



TRANSPORT STRATEGY

NORTH SYDNEY COUNCIL





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I. INTRODUCTION AND OBJECTIVES

Introduction

The North Sydney Transport Strategy (NSTS) is Council's guiding document for the delivery of its transport planning and management functions. This includes strategic transport planning, transport advocacy and the delivery of local transport projects. The NSTS builds on the directions, outcomes and strategies detailed in North Sydney's Community Strategic Plan 2013-23 (CSP) and Ecologically Sustainable Development Best Practice Project 2014 (ESD) to create an over-arching transport planning and management framework for the whole of Council.

More specifically, the NSTS aims to bridge the gap between CSP objectives and practical, everyday transport planning and management decision making by:

- Defining a holistic Vision for transport in North Sydney;
- Setting a principled, best practice approach to achieving this Vision;
- Identifying requirements for the development of mode specific action plans;
- Defining a Council-wide transport implementation framework;
- Outlining a delivery methodology that will help to ensure quick, consistent and robust responses to increasingly complex transport issues; and
- Re-assessing shared CSP/NSTS measuring and reporting requirements.

The NSTS is based on extensive feedback from preliminary community consultation undertaken in 2016. This feedback helped to identify the North Sydney community's transport priorities, aspirations for the future of North Sydney's transport networks, and informed the development of the NSTS within the methodology outlined in Figure 1.

A second round of community consultation will ensure that the community priorities and aspirations identified in preliminary consultation are appropriately reflected within the NSTS.

Definitions

Autonomous Vehicles – vehicles that do not require a driver

Global Sydney – Global Sydney comprises Sydney CBD, various adjoining suburbs and the North Sydney CBD.

Modal – relating to travel mode

Pedestrians – this includes “walkers” of all abilities and task capabilities e.g. children; mothers with prams; elderly and infirm; and visually, hearing and/or mobility impaired

Travel Mode – a means of transportation e.g. walking, cycling, bus, light rail, train, etc.

Strategy Development Flowchart



Figure 1: Strategy Development Flowchart

2. NORTH SYDNEY'S TRANSPORT CONTEXT

North Sydney's position on the north shore of Sydney Harbour, opposite the Sydney CBD means that North Sydney transport infrastructure not only accommodates the travel demands of its 71,000 residents and 66,000 employees, it also accommodates more than half a million through trips per day to and from destinations across greater Sydney. While the dense multi-modal transport network required to accommodate these journeys provides high levels of mobility for North Sydney residents and workers, the scale of transport infrastructure required on the approach to the harbour bridge and tunnel creates barriers to movement that significantly undermine the amenity, live-ability, walkability, lifestyle and travel choices of the North Sydney community.

By 2031, North Sydney is expected to grow to 76,861 residents (+14.46%) with similar levels of jobs growth. Through-trips will also grow to reflect the 6.2 million residents expected to live in Sydney by 2031. Balancing future metropolitan wide travel demand against North Sydney amenity and community transport needs using Council's existing transport planning and management processes is likely to result in:

- Missed opportunities to influence regional transport decision making;
- Less integrated transport decision making; and
- A more ad hoc approach to transport planning and infrastructure management.

2.1 Policy Context

2.1.1 Regional Policy Context

The NSW Government's A Plan for Growing Sydney and the Long Term Transport Masterplan identify the following objectives for transport across Sydney:

- Sydney will become a more compact, multi-centred, connected city, with a transport network that provides quick and convenient public transport connections across the city and frequent links to other cities.
- Development within the walking and cycling catchments of local centres will improve access to local services and public transport that links to major centres, with seamless interchange opportunities.
- The city will become more liveable by improving the design of buildings and public areas, developing mixed-use spaces where people work and live, and creating more opportunities for people to walk and cycle to work and major service centres.
- Central to these outcomes will be an integrated and efficient transport system that is closely aligned with land use planning.
- Improved public transport networks will increase productivity and global competitiveness.
- Better transport hubs and improved connections will support revitalisation of neighbourhoods and the success of urban centres.
- Public transport services will link people to the jobs available in the Global Economic Corridor.
- With an integrated and more effective transport system, a future Sydney will be more sustainable, more liveable and will be a strong global city.

The recently released Draft Northern District Plan highlights the review and development of the following transport planning documents as critical to the delivery of the District Plans: A Plan for Growing Sydney (2017), the Future Transport Strategy, the Transport Services and Infrastructure Plan and the State Infrastructure Strategy. It also suggests that a detailed process will be developed in partnership with TfNSW and Infrastructure NSW to ensure that the objectives of the District Plans form the basis of the re-assessment/ assessment of existing and future state infrastructure programs (Chptr. 1.1.1 pg. 14).

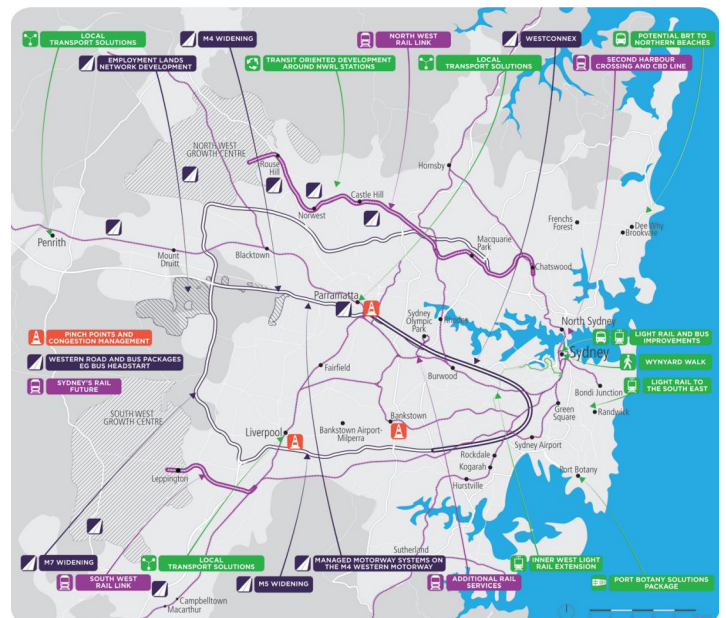


Figure 2: Sydney's Long Term Transport Masterplan - Priority Actions for Sydney

2. NORTH SYDNEY'S TRANSPORT CONTEXT

2.1.2 Local Policy Context

North Sydney's overarching strategic vision is outlined in the North Sydney Community Strategic Plan 2013-23 (the CSP). This details:

- The community's vision for North Sydney to 2023 (Outcomes);
- Council processes for delivering this vision (Strategies); and
- Monitoring criteria (Indicators).

While many of the Outcomes, Strategies and Indicators of the CSP are transport related, it is not intended to provide a holistic vision for transport planning and management in North Sydney. The NSTS will provide a clear link between overarching CSP outcomes and everyday transport planning and management decision making to ensure that Council's transport functions are consistently and cost-effectively delivered to help achieve the community's vision for transport in North Sydney.

In 2014, Council adopted the Ecologically Sustainable Development (ESD) Best Practice Project - Transport. Although the main focus of the ESD project was to identify ways to ameliorate the transport impacts of private development, many of the outcomes identified by the ESD reached beyond traditional planning and assessment functions. It identified that consideration of upper level strategy during project identification, prioritisation, design and development phases is critical to ensuring the efficient delivery of the CSP vision for transport across a range of Council functions. It was noted that Council's policy hierarchy is not well suited to this function and that a gap exists between the CSP vision and other transport management and planning policies.

