



Integrated Public Transport Service Planning Guidelines

Sydney Metropolitan Area

December 2013

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1. INTRODUCTION

“Transport will always be about people and connections. Like any well-oiled machine, the transport system requires the right parts to be in the right places and to work together at the right times. Transport is complex, but it is essential that we get it right as it is critical to the life of this State and the people who live here.”

Director General, Transport for NSW, 2012(a)

1.1 Purpose

The Integrated Public Transport Service Planning Guidelines provide guidance for service planning activities to support the implementation of the Long Term Transport Master Plan (LTTMP). This document has been designed to provide a starting point for service planning over a 10 year period, with services to be progressively implemented to align with customer demand, government priorities and funding availability. As a result, these guidelines provide indicators that will trigger more detailed consideration of relevant issues, rather than being a target to be achieved.

1.2 Background

The Sydney metropolitan area transport network has grown cumulatively over a number of decades. The need to improve efficiency and effectiveness across the network has been recognised and work has been undertaken on this. The Integrated Public Transport Service Planning Guidelines aim to further develop this work by aligning the service planning guidelines across all public transport modes.

Transport for NSW is the transport authority of the NSW Government providing an integrated approach to the planning and delivery of safe, reliable and efficient transport. A key role of Transport for NSW is the planning and procurement of transport services. This document sets out the network hierarchy, service planning principles and service delivery guidelines to be used for the planning and procurement of bus, ferry, light rail and train services in the Sydney metropolitan area to ensure integrated service delivery.

The spatial area for the use of these guidelines is shown in Figure 1 and includes metropolitan bus services, metropolitan ferry services, light rail services and train services delivered by Sydney Trains.

Figure 1 Sydney Metropolitan Area



Service planning provides a framework for developing and implementing public transport services in an integrated fashion that considers land use patterns, customer values, demand and operational specifications in an environment of continuous improvement.

The Integrated Public Transport Service Planning Guidelines for the Sydney metropolitan area provide a tool to support improvements to bus, ferry, light rail and train services over the short to medium term (up to 10 years). These improvements are informed by the NSW Long Term Transport Master Plan (LTTMP) and the individual modal plans for bus, ferry, light rail and train. The guidelines strive to achieve a balance between service frequency and service coverage, simplicity and legibility of the network.

These guidelines also support efforts by Transport for NSW on a number of NSW Government initiatives. These initiatives are outlined in Table 1 below.

Table 1 NSW Government Initiatives

NSW Government Initiatives	
Initiative	Relevant Linkages
NSW 2021: A Plan to Make NSW Number One	The guidelines support a number of priority actions identified under Goal 7: Reduce Travel Times and Goal 8: Grow Patronage on Public Transport by Making it a More Attractive Choice, including: <ul style="list-style-type: none"> ○ Increase the frequency of train, bus and ferry services ○ Ongoing review of train, bus and ferry timetables ○ Increase the frequency and efficiency of public transport services through improvements to timetabling and better service coordination
NSW Long Term Transport Master Plan	The guidelines reflect the principles and network structure identified through the Master Plan process and support integrated service planning and delivery across bus, ferry, light rail and train services
Transport for NSW Corporate Plan 2012-17	The guidelines support the major areas of focus of improving transport services and operations and growing the transport system

1.3 Travel in Sydney Metropolitan Area

Residents of the Sydney metropolitan area made over 16 million trips per weekday and 4.8 million trips on an average weekend day during the 2011/12 financial year. Sydney residents travelled a total of 142 million kilometres on an average weekday. The number of weekday trips increased by 0.8%, while the total kilometres travelled increased by over 3% from the previous year. This means that individual trips on average were longer than previously. While the number of trips for social/recreational and educational purposes increased, travel for work related purposes and personal business declined for the seventh consecutive year. This is consistent with the growing uptake of mobile internet and communication technologies. Sydney residents favour travel by private vehicle, with seven out of ten trips made in private vehicles.

A focus on integrated service planning for public transport requires an understanding on current performance where customers are transferring between different public transport services. In the 2011/12 financial year, 80% of public transport journeys made on an average weekday by Sydney residents had only one public transport leg. Of the other 20% who transferred between services, nearly 87% used only two public transport legs, with relatively few journeys using three or more legs. Table 2 shows the key transfers between services and the percentage they represent of the market of customers using two or more public transport legs. The highest numbers of transfers were at the major train stations, respectively, of Central, Town Hall, Wynyard and Parramatta.

Table 2 Key Transfers between Public Transport Services in Sydney Metropolitan Area

Key Transfers between Public Transport Services in Sydney Metropolitan Area		
Rank	Transfer between services	% of more than one public transport leg
1	Bus, train	40%
2	Train, train	25%
3	Bus, bus	16%
4	Bus, train, train	4%
5	Bus, bus, train	4%

Source: Transport for NSW, 2012(b)

Customer research conducted by Transport for NSW provides insights into integrated service planning for public transport services. In relation to current performance across all modes of public transport, research has found that 85% of customers surveyed were satisfied with their service and 6% were dissatisfied. When surveyed on the ease of connection with other public transport services, 73% were satisfied and 11% were dissatisfied. Research also suggests there are four broad propositions that will encourage more people to use public transport. These propositions reflect the trade-offs customers consider in making their travel choices and evaluating where they get best value for money. They also provide the basis of actions that Transport for NSW can take to target, evaluate and measure strategies to improve public transport services. The four propositions are outlined in Table 3.

Table 3 Customer Value Propositions for Public Transport

Customer Value Propositions for Public Transport	
Time	<ul style="list-style-type: none">• Travel time• Frequency• Reliability• Convenience
Systems and efficiency	<ul style="list-style-type: none">• Information and technology• Ticketing• Interchange
Reassurance	<ul style="list-style-type: none">• Safety• Accessibility• Friendly and helpful staff
Comfort	<ul style="list-style-type: none">• Environment, including temperature, space and cleanliness• Other passengers

Source: Transport for NSW, 2012(c)

Based on the current performance of the transport network and the findings of customer research, there is a role for an integrated public transport network in the Sydney metropolitan area. Changes in the future to the way transport services are planned and delivered will see the need for integration grow in importance over time.

1.4 Objectives of the Integrated Public Transport Service Planning Guidelines

The Integrated Public Transport Service Planning Guidelines for the Sydney metropolitan area provide the foundation for short and medium term service planning (up to 10 years) by Transport for NSW across bus, ferry, light rail and train services. In doing so, the objectives of the guidelines are to:

- Support a transparent, evidence based and multi-disciplinary approach to service planning
- Provide guidance to transport planners and practitioners on service planning considerations using a consistent approach across public transport modes
- Align service planning outcomes with strategic transport directions outlined in the NSW Long Term Transport Master Plan

1.5 Structure of the Integrated Public Transport Service Planning Guidelines

The Integrated Public Transport Service Planning Guidelines for the Sydney metropolitan area set out the principles and framework for service planning. The guidelines focus on two key elements – the strategic transport planning framework and the strategic public transport service planning framework. The Guidelines outline the approach identified in the NSW Long Term Transport Master Plan and translate this into guidelines for the delivery of transport in the short to medium term (up to 10 years).

The strategic transport planning framework outlines an integrated approach in bringing together transport and land use and aligning these considerations along corridors of demand. Further information on this approach is provided in section 2 of the guidelines.

The strategic public transport service planning framework outlines an integrated approach in responding to strategic transport planning by identifying guiding principles and guidelines to support the delivery of public transport service improvements. Further information on this approach is provided in section 3 of the guidelines.

2. STRATEGIC TRANSPORT PLANNING FRAMEWORK

The NSW Long Term Transport Master Plan (LTTMP) introduces a four step transport planning framework that integrates transport planning with land use planning. This approach takes an integrated planning perspective across all transport modes and the whole transport network.

The integrated transport planning approach brings together land use and transport planning, to identify transport corridors of demand which link the places between which people want to travel. It considers the level of demand along each corridor, the capacity of the corridor to meet current and future demand, and the type of transport service and network response required to meet customer needs on that corridor. This also informs the public transport service planning requirements for the transport network.

2.1 Step One: Integrating Transport with Land Use Planning

The Department of Planning and Infrastructure develops land use plans to guide and facilitate sustainable growth in NSW. These plans aim to carefully manage the expansion of residential and commercial development across NSW to ensure our cities, towns, suburbs and neighbourhoods retain their amenity and liveability.

A key aspect of transport planning is the NSW Government's formal decision to develop the NSW transport system in a way that fully supports the NSW Department of Planning and Infrastructure's creation of a hierarchy of strategic centres. This hierarchy of strategic centres classifies different types of urban centres according to their function. Through this approach, the Department of Planning and Infrastructure and Transport for NSW will support the development of strategic centres and precincts that are highly accessible through good transport links, making them attractive locations for economic development and employment growth. This hierarchy will enable us to better link land use and transport planning.

2.2 Step Two: Identifying Corridors of Demand

The second step in the transport planning process uses the land use plans to forecast the travel demand corridors that will be created by the location and type of population and employment growth. These mode-neutral corridors connect activity centres and are held together by interchanges.

