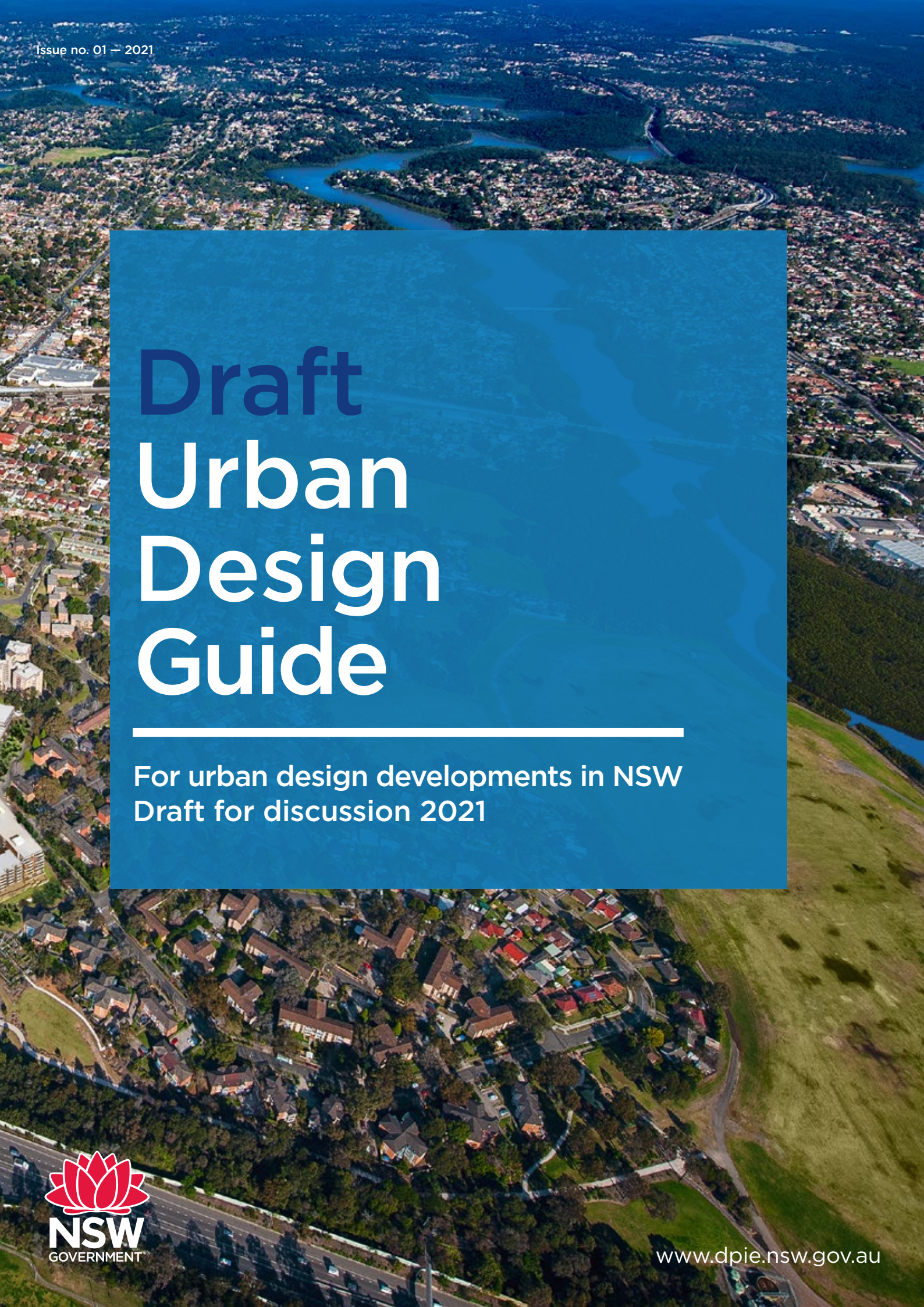
Issue no. 01 — 2021

Draft Urban Design Guide

For urban design developments in NSW
Draft for discussion 2021



NSW GOVERNMENT

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Acknowledgement of Country

The Department of Planning, Industry and Environment acknowledges the Traditional Custodians of the land and pays respect to Elders past, present and future. We honour Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place, and their rich contribution to our society. To that end, all our work seeks to uphold the idea that if we care for Country, it will care for us.

Pearl Gibbs Street Art,
Dubbo, Artist: Matt Adnane.
Photo: Destination NSW

Minister's foreword

To create beautiful and thriving places that promote good health and wellbeing, we must focus not only on the quality of buildings, but the streets and public spaces between them.

To quote the urbanist Jan Gehl "First life, then spaces, *then* buildings, the other way around never works."[1] This Guide is about the spaces in between the buildings, and ensuring these spaces support healthy, connected and thriving communities.

Getting this right upfront is critical. Streets and blocks once established can stay in place for hundreds of years. We need to ensure that our subdivisions are thoughtfully designed and developed right across NSW and that great subdivisions become the norm, rather than the exception.

The *Urban Design Guide* is NSW's first comprehensive guide for place-based design for master-planning and larger scale development proposals. Without clear objectives established from the outset, urban outcomes can be of variable quality, and we risk poorer outcomes for our new suburbs – more cars and roads, less trees and public space – or the challenge of retrofitting these at much greater cost later.

Just as the *Apartment Design Guide* (ADG) established an important benchmark of quality and amenity for apartment design in NSW, so will the UDG establish the same benchmarks for our urban places.

The ideas mapped out in this guide are fundamental to the creation of great places – get to know your site and celebrate what is special about it, ensure that there are trees and public spaces so that the place great to live in and make sure you're creating an urban layout that makes it easy, and attractive for people to get around.

We're helping to create places with more spaces to enjoy as our cities and suburbs grow, while also responding to climate change. Targets for public space, tree canopy, density, walkability and diversity will shape our future neighbourhoods so that they can aspire to the sustainable, vibrant and diverse suburbs that are most sought after in NSW.

Focusing on providing new housing close to shops, services, transport and parks supports healthier lifestyles and also limits the homogenous sprawl and associated car dominance typical of post-war development. This means more places where people love to live, with public space, facilities, places to meet and dwell – space made for community by design.

The State Environmental Planning Policy (Design and Place) 2021 (DP SEPP), together with the UDG and ADG, will make sure that we have the right kind of policy to ensure that the people of NSW enjoy the benefits that basic good design can deliver – design that will make sure that our cities and towns are planned and designed to be sustainable and with the needs of people and the quality of places at the heart.

With a collective effort now and an investment in more sustainable ways of planning, designing and delivering our homes and urban environments, we will all reap enormous dividends in the future – better health, better connected communities, more efficient housing, and a more resilient built environment.

1. Jahn Gehl in 'The Human Scale' 2012. Documentary directed by Andreas Dalsgaard. https://thehumanscale.dk/thefilm/

Government Architect's foreword

Our places and buildings are for the long term. Their impacts are far-ranging, and our joint responsibility to make a positive contribution to these places is more significant than ever before.

We are faced with the urgent need for sustained economic recovery as well as having a clear focus on environmental sustainability. In the wake of the pandemic we have a whole new appreciation for how people want to work and live. We have a growing understanding about how we need to be better connected to the Country on which we reside. In this context, I am committed to ensuring the DP SEPP, together with its supporting guides, will deliver better housing and urban design outcomes for communities across NSW.

Good design plays an important role in improving peoples' mental and physical health, and the community has reinforced this understanding. We are necessarily connected to the places where we live and work, and this policy is directed at creating equitable and high-quality built spaces embedded in liveable and beautiful environments. For our neighbourhoods, workplaces, schools, hospitals and other infrastructure, this is evident in our connection to the natural environment, moments for recreation, and the ways we move around and through places and create connections. For houses and apartments, this means homes that are well-ventilated and insulated and contain ample outdoor space, with great outlook and a positive relationship to the immediate context. We want homes we love to live in – and this is even more important now as our homes are also becoming more multifunctional – they're places of work, they're our home gym, and our places to entertain.

The DP SEPP also seeks to create places that are more responsive to the environment and to our unique Australian culture. When our buildings are designed sustainably, they respond to climate, are cheaper to heat or cool, they last longer and create less waste, and are more enjoyable to inhabit. They connect to parks and walkways, they sit within cool streets that have connected soil networks and tree canopy, where stormwater is well-managed to contribute to the ecosystem rather than cause problems, and where the greater community uptake of electric vehicles is supported with appropriate infrastructure. While this reflects the NSW Government's goal to achieve net zero emissions, it also creates better places to live and work – places that have character and identity and are resilient.

The DP SEPP promotes place-based design. It focuses on the importance of sound decision-making through the use of skilled professionals, through documentation of the design process, and through participation in design review before lodgement of planning applications, fostering the optimal outcome for each site and each community.

I'm grateful for the commitment and energy of our stakeholders and colleagues across industry, government and the community, who have worked alongside us to develop a draft DP SEPP that is flexible and responsive. The policy and supporting guides that are now on exhibition will provide a clear framework to create housing, infrastructure and development that will better fit community needs now and in the future.

I look forward to continuing to work with you to finalise the policy and guides so together we can deliver the homes people want and the places they want to live, in a way that enhances the environment for us all.

Cover image: Aerial photograph of Riverwood looking south, showing Salt Pan Creek, parklands, motorways and rail. Photo: DPIE.

Published by NSW Department of Planning, Industry and Environment
www.dpie.nsw.gov.au

Title: DRAFT Urban Design Guide

Acknowledgements
DPIE and Government Architect New South Wales (GANSW) images only, unless otherwise captioned.

About this guide

The *Urban Design Guide* (UDG) is a resource to improve the planning and design of urban environments across NSW. The UDG is to be used in conjunction with draft *State Environmental Planning Policy (Design and Place) 2021* (the DP SEPP) to improve the design quality of urban places.

The UDG is a companion document to the *Apartment Design Guide* (DPIE 2021), which provides further guidance on the design of residential flat buildings.

Aims of the Urban Design Guide

The guide supports the principles of the DP SEPP in aiming to create healthy, prosperous places for people, communities and Country. It provides benchmarks, guidance and best practice processes for designing and assessing urban design development across NSW. The guide:

- recognises and responds to place as the foundation for all place-based decision-making
- focuses on public space to promote equitable public life as a key outcome of good urban design
- takes a strategic approach to urban design, looking beyond site boundaries to positively contribute to place
- prioritises compact, walkable, diverse and connected neighbourhoods
- provides a common framework that gives progressive certainty to proponents and assessors.

Who is the Urban Design Guide for?

The guide is for:

- urban designers, architects and landscape architects preparing designs for urban places
- professionals who contribute to the design of urban environments in NSW, including developers, consultant planners, and other built environment professionals
- members of design review panels involved in the review of development proposals
- local and State government planners who assess planning proposals, master plans and development applications
- strategic planning teams in local and State government preparing local controls, design guidelines and strategic plans.

Application of the Urban Design Guide

The guide applies to urban design development under the DP SEPP.

UDG WILL **DIRECTLY INFLUENCE**	THE UDG **CAN INFORM**
Precinct planning	City, town or neighbourhood-scaled place strategies
Planning proposals	Reviews of local environmental plans
State significant development	Preparation of development controls plans
Master planned developments	Preparation of supporting urban design studies and guidelines
Subdivision development applications	
Concept development applications	

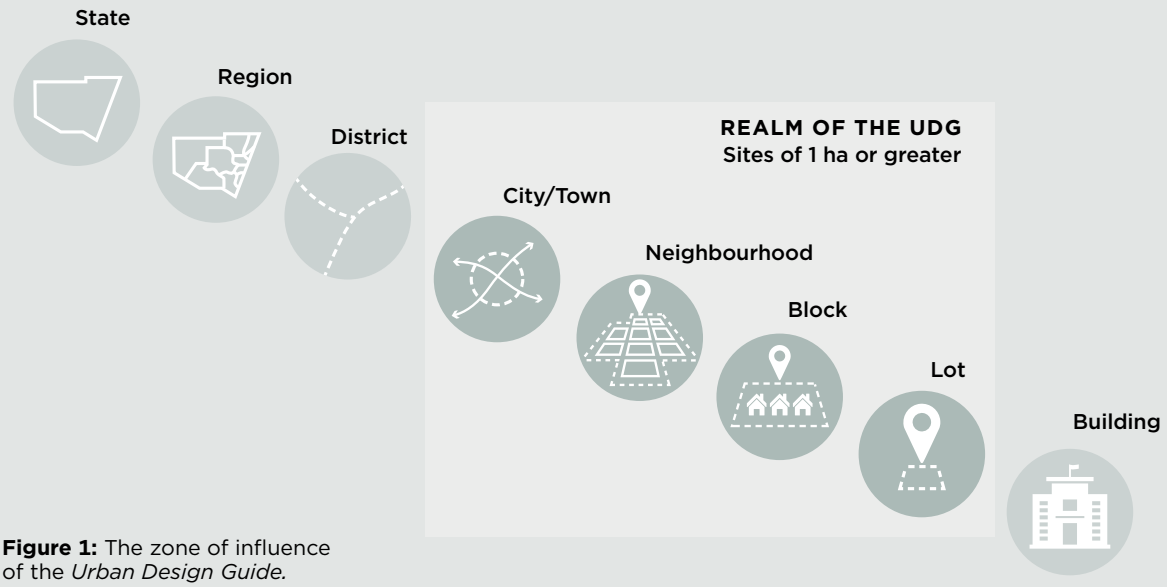


Figure 1: The zone of influence of the *Urban Design Guide.*

How this guide relates to the NSW planning process

The advice in this guide is framed around a set of objectives for urban design development. These objectives have a critical role in the development of urban design proposals and in the preparation of the documentation applicants must provide to support a development application, and the process the consent authority must use to assess the development application.

Urban design development must be consistent with the DP SEPP

The DP SEPP sets a consistent statewide policy framework for the design quality of the built environment, including urban environments. It establishes 5 design principles, 10 considerations and a range of key outcomes. Urban design development in NSW must be consistent with the DP SEPP principles and considerations.

This requirement applies to design professionals when preparing urban design proposals, to design review panels when giving advice on proposals, and to consent authorities when determining a development application.

The UDG objectives are derived from the DP SEPP principles and considerations and provide further detailed guidance applicable to the design and assessment of urban design development.

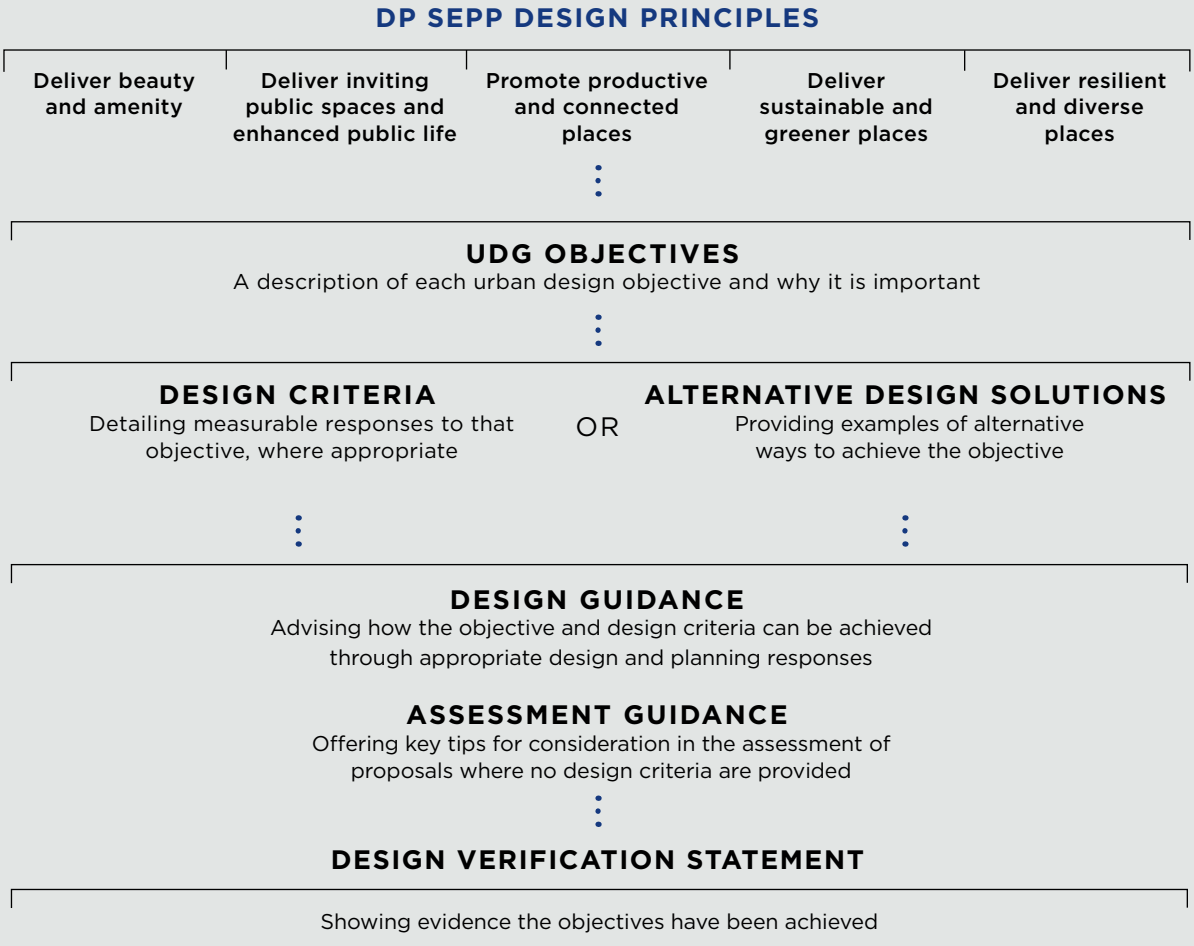
How to use this guide

Urban Design development in NSW must be consistent with the UDG objectives.

This guide includes objectives, design criteria and design guidance. The objectives are universal requirements for achieving good urban outcomes in keeping with the 5 DP SEPP principles. These are outcomes that will ultimately benefit the health, wellbeing and prosperity of our homes, places and planet.

Projects will have different responses to the objectives depending on the site, scale, design brief and typology. The objectives are not prescriptive controls, and the guide provides design criteria and detailed guidance that describe how they can be met. The design criteria are quantitative benchmarks that if met, will achieve the objective.