In January 2015, Council resolved to prepare a North Sydney Transport Strategy that extended the principles identified in the ESD project to achieve best practice across all of Council's transport planning and management functions.

Current Transport Planning and Management Policy Hierarchy and Project Flowchart

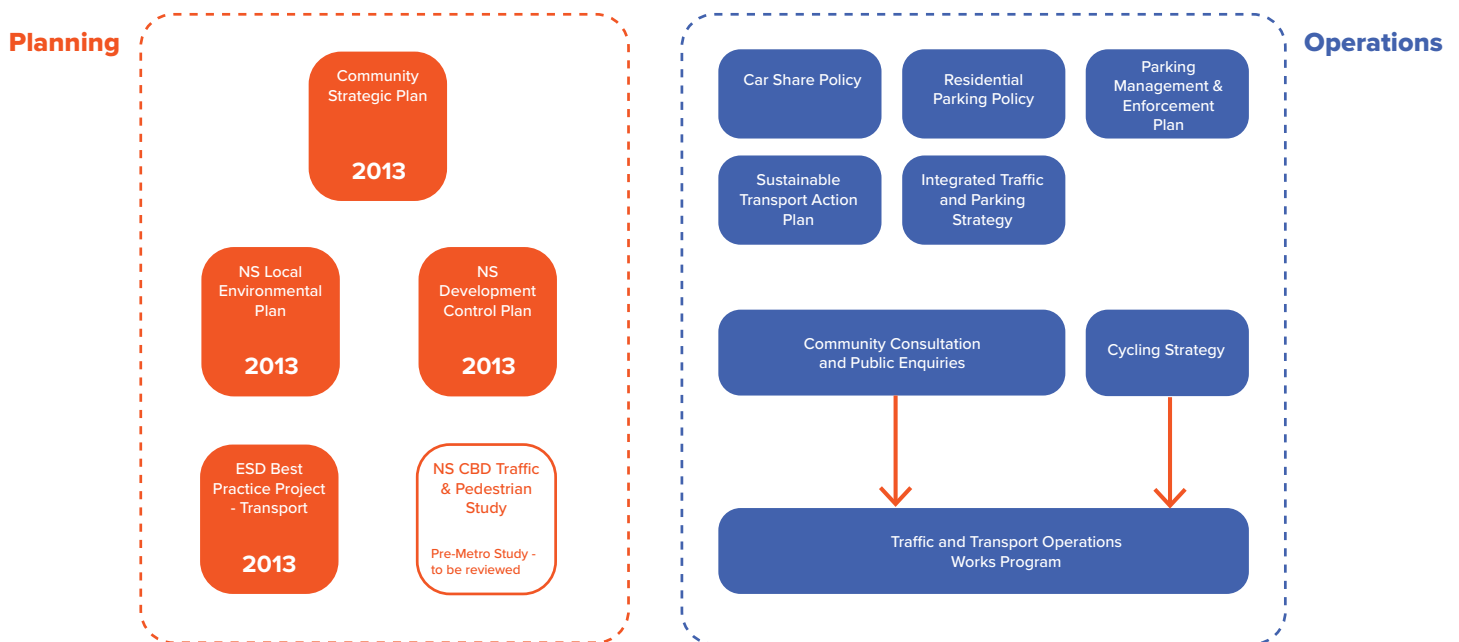


Figure 3: North Sydney's existing transport policy context

2.2 Demographics and Mode Choice

2.2.1 Demographic Characteristics

North Sydney's demographic characteristics have influenced the development of the transport strategy and will influence future modal action plans. Key demographic themes include:

Gender: Although gender is evenly split in North Sydney, the relative priorities of men and women (e.g. travel security being a greater concern for women) must be considered to determine effective whole of population transport policy.

Age: North Sydney's age demographic is skewed towards younger/middle-aged adults with no children (households without children in North Sydney 84.6%, Greater Sydney 65.2%). This group is more likely to locate near urban centres and public transport, less likely to acquire private vehicles/driving licences, have higher rates of car share membership and are more likely to use emerging transport technologies (e.g. Uber).

Wealth: North Sydney residents are, generally, wealthier than the Sydney average. This allows them to locate in desirable locations proximate to jobs, community infrastructure and dense multi-modal transport networks. This reduces their need to travel (frequency and distance) and increases access to a wider variety of travel options.

2.2.2 Mode Choice

Initially shaped by geography (e.g. Sydney Harbour), North Sydney's formative walking, cycling and public transport networks reflect a history of rapidly changing transport technology as well as the influence of policy and institutions that foster car dependency. While rail networks helped to define transport and land use development patterns to the end of the 19th century, mass car production from the 1920s saw increasing car use, dispersed development patterns, and the undermining of traditional transport networks. Car dependency was supercharged in the 1930s with the opening of the Harbour Bridge and per capita car use grew steadily until 2004 when Sydney reached "peak car". Growth in per capita car travel peaked in every Australian capital city in 2004 (see figure 4). Complex reasons have been suggested for this trend: rising petrol prices, traffic network saturation, shrinking travel time budgets, increased access to public transport, etc. Post-2004, there have been sustained reductions in per capita car travel to 2013-14.

The following North Sydney mode share statistics, based on 2011 census data, have also helped to inform the development of the NSTS:

- Census data suggests that only 6.4% of journeys are undertaken by "walking only". Given that walking facilitates almost every other journey type: travel to and from bus stops, train stations, ferry wharfs, car parks, etc., this grossly understates the true value of walking. In North Sydney's commercial, mixed use and neighbourhood centres, short walking journeys make up a far greater proportion of total trips.
- Cycling is a growth market. While the number of bicycle commuter trips in North Sydney is still low compared to international standards, cycling mode share doubled from 2006 to 2011 and is expected to do the same again as a result of the delivery of North Sydney's Integrated Cycling Strategy.
- 71.3% of residents and 71.1% of workers walk, cycle, use public transport or ride share to travel to and from work.
- More workers arrive in the North Sydney LGA by train (34.2%) than single occupant vehicle journeys (28.9%).
- Walking, cycling and public transport patronage is growing at rates well in excess of population growth.
- 16.5% of North Sydney households do not own a car, while only 24% of households own more than 1 car.

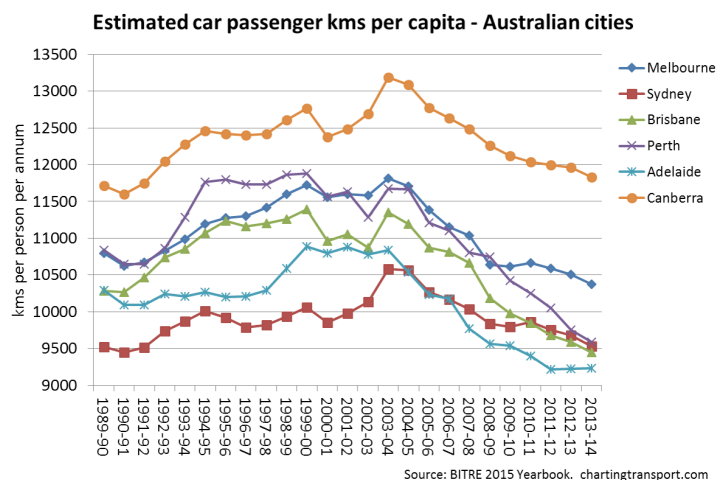


Figure 4: Estimated car passenger kilometres per capita - Australian cities

Population growth and associated travel demand continues to put pressure on all of North Sydney's transport infrastructure. However, walking, cycling and public transport demand is growing at a significantly higher rate than private vehicle travel demand.