The LTTMP identifies 46 demand corridors connecting Sydney's many centres, as outlined in Figure 2.

Figure 2 Sydney's Main Demand Corridors



Source: Transport for NSW, 2012(c)

2.3 Step Three: Defining the Performance Required from the Transport Network

The third step in the transport planning process is to define the performance required from the transport network. This considers transport planning hierarchies, the Strategic Transit Network and interchange network hierarchy.

2.3.1 Transport planning hierarchies

For each corridor the nature of demand must be assessed to define the appropriate service levels. To achieve this, the LTTMP identifies a planning hierarchy framework that considers land use classification, road network and road freight type to classify public transport in each hierarchy.

The network hierarchies are used to define the function and role of each corridor or interchange on the basis of data and the service standards required to fulfil that function (service capacity, speed and frequency). Further information on the transport planning hierarchies is provided at Table 4.

Table 4 NSW transport planning hierarchies

Network	Land use classification	Public transport	Roads	Road Freight	Interchange
Level 1	Major centre	Mass Transit Network	Arterial network (includes motorways)	Primary	Regional cities and major centres
Level 2	Town centre	Intermediate Transit Network	Sub-arterial network	Secondary	Town centres
Level 3	Village	Local Transit Network	Local network	Tertiary	Local villages

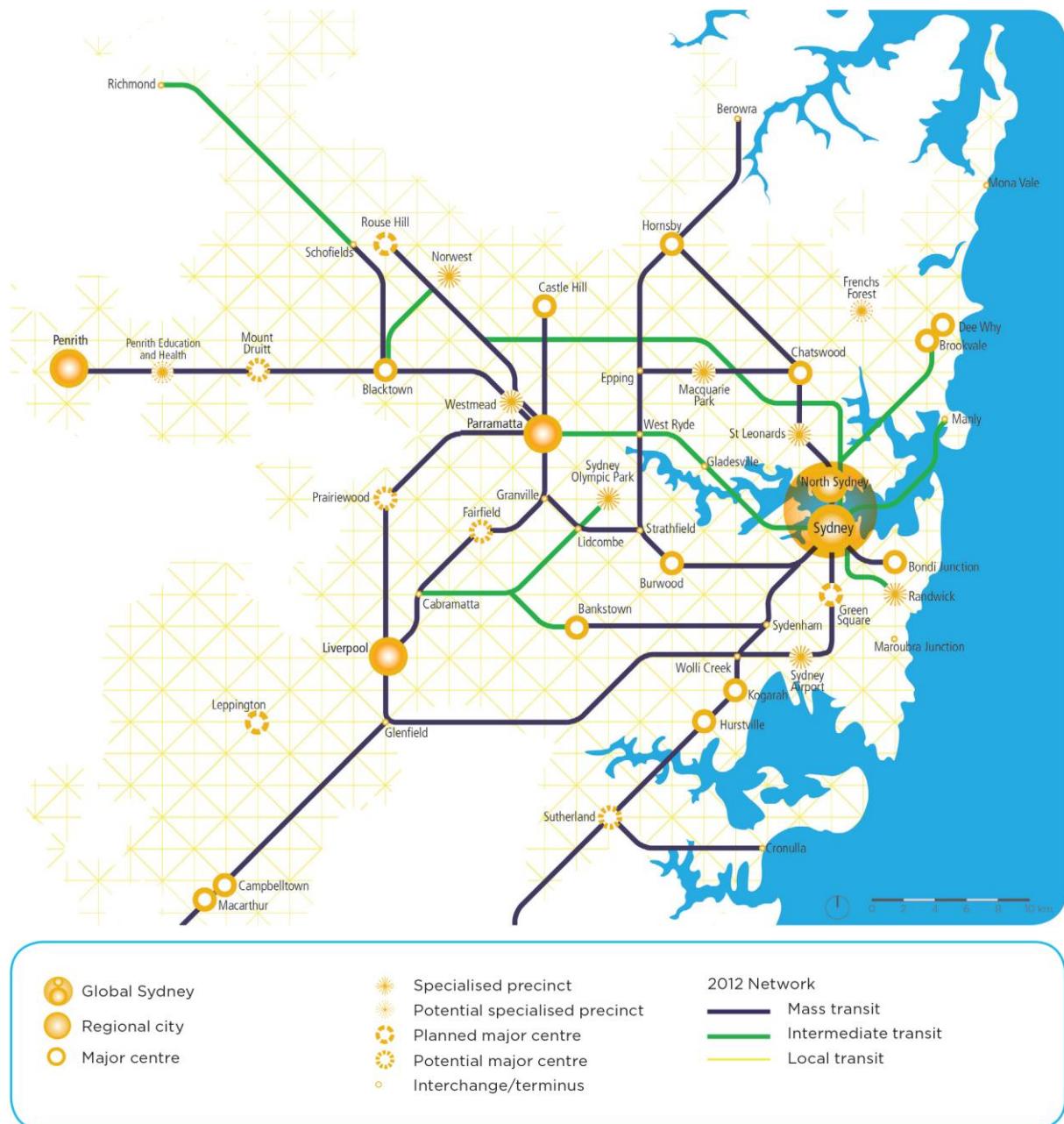
Source: Transport for NSW, 2012(c)

2.3.2 Strategic Transit Network

The Strategic Transit Network sets out the required public transport service levels based on an assessment of customer requirements along each corridor, taking into account capacity, speed and frequency. It does not set out modal requirements. The decision as to which transport mode best delivers the required service levels is the next step in the planning process.

The Strategic Transit Network is structured to give three tiers of service requirements - mass transit, intermediate transit and local transit. This network also aligns to the hierarchy of centres identified in land use plans as shown in Figure 3. Further details on the service attributes of the Strategic Transit Network are provided in Table 5.

Figure 3 Sydney Strategic Transit Network - Showing Hierarchy of Centres



Source: Transport for NSW, 2012(c)

Table 5 2012 Sydney Strategic Transit Network

Service attribute	Mass Transit Network	Intermediate Transit Network	Local Transit Network
Service type	Rapid, express and all-stop services	Express services in peak periods and all-stop all day services	All-stop services only
Frequency	High frequency in peak periods. Good all day frequencies in off-peak periods	All day frequencies with higher frequency in peak periods	Relatively low frequency due to extensive coverage. Moderate frequencies in peak periods
Service span	Operates all day	Operates all day	May not operate during some periods
Priority	Operates mostly in separate right of way	Combination of separated right of way and on-street	Predominantly on-street
Speed (average, includes scheduled stops at bus stops, stations, and other stops such as traffic lights or signals)	All stop services with speeds in the range 25 to 60 km/h; express services with speeds up to 70 km/h	All stop services with speeds in the range 15 to 25 km/h	All stops services with speeds less than 20 km/h
Network coverage	Confined to a relatively small set of direct, high volume corridors	May have coverage over a wider area than Mass Transit Network. Still has a focus on direct connections	Extensive coverage over wide area. Mostly indirect and sometimes circuitous connections
Capacity	High	Medium	Lower
Station/stop spacing	Longer spacing to provide faster travel times. Typically at least 800 metres for bus and longer for rail	Generally long stop spacing (400 metres to 800 metres)	Short stop spacing to improve accessibility
Station access	Long access distances. Important role for park and ride in outer areas	Shorter access trips. Mostly walking access and some local bus	Predominantly walking access

Source: Transport for NSW, 2012(c)

2.3.3 Interchange network hierarchy

The interchange hierarchy is a key part of the decision making process about how interchanges will be developed in the future. The interchange hierarchy is aligned to centres as outlined in land use plans. Further details on the service characteristics for interchanges are provided in Table 6.

Table 6 Classification and Characteristics of Interchanges in NSW

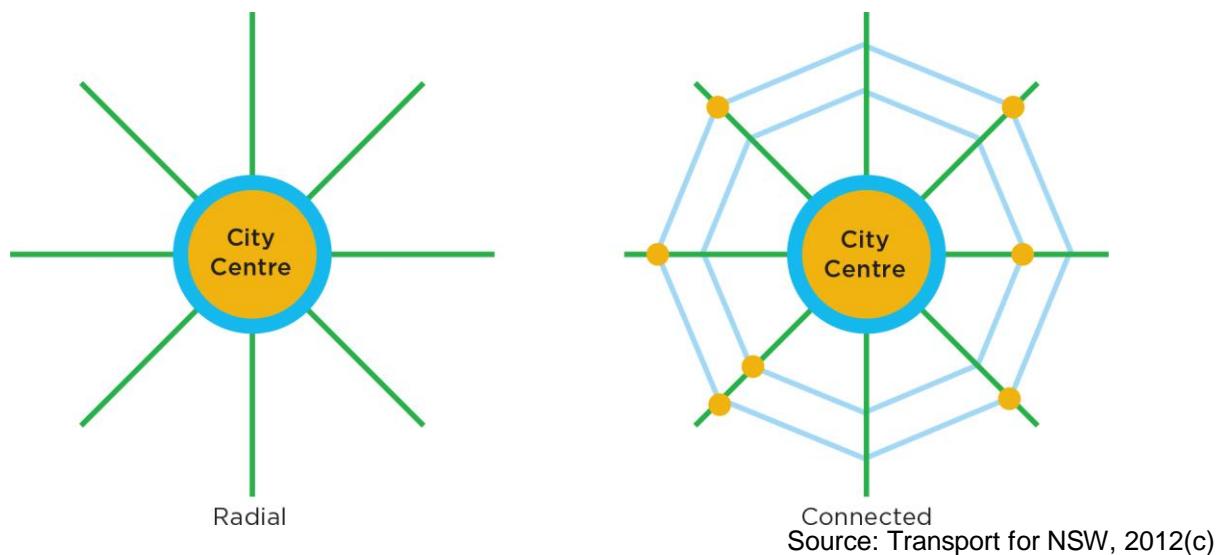
Service level	Major centres and regional cities	Town centres	Village/Local
Service characteristics	Large interchange places: multi-purpose trips	Transport hub linking rail, bus, bike, walk, drop-off facilities	Localised interchange infrastructure
	Good commercial potential	Medium sized interchange places	Entry to network rather than interchange between modes
	Integrated with town centres – vibrant and busy	Residential/small commercial potential	Shelter, lighting, network and timetable information
	Major interchange facilities – rail, bus, ferry, bike, walk, drop-off facilities	Integrated with town centres – vibrant and busy	Walk, drop-off facilities, bus to rail, bus to ferry
	Minimal commuter car parking	Some have commuter car parking	Some have commuter car parking

Source: Transport for NSW, 2012(c)

2.4 Step Four: Moving Towards a Connected and Integrated System

Sydney's current transport network is best described as a radial system, requiring customers to travel to the city centre or major centres. The LTTMP identifies the focus for future transport planning as a connected transport system. A connected transport system supports more cross-city and cross-region journeys by way of new travel opportunities through increased interchange, as geographically shown in Figure 4.

Figure 4 Interchange Opportunities on a Radial Versus a Connected Network



In relation to an integrated system, this refers to integration across the transport modes as well as integration of transport, land use planning and decision-making to increase public transport use. In the context of public transport services, integration can be defined as all modes of transport, being bus, ferry, light rail and train, operating as one seamless entity for the benefit of the customer. Integrated service provision results in a seamless journey that is as door to door as possible.

3. STRATEGIC PUBLIC TRANSPORT SERVICE PLANNING FRAMEWORK

This framework provides a guide for the planning of integrated public transport services within the context of a connected network. The framework is intended to be used as a guide rather than a performance measure. Performance is measured on the implementation and monitoring of network and service improvements over time.

The framework consists of a set of guiding principles and guidelines that are common to all public transport types. Guidelines for individual modes types are also included to reflect the unique characteristics of each public transport mode.

3.1 Guiding Principles for Integrated Public Transport Service Planning

The guiding principles provide an overarching framework for service planning for bus, ferry, light rail and train services. These guiding principles underpin Transport for NSW's integrated service planning; however, they are not intended to prescribe a particular outcome. These guiding principles are based on a multi-disciplinary approach that considers service integration, customer interface, assets and infrastructure and policy. These principles support an evidence based planning approach.

The guiding principles for integrated public transport service planning are:

- Provide a positive customer experience
- Consider government policy
- Develop an integrated public transport network
- Plan for asset and infrastructure usage
- Foster continuous improvement

Further details of the guiding principles for integrated public transport service planning are outlined in Table 7.

Table 7 Integrated Public Transport Service Planning – Guiding Principles

Integrated Public Transport Service Planning – Guiding Principles				
	Principle	Considerations	Outcome	Description
1	Provide a positive customer experience	<ul style="list-style-type: none"> • Offer clear and accessible information for customers • Identify ticketing and fare requirements for customers • Plan for high quality facilities to ensure customer security, comfort and ease of use • Encourage good pedestrian access to public transport services • Consider the needs of all customers in using the network 	Customers are encouraged to use public transport services	Customers consider public transport as an integrated ‘product’. Service planning needs to align with other elements of the ‘product’ where possible, including customer information, ticketing, facilities and pedestrian access, and needs of all customers using the network
			Customers are able to comment on the service planning process	This includes: <ul style="list-style-type: none"> • Broad or targeted community consultation on significant changes • Community information on new services and minor service changes
			Changes to public transport services consider overall customer benefit	Changes to public transport services will result in the majority of customers being better off Changes to public transport will take into account the Customer Value Proposition (CVP) priorities
2	Consider Government policy	<ul style="list-style-type: none"> • Examine existing policy, commitments and long term strategies • Identify areas for policy development and input to strategic development 	Public transport services provided align with transport and government initiatives	Considers current strategic planning framework, including NSW 2021, Long Term Transport Master Plan and modal strategies, and Metropolitan Strategy for Sydney
			Public transport services are made available in new growth areas as early as possible	Establishing services in new growth areas from an early stage facilitates greater take up of services
			Public transport services provide value for money to customers and taxpayers	Service planning takes into account funding and resource availability
3	Develop an integrated public transport network	<ul style="list-style-type: none"> • Plan for a hierarchy of mass, intermediate and local transit services in a network • Provide simple and direct services that can be easily remembered • Follow consistent timetables and stopping patterns for services • Offer services for a range of time 	The overall journey time is more important than individual trip times	The journey time comprises the on-board journey time and wait between services, commencing from the time of departure of the first trip to the arrival time of transport on the final trip
			The public transport network is effective and easy to understand and navigate	This includes: <ul style="list-style-type: none"> • High level of consistency for span of hours, headways and stopping patterns across similar service levels and days of week • Easy to understand timetables

Integrated Public Transport Service Planning – Guiding Principles				
	Principle	Considerations	Outcome	Description
		<ul style="list-style-type: none"> • Coordinate convenient transfers between services • Increase network connectivity • Planning for an integrated network is undertaken using an evidence based approach 		<ul style="list-style-type: none"> • Route simplification
			The public transport network considers the needs of different customer groups	<p>The network considers the needs of customers travelling out of peak hours and needing to make reliable off-peak journeys.</p> <p>The network provides accessible options for travel</p>
			Changing between public transport services is as convenient as possible	<p>This includes:</p> <ul style="list-style-type: none"> • Clear information on transfer arrangements • Minimising wait times as best as possible, with consideration to frequency of connecting services • Supporting transfers with appropriate facilities and connecting infrastructure where required • No cost or low cost transfers
4	Plan for asset and infrastructure usage and operation	<ul style="list-style-type: none"> • Provide services making best use of existing assets and infrastructure • Plan for future asset and infrastructure procurement and development 	Appropriate distribution of public transport services across the network	<p>Public transport services aim to maximise customer mobility with available resources.</p> <p>Spatial coverage and demand are considerations of service distribution</p>
			Service provision increases network productivity	Service planning to optimise loadings and vehicle utilisation
			Public transport services are integrated with future asset and infrastructure improvements	<p>Opportunities for public transport service improvements are identified for future asset and infrastructure projects.</p> <p>Assets are procured with stewardship and whole of life management in mind.</p> <p>Ensure the functional requirements for interchanges are provided for.</p>
			Public transport services are accessible	Accessible public transport options are provided, including customers who have a disability, use a wheelchair or mobility device, are elderly or travelling with a pram or luggage

Integrated Public Transport Service Planning – Guiding Principles				
	Principle	Considerations	Outcome	Description
5	Foster continuous improvement	<ul style="list-style-type: none"> • Respond to land use changes in existing and new growth areas • Monitor performance of services based on an evidence based approach covering demand, service delivery and customer feedback • Undertake periodic reviews to ensure that services continue to reflect demand and customer expectations 	An evidence based approach is used for service planning and improvement	<p>Develop and maintain an evidence base to inform service planning and improvement. This is supported by analysis by the operator and/or Transport for NSW on:</p> <ul style="list-style-type: none"> • Trends or changes in demographics • Land use patterns and planning • Access to key centres • Infrastructure enhancements • Patronage data • Customer feedback • Customer research • Corridor analysis • Operational specifications
			Service planning continues to be efficient and effective	<p>This includes:</p> <ul style="list-style-type: none"> • Matching the appropriate mode to the task • Minimising duplication of services • Prioritising investment based on need across the whole network • Undertaking service planning in a timely manner, consistent with organisational policies and contractual requirements • Aligns with the service delivery chain for public transport services

3.2 Guidelines for Integrated Public Transport Service Planning

The guidelines for integrated public transport service planning provide a series of baseline indicators that support a consistent approach to the planning and development of public transport services. The guidelines focus on four areas – capacity, coverage, service provision and performance.

3.2.1 Service Capacity

Service capacity considers the number of people who can be moved by each vehicle and how to make the most efficient use of existing infrastructure when moving people. While the integrated public transport service planning guidelines are to be used across all service modes, the unique characteristics of each service type also need to be taken into consideration. The indicative capacities for public transport used as part of integrated public transport service planning are provided in Table 8.

Table 8 Integrated Public Transport Service Planning – Service Capacity

Integrated Public Transport Service Planning - Service Capacity				
Service Mode	Description	Indicative Capacity*	Vehicle	Considerations
Bus	A key component of the overall transport system expanding the train catchment area and providing an important intermediate mode for cross-regional connections. Provides limited mass transit	Standard bus – varies from 50 to 60 people. High capacity bus – varies from 100 to 120 people.		Can be demand responsive, offer local services and tailored to provide mass transport along strategic corridors or low level service provision Services can be changed quickly to service emerging issues, new operating conditions and link regions that cannot be connected by other modes
Ferry	A specialised transport mode and an internationally recognised symbol of Sydney	Dependent on the class of vessel and varies from 150 – 1,100 people.		An attractive form of transport for both commuters and tourists Service area is constrained and services are affected by weather conditions more than any other mode
Light Rail	An important interchangeable mode of transport, providing flexibility for cross-regional connections while also facilitating mass transit services	Dependent on the vehicle, 206 – 300 people, at 4 people per m2.		Supports corridors of high demand levels with linkages to major centres and activity generators Linked with other public transport services to support a connected network
Train	Mass transit mode, able to move many people quickly	Up to 1,200 people.		The backbone of the public transport system Provides a platform that supports all other transport modes Typically actions implemented on the train network affect all other transport modes

* = Indicative vehicle capacity includes both seated and standing customers.

3.2.2 Service Coverage

Planning for integrated service provision needs to consider the ratio of service to be directed to support customer demand and coverage to extend the reach of public transport services as far as possible. Coverage guidelines support the provision of a minimum level of service to the majority of households in metropolitan Sydney, supplemented by higher frequency services on key corridors and areas of higher customer demand. Service coverage guidelines support the development of a connected and integrated public transport network that facilitates travel opportunities to meet the needs of different customer groups.

The guidelines are to be considered as a starting point when determining service coverage. It is recognised that uniform geographic coverage cannot always be achieved due to constraints such as topography and street network restrictions. Local characteristics and evidence need to be considered when determining service coverage.

Service coverage considers ease of access, proximity to households, consideration of the walking component of travel and the percentage of the households covered within a defined distance. This has traditionally been an important standard as part of public transport service planning for the Sydney metropolitan area and will continue to do so.

Coverage guidelines support a connected transport system by providing direct or linked service for cross-city and cross-regional journeys. Coverage guidelines provide an economic and environmental benefit by providing a viable, cost effective alternative to car travel. Coverage guidelines also provide social benefits by ensuring social inclusion and equity of access to all members of the community.

The service coverage guidelines are provided in Table 9.

Table 9 Integrated Public Transport Service Planning – Service Coverage Guidelines

Integrated Public Transport Service Planning - Service Coverage Guidelines	
Weekday	90% of households to be within 400 metres (as the crow flies) of a bus stop, ferry wharf, light rail station or train station between the hours of 06:00 – 22:00.
Saturday	90% of households to be within 400 metres (as the crow flies) of a bus stop, ferry wharf, light rail station or train station between the hours of 09:00 – 18:00.
Sunday and Public Holiday	90% of households to be within 800 metres (as the crow flies) of a bus stop, ferry wharf, light rail station or train station between the hours of 09:00 – 18:00.

As part of service coverage an understanding of catchment areas for public transport modes informs the planning and development of public transport services. Further details are provided in Table 10.

Table 10 Integrated Public Transport Service Planning – Service Catchment Areas

Integrated Public Transport Service Planning - Service Catchment Areas		
Strategic Transit Network	Service Type Attribute	Description
Mass	Rapid, express and all-stop services. Focus on train services. Limited bus services on strategic corridors.	Walking catchment is generally within 800 metres (as the crow flies) of the station for train services. Access to the catchment widens with travel by public transport services or by car or bicycle.
Intermediate	Express services in peak periods and all-stop all day services. Focus on some bus, ferry, light rail and train services.	Walking catchment is generally within 800 metres (as the crow flies) of the stop/wharf/station for priority bus, ferry, light rail and train services. Access to the catchment widens with travel by public transport services or by car or bicycle.
Local	All-stop or tailored services only. Focus on bus and ferry services.	Walking catchment is generally within 800 metres (as the crow flies) of the stop/wharf for bus and ferry services. Walking catchment is generally within 400 metres (as the crow flies) of the stop for bus services.

Service coverage is also a function of the service days and service periods. In order to achieve network simplicity in an integrated network, standard service days and service periods are to be observed when planning for public transport services, as outlined in Tables 11 and 12 respectively.

Table 11 Integrated Public Transport Service Planning – Service Days

Integrated Public Transport Service Planning - Service Days	
Period	Description
Weekday	Monday – Friday
Saturday	Saturday
Sunday	Sunday
Public Holidays	Public holidays, both national and state. Operators advise which timetable will be used. ¹

Table 12 Integrated Public Transport Service Planning – Service Periods

Integrated Public Transport Service Planning - Service Periods			
Period	Mass Transit Network	Intermediate Transit Network	Local Network
Overnight	Services that operate from 24:00 – 06:00 as required.	Services that operate from 24:00 – 06:00 as required.	Additional services provided as required between 18:00 – 09:00.
Base	The base level of services operated 7 days a week from 06:00 to 24:00.	The base level of services operated 7 days a week from 06:00 to 24:00.	Frequent – The base level of services operated 7 days a week from 06:00 – 22:00.
			Standard - The base level of services operated 5 - 7 days a week from 09:00 to 18:00.
			Tailored - tailored services operate as required.
Shoulder	Shoulder services may operate for an hour pre peak or post peak.	Shoulder services may operate for an hour pre peak or post peak.	Shoulder services may operate for an hour pre peak or post peak.
Peak	The morning peak is 06:00 – 09:00 and the afternoon peak is 15:00 – 18:00 on weekdays excluding public holidays.	The morning peak is 06:00 – 09:00 and the afternoon peak is 15:00 – 18:00 on weekdays excluding public holidays.	The morning peak is 06:00 – 09:00 and the afternoon peak is 15:00 – 18:00 on weekdays excluding public holidays.
	The school peak may create a demand for service that needs to be managed outside of base service level provision.	The school peak may create a demand for service that must be managed outside of base service level provision.	The school peak may create a demand for service that must be managed outside of base service level provision.

The definition of peak periods is taken from the NSW Long Term Transport Master Plan. Peak periods may vary by mode from this definition, however all services are

¹ Transport for NSW specifies some train timetables for public holiday periods.

to meet to defined peak period. Where additional peak services are required services should be delivered as the Shoulder period. Where service delivery is varied, the impact on the integrated network needs to be considered.

Local needs may vary from the service periods specified. Where variations to the service periods are considered, evidence of the need for a variation is to be collected and documented.

Across most public transport services, demand varies on Saturday and Sunday with peak demand being experienced at different times on the two days. Demand also varies across public holidays depending on the nature of the holiday. As a result, service days have included Saturday, Sunday and public holidays as different days. When determining which timetable is to be used on a public holiday, Transport for NSW and operators need to take into consideration connecting services and the timetables they will be operating, particularly in relation to where there is an increase or decrease in the number of service provided during a public holiday period.

3.2.3 Service Provision

Service provision considers the components required for quality service delivery and sets out the guidelines that need to be met to achieve this. The service provision guidelines, as outlined in Table 13, should be used as a starting point when planning public transport services across all modes.

Table 13 Integrated Public Transport Service Planning – Service Provision Guidelines

Integrated Public Transport Service Planning - Service Provision Guidelines	
Guideline	Description
Service frequency will not fall below hourly	Minimum hourly service provision, unless service is a targeted service.
Consistent running time between stops	Unless required due to circumstances such as peaks the running times between stops should be consistent. Where running times are different in the peak they will be consistent in the AM and PM peaks.
Consistent timetable journey time for each trip	Same journey time from start to finish for each trip. Service operating in base and peak periods may have different journey times to take into account changed conditions. Where journey times are different in the peak they will be consistent in the AM and PM peaks.
Service stopping patterns will be repetitive	Minimum variants to stopping patterns in the peak and off peak. Where stopping patterns are different in the peak they will be consistent in the AM and PM peaks.
Provide even spacing of services	Where services are not operated as turn up and go then clock-face, memory timetables should be implemented. Services depart at regular intervals and at the same number of minutes past each hour. Where spacing of services is different in the peak they will be consistent in the AM and PM peaks.
Services will have a consistent span of hours	This provides a simple and consistent message on all first and last services.
Provide accessible services for all commuters	Service provision in line with the Transport for NSW Disability Action Plan. Accessible services refers to both the infrastructure (stops and interchanges) and the transport modes.

A connected transport network is also supported through integration of timetables where possible to minimise travel time for customers. Guidelines for this approach are outlined in Table 14.

Table 14 Integrated Public Transport Service Planning – Timetable Integration Guidelines

Integrated Public Transport Service Planning - Timetable Integration Guidelines	
Guideline	Description
Transfer opportunities should respond to the frequency of connecting public transport services.	Services that meet at a frequency greater than 15 minutes can rely on 'turn-up-and-go' services to facilitate connections. Services that meet at a frequency less than every 15 minutes should be timetabled to the same frequency or a derivative of that frequency. As an example, if a service is operating to a 15 minute frequency, services meeting it should operate at a 15, 30 or 60 minute frequency.
In peak periods, transfers between services should be timetabled at between 5 – 10 minutes.	The proximity of the services and competition for space needs to be taken into consideration when determining the transfer time.
In base periods, transfers between services should be timetabled at between 5 – 15 minutes.	The proximity of the services and competition for space needs to be taken into consideration when determining the transfer time.
Where there are inbound and outbound services, priority for transfers should be given to the service operating in the peak direction.	Where possible, services should be timetabled so that passengers on both inbound and outbound services can transfer. Where this is not possible priority for transfers should be given to inbound services for the morning peak and outbound for the afternoon peak.
All services should focus on the need for connection, either through turn-up-and-go services or timetabled connections.	Particular attention should be given to services with a low frequency or where there are specific traveller needs (eg school student transfers). Connections are generally timetabled to meet but do not wait if a service is running late.
Where multiple services meet, service transfers/timetable integration should be targeted to the most common transfers.	Integration across all services may be difficult at major interchanges (eg Parramatta) where customers come in and leave on a multitude of services. This level of planning requires knowledge of customers' movements.
When transferring between services passengers travelling on an accessible service should expect to transfer to another accessible service without incurring additional journey time.	Transfer between accessible services without a journey time penalty regardless of whether the transfer is between modes or across a single mode.
Consideration is to be given to stopping locations to minimise perceived transfer penalty for customers transferring.	The proximity of stops and ease of transfer can directly influence a customer's perception of the transfer penalty.
The first and last services with the earlier starting or finishing time will have planned transfers.	Planned transfers may not be in place during the day where services are frequent but first and last services should have planned transfers.
The timetable to be used for public holidays will be based on demand, with consideration given to integration with other service types.	Public holiday services will operate at a minimum on a Sunday timetable. In determining service levels, demand needs be considered as well as integration with other service types.

3.2.4 Service Performance

Service performance considers service patronage, operational performance, customer feedback and the rate of take up of new services. It also considers the

overall network design and the network's responsiveness to changes in the public transport service environment.

Ongoing service performance monitoring and review is vital to achieving services that meet the needs of the customer and contribute to the overall viability of the network. Service review is generally conducted at a regional or modal level.

The indicators outlined in Table 15 are to be considered when undertaking a service review.

Table 15 Integrated Public Transport Service Planning – Service Performance Indicators

Integrated Public Transport Service Planning - Service Performance Indicators		
Patronage	Total patronage this financial year	Number
	Total patronage previous financial year	Number
	Change in total patronage	Percentage
	Routes with significant growth	Route number, name, % increase
	Routes with significant decline	Route number, name, % decrease
Operational Performance	On-time running this financial year	Percentage
	On-time running previous financial year	Percentage
	Change in on-time running	Percentage
	Boardings per km this financial year	Number
	Boardings per km previous financial year	Number
	Change in boardings per km	Percentage
	Capacity utilisation	Percentage
Customer Feedback	Customer satisfaction	Percentage
	Complaints this financial year	Number
	Complaints previous financial year	Number
	Changes in total complaints	Percentage
	Key complaints raised	Description, percentage
	Key service issues raised	Description
Customer Value Proposition	Time	Yes/No, description
	Comfort	Yes/No, description
Urban Growth	New release areas	Yes/No, precinct name/s
	Development infill and renewal areas	Yes/No, precinct name/s
	Scale	No. of houses / dwellings/ etc
	Time	Years
Operator Feedback	Operational performance	Yes/No, description
	Service considerations	Yes/No, description
Review Outcomes	Service proposals	Description
	Travel time and reliability proposals	Description
	Timetable proposals	Description

A key element of the Government's urban release strategies is to have public transport services in place from the commencement of development. The early establishment of public transport services is important so that a public transport culture is established from day one. Initial patronage on such services will be low as development progresses.

Starting a new service requires a multi-criteria assessment of the potential demand generation and the impact on any current services. This could consider future population growth, alignment with strategic transport plans, system availability and service operational requirements.

Another element of performance is the level of customer loading on public transport services. Loading guidelines are used to adjust the frequency of services based on loads relative to capacity and minimum service frequencies. Services may operate at a greater frequency than the minimum service frequency guidelines require. Where a service operating at a frequency above the minimum frequency fails to meet the minimum load guidelines, the service should be reviewed with a view to services being reduced. Further details of these indicators are provided at Table 16.

Table 16 Integrated Public Transport Service Planning – Minimum Load Guidelines

Integrated Public Transport Service Planning - Minimum Load Guidelines			
Route Type	Peak	Base	Overnight
All route types	>80% seated capacity	>40% seated capacity	>40% seated capacity

3.3 Guidelines for Modal Service Planning - Bus

The integrated public transport service planning guidelines apply across all modes of public transport. In addition to these tools there are a number of bus specific guidelines that need to be considered as part of the integrated planning process.

Figure 5 shows the bus network design hierarchy, including how each level relates to the Strategic Transit Network. This hierarchy is to be used when considering service provision.

Figure 5 Bus Network Design Hierarchy

Rapid	Suburban	Local
<ul style="list-style-type: none"> Frequent ‘turn up and go’ services without the need for consulting a timetable 13 routes (2 Growth Centre routes, 5 new end-to-end services and 6 established routes) Stops every 800 metres to 1km Investment in bus priority infrastructure for fast and reliable journeys. 	<ul style="list-style-type: none"> A mix of frequent ‘turn up and go’ and timetabled services 20 cross-metropolitan routes initially, including 8 new end-to-end services Additional Suburban routes to be identified and introduced Stops every 400 metres Bus priority targeted at key pinch points to speed up services. 	<ul style="list-style-type: none"> Timetabled services Completes the network, providing services such as local shopping services, CBD shuttles, peak expresses Stops every 400 metres Peak express services with variable stop spacing Services use local streets and roads, and bus priority for peak express connections.

Source: Transport for NSW, 2013(c)

3.3.1 Service Capacity

Bus services are generally classified as intermediate and local services, with limited mass transit services. Standard buses have a capacity of up to 60 people, with high capacity buses being able to transport up to 120 people.

3.3.2 Service Coverage

The opportunity to provide bus service coverage to within 400 metres of 90% of households will be considered dependent on resources.

3.3.3 Service Provision

The Sydney Metropolitan Bus Service Contract gives Transport for NSW the responsibility for developing contract service levels and approving timetables. Service design will consider service kilometres and hours, operating requirements and the number of available buses. Submissions for a new bus route or a change to a bus route are covered as part of the contract arrangements.

In addition to the integrated public transport service planning guidelines, specific bus service guidelines for service provision and timetable integration and service frequency are outlined in Table 17 and Table 18 respectively.

Table 17 Bus Service Planning – Service Provision Guidelines

Bus Service Planning - Service Provision Guidelines	
Guideline	Description
Customers should be taken as close as possible to their destination.	<p>At major centres such as shopping precincts stops will be as close as possible to the assumed destination, however complicated or indirect routings should be avoided.</p> <p>At public facilities, such as hospitals, stops will be as close as possible to the main entrance.</p>
Routes should be designed so that they provide a reasonably direct journey for the majority of customers.	<p>Routes generally to be between 30 – 60 minutes in duration.</p> <p>Diversions from the fastest or shortest route (between termini) to be no more than 20% of the time or distance.</p> <p>Deviations in excess of 20% may be considered if the generators near a route are of sufficient size to warrant deviations.</p>
Each route is to be divided into section points.	<p>The range of section point lengths should be between 1.3 km and 1.9 km and the average length of section points within each route should be 1.6 km.</p> <p>Sections should be logical and common across intersecting routes, acknowledging that this may result in some sections being longer or shorter than the range specified.</p>

Table 18 Bus Service Planning – Timetable Integration Guidelines

Bus Service Planning - Timetable Integration Guidelines	
Guideline	Description
Where multiple bus services connect at an interchange, planning for connections should be based on the most common transfers.	An example is at Parramatta Station. Where a number of buses and trains meet, connections should be based on the most common transfers.
For bus to ferry planned transfers buses should arrive at wharves between six and ten minutes before scheduled ferry departure.	The direction of the transfer is generally determined by the time of day, inbound for the morning peak and outbound for the afternoon peak, as well as the most common transfers.
For ferry to bus planned transfers buses should depart wharves between three and ten minutes after scheduled ferry arrival.	The direction of the transfer is generally determined by the time of day, inbound for the morning peak and outbound for the afternoon peak, as well as the most common transfers.
For bus to train or train to bus the recommended transfer time is between five and ten minutes during peak hours and five and fifteen minutes during base periods.	The direction of the transfer is generally determined by the time of day, inbound for the morning peak and outbound for the afternoon peak, as well as the most common transfers.

Bus service planning is also informed by specific minimum service frequency guidelines that are informed by the role of each route as part of the network. These guidelines are outlined in Table 19.

Table 19 Bus Service Planning – Minimum Service Frequency Guidelines

Bus Service Planning – Minimum Service Frequency Guidelines					
Strategic Transit Network	Mass Transit Network	Intermediate Transit Network	Local Transit Network		
Tier	Rapid	Suburban	Local		
Days of Operation	7 days	7 days	Frequent	Standard	Tailored
Weekday Pre-Peak 05:00 – 06:00	15 – 30 mins	30 mins	As required	As required	As required
Weekday Peaks 06:00 – 09:00 15:00 – 18:00	5 – 10 mins	10 mins	10 – 15 mins	15 – 30 mins	As required
Weekday Inter-peak (base) 09:00 - 15:00	10 mins	15 mins	15 mins	30 – 60 mins	As required
Weekday Early Evening (base) 18:00 – 22:00	10 – 15 mins	15 – 30 mins	15 – 30 mins	As required	As required
Weekday Late Night 22:00 – 24:00 Weekend / Public Holiday Night 19:00 – 22:00	15 – 30 mins	30 – 60 mins	30 – 60 mins	As required	As required
Weekday Early AM 24:00 – 05:00	As required	As required	As required	As required	As required
Weekend Early AM 22:00 – 07:00					
Weekend and Public Holidays (base) 07:00 – 19:00	15 mins	15 mins	15 – 30 mins	30 – 60 mins (if in operation for the relevant day and/or time period)	As required

Unless exceptional cases exist, bus services should operate at no less than the minimum service frequency. Transport for NSW and operators may choose to operate services at greater than the minimum frequency. In circumstances where services are operating at greater than the minimum frequency consideration of connections between public transport services should be undertaken.

3.3.4 Service Performance

In reviewing the performance of bus services, the indicators outlined in Tables 20 and 21 are to be used to ensure the best utilisation of the available capacity. These indicators should be considered in addition to the service performance guidelines across all public transport modes. Reviews are usually conducted at the contract or regional level to ensure integration of services.

Table 20 Bus Service Planning – Service Performance Indicators

Bus Service Planning - Service Performance Indicators					
Strategic Transit Network	Mass Transit Network	Intermediate Transit Network	Local Transit Network		
Tier	Rapid	Suburban	Local		
			Frequent	Standard	Tailored
Boardings per revenue km is greater than	> 1.5	> 1.0	> 1.0	> 0.2	N/A
Boardings per revenue km is less than	< 3.5	< 2.0	< 2.0	< 1.0	N/A
Patronage exceeds % of legal bus capacity*	85%	85%	85%	85%	85%
Passengers required to stand**	> 30 mins	> 30 mins	> 30 mins	> 30 mins	> 30 mins

* At maximum load point and averaged by the number of trips operated during any 20 minute period.

** Averaged over a period of time and taking into account passenger turnover. Where a passenger chooses not to catch a bus due to excessive load or potential excessive standing time they should have a service that gets to their destination no more than 15 minutes earlier or later than the original service.

Table 21 Bus Service Planning – On-Time Running Guidelines

Bus Service Planning - On-Time Running Guidelines	
Key Performance Indicators	Definition
At least 95% of Published Timetable Trips and Headway Trips commence each Trip On Time.	Trip On Time means, for Published Timetable Trips, a Contract Bus departing a Transit Stop no more than 1 minute 59 seconds early and no more than 5 minutes 59 seconds late compared to Timetable or for Headway Trips means commencing each Headway Trip within 5 minutes 59 seconds of published Headway.*
At least 95% of Published Timetable Trips and Headway Trips leave the mid-point Transit Stop on each Trip On Time.	Informed by Sydney Metropolitan Bus Service Contract.
<5% of Published Timetable Trips arrive at the last Transit stop of each Trip Late.	Informed by Sydney Metropolitan Bus Service Contract.

* Definition taken from the Sydney Metropolitan Bus Service Contract.

Source: Transport for NSW, 2012(d)

In instances where public transport service patronage falls below a defined level, bus services may continue to be provided to meet coverage requirements. However service planning would also be used to review the most appropriate mode of transport or the characteristics of a service.

3.4 Guidelines for Modal Service Planning - Ferry

The integrated public transport service planning guidelines apply across all modes of public transport. In addition to these tools, there are a number of ferry specific guidelines that need to be considered as part of the integrated planning process.

The Sydney Ferries network comprises eight routes which serve 39 wharves across Sydney Harbour and the Parramatta River. A trunk route operates between Circular Quay and Manly. Local ferry services operate around the Inner Harbour and along the Parramatta River. Other contracted and deregulated services also operate in Sydney Harbour and other maritime areas in Pittwater, Hawkesbury River and Port Hacking.

3.4.1 Service Capacity

Ferry services are generally classified as local. A small number of ferry services may be classified as intermediate, such as the service between Circular Quay and Manly. Ferries have a capacity of 150 – 1,100 dependent on the class of vessel.

3.4.2 Service Coverage

No additional ferry service planning guidelines are provided.

3.4.3 Service Provision

The Ferry System Contract and other ferry contracts for the Sydney metropolitan area give Transport for NSW the responsibility for developing contract service levels and approving timetables. Service design will consider service hours, operating requirements and the lease of available ferries. Submissions for a new ferry route or change to a ferry route are covered as part of the contract arrangements.

Deregulated, charter and tourist ferry services are not covered by these service planning guidelines as arrangements are undertaken by the ferry operator.

In addition to the integrated service planning guidelines, specific ferry service guidelines on service provision, timetable integration and service frequency are outlined in Table 22, Table 23 and Table 24 respectively.

Table 22 Ferry Service Planning – Service Provision Guidelines

Ferry Service Planning - Service Provision Guidelines	
Guideline	Description
Routes should be designed so that they provide a reasonably direct journey for the majority of customers.	The journey should be no more than 25% greater than the direct marine path from wharf to Circular Quay or final destination.

Table 23 Ferry Service Planning – Timetable Integration Guidelines

Ferry Service Planning - Timetable Integration Guidelines	
Guideline	Description
For wharves with frequent bus services within walking distance ferries do not need to be timetabled to meet buses.	Sometimes referred to as turn-up-and-go wharves, examples include Circular Quay and Parramatta wharves. Walking distance is considered to be distances up to 800 metres.
For planned transfers from bus to ferry, ferry services should depart the wharf between six and ten minutes after scheduled bus arrival.	Informed by current and planned arrangements.
For planned transfers from ferry to bus, ferry services should arrive between three and ten minutes before scheduled bus departure.	Informed by current and planned arrangements.

Table 24 Ferry Service Planning – Minimum Service Frequency Guidelines

Ferry Service Planning - Minimum Service Frequency Guidelines			
Strategic Transit Network	Intermediate Transit Network	Local Transit Network	
Service Type	Sydney Ferries	Sydney Ferries	Other contracted services
Days of Operation	7 days	7 days	As required
Weekday Pre-Peak 05:00 – 06:00	As required	As required	As required
Weekday Peaks 06:00 – 09:00, 15:00 – 18:00	20 – 30 mins	30 – 60 mins	As required
Weekday Inter-Peak (base) 09:00 – 15:00	30 – 45 mins	60 mins	As required
Weekday Early Evening (base) 18:00 – 22:00	30 – 45 mins	60 mins	As required
Weekday Late Night 22:00 – 24:00	30 – 45 mins	60 mins	As required
Weekend / Public Holiday Night 19:00 – 22:00			
Weekday Early AM 24:00 – 05:00	As required	As required	As required
Weekend Early AM 22:00 – 07:00			
Weekend and Public Holidays (base) 07:00 – 19:00	30 – 45 mins	60 mins	As required

Unless exceptional cases exist, ferry services should operate at no less than the minimum service frequency. Transport for NSW and the operator may choose to operate services at greater than the minimum frequency. In circumstances where services are operating at greater than the minimum frequency, these need to consider the impact on connecting services.

3.4.4 Service Performance

In reviewing the performance of ferry services, the indicators outlined in Tables 25, 26 and 27 should be used to ensure the best utilisation of the available capacity. These indicators should be considered in addition to the service performance guidelines across all public transport modes. Reviews are generally undertaken at a contract or regional level to ensure integration of services.

Table 25 Ferry Service Planning – Service Performance Indicators

Ferry Service Planning - Service Performance Indicators	
Boardings per day at Wharf	< 100
Boardings per trip at Wharf	< 6
Peak patronage exceeds % of vessel capacity*	80%
Base patronage exceeds % of vessel capacity	40%
Early / Late patronage exceeds % of vessel capacity	40%
Passengers required to stand**	> 30 mins

* At maximum load point and averaged by the number of trips operated during any 20 minute period.

** Averaged over a period of time and taking into account passenger turnover.

Table 26 Ferry Service Planning – On-Time Running Guidelines

Ferry Service Planning - On-Time Running Guidelines	
Key Performance Indicators	Definition
98.5% of services run on time	On time means actual services departing within 5 minutes of the scheduled departure, measured at all points of departure.

Source: Transport for NSW, 2012 (h)

Table 27 Ferry Service Planning – Demand Indicators for a New Service / Wharf

Ferry Service Planning - Demand Indicators for a New Service / Wharf		
	Demand	Rationale
Journey to Work	530 Journey to Work commuters within 800m catchment	Mean of existing wharves Journey to Work
Population Density	3,600 residents within 800m	Mean of existing wharves population numbers
Employment Density	1,500 jobs within 800m	Mean of existing wharves employment numbers
	Serviceability	Rationale
Directness	Directness ratio to Circular Quay relative to direct road	Comparison of reasonable journey alignment via ferry and road
Other Public Transport Modes	Generalised costs of travel (frequency / fares / travel time / catchment of other modes and services)	Comparison of all public transport modes
	Other	Rationale
Cost and Feasibility	Cost of infrastructure Other	Feasibility of implementation

3.5 Guidelines for Modal Service Planning - Light Rail

The integrated public transport service planning guidelines apply across all modes of public transport. In addition to these tools, there are a number of light rail specific guidelines that need to be considered as part of the integrated planning process.

The light rail network operates service between Central Railway Station and the Sydney casino and in the inner west between Central and Lilyfield. The inner west line is being extended to Dulwich Hill. An additional line operating through the Sydney CBD and into south east Sydney is also planned.

3.5.1 Service Capacity

Light rail services are classified as intermediate services. Light rail has a capacity of up to 300 people per vehicle.

3.5.2 Service Coverage

Intermediate services operate express services in peak periods and all-stop all day services. Due to the unique nature of light rail, express services are not operated.

3.5.3 Service Provision

The light rail contract for the Sydney metropolitan area gives Transport for NSW the responsibility for developing contract service levels and approving timetables. Service design will consider service hours, operating requirements and the number of light rail vehicles available. Submissions for a new light rail service or change to a light rail service are covered as part of the contract arrangements.

In addition to the integrated public transport service planning guidelines, specific light rail service guidelines for service frequency are outlined in Table 28.

Table 28 Light Rail Service Planning – Minimum Service Frequency Guidelines

Light Rail Service Planning - Minimum Service Frequency Guidelines			
Strategic Transit Network	Intermediate Transit Network		
Service Class	CBD Core	Inner East (between terminus points)	Inner West
Days of Operation	7 days	7 days	7 days
Average Stop Spacing	200 – 400 m	400 – 800 m	400 – 800 m
Weekday Pre-Peak (base) 05:00 – 06:00	15 mins	30 mins	as required
Weekday Peaks 06:00 – 09:00 15:00 – 19:00	3 mins	6 mins	7.5 – 12 mins
Weekday Inter-Peak (base) 09:00 – 15:00	5 mins	10 mins	12 mins
Weekday Early Evening (base) 19:00 – 22:00	5 mins	10 mins	12 – 15 mins
Weekday Late Night 22:00 – 23:00	7.5 mins	15 mins	15 mins
Weekend / Public Holiday Night 19:00 – 22:00			
Weekday Early AM 24:00 – 05:00	As required	As required	As required
Weekend Early AM 22:00 – 06:00			
Weekend and Public Holiday Base 06:00 -19:00	5 mins	12 mins	7.5 – 24 mins

Unless exceptional cases exist, light rail services should operate at no less than the minimum service frequency. Transport for NSW and the operator may choose to operate services at greater than the minimum frequency. In circumstances where services are operating at greater than the minimum frequency, these need to consider the impact on connecting services.

3.5.4 Service Performance

In reviewing the performance of light rail services the indicators outlined in Table 29 and 30 should be used to ensure the best utilisation of the available capacity. These indicators should be considered in addition to the service performance guidelines across the public transport modes. Reviews are generally undertaken at a contract or regional level to ensure integration of services.

Table 29 – Light Rail Service Planning – Service Performance Indicators

Light Rail Service Planning - Service Performance Indicators	
Capacity	6 people standing per square metre
Indicator for review	4 people standing per square metre

Table 30 – Light Rail Service Planning – On-Time Running Guidelines

Light Rail Service Planning - On-Time Running Guidelines	
Key Performance Indicators	Definition
Punctual for ≥ 95% of revenue services for the Lilyfield – Lilyfield cycle or the Dulwich Hill – Dulwich Hill cycle.	Punctual means a Contract Vehicle arriving within 60 seconds of the defined end to end journey time. A trip which is cancelled or skips stops does not count as punctual.

Source: Transport for NSW, 2013(b)

3.6 Guidelines for Modal Service Planning - Train

The integrated public transport service planning guidelines apply across all modes of public transport. In addition to these tools, there are a number of train specific guidelines that need to be considered as part of the integrated planning process.

Figure 6 shows the train network design hierarchy. Rapid transit and suburban train services fall within the Strategic Transit Network as mass and/or intermediate transit networks. Rapid transit services will be introduced over time, starting with the North West Rail Link.

Figure 6 Train Network Design Hierarchy

TIER 1: Rapid Transit	TIER 2: Suburban	TIER 3: Intercity
<ul style="list-style-type: none"> Frequent ‘turn up and go’ services without the need for consulting a timetable Fast single deck trains, with plenty of seats, more doors, designed for easy boarding and alighting. 	<ul style="list-style-type: none"> Timetabled services Double deck trains with more seats per train. 	<ul style="list-style-type: none"> Timetabled services Double deck trains for Central Coast, Newcastle, Wollongong and Blue Mountains services Comfortable services for long distance commute and leisure travel with on-board facilities for improved customer convenience.

Source: Transport for NSW 2012(e)

3.6.1 Service Capacity

Sydney Trains services are generally classified as mass transit services. A small number of train services may be classified as intermediate. Train services have a capacity of up to 1,200 people.

3.6.2 Service Coverage

No additional train service planning guidelines are provided.

3.6.3 Service Provision

Train contracts for rapid transit and suburban services for the Sydney metropolitan area give Transport for NSW the responsibility for developing contract service levels and developing master timetables. Service design will consider service hours, operating requirements and the number of trains available. Submissions for a new train service or change to a train service are covered as part of the contract arrangements.

In addition to the integrated public transport service guidelines, specific train guidelines on service provision, timetable integration and service frequency are outlined in Tables 31, 32 and 33 respectively.

Table 31 Train Service Planning – Service Provision Guidelines

Train Service Planning - Service Provision Guidelines	
Guideline	Description
All first trains will stop all stations and ensure that all suburban passengers can get to Central Station by 05:00 (\pm 15 minutes).	Informed by current and planned transfer arrangements.
All last trains will stop all stations.	Informed by current and planned transfer arrangements.

Table 32 Train Service Planning – Timetable Integration Guidelines

Train Service Planning - Timetable Integration Guidelines	
Guideline	Description
For bus to train or train to bus the recommended transfer time is between five and ten minutes during peak hours and five and fifteen minute during base periods.	Informed by current and planned transfer arrangements.

Table 33 Train Service Planning – Minimum Service Frequency Guidelines

Train Service Planning – Minimum Service Frequency Guidelines			
Strategic Network	Transit	Mass Transit Network	Intermediate Transit Network
Tier and Service Type	Rapid	Suburban	Suburban
Stopping pattern	All stations	Mixed stopping patterns	Mixed stopping patterns
Days of operation	7 days	7 days	7 days
Weekday Pre-Peak 05:00 – 06:00	10 mins	15 – 30 mins	As required
Weekday Peaks 06:00 – 09:00 15:00 – 18:00	5 – 10 mins	10 – 15 mins	15 – 30 mins
Weekday Inter-Peak (base) 09:00 – 15:00	10 mins	15 – 30 mins	15 – 30 mins
Weekday Early Evening (base) 18:00 – 22:00	10 mins	15 – 30 mins	30 – 60 mins
Weekday Late Night 22:00 – 24:00	10 mins	15 – 30 mins	30 – 60 mins
Weekend / Public Holiday Night 19:00 – 22:00			
Weekday Early AM 24:00 – 05:00	As required	As required	As required
Weekend Early AM 22:00 – 07:00			
Weekend and Public Holiday (Base) 07:00 – 19:00	10 mins	15 mins	15 – 30 mins

In exceptional cases, some services may not meet the minimum frequency for their station size due to infrastructure not being able to support this. This occurs on the Richmond branch line and the Carlingford branch line where there is only a single line.

Unless exceptional cases exist, train services should operate at no less than the minimum service frequency. Transport for NSW and the operator may choose to operate services at greater than the minimum frequency. In circumstances where services are operating at greater than the minimum frequency, these need to consider the impact on connecting services.

3.6.4 Service Performance

In reviewing the performance of train services, the indicators outlined in Tables 34 and 35 should be used to ensure the best utilisation of the available capacity. These indicators should be considered in addition to the service performance guidelines across all public transport modes. Reviews are generally undertaken at a sector level or across the network to ensure integration of services.

Table 34 Train Service Planning – Service Performance Indicators

Train Service Planning - Service Performance Indicators			
Indicator	Mass Transit Network		Intermediate Transit Network
	Rapid Tier	Suburban Tier	Intermediate Transit Network
Capacity	30% seated 70% standing	60% seated / 40% standing (inner suburban) 70% seated / 30% standing (outer suburban)	70% seated 30% standing
Passengers required to stand	> 20 minutes	> 20 minutes	> 20 minutes

Where a passenger chooses not to catch a train due to excessive load or potential excessive standing time, they should have a service that gets to their destination no more than 15 minutes earlier or later than the original service.

Table 35 Train Service Planning – On-Time Running Guidelines

Train Service Planning - On-Time Running Guidelines	
Key Performance Indicators	Definition
Punctual for ≥ 92% of services for CBD business centre and each non-CBD business centre.	On-time tolerance means 5:00 minutes.

Source: Transport for NSW, 2012(f)

3.7 Service Planning Interfaces

Public transport services operate in a broad environment and directly and indirectly interface with other services. These services need to be taken into consideration as part of the integrated planning process.

3.7.1 Interchanges

Interchanges are places where people join or leave the public transport system, or transfer between train, bus, ferry, light rail or other services. Effective transfer is essential as there will not be direct transport for every journey. Transferring between services will be taken into consideration in service planning. Interchanges should offer seamless transfer opportunities.

Customers required to transfer between services perceive transfers as being inconvenient. This is often referred to as a transfer penalty or may be known as a time cost penalty or travel time value. Reed (1995) found that travellers perceive one minute of wait time as equivalent to 1 ½ to 2 minutes of transit time. The customer's experience of a transfer has a direct impact on the perceived extra travelling time that the change costs. Fare penalties, delay-inducing features such as fare gates, vertical transfers (involving escalators or stairs), road crossings and the quality of the waiting environment all add to the perceived penalty.

In order to reduce the perceived transfer penalty, configuration of the connection needs to be considered. For example where a high volume of people transfer from one bus service to another the bus stops should be located as conveniently as possible.

3.7.2 Active Transport

Active transport includes walking and cycling. An integrated approach to public transport service planning will be aware of these needs when planning normal route services.

3.7.3 Community Transport

Community transport provides a range of supplementary and specialised services across the Sydney metropolitan area that respond to the specific needs of the community. These services are provided by a range of transport operators.

An integrated approach to public transport service planning will be aware of these needs when planning normal route services.

3.7.4 School Services

The School Student Transport Scheme (SSTS) provides subsidised travel for eligible school students on train, bus and ferry services in the Sydney metropolitan area. Subsidised travel is available between home and school on school days.

As a general principle, dedicated school services should be kept to a minimum in order to maximise the frequency and availability of normal route services. School locations and the number of students travelling by public transport are to be considered in determining the need for dedicated school services. Dedicated school services may be justified when:

- Placing students in large numbers on regular passenger services would exceed the maximum passenger loading criteria

- Schools are located away from regular routes
- The opportunity exists to hub students of a school or set of schools into a regional centre and transfer to dedicated school specials
- Placing students on another transport mode would significantly adversely affect that mode

An integrated approach to public transport service planning will consider the needs of school students as part of normal route services.

3.7.5 Security and Emergency Management

Transport for NSW is the lead agency for the development and coordination of security and emergency plans and strategies for transport agencies. Security and emergency management contributes to the overall customer experience by ensuring cross modal security standards, guidelines and procedures that are operationalised by transport agencies.

In the event of an emergency or security incident transport operators will aim to maintain route services, with the public being directed to use these where possible. Operators may need to provide route services that operate around exclusion zones or provide disrupted services. Safety of staff and customers should be an operator's first consideration in determining service provision during an incident.

Customer personal safety and security, both actual and perceived, is addressed in the Transport for NSW document 'TCS200 Customer Standards: Personal Safety and Security on Public Transport'. Customer standards refer to the standards of service that customers should expect from all public transport modes. The document is aimed at stakeholders and transport operators and highlights what is required to be delivered for the customer. The document is intended to be the first 'standards' document read by any stakeholder planning an operational or infrastructure change and will complement other relevant technical standards.

Table 36 outlines relevant integrated public transport service planning considerations that relate to security and emergency management.

Table 36 Security and Emergency Management Planning

Security and Emergency Management Planning	
Task	Outcome
Review major hazard facilities in NSW.	Identify major hazard facilities in the operating area.
Review Emergency Risk Management Study produced by Local Emergency Management Committee.	Identify local hazards and risks in the operating area, particularly those on major transport corridors.
Consider identified local hazards and risks during route planning.	Where appropriate transport routes avoid known potential hazards. Where transport routes traverse potential hazardous areas, operators plan and test alternative route options for use during an incident.
Review TCS200 Customer Standards: Personal Safety and Security on Public Transport.	The Customer Outcomes of the Standards are delivered.

3.7.6 Other Transport Services

The public transport network, consisting of bus, ferry, light rail and train services, is complemented by other privately operated transport services. These additional services complement the network and provide targeted services for specific groups in the community. Privately operated services include:

- Council run services (eg shopper shuttles)
- Deregulated ferry services
- Employer funded services
- Self funded services (eg school owned buses)
- Taxis
- Tourist services

These services may complement existing public transport services or may be operating to fill a service gap. The impact on these transport services when introducing or changing service provision in a region should be considered as part of the integrated public transport service planning approach.

3.7.7 Car Parking

A range of on-street and off-street car parking arrangements are in place to access the public transport network. The availability of car parking to access the public transport network can influence the level of customer demand for services. An integrated approach to service planning will consider the role of car parking as part of normal route services.

3.7.8 Major Events

A number of major events are held in the Sydney metropolitan area each year, with the movement of large numbers of people by public transport. Special arrangements are in place for the development of traffic and transport management strategies for major events. These event specific arrangements are separate to integrated public transport service planning for normal route services.

3.7.9 Disability Standards for Accessible Public Transport

The Disability Standards for Accessible Public Transport are prescribed under section 31 of the Disability Discrimination Act (DDA). The purpose of the Transport Standards is to provide a structure for planning and achievement over time of accessibility of all public transport services. Transport for NSW is committed to compliance with the Standards.

The Transport for NSW Disability Action Plan sets out a process of continuous improvement to deliver high quality services to all customers including those with disability or limited mobility. The actions of the plan are to be considered when undertaking integrated public transport service planning.

3.7.10 Land Use Considerations

The Sydney metropolitan area is constantly changing. There are regular upgrades and additions to the existing infrastructure. In addition there are significant changes in land use across the city, such as the conversion of industrial sites to residential and commercial uses as well as increases in residential density along transport corridors. These changes need to be taken into account when considering changes to the public transport network.

In existing areas, public transport service planning needs to identify opportunities for improved public transport services to key centres in line with the strategic directions within NSW 2021 State Plan and the NSW Long Term Transport Master Plan. These opportunities should reflect the level of public transport services provided and the ability to increase the number of people located within 30 minutes of a major centre by public transport.

In new growth areas, public transport services should be available to residents as early as possible after they move in. The early introduction of services provides residents with an alternative to car use and helps to establish public transport use in the area.

3.8 Application of Service Planning Framework

The guiding principles and guidelines outlined in these integrated public transport service planning guidelines are to be used by Transport for NSW to inform the development and implementation of public transport service improvements. These include network reviews, route changes and the introduction of new services to the network.

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5. GLOSSARY

GLOSSARY	
Term	Definition
Clock-face timetable	A service pattern where services depart at regular intervals, and thus at the same number of minutes past each hour.
Community transport	Programs and services that provide essential transport to allow disadvantaged groups to access essential services and social contact where conventional public transport systems are not generally viable or appropriate.
Connecting service	Where two or more services are timetabled to meet. The time taken to transfer between services is taken into consideration and may be directed at either boarding or alighting customers or resting time may be timetabled to allow the transfer of customers between services.
Framework	A structure for supporting or enclosing something. A fundamental structure as for written work. A structural plan or basis of a project.
Guidelines	A statement or other indication of policy or procedures by which to determine a course of action. A detailed plan or explanation to guide you in determining a course of action.
Integration / transport integration	All modes of public transport operate as one seamless entity for the benefit of the fare paying customer. A seamless journey that is as door to door as possible.
Interchange	A facility to transfer from one mode of transport, or one transport service, to another. This can include a major train station or bus facility. See transfer.
LT TMP	NSW Long Term Transport Master Plan.
Memory timetable	A timetable that is easy to remember as departure times are consistent across some or all of the transport periods.
Mode	The type of vehicle or method used for a trip (e.g. train, bus, car, motorbike, cycle, ferry, walking).
Principles	A rule or standard. A fixed or predetermined policy or mode of action.
Public passenger service	A public passenger service is the carriage of customers for a fare or other consideration by motor vehicle along a road or by vessel.
Public transport leg	A single trip within a journey taken on public transport
School service	A service that operates to transport primary or secondary students to or from school or for other school purposes.
Transfer	Moving from one public transport trip to another as part of an overall journey. See Interchange.
Turn-up-and-go	High frequency public transport services, where the timetable is less significant and customers can simply turn up and go. Services with a frequency of 15 minutes or better are considered to be turn up and go in these guidelines.