Figure 2: Line of sight from the DP SEPP to the *Urban Design Guide.*



For some objectives only design guidance applies. The design guidance offers qualitative advice for how objectives can be achieved through appropriate design responses. This guide also includes a framework for developing 'alternative design solutions' that allow designers to find the best solution for their site. Where an alternative is proposed, the development application (and specifically the design verification statement) must demonstrate how this delivers a neutral or beneficial planning outcome when assessed against the objective.

Documentation of the design process, including technical submissions or other evidence to support alternative design solutions, particularly the reference scheme and scenarios that have been considered, is critical to demonstrate a development proposal is presenting the best planning outcome for the site.

The criteria and guidance included in this guide is not exhaustive, and each site and project will have a unique response. We can't create great places by writing a rule for everything, however, we can aim to define what is important, and use skill, expertise, good processes and sound judgement to help us get there.

Application requirements

Design verification statement

The EP&A Regulation requires a qualified designer to prepare a design verification statement which demonstrates how the proposal provides the best possible design response for the site, and how it meets each of the UDG objectives.

The statement should direct the consent authority to where they can find evidence supporting the design response. The evidence can be written in the design verification statement or a cross-reference provided to a drawing, table or report.

The DP SEPP requires a consent authority to consider the design verification statement when determining a development application.

Design review

Design review is a critical part of the design and assessment process. Design review panels provide independent expert design advice to improve the design quality of developments. Early and iterative review maximises the benefits of the design review process and is required on large and complex projects before submitting a planning application.

The NSW State Design Review Panel (NSW SDRP) applies to State significant projects. The *Local Government Design Review Panel Manual* (DPIE 2022) provides information on the review of development proposals by independent council-appointed design review panels. For further details on development types that require referral to a design review panel see the DP SEPP.

The design verification statement submitted as part of a development application requires the applicant to set out how the proposal responds to advice from the design review panel, and to justify any departures from that advice. A template for this response is included in the *Local Government Design Review Panel Manual*.

Structure of the guide

Part 1: A place-based approach explains the challenges and opportunities for designing successful urban places in NSW and explores how urban design can respond to unique contexts and shape future developments to strengthen place-based outcomes.

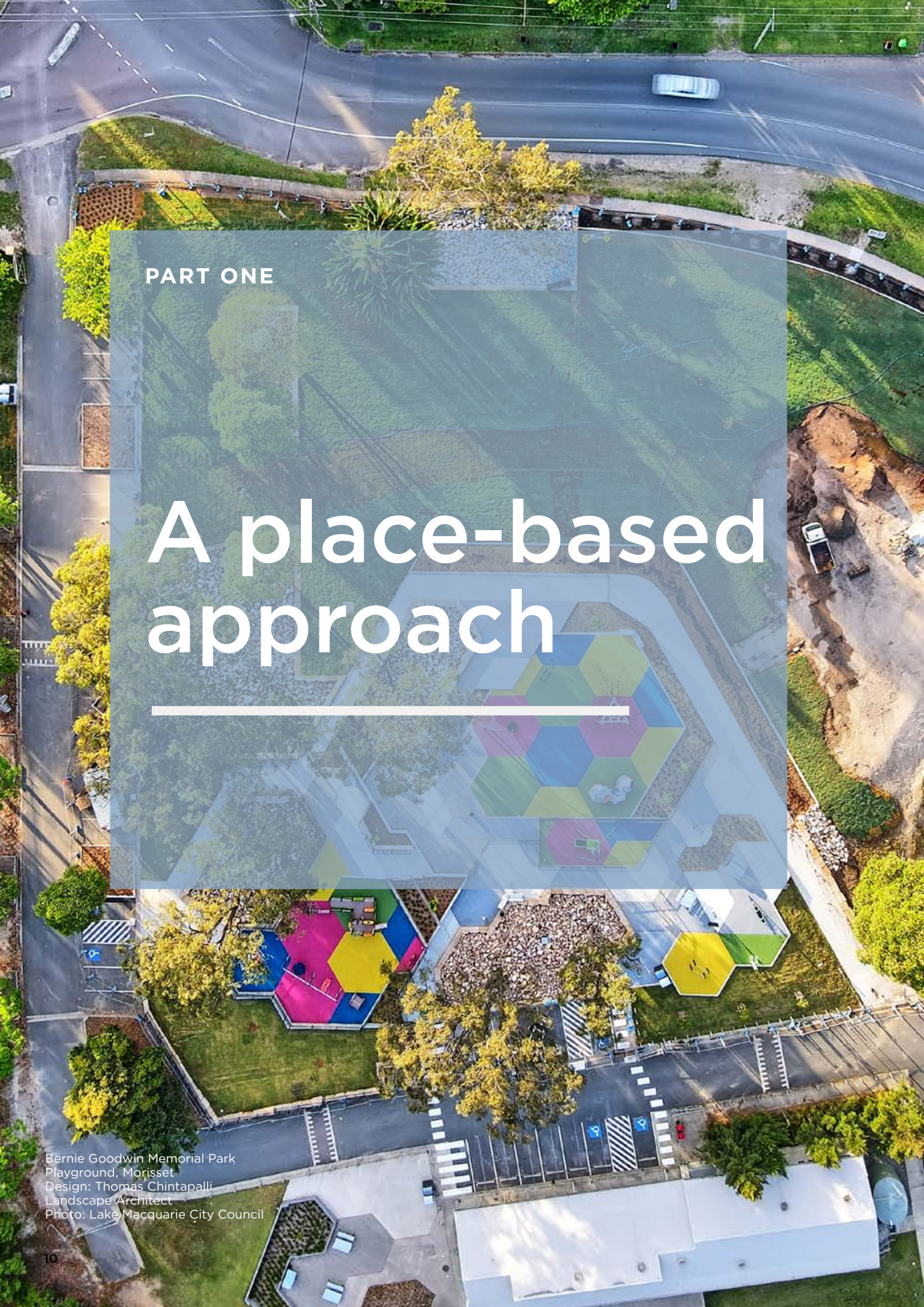
Part 2: Objectives for good urban design establishes 5 components of good urban design and uses these to frame 19 objectives and related guidance.

Part 3: Implementing good urban design practice describes a 3-phase process to prepare, develop and deliver good urban design, including the outputs of each phase of the design process and development application requirements.

Appendices: include the design verification statement template and technical detail to support the delivery and measurement of public open space, urban tree canopy and street dwell space.

PART ONE

A place-based approach



Bernie Goodwin Memorial Park Playground, Morisset
Design: Thomas Chintapalli Landscape Architect
Photo: Lake Macquarie City Council

1.1 Importance of place in urban design

A concerted and strategic focus on our urban environments is imperative to enable NSW to respond to the contemporary pressures of population growth, rapid urbanisation, and climate change. The social, environmental, cultural and economic impacts of new development extend beyond the scope of a single project or site boundary.

Through careful and respectful consideration of the unique qualities of the places we design and the uses and outcomes we want to enable, we can create the environments for great places to flourish.

What is a place-based approach?

A place-based approach requires understanding the physical, environmental, social and cultural attributes of a location. It requires analysing the dynamic conditions of a place that make it unique, and recognising this change will continue. This understanding informs design and decision-making. Putting place at the centre of decision-making drives the creation of urban environments that are healthy, responsive, integrated, equitable and resilient.

How can we understand place in urban design?

Place is the interdependent relationship of people and their environment, made unique by local conditions.

The successful design, planning, development and management of place is a sustained and complex collaboration between stakeholders, including government, developers, built environment and landscape professionals and the community.

A vital role for the urban designer is to establish a common understanding of a place with these many stakeholders to help shape the desired future. Great places recognise local characteristics and the qualities people value. Through analysis of existing and proposed activity, physical form, meaning and place attachment, a multidisciplinary urban design team can establish a strong understanding of place that will guide and inform place-based decision-making for the benefit of the community.

Delivering placed-based urban design

Good urban design is both a process and an outcome. The UDG supports consistency by applying a universal urban design process that caters for the unique qualities of places in NSW. Good urban design process starts with an understanding of place that defines a project's parameters, sets the design intent, guides design development, and ensures genuine place-based outcomes are delivered. For further details see **Part 3: Implementing good urban design practice**.

Place-based planning is a design-led and collaborative way of examining the complexity of the city by viewing it as a mosaic of different places, each with unique potential and characteristics. It is a means of better understanding a place and building relationships and collaboration to deliver a vision and solutions that respond to a place's potential.

Greater Sydney Commission, The Greater Sydney Region Plan, A Metropolis of Three Cities, 2018

1.2 Public space as an urban design outcome

Public spaces are all places publicly owned or of public use, accessible and enjoyable by all for free and without a profit motive.

United Nations Charter for Public Space, 2016

What is public space?

The UDG identifies public space as a critical outcome of good urban design. It aligns with the principles of the draft *NSW Public Spaces Charter* (DPIE 2020) and the United Nations definition of public space as the combination of public land and any publicly accessible building or space, comprising 3 broad categories:

- **public open spaces:** active and passive spaces including parks, gardens, playgrounds, public beaches, riverbanks and waterfronts, outdoor playing fields and courts, and publicly accessible bushland
- **streets:** including streets, avenues and boulevards, squares and plazas, pavements, passages and lanes, and bicycle paths
- **public facilities:** public libraries, museums, galleries, civic and community centres, showgrounds and indoor public sports facilities.

Paddington Reservoir by Tonkin Zulaikha Greer is an example of landscape renewal that responds to existing heritage to enhance local character. Photo: Josef Nalevansky.

Why is public space important?

If public space is well-designed it provides the setting for a popular and prosperous place. Places with a strong identity are often the result of many people sharing and valuing similar memories of that place and its collective image. Well-planned and well-designed public spaces play an important role in positively influencing local identity and provide a stage for our public lives. These spaces evolve and may have different characters across a day, at weekends or seasonally, or when different people use them for different activities such as enjoyment, socialising, expression or commerce.

By providing public spaces for people to spend time together, public life can thrive, contributing to a vibrant quality of life for all. Shaping public space deliberately is a fundamental role of urban design in delivering quality green, open and public spaces that are essential to everyone. They are our free parks, gardens and sports fields, walkable shady streets, libraries and museums, which form the heart of our communities. Quality public spaces support our health and wellbeing, environmental resilience and local economies.

Interconnected public space networks are the result of creating and protecting the grain, composition and character of an urban area for the public's benefit. In the context of the UDG, quality public spaces are achieved at the nexus of urban structure, the movement and connection network and the natural and built environment.

Starting with Country

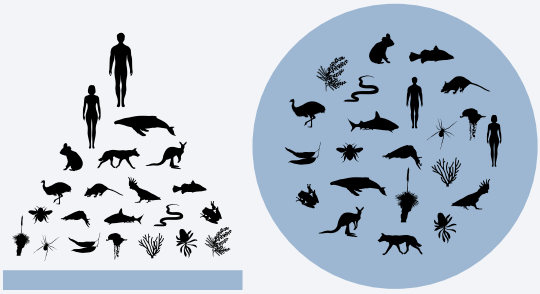
The meaningful associations we make with a place, the things which happen on or in that place, the physical characteristics of a place together allow us to understand a 'place-based' way to design.

A well-rounded and holistic understanding of place sustains and respects culture. As the Traditional Custodians of the land and waters, Aboriginal people have a deep and ongoing connection to these elements through their experience of Country. Country includes tangible and intangible aspects, knowledge, cultural practices, belonging and identity, wellbeing and relationships. Aboriginal people maintain a strong belief that if we care for Country, it will care for us.

All Aboriginal communities are responsible for nurturing narratives and sustaining memories that shape and maintain landscapes for future generations. Understanding a place is a subtle and complicated combination of strong physical and emotional interconnection to the meaning, activity and physical form of all Country. All communities of NSW can benefit and learn from this cultural understanding and bring cultural awareness and understanding to the way we consider the design of the built and natural environment.

The *Draft Connecting with Country* framework (GANSW 2020) provides more information supporting this approach, including engagement with Traditional Custodians and knowledge-holders.

Figure 3: Human-centred or Country-centred. Image: Diagram adapted from German architect Steffen Lehmann, Eco v Ego diagram 2010.



1.3 Components of successful places

Urban design requires the integration of many complex and interrelated components of the natural and built environment. The UDG sets out 5 key urban components that collectively provide the framework for the guide's urban design objectives, design criteria and guidance.

The UDG objectives support the design and assessment of good urban design across NSW. They apply to all scales of urban design development, including cities, towns, neighbourhoods, blocks and lots.

The guide establishes clear expectations for urban design that will help to strengthen urban outcomes and streamline development assessment processes. These objectives require collective consideration to achieve an integrated outcome.

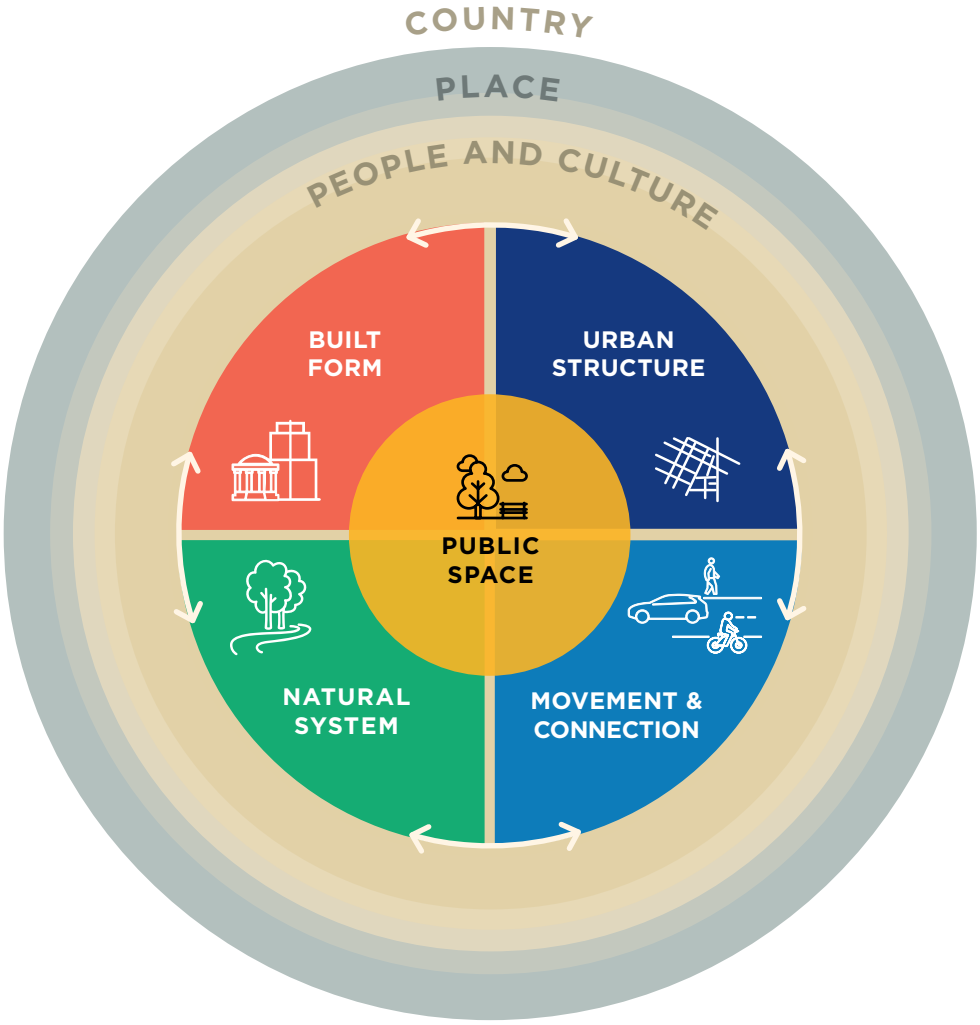


Figure 4:
Components of successful places.

URBAN STRUCTURE

The natural topography, arrangement of streets, paths, blocks, subdivision patterns, public open spaces, blue and green infrastructure, activity centres, public transport nodes, corridors and neighbourhoods

1. Projects start with nature, culture and public space.
2. District and local routes provide transport choice and accessibility.
3. Compact and diverse neighbourhoods connect to good amenity.
4. Place-based risks are mitigated and ecological values sustained to ensure resilient communities.

MOVEMENT AND CONNECTION

The network of transport systems for public transport, cars, bicycles, and pedestrians

5. Walkable neighbourhoods are vibrant and productive.
6. Block patterns and fine-grain street networks define legible, permeable neighbourhoods.
7. Walking and cycling is prioritised, safe and comfortable for people of all abilities.
8. Parking is minimised, adaptable and integrated.

NATURAL SYSTEM

The integration of the natural environment and local ecologies and their interface with green infrastructure like parks, urban tree canopy, waterways and stormwater in the design and development of new urban areas

9. Landscape features and microclimates enhance human health and biodiversity.
10. Tree canopy supports sustainable, liveable and cool neighbourhoods.
11. Water is retained and water quality improved in urban places.

PUBLIC SPACE

The core of good urban design, the heart of urban environments, and where urban structure, the natural system, movement and connection, and built form components can collectively create public good

12. Public open space is high-quality, varied and adaptable.
13. Streets are safe, active and attractive spaces for people.
14. Public facilities are located in key public places, supporting community and place identity.

BUILT FORM

The contribution and interface of built form with its broader setting

15. The lot layout supports green neighbourhoods and a diversity of built form and uses.
16. There is a strong sense of place structured around heritage and culture.
17. Scale and massing of built form responds to desired local character.
18. Built form enlivens the ground plane and activates and frames public space.
19. Developments use resources efficiently, reduce embodied emissions, and consider onsite energy production.

PART TWO

Objectives for good urban design

Movement, heritage and nature coming together, Blackwattle Bay.

URBAN STRUCTURE

Urban structure is the arrangement of green and blue networks, public open spaces, paths of movement, pedestrian permeability and cycling infrastructure integrated into the pattern of blocks and streets that connects activity centres and public transport nodes to form urban neighbourhoods.

1.
Projects start with nature, culture and public space.

2.
District and local routes provide transport choice and accessibility.

3.
Compact and diverse neighbourhoods connect to good amenity.

4.
Place-based risks are mitigated and ecological values sustained to ensure resilient communities.

Centennial Parklands in Sydney provide amenity and connection for residents across multiple suburbs.
Photo: Destination NSW

OBJECTIVE 1

Projects start with nature, culture and public space

WHY THIS IS IMPORTANT

To respond to the unique characteristics of place and enable the potential of place to be realised.

To strategically identify areas for preservation and protection.

To provide green and blue spaces and networks as a key hallmark of liveability in urban areas.

To integrate natural landscapes into public life.

To support and express the natural qualities of places in development.

To increase and strengthen continuous green infrastructure networks.

To provide scenic amenity and opportunities to restore, connect and enhance urban ecosystems.

To ensure biodiversity, bushland and waterway regeneration.

ASSESSMENT GUIDANCE

The proposal demonstrates how the design response has been informed by place analysis.

The project vision and place-based principles have been developed through place analysis.

Topography and natural elements are clearly expressed, and a comprehensive, integrated and continuous green infrastructure framework informs the urban structure of subdivisions and master plans.

Areas of ecological importance and significant vegetation are retained, enhanced and connected.

Heritage buildings and significant landscape qualities are integrated into the development.

A water management strategy is appropriate to the demands of the project and context. Refer to the EP&A Regulation.

Waterways and water-sensitive urban design elements have been integrated into the green infrastructure framework.

DESIGN GUIDANCE

1.1 Base design decisions on comprehensive place analysis, strategic planning priorities and the site's contextual opportunities and constraints

Take a strategic approach to urban design, looking beyond site boundaries to positively contribute to place.

Undertake a comprehensive place analysis. Capture this analysis in the design verification statement, explaining how it has informed design decisions. See **Appendix 1**.

1.2 Identify, integrate and support the topography and landscape of the site in the structure of renewed or new places

Express natural elements – topography, waterways, trees, major views to natural features (such as parkland or ridgelines).

Prioritise natural elements to define the shape and structure of new elements in places. This includes using bushland and waterway corridors as the backbone of green infrastructure in public space.

Figure 5: Natural elements structure new development.

Protect ecological areas.

Protect, conserve, enhance and connect natural waterways and watercourses, and enhance or restore engineered waterways and watercourses, particularly those classified 2nd order or above according to the Strahler system as per the *NSW Water Management (General) Regulation 2018.*

1.3 Identify and protect significant Aboriginal heritage and environmental values (tangible and intangible)

Design the urban structure to respond to existing cultural and heritage values, landscapes and built assets that are to be retained.

Protect and conserve significant Aboriginal heritage values (tangible and intangible) and environmental features within the public realm.

1.4 Establish connected public space networks that integrate and support natural features
Retain existing public space as a priority.
Establish core public space networks along natural features and connect natural elements together.
Link natural elements and public space into a connected network that creates a clear hierarchy of public spaces, including large plazas, smaller squares, parks, and viewing platforms.
Align new public space to topographic features and natural systems, maximising co-location with green infrastructure and walking and cycling networks.
Provide public access to waterways, waterfronts, cliff lines and nature reserves.

1.5 Provide an integrated and connected blue and green infrastructure framework
Ensure green infrastructure is contiguous and integrated within the public realm.
Provide for new green infrastructure along strategic links to enable the network of interconnected green infrastructure to grow over time, such as along cycleways and public access to creek corridors or other government assets (for example along Sydney Water corridors).
Co-locate green infrastructure corridors with other linear systems where possible, including walking and cycling routes.
Provide opportunities for contiguous green infrastructure within private space, such as contiguous rear setbacks or larger landscaped lots (e.g. using Environmental Living zoning).
Protect and enhance urban tree canopy (see **Objective 10**).

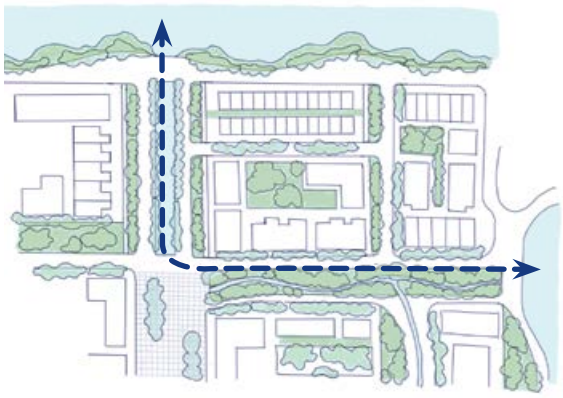


Figure 6: Blue and green connections through urban areas.

Figure 7: Blue and green networks are connected and frame urban form.

1.6 Integrate a high-quality public open space network into the urban structure to provide a forum for public life

Preserve and maintain key existing public open space areas.

Prioritise public space in the urban composition.

Ensure a clear and logical network of high-quality public open space, incorporating existing open space and including natural and movement components.

Investigate different open space types to accommodate constraints occurring across scales.

Figure 8: Public space networks give structure to urban form.

1.7 Integrate a water cycle management strategy at the neighbourhood scale

Establish a large-scale water cycle management strategy to retain more water in the landscape and to manage stormwater and water quality. Provide a network of interconnected measures such as wetlands, detention, bioretention and water-sensitive urban design measures including urban swales and passive filtration, and support urban greening.

Integrate large and neighbourhood-scale water detention, capture and re-use.

Integrate water management strategies that retain natural topography and stormwater flow paths in subdivisions.

Preference natural methods for stormwater control, integrating passive landscape elements and water-sensitive urban design in preference to engineered solutions.

Integrate water management within public spaces (public open spaces and streets) and with complementary uses such as green infrastructure corridors.

See **Objective 11** for further guidance on water management, water quality and water-sensitive urban design.

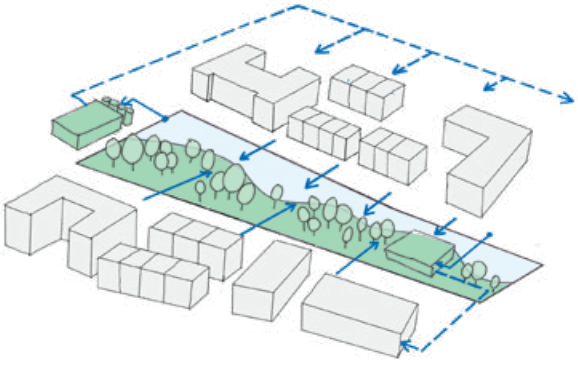


Figure 9: Neighbourhood-scale water cycle management strategies are integrated.

OBJECTIVE 2

District and local routes provide transport choice and accessibility

WHY THIS IS IMPORTANT

To integrate Movement and Place considerations into urban design and planning early in the project life cycle.

To ensure existing and proposed infrastructure is used efficiently.

ASSESSMENT GUIDANCE

The development is aligned with broader strategic planning, transport strategies and plans (See **Part 3**). The case for change has been adequately justified.

A Movement and Place approach has been used to understand and balance movement and place functions and inform network planning, street hierarchy and street environments within the project.

A diverse range of transport options is delivered, prioritising walking, cycling and public transport.

DESIGN GUIDANCE

2.1 Align with existing and planned transport networks

Identify and map existing, planned or proposed transport networks, key nodes, trip generators and destinations, including hospitals, schools, major and local centres set out in strategic plans, including district or regional plans, local strategic planning statements, and other relevant local strategies and plans.

Identify a local and clear movement network that connects with the broader transport network and connects to strategic or city centres, local businesses and public places.

Deliver or safeguard strategic transport corridors connected to places.

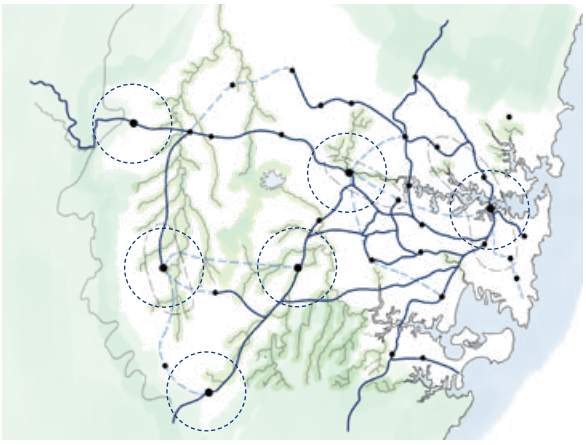


Figure 10: Understanding of the wider strategic planning context is critical.

2.2 Provide a diversity of transport modes and prioritise active and public transport connections

Identify routes that need to go around places, considering neighbourhood catchments, scale, and the potentially divisive character of large or busy roads and heavy vehicles.

Create local cycle and pedestrian connections between key destinations such as parks, urban centres, community uses, waterways, bushland and ecological areas.

Identify the local routes that need to connect places and provide for them at the neighbourhood scale and with slow speeds.

Align local routes to key destinations such as schools, workplaces, transport hubs and centres, open space and green infrastructure corridors.

Connect the routes to points of attraction in and beyond the project boundary.

Ensure multiple modes are provided to enable flexibility, choice and prioritise active travel. For example, a short local trip may be walked or cycled, and a medium distance trip cycled or taken by bus.

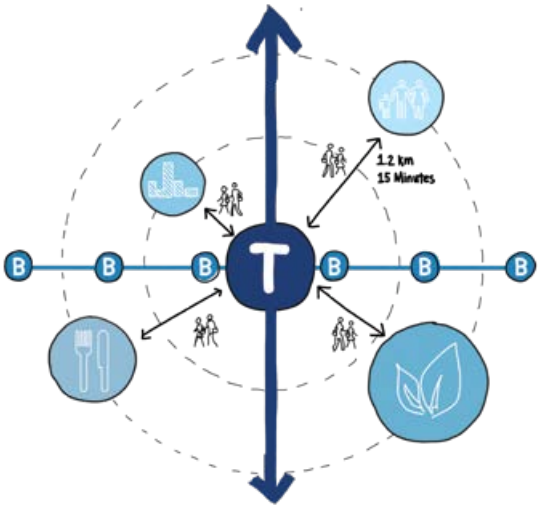


Figure 11: Consider access to a range of key destinations.

2.3 Locate and integrate development with highly accessible public transport

Integrate public transport nodes into the heart of centres and clusters.

Prioritise provision of homes in residential areas with accessible, safe and secure routes to high-service-frequency public transport within 800 m.

In less frequently serviced residential areas, locate homes within 400 m of public transport.

Integrate and plan for public transport as an integral part of the network planning.

On existing public transport routes, facilitate direct and frequent public transport that is easy and safe to access.

Locate new centres, key destinations and transport interchanges on public transport routes.

Consider adding on-road priority for public transport on streets that connect centres.

Refer to **Objective 3** for further guidance on residential accessibility to public transport.

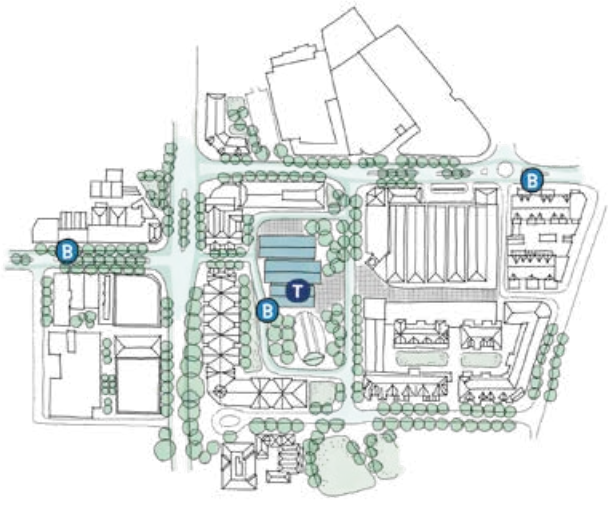


Figure 12: Integrate transport stations, stops and interchanges.

2.4 Ensure movement networks consider the existing conditions and environment

Consider the movement patterns required together with natural and built components. Adapt existing streets or design new street networks to satisfy the requirements of current and future populations.

Minimise the impact on natural systems and built form, such as using duplication of corridors or streets rather than widening, to preserve existing trees as future median trees.

Retain existing street networks where it is practical to do so, including any services which may coincide with the network. New services cannot be easily accommodated in a right-of-way; consider offsetting service corridors to create laneways or similar secondary networks.

2.5 Provide for efficient movement of goods to minimise the impact on places

Provide routes for essential strategic freight that can bypass neighbourhoods and key places where people gather.

Provide for last-mile delivery of goods that minimises loading and delivery impact on places, such as through rear-lane access, loading bays or consolidation centres.

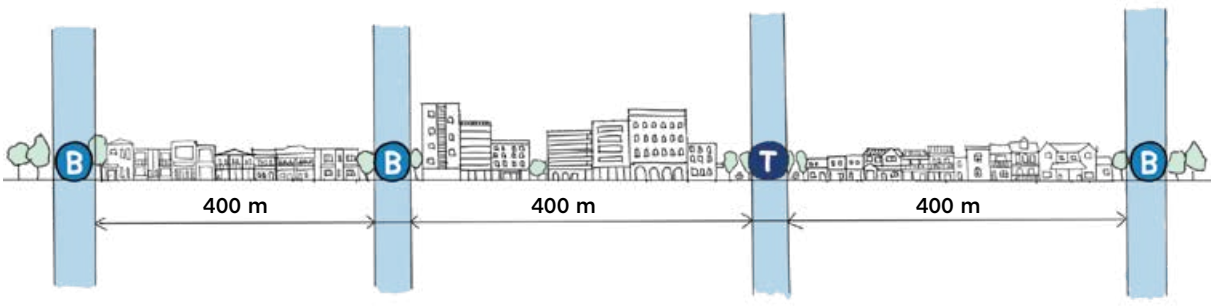


Figure 13: 400 m access to public transport.

BEST PRACTICE EXAMPLES

Urban transition

Summer Hill Mill, Sydney illustrates:

—integration of heritage and new build
—new street design
—new public space design.

Design: Hassell
Photo: Mark Syke

GOOD EXAMPLE OF OBJECTIVES:

1 2 7 12 16 17 18

OBJECTIVE 3

Compact and diverse neighbourhoods connect to good amenity

WHY THIS IS IMPORTANT

To optimise land-use efficiency.

To protect, enhance and support natural systems and agricultural land.

To ensure urban networks are connected beyond the site.

To create walkable neighbourhoods that support local living and healthy communities.

To establish dense, mixed and diverse neighbourhoods for good growth, limiting sprawling and homogenous subdivisions.

To facilitate access and connectivity of sustainable mobility.

DESIGN CRITERIA

Neighbourhood density

Minimum gross residential densities of 30 dwellings per hectare are provided:
- in and around activity centres within 5 minutes' walk of neighbourhood shops, neighbourhood centres or local centres
- within 10 minutes' walk of strategic and metropolitan centres, regional towns and cities
- within 10 minutes' walk of high-frequency public transport.

The minimum average gross residential density is 15 dwellings per hectare if not called out in the neighbourhood catchments above.

The scale and distribution of density varies within catchments according to the centre scale and form. Higher densities are likely to be appropriate in larger centres and closer to transport hubs.

DESIGN GUIDANCE

3.1 Provide a network of centres that supports a compact urban form

Deliver a clear hierarchy of activity centres of varying scales and roles that is mutually productive.

Distribute centres to minimise gaps between sustainable transport catchments (walking and cycling), and around key transport nodes.

Protect, enhance and repair existing urban environments and centres to improve their sustainability and performance.

Provide for the successful operation of centres by considering their catchment and likely patronage, integration into the broader street network, retail exposure and amenity.

Figure 14: A network of centres establishes a clear hierarchy and maximises efficiency of catchments.

3.2 Ensure key land uses are well-sited and integrated for amenity, safety and productivity

Locate sensitive land uses including residential areas, childcare centres, schools and hospitals away from noisy and busy transport corridors such as major roads, railway lines, designated freight routes, noxious uses and facilities that could have a detrimental impact on human health and wellbeing.

Absorb and integrate major retail into centres to avoid cannibalisation of existing or proposed local main street retail areas.

Leverage the placement of new major retail to create anchors for a new walkable pedestrian-focused public realm.

Ensure lot sizes enable large premises and big-box uses can be sleeved in accordance with **Objectives 8** and **18**.

3.3 Provide mixed and diverse neighbourhoods with high amenity

Provide a mix of housing types that reflect the future needs of communities and promote affordability for families and aging in place.

Locate increased density in areas of high amenity such as within walking catchments of activity centres, public transport hubs (high-frequency train and metro stations) and adjoining public open space.

Scale density to align with the hierarchy and amenity of centres and the capacity of key transport hubs.

Provide a range of residential densities that respond to amenity.

Provide various uses, types and settings to create variety, activity and interest within a neighbourhood.

In areas of greater intensity or where there are excellent active and public transport networks, development should aim for a minimum density of 30 dwellings per hectare across the entire walkable neighbourhood.

Figure 15: A mix of densities supports centres and maximises natural amenity.

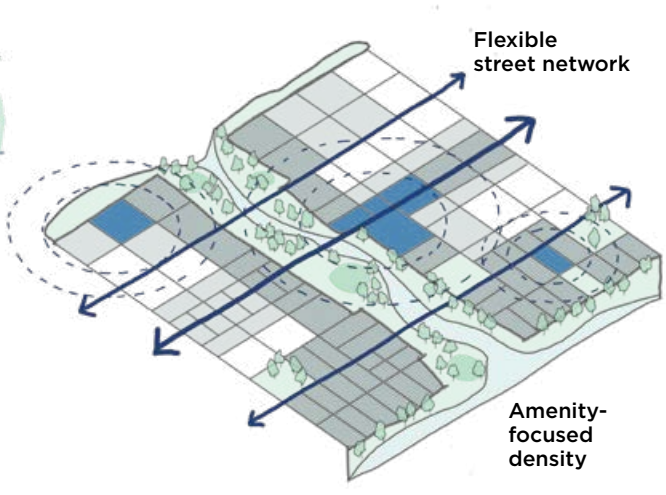


Figure 16: Density is located with amenity – around centres and public open space.

3.4 Connect and integrate urban networks with the broader context, and overcome barriers

Ensure open space and movement networks are connected conveniently through the project site where appropriate, supporting green infrastructure connectivity and increasing accessibility.

Ensure barriers such as major roads and rail, or ecological and waterway corridors, are provided with regularly spaced cross-connections for walking and cycling within walking distance of the development.

3.5 Provide a compact urban footprint that minimises impact on adjacent productive sites

Design the urban footprint to:
— make efficient use of land
— minimise impact on existing agriculture, employment land and cultural areas.

Alternative design solutions

If individual blocks are not capable of meeting a density target of 30 dwellings per hectare, the development proposal needs to demonstrate the average gross residential density across the area defined in the design criteria is capable of exceeding the target, and there is a suitable transition from highest to lowest density.

Depending on the context, it may be appropriate to spread density across a wider catchment adjacent to centres or where there are multiple transport nodes.

Figure 17: Open space and transport networks contribute to and connect destinations beyond the site.

Figure 18: Development is defined by the blue and green network to deliver a compact footprint.

BEST PRACTICE EXAMPLES

Suburb for the future

Newington, Sydney illustrates:

- a new master planned suburb developed to accommodate a future community after being the 'Sydney Olympic Village'
- collaboration between multiple developers, a range of architects and Government
- good sustainable design, including Australia's first solar suburb.

Design: Cox Richardson, PTW, Hassell, Eeles Trelease, Vote Associates, Tanner and Associates, Gordon and Valich, Virginia Kerridge Architects, Grose Bradley Associates, Order Architects and Tonkin Zulhaika for Mirvac and Lend Lease.

GOOD EXAMPLE OF OBJECTIVES:

1 6 7 9 10 12 19

OBJECTIVE 4

Place-based risks are mitigated and ecological values sustained to ensure resilient communities

WHY THIS IS IMPORTANT

To establish an integrated approach to building long-term resilience.

To consider cumulative place-based risks.

To ensure land-use planning considers resilience and the risks of vulnerable land.

To reduce the impacts of hazards such as bushfire, drought or flooding, whether natural or human-induced.

To respond to climate change effects.

To reduce consumption and depletion of natural resources.

To promote sustainable development while maximising quality of life and wellbeing.

To protect ecological areas and soil networks and build ecological resilience.

ASSESSMENT GUIDANCE

The proposal includes a design for resilience summary including:
- how development has considered the likely impacts of cumulative place-based risks (shocks and stresses)
- demonstrating how it will build community resilience.

The proposal meets the DP SEPP and EP&A Regulation requirements for urban design development and the 'design for resilience' template and accompanying guidance.

Development along the coast is informed by the *Coastal Design Guidelines for NSW* (Coastal Council 2003).

Areas of high ecological value have been mapped and are protected.

Areas of ecological value are connected.

DESIGN GUIDANCE

4.1 Address, mitigate and respond to risks

Carefully locate development, distribute land uses and site built form to minimise risk.

Implement strategies that will manage, reduce or mitigate any hazards such as bushfires, drought or flooding (whether natural or human-induced), and hazards such as air pollution, land contamination and gas or fuel pipelines.

Use hazard-prone and other environmentally sensitive areas to add value and outlook to the development, rather than by introducing barriers such as fencing.

Locate density away from vulnerable areas such as flood-prone land. Carefully plan development along the coast to ensure natural character values are maintained or enhanced; see the *Coastal Design Guidelines* for further guidance.

Use engineering tools, such as rain gardens, tree pits, swales, detention tanks and piped networks, to manage the speed and volume of stormwater. See **Objective 11** for further guidance.

4.2 Ensure safety and resilience underpin new communities

Consider community resilience at all scales of development. For a new subdivision or major urban renewal, use the layout and composition of development to provide an opportunity for designated safe zones for use in emergency management. A safe zone is a designated area in case of an emergency that prioritises safety considerations.

4.3 Protect natural ecology as a system

Provide buffers to sensitive ecological areas.

Set subdivision patterns and building setbacks to enable contiguous planting of vegetation to enhance habitat and ecology.

Improve interconnections between urban habitat areas to support ecological resilience.

Figure 19: Land use and built form is located to mitigate and manage risk – such as flooding or bushfire.

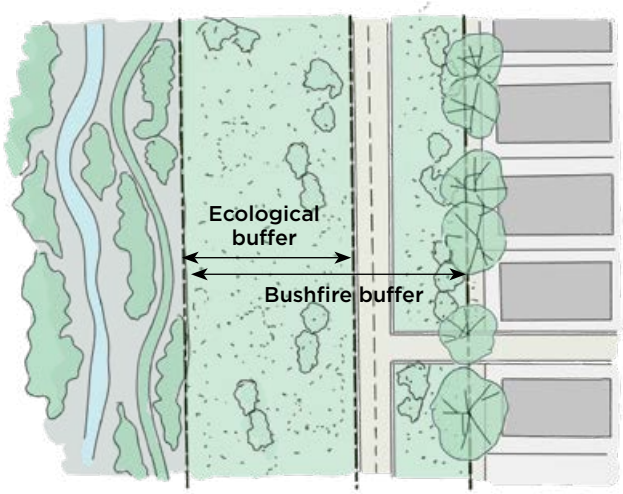
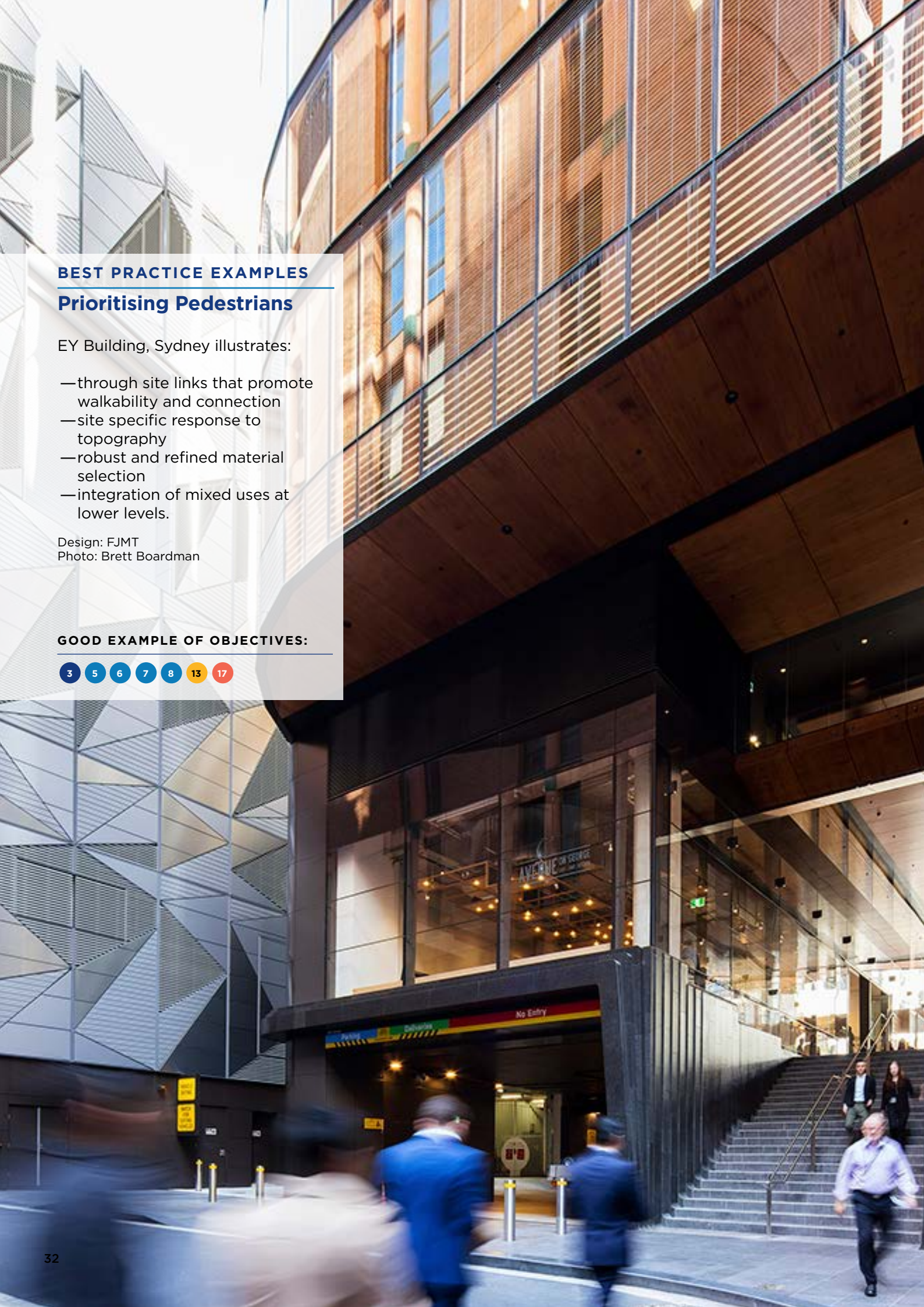


Figure 20: Example of a supportive green corridor interface.



BEST PRACTICE EXAMPLES

Prioritising Pedestrians

EY Building, Sydney illustrates:

—through site links that promote walkability and connection
—site specific response to topography
—robust and refined material selection
—integration of mixed uses at lower levels.

Design: FJMT
Photo: Brett Boardman

GOOD EXAMPLE OF OBJECTIVES:

3 5 6 7 8 13 17

MOVEMENT AND CONNECTION

Movement and connections to and from places, within places, and through places are critical components of successful urban environments. Movement and connectivity can be achieved through various means such as streets, plazas, public open space networks, public transport, and green infrastructure corridors.

5.
Walkable neighbourhoods are vibrant and productive.

6.
Block patterns and fine-grain street networks define legible, permeable neighbourhoods.

7.
Walking and cycling is prioritised, safe and comfortable for people of all abilities.

8.
Parking is minimised, adaptable and integrated.

Castle Hill Metro integrates high-quality public space with the brightly coloured *Light Line Social Square* metropolitan-scale public art – with distinctive high-quality station architecture. Photo: Transport for NSW.

OBJECTIVE 5

Walkable neighbourhoods are vibrant and productive

WHY THIS IS IMPORTANT

To facilitate local living, grow local economies and promote walkability.

To provide for centres and nodes that build social resilience.

To enable a shift away from car use.

To enable vibrant and productive communities including night-time economies.

DESIGN CRITERIA

Walkable neighbourhoods

All homes are within 15 to 20 minutes walk of a collection of local shops, a primary school, public transport, a supermarket or grocery store.

Public open space accessibility

Access to public open space is provided as follows:

DEVELOPMENT TYPE	NET DWELLING DENSITY	PROVIDE ACCESS TO	MINIMUM CATCHMENT AND MODE
All new residential, commercial and mixed-use development	50 dwellings/ha or greater	Small park	200 m (2–3 min. walk)
	10 dwellings/ha or greater	Local park	400 m (5 min. walk)
	All densities	District park	1,600 m (20 min. walk)
		Regional park	5 km (cycle, drive or public transport)

DESIGN GUIDANCE

5.1 Deliver neighbourhoods with a vibrant centre

Support local living by providing mixed-use developments, compact neighbourhoods and local access to shops, public facilities and services.

Promote the clustering of uses within centres so they become strong community anchors. Include a compatible mix of uses, including retail, which provide daily needs, public open spaces and public facilities or schools. For centres of all sizes provide the following daily destinations within walking distance of housing:

— local shops, for a variety of everyday goods and services such as cafes
— primary schools, for both children walking to school and onward trips by accompanying adults
— public open space for sport and recreation
— public transport, for access to wider destinations around the town or city
— supermarkets or grocers, for fresh food.

Design centres to be inclusive and diverse, fostering a sense of ownership, encouraging physical activity, and supporting social interaction.

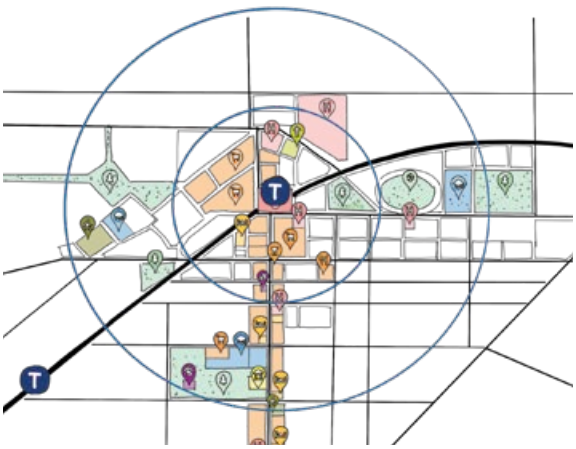


Figure 21: Co-located uses in walking catchments form vibrant centres.

5.2 Support the local night-time economy and provide more varied, well-integrated entertainment uses

Protect existing entertainment uses and protect them from encroachment (including noise complaints). Manage potential impacts by considering:

— the daily cycle and desirability of activity across the four night-time economy time periods: early evening 6 pm – 9 pm, evening 9 pm – 11 pm, night 11 pm – 2 am, and late night 2 am – 6 am.
— sound impacts: ambient noise can contribute to vibrancy and activation, but loud noise can adversely affect amenity. Consider buffers, enhanced noise insulation, and venue management.

Provide venues for local cultural activity such as galleries, theatres, studios and auditoriums. See **Objective 14** for further guidance on public facilities.

Enable public space to cater for pop–up or temporary uses, e.g. events or markets, by providing power and water points, toilets and storage.

Support cultural activity in private venues such as bookstores or music stores that may host events, or small bars, cafes or restaurants providing live music.

Consider locations suitable for boutique manufacturing, such as artisan crafts, microbreweries and distilleries.

Consider early activation of vacant or underused premises through temporary or auxiliary uses, such as office space as a temporary gallery.

Alternative design solutions

Where residential areas cannot provide local access to a collection of all the destinations listed in this objective:

— prioritise the provision of all listed destinations within a 20-minute walk
— provide smaller clusters of destinations that form a logical sequence of everyday linked trips, such as a school and open space for after-school recreation, or public transport with a grocery shop for access to fresh food.

OBJECTIVE 6

Block patterns and fine-grain street networks define legible, permeable neighbourhoods

WHY THIS IS IMPORTANT

To deliver a highly permeable urban environment.

To maximise accessibility across urban areas.

To deliver a street and block pattern that is robust and adaptable over time.

To increase participation in active transport: walking.

DESIGN CRITERIA

Walkable block lengths

Maximum block length for industrial areas is 220–250 m.

Maximum block length for residential and mixed-use development is 160–220 m.

This is complementary to the design criteria for pedestrian and cycle permeability in **Objective 7**.

ASSESSMENT GUIDANCE

A variety of blocks (sizes, orientations and access arrangements) are provided.

DESIGN GUIDANCE

6.1 Provide a street network with a legible hierarchy

Build on the strategic network (see **Objective 2**) to develop the street pattern and street hierarchy.

Integrate new streets with the existing street pattern.

Ensure the proposed urban grain is sympathetic to the existing grain and use it to integrate the development into the wider urban pattern.

Support wayfinding by providing clear sightlines to place features such as waterways, public open spaces, landmarks and civic built form.

See **Objective 13** for further guidance on street types.

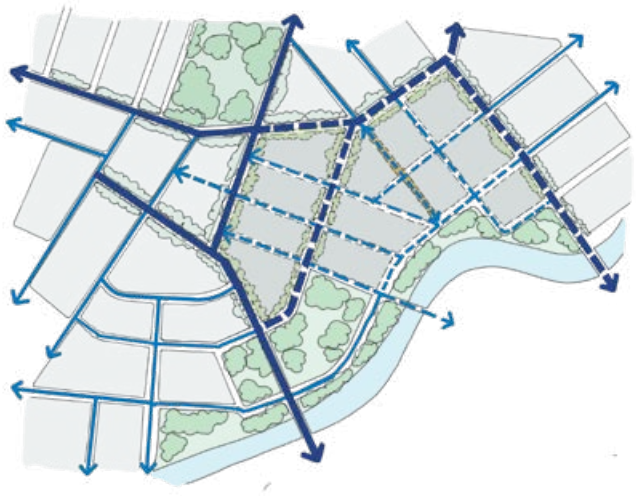


Figure 22: Street pattern provides for a hierarchy with direct sightlines to key destinations.

6.2 Create a fine-grain street layout that facilitates ease of access to key destinations

Design urban pattern in response to the intensity of population, density, and land use, with smaller blocks and streets in more intensive areas and around public transport nodes.

Provide walkable blocks and permeable street patterns; these can accommodate greater amenity and support increased density over time.

Ensure permeable and safe pedestrian movement is possible in all directions.

As a measure of ease of movement, low-scale, residential areas should generally contain at least one street intersection per ha. Intersection densities should increase and block lengths decrease in more intensive areas in proximity to activity centres and close to public transport.

Align streets with site boundaries to improve legibility, wayfinding and connection.

Avoid geometries that create wide crossings or circuitous paths on foot, cycle or by public transport. See **Objective 13** for further guidance.

Avoid cul-de-sacs to support connectivity and crime prevention through environmental design (CPTED).

Provide mid-block connections – see **Objective 7**.

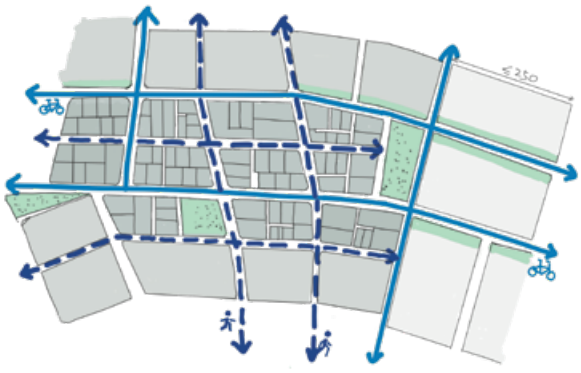


Figure 23: Clear and permeable street pattern.

Figure 24: Public plazas and pedestrian connections add to the accessibility of the street pattern.

6.3 Provide a diversity of block patterns to suit a variety of uses

Provide an appropriate range of block sizes, orientations, access arrangements (such as laneways), and shapes, to support diverse neighbourhoods and housing choice (see **Objectives 15** and **17**).

Create blocks that are appropriately sized, proportioned, and orientated to support the intended function and character.

Some historic areas align main streets north–south to maximise lunchtime sun, and residential cross-streets east–west to maximise built form solar access to the north.

6.4 Design urban environments to be adaptable for future change

Where existing streets and blocks do not facilitate walkable neighbourhoods, prioritise urban repair, particularly:

— for new streets or through-site links at the block scale
— compatible uses at the lot scale where a given daily need cannot be satisfied within walking distance.

Ensure development does not preclude future increased connectivity and permeability. Take advantage of opportunities to increase connectivity (public space and green infrastructure) and permeability over time, such as providing a new through-site link along a seasonal creek line (no-build zone).

Figure 25: Provide a range of different lot shapes, sizes and orientations.

BEST PRACTICE EXAMPLES

Residential amenity

Maestro, Harold Park, Glebe illustrates:

- a lush internal garden which ensures density is next to amenity
- public space network connected into a variety of 2 and 4 storey building forms
- private outdoor spaces that are splayed to capture sunlight and street views.

Design: Eeles Trelease
Photo: Simon Wood

GOOD EXAMPLE OF OBJECTIVES:

1 10 12 13 16 17

OBJECTIVE 7

Walking and cycling is prioritised, safe and comfortable for people of all abilities

WHY THIS IS IMPORTANT

To facilitate active and sustainable transport modes and increased transport choice (walking and cycling).

To reduce car dependency and support healthy lifestyles.

To make streets and places pedestrian-friendly.

DESIGN CRITERIA

Mid-block connections
Mid-block connections and through-site links for pedestrians are provided no more than 130 m apart within walking catchments of key destinations such as centres, public open spaces, transport nodes and schools.

Dedicated footpaths are provided on both sides of street carriageways (excluding shared accessways).

DESIGN GUIDANCE

7.1 Provide fine-grain pedestrian permeability

Develop local movement strategies on the basis that walking is the natural first choice for local trips.

Ensure developments provide through-site links, including opportunities to integrate new local traffic or walking and cycling connections through large-format blocks and uses.

Provide pedestrian connections and through-site links that have clear sightlines, are open to the sky and are supported by active interfaces.

7.2 Provide pedestrian priority and amenity

For all streets, either new or adapted, give priority to pedestrian movement over cars. Point closures (e.g. bollards) are an inexpensive method of maintaining the character of open street networks while prioritising direct walking and cycling routes over car trips.

Figure 26: Pedestrians are given priority.

Continue pedestrian and cyclist networks through or alongside public open space to existing and planned destinations.

Use designs that facilitate continuous pedestrian movement, including zebra crossings and raised 'side road treatments' (including at roundabouts). See **Objective 13** for further guidance on safe streets.

Where provided, ensure awnings and other facade structures are compatible with the context and local character and do not adversely impede daylight or views to the sky.

7.3 Provide low-traffic and slow-traffic streets

Integrate behavioural traffic calming within streets e.g. yield streets, narrow lanes, street trees or indented street parking bays.

Where possible, adopt speed limits that minimise the risk of fatality for vulnerable road users (e.g. 30 or 40 km/hour or less).

Integrate alternative materials in low-speed streets to aid pedestrian legibility and reinforce pedestrian priority.

7.4 Integrate safe cycling

Develop local movement strategies promoting cycling as the safe and comfortable choice for local trips up to 5 km.

Consider e-bikes and alternative mobility to address topographical constraints and extend cycle catchments.

Provide dedicated cycle facilities on streets where the speed limit exceeds 40 km/h or there are high volumes of traffic or heavy-vehicle movements are expected.

Provide cycle signals or crossings for perpendicular cycle routes across busy roads and rail to avoid the need to dismount.

Connect key locations such as transport stops or interchanges, centres, local open spaces and schools to the cycle network.

Provide supporting infrastructure in those key locations such as secure cycle parking and end-of-trip facilities.

For further guidance on urban design that supports cycling see the *Cycleway Design Toolbox*, *Designing for cycling and micromobility* (TfNSW 2020).

Figure 27: Integrate cycling networks.

OBJECTIVE 8

Parking is minimised, adaptable and integrated

WHY THIS IS IMPORTANT

To provide efficient and effective management of parking that will ensure functionality and safety for drivers and pedestrians.

To ensure parking is integrated with the overall design of a place and surrounding public spaces.

To promote more sustainable movement options.

To ensure car parking does not dominate urban centres.

To support new technologies such as electric vehicles and ensure charging stations are integrated into the delivery of new projects.

ASSESSMENT GUIDANCE

Car parking is minimised.

Where feasible, maximum parking rates are encouraged in setting development controls.

All parking controls and outcomes are aligned with the place vision.

Electric vehicles are supported through charging infrastructure.

DESIGN GUIDANCE

8.1 Integrate parking into urban form

Develop an integrated approach to parking in the development to reduce the need for parking overall. Consider:

— managed parking schemes for on-street parking to promote turnover of visitors and short-stay parking
— residential parking permits for on-street parking to reduce off-street parking demand
— consolidated parking structures
— micromobility or mobility-as-a-service (such as car share spaces) as a substitute for parking demand.

Ensure car parking does not dominate the urban environment and its built form is permeable to the surrounding network. Underground car parking and semi-basement car parking is preferable to above-ground parking, especially for medium- to high-density development and areas with higher land value.

Multistorey car park structures may be suitable in built-up urban areas and in suburban or town centre locations, where parking can support public transport patronage, such as near train or bus stations.

Surface parking is not suitable in centres or dense urban areas. Where surface parking is provided in suburban or office-park environments:

— provide adequate trees, landscaping and permeable surfaces
— locate parking to the rear of the site to allow buildings to define the street edge and contribute to the streetscape.

8.2 Minimise parking, manage demand and explore strategies to accommodate new technologies

Consider the total parking demand, whether it can be satisfied by on- or off-street, and look for solutions that reduce total parking.

Encourage car sharing.

Consider whether off-street parking can be consolidated or replaced with alternatives such as car share parking.

Consider integrating car share parking spaces within streets or visitor areas of car parks.

Consider maximising the efficiency of on-street parking through management strategies such as residential parking permits.

Consider reducing on-street parking oversupply to accommodate other modes such as cycle lanes.

Reduce parking for private vehicles close to transport hubs, and strategically place car share and cycle parking at key hubs to increase their catchment.

Consider preparing green travel strategies to minimise the amount of parking required.

Integrate and prioritise electric vehicle (EV) charging car spaces in key public locations.

Provide a minimum of 2 per cent of all parking spaces with EV-charging equipment (except where local controls exceed this).

Consider car share parking, with a minimum 2 per cent of all parking spaces provided for car share parking in high-density urban places.

See the DP SEPP and *Apartment Design Guide* for further guidance on parking requirements.

8.3 Consolidate access to parking, and minimise conflicts

Design and locate vehicle entrance ramps to semi-basement or basement parking so that disruption to traffic, cyclists and pedestrians is minimised, e.g. via a side street rather than the main road.

Investigate alternative ways to accommodate on-street and off-street parking to limit driveway crossovers.

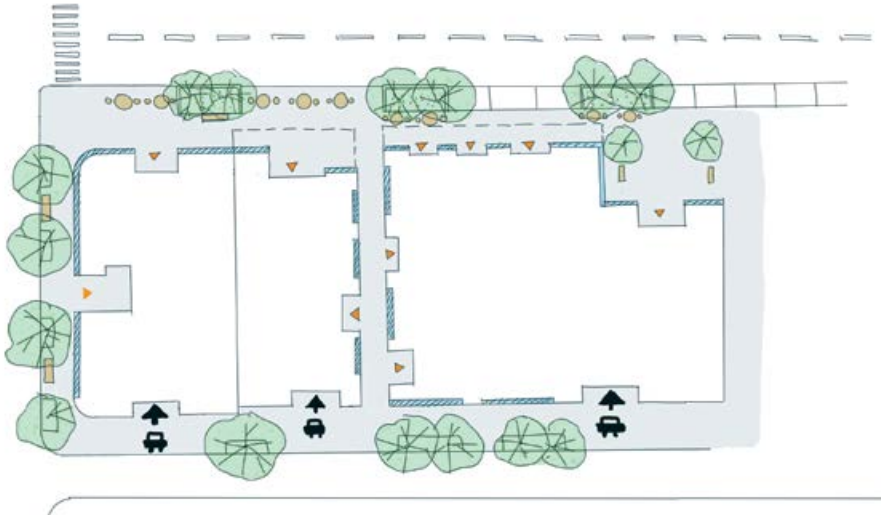


Figure 28: Vehicle access is provided away from key pedestrian spaces.

BEST PRACTICE EXAMPLES

Cycle infrastructure

Bourke Street Cycleway from Woolloomooloo to Waterloo:

- —provides a 3.4-km active transport corridor across a traffic-congested area of inner city Sydney
- —retains and celebrates existing mature trees and incorporates new street tree canopy
- —prioritises cycling and pedestrians in a dense urban area.

Design: Pod Landscape Architecture (Group GSA) for City of Sydney Council. Photo: CFUD Transport.

GOOD EXAMPLE OF OBJECTIVES:

1 2 4 7 9 10

8.4 Screen above-ground parking

Use sleeved parking for larger sites such as office, retail or apartments.

Sleeved parking solutions can conceal parking from public view and make the best use of outlook by locating habitable and occupied space on the perimeter of a building.

Provide sufficient depth to accommodate active uses within sleeving. As a rule of thumb, where the final use in sleeved areas is unknown, provide for a depth of around 9 to 10 m.

Provide sleeved parking with direct access from the street and not the parking lot.

Where active uses are not possible, use greening alternatives for walls and roof–sky interfaces.

Figure 29: Active uses screening above-ground car parking.

8.5 Make parking adaptable and sustainable

In neighbourhood-scale and city-scale projects, explore consolidated parking areas to allow parking to adapt and respond more flexibly to changing needs.

Encourage built form that can be readily adapted to cater for other uses over time such as:

— floor-to-floor heights that permit conversion to other uses, typically no less than 3.1 m floor-to-floor for conversion to residential, and no less than 3.6 m for conversion to upper storey commercial
— using flat slab construction
— providing building depths that can cater for the insertion of courtyards
— locating ramps to the edges of parking structures
— setting back the edge of the structure to accommodate a future facade
— providing multiple building cores and access points.

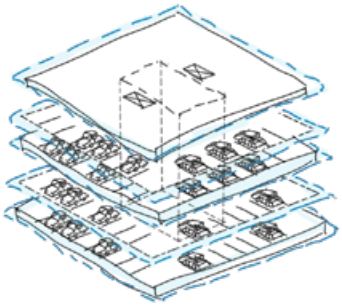


Figure 30: Flat slab construction scaled to provide for a future central void.

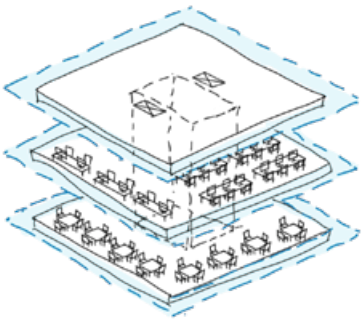


Figure 31: Generous floor-to-floor heights to cater for future changes of use.

BEST PRACTICE EXAMPLES

Urban regeneration

Sydney Park, Sydney, illustrates:

—staged investment in district parklands
—constructed wetlands on a previously contaminated site
—re-introduction of endemic species to attract local bird life
—diverse recreational opportunities.

Design: Turf Design Studio and Environmental Partnership for City of Sydney.

GOOD EXAMPLE OF OBJECTIVES:

1 2 4 7 9 10 11 12

NATURAL SYSTEM

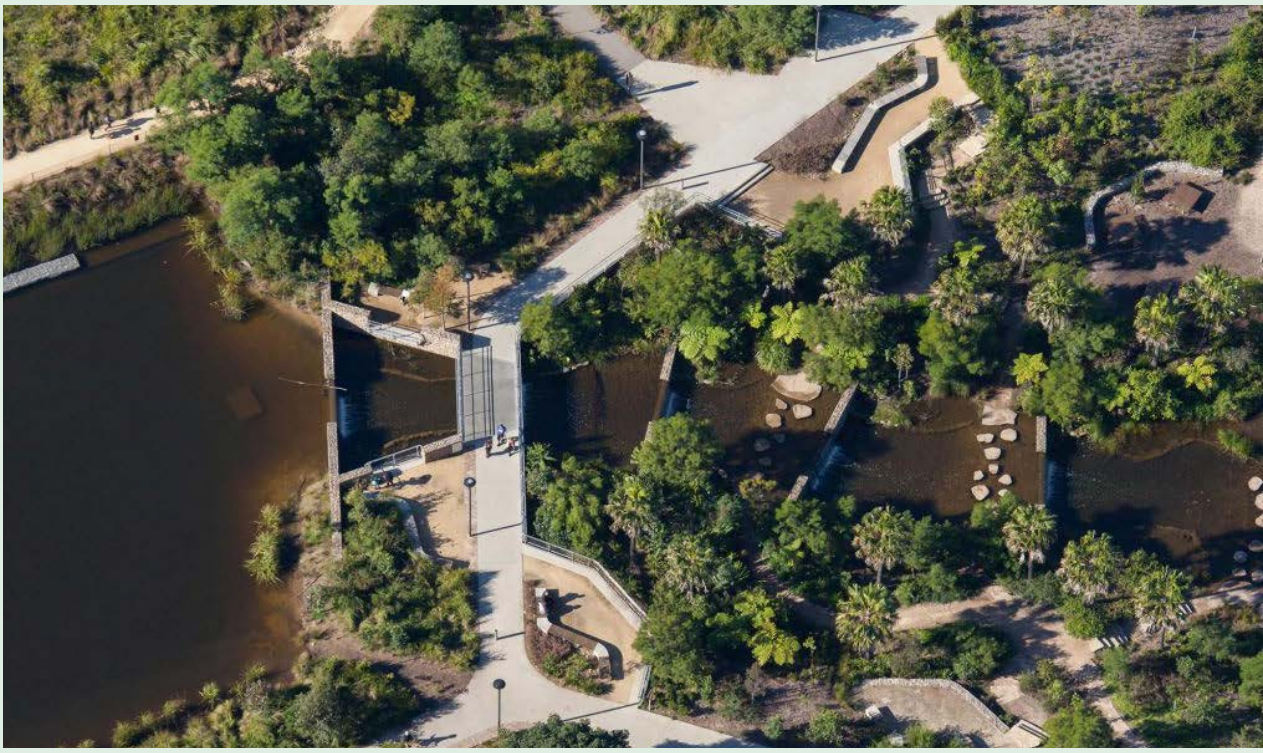
The natural component of urban places is a system of interrelated elements including landform, soils, waterways and watercourses, ecological assets including trees and other vegetation, open spaces, vistas and views, climate, sky, wind and sun.

9.
Landscape features and microclimates enhance human health and biodiversity.

10.
Tree canopy supports sustainable, liveable and cool neighbourhoods.

11.
Water is retained and water quality improved in urban places.

Sydney Park Wetlands water re-use project by Turf Design Studio and Environmental Partnership for City of Sydney. Photo: Ethan Rohloff.



OBJECTIVE 9

Landscape features and microclimates enhance human health and biodiversity

WHY THIS IS IMPORTANT

To address and design for site-specific climatic conditions and ensure places are pleasant, inviting and memorable.

To support movement, activity and rest, and limit negative site impacts.

To ensure good thermal comfort for all ages.

To optimise the overall health and wellbeing of individuals and communities.

ASSESSMENT GUIDANCE

The proposal demonstrates adequate amenity and human comfort can be achieved.

Public open spaces include features to support human comfort and mitigate against negative sensory experiences.

DESIGN GUIDANCE

9.1 Use green infrastructure to improve human health and biodiversity

Provide trees and landscaping in public spaces as early as possible to establish long-term amenity.

Optimise local breezes and urban cooling through green infrastructure placement and street orientation to catch prevailing breezes.

Ensure landscape features are appropriate for the scale, location and use of the area.

Integrate urban greening, such as green roofs or green facades, to support urban ecology and biodiversity, reduce stormwater run-off, reduce urban heat and increase amenity.

9.2 Use nature to provide delight

Optimise key views and vistas to and along natural assets.

Use green infrastructure to mediate poor sensory experiences, such as integrating landscape features and planting to absorb noise and manage air quality.

Seek opportunities to integrate natural soundscapes and scents, such as flowing water or wildflower gardens.

Integrate water features within squares or plazas to soften noise.

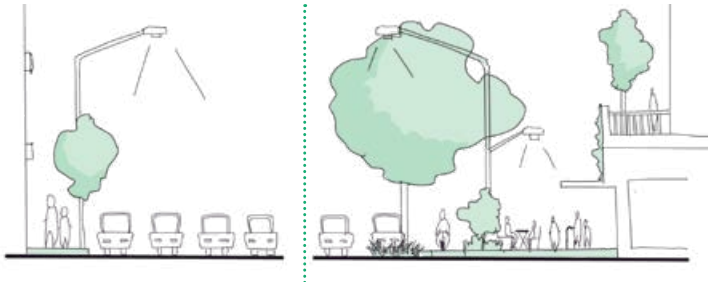


Figure 32: Examples of streets with and without supportive greening.

BEST PRACTICE EXAMPLES

Pedestrian connection

The Goods Line, Haymarket:

—provides a key strategic link and an important green space for this active part of the city
—retains significant fig trees to form green infrastructure
—provides a variety of activities along its length to cater for all generations.

Design: Aspect Studios and CHROFI.
Photo: Florian Groehn.

GOOD EXAMPLE OF OBJECTIVES:

1 2 4 7 9 10 12 13

OBJECTIVE 10

Tree canopy supports sustainable, liveable and cool neighbourhoods

WHY THIS IS IMPORTANT

To contribute to the mitigation of the urban heat-island effect.

To maximise the amenity and attractiveness of urban environments, including creating more shade and producing cleaner air.

To contribute to an integrated and connected network of green infrastructure.

To protect soil networks.

DESIGN CRITERIA

Tree canopy targets

Urban tree canopy is enhanced and supported in accordance with the following benchmarks:

Public open space tree canopy targets

Open spaces (< 5 ha) without sports courts and fields	Minimum 45% canopy cover
Open spaces (< 5 ha) with sports courts and fields	Minimum 45% canopy cover. Target applies only to areas outside the courts and fields. Where possible the area without courts and fields should exceed the 45% minimum to compensate for the areas without canopy.
Regional open space	Tree canopy is determined on a case-by-case basis. In any case, at a minimum proponents should demonstrate no net loss of canopy and a contribution to strategic canopy targets.

Street tree canopy targets

EXISTING RESIDENTIAL STREETS	OVERHEAD POWERLINES	UNDER-GROUND POWER
12–20 m reserve	Minimum 40% canopy cover	Minimum 50% canopy cover
EXISTING INDUSTRIAL STREETS	**OVERHEAD POWERLINES**	**UNDER-GROUND POWER**
20–25 m reserve	Minimum 35% canopy cover	Minimum 45% canopy cover
NEW RESIDENTIAL STREETS WITH UNDERGROUND POWER		
12–20 m reserve	Minimum 70% canopy cover	
NEW INDUSTRIAL STREETS WITH UNDERGROUND POWER		
20–25 m reserve	Minimum 60% canopy cover	

Large development tree canopy target[#]

LAND-USE CATEGORY	MINIMUM CANOPY TARGET
Residential zoned land (R1, R2, R3, R4), including streets	40%
Industrial zoned land (IN1, IN2), including streets	35%
Business zoned land (B5, B6, B7), including streets	35%
Open space (RE1), including streets	45%
Land uses not listed	Determine through site-specific analysis

[#] Use these targets for setting canopy targets for development where the street network or detailed development mix is unknown, such as for large-scale precinct planning or urban design strategies. When known, such as at master plan or concept DA stage of a project, use the targets specific to the type of development. Alternative design solutions are possible when sites are constrained (see the guidelines below).

Development category canopy targets

DEVELOPMENT CATEGORY	TREE CANOPY TARGET (% OF SITE AREA)	DEEP SOIL TARGET (% OF SITE AREA)	TREE PLANTING RATES SMALL TREE – MIN. 6 M^ MEDIUM TREE – MIN. 8 M^ LARGE TREE – MIN. 12 M^
DETACHED DWELLINGS			
Less than 300 m^2	20%	20%	For every 200 m^2 of site area, or part thereof, at least one small tree
300 m^2 – 600 m^2	25%	25%	For every 250 m^2 of site area, or part thereof, at least one medium tree
Greater than 600 m^2	30%	30%	For every 350 m^2 of site area, or part thereof, at least 2 medium trees or one large tree
ATTACHED DWELLINGS			
Less than 150 m^2	15%	15%	At least one small tree
150 m^2 – 300 m^2	20%	20%	For every 200 m^2 of site area, or part thereof, at least one small tree
Greater than 300 m^2	25%	25%	For every 225 m^2 of site area, or part thereof, at least one medium tree
MULTI-DWELLING HOUSING			
Less than 1000 m^2	20%	20%	For every 300 m^2 of site area, or part thereof, at least one medium tree
1000 m^2 – 3000 m^2	25%	25%	For every 200 m^2 of site area, or part thereof, at least one medium tree
Greater than 3000 m^2	30%	30%	For every 350 m^2 of site area, or part thereof, at least 2 medium trees or one large tree
APARTMENTS – SEE THE APARTMENT DESIGN GUIDE			
BUSINESS PARKS			
All lots	35%	25%	For every 300 m^2 of site area, at least 2 medium trees or one large tree
INDUSTRIAL			
All lots	25%	15% site area. Minimum 3 m dimension. Provide a wider contiguous portion that is a minimum 6 m wide and at least 50% of the minimum deep soil area.	For every 400 m^2 of site area, or part thereof, at least 2 medium trees or one large tree
BULKY GOODS			
All lots	25%	15% site area. Minimum 3 m dimension. Provide a wider contiguous portion that is a minimum 6 m wide and at least 50% of the minimum deep soil area.	For every 400 m^2 of site area, or part thereof, at least 2 medium trees or one large tree
ON-GRADE CAR PARKING ASSOCIATED WITH A BUSINESS PARK, INDUSTRIAL OR BULKY GOODS DEVELOPMENT			
Development with 5 or more car spaces	One medium tree should be planted between every fifth car parking space provided. The tree is to be in a planted zone of 13 m^2 – the equivalent of a car parking bay area. Trees should be evenly distributed in a chequerboard fashion to increase shading.		

^ mature canopy diameter

DESIGN GUIDANCE

10.1 Enhance urban tree canopy

Deliver urban tree canopy benchmarks, as set out in the design criteria for this objective. These targets should not override higher local controls.

Prioritise the retention and protection of existing tree canopy over removal and replacement of trees to achieve canopy cover.

When setting a canopy target for large development:
— ensure no net loss on the existing canopy baseline
— account for the opportunities of each development.

Deliver tree canopy for on-grade car parks by applying the development category canopy targets in the design criteria for this objective. For on-grade car parks where the benchmarks do not apply (e.g. hospitals, shopping centres) deliver sufficient canopy to mitigate the urban heat-island effect.

Consider site-specific constraints and requirements when planting trees and ensure future flexibility.

For species selection, gain maximum benefits from the urban canopy by considering species suitability for the site constraints and contribution to biodiversity.

Consider the mature size of the tree canopy, assuming supportive conditions have been established.

10.2 Support urban tree canopy with deep soil

Provide sufficient deep soil to support urban tree canopy. Provide supportive conditions for vegetation and tree canopy to thrive, including contiguous deep soil and water-sensitive urban design.

Minimise barriers to tree growth by consolidating below-ground services and aligning them to paths, removing overhead cables and powerlines, and creating buffer zones.

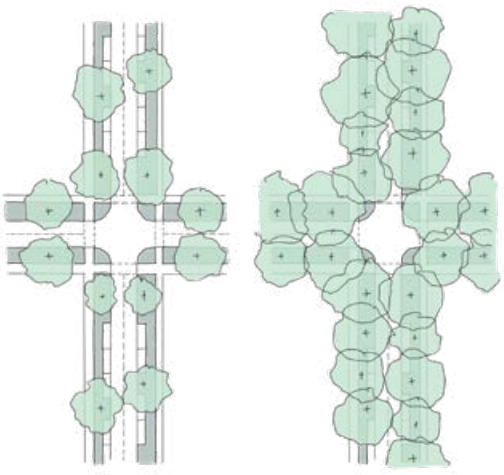


Figure 33: Examples of streets with minimal tree canopy and with UDG tree canopy.

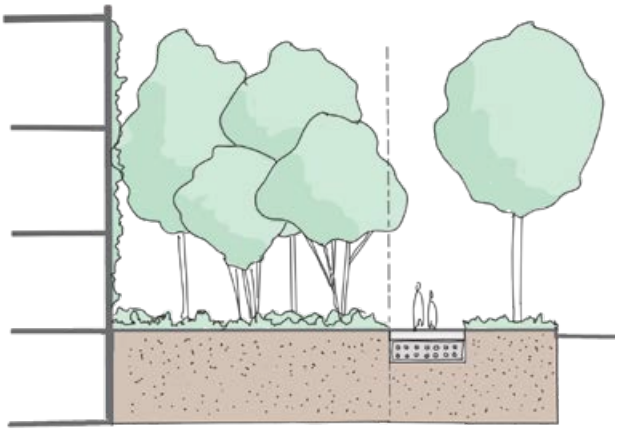


Figure 34: Support trees with sufficient deep soil and complementary greening.

10.3 Provide an interconnected soil network

Protect and integrate a network of interconnected undisturbed soil across the development that connects to the broader soil network.

Protect soils along waterways. Minimise the potential impact of creek restoration, water-sensitive urban design measures, pedestrian links, and bridges.

Minimise impact on undisturbed soil in public open spaces, including protecting soil against topographic alteration, except for localised earthworks such as for sports fields, playgrounds, or amenities.

Explore opportunities for increased continuous undisturbed soil profiles along green infrastructure corridors and in streets with generously planted verges (green streets).

Align road surfaces as closely as possible with the natural topography.

Align the surface level of private lots with the public realm.

Figure 35: Example of a street cross-section minimising cut and fill to maintaining soil networks.

Figure 36: Example of a street cross-section with an offset carriageway to retain a continuous soil corridor.

10.4 Place trees to allow for maximum canopy growth

Use tree canopy to frame significant views.

Select appropriate tree species to avoid new tree placement that blocks high-amenity views.

Place trees to allow tree growth in a balanced and healthy shape and minimise risk of pruning to an unnatural form, such as under overhead powerlines.

Consider the species and healthy mature size and shape of a tree to fit the place conditions.

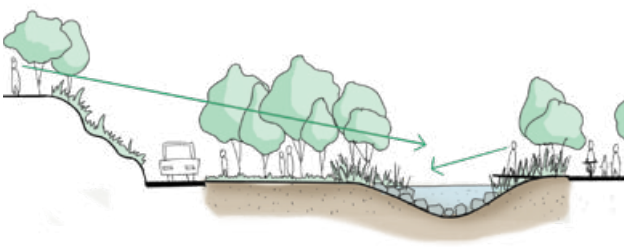


Figure 37: Integrate trees to frame views.

10.5 Ensure a diversity of street types enable tree planting

For new streets provide underground power where possible, and ample space to deliver tree canopy.

Provide the following for a typical new 20 m wide road reserve with underground power in residential areas:

— average of one large tree (10 m diameter) planted every 10 m
— street allowances:

STREET ELEMENT	INDICATIVE WIDTH
Overall road reserve	20 m
Carriageway	12 m
Verge 1	4 m
Verge 2	4 m
Typical adjoining lot widths	15 m/ 24 m / 10 m
Typical driveway area	108 m^2 / 8% site area

Provide the following allowance in a typical existing 15 m wide road reserve with overhead power in residential areas:

— average of either one small tree (5 m diameter) planted at 7 m intervals, or one medium tree (8 m diameter) planted at 10 m intervals, or one large tree (10 m diameter) planted every 10 m
— street allowances:

STREET ELEMENT	INDICATIVE WIDTH
Overall road reserve	15 m
Carriageway	8 m
Verge 1	5 m
Verge 2	2 m

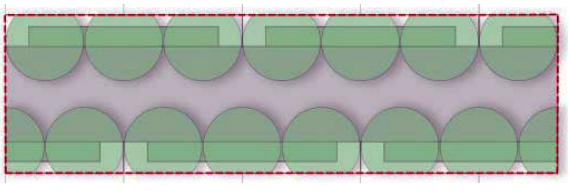


Figure 38: Typical new 20 m wide street with 70% canopy cover, with underground power, 10-m wide trees and 15 m wide adjoining lot widths.

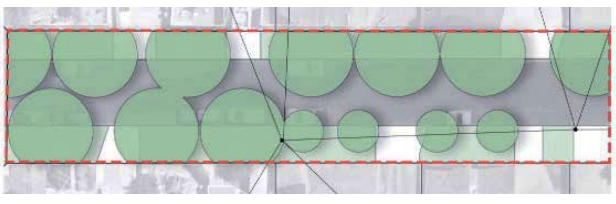


Figure 39: Typical existing 15 m wide street with 66% canopy cover, with overhead power.

Provide the following allowance in a typical existing 12 m wide road reserve with underground power in residential areas:

— average of either one small tree (5 m diameter) planted at 7 m intervals, or one medium tree (8 m diameter) planted every 10 m
— street allowances:

STREET ELEMENT	INDICATIVE WIDTH
Overall road reserve	12 m
Carriageway	5.5 m
Verge 1	4 m
Verge 2	3 m

Alternative design solutions

Where sites are constrained (e.g. existing high-density mixed-use urban sites, existing high streets, and where there are overhead powerlines), consider greening alternatives.

Alternatives are not comparable to planting in deep soil, and if used, the quality and quantity must aim to achieve the same environmental outcomes as planting in deep soil, recognising this may not be possible on all sites.

Greening alternatives include green cover, green roofs, green walls, pergolas with climbers, podiums, planters, lawns and gardens, rain gardens, and permeable pavements.

Greening alternatives can be included on new buildings, retrofitted onto existing buildings, and can require little, if any, space at ground level.

Consider greening alternatives early in the design process to incorporate their requirements (e.g. drainage, irrigation and lighting) with other built form aspects.

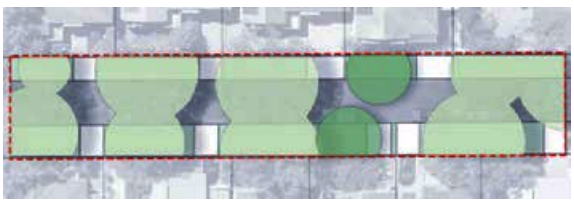


Figure 40: Typical existing 12 m wide street with 75% canopy cover, with underground power.

OBJECTIVE 11

Water is retained and water quality improved in urban places

WHY THIS IS IMPORTANT

To reduce consumption and depletion of natural resources.

To increase water quality for human health, the environment and the recreational value of our inland and coastal waterways and wetlands.

To assist in cooling urban environments.

ASSESSMENT GUIDANCE

Water is retained in place to support urban tree canopy cover and contribute to reducing the urban heat-island effect.

Water (particularly run-off and stormwater) is retained on site or managed within the neighbourhood.

DESIGN GUIDANCE

11.1 Retain water in the landscape and contribute to urban cooling

Retain as much water in the landscape as possible.

Preference natural methods for stormwater control, integrating passive landscape elements and water-sensitive urban design.

Use water-sensitive urban design elements to support green infrastructure such as wetlands, parks, community gardens, tree canopy, corridors and bioswales to provide habitat and ecosystem services while building resilience and fostering urban cooling.

Integrate water-sensitive urban design measures such as reed beds and urban swales along green infrastructure corridors within streets and public open spaces such as parks and streets.

Support greening and reduction of urban heat by providing tree canopy in accordance with **Objective 10**.

Figure 41: Retain water in the landscape by integrating water-sensitive urban design measures.

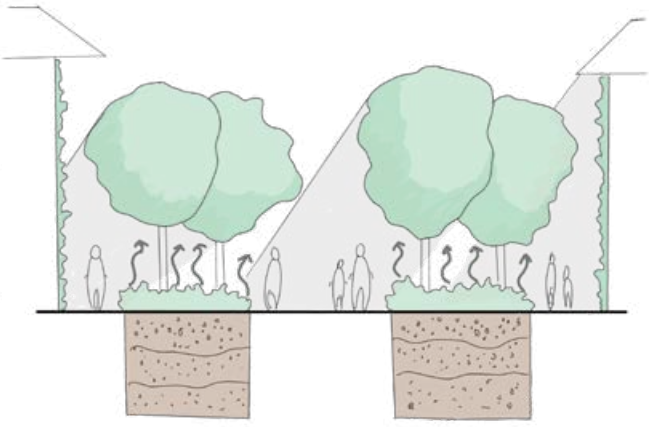


Figure 42: Integrate areas of deep soil and landscaping to assist urban cooling.

11.2 Reduce water consumption, reduce stormwater run-off and improve water quality

Reduce water consumption and contribute to water security by providing water systems that minimise use of potable water for non-potable uses and maximise water re-use.

Slow down the flow of stormwater and provide for cleaning of water on site in preference to piped stormwater infrastructure that can disrupt stream habitats and lead to erosion.

Preference natural methods for stormwater control, integrating passive landscape elements and water-sensitive urban design, such as wetlands and naturalised creek lines. See **Objective 1.**

Use water-sensitive design and 'soft' engineering such as swales, permeable surfaces and continuous soil networks to minimise the need for large-scale engineered water-management infrastructure.

Where large structures are necessary, such as retention basins, design these to add amenity to the subdivision and be multifunctional, cost-effective, and require only straightforward maintenance that does not place an inappropriate burden on future residents.

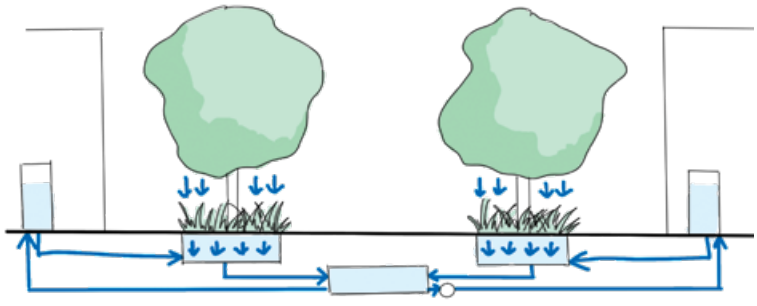


Figure 43: Integrate strategies to collect and re-use water to support green infrastructure.

BEST PRACTICE EXAMPLES

Public space for public life

Orange Regional Museum illustrates:

—response to setting including the adjacent parkland
—delivery of public space with a civic square and quality public facility
—activating the street through siting and ground floor services
—refinement of the public–private interface
—focus on entry and wayfinding.

Design: Crone Architects,
Photo: Troy Ferguson

GOOD EXAMPLE OF OBJECTIVES:

1 12 14 17 18

PUBLIC SPACE

Public space includes all places that are publicly owned, or designated for public use, that are accessible and enjoyable by all, free of charge and without a profit motive, including public open spaces, public facilities, and streets, lanes and accessways.

12.
Public open space is high-quality, varied and adaptable.

13.
Streets are safe, active and attractive spaces for people.

14.
Public facilities are located in key public places, supporting community and place identity.

Open space for recreation at Rouse Hill.

OBJECTIVE 12

Public open space is high-quality, varied and adaptable

WHY THIS IS IMPORTANT

To create a vital network of high-quality public open space that connects town centres, public transport hubs, and residential areas.

To create a sense of community and to encourage interaction and social cohesion.

To ensure inclusive and equitable provision of public open space.

To support the needs of the community by providing spaces for outdoor recreation and exercise, play, organised sport, nature and heritage appreciation, socialising, picnicking, walking and informal activities.

DESIGN CRITERIA

Public open space provision

For development over 5 ha, deliver a minimum of 15 per cent of the net developable land (NDL) as freely accessible public open space, with the majority of this as dedicated RE1-zoned land (small, local, district and linear parks). Regional open spaces are excluded from this 15 per cent calculation.

For all development, deliver open spaces of varying sizes within walking distance of all residents and workers as follows:

OPEN SPACE TYPE	MEDIAN SIZE	MINIMUM SIZE	WALKING DISTANCE (CATCHMENT)
Small park	0.45 ha	0.15 ha	200 m
Local park	2.5 ha	0.5 ha	400 m
District park	10 ha	5 ha	1,600 m
Green corridors and linear parks	15 m min. width 400 m min. length		400 m

See **Appendix 2: Public open space** for further detail on calculating and providing public open space, including exclusions for various site sizes and development densities.

Solar access and shading for public open space

50 per cent of the public open space, including public squares and plazas, has sunlight access for a minimum of 4 hours between 9 am and 3 pm on 21 June, demonstrated by shadow diagrams.

20 per cent of the public open space, and public squares and plazas, is protected from direct sunlight on 21 December, to provide protection against ultraviolet radiation.

Public open space is protected from adverse wind conditions, wherever possible.

DESIGN GUIDANCE

12.1 Locate public open space to be visible and connected

Protect the location of entrances and key pedestrian edges to public open space from busy roads.

Ensure public open spaces are visible from neighbourhoods and streets, and optimise the opportunity for car-free frontages where appropriate.

Positively address varying interfaces between public open space, urban edges and other natural systems.

See **Objectives 17** and **18** for additional guidance on transitions and interfaces.

12.2 Design public open spaces that are safe and accessible for all people

Provide a variety of public open space types, to respond to the overarching local character.

Provide open space types that are inclusive and available to all (such as play spaces, youth plazas, and exercise equipment for diverse age groups).

Provide toilets and amenities located in areas of high visitation.

Provide adequate shade in accordance with **Objectives 9** and **10**.

Provide suitable lighting for safety and character.

Provide public open space that is free of hazards or constraints to public recreation and community use.

Locate public open space so it is not adjacent to industrial areas or utility facilities that are potentially dangerous or harmful to health.

Figure 44: Public and private transitions are clearly defined and support incidental surveillance.

Figure 45: Provide for a range of activities and easy, safe use.

12.3 Provide for landscaping and enhance tree canopy in public open space

Prioritise landscape repair, restoration and regeneration for ecological systems and green infrastructure corridors.

Deliver and support tree canopy in accordance with **Objective 10**.

Maximise tree canopy in spectator areas for sports fields and courts and along walkways and cycleways.

12.4 Provide for sports and active and passive recreation

Through the development of a needs assessment or alignment with existing local open space and recreation strategies, provide a diversity, distribution and hierarchy of active recreation and sporting spaces such as parks and playing fields. Include a diversity of passive recreation open spaces, including civic spaces, parks and reserves, green corridors and linear parks that promote outdoor activity and street life.

Ensure the provision and diversity of sport and recreation facilities (e.g. courts, fields, exercise equipment, change rooms) meets the needs of all in the community.

Figure 46: Integrate landscaping and natural systems.

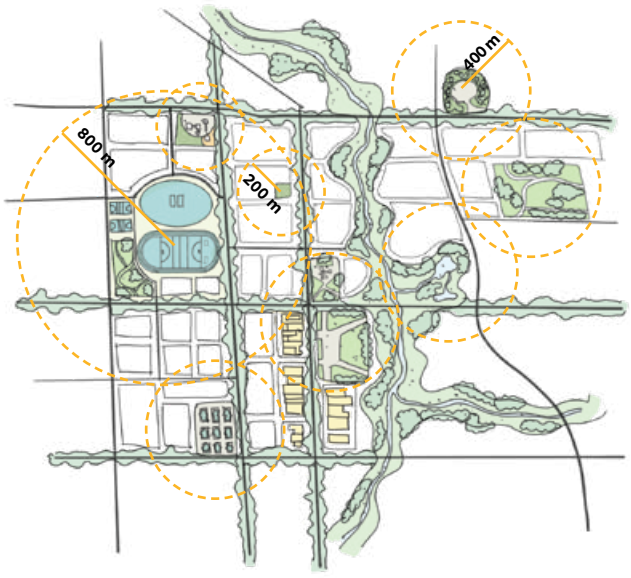


Figure 47: Deliver a range of accessible and equitably distributed public open space.

12.5 Provide flexible, adaptable and resilient public open space

Provide public open spaces that are:
— based on a detailed needs assessment of current and future requirements, in combination with the assessment of existing public open space provisions
— multifunctional, versatile and can be reconfigured to accommodate changing participation and activities
— able to be readily adapted over time.

Open spaces that are used for multiple uses such as muster points should be adaptable and resilient at times of emergency, including providing off-grid renewable energy supply and water (see **Objective 19** for further guidance).

12.6 Develop design measures to protect public open space

Develop design solutions to protect existing or proposed public open space from any adverse impacts, such as overshadowing or wind.

Provide both solar access and shade to key streets and public open spaces for year-round user comfort and protection from ultraviolet radiation.

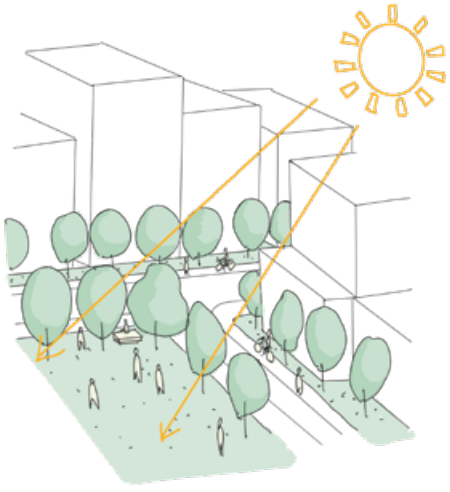


Figure 48: Protect sunlight access to public open space.

Alternative design solutions

Consent authorities may consider the 15 per cent open space criteria being partially met through existing open space located outside the development boundary, subject to a merit assessment. Any considered public open space must be within walking distance of the development, consistent with design criteria for this objective.

Consent authorities may consider the provision of publicly accessible private open space, provided it is accessible to all, free of impediment at all times of day, and appropriate management and maintenance is provided.

The provision of shade can be from natural features or human-made structures. Tree canopy should be encouraged and accepted as a design solution, however temporary built structures may be necessary to allow for tree canopy to achieve maturity.

For further detail see **Appendix 2: Public open space.**

OBJECTIVE 13

Streets are safe, active and attractive spaces for people

WHY THIS IS IMPORTANT

To support the safety and amenity of all users and elevate the needs of people and the community.

To create more attractive, productive and active high streets.

To deliver streets with more urban amenity and comfort that prioritise space for people.

To ensure the street design contributes to natural components of urban environments.

DESIGN CRITERIA

Street space for social interaction and comfort

Sufficient 'dwell space' is provided for activities, pedestrians, landscape and buffers in accordance with the local council requirements or as set out in **Appendix 4: Street dwell space** – whichever is the greater.

DESIGN GUIDANCE

13.1 Provide varied street types that respond to the street hierarchy and place qualities

Ensure that street types are varied and respond to:
— the strategic network (**Objective 2**)
— the land use and nature of development
— the hierarchy and role – including movement and place functions (**Objective 6**)
— differing characteristics of place.

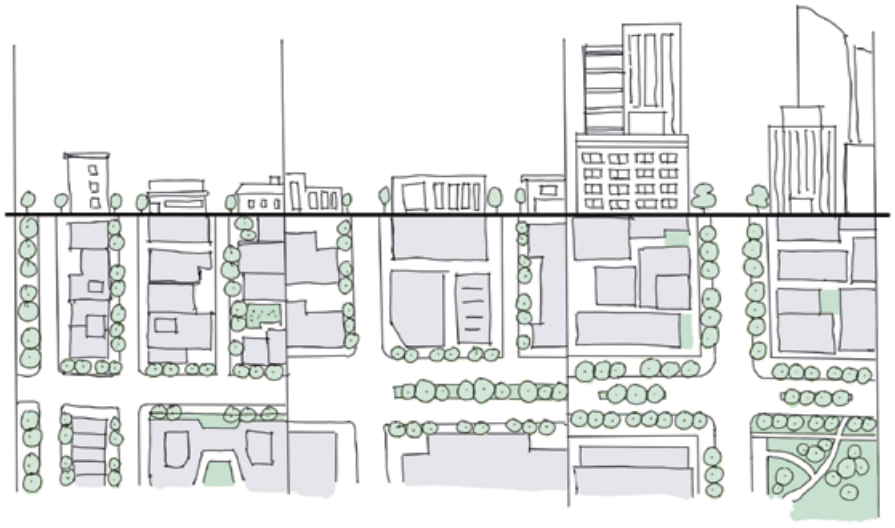


Figure 49: Street hierarchy and types respond to use and density.

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13.2 Create comfortable streets that are visually pleasing and designed to encourage social interaction

Provide streets that allow for a range of activities and modes.

Provide opportunities for people to stop, rest and dwell in the streets:
— identify locations for place activities along streets, such as outdoor dining areas
— provide street furniture that supports flexible use
— incorporate benches as rest points at appropriate locations, such as every 50 m along key walking routes and in clusters in high-activity areas.

Integrate plazas, civic squares and other public spaces within the street network to connect and activate places for vibrant day and night uses.

Consider adequate solar access to key streets for human comfort and to support landscaping and street trees.

Keep the extent of the road carriageway to a minimum, where possible, so it facilitates compact neighbourhoods and doesn't visually dominate the streetscape or limit visual connections across the street.

Figure 50: Streets are generously proportioned for people.

13.3 Provide landscaped tree-lined streets that integrate services

Maximise opportunities for tree planting along new and existing streets to facilitate continuous canopy cover in accordance with **Objective 10**.

Design or retrofit streets to ensure trees have adequate soil volumes and sufficient dimensions, soil condition and access to water.

Ensure new streets can achieve mature tree canopy by integrating consolidated (co-located) services and locating powerlines underground.

Preference street tree species with a minimum 8 m canopy diameter, except on narrow streets.

Deliver integrated water-sensitive urban design measures in streets in accordance with **Objectives 1** and **11**. Consider:
— grading hard surfaces to harvest and re-use water in water-sensitive urban design elements
— using permeable pavements to support absorption, filtration and purification of run-off
— re-using run-off and wastewater to provide passive irrigation for the landscape and urban tree canopy.

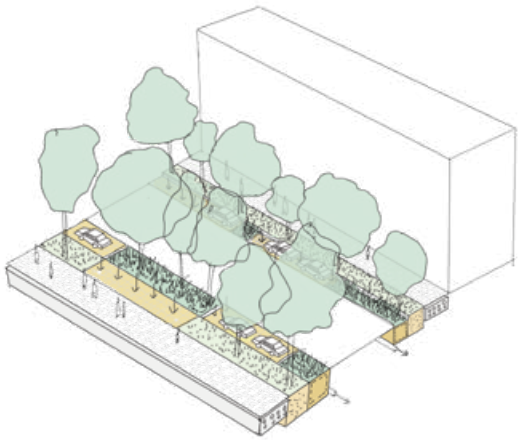


Figure 51: Integrated and co-located services maximise deep soil, landscaping and water-sensitive urban design.

13.4 Create streets which are safe, walkable, and accessible

Ensure that streets deliver legibility and ease of wayfinding with clear sightlines.

Ensure streets, paths and walkways are well-lit for safety, particularly in high-traffic areas, while avoiding glare into private residences and minimising light pollution.

Maximise opportunities for incidental surveillance of the street from adjacent land uses.

Proactively cater for walkers of all ages and abilities through measures such as level pavements, pram ramps and tactile markers at crossings, shorter crossing distances, frequent pedestrian crossings, pedestrian-prioritised traffic signals that cater for slower walk speeds, raised transitions and thresholds to minor roads, and landscape buffers to slow traffic and facilitate walking.

Consider integrating streets with shared surfaces that facilitate comfortable pedestrian movement.

Limit crossing stages and carriageways without medians to 20 m, to support people of all ages and abilities.

13.5 Design active and defined streets

Ensure the street width relates to the built form, provides solar access to the street, clearly defines the street edges, and is of a comfortable scale.

Consider the transition and interface between streets and built form to deliver activated street edges.

For development in centres or other pedestrian-oriented locations, incorporate awnings for pedestrian comfort and protection from rain, wind and summer sun.

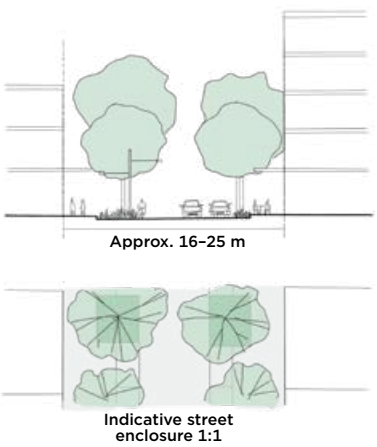


Figure 52: Local high street example – an enclosure ratio in the order of 1:1 can set expectations early in the design process.

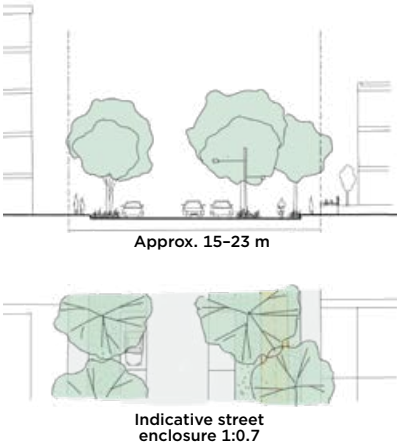


Figure 53: Example of a local street with medium to high-density – to achieve a human scale heights may need to be limited, 6 storeys can enclose a street of 20 m to 40 m.

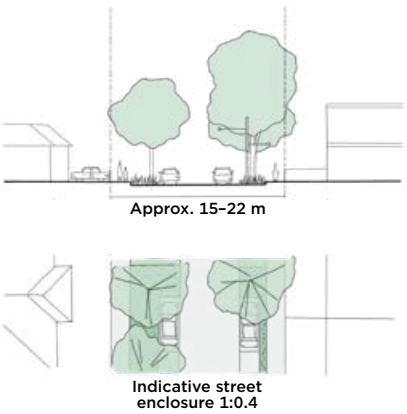


Figure 54: Example of a local street with low-density residential – ratios less than 0.5:1 may lack enclosure.

Alternative design solutions

Proponents may demonstrate there is sufficient space for all of the following functions:

— buffer, from buildings and fast-moving traffic
— pedestrian clear path of travel
— deep soil, wherever street trees are anticipated
— anticipated activities, such as street dining on eat streets.

See **Appendix 4** for further guidance.

Where the streets by their nature allow people to stop and stand in any part of the right of way, such as shared zones, play streets or slow-speed environments that permit 'cars as guests', the entire right of way is considered dwell space and separate space does not need to be provided for these functions.

OBJECTIVE 14

Public facilities are located in key public places, supporting community and place identity

WHY THIS IS IMPORTANT

To provide high-quality public facilities that support community wellbeing, social cohesion and resilience.

To deliver inviting and well-used public facilities at the heart of neighbourhoods.

To ensure the long-term sustainability of public facilities.

ASSESSMENT GUIDANCE

Specialist analysis of existing and future demographic needs has been undertaken and supports the proposal — using relevant best practice benchmarks, council strategies and guidance.

Public facilities meet the needs of the existing and proposed community (which may differ by option) and are aligned with relevant strategic plans.

Public facilities are co-located with complementary uses and have direct and active interfaces with the public realm.

DESIGN GUIDANCE

14.1 Identify public facilities to meet the needs of the community

Through the development of a needs assessment or alignment with existing strategies for local community facilities, identify the public facilities required to accommodate existing and future community needs.

Provide a variety of public facilities that:
— include people of all cultures and abilities
— are designed with flexibility to cater for multiple uses and activities and for adaptability over time
— contribute to local character and sense of place.

14.2 Provide public facilities that are connected and safe

Locate and design public facilities so they are well-connected to public open space, waterways and natural systems.

Integrate public facilities into the wider public space network.

Locate public facilities to ensure their long-term viability and sustainability.

14.3 Co-locate public facilities so they activate the public realm

Co-locate public facilities with a mix of complementary uses such as public open spaces (e.g. parks, town squares, plazas), centres and other social infrastructure (e.g. schools, community centres, civic buildings, and health facilities) to:

— maximise opportunities for shared and flexible use
— contribute to neighbourhood focal points
— contribute to activation and vibrancy
— encourage use and activity throughout the day and evening.

Co-locate schools with open space, local centres, and walking, cycling and public transport networks.

Support the local night-time economy and activity in the public realm. See **Objectives 5** and **18** for further guidance.

14.4 Make public facilities visible civic spaces

Make public facilities visible from the street, with clear and legible entries.

Provide public facilities with direct, flush connections to public space, such as the ground plane of streets or aligned with public raised courtyards.

Provide public amenities in safe and visible locations and make them accessible for people of all abilities, and parent-friendly for all family structures e.g. by providing toilets and parents' rooms.

Ensure public facilities are well-integrated into public life and support the activity of the public realm and streetscape.

Figure 55: Co-locate public facilities with complementary uses such as schools, shops and public open space.

Figure 56: Visable and direct interface to the public realm and connection to natural systems.

BEST PRACTICE EXAMPLES

City renewal

Newcastle East End illustrates:

— architecture from a range of designers to build character and grain
— integration with new public transport
— pedestrian-scale through-site links
— elegant architectural detailing with robust materials
— connection and sightlines to existing parkland.

Design: Durbach Block Jaggers, Tonkin Zulaikha Greer, SJB, ASPECT Studios
Photo: Brett Boardman

GOOD EXAMPLE OF OBJECTIVES:

3 15 16 17 18

BUILT FORM

Built form is the constructed environment as distinct from the natural environment. Built form encompasses all aspects of our surroundings made by people, and includes cities and towns, centres, neighbourhoods, parks, roads, buildings, infrastructure, and utilities like water and electricity.

15.
The lot layout supports green neighbourhoods and a diversity of built form and uses.

16.
There is a strong sense of place structured around heritage and culture.

17.
Scale and massing of built form responds to desired local character.

18.
Built form enlivens the ground plane and activates and frames public space.

19.
Developments use resources efficiently, reduce embodied emissions, and consider onsite energy production.

Marrickville Library establishes both civic presence and human scale through material selection and form. Design: BVN Architects with Mirvac.

OBJECTIVE 15

The lot layout supports green neighbourhoods and a diversity of built form and uses

WHY THIS IS IMPORTANT

To ensure the lot pattern responds to place.

To ensure lots are fit for purpose.

To support housing choice and diversity.

To cater for a range of lifestyles and abilities, and support aging within the community.

To deliver more varied streetscapes and neighbourhoods.

ASSESSMENT GUIDANCE

A mix of lot types and sizes is provided that supports a range of building types.

A mix of lots within each residential block is provided.

A mix of building types is provided.

DESIGN GUIDANCE

15.1 Design lots to support desired character and topography

Align lot pattern with the intended development density and character.

Design lot layouts to accommodate the appropriate building type and respond to place and climate by:

— minimising earthworks and retaining walls on sloping sites
— minimising overlooking and overshadowing
— including setbacks to the public realm and streets to enable appropriate landscape planting and to contribute to urban tree canopy in accordance with **Objective 10**
— maximising the ability of lots to deliver efficient and sustainable built-form massing (such as appropriate setbacks, minimising site cover, lot orientation, and deep soil provision)
— demonstrating allowable massing and proposed lot layout together
— minimising impacts of vehicle access, and the dominance of vehicle parking in the streetscape, such as providing rear-lane access to lots facing public open space, or on-street parking to lots along streets with cycle priority.

Use the location of built form to facilitate safe and efficient vehicle access without street frontages being dominated by garages, multiple wide driveways or parked cars.

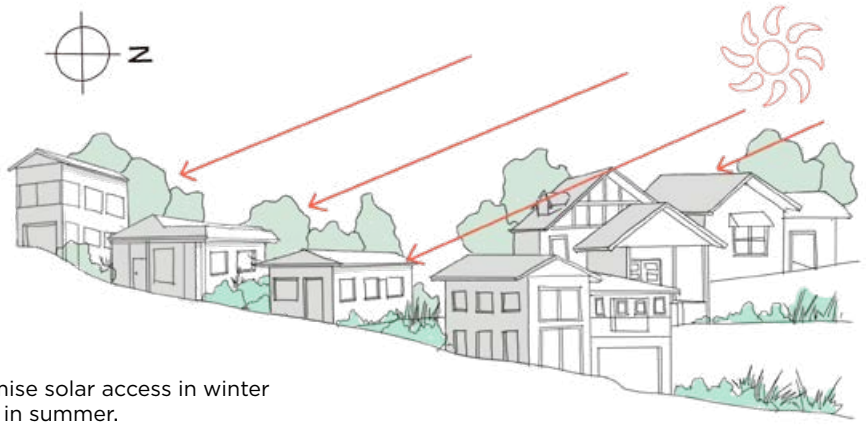


Figure 57: Lots maximise solar access in winter and consider shading in summer.

15.2 Support mixed use

Provide various uses, types and settings to create variety, activity and interest within a neighbourhood.

Design lot size and configuration to support intended retail, commercial and mixed-use development.

For large-scale lot subdivisions, produce a consolidated master plan for the location that can support the involvement of multiple developers and designers in creating diverse built form that supports flexibility over time.

Integrate large-format uses and larger lots as supporting anchors, and allow for street activation, pedestrian permeability, and integration into the adjacent land uses and street patterns.

15.3 Provide a mix and diversity of lots and buildings

For lot patterns in residential areas, include a range of lot sizes, orientations, and access arrangements to deliver a mix of building types and tenures, both across neighbourhoods and within each block.

Figure 58: Deliver a mix of lots across neighbourhoods and within each block.

In consolidated sites and higher density development, provide a mix of building types within the block, such as an apartment building on primary roads and maisonettes on side streets or mews.

Provide a mix of housing types and sizes that reflect the future needs of the community, to promote affordability for families and aging in place.

In areas of 15 dwellings per hectare (gross) or greater, aim to achieve fewer than 30 per cent detached dwellings to increase walkability, provide housing diversity, maximise the opportunity for tree canopy and landscaping on lots, and optimise land use.

15.4 Provide setbacks that support green cover and tree canopy

Scale rear or front setbacks to cater for deep soil where appropriate to support mature trees.

Ensure basements don't encroach on deep soil zones.

Where smaller lots are proposed:
— pair lots with smaller footprint and attached housing types
— consider rear setbacks of 4 m or more, to provide the same tree canopy and equivalent landscaped area as standard lots.

OBJECTIVE 16

There is a strong sense of place structured around heritage and culture

WHY THIS IS IMPORTANT

To ensure heritage buildings, cultural landscapes and places of cultural value are preserved and adapted as required.

To create living, sustainable, and resilient places through adaptive re-use of heritage buildings no longer in use, preferably for new public facilities.

ASSESSMENT GUIDANCE

Adaptive re-use of heritage buildings is considered.

Historical street patterns are considered and reinstated where possible.

Solar access is adequately protected.

DESIGN GUIDANCE

16.1 Retain and integrate elements of history to enhance the place

Retain and incorporate into the design existing built features, including built heritage, landscape and other unique features.

Adaptively re-use and activate heritage buildings that are no longer providing their former use, preferably for new public facilities.

Integrate surviving fragments of older built form and landscapes of value within the design.

Contribute to enhancing or connecting with cultural landscapes.

Figure 59: Integrate elements of heritage and history in the design of places.

16.2 Respond to existing natural and built heritage values

Where possible ensure urban grain around cultural areas is sympathetic to the existing grain of streets and paths, or the rhythm of cultural quarters, such as the orientation and scale of building clusters.

Consider the need to protect solar access to places of heritage and cultural significance to protect values, settings and materiality.

Provide positive transitions and interfaces to areas of cultural heritage in accordance with **Objectives 17** and **18**, including appropriate setbacks.

When designing new developments in and around existing heritage buildings and places, respect or integrate historic lot layouts, street patterns, streetscapes and landscapes into the design.

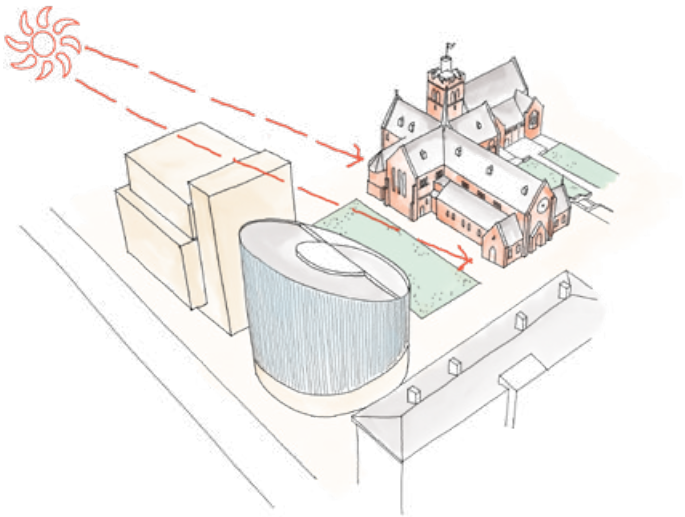


Figure 60: Protect sunlight access and the settings of heritage buildings and cultural places.

OBJECTIVE 17

Scale and massing of built form responds to desired local character

WHY THIS IS IMPORTANT

To balance built elements within the wider urban form.

To increase the quality of human experience of urban places.

To provide appropriate transitions to neighbouring areas.

To ensure different built forms are available to suit a range of uses, functions and activities.

ASSESSMENT GUIDANCE

Local conditions, datums lines and materials have informed the design of the built form.

The scale, massing and height of new development responds positively to adjoining buildings, the topography, views, vistas and landmarks to reinforce a coherent local identity.

The proposal demonstrates adequate amenity and human comfort is maintained for local public space.

Materials and detailing respond to the local character of adjacent streetscapes and parks.

Setbacks are appropriate to local conditions and deep soil (where required).

Built form elements have appropriate orientation, proportion, composition and articulation.

DESIGN GUIDANCE

17.1 Ensure built form layout responds to natural and built conditions of the place to maximise amenity

Integrate site design and placement of the buildings with natural components.

Locate building platforms above 100-year flood levels and overland flow paths.

Maximise solar amenity through siting and design of built form to protect communal and public open space and avoid artificial and engineered solutions.

Consider how built form can ameliorate existing adverse wind conditions and ensure appropriate wind comfort levels at the ground plane.

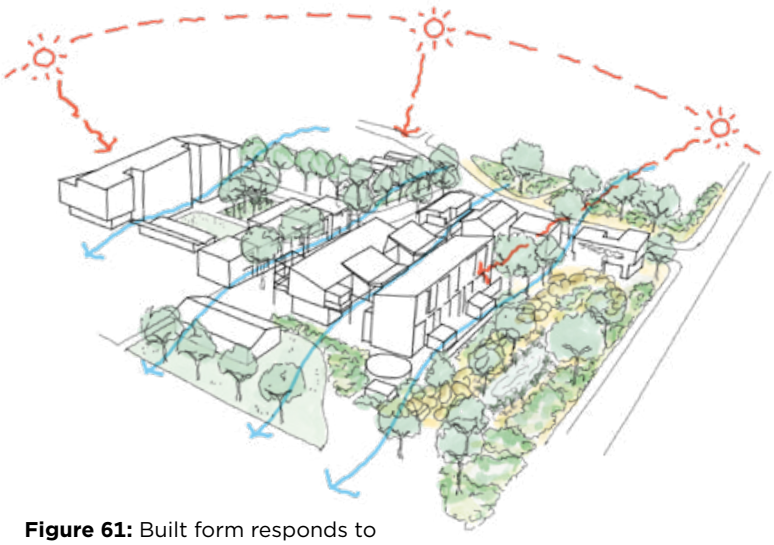


Figure 61: Built form responds to climate to maximise amenity.

17.2 Manage built form (scale and massing) transitions at edges and within the development to fit the context

Ensure the scale of the built form is appropriate for the context.

Consider the impact of development on the skyline.

Provide low-scale interfaces to low-density residential uses.

Transition heights incrementally according to a coherent height strategy that fits within the broader urban pattern.

Use sensitive scale and massing to respond to significant heritage buildings and places of cultural value.

17.3 Consider human scale

Design street wall heights that contribute to a human-scale public realm, respect the massing and pattern of existing neighbourhoods, and align with the project vision. For example, street walls of a maximum of 4 to 6 stories overlooking public open space can define the edges of the public space and enable building occupants to communicate with people on the street. This can encourage a sense of community and connection with the public realm.

Consider upper level setbacks and appropriate building separation to respond to the scale of the context (including the streets) and enhance the human experience of places.

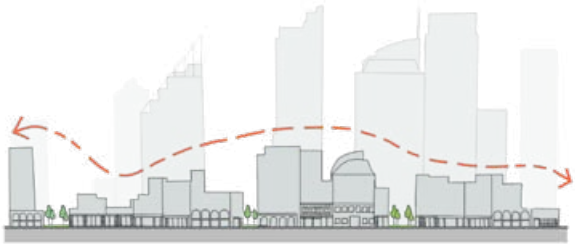


Figure 62: Ensure well-considered transitions in scale and skylines.

Figure 63: Scale and massing of interfaces with the public realm is human scaled.

17.4 Design massing and setbacks appropriate for adjacent public space

Make built form setbacks appropriate for the land use and density.

Consider different setbacks for the ground level, street wall and upper levels of buildings to activate and define public space, particularly main streets and public open space.

Ensure the building scale is appropriate for the adjacent elements, e.g. massing along streets and adjoining open spaces.

Consider views to the sky.

Use massing to respond to local conditions such as terminating views or landmark buildings, with additional height or variation in orientation and setbacks.

17.5 Create positive climatic conditions through layout, siting and appropriate built form

Use layout and building envelopes to positively respond to local climate and positively shape microclimates. For example, locate built form to the west of major public spaces to provide an eastern aspect over public open space and protection from western sun.

Locate built form to channel prevailing winds to maximise opportunities for natural ventilation. Avoid creating wind tunnels or local wind pockets below tall buildings.

Ensure prevailing winds are suitable for the intended uses of spaces.

The following wind comfort standards can be used to define acceptable (healthy and safe) levels of wind speed based on the intended use, such as:
— for sitting – 4 m per second
— for areas with both siting and standing – sitting 4 m per second and standing 6 m per second
— for walking – 8 m per second.

Wind standards are measured as an hourly mean wind speed, or gust equivalent mean wind speed, whichever is greater for each wind direction, for no more than 292 hours per year measured between 6 am and 10 pm Eastern Standard Time (i.e. 5 per cent of those hours).

Figure 64: Street and upper level setbacks are appropriate for the place and conditions.

Consider using modelling to validate the future microclimates.

Minimise noise through a range of means and scales from appropriate land-use distribution, sensitive built form layout and massing, and building treatments and materials.

See **Objective 18** for further guidance on built form response to place.

17.6 Ensure site coverage provides a balance of indoor and outdoor space

Use compact building footprints that provide adequate private outdoor space and retain deep soil for tree canopy.

Consider setting site coverage controls tailored to suit the scale and type of the built form. For example, low-density residential development with detached housing is generally in the order of 50 to 70 per cent. See the *Apartment Design Guide* for further guidance on residential apartment buildings.

Ensure site coverage considerations align with strategies identified at the block scale such as setbacks and consolidated planting areas.

17.7 Use materials that are appropriate for the local area and will reduce urban heat

Use building design and detailing, including materials, to complement the desired character of adjacent public space.

Where there is a local vernacular, respond to it, e.g. design a brick infill building, or consider material of a comparative scale and texture, in a predominantly brick street wall.

Incorporate low albedo materials and light colours for surfaces, especially roofs, together with urban tree canopy to reduce urban heat. See **Objectives 9** and **10** for further guidance.

OBJECTIVE 18

Built form enlivens the ground plane and activates and frames public space

WHY THIS IS IMPORTANT

To deliver built form that encourages and complements public life at the ground plane.

To deliver a safe and lively public realm for the community.

To increase the quality of people's lived experience of urban places.

ASSESSMENT GUIDANCE

Built form frontages to main streets, neighbourhood centres, and public open spaces are fine grain and provide active frontages.

Materials make a positive contribution to the public realm.

DESIGN GUIDANCE

18.1 Design public–private interfaces to support the public realm

Where buildings adjoin public space and streets, clearly frame spaces and contribute to activation and natural surveillance.

Provide a clear delineation of ownership and consider the transitions between public and private space. This can be achieved using clear thresholds, articulated entries, and changing the materials or the thickness and depth of building facades.

When sleeving big-box uses and above-ground car parking, use smaller scale uses that can enhance and activate interfaces with the public realm. Active uses can increase the streetscape's vibrancy and quality and increase the transparency of the built form interface with the street. See **Objective 8** for additional guidance on sleeving.

Figure 65: Design interfaces at the ground plane to contribute to, and support, public activity.

18.2 Vary and articulate built form

Provide interfaces to the public realm that contribute to the overall articulation, variation, visual interest and amenity.

Vary and articulate built form to:
— provide breaks in massing along streets
— address corners
— terminate vistas
— provide openings and protrusions such as windows, entries, balconies, awnings, canopies and transparent facades
— provide varied facade treatments and materials, particularly on larger facades, and reinforce the vertical rhythm of streetscapes.

Use varied and articulated roof forms and make use of roofs for activities, greening and renewable energy generation. Ensure built form controls permit articulation, roof access and productive use of roofs. Consider the visual interest and treatment of roofs when viewed from other buildings.

18.3 Design active frontages

Use fine-grain non-residential frontages to activate key interfaces, such as main streets and edges to plazas, squares and parks.

For retail and commercial development, provide active street frontages (entrances and glazed shop fronts) at ground level at the same general level as the footpath. Generally, aim for active frontage for around 80 per cent of the length of glazed frontages or 70 per cent of the total facade (excluding sills and structure).

Make ground floor uses directly accessible from the street.

For residential interfaces, provide pedestrian entries to individual dwellings or apartments and delineate the boundaries of public and private spaces through transitions such as landscaping, semi-transparent fencing, and raised courtyards.

Minimise blank walls, loading docks and service areas on key interfaces. Where unavoidable, mitigate visual impacts e.g. using narrow entrances and screening. For apartment buildings further guidance is available, see the *Apartment Design Guide*.

Figure 66: Provide transparency of non-residential frontages to maximise incidental surveillance and connections.

18.4 Integrate services and infrastructure

Integrate and consolidate services to minimise impact on the public realm. For example, co-locate service cabinets internal to loading, waste or parking areas where possible, and conceal servicing infrastructure within landscaping or adjacent buildings where practicable.

18.5 Consider the impacts of material choices

Use materials that are durable, low-maintenance and fit for purpose.

Use high-quality materials, and consider scale and tactility and how the materials contribute to human engagement with the place.

Avoid materials and facade treatments that result in unacceptable levels of glare or other negative effects.

Avoid ground level interfaces such as louvres and grills that diminish the human experience of the streetscape.

Articulate long lengths of glazed facades at ground level, e.g. with window frames or entrances.

Consider materials and operational requirements so interfaces can be maintained and are adaptable to changes in use over time.

See **Objective 17** for guidance on using materials that are appropriate for the local area and will reduce urban heat.

Figure 67: Consider enclosures and orientations of services to minimise visual intrusion on the public realm.

BEST PRACTICE EXAMPLES

Residential greenfield development

Renwick, Mittagong illustrates:

—a new suburb which responds to its place
—a diversity of housing types within a regional setting
—high quality community amenity development which supports healthy living.

Design: Gilles Tribe Architects (masterplan), MHDP Architects in association with Allman Johnston Architects (building)
Photo: Landcom

GOOD EXAMPLE OF OBJECTIVES:

1 3 5 7 12 13 15 16 18

OBJECTIVE 19

Developments use resources efficiently, reduce embodied emissions, and consider onsite energy production

WHY THIS IS IMPORTANT

To reduce energy consumption and depletion of natural resources.

To promote sustainable development.

To promote and deliver technologies and smart solutions that enrich daily living and make it more sustainable.

ASSESSMENT GUIDANCE

The proposal is a sustainable development.

The development has considered and committed to emissions targets through to implementation and considered onsite renewable energy equivalent to 20 per cent of the annual electrical energy demand.

Smart technologies and infrastructure have been integrated into the development.

DESIGN GUIDANCE

19.1 Reduce energy consumption and support renewable energy generation

Prioritise passive means for reduction of energy consumption, such as site and building orientation, solar shading, and material choice and composition, in order to reduce reliance on mechanical systems for heating and cooling.

Create opportunities to provide onsite renewable energy generation and storage.

Consider commitments to meet onsite renewable energy targets with the development.

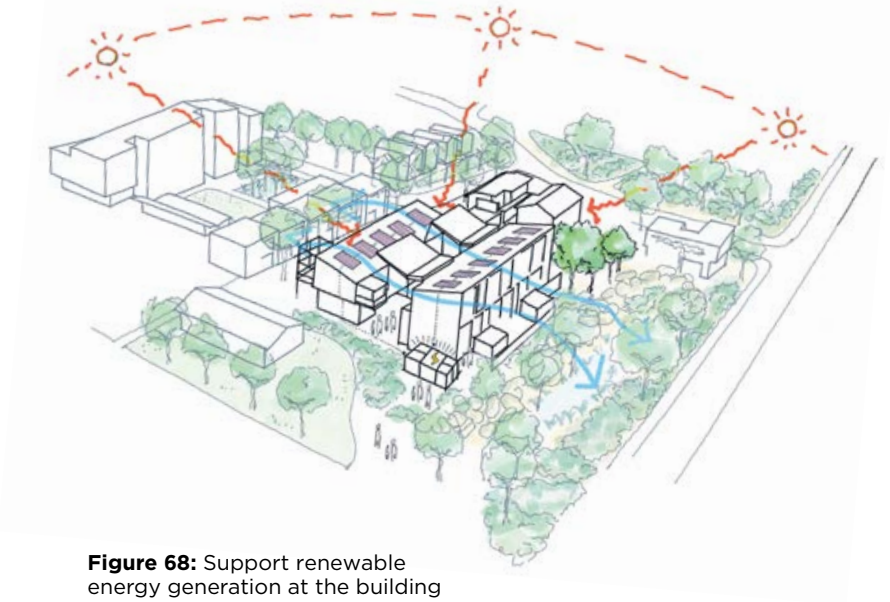


Figure 68: Support renewable energy generation at the building and neighbourhood scale.

19.2 Deliver net zero emissions neighbourhoods

Deliver net zero emissions in alignment with NSW Net Zero Plan objectives for all scales of new development (prioritising efