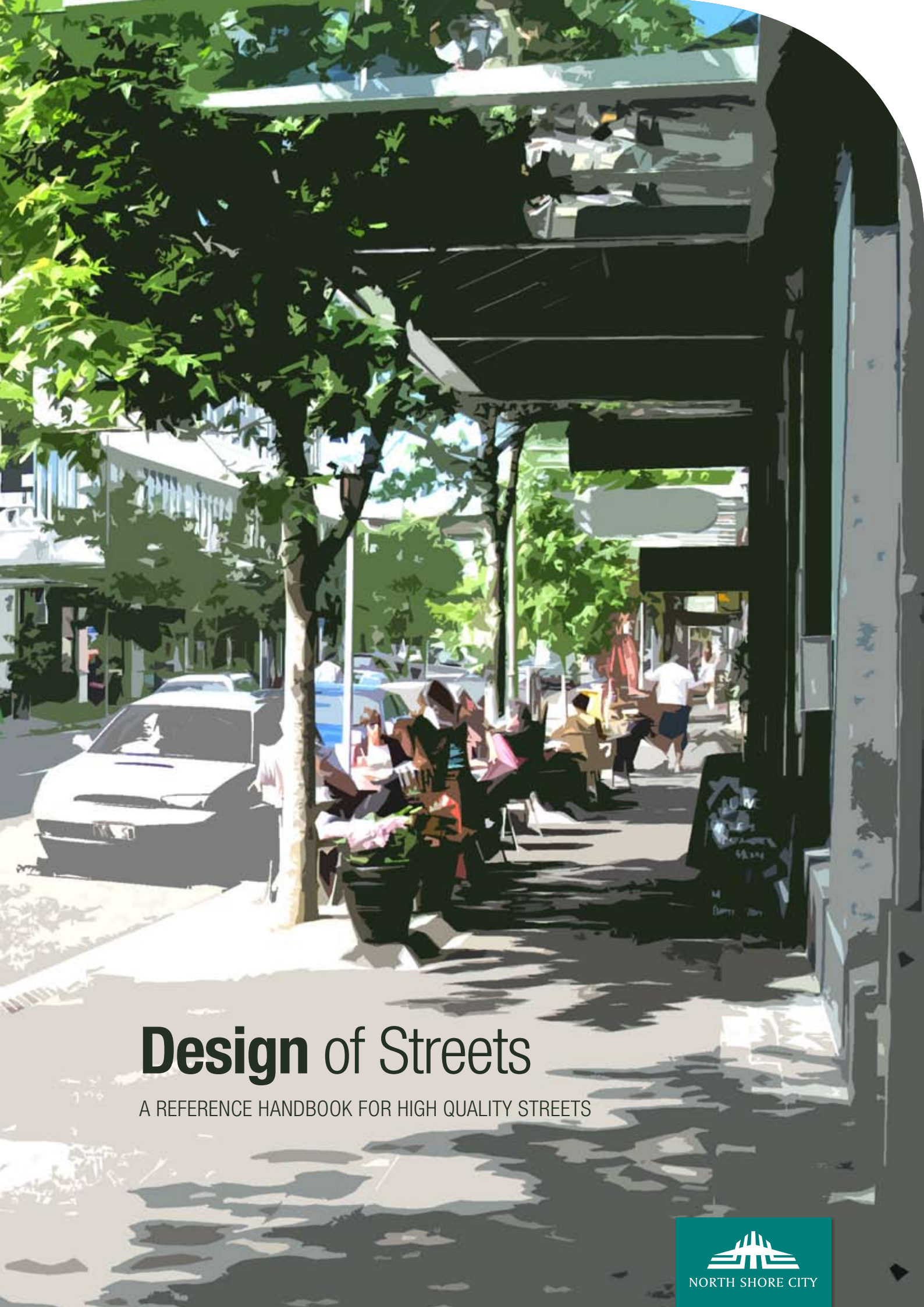

Design of Streets

A REFERENCE HANDBOOK FOR HIGH QUALITY STREETS

NORTH SHORE CITY

I believe streets deserve respect – they shape the form of the city and how we move through it. They accommodate buildings, people, vehicles, utilities, vegetation, stormwater, signage, street furniture and lighting.

Foreword

I believe streets deserve respect – they shape the form of the city and how we move through it. They accommodate buildings, people, vehicles, utilities, vegetation, stormwater, signage, street furniture and lighting. Streets are the most used and most visible public asset a city has. To build great cities and towns, first build great streets.

In the recent past, many streets have been designed with vehicle movement as priority. This tends to diminish the potential of streets to function as social space and has resulted in some streets that are hostile environments for people.

The objective of the Design of Streets Handbook is to initiate thinking about how we design and deliver streets today and what changes we can make to improve this in the future.

Some advice given in the Handbook does not conform with conventional engineering thinking and road standards but innovative approaches overseas suggests that there are opportunities to review and make changes to existing practice in use in New Zealand.

All streets have the potential to provide a more balanced approach for pedestrians and vehicles. I believe the best practice principles and guidance in this Handbook will be applicable to a wide range of street conditions in New Zealand, not just North Shore City.

The Handbook is intended for those concerned with streets, whether they are involved in planning, design, decision-making or delivery. This will include Council officers, politicians, local community representatives, the public, developers, utility providers and other public agencies, such as the New Zealand Transport Agency.

While change will not happen overnight, it is my hope that points raised by this Handbook will promote discussion about creating more enjoyable and efficient environments for people, in whatever way they choose to move through and interact within streets.

Andrew Williams, JP
October 2009
Mayor of North Shore City

ACKNOWLEDGEMENTS

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Project Team:

Sarah Lindsay and David Sanders – NSCC
Jessica Donaldson, Will Thresher, Heather Penman and Juliet Glaister – Thresher Associates

North Shore City Council Steering Group members:

Claire Bodmin, Steve Cable, Philip Consedine, Zoe Douglas-Jones, Chris Harris, Jan Heijs, Andy Irwin, Ken Lee-Jones, Trevor Mackie, Graeme Read, Mike Russell, John Stenberg, Chris Stumbles.

Additional consultation and advice:

Phil Jones – Phil Jones Associates;
Michelle Lewis – New Zealand Transport Authority;
Bronwyn Coomer-Smit – Flow;
Yvonne Weeber – Ministry for the Environment.

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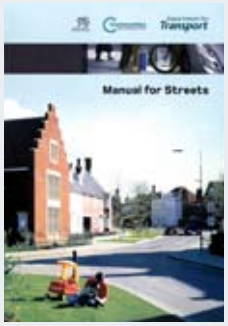
Streets make up the majority of the public realm in our towns and cities. How we feel about and value a place has much to do with how we move around it and perceive it at ground level.
A city is its streets.

Introduction



Streets make up the majority of the public realm in our towns and cities. How we feel about and value a place has much to do with how we move around it and perceive it at ground level. A city is its streets.

New Zealand has made an important national commitment to achieving better designed urban areas through its Urban Design Protocol, of which North Shore City Council is a signatory. However, delivering better quality places cannot take place without delivering better quality streets.

Unfortunately in New Zealand, as in many other developed nations, the unthinking application of traditional road standards, developed over decades, has tended to cause conflict with good urban design. Our towns and cities are full of standardised roads and streets that are essentially designed to meet the needs of motorised traffic which – often without the designers intending it – actively discourage people from choosing to walk, cycle or take public transport.

Since the mid-20th century the unrestricted use of the private car formed the basis for the development of New Zealand's transport systems and – perhaps more crucially –its patterns of land use and development.

While this has brought substantial benefits to many people, these policies have also caused significant disbenefits, including dependence on expensive foreign oil, costly and distressing road accidents, increasing CO2 emissions, and a growing obesity problem.

We know that change has to take place. Throughout much of the world there is an increasing recognition of the contribution that well-designed urban streets can make in tackling these issues.

The UK Government published Manual for Streets in 2007, which for the first time recognised that streets have a value as places and are not simply corridors for movement. Recent experience on busy arterial routes has shown that urban design-led approaches to streets can bring significant road safety and quality of life benefits – the two are not mutually exclusive.

This document sets out how some of these ideas can begin to be applied. It is not a blueprint or a firm set of rules. Streets have different and more complex issues to be balanced, compared to inter-urban roads; and have to fulfil many functions which are often in competition for limited space or resources.

It is therefore crucial that everyone involved in designing, approving, building and maintaining our streets works together towards the overall aim of making towns and cities better places to be.