2. NORTH SYDNEY'S TRANSPORT CONTEXT

2.3 State Significant Infrastructure Projects

2.3.1 Sydney Metro

Sydney Metro will connect Sydney's north-western suburbs to the Bankstown Line via Chatswood, Crows Nest, North Sydney and the Sydney CBD. Sydney Metro will accommodate 20-30,000 trips in the peak hour with potential to accommodate approximately 40% of the road based trips that currently utilise the Metro corridor. This has the potential to deliver a paradigm shift in the way Sydney's residents and workers travel to, from and through North Sydney.



Figure 5: Sydney Metro - Artist's Impression

2.3.2 WestConnex

On the 22 June 2015, Council considered the "WestConnex and the Western Harbour Road Tunnel" report. A broad analysis of the potential impacts that the WestConnex project could have on the North Sydney community was provided in that report. They include: induced traffic from WestConnex entering North Sydney via the proposed western harbour road tunnel (final alignment not confirmed); increased traffic congestion at up-stream and down-stream pinch points; diverting traffic on to local roads to avoid congestion on key arterial routes; and discouraging walking, cycling and public transport use.



Figure 6: WestConnex and potential Western Harbour Road Tunnel Extension

"Building more roads to cure congestion is like a fat man loosening his belt to cure obesity." - Lewis Mumford

2.3.3 Western Harbour Tunnel and Beaches Link

On 16 March 2017, the NSW Government announced a preferred route, the start of geological drilling, notifications of property owners and the commencement of a market sounding process for the delivery of two new motorway tunnels: a 'Western Harbour Tunnel', extending from Westconnex at Rozelle under Sydney Harbour to the Warringah Freeway at North Sydney, and a 'Beaches Link' tunnel, from the Warringah Freeway under Middle Harbour to Balgowlah. Council has concerns regarding the impact of both projects on the community aspirations detailed in the North Sydney Community Strategic Plan and has recommended that work on both of them be halted until the Greater Sydney Commission, in collaboration with Transport for NSW, undertake a robust options assessment that considers all possible solutions to the transport problems afflicting the northern beaches and the flow on effects on the lower north shore.

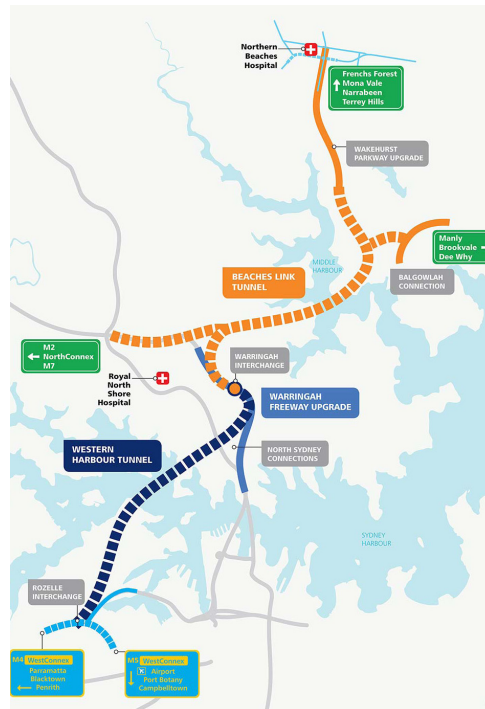


Figure 7: Western Harbour Tunnel and Beaches Link

2.3.4 Northern Beaches B-Line

On the 9 November 2015, Council considered the "Northern Beaches B-line (BRT)" report. A broad analysis of the potential impacts that B-line could have on North Sydney communities was provided in this report. With the potential to significantly improve access between the Northern Beaches and Global Sydney, a Northern Beaches bus rapid transit (BRT) project, as this project was originally intended to be, had the potential to significantly reduce traffic on Military Road; improve walking and shopping environments; and revitalise Military Road mixed use centres. However, decisions made during the development of the project have significantly increased the expense of the project (e.g. construction of 7 multi-deck Northern Beaches car parks) while undermining benefits to public transport users (e.g. comparatively small reductions in travel times for bus passengers) and local communities (e.g. removal of on-street parking in Military Road commercial precincts). These outcomes are inconsistent with North Sydney community aspirations to promote public transport use and reduce traffic volumes on Military Road.

2.4 Legislative Context / Framework

While North Sydney centres continue to increase in density and the NSW Government focuses on delivering public transport projects that address regional travel demand and traffic capacity projects, the delivery of walkable and cycle-able centres is failing to keep pace with this growth. One of the key reasons for this is the legislative framework within which transport decision making takes place. Although North Sydney Council is delegated certain road network planning and management powers from Roads and Maritime Services (RMS) under the Roads Act (1993), these powers are subservient to RMS's regional traffic mandate. This is often in direct conflict with local transport interests and hampers the delivery of local walking and cycling networks that address the needs of local communities. In particular, it impedes the delivery of missing walking and cycling links on and across classified roads, where walking and cycling infrastructure is both most lacking and most urgently required.

2.5 Emerging Trends

The transport sector is currently undergoing its most rapid transformation in decades. Changing lifestyle choices and emerging transport technologies could significantly change land use and transport planning within the next 10-20 years.

The following emerging trends have the potential to significantly change the number and distance of journeys and/or the way that individuals travel:

- E-business
- Remote Working/Working from Home
- Small Business Start-ups and Co-working Spaces
- Hot Desking/Activity Based Working/Team Neighbourhoods
- Multi-modal Journey Planning
- Dynamic Road User Charging (tolls, parking, etc.)
- Car Sharing
- Ride Sourcing (e.g. Uber)
- Car Parking Market Places
- Electric Vehicle Technology (bike and car)
- Autonomous Vehicle Technology

The potential impacts of these emerging trends include:

- Significant reductions in per capita travel demand (trip frequency and distance);
- Reductions in per capita non-residential floor space requirements;
- Improved access to information and increased travel/modal flexibility;
- Reduced private vehicle ownership and associated parking demand;
- Increased demand for electric vehicle charging facilities;
- Improved road safety; and
- Significant increase in congestion, should access to more efficient private vehicle travel not be off-set by corresponding congestion management measures.

These emerging trends are set to have a profoundly transformative effect on cities, transport behaviour and urban life, which will inherently impact the delivery of the strategic objectives detailed in this strategy. However, these trends cannot be harnessed effectively without the provision of a flexible and supportive policy environment.

These "Emerging Trends" will be considered as part of the development of the mode specific transport action plans identified in Section 6.



Figure 8: Google Car Autonomous Vehicle

3. IDENTIFYING COMMUNITY TRANSPORT PRIORITIES AND ASPIRATIONS

The North Sydney Community Strategic Plan 2013-23 (the CSP) provides a broad vision for the North Sydney community to 2023. An assessment of all CSP directions, strategies, outcomes and indicators highlights the following key transport themes:

- **Safe Travel**
- **Transport Security**
- **Social Well-being**
- **Active Health**
- **Environmental Sustainability**
- **Local Environments**
- **Congestion**
- **Business Activity**

Council conducted preliminary transport consultation in early 2016 to identify the relative importance of each of these themes for North Sydney residents, workers and schools. The results of this community consultation are shown below and are the foundation of the transport vision and implementation framework detailed in this strategy.

Community Consultation Theme	Residents		Businesses	
	Important	Not Important	Important	Not Important
Safe Travel - <i>safe travel and transport security</i>	85%	5%	92%	7%
Community Well-being <i>social well-being and active health</i>	71%	6%	84%	14%
Fair Access to Parking	71%	12%	85%	6%
Sustainable Transport Options <i>- environmental sustainability and local environments</i>	65%	9%	80%	13%
Transport Affordability	61%	10%	85%	2%
Less Travel, More life - <i>congestion</i>	57%	13%	79%	3%
Economic Vitality- <i>business activity</i>	48%	10%	74%	2%
Other	78%	12%	N/A	N/A

Figure 9: Consultation Feedback - Community Transport Priorities

The priorities identified by residents and businesses were reflected in similar feedback from North Sydney schools. The following issues were identified as high priorities for these schools: student safety (safe travel); stopping the “us versus them mentality” (community well-being); fair access to parking for staff and parents (fair access to parking); and travel behaviour change (active health and sustainable transport options).

In addition, Council sought resident, business and school feedback regarding their aspirations for transport in North Sydney. When asked to identify national or international “best practice” transport infrastructure, the following travel modes/locations were identified:

Transport Mode	Share of Responses	Location of “best practice” transport infrastructure	
Walking	17%	New York, Ultimo, North Sydney, Hong Kong, Sydney CBD, Chatswood, Harbour Bridge	
Cycling	17%	Amsterdam / The Netherlands, Copenhagen, Canberra, Melbourne	
Public Transport	Trains & Metro	38%	London, Melbourne, Hong Kong, Paris, Singapore
	Buses incl. Shuttle Buses	12%	London, North Sydney, Singapore, New York, Brisbane, Melbourne
	Light Rail & Trams	10%	Melbourne, Inner West, Amsterdam, Vienna
	Ferries	1%	Sydney & CBD, Hong Kong, Venice
Vehicles	4%	Europe, London, Melbourne, North Sydney, Perth	

Figure 10: Consultation Feedback - Community Transport Aspirations

The high proportion of responses that identified best practice examples of walking, cycling and public transport infrastructure suggests that, in general, North Sydney communities aspire to transport networks that prioritise walking, cycling and public transport. This is consistent with the directions and outcomes detailed in the CSP and current transport planning best practice, which has seen strong support for the following types of projects:

- George Street (walking) and The Goods Line (walking), City of Sydney;
- Bourke Street segregated cycle path (cycling), City of Sydney;
- George Street Light Rail (light rail), City of Sydney;
- Gold Cost Light Rail (light rail), Gold Cost;
- Cross City Metro (Metro Rail), Melbourne; and
- Metro North-West and Metro City and South (Metro Rail), Greater Sydney.

The low proportion of responses that identified car based infrastructure examples suggests that, even though the majority of residents and businesses agree that “fair access to parking” and “traffic congestion” are important issues that need to be addressed, only 4% of residents can identify car-centric approaches to transport planning and management that they believe are an appropriate response to these problems. This is, again, consistent with current transport planning best practice, which recognises that increasing parking supply and traffic capacity results in:

- induced traffic demand;
- increased congestion at upstream and down-stream pinch-points;
- reduced walking, cycling and public transport uptake; and
- inherent negative impacts upon local amenity and safety.

4. DEFINING A TRANSPORT VISION AND MODAL HIERARCHY

4.1 North Sydney's Transport Vision

The following amalgamated vision for transport in North Sydney is based on key CSP themes and the community priorities identified during preliminary consultation.

In 2030, transport will play a positive role in supporting a happy, healthy and prosperous North Sydney community.

To achieve this, transport will be planned and managed to deliver the following community priorities:

Safe Travel - Trips will be made safely, regardless of travel mode. This will be achieved by reducing traffic speeds to address human physiological limitations and increasing driver awareness of more vulnerable road users.

Transport Security - Personal security will be improved through street design that increases on-street activity and improves passive surveillance.

Social Well-being - Residential, commercial, mixed use and neighbourhood centre streets will be social spaces where human interaction will be given the highest priority and the negative impacts of traffic will be minimised.

Active Health - Infrastructure that encourages healthy and active lifestyle and travel choices will be supported.

Fair Access to Parking - Parking policy will be set to encourage people to consider alternatives to driving, reducing parking demand and increasing the availability of the existing parking supply.

Environmental Sustainability - The use of low emission transport options will be encouraged.

Local Environments - Travel modes that have a lower impact on local environments, in terms of air quality, water quality and noise, will be encouraged.

Transport Affordability - Cost-effective travel modes will be supported. Consideration will be given to the broad social, health and economic costs and benefits of each travel mode.

Congestion - Travel demand management principals will be applied to minimise traffic demand and associated traffic congestion.

Business Activity - Commercial, mixed use and neighbourhood centre precincts will be designed to address the transport needs of target businesses, attract target workforces and to encourage increased activity throughout the day and in to the night.

These priorities will be delivered directly through Council led education, encouragement, enforcement and engineering initiatives as well as advocacy to NSW Government transport planners and managers: TfNSW, RMS, NSW Police, etc.

Impacts of Travel Modes on NSTS Vision Priorities

	Walking	Cycling	Public Transport	Car	Motor cycle
Safe Travel	most vulnerable road users - no impact on road toll	second most vulnerable road users - minimal impact on road toll	generally safe - potential for catastrophic outcomes when crashes do occur	high impact on road toll	highly vulnerable - high impact on road toll
Transport Security	walking activity creates natural surveillance, reducing the overall risk of crime	cycling activity creates natural surveillance, reducing the overall risk of crime	public transport use creates natural surveillance, reducing the overall risk of crime	private vehicle activity creates some level of natural surveillance	
Social Well-being	offers opportunities for incidental human interaction	offers opportunities for incidental human interaction	offers opportunities for incidental human interaction	offers limited opportunities for incidental human interaction in local communities but provides access to more remote social opportunities	
Active Health	active lifestyle health benefits	active lifestyle health benefits	active lifestyle health benefits from associated walking / link trips	directly contributes to more sedentary lifestyles as well as indirectly discouraging walking, cycling and public transport use	
Fair Access to Parking	increased uptake of walking will increase parking availability	increased uptake of walking will increase parking availability	increased uptake of walking will increase parking availability	increased car use significantly reduces parking availability	increased motorcycle use reduces parking availability
Environmental Sustainability	minimal energy consumption or environmental costs	minimal energy consumption or environmental costs	high energy consumption and environmental costs shared between passengers	high energy consumption and environmental costs	medium energy consumption and environmental costs
Local Environments	minimal local particulate pollution or noise	minimal local particulate pollution or noise	potential for high levels of local pollution and noise	high levels of local pollution and noise	medium local pollution and high levels of noise
Transport Affordability	minimal costs	generally low costs, dependant on quality of bicycle	ticket costs	high initial costs compared with comparatively low marginal costs encourage vehicle use to maximise initial investment	
Congestion	minimal spatial requirements	spatial requirements dependent on facility type	spatial requirements offset by capacity	significant spatial requirements	some spatial requirements
Business Activity	better local walking environments stimulative business activity - walking provides limited workforce mobility	better local cycling infrastructure stimulate business activity - cycling provides some level of workforce mobility	good public transport access stimulates business activity and provides high capacity workforce mobility	poor perceptions of safety, air quality and noise associated with traffic negatively affects commercial centre business activity but provides high levels of workforce mobility	
Total	walking ranks highest for community outcomes but provides limited mobility	cycling provides mobility but requires more space when treated as a priority travel mode	high levels of patronage helps to reduce per capita sustainability costs	Majority poor community outcomes are off-set by the level of social and economic mobility provided.	

Figure 11: Impact of different travel modes on Transport Vision Priorities

Figure 11 suggests that walking, cycling and public transport use generally help to achieve North Sydney’s transport Vision and priorities. Private motor vehicle use, generally, does not help to achieve and, in many cases, hinders the delivery of North Sydney’s transport Vision and priorities. In consideration of this, North Sydney Council will take a balanced approach to infrastructure planning and management that will, in most cases, prioritise the efficient movement of people and goods by walking, cycling and public transport with lower levels of priority given to private vehicle transport (delivery vehicles, cars, motorcycles, etc.). In some cases, this will result in the re-allocation of road space away from parking and traffic functions.

4. DEFINING A TRANSPORT VISION AND MODAL HIERARCHY

4.3 A Modal Hierarchy for North Sydney

Priority 1	Walking
Priority 2	Cycling
Priority 3	Public Transport
Priority 4	Local Deliveries & Freight
Priority 5	Private Vehicles

Figure 12: A Modal Hierarchy for North Sydney

The infrastructure required to deliver these modal priorities must address the particular characteristics of different road types: local roads, collector roads, sub-arterial roads, or arterial roads.

In general, Council will deliver inclusive streetscape design and slow speed (40km/h) traffic environments in commercial, mixed use, neighbourhood centres and residential zones, which will encourage the sharing of local streets by all travel modes.

On classified state and regional roads outside of local centres, Council will advocate for the delivery of high quality, separated walking, cycling and public transport facilities to improve walking, cycling and public transport safety and amenity on these strategic traffic routes, even where this comes at the expense of general traffic capacity and travel times.



Figure 13: Shared Space: Mariahilfer Strasse, Vienna



Figure 14: Separated Cycling Facility: Bourke Street, Sydney

5. BEST PRACTICE PRINCIPLES FOR TRANSPORT PLANNING

The relationship between the built environment, travel demand and mode choice is defined by the interaction of five key built environment variables:

- 5.1 Land use DENSITY;**
- 5.2 Land use DIVERSITY;**
- 5.3 Walking and cycling infrastructure DESIGN;**
- 5.4 DISTANCE to transit; and**
- 5.5 DESTINATION accessibility.**

These 5 Ds (Ewing and Cervero, 2010) are the building blocks of modern transport planning.

In combination, these principles help to achieve local living and transit oriented development outcomes that minimise the number and distance of trips generated within a local area; increase the uptake of walking, cycling and public transport; and minimise traffic growth in line with the NSTS Vision and Priorities.



Figure 15: Dense urban areas support Diverse land uses, businesses and communities

5. BEST PRACTICE PRINCIPLES FOR TRANSPORT PLANNING

5.1 Land Use Density

Guiding Principle: Council will plan, support and encourage increases in land use densities in areas within a walkable distance of commercial, mixed use and neighbourhood centres that contain local shops and facilities and also offer access to high quality public transport services.

Providing higher land use and population densities in areas with good access to local shops, facilities and public transport provides support for existing business as well as the opportunity to increase the number and diversity of businesses in a local centre. It also supports the delivery of frequent, high quality public transport services. This helps to maximise the number of journeys that are made by walking, cycling and public transport.

5.2 Land Use Diversity

Guiding Principle: Council will support and encourage diversity in North Sydney's mixed use and neighbourhood centres in order to accommodate community activities locally.

Mixed use and neighbourhood centres generally allow for more diverse land-uses, reducing the need to travel outside of an area for common trip purposes. This minimises demand for vehicle based journeys by increasing opportunities for making shorter walking and cycling trips between regular destinations such as home, work, school and shops.

5.3 Walking and Cycling Infrastructure Design

Guiding Principle: Council will identify and prioritise improvements to walking and cycling infrastructure within the walking and cycling catchments of commercial, mixed use and neighbourhood centres that also offer access to high quality public transport services.

Walking and cycling infrastructure design covers a range of issues that help to define the attractiveness of walking and cycling for local journeys. Walk/cycle-ability is affected by physical factors: street and junction density, walking and cycling infrastructure coverage, delays due to traffic infrastructure. It is also affected by less tangible factors such as perceptions of safety, perceptions of security, air quality, noise, etc. While the less tangible aspects of walk/cycle-ability are difficult to quantify, Planning Guidelines for Walking and Cycling, 2004 (NSW Government) describes a methodology for managing the built environment aspects of walk/cycle-ability.

Mapping the physical efficiency of walking and cycling catchments around all commercial centres, mixed use centres, neighbourhood centres, public transport nodes, schools and parks will give a clear picture of how urban form affects North Sydney walk/cycle-ability. It will identify routes where infrastructure improvements (through site links, improved crossing facilities, etc.) and further consideration of the less tangible contributors to walk/cycle-ability will yield significant benefits in terms of walking and cycling mode share outcomes. It will also identify those areas with less access to neighbourhood centres and public transport, where provision of local shops, services and public transport (either shuttle buses or direct services) can encourage greater levels of local living and public transport use in currently underserved parts of North Sydney.



Figure 16: Victoria Cross Metro Station, North Sydney - Artist's Impression (TfNSW)

5.4 Distance to Transit

Guiding Principle: Council will identify precincts located outside of the walkable catchments of high quality public transport services and either directly deliver or advocate for initiatives that improve public transport access in these areas.

Walk/cycle-ability is also an important factor affecting the uptake of public transport because public transport journeys tend to involve a local walking or cycling leg at their origin or destination. Although there is significant overlap between local centre walk/cycle-ability and public transport walk/cycle-ability, there are a number of locations in North Sydney where good access to public transport is not reflected in similar levels of access to local centre shops and services.

5.5 Destination Accessibility

Guiding Principle: Council will compare the relative accessibility of regional destinations by private vehicle and public transport and identify projects that improve public transport access to regional destinations.

The time taken to access regional destinations by different modes of travel is a key factor affecting mode choice for longer journeys. A comparative analysis of public transport and private vehicle travel times from North Sydney's commercial, mixed use, neighbourhood and residential precincts to regional destinations will help to identify public transport network shortcomings. Understanding where private vehicle travel offers significantly better travel time outcomes than the equivalent public transport journey is the first step in identifying public transport infrastructure and service improvements to address these shortcomings.



Figure 17: Crows Nest Metro Station - Artist's Impression (TfNSW)

6. MODE SPECIFIC TRANSPORT ACTION PLANS

6.1 Delivering More Walking, Cycling and Public Transport

6.1.1 North Sydney Walking Action Plan

Walking is our most fundamental travel mode and supports all other modes of travel. Because walking networks have been eroded by the rapid traffic infrastructure growth in the last 30-40 years, they fail to address today's walking needs let alone any desirable future growth. As per the modal hierarchy identified in Section 3, walking will be accorded the highest level of priority in North Sydney to ensure that it is both pleasurable and safe.

The North Sydney Walking Strategy will be based on a walking catchment assessment, in line with endorsed NSW Government "Planning Guidelines for Walking and Cycling" processes.

An assessment of land use diversity in existing commercial, mixed use and neighbourhood centres will identify opportunities for land use planning interventions to support the delivery of more diverse local centres: new shops, open space, community facilities, etc.

Emerging transport trends that may affect the uptake of walking in North Sydney will also be identified and addressed as part of the Walking Strategy.

Consideration will be given to the qualified remit that Council has for delivering walking infrastructure on local roads (delegated authority). Projects affecting classified road infrastructure will be identified and scoped as part of the Walking Strategy to provide justification for further advocacy to state infrastructure providers.

6.1.2 North Sydney Integrated Cycling Strategy

Cycling is an increasingly important component of multi-modal transport network planning. It offers mobility benefits without the serious social, health and financial impositions of the private car. As per the modal hierarchy identified in Section 3, cycling will be accorded the second highest level of priority in North Sydney to ensure that it is both pleasurable and safe.

A justified and consistent approach to cycling planning, management and advocacy was detailed in the North Sydney Integrated Cycling Strategy, 2014. The Cycling Strategy provides a justified and consistent approach to cycling planning and management that will increase the uptake of cycling in North Sydney.

Future review of this policy will provide opportunities to:

- Identify local cycling precincts around North Sydney's centres, public transport nodes, schools and parks in line with endorsed NSW Government "Planning Guidelines for Walking and Cycling" processes;
- Identify land use planning interventions to support the delivery of more diverse local land uses to help reduce the number and distance of journeys made by local residents and increase the uptake of cycling for local journeys;
- Identify lop-sided cycling catchments, missing cycling links, poor cycle-ability scores, and cycling infrastructure upgrades to increase the uptake of cycling for local journeys;
- Identify and deliver cycle links between regional cycle routes and local centres/ activity nodes;
- Define particular maintenance regimes for cycling infrastructure;
- Plan, design and deliver cycle parking for local centres and activity nodes;
- Identify processes for collaborating with adjoining councils to facilitate the planning and delivery of a connected regional cycling network;
- Justify advocacy for cycling infrastructure on classified roads; and
- Identify and address emerging transport trends that may affect the uptake of cycling in North Sydney.

Consideration will be given to the qualified remit that Council has for delivering cycling infrastructure on local roads (delegated authority). Projects affecting classified road infrastructure will be identified and scoped as part of the Cycling Strategy to provide justification for further advocacy to state infrastructure providers.



Figure 18: Pedestrians in North Sydney Centre

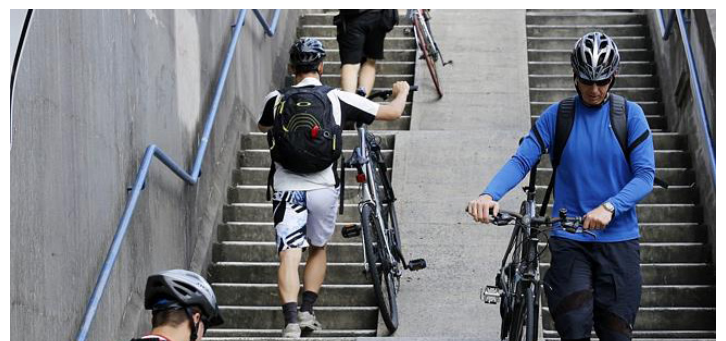


Figure 19: Sydney Harbour Bridge steps

6.1.3 North Sydney Public Transport and Advocacy Action Plan

As per the modal hierarchies identified in Section 3, on-road public transport will be accorded the third highest level of priority on North Sydney roads in order to ensure that it is safe, reliable and quicker than the equivalent car-based journey.

Although Transport for New South Wales (TfNSW) is currently expediting a number of major public transport projects, rapid increases in passenger demand will continue to put pressure on most public transport infrastructure and services for the foreseeable future.

The North Sydney Public Transport and Advocacy Strategy will assess the suitability of existing and proposed North Sydney public transport to deliver the community's vision for transport in North Sydney. It will also provide an analysis of the relative accessibility of regional destinations by public transport and private vehicle. These two studies will provide the basis for a justified and consistent public transport advocacy/delivery program that improves the affordability, reliability, frequency, safety and speed of public transport services in North Sydney. The Public Transport Strategy will also identify and address emerging transport trends that may affect the uptake of public transport in North Sydney.

Consideration will be given to the limited remit that Council has for delivering public transport infrastructure and services. New/improved infrastructure and services, scoped as part of the strategy, may be delivered directly (e.g. walking infrastructure around bus shelters, priority bus lanes, local shuttle buses, etc.) but are more likely to form part of Council's public transport advocacy program for state infrastructure providers e.g. TfNSW and Roads and Maritime Services, NSW.



Figure 20: Milsons Point Station, Milsons Point

6. MODE SPECIFIC TRANSPORT ACTION PLANS

6.2 Managing Private Motor Vehicle Transport

6.2.1 North Sydney Local Deliveries and Freight Action Plan

Delivery facilities support business activity in local centres and regional freight routes support wider economic activity. Both have significant externalities that negatively impact the delivery of the community's transport Vision and priorities.

The North Sydney Local Deliveries and Regional Freight Strategy will assess the suitability of existing and proposed local delivery and freight infrastructure to promote the community's vision for transport in North Sydney. It will:

- Set area-based delivery infrastructure requirements based on the sharing of assets by multiple delivery destinations;
- Identify actions to encourage or require delivery tasks to be completed outside of periods of high pedestrian activity: peak hours, lunch time, etc.;
- Identify the comparative competitiveness of existing road and rail freight options to/from key regional freight origins and destinations and identify actions that increase the competitiveness of rail freight;

- Identify preferred freight routes to regional freight interchanges;
- Identify preferred freight, delivery and construction vehicle routes through North Sydney;
- Identify advocacy opportunities that minimise the impact of local deliveries and freight on North Sydney roads (e.g. last mile bicycle delivery networks); and
- Identify and address emerging transport trends that may effect delivery and freight functions in North Sydney (e.g. last mile drone deliveries).

As per the modal hierarchies identified in Section 3, facilities that accommodate local deliveries and regional freight will be carefully managed to support local business activity, opportunities for local employment and wider economic growth while minimising the negative impacts that delivery and freight vehicles have on safety and amenity in urban centres and local roads.



Figure 21: Loading dock

6.2.2 North Sydney Parking and Traffic Action Plan

There is a clear link between parking supply and traffic generation as described in the Roads and Maritime Services' Guide to Traffic Generating Development. Providing new parking and traffic infrastructure to "accommodate" parking demand and traffic growth results in:

- Induced traffic demand; (the Lewis-Mogridge Position, 1990)
- Increased congestion at upstream and downstream pinch-points; and
- Reduced uptake of walking, cycling and public transport. (the Downs-Thomson Paradox, 1990)

The North Sydney Parking and Traffic Action Plan will assess the suitability of existing and proposed parking and traffic infrastructure to deliver the community's vision for transport in North Sydney. It will identify where the targeted application of parking policy and demand management initiatives may support reduced car ownership and use, provide more equitable access to parking and reduce traffic volumes in North Sydney. The North Sydney Parking and Traffic Action Plan will investigate:

- Area-based parking rates for new development based on walkability of local shops, service and public transport nodes;
- Area-based travel planning requirements for new development;
- The impact of car-share on parking and traffic demand;
- Area-based car share requirements;
- Additional measures to advise prospective residents about parking arrangements and restrictions;

- Amendments to the resident parking permit scheme that establish parking areas that share similar characteristics due to their proximity to local trips attractors;
- Amendments to the resident parking permit scheme that ensure that resident permit allocations do not exceed parking supply within identified parking areas;
- Parking restriction typologies that will help to deliver target on-street parking saturation rates;
- A best practice approach to the planning of Council's parking assets that considers emerging transport technologies;
- The prioritisation of parking for less mobile road users;
- Locations where the re-introduction of on-street parking will increase side friction, create slower speed traffic environments and/or provide a buffer between carriageway (traffic) and footpath (walking) environments;
- Emerging transport trends that may affect private vehicle mode share in North Sydney (e.g. road-user charging and autonomous vehicle technology); and
- Demonstrate community leadership by delivering Council's own travel plan.

Although private motor vehicle use will continue to be an important part of multi-modal transport networks for the foreseeable future, parking supply and associated traffic generation must be carefully managed if the aspirations of the community's transport Vision are to be realised. As per the modal hierarchies identified in Section 3, parking supply and traffic infrastructure capacity will be carefully managed to minimise traffic growth, encourage walking, cycling and public transport use and deliver the priorities identified in the community's transport Vision.

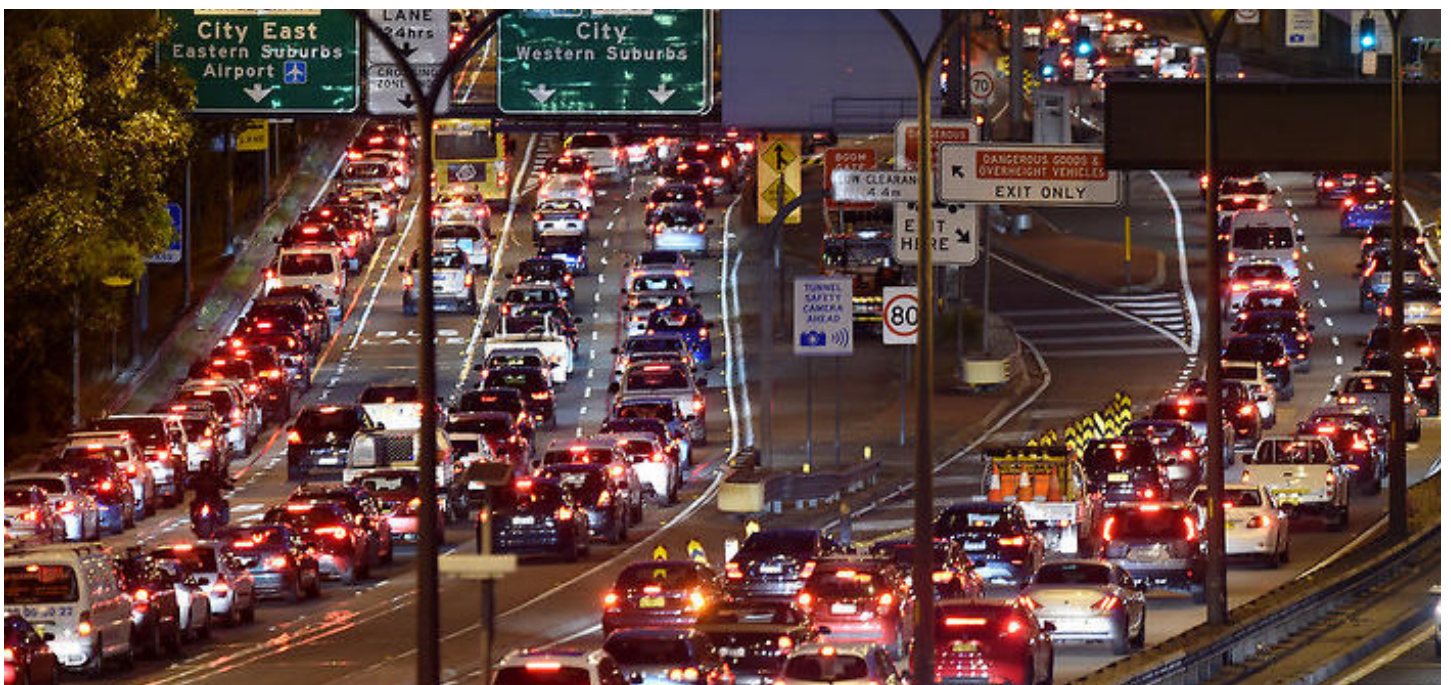


Figure 22: Congestion on the Sydney Harbour Bridge

7. IMPLEMENTATION

7.1 Proposed Policy Context

The proposed policy hierarchy and implementation framework (see figure 23) is designed to optimise the efficient and effective delivery of the identified transport Vision and modal action plans.

