonnes. The class also includes 4-axle twin-steer vehicles with a typical load capacity of 16 tonnes.
Council Waste Collection Vehicle	Industrial Refuse Collection Vehicle.
AV	20m Articulated Vehicle. The AV is the largest vehicle for which under normal circumstances, a service facility would need to be designed.

Table 1 Definitions for design commercial vehicles

Vehicle Class	Overall Length	Design Width	Clearance Height
VAN	5.4	2.1	2.3
SRV	6.4	2.3	3.5
MRV	8.8	2.5	4.5
HRV	12.5	2.5	4.5
Council Waste Collection Vehicle	10.5	2.5	4.5m*
AV	20.0	2.5	4.5

Table 2 Design vehicle dimensions and clearance height

**6.4m height required for waste collection area to enable tipping of bins*

3.3.2 Dimensions of loading bays

The minimum dimensions for loading bays shall be in accordance with AS2890.2.

3.3.3 Design considerations

In addition to providing a sufficient number of servicing bays for the above needs, it is important that servicing areas are well located. If goods/refuse have to be trolleyed significant distances, or man-handled within service areas, this can affect the turnover time and hence the average number of bays in use at any one time.

Design guidelines have been developed by Council to assist developers with appropriately guiding the design of their sites with respect to servicing and loading. Council's *Technical Specification for Waste Management* and the 'Better Practice Guide for Waste Management in Multi-Unit Dwellings' (DECC, February 2008) provide information for how waste servicing can be incorporated into varying types of development sites.

Other design considerations are as follows:

a. If access is to be provided from a major road or retail street (street with pedestrian activity), then ALL service vehicles must:

   (i) Enter and leave the site in a forward direction;

   (ii) Traverse the site on circulation roads/aisles to access service areas; and

   (iii) Manoeuvre on-site to allow parking and loading/unloading in a designated service area, without affecting the operations of the parking area.

b. If the access is to be provided from a minor street then MRV/HRV/AV service vehicles as a minimum must:

   (i) Be able to stand wholly contained within the site without occupying any designated queue areas, or blocking access to more than 50% of car parking spaces;

   (ii) Any on-street manoeuvring can be limited to reversing on or off the site in one movement only, entering the site in a reverse direction and exiting the site in a forward direction; and

   (iii) For low traffic generating developments (less than 20 vehicles per hour) the swept path of the design vehicle may cover the overall width of a two-way undivided driveway.

c. If access is to be provided from a minor street then VAN/SRV service vehicles must:

(i) Enter and leave the site in a forward direction;

(ii) Traverse the site on circulation roads/aisles to access service areas; and

(iii) Manoeuvre on-site to allow parking and loading/unloading in a designated service area, without affecting the operations of the parking area.

d. For low traffic generating sites (less than 20 vehicles per hour) with access provided from a minor street, VAN/SRV service vehicles as a minimum must:

(i) Be able to stand wholly contained within the site without occupying any designated queue areas, or blocking access to more than 50% of car parking spaces;

(ii) Any on-street manoeuvring can be limited to reversing on or off the site in one movement only, entering the site in a reverse direction and exiting the site in a forward direction; and

(iii) The swept path of the design vehicle may cover the overall width of a two-way undivided driveway.

e. Where site access is to be provided for Waste Collection service vehicle:

(i) The vehicle can stand wholly contained within the site, with minimal impacts on car park operations;

(ii) Any on-street manoeuvring can be limited to reversing on or off the site in one movement only, entering the site in a reverse direction and exiting the site in a forward direction; and

(iii) The swept path of the vehicle does not have a greater overall width than the access driveway.

For the design of Ambulance bays, the design considerations are as follows:

a. The following factors must be given prime consideration in the design of an ambulance entry.

(i) Ambulance driveways should be exclusive to ambulance vehicles;

(ii) Entrance driveways should indicate entrance restrictions and Ambulance parking restrictions with a clear directory sign, which may read, “AMBULANCE ENTRY” or “AMBULANCE ONLY”. In some locations the sign may need to be illuminated; and

(iii) Surfaces to driveways should be smooth but nonslip and be without uncovered drainage gutters or speed humps.

b. Turning circles and clearances to kerbs, existing buildings or other obstructions are for the current largest size of ambulance vehicle which requires a minimum turning circle of 15 metres.

c. The canopy over the entrance is to be large enough to provide ample cover for two paramedics to unload the patient from the rear of the vehicle.

d. The surface beneath the canopy should be level and non-slip and ideally at the same level as the entrance to the building. Canopies must be clear of the vehicle turning circles and the stretcher handling area.

e. The height of the canopy from finished paved area to the underside should be 3.5 metres (3.2 metres to the underside of any beam). These dimensions are required to accommodate roof mounted radio aerials.