I was fortunate to be invited to speak on the subject of street design in New Zealand during the winter of 2008 and saw first-hand the challenges that have to be faced. But I also saw the enthusiasm and passion of those who want to respond to and overcome these challenges. I believe that this document provides practical guidance that will help deliver a new direction in street design and I wholeheartedly commend this Handbook to you.

Phil Jones,
October 2009
Co-author of Manual for Streets

How to use this Handbook

This Handbook is intended as a best practice source document for anyone involved in the design of streets. It should be used to set project objectives and to inform project briefs; both are essential elements which must be addressed at the outset of any transportation project.

Project objectives should be holistic; that is, responsive to all users and the adjacent land uses. Once agreed, projects can be tested against these objectives as the design work progresses.

Project briefs can be developed around these objectives. Again, it is essential that the project brief adequately encompasses all users' requirements and that it will deliver an outcome that enhances pedestrians' experiences and the street as a public place.

The Handbook is organised under the headings of Context, Essentials and Details and draws on proven fundamental design elements that will create better streets with a broader range of functions.

Each page asks a question to stimulate the reader's awareness about an important aspect of street design. The text provides an overview of the topic and offers design principles or important points to note when designing, reviewing and delivering streets.

Images shown throughout the Handbook provide both positive and negative examples of street design to either emulate or avoid in future.

Highlighted boxes with text offer additional important points.

A number of references (displayed as footnotes) have been used in this Handbook. These may assist in gaining a greater understanding of the issues and principles in the Handbook.

How the Handbook links with other Transport Strategies and Guidelines

This Handbook is intended to compliment other strategic documents including the following national and regional documents:

National documents:

- New Zealand Transport Strategy 2008 – Ministry of Transport
- Getting there - on foot, by cycle 2006 – Ministry of Transport
- Raising the Profile of Walking and Cycling in New Zealand 2008 - Ministry of Transport
- Pedestrian Planning and Design Guide 2007 – NZTA
- New Zealand Urban Design Protocol 2005 Ministry for the Environment

Auckland regional documents:

- Regional Arterial Road Plan 2009 – ARTA
- Regional Parking Strategy 2009 – ARC
- Integrated Transport Assessment Guidelines 2007 – ARTA
- Auckland's Sustainability Framework 2007 – ARTA

The Handbook is not intended to replace the NSCC Infrastructure Design Standards Manual, but should be read as a best practice guide to be used at the design inception of transportation projects.


tour

CONTEXT

"If we can develop and design streets so that they are wonderful, fulfilling places to be – community-building places, attractive for all people – then we will have successfully designed about one-third of the city directly and will have had an immense impact on the rest."

Allan Jacobs[1]

[1] Project for Public Spaces, 'Streets as Places: A Training Seminar', 2008, accessed at http://www.pps.org/training/info/transportation_training_course on 16/01/08

[2] CABE & The Institution of Highways & Transportation and English Heritage, 'Designing Streets for People: How Highways and Transportation Professionals Can Help Make Better Places', publish date unknown, pg 24 accessed at http://www.iht.org.uk/technicalaffairs/downloads/Streets%20for%20People.pdf on 15/05/08

Why is working together essential to delivering better streets?

The importance of streets cannot be overstated. The impact that these spaces have on social and economic well-being is paramount. However, current street planning and design practice is undertaken by professionals sometimes operating in isolated workstreams with limited interaction or understanding of each other's objectives and desired outcomes.

Most streets today are average. They are the outcome of a limited vision of the role streets plays in the wider context and restrictive standardised practices.

There is urgency for change; with obesity levels rising, oil reserves declining and climate change issues coming to the fore, long-held assumptions are being challenged around the world. People involved in the design and delivery of streets must acknowledge that there is a need to genuinely work together to deliver better streets.

Delivering high quality streets takes place in a complex environment. There are a large number of people involved in the design and delivery of streets both within Council and in the private sector. Each one of these people will have different objectives and expectations of the outcome if there is no clear consensus about how streets will be used and by whom.

Delivering streets requires a better balancing of the objectives, values and desires of the people involved in street design and an honest appreciation of the points of view of other professionals and street users.

This Handbook is to help people raise the expectations of what streets can and should be.

"We need to break down silo mentalities and look outside the traditional confines of our professional boxes. None of us has all the attributes necessary to design a town or city, and no discipline has the right to insist on primacy when it comes to design solutions".[2]

CABE

Left: Understanding objectives of others in working towards a common goal

Why are connections through neighbourhoods, towns and cities important?

The way streets are designed and fit together influences how people perceive and experience an environment. This is vitally important and carries great weight – streets ultimately affect every person's quality of life.

Streets are fundamental movement networks through cities and towns. They offer vital connections to and through spaces allowing pedestrians, cyclists, vehicles and goods to get from A to B, giving life to a town or city. For this reason, streets are where public life occurs – they are a neutral stage for social interaction with others. They are where people live, work, socialise, shop and play.

When traffic levels threaten the environmental quality and enjoyment of a street, the balance between provision for people and for vehicles must be adjusted.

Whatever their main function, streets must be thought of as an integral part of the urban fabric.

Street networks should avoid dead ends, cul-de-sacs and encourage layouts that minimise travel distances, provide a choice of routes, maximise access to facilities and services and assist people in finding their way by providing a permeable network.

Connected street networks offer the ability to spread traffic loads through alternative routes reducing reliance on one or two major routes that become periodically overloaded.

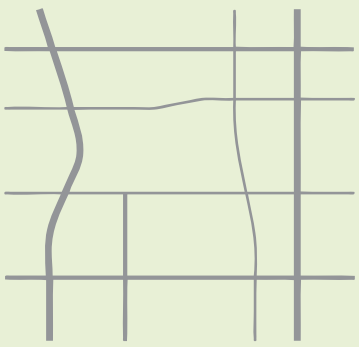
Good design and collaboration can reconcile the demands of movement and social space on streets by ensuring the needs of people are equitably met in street design and that movement networks are laid out to support that vision.

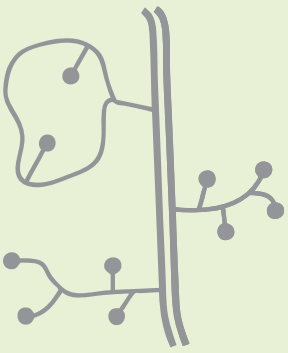
Key points to note:

- design an inter-connected street network that offers choice of routes for users
- connect new streets to existing street networks
- avoid cul-de-sacs whenever possible

Right:
A connected street network provides people with a choice of route from A to B [3]

Further right:
Street networks accessed off an arterial street are reliant on the efficient operation of that street and offer limited choice and connectivity [4]





[3,4] Sketches accessed and adapted from http://www.pps.org/transportation/info/trans_articles/future_of_trans on 23/07/08

What is a legible environment? And how does it aid in navigating streets?

Left: Streets with a lot of signage can become cluttered and confusing

Above centre: Public artwork acts as a landmark/social meeting place that people become familiar with i.e. “meet you by the horses”

Above right: Distinctive buildings, such as the Christchurch Cathedral, provide visual cues that enable people to orientate themselves

A legible street environment allows people, particularly those on foot and bicycle, to find their way intuitively. It is about helping people to better understand and navigate a neighbourhood, town or city.

Street users innately search the street and surrounds for markers and cues for where to go next on their journey. If a journey unfolds in an understandable way, street users are able to ‘read’ the environment to their end destination.

Legible streets are achieved by:

- Keeping in mind how a pedestrian would navigate an area, not how a person in a vehicle would navigate it
- Enhancing clear visual lines from one point to another to allow the pedestrian to see what is ahead and how to get there easily and safely
- Using landmarks to provide orientation cues and memorable locations. Landmarks help people visualise their present position and where they want to get to. A landmark can be large scale so that people can see it from a wider area such as a tall building, or a series of well-located landmarks can help navigate on a local scale, such as significant street trees, a park or a distinctive building
- Providing consistent signage only at decision points to help way-finding and not so much signage that a person is visually overwhelmed
- Avoiding excessive standardisation of streets - through use of standard cross-sections, materials, signage - which result in ‘anywhere’ streets with no sense of place and are confusing to navigate

What are character areas? What do they have to do with designing streets?

Above:
The unique topography has shaped the design of this street and characterises other streets in the area

Character areas are areas of a city or town that have a unique and recognisable character that is different from neighbouring areas.

These differences may be the result of:

1 topography
2 landscaping and vegetation
3 street patterns
4 land use patterns
5 open space
6 built environment
7 age and style of housing
8 streetscapes
9 materials

An awareness of the value of the unique characteristics of different parts of a city is important to how streets have evolved over time. The character of different parts of a city is often expressed in its streets.

It is important that street designers should:

- have a general awareness of the character of individual areas of a city or town and how they fit together and contribute overall to that city or town
- have an understanding of how topography and vegetation shapes the character of an area and the contrast between different areas
- accept the inclusion of ‘character’ as a consideration for street design decisions within an area
- acknowledge the identity of an area allowing local people and visitors to understand or ‘read’ a unique area and where it is located in a wider context
- recognise the differences from one street to another, even differences from one end of a street to the other
- accept the way different neighbourhoods look, feel and function and value these differences

Left:
The recognisable streets of Devonport are often characterised by narrower road widths, houses close to the street front and established street trees

Above centre and right:
It is important to recognise and maintain the character and individuality of different areas e.g. residential streets surrounding Mt Eden are characterised by volcanic rock walls

Devonport is an area of North Shore City with a strong local character. This is evident in its streets, houses, mainstreet and landmarks. Any alteration to the streets of Devonport must take these characteristics into account otherwise Devonport's identity would be compromised. Other character areas of North Shore City should be given the same recognition when modifying streets.

Giving recognition to character can be achieved by:

- undertaking a character audit to identify key characteristics of streets proposed for works
- creating a database and glossary from the character audit that allows access to local character information for street designers
- demonstrating consideration of local character in street design. This means designing streets and/or street elements that are either consistent with or compliment established local character. The suitability of materials and streetscape elements should be considered
- identifying areas that lack a distinctive or desirable local character. These locations provide opportunities for community involvement and pride in the rejuvenation or creation of a new local character

How do street hierarchy terms impact on street design?

Streets should be designed to suit their context.

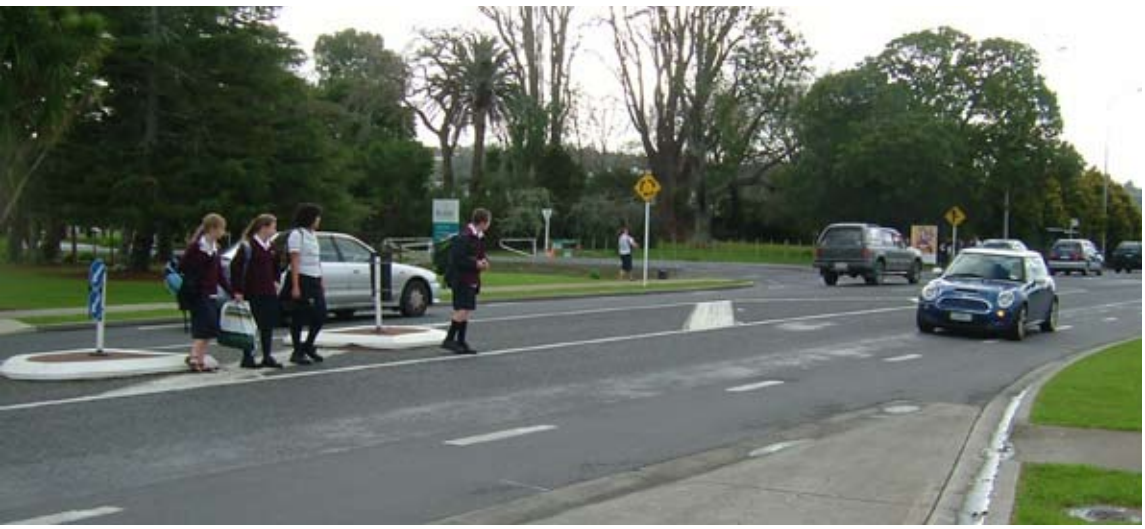
However, streets have typically been classified by their traffic function into a hierarchy, using terms and design standards that emphasise motor vehicle movement patterns, with the sole aim of providing an efficient network for vehicular traffic.

This approach regards streets as traffic conduits and ignores their multi-functional role. Streets are complex, requiring a balance between movement and place – an outcome not achieved by applying standard hierarchies.

Streets can become hostile environments for anybody other than those travelling in vehicles.

In many Council documents, roads are identified and classified under headings such as National Routes (Motorways and State Highways); Primary (Regional) Arterials; Secondary (District) Arterials; Collector Routes; Local Roads.

Above:
This street is classified as a Primary Regional Arterial – it has been designed for vehicle flow with little consideration given to people that live, walk and work on this street



Left:
This busy arterial is located adjacent to a school. The street environment is designed to maximise vehicle flow and hasn't adequately considered the opportunities for designing around the needs of school children

These terms and their associated design standards are often applied without considering the surrounding context. This results in streets that are disconnected from people, adjacent land uses and the natural environment.

Such terms and standards do not recognise the complexity of urban environments and the many functions served by streets, instead, these are oversimplifications.

Design standards and hierarchy terms need to reflect the wider role of the street as well as being a means for vehicle movement.

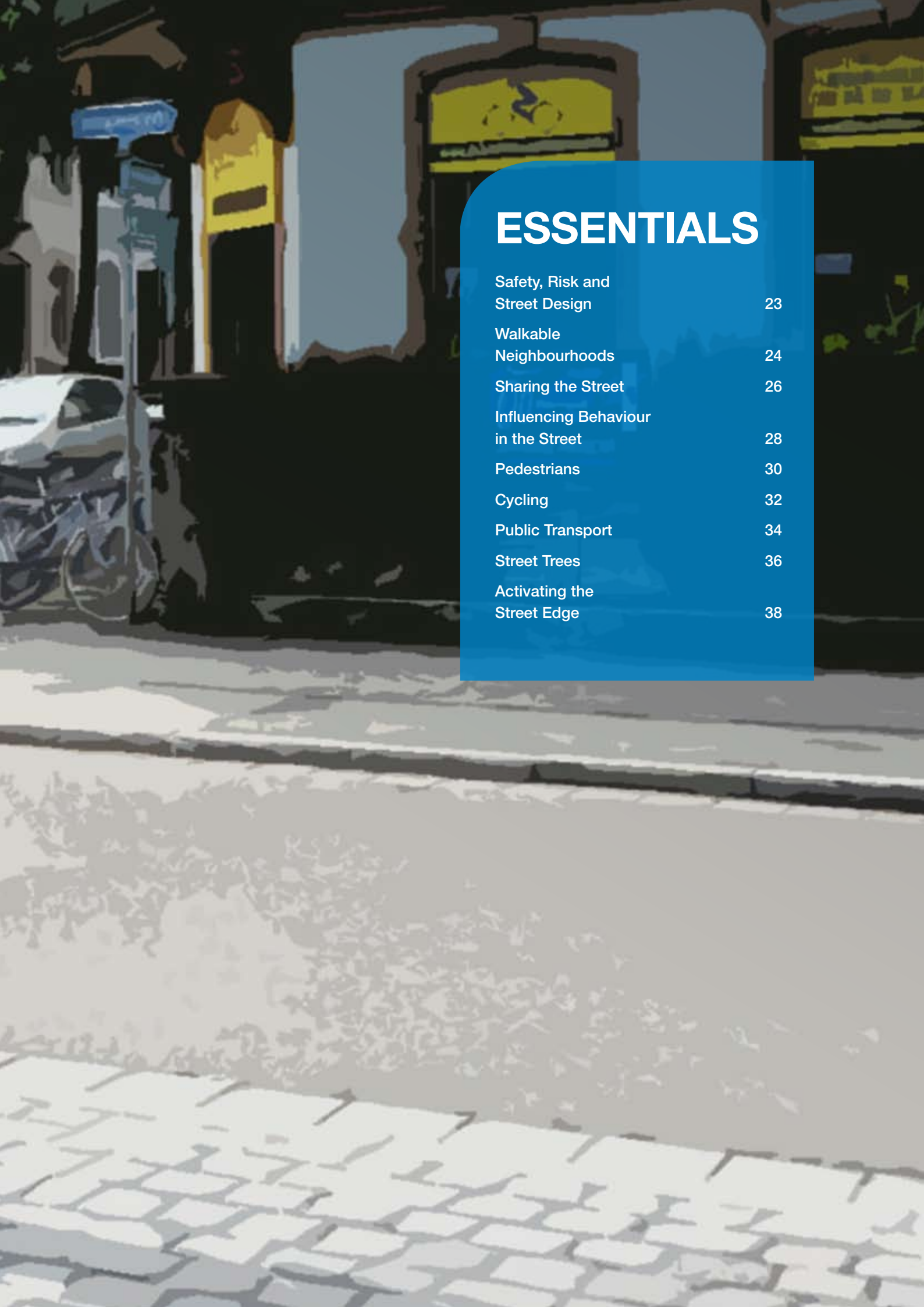
Classifying street types should always consider:[5]