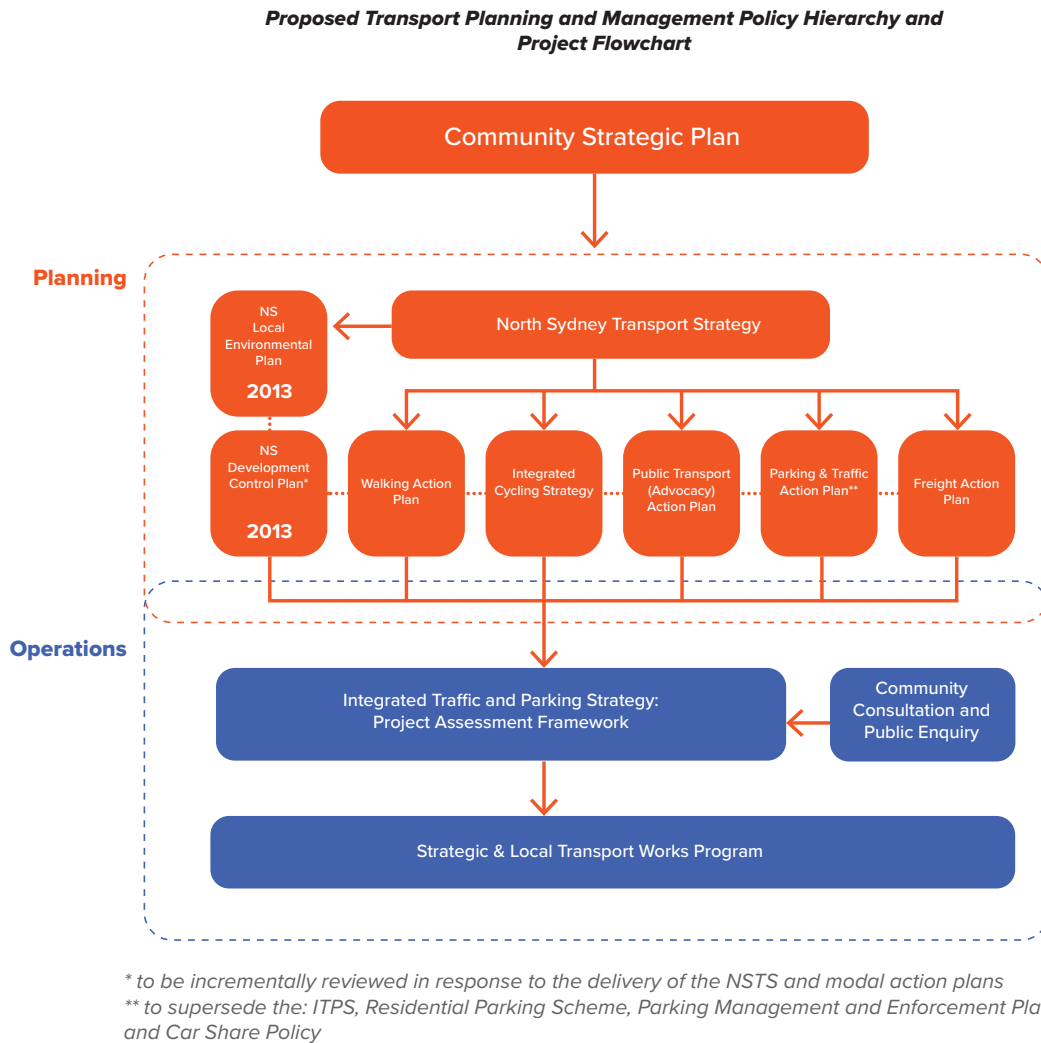


Figure 23: Proposed North Sydney Transport Policy Context

As noted previously, community consultation regarding the relative importance of transport specific objectives identified in North Sydney CSP outcomes, strategies and indicators has informed the development of the NSTS Vision and Priorities. The 5D best practice transport planning principals will inform a review of North Sydney’s DCP parking rates.

7.2 Strategic Transport Projects

Mode specific transport action plans will identify strategically important transport projects that address the key priorities of North Sydney’s transport vision. Strategic projects will, typically, involve a mix of advocacy, education, encouragement, enforcement and engineering components.

7.3 Local Transport Projects

Local transport projects, identified through community consultation and public enquiries, will be assessed for consistency with the North Sydney transport vision and prioritised using the revised Integrated Traffic and Parking Strategy (ITPS): Project Assessment Framework (figure 24). Generally, less expensive education and encouragement interventions will be delivered in the first instance, enforcement interventions will follow and engineering interventions will only be pursued where previous interventions are unsuccessful.

7.4 Transport Planning and Management Decision Matrix

The revised Integrated Traffic and Parking Strategy (ITPS): Project Assessment Framework below delivers a justified and consistent transport planning and management decision matrix that addresses North Sydney's transport vision and priorities and that can be used to prioritise both strategic*1 and local*2 transport works programs.

*1 projects identified through Mode Specific Action Plans

*2 projects identified through TAPAS consultation and ongoing resident enquiries

Community Transport Priority	Will the project:	Make Worse							Improve	NSTS Priority Rating *	TOTAL
		-3	-2	-1	0	1	2	3			
Safe Travel	...improve community safety by creating slow speed road environments where more vulnerable road users are protected from higher impact road users and the number of crashes and severity of injuries is minimised?								0.81	Score X NSTS Priority Rating	
Transport Security	...improve personal security through improved streetscape design, increased street activity and passive surveillance?								0.81	Score X NSTS Priority Rating	
Social Wellbeing	...provides social spaces where human interaction is given the highest priority and the negative impacts of traffic are minimised, promoting incidental social interaction, increasing civic pride, reducing anti-social behaviour and community policing requirements?								0.65	Score X NSTS Priority Rating	
Active Health	...provide infrastructure that encourages healthy and active lifestyle/travel choices?								0.65	Score X NSTS Priority Rating	
Fair Access to Parking	...reduce demand for parking and / or provide more equitable access to existing parking supply?								0.59	Score X NSTS Priority Rating	
Environmental Sustainability	...encourage the use of low greenhouse gas emitting transport options?								0.56	Score X NSTS Priority Rating	
Local Environments	...encourage the use of travel modes that have minimal impact on air quality, water quality and noise?								0.56	Score X NSTS Priority Rating	
Transport Affordability	...encourage the use of travel options with lower social, health and economic costs and higher social, health and economic benefits?								0.51	Score X NSTS Priority Rating	
Congestion	...apply travel demand management principles to minimise traffic demand and associated traffic congestion?								0.44	Score X NSTS Priority Rating	
Business Activity	...increase business opportunities by improving the look/amenity of North Sydney throughout the day and in to the evening while, at the same time, reducing the whole of life cost of transport networks, including the ongoing costs associated with cleaning and maintaining assets?								0.38	Score X NSTS Priority Rating	

TOTAL = SUM / 16.35

Preliminary Project Score = SUM/16.35 x estimated cost x residents effected

Figure 24: Proposed North Sydney Transport Planning and Management Decision Matrix

* figures derived from community feedback regarding the relative priority of CSP outcomes

8. MONITORING, REPORTING AND REVIEW

Transport requirements change constantly due to changes in population densities, land use diversity, quality of walking and cycling infrastructure, distance to transit and destination accessibility as well as emerging transport technologies. New technologies provide innovative solutions to problems, but may have long-term social, health and economic implications that are unclear when first introduced. Consideration must also be given to the changing ideologies of the institutions that influence local transport planning and management. As such, the North Sydney Transport Strategy and modal action plans will be monitored and reviewed every 4 years, in line with CSP monitoring and reporting, in order to maintain the required level of currency in this rapidly evolving policy area.

Existing CSP indicators will be augmented by a number of additional transport specific indicators to provide a clear picture of the success of the NSTS and modal sub-strategies in delivering the community's transport vision (see figure 24).

Community Priority	Proposed Indicators
Safe Travel	<ul style="list-style-type: none"> • Number of cyclist injuries • Number of cyclist fatalities
Transport Security	<ul style="list-style-type: none"> • Percentage of active frontages delivered as part of new development • Street level activity in commercial, mixed use and neighbourhood centres
Social Wellbeing	<ul style="list-style-type: none"> • Rates of mental health registrations • Rates of anti-social behavior / vandalism offences per 1,000 residents in North Sydney • Police enquiries
Active Health	<ul style="list-style-type: none"> • NSCSP Indicators
Fair Access to Parking	<ul style="list-style-type: none"> • Percentage of roads that meet the 85% target parking saturation rate.
Environmental Sustainability	<ul style="list-style-type: none"> • NSCSP Indicators
Local Environments	<ul style="list-style-type: none"> • NSCSP Indicators
Transport Affordability	<ul style="list-style-type: none"> • Percentage of household earnings spent on transport. (ABS Survey of Housing and Income)
Congestion	<ul style="list-style-type: none"> • Traffic volumes on the: <ul style="list-style-type: none"> • Sydney Harbour Bridge / Tunnel; • Military Road • Warringah Freeway; and • Pacific Highway.
Business Activity	<ul style="list-style-type: none"> • NSCSP Indicators

Figure 25: Proposed Indicators

9. CONCLUSION

The NSTS is based on extensive feedback from preliminary community consultation undertaken in 2016. This feedback helped to identify the North Sydney community's transport priorities, aspirations for the future of North Sydney's transport networks, and informed the development of the NSTS.

A holistic Vision for transport in North Sydney is provided in Chapter 4.

A principled, best practice approach to achieving this Vision is provided in Chapter 5.

Chapter 6 identifies requirements for the development of mode specific Action Plans.

A Council-wide transport implementation framework (fig 23) and delivery methodology (fig 24) are identified in Chapter 7.

A review of shared CSP/NSTS measuring and reporting indicators is provided in Chapter 8.

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