Further information may be obtained from the published website of the Ambulance Service of NSW.

3.3.4 Gradients

The maximum allowable gradients and rates of grade change on circulation roadways used by commercial vehicles shall be in accordance with Australian Standard AS2890.2.

For access driveways used by commercial vehicles, the gradients between the frontage roadway and the property line, and over a footpath, shall be as determined by Council upon submission of an application for Boundary Levels.

Where access driveways and circulation roadways are used by cars and commercial vehicles the maximum gradient and rates of gradient change provisions of Australian Standard AS2890.2 shall prevail.

3.3.5 Mechanical systems

The use of turntables to enable the entry and exit of service vehicles in a forward direction is not a recommended approach by Council. The use of turntables should be seen as an absolute 'last resort' to resolving access issues within constrained sites.

3.4 Design of bicycle parking facilities

The design of bicycle parking facilities shall be in accordance with Australian Standard AS2890.3 and the Bayside DCP.

Where bike parking for tenants is provided in a basement, it is to be located:

(a) on the uppermost level of the basement;

(b) close to entry/exit points; and

(c) subject to security camera surveillance where such security systems exist.

(d) A safe path of travel from bike parking areas to entry/exit points is to be marked.

Access to bike parking areas are to be:

(a) a minimum of 1.8m wide to allow a pedestrian and a person on a bike to pass each other and may be shared with vehicles within buildings and at entries to buildings);

(b) accessible via a ramp;

(c) clearly identified by signage; and

(d) accessible via appropriate security or intercom systems.

(e) Bike parking for visitors is to be provided in an accessible on-grade location near a major public entrance to the development and is to be signposted.

3.5 Design of on-street parking facilities

The design of on-street parking facilities shall be in accordance with Australian Standard AS2890.5. However, the design of on-street parking facilities must also consider the requirements of Council's AUS-SPEC, which outlines the criteria for geometric road design, pavement design, subsurface drainage design, stormwater drainage design, and cycleway and pathway design.

Where applicable, on-street parking will also be required to comply with published Technical Directions of the NSW Roads and Traffic Authority (TfNSW). Where a development is required to provide on-street parking, the design approval of the on-street parking will require the concurrence of the Bayside Local Traffic Committee.

4 Workplace "Green" Travel Plans

In order to reduce the on-site demand and car dependency, commercial and industrial developments are encouraged to develop Workplace "Green" Travel Plans and Transport Access Guides (TAGs). Workplace "Green" Travel Plans and Transport Access Guides can assist staff and customers visiting the site by making good use of public transport, cycling, walking and car sharing for commuting work related journeys and hence reduce car based travel demand. Council has adapted the City of Sydney's approach to travel planning below:

4.1 Introduction

A travel plan is a package of site-specific measures implemented to promote and maximise the use of more sustainable modes of travel. Typically, travel plans support walking, cycling, public transport and car sharing, which are encouraged via a range of actions, promotional campaigns and incentives.

Travel plans are concerned with more than just the installation of facilities such as bike racks and end-of-trip facilities. A travel plan should be considered as a site management tool which incentivises people to make more sustainable transport choices.

Developments can enjoy many benefits as a result of an effective travel plan – parking needs and costs are reduced, staff and residents are healthier and therefore take fewer sick days, and strain on local transport networks is reduced.

Developing a travel plan is not a one-off task. It involves ongoing implementation, monitoring, and review – a travel plan should be a 'living document'. Nominating an individual or a team to oversee the implementation of a travel plan is a crucial component of success, as is gaining support from senior management, strata management or other relevant governing body.

Travel plans can be developed and implemented for a range of development types, including workplaces, residential developments, destinations (such as tourist attractions), schools and educational campuses.

The Bayside DCP contains guidelines around when applicants are generally required to prepare and submit a travel plan as part of the development application (DA) process. However, conditions of consent can require that a travel plan be provided for any new development that Council believes has the potential to generate significant traffic and transport impacts. The vision is to create a city that is green, global, and connected. Supporting and implementing a sustainable transport network is a key component of achieving this vision.

Local and state governments take responsibility for the provision and maintenance of transport services and networks. They also provide guidance for site-level infrastructure through DCP's and other planning controls – for example, the Council requires that end-of-trip facilities be provided within new developments.