- Capacity: how movement of every kind can be accommodated safely
- Character: the role of the street in the urban realm and the types of building, landscape and land use that line it

"Sometimes roads are like rivers. Increase their flow too much and they can drastically reshape their surroundings. Pump up the traffic on a road through a small town, for example, and all sorts of new gas stations, billboards, and fast food outlets spring up; soon, the road widens and sprawl, like a mudslide, buries the town's character, pride, and sense of place".[6]

[5] English Partnerships, 'Urban Design Compendium', 2000, accessed at http://www.urbandesigncompendium.co.uk/public/documents/Chapter%204%20Making%20the%20connections.pdf on 17/12/07

[6] Michigan Land Use Institute, 'People and Pavement: Transportation Design that Respects Communities', 2004, pg 2 accessed at http://www.mlui.org/downloads/flexibledesign.pdf on 03/06/08



ESSENTIALS

It can be seen that safety audits do not always take into consideration the wider context, which can also play a significant role in minimising safety concerns. CABE argues in their briefing paper 'Civilised Streets' that "other factors are usually ignored, such as the total number of users, the range and type of users, the way they use and enjoy the space, and economic indicators such as customer 'footfall' in nearby shops and so on".[7]

[7] Commission for Architecture and the Built Environment, 'Civilised Streets', 2008, pg 5 accessed at www.cabe.org.uk/files/civilised-streets.pdf on 28/04/09

What role do safety and risk play in the design of streets?

Managing safety and risk is a contentious issue in the design of streets and is a matter of continuing debate. No-one denies that streets need to be as safe as possible for all users. However, street design is heavily influenced by a fear of risk at present, and the responses have tended to be to design all aspects of the public realm to be as safe as possible, so much so that many public spaces have become unstimulating places to be, which impacts on quality of life.

In the design of streets, traffic engineers and safety practitioners have typically been concerned with reducing driver uncertainty by providing them with timely guidance (via traffic signs and road markings) and improving safety by providing wide turning radii, ample carriageway space to accommodate careless driving, removing perceived threats such as trees and attempting to segregate different road users from each other.

It can be seen that this approach uses risk aversion to actively manage any hazard or risk in this environment but it has consequently instilled a sense of certainty and priority in drivers. Streets have become intimidating and inconvenient for other users of the street (all those not in vehicles) and lack character and social life.

Accepting that some risk will always be present is the greatest cultural change required to restore spontaneous human activity in the public realm and as an essential component of activity and interaction.

Safety audits including risk assessment are formal, independent examinations that aim to identify potential road safety problems to eliminate or mitigate them, and minimise accident numbers and severity. However, the current form of safety auditing often supports conventional street design by reinforcing fear of risk and liability.

It is time to reconsider long-standing assumption and expand the scope of audits – there is a strong argument for a comprehensive ‘place audit’ (which includes walking, cycling, community/social, economic and environmental assessment) to be given the same weight as road safety audits in the road planning, design and construction process.

Above left: Navigating several traffic lanes, this pedestrian must actively assess risk and negotiate their crossing accordingly

Above right: Streets have become dominated by features designed for the safety and convenience of people moving at speed in vehicles

What are walkable neighbourhoods and how do we create them?

A walkable neighbourhood expresses a quality of the built environment that encourages people to get around on foot, not because they have to, but because they want to as it will be a convenient and pleasant experience.

Increased walkability offers a viable transport mode that is environmentally friendly and improves physical fitness and social interaction. Walkable neighbourhoods are capable of sustaining a higher quality of life.

The walkability of a neighbourhood will be influenced by the ability of the streets within the neighbourhood to provide pedestrians with the facilities to walk, such as:

- A choice of connected routes: offering a choice of routes allows people to add variation and interest to their journey. Avoid the use of disconnected cul-de-sacs and looping or dead end streets. A connected street network allows people to choose the most direct route, easily find their way and makes best use of the time and energy committed by the pedestrian
- A variety of experiences: a vibrant street environment offers experiences that stimulate the senses i.e. looking, hearing, feeling, and allows for social interaction opportunities
- Comfortable surroundings: streets that are safe (opportunity to be seen by others), pleasant (limited noise, pollution) and offer shelter from the elements (trees)
- Quality of the street environment: well-maintained and quality street furniture and facilities must be easy to use for all users i.e. footpaths with even surfaces, convenient pedestrian crossings, appropriately located resting places
- Location of services and facilities: develop integrated, well connected land use and transportation to enable higher densities and mixed-use developments that are easily accessible by foot, bicycle and public transport. Local activity nodes in a neighbourhood such as schools, corner shops, medical centres, groups of shops, community centres and libraries should be located within walking distance - ideally a 10 minute walk time.

Above left: An important measure of walkability is whether children are able to walk to and from school rather than being dropped off in cars or buses

Above right: Walkable neighbourhoods offer key services and activities within walking distance

A walking audit is a review of walking conditions along specified streets conducted with a diverse group of community members, which can include Council officers, Councillors, local residents, school groups, business association members, police, developers, business owners, and other interested parties. Areas are analysed for both their positive and negative conditions.

Recommendations are made on:

- footpath width and condition
- pedestrian crossings
- safety/passive surveillance opportunities
- vegetation
- street furniture
- land use and housing types
- building placement
- on-street and off-street parking

A neighbourhood comparison

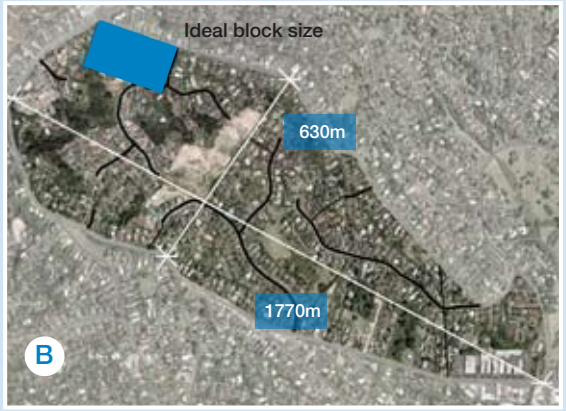
Research suggests ideal block sizes in the following ranges:

70 - 120m in depth

120 - 220m in length

A Many streets in Devonport maintain good connectivity, walkability, passive surveillance and a strong neighbourhood character. Due to smaller block sizes traffic tends to travel more slowly and more cautiously, creating a safer and more enjoyable environment for pedestrians and cyclists. Most residents live within easy walking or cycling distance of the Devonport retail centre and public transport nodes, and most of these trips can be navigated through the local street system. This serves the dual purpose of increasing walking and cycling modes and boosting the local economy.

B In contrast, the Browns Bay street network is largely comprised of cul-de-sacs and disconnected streets. Many residents live within walking or cycling distance of the small town centre, however, many journeys involve inefficient backtracking or travelling along busy arterials. Pedestrians and cyclists should be encouraged through reconnecting the street network and creating pride of place and a stronger local character.



How can the needs of street users be balanced?

Streets are multi-functional places and there is a need to reverse the street user hierachy in consideration and allocation of road reserve space to provide greater equity for all uses and users.

Until recently, conventional transport planning and engineering practice has devoted most street space to vehicle needs resulting in an equity imbalance in the layout of the street.

Equity refers to the distribution of resources and opportunities. Transportation decisions can have significant equity impacts. How easy it is to move around an area determines where people can live, shop, work, go to school and recreate and how they will make those journeys. Adequate accessibility and mobility is essential for people to participate in society.

Streets designed for people are often attractive and functional and will benefit a wider group, especially those who may not have access to a car, i.e. children and the elderly.

When designing streets, consider the street user hierachy in this order of priority:

1 pedestrians
2 cyclists
3 public transport
4 commercial and private vehicles

Above left:
Too often pedestrians, cyclists and public transport patrons have found themselves 'down the pecking order' when it comes to the prioritisation of space within the street reserve

Above right:
Pedestrians are given priority in Portland, Oregon; wide footpaths, narrower kerb to kerb widths, tight corner radii and coloured street markings aid in crossing the street

Key points to note to improve street reserve prioritisation and provide equitable transport choices:

- Reassess present street allocation procedures to accommodate all users so that movement on foot, by bike or public transport, as well as between these modes is as easy and convenient as using a private vehicle
- Continue to educate about the importance of balancing the needs of diverse users ie the social value of different types of transportation activities and their social costs
- Reallocation of street reserve space in some locations can have social and economic benefits. For example, converting traffic or parking lanes into footpath space to accommodate café seating, retail activities, rest spots with benches
- Allocating space within the street reserve with pedestrians as priority will create walkable streets. Walkable streets create a buzz of activity, resulting in more social life occurring on the street
- Consider a variety of prioritisation strategies that assess the land use activities adjacent to the street and design accordingly to meet the needs of those activities, not just for vehicle movement
- Streets that are designed for lower vehicle speeds allow for pedestrians, cyclists and vehicles to mix safely

Above left :
Median strips can add greenery to the street, but when continuous creates a barrier that pedestrians are unable to cross, effectively cutting off one side of the street from the other

Above right:
Streets can accommodate pedestrians, cyclists, on-street parking, vehicles and landscaping

How can street design influence the behaviour of users?

Pedestrians and drivers have been separated in the street through the use of signs, kerbs, speed limits, pedestrian crossings, barriers and traffic lights.

The road becomes the domain of vehicles and the footpath the domain of pedestrians and the two should only meet at pre-determined points – pedestrian crossings or intersections.

An alternative is where demarcation between users in street design is lessened, for example, by removing kerbs to have no change in level between the roadway and footpath, giving pedestrians greater freedom of movement and a greater sense of sharing the street.

Drivers typically slow their speed to negotiate with the pedestrians and cyclists for right of way. This is achieved through eye contact between street users – possible only when drivers are travelling slowly enough – drivers have to think about navigating the environment using a new set of visual cues.

This is an example of psychological traffic calming where behaviour follows design. A message to drivers that they are 'guests' in the street space is emphasised. Drivers lessen speed with consideration for other street users.

In residential streets, this shared space philosophy has proven successful initially with *Woonerfs* in the Netherlands and since with *Home Zones* in the UK and throughout Europe. Lessons from these projects can be applied to most streets.

Increasing opportunities for positive interaction between pedestrians, cyclists and drivers is achieved by using cues to reduce speed and change the mind set of the driver.

Above left: Pedestrians are told how to act in the street through signage

Above right: Separation through the use of kerbs, guardrails, signage to restrict pedestrian movement will encourage drivers to believe that they are the dominant street user

Left:
No change in level between pedestrians and vehicles means greater pedestrian freedom and conditions that require drivers respect pedestrians

Above:
Shared surface street treatment in Christchurch indicates pedestrians have priority in the street

Combinations of the following may be used:

- Reduce lane widths – a narrower carriageway encourages motorists to drive at a slower speed in case they have to react to an unpredictable incidence
- Reduce signage – removal of signs encourages drivers to 'think' and 'react' to the environment that they are driving through i.e. reduce predictability and encourage mental engagement
- In town or city centres, reduce differentiation of street space by transport mode and increase shared space. For example, using the same paving for footpath and street with no vertical kerb faces
- Encourage community activity to occur on streets – people on streets encourage drivers to interact with other street users, slowing their speed
- Prioritise pedestrians and create pedestrian and cycle friendly environments through increased amenity; trees, seats, art, play equipment

How can the street be designed to make trips by foot accessible while enhancing the pedestrian experience?

Pedestrians form the largest single road user group. Most individual trips, whatever the primary mode used, begin and finish with a walk section, making walking the fundamental component of travel.[8]

Walking is an essential form of sustainable transport which costs nothing and offers a wide range of benefits to the individual as well as the community.

Pedestrians want to be able to reach the same destinations as people on bikes, using public transport or in cars. It is essential that streets are designed to be accessible and attractive for those walking.

The provision of a high quality pedestrian street environment will encourage people to choose walking as a viable transport option and/or as a recreational activity that will in turn have a positive impact on the street, neighbourhood and city.

The presence of more pedestrians will increase passive security and reduce crime; improve the viability of local shops and other facilities; and help reduce traffic speeds, improving road safety.

Above left:
The concept of walkability is one of the most important measures of the quality of a city's public realm, its health and vitality

Above right:
Take opportunities to make journey by foot more interesting e.g. by incorporating street art

[8] Jordan and Jones, 'Design for Pedestrians', 1999, pg 303, cited in Traffic Engineering and Management, Ogden and Taylor.

[9,10] English Partnerships, 'Urban Design Compendium', 2000, pg 5 accessed at http://www.urbandesigncompendium.co.uk/public/documents/Chapter%204%20Making%20the%20connections.pdf on 17/12/07

To ensure walking is a safe, comfortable and convenient mode of travel, street design should respect the following principles:

- Make streets suitable for vulnerable users including parents with prams or children, people with disabilities and the elderly. This will benefit and appeal to the widest range of pedestrians
- Design at a pedestrian scale, with short blocks, narrow streets and pedestrian-oriented buildings
- Acknowledge that people prefer to walk along streets where they can be seen by drivers, residents and other pedestrians[9]
- Design footpaths and kerb ramps to lead people where they want to go[10]
- Footpath widths need to be designed in response to the surrounding context. For example, provide wider footpaths alongside retail, cafes and schools
- Pedestrians will need to cross the street during their journey, therefore it is imperative that this is safe and convenient
- Narrow carriageways encourage pedestrians to cross at any point suitable to their journey
- At intersections, the use of raised surfaces, tight radii and short waiting times at crossings make it easier for pedestrians to cross. Provision of mid-block crossings and pedestrian refuges adjacent to activity nodes such as bus stops, schools and shops is imperative to create walkable neighbourhoods
- Provide street furniture and pedestrian facilities such as benches, pedestrian-oriented street lights and public toilets
- Provide verandahs and covered waiting areas for shade and protection from rain

Left:
These barriers attempt to stop pedestrians crossing this busy street for their own safety. However, the barriers impede the desire line of pedestrians who climb over the barrier and cross anyway

Below:
Pedestrian refuges shorten the distance to cross and aid in crossing wider streets in stages

How should we design for cycling?

Cycling increases public health and fitness by encouraging outdoor exercise and active transportation. Short trip mode shift from private vehicles to cycling can reduce motor vehicle miles travelled, traffic congestion and the emission of greenhouse gases. Cycling should therefore be encouraged through quality planning, provision and maintenance of cycle routes.

There is much debate on how best to provide for cyclists. "Some of the best solutions for cyclists may not involve cycle facilities at all. Streets that are adequately managed to minimise motor vehicle speeds and volumes are likely to be very pleasant environments for cycling, providing the best of both on and off road solutions".[11]

The *Cycle Network and RoutePlanning Guide*[12] identifies three types of cyclists, each with varying abilities and levels of confidence; the child/novice, basic competence, and the experienced cyclist. It is valuable to determine which of the cyclist types require the most support during the cycling journey.

Identification of the target cyclist group should be based on the age and ability levels of potential cyclists in the area i.e. living, working or going to school. When the target group has been identified, the types of provisions and cycle facilities must be planned.

To encourage an increase in the number of people cycling, it is important to first provide for and attract the largest potential group; rather than catering to the needs of the predominant existing group. People who perceive the existing facilities as unsafe and inconvenient will be more reluctant to cycle.[13]

Above left:
It is important to have convenient storage facilities. These can be located adjacent to information signage

Above right:
Provide good surfaces and sufficient buffer from vehicles. Unsafe or inadequate provisions and poor maintenance of cycle infrastructure like that shown will have a negative impact on cycling

[11] Koorey, G, 'The "On-again/Off-again" Debate About Cycle Facilities', 2005, pg 3, New Zealand Cycling Conference Paper, New Zealand

[12] Land Transport Safety Authority, 'Cycle Network and Route Planning Guide', 2005, Land Transport Safety Authority, Wellington.

[13] Koorey, G, 'The "On-again/Off-again" Debate About Cycle Facilities', 2005, pg 3, New Zealand Cycling Conference Paper, New Zealand

Photo credit: 2headedturtle.com


Photo credit: Chris Harris

There is a significant difference between 'providing for cyclists' and 'providing cycle facilities'. The latter can potentially be poorly chosen, placed or designed, therefore providing little benefit for the target group of cyclists. Providing for cyclists involves a conscious decision and commitment to ensure that the cycle journey will be safe and enjoyable.

To encourage cycling amongst the identified group, the cycle journey should be safer, more efficient, more enjoyable and more useable. For example, near schools it may be appropriate to ensure that children can safely cycle to school by providing routes through quiet streets and off-road solutions along busy roads.

Along streets with higher traffic speeds, many cyclists need clearly defined cycle lanes or, space allowing, separate cycle tracks which are a major incentive for cycle travel.

Cycle provisions should maintain continuity and be part of a well connected cycle network to maximise the number of destinations that can be reached by bicycle, maximising convenience and the journey's enjoyment.

Above left:
Convenient cycle routes and a counter encourage journeys by bicycle

Above right:
Dedicated cycle lane separated from moving traffic with additional protection from on-street car parking

What provisions need to be made for public transport in streets?

Attractive public transport networks need to be structured and designed to encourage people to make sustainable transport choices as an alternative to dependence on the use of private vehicles.

Public transport trips can be all on one form of public transport or part of a multi-modal journey. Therefore it is important to consider integration between modes and convenient transfer including enjoyable, comfortable pedestrian and cycle connections, waiting areas, secure cycle parking and clear information signage at transfer points.

The most common types of public transport are buses, trains, ferries and taxis. Buses and taxis are the modes that have most impact on street design. Inclusive street design will improve the accessibility of public transport, increasing patronage and therefore viability of services.

Bus

Buses that are convenient to catch, offer direct routes and link with other modes of transport can be a practicable alternative to the private vehicle.

- dedicating road space to bus lanes along street links and at junctions ensures a more reliable and faster service for passengers and provides a clear and visible time advantage to buses that will encourage some drivers to switch to those services
- buses stopping to pick up or drop off passengers should remain within traffic lanes. Making buses pull off into laybys makes it more difficult for them to rejoin the traffic stream, making the service less attractive
- bus stop locations should be a key part of a walkable neighbourhood i.e. easily accessed on foot and located close to activity points
- the location of the bus stop and shelter must correspond with each other
- bus shelters and waiting areas need to be visible, convenient, clean and accessible for all and should include real-time information systems
- waiting areas should not impede the movement of other pedestrians

Left:
Bus stops should be positioned in convenient locations with adequate waiting space, shelter and information on routes, connections and bus times

Below:
This shelter is under-utilised as it is located away from the bus stop and people risk missing a passing bus therefore choosing to wait next to the stop

Taxi

Taxis provide a link to and from longer distance public transport services e.g. rail, and are an important backup option for other public forms of transport.

- taxis offer an alternative to other public transport modes in that they are not on a set route and travel can be faster and more convenient. For instance, for transporting large goods from a store directly home and as an after-hours service when other public transport has stopped
- taxi ranks need to be located close to activity nodes such as retail areas, supermarkets, clubs, public transport stations and stops and be accessible for all with low kerb access
- taxis waiting at ranks offer informal passive surveillance at night
- there are opportunities for more environmentally-friendly vehicles to be used in the fleet

Rail and Ferry

Whilst not directly impacting on street design, the interface between the street, rail stations and ferry terminals is extremely important.

- rail station and ferry terminal locations should be a key part of a walkable neighbourhood i.e. easily accessed on foot or by bicycle with high residential densities to support rail services
- stations need to be clearly marked on the street
- shelters and waiting areas need to be visible, convenient, clean and accessible for all
- stations and terminals should incorporate secure bicycle parking
- bus routes should be well integrated with rail stations and ferry terminals, with adjacent drop off and pick up points
- clear and conspicuous information on connecting services is vital at and around transfer points

Well-established benefits of public transport:

- improved accessibility: making easy connections between public transport routes will provide a usable network, increasing the choice of destinations that can be reached and the overall attractiveness of the system
- reduced traffic congestion: modern public transport is efficient and takes cars off the road
- promotes equity: allows those that do not or can not drive or afford a private vehicle to have mobility
- cleaner environment and energy conservation: less cars on the road reduces greenhouse gases and contaminated stormwater run-off
- promotes sustainable development: efficient, compact land use practices work well in supporting public transport networks
- improved community interaction: offers informal social interaction opportunities

What are the benefits of street trees? How should trees be integrated into the street environment?

Above:
Street trees create a sense of place, shade and improves street appearance

Trees offer so many benefits to an urban street environment that their importance cannot be overstated.

For example, they:

- change over time – size and seasons – creating interest and variation
- create habitats for wildlife
- create a more pleasant walking environment
- improve air quality
- improve street appearance (adding value to an area)
- provide shade and protection from the weather
- reduce stormwater quantities
- reduce wind speed
- soften harsh built-forms and expanses of paving

Trees are one of the most reliable long-term and cost effective means of improving the sense of place and quality in a street.

The following are important points to note:

- **Scale:** Trees are an effective means of providing a comfortable human scale and sense of definition to a street. Larger trees offer stature and definition to a street and well developed crowns offer shade and character. Achieving human scale on wider road reserves may require larger trees, double rows of trees, tree islands, median planting, slip lane planting, or a reduced distance between the trees on opposite sides of the road.
- **Street safety:** Urban street trees create a vertical wall that frames streets, provides a defined edge and creates a buffer between pedestrians and vehicles. Issues associated with street trees negatively impacting on utilities and being a perceived hazard for vehicles can be overcome through careful choice and positioning of trees.

Left:
The impact of this busy arterial in Vancouver, British Columbia is lessened by the presence of trees along the street and in the median

Above centre:
Mature street trees provide a sense of enclosure

Above right:
Appropriate spacing reinforces human scale

- **Spacing:** Good tree spacing reinforces human scale by providing a sense of cohesion, rhythm and street definition. Where an avenue is appropriate, pedestrians should be able to see between the first few trees along a street and perceive the rest as a line. Close spacing, 8 - 15m, provides an adequate psychological buffer from cars along busy roads.
- **Continuity:** Continuous canopies of mature trees with the trunks clearly delineating the street are particularly effective in minimising the visual impact of built form. Lower density residential areas may tend toward an avenue or grouping effect rather than canopy enclosure.

  Allow for significant views, including visibility of quality public buildings and historic or significant architecture.

- **Tree management:** A GIS tree data base is an excellent means of monitoring the quantity, quality and success of street tree planting and is a recommended asset management tool for long term street tree management. The impact of tree roots on buried services and drainage systems can be controlled through the use of root barriers and specialised soils, proven constructed root management systems are becoming available commercially. This allows for the continued growth and health of the tree without impacting on the street and utilities.

Why is activating the street edge important?

The design of the street edge, the point where the public realm (street) and the private domain (buildings and landscapes) interact, makes a vital contribution to the sense of place of an area.

Quality buildings, dwellings and landscapes within the private domain provide scale, passive surveillance and local character to the street.

An active street frontage will also encourage slower vehicle speeds by stimulating driver interest and the perceived higher risk of conflict with pedestrians and traffic.

District Plan rules and regulations may dictate the bulk and position of built form on private land, however, it is essential that land owners and developers accept responsibility and take pride in the quality of buildings and landscapes to ensure appropriate contribution and positive interaction with the street.

Above:
Example of an active street edge in an urban environment that exhibits a sense of enclosure, transparency, human scale and richness

Left:
This cafe is raised above street level to offer passive eye-level interaction between patrons sitting at tables and pedestrians walking past

Above centre:
This house offers no transparency and projects an uncomfortable sense of enclosure and hence limited richness

Above left:
This house presents an 'openness' to the street edge. The frequent use of windows suggests a human presence without negatively impacting on the privacy of the owner

Key considerations in activating street edges include the following, used in dynamic combination:

- **Enclosure:** The buildings and landscape elements that line the edges of streets are important in establishing enclosure. Collectively these offer a sense of containment, yet providing comfort for pedestrians and define the setting for public life.
- **Transparency and Permeability:** The frequent use of doors and windows and incorporation of design features such as verandahs, balconies, porches and entranceways allows for positive passive interaction opportunities between people on the street and people in the building.
- **Accessibility:** Provision for movement between the street and the private domain should always consider pedestrian access as priority. Entry points into buildings should be easily identifiable and accessible for pedestrians. Garages and blank walls at the street edge offer nothing positive to the street. For those concerned by private property rights, the demarcation between the private buildings and landscapes and the street can be achieved through appropriate design that makes clear to people the transition between the street and the private domain, whilst still ensuring positive interaction with public space.
- **Richness:** This quality offers people the opportunity to experience and exchange an interesting and vital experience when travelling along a street edge. It is details that enrich experience such as the movement and bustle of people along footpaths, the beauty of established street trees, the colour of shopfront displays – the hum of activity that stimulates the senses.

DETAILS

The quality of our public realm should be measured by more than its capacity for storing parked cars.[14]

[14, 15] CABE, 'Building for Life: Accommodating the car', 2006, Issue 6, pg 2 accessed at http://www.cabe.org.uk/AssetLibrary/4263.pdf on 17/07/08

How should on-street parked vehicles be accommodated?

Left:
On-street parking creates a barrier for pedestrians from moving cars

Above:
On-street parking integrated with pedestrian buildouts provides greater visibility for pedestrians waiting to cross

The quality of our public realm should be measured by more than its capacity for storing parked cars.[14]

There is much talk about the need to decrease our reliance on private vehicle trips and increase public transport patronage in combination with promoting walking and cycling as viable alternative modes of transport.

This shift in mindset is positive yet will take time to implement and parking vehicles on the street will continue to be a necessity. Therefore the focus should be on the impact that parked vehicles have on the streetscape and public space.

Much skill is required in incorporating car parking into the public realm without it becoming dominant. It should not be a case of simply trying to fit a given number of rectangular spaces onto a plan. This does not create attractive and functional places.[15]

However, if designed and provided appropriately, on-street parking can create activity on the streets as well as helping to slow traffic speeds, as it reduces both the perceived and actual width of the carriageway.

Left:
On-street parking spaces punctuated by street trees

Above:
Providing parking spaces within the median leaves two vehicle lanes to operate and allows for a dedicated bus lane. Drivers are able to enter and exit from either side of the parking space

Key points to note:

Allocation of on-street parking

Current parking standards are often inflexible, applied with little consideration to specific geographic, demographic, economic and management conditions, therefore:

- There needs to be sufficient numbers of spaces available on the street to cater for a level of demand without oversupplying spaces - a comprehensive parking strategy can provide an integrated overview of how best to treat parking in a specified area. Reducing parking spaces below demand levels can be utilised in areas that are well served by public transport
- Put people before car parking spaces – it is not car spaces that provide income to retail shops, it is people. Good quality public space is the most important aim and parking layouts on the street should be provided in a way that doesn't detract from it

Requirements for on-street parking

- A parked car starts with and results in a pedestrian journey. Therefore, it is important to improve walkability, or the quality of the walking environment, from car parking locations to destinations
- Car parking needs to be safe, secure and accessible for all including prioritising provision for those with disabilities
- Well-designed, on-street parking needs to be integrated with the street and broken up with landscaping features to limit the visual dominance of stationary cars
- Provision of parking space for loading and servicing should be accommodated adequately on the street

How can stormwater management and treatment be optimised in street design?

Left:
Stormwater treatment can be integrated to create an attractive street

Above:
Low maintenance stormwater solutions can have high visual impact and provide amenity

Stormwater is water from rain. It falls within the road reserve, runs from adjoining land and sometimes roof run-off is discharged to the road channel. The stormwater flow enters the conventional drainage system where it eventually infiltrates natural water bodies.

Conventional road drainage may collect and remove stormwater, but does little to deal with contamination and may worsen flooding downstream.

Light rain can help irrigate vegetation and maintain base flows to keep streams healthy. Heavy rain can cause flooding, erosion and deposition of silt and other contaminants. Streets must be designed to deal with all rain conditions. This is particularly important as the majority of streets consist of impermeable surfaces that contain significant amounts of contaminants from vehicles and adjacent land uses.

Stormwater management interventions aim to eliminate runoff from low rainfall events, treat and slowly release rainfall from moderate events, and provide conveyance or flood control for high rainfall events by eliminating or treating as much stormwater as possible at or close to the source by replicating the natural hydrological cycle.

The potential of these stormwater interventions is often under utilised in many instances in street design.

With integrated planning and coordination among stakeholders and council departments, successful stormwater designs can enhance street design, form part of the landscaping works and treat stormwater, achieving several objectives at once.

Key stormwater management techniques and tools to incorporate when designing streets are:

- utilise a combination of linked stormwater management devices, known as treatment trains
- bioretention i.e. vegetated swales, tree pits, rain gardens, sand filters
- green roofs on adjacent buildings
- increasing absorbent surfaces in the street i.e. using permeable paving and planting trees
- vegetation wherever possible
- stormwater retention ponds

Above left:
Rain gardens allow surface runoff to be treated locally within streets

Above right:
Stormwater treatment within a tree pit is integrated into the streetscape

How should street furnishings be incorporated into street design?

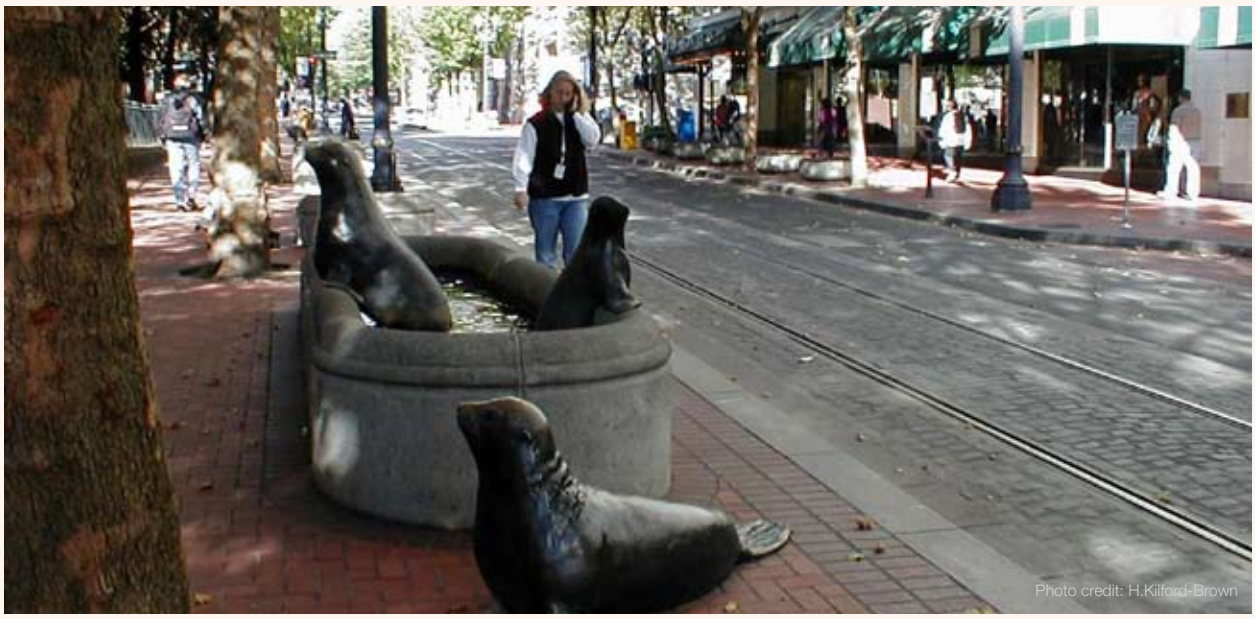
Left:
Street furniture placed alongside vehicle lanes reinforces pedestrian presence

Well-designed public space plays a decisive role in the comfort and safety of users. Street furnishings should always support people walking, cycling and those taking rest on their journey, whilst also providing visual interest to the streetscape.

The quality of streets, like that of architecture, lies in its ability to reflect a city's culture and character. This quality lies not only in design, but also in the choice of facilities, materials, execution of work and regular maintenance.