However, every new development is also responsible for maximising its contribution to creating a more liveable and sustainable environment. This is achieved by implementing site-specific policies and facilities that are aligned with objectives that encourage uptake of sustainable transport modes.

In addition to providing city-wide benefits, such as the reduction of congestion and pollution, travel planning can deliver a range of benefits to employers, employees, visitors, or residents of a development. Travel plans can:

- Reduce the need to provide parking (reducing costs associated with providing parking and helping to create more affordable housing outcomes);
- Contribute to corporate social responsibility relating to the triple bottom line, and improve corporate image as an innovative and environmentally-aware organisation;
- Help to attract and retain staff (reducing costs associated with staff turnover);
- Contribute to a healthier, happier and more active workplace (reducing costs associated with sick days and an unhealthy, unproductive workforce)1 ;
- Create opportunities for healthier lifestyles and more vibrant, cohesive and accessible communities;
- Provide staff and residents with potential travel cost savings;

- Help to appeal to a new generation of professionals who prioritise location and lifestyle over car ownership;
- Increase the potential market for your development by improving accessibility.

Travel planning is a cost effective means of achieving this range of benefits for a development.

4.2 Requirements:

In order to develop and implement an effective travel plan, a number of key steps are required. These steps ensure that a travel plan is robust, realistic and achievable.

The essential elements of a travel plan include:

- Site audit and data collection, which is crucial for understanding the starting point;
- Objectives and targets that define the direction and purpose of the travel plan. Targets should be specific, measurable, achievable and time-bound;
- Actions that will help achieve the objectives. Actions should provide incentives for using sustainable transport modes;
- A strategy for promoting and marketing the actions;
- Commitment of resources, including financial support and human resources to allow for implementation, monitoring, review and continual improvement of the travel plan;
- A monitoring and review process that sets out a systematic approach to measuring the impact of the travel plan;
- Governance support, including appointment of a Travel Plan Coordinator or Committee.

When developing a travel plan, it is important to remember:

- A travel plan is not simply a list of existing sustainable transport infrastructure and facilities. A travel plan should include descriptions of existing transport conditions to set the scene, and should also identify how people traveling to/from the site will be encouraged to use those facilities.
- A travel plan is not a Transport and Access Guide (TAG). Developing a TAG might be an action that can be included in the plan, but is not the same as creating a travel plan.
- A travel plan should not simply be a list of actions. A travel plan should include the results of the site audit, objectives and targets, identify human and financial resources that will be used to support the plan and describe monitoring and review processes.

Council recognises that when a travel plan is required as part of the development application process, the end user may not necessarily be known to the developer. This may affect the information available to assist in informing baseline data, and in turn developing objectives and targets. In such circumstances, the monitoring and review strategy becomes increasingly important. While the travel plan submitted for approval may describe the initial situation, ongoing review will ensure that the travel plan incorporates baseline data and establishes actions and strategies that are relevant to the context.

4.3 Preparation of the travel plan:

Conduct a site audit and gather data

The second step involves conducting an audit of the site and the transport networks that service it, in order to understand the current situation, potential problems and likely solutions. At a minimum, Council requires that mode-split data for trains, buses, bicycles, walking, car share, motorcycle, car (passenger) and car (driver) are provided. Depending on the location of the development, data for ferries and light rail may also be relevant and should be provided.

The site audit will need to consider:

- Number of people travelling to and from the site each day and the mode they use (though this may be an estimate if the site is a new development)

- Destinations that people are travelling to/from (note that this may not be known until the development is occupied)
- Parking availability and costs
- Public transport services, the frequency of these and destinations to which they run
- Public transport costs
- Safety and accessibility of public transport stops and stations
- Availability of information about public transport
- Connectivity for cyclists and pedestrians, and safety of walking and cycling routes
- End of trip facilities for cyclists and pedestrians
- Location of nearby car share pods
- Opportunities for improving access to and uptake of sustainable transport options

Workplaces should also look to review any relevant company policies to understand what incentives they create. This may include:

- What is the policy/framework regarding the use of onsite parking spaces? What costs are attached to these parking spaces?
- What is the policy/framework relating to fleet vehicles? Do they create incentives that encourage staff to drive to work?
- What is the policy/framework relating to taxis? Do perceived travel time savings result in taxi use being preferred over public transport?
- Are mileage allowances relatively low or high? Are these creating incentives for use of a particular travel mode?
- Do any incentives exist to encourage sustainable transport modes?

For residential developments, there may be building regulations which impact on mode choice. For example, rules not allowing bicycles in lifts or storage of bicycles in common areas. Certain actions may also unintentionally affect travel behaviour – such as poorly located or inadequately secured bicycle parking. A site audit should consider what kinds of travel behaviours might be discouraged or encouraged due to existing actions and policies.

Develop objectives and targets

Objectives and targets are essential components of a travel plan as they help define goals.

When developing objectives, site context is important. For example, if a building is located close to a cycle path, increasing the number of cycle trips may be identified as a key objective.

Targets must be specific, reasonable and achievable, and should be associated with a measurable improvement in mode share. They need to be realistic but ambitious, and must be time-bound so that progress can be assessed against targets.

Objectives and targets should also consider any overarching State Government or Council policies or plans. For example, if a planning document identifies a mode share target for the area this should be addressed within the travel plan.

Outline actions and a promotion and marketing strategy

Actions are the core of a travel plan. Actions outline what strategies will be employed to create incentives to use sustainable transport modes – they are the ‘how’ of a travel plan.

Travel plans need to have a variety of actions that guide strategies relating to promotion, facilities and policies to create incentives for sustainable travel behaviour. If actions are to be staged, a staging strategy should be outlined in the plan.

Travel planning actions should align closely with the objectives and targets of the travel plan – it is important to

choose actions that will result in progress towards targets.

Strategic promotion of travel plans and associated initiatives tends to result in higher uptake of sustainable travel modes. Travel plans should be made available to all stakeholders, and actions need to be promoted to ensure that all staff, visitors and/or residents are aware of the initiatives. Promotion will improve uptake by providing stakeholders with information about upcoming events, changes to facilities and new policies.

Identify resources and governance

A travel plan is not a one-off document – it is a process of ongoing implementation, review and improvement.

Executive level support and commitment is essential. Workplace travel plans should identify the executive level position that will hold overall responsibility for the plan, whilst residential travel plans need to recognise the role and responsibilities of the body corporate and/or owners association.

It will be necessary to appoint a coordinator to oversee the process over time. This might be a single person who can act as a Travel Plan Coordinator, or a committee of people who can work together to implement the travel plan. If the appropriate person is not yet known, consider attaching the role to a particular position in the organisation or building. Attaching the responsibility of implementation to a particular person or position is a necessary element of any travel plan approved by Council.

For workplaces, the staff member who is appointed as a Travel Plan Coordinator should be someone who has a good overview of the activities of the organisation.

For residential developments, the travel plan coordinator might be a member of the Body Corporate, appointed on an annual basis, a staff member from the managing agency, or a motivated resident.

Responsibilities of the Travel Plan Coordinator will include:

- Coordinating implementation efforts;
- Conducting surveys or other data collection processes to measure progress;
- Communicating the travel plan to stakeholders;
- Coordinating events to promote awareness of the plan and associated initiatives; and
- Coordinating marketing and promotional programs.

The Coordinator will also be responsible for monitoring, reviewing and updating the travel plan over time. It is likely that coordinators will require assistance from ‘champions’ to promote specific actions and encourage the uptake of initiatives.

The Travel Plan will require funding to support implementation. Some actions may already be in place and relevant infrastructure, such as cycle parking and showers, will be provided through the development itself. The Travel Plan should identify existing and additional resources required to successfully implement the plan.

Submit the travel plan to Council

Once the travel plan has been prepared it should be ready to submit to Council for approval. The Council may provide feedback or advice about how the plan could be improved, prior to being satisfied that it meets the intent of the development consent condition.

Implement the travel plan

The Travel Plan Coordinator or Committee will be required to oversee the implementation of the actions of the travel plan. These might not all be implemented at the same time but may be staged throughout time as appropriate. There may be some crucial actions that are implemented immediately, while others might take longer to plan and develop.

Before implementing actions, make sure relevant stakeholders are on board. For example, if the travel plan involves reviewing company policies and proposing changes, relevant members of the senior management team will need to be on board to sanction and approve such changes.

Monitor and review the plan

Monitoring and reviewing a travel plan is one of the most critical components of the travel planning process. It is crucial to understand whether – and how – the travel plan is having an impact on mode share. Council requires that on-going monitoring is conducted for a minimum of five years; annual reviews may need to be submitted to Council to enable ongoing monitoring.

A building or organisation should aim to collect new data on an annual (or bi-annual) basis to understand how mode share has changed over time. This will help in understanding whether progress is being made. Surveys can also help to identify which actions are having an impact on people's travel behaviour, and whether some are more effective than others. It might also help to identify ongoing or unresolved issues and barriers that are preventing greater improvement.

Once the data has been updated, the targets and actions of the travel plan will need to be reviewed. The review should consider:

- Are the targets still realistic? Are they still ambitious? Should they be updated?
- Is the building struggling to achieve particular targets? What are the likely reasons for this?
- Are there any gaps with regards to actions?
- What is preventing further improvement on mode share, and how can this be addressed?

The steps outlined above should not be considered as a linear process, but rather an on-going cycle. Travel planning requires regular review and adjustment – a review may reveal the need to reconsider objectives or targets, or to add new actions to create greater incentives for the uptake of sustainable transport choices.

An annual travel survey will be undertaken to assess progress against the baseline data. The results of this survey will be published in an annual report that will detail progress against objectives and targets. The reports are to be submitted to the local government for review and approval. The annual report will identify any modifications to the travel plan that are needed, such as revision of objectives or targets, or the addition or alteration of measures.

Ongoing actions.

A range of incentives are provided to encourage use of sustainable transport modes. Measures intended to produce these incentives include:

- Distribution of free or discounted public transport passes when a dwelling is newly occupied to encourage public transport use and help establish new transport habits amongst residents
- Information about public transport routes provided on the development's website, including maps and timetables;
- Real-time bus information provided at bus stops to assist users in planning their trips;
- Good quality street lighting to encourage walking;
- Provision of seating and shaded areas to encourage walking and physical activity;
- Maps of walking routes made available in public areas and on the website;
- Walking school buses to promote walking to school by children and their families;
- Cycle parking provided at all properties;
- Bicycle user groups established to create a community of cyclists within the development;
- Welcome pack introducing new residents to the sustainable transport options available within the development;
- Cycle training provided for young cyclists;
- 20 miles/hour speed limit in the development;
- Incentives provided to become a member of the Car Share Schemes;
- Parking spaces provided to support a car share scheme.

5 New and Emerging Transport and Parking Facilities

5.1 Electric Vehicle Charging Stations

Electric vehicles charging points aim to address the increase in popularity electric vehicle use and accommodate future demand. Council encourages the installation of dedicated charging points in residential, mixed use and commercial developments to promote more sustainable methods of transport.

The proposed charging station must:

a. Be suitably located to provide for convenient, shared access;

b. Have the capacity to be expanded to accommodate new charging points (through provision of additional pre-cast conduit channels)

c. Be monitored by the Owners Corporation or a 3rd party on behalf of the Owners Corporation;

d. Be installed on a dedicated circuit;

e. Allow for monitoring and individual billing payment for electricity use where applicable;

f. Provide dedicated space for electric vehicles to park and charge; and

g. Accommodating charging points for electric bicycles and mobility scooters to be charged.

5.1.1 Provision and Installation

The installation of EV charging on should be consistent with the State Government Policies *NSW Electric and Hybrid Vehicle Plan Future Transport 2056* and the *Drive electric NSW EV ready buildings*. Council requires a modular/whole of building approach for new medium-high density developments.

All multi-unit residential car parking spaces must be 'EV-Ready'. An 'EV-Ready' car space requires the provision of a backbone cable tray and a dedicated spare circuit within an EV Distribution Board enabling future installation of a smart EV charger and cabling to the EV Distribution Board.

At least 20% of non-residential car parking spaces in development with a total GFA greater than 1000m2 shall be 'EV-Equipped'. An 'EV-Equipped' car space is a car space equipped with EV fast charger that is ready to use on completion of the development. These may be payment operated systems. At minimum, the charger(s) will need to be 'Level 2' fast charging charger – three-phase with 11-22kW power or greater as defined by NSW Electric and Hybrid Vehicle Plan.

EV Distribution Board(s) shall be of provided of sufficient size to allow connection of all car spaces 'EV-Ready' and 'EV Equipped'. EV Distribution board(s) shall be located so that no 'EV-Ready' car space will require a cable run greater than 55m from the parking bay to an EV distribution board and, ensure that no cables will obstruct vehicular circulation aisles. Development shall provide cable trays, electrical cabinets, and conduits sufficient to accommodate the electric circuitry to each 'EV-Ready' and 'EV Equipped' car space.

Development shall provide cable trays sufficient to accommodate the electric circuitry to each 'EV-Ready' and 'EV Equipped' car spaces.

EV Distribution Boards are to be dedicated to EV charging and capable of supplying not less than 50% of EV connections at full power at any one time during off-peak periods, to minimise impacts to maximum demand loads. To deliver this, an EV Load Management System and an active suitably sized connection to the main switchboard is required.

Cables shall be designed to not be a hazard for pedestrians or other vehicles.

EV Load Management System is to be capable of:

a. Reading real time current and energy from the EV chargers under management via ethernet connection;

b. Determining, based on known installation parameters and real time data, the appropriate behaviour of each EV charger to minimise building peak power demand whilst ensuring electric vehicles connected are fully recharged;

c. Scale for residents to engage an EV Load Management provider to provide additional smart chargers to residential car spots over time.

d. Ensuring each apartment is metered separately to their electricity account as part of the 'EV-Ready' system.

Bicycle parking areas should the provision of 1 electrical outlet per 20 bicycle spaces.

Note: Provision may be altered where future EV charging infrastructure specifications supersedes what is stated here.

5.1.2 Signage

"EV-Equipped" EV charging stations must have the following signage identifying:

- Whether the bay is for public or private use only;
- Location and identifying signage (see figures 4 & 5); and;
- Fees and charges, if any.

Figure 4 - 'Electric Vehicle Parking Only' within the parking space

Figure 5 - Preffered parking space signage

5.2 Mechanical Parking

5.2.1 Mechanical Car Parking Applicability

Mechanical Carparking systems are generally not preferable, however are permissible where an applicant can demonstrate to Council that conventional carparking cannot be provided. This may be due to one or more of the following applies:

- The topography or lot size does not reasonably allow a simpler, more conventional parking arrangement.
- An existing building is being refurbished and there is no land available for additional parking. Refurbishment does not include extension of the building so as to increase site coverage or any other works to increase site coverage, all of which have the effect of reducing site area which could be used for conventional parking arrangements.
- There is a demonstrate need for a mechanical parking system and that its provision will not adversely affect the use of the site or the immediate locality;
- In the case of non-residential development, the installations are for long-stay parking.

5.2.2 Details required for proposal

The following details are required when an applicant is proposing a mechanical parking system:

- details of required servicing and ongoing maintenance;
- internal and external dimensions of the device;
- details of the noise and vibration output of the device;
- manufacturer's documentation, including information on service rates;
- general and emergency management procedures.

The design and operation is to the satisfaction of the responsible authority

A report from a suitably qualified traffic consultant is required for any development application that proposes a mechanical parking installation or paid parking station relating to the parking of three or more cars.

As a minimum, the report should provide a queuing analysis, taking into account:

- the proposed peak hour vehicle volumes;
- the service rate (in seconds) associated with the proposed parking equipment; and
- the number of on-site waiting bays required to accommodate the 98th percentile queue at peak traffic levels.

5.2.3 Design requirements

Vehicle access to the mechanical parking installation must be made in accordance with AS 2890.1 (2004). Where there is one car lift proposed, this must be capable of accommodating a B99 vehicle. Where there are multiple car lifts proposed, one car lift must be capable of accommodating a B99 vehicle and the remaining lifts must be capable of accommodating a B85 vehicle. If a car lift is providing access to a car parking area with more than 25 parking spaces, then two separate car lifts must be provided.

Where a development is required to provide parking for people with a disability, a mechanical parking installation must allow people with a disability to exit in the event of breakdown or failure. The use of car-stackers to service accessible parking is not permitted.

The applicant must be able to demonstrate forward entry and exit from the mechanical system (a turn-table is appropriate).

5.2.4 Waiting Bays/Queueing

The design must include sufficient size to ensure that vehicles queuing to enter the mechanical parking installation or paid parking station does not extend beyond the property boundary. Vehicles must not wait on the footpath or roadway.

- The waiting bay(s) must be adequately sized to enable vehicle(s) to wait, while another vehicle exits the site. It is not acceptable for waiting vehicle(s) to reverse onto the footpath to enable another vehicle to manoeuvre off the site.
- The minimum length of each waiting bay is 5.5m.
- Waiting bays must not exceed a maximum grade of 1 in 20 (5%).
- Waiting bays must not obstruct the driveway.

5.2.5 Safety & Operational Requirements

Operation and Management Plan has been prepared and implemented for the mechanical car stacker. The Plan must set out the following, at a minimum:

- The proposed maintenance regime, specifying that the system is to be regularly inspected and checked by qualified practitioners;
- The proposed method of management of the facility, including procedures, directions to users, safety protection systems, emergency response plan in the event of mechanical failure, etc;
- Any person required to operate the parking system must be trained to do so; and
- Provide signage that shall be erected prominently alongside the mechanical parking facility stipulating the maximum height/width/length of vehicle that can enter the facility.

5.2.6 Visitor Parking

Mechanical car parking spaces facilities that require the operation of the system are not allocated for use by visitors.

5.3 Car Share

Proposed car share schemes shall be provided as per the Bayside DCP and comply with the following controls:

a) Car share parking spaces must be publicly accessible at all times, adequately lit and sign posted and located off the street unless council has an on-street car share policy;

b) Car share spaces must be in optimum positions within the parking area to allow ease of access to car share vehicles by residents and the public;

c) Where appropriate, Council may consider the provision of on-street car share spaces in lieu of car parking on site;

d) Car share spaces must always be under the ownership of a building’s Owners’ Corporation as common property;

e) Car share spaces must be used and have authorised use by car share vehicles only;

f) If a car share space is not taken up by a genuine car share provider, the space cannot be permanently or temporarily designated for alternative purposes.

6. Design Documentation Requirements

This section sets out the minimum documentation standards for the design of parking facilities. In most cases the design plans for a parking facility may be prepared by an architect. However, the advice of a suitably qualified professional, such as a Traffic Engineer, may be required in relation to particular documents.

6.1 Plans

Plans are the principal document in the design of a parking facility and indicate most of the features of the parking facility.

Plans for the design of parking areas shall include:

- Geometric layout of the parking facility, identifying all access driveways, circulation roadways, control points, parking aisles, parking spaces, queuing areas, ramps, roads and other features that comprise a parking facility.
- Dimensions of all features where they derive from numerical standards set by this Technical Specification or Australian Standards AS2890.
- Details of the classification of parking for cars.

6.2 Swept path analysis

Swept path analysis is required in most instances to assess the adequacy of the parking facility design.

The swept path diagrams shall be in accordance with Australian standards and include a scale, dimension, legend and be prepared by recognised software (e.g. Auto Track, Auto Turn or equivalent).

The objective of the analysis is to ascertain whether design vehicles achieve the minimum clearances when manoeuvring in a parking facility.

Swept path analysis should be undertaken by a suitably qualified professional, such as a Traffic Engineer.

6.2.1 Swept path templates

For the assessment of off-street parking facilities, the templates from Australian Standard AS2890.1 and Australian Standard AS2890.2 shall be used to assess the adequacy of the design of the facility.

In assessing the adequacy of the design, the clearances from Australian Standard AS2890.1 and Australian Standard AS2890.2 shall be applied.

For the movement of vehicles to and from a frontage roadway, in connection with a parking facility the templates from Austroads *Design Vehicles and Turning Path Templates* shall be used.

6.2.2 Swept path diagrams

Swept path diagrams may be used in the place of swept path templates to assess the adequacy of design of parking facilities. Where a swept path diagram is used, the diagram must be produced by a recognised computer program and must be plotted onto a design plan of the facility.

Swept path diagrams for off-street car parking facilities shall be based on:

a. The base vehicle dimensions for the B99 and B85 cars as defined by Australian Standard AS2890.1.

b. A minimum turn radius of 6.3m for the B99 car and a minimum turn radius of 5.8m for the B85.

c. Swept path clearances in accordance with Australian Standard AS2890.1.

Swept path diagrams for off-street parking facilities used by commercial vehicles shall be based on:

a. The design vehicle dimensions specified in Section 4.3.1 of this Technical Specification.

b. The wheel base, design turning radius and swept circle dimensions from Australian Standard AS2890.2.

c. Manoeuvring clearances in accordance with Australian Standard AS2890.2.

For the movement of vehicles to and from a frontage roadway, in connection with a parking facility the swept path diagrams shall be prepared using the base data from Austroads *Design Vehicles and Turning Path Templates*.

6.3 Sections

The preparation of sections allows for gradients in the parking facility to be assessed. Gradients are critical to the suitability of access, where maximum gradients can prevent vehicle access, and also where minimum gradients can affect the drainage.

6.3.1 Longitudinal sections

Longitudinal sections are required for all circulation roadways, ramps and access driveways where there are changes in gradient requiring consideration of relevant provisions of the Australian Standard AS2890, e.g. in the case of parking facilities for cars, this requires longitudinal sections for changes in gradient exceeding 12.5%.

All longitudinal sections are to be drawn to a scale that enables graphical checking of ground clearances using the templates from the Australian Standard AS2890, e.g. in the case of parking facilities for cars, this requires longitudinal sections at a scale of 1 to 25.

In the case of ground clearance checking for commercial vehicles, the longsection will be required to plot the commercial vehicle clearance using the ground clearance data from Australian Standard AS2890.2.

Sections relating to access driveways must extend in the frontage roadway to enable checking of ground clearance at the movement across the layback or gutter crossing. It must also be acknowledged that any longitudinal section prepared in relation to an access driveway for a development will not be final until such time as Boundary Levels are issued by Council for the property.

6.3.2 Cross sections

Cross sections shall be provided where a design proposes superelevation of a circulation roadway or ramp, particularly in the cases of curved roadways or ramps. Cross sections shall also be provided where a design proposes cross fall in a roadway, or where there is an integration of roadway and drainage facilities, such as drainage swales or drainage channels. Cross sections should be prepared at an appropriate scale, e.g. 1 to 20.

6.4 Details

Details may be included on the plans as required for the design of such elements as follows:

- Kerbs;
- Pedestrian ramps;
- Pavements;
- Signs;
- Linemarking; and
- Traffic management facilities.

6.5 Specifications

A detailed specification for the construction of parking facilities, including the installation of all signs and linemarking, should be developed to ensure that the completed facilities achieve the intended design.

Construction specifications are available from Council for various work elements related to the construction of parking facilities, based on AUS-SPEC.

The potential for variations, in particular to the design dimensions, must be minimised, so that facilities are able to adequately cater for the design vehicle. Variations that reduce the available clearances for the design vehicle can lead to decreased efficiency, and ultimately affect the function and amenity of the parking facility.

6.6 Shared parking registers

In mixed use premises the peak parking demand for the various uses may not always correspond, and in such cases a reduction in the number of parking spaces in the facility can provide for a more efficient parking facility. The DCP identifies the conditions that apply to shared parking concessions. The method of determining whether a shared parking concession applies is to prepare a Shared Parking Register.

Developments that use shared parking concessions to reduce the parking provision of a development may be restricted from the future Strata Title subdivision of the tenancies involved in the shared parking arrangements

An example of the Shared Parking Register is included in Appendix A.

Appendix A

Shared Parking Registers

An example of a Shared Parking Register is outlined below.

In the example, a major development includes residential units, considerable office and retail floor space, a restaurant and a community facility.

Land Use	Amount	Parking Rate	Parking Bays Required (Traditional)	Parking Bay Requirement (Shared Parking)							
				Peak Period 1		Peak Period 2		Peak Period 3		Peak Period 'n'	
				Time:	8am-6pm	Time:	4:30pm-5:30pm	Time:	Wk end 11am-12pm	Time:	
				% Use	Bays	% Use	Bays	% Use	Bays	% Use	Bays
Residential	20x2bed units	2 spaces/ unit	40	100%	40	100%	40	100%	40		
Residential	12x1bed units	1 space/ unit	12	100%	12	100%	12	100%	12		
Residential visitor	32 units	1 space/ 5 units	6.4	50%	3.2	50%	3.2	50%	3.2		
Office	2050sqm (GFA)	1 space / 40sqm	52	100%	52	75%	39	0%	0		
Retail	850sqm (GFA)	1 space / 40sqm	22	75%	16.5	77%	16.94	100%	22		
Restaurant	200sqm (GFA)	1 space / 40sqm	5	50%	2.5	80%	4	50%	2.5		
Community Hall	130sqm (GFA)	1 space / 10sqm	13	25%	3.25	25%	3.25	100%	13		
		Original Total	150.4	Total	129.45	Total	118.39	Total	92.7	Total	

The method of completing the register is as follows:

1. Using the DCP, the parking demand for each individual use is calculated.
2. An assessment is then made of time periods when parking demand may not be at 100%. These are the designated shared parking periods.
3. For each of the designated shared parking periods, the parking demand percentage (% use) is multiplied with the full parking demand.
4. The total parking is calculated within each of the designated shared parking periods.
5. The highest total amongst the designated shared parking periods is then the minimum number of spaces to be provided.

The following conditions apply to the Shared Parking Register:

(a) Parking for residential units must be considered as 100% use at all times.

(b) Parking for residential visitors should be considered as 100% use in the weekday and weekend evenings, and weekend afternoons.

(c) The estimation of % use must be consistent with existing hours of operation or expected hours of operation where the development is a new building.

(d) The calculations should retain flexibility to account for permissible changes of use in the future.