Street furniture should:

- have a consistent standard of quality
- avoid interrupting pedestrian desire lines
- be carefully selected and positioned to avoid cluttering the street
- be adaptable to a variety of informal uses
- be robust and easy to maintain so that quality is retained
- enhance the area's character



Above:
Interactive public art provides interest to the street

Also important to consider when designing streetscapes:

- Bicycle racks should be permanently mounted and placed in visible and convenient locations for cyclists without obstructing views or causing hazard to pedestrians
- Seating and benches should be designed and placed appropriately to provide amenity without obstructing movement on the footpath
- Tree surrounds should be suitable to allow for tree growth without causing a hazard to pedestrians. When installing tree grates consider providing electrical outlets for future feature lighting of the trees
- Rubbish bins should be located for convenient pedestrian use and service access
- Signage should complement a legible environment and not clutter the streetscape – eliminate the excessive use of posts and columns by mounting signage to existing posts, structures and buildings
- Public art should enhance the experiences of those passing without interfering with pedestrian circulation
- Public art should be context-sensitive reflecting the aesthetic, cultural and environmental values of the local area

Why is lighting important in street design?

Choice of lighting is an important decision in street design. Often streets are only lit with standardised light fixtures that provide basic uniform illumination primarily for vehicle movement.

Lighting can make a positive contribution to the character and amenity of streets. Lighting can assist in creating a sense of place by enhancing night time lighting that encourages social activity, civic pride and supports a night time economy i.e. up-lighting of important buildings and landmarks, fairy lights in street trees, colourful lighting to create visual interest.

The following street lighting points are important to consider when designing streetscapes:

- A co-ordinated lighting strategy should be put in place to ensure lighting levels correspond to context ie identify the different functions of different streets and plan appropriate street lighting, whilst always considering energy consumption
- The scale and height of lighting fixtures should be relative to those primarily using the street i.e. illuminating the street at a lower level for pedestrians creates a perception of a more human and intimate environment
- Lighting should assist in providing cues to those already offered by a legible built environment. This allows people to make genuine choices in their form of transport and promotes walking, cycling and the use of public transport
- Lighting should be an integrated part of the streetscape and function as a unifying element with other streetscape furnishings including trees, benches, paving, public art and signage
- Diffusers and refractors should be installed to reduce unacceptable glare; particularly adjacent to residential areas
- The placement of lighting poles should not impede pedestrian and cyclist movement

Left:
Carefully selected lighting provides human scale and character to the street at night, particularly in town or city centres

Below:
Unique light fixtures add interest to the street

What needs to be considered when providing utility infrastructure in the street?

The appearance of otherwise well-designed streets can be degraded by poorly positioned utility services.

There needs to be a balance between the requirements for the provision of services by utility companies and quality outcomes for sustainability, place values and movement within the road reserve. Utility provision should be subservient to street design and layout.

Utility providers have legal rights to dig up streets whenever they need.

Strict control and coordination of utilities placement and servicing is essential to ensure successful street design outcomes, for example:

- Co-ordinate utilities work with street works and encourage private utility companies to upgrade their infrastructure during street reconstruction. Council should notify other utility companies once a 'Road Opening Notice' is received to enable other operators to carry out work in the same part of the street. This requires effective communication (dialogue and education) between Council and various utility providers

Above:
Co-ordination of works saves time, money and disruption

Left:
Work with power companies to minimise the impact of power poles in the street

Above centre:
The location of this generator in a recently completed development could have been placed back into the garden where it would not impede movement on the footpath and would be less visually intrusive once the vegetation has developed

Above right:
Placement of power pole impedes movement on footpath and detracts from building entrance

- Investigate the implementation of a non-emergency excavation and utility moratorium for a minimum of two years on streets that have been resurfaced, repaved or reconstructed to preserve pavement lifecycle, minimise disruption and reduce long-term costs
- Locate services discretely to reduce the visual and physical impact on the street
- If excavation for works is necessary, ensure that footpaths are restored to at least the existing standard to maintain the visual integrity of the street
- Street trees should not be subservient to utilities; other options should be sought to avoid tree removal and to ensure tree planting occurs. These can include root management systems, appropriate choice of species and allowing sufficient spacing between trees
- Ensure utility placement does not impact on significant views and viewshafts
- Consider using directional drilling when placing utility runs where tree roots are difficult to avoid. This will minimise damage to the tree. Consider the use of directional drilling in other situations to minimise disruption of materials and damage
- The greatest visual impact on the street is often from power poles, their placement and associated connections. Where under-grounding is not practical in the short term, reduce superfluous power poles and ensure connections to power poles are discreet

What steps do we need to take to ensure better street design?

What needs to be done?
Why do we need to do it?

Change is inevitable. People thrive on it, yet sometimes they shy away. Why? Because change involves the unknown realm of creativity, innovation and an element of risk. Positive change can transform and enrich a community, an urban centre and a street. It does not exclude careful calculation and intelligent reason; rather, it combines these qualities with creative vision to accomplish exceptional solutions. To achieve change one must keep moving forward, always with an eye to contributing to a higher quality of living.

Our actions and urban interventions have the potential to improve the environment to influence the way people live and interact, and to stimulate economic growth. It is essential that everyone is considered; the able and disabled, the young, old and in-between, the confident and cautious. Vulnerable members of society must be encouraged into the public realm and be provided with opportunities for learning, stimulation, movement and recreation. Within a street the vulnerable include pedestrians and cyclists. The needs of these street users must be adequately considered and provided for in order to create a liveable environment.

Who is responsible?
Who can make the change?

Everyone is responsible for designing and shaping the urban environment including politicians, stakeholders, community members, planners, traffic engineers, designers and maintenance personnel. We all carry a responsibility to bring about the best possible outcomes for people and their communities. Achieving this involves strong leadership, collaborative and co-operative working practices, education, new skills, innovative thinking and initiatives, and a respect for all professional opinions.

Below left:
Make streets attractive and accessible for all people

Below right:
A tyre swing can tranform the entire street atmosphere – it implies that children play in this street

What is the solution?

Underlying issues that impede progress must be addressed.

This can be achieved through:

- **Collaborative** working practices requiring people from different professions and interest groups to contribute towards a common goal of providing liveable urban environments
- **Education** for the community and all those involved in the design and maintenance of the urban environment
- **Innovative** practices to uncover new opportunities and solutions to complex problems
- **New skills** which enable positive change and desirable outcomes
- **Strong leaders** that possess the necessary conviction and responsibility to provide direction for projects and personnel

As designers of streets, our work has a profound impact on the urban environment. It is time to take advantage of the huge opportunities presented by designing streets to address real and critical environmental and social issues with changes that can start today.

Key points for supporting change

Be proactive in revitalising your city and neighbourhood:

- **Value people and their opinions**
  Everyone perceives the urban environment in a different way. Address these differences and find solutions through collaborative working practices
- **Communicate, educate, participate, commit**
  Educate all those involved in each project and optimise communication and participation throughout the process. Through consensus, establish and commit to a common vision and a desired outcome
- **Embrace change and choose the right solution for the 'greater good'**
  Make the decision to provide streets that will benefit people and create functional and vibrant communities. Critically assess whether the design outcomes are going to meet these objectives and needs
- **Be prepared to explore alternative ways of thinking**
  People involved in the design and delivery of streets must acknowledge that there is a need to genuinely work together to deliver better streets
- **Deliver quality**
  Maintain the vision and momentum throughout the planning and design process and construction phase. Be aware that changes to both the public and private realm will have an impact on the street. Design to bring about positive change

How does your street project rate on this checklist of vital ingredients for well designed streets?

✓	✗	
☐	☐	Is the street attractive, safe and comfortable for *people*?
☐	☐	Has the street design process been carried out by an integrated, multidisciplinary team with the commitment to ensure that only high quality outcomes are delivered?
☐	☐	Is the street part of a connected network and is it legible?
☐	☐	Has the role that streets play in creating or reinforcing the character of the urban realm been recognised in the design?
☐	☐	Has the design acknowledged and accommodated the street's multi-functional role as priority?
☐	☐	Does the street express a quality of the built environment that encourages people to get around on foot?

✓	✗	
☐	☐	Has the street been designed so that movement of active modes of transport (walking and cycling) can be accommodated equitably?
☐	☐	Is the street design integrated with public transport to offer viable transport options?
☐	☐	Has on-street car parking been accommodated as harmoniously as possible into the urban environment?
☐	☐	Does street furniture and lighting consist of complementary elements that are functional, attractive, accessible, pedestrian-orientated and are appropriate to the surrounding context?
☐	☐	Has the design ensured that stormwater measures are implemented as standard practice?
☐	☐	Has the design ensured that utilities and services do not impact negatively on the street environment?

If the project receives any crosses in your appraisal, due consideration should be given to rectifying the issue to ensure a high quality street outcome.

10-NSC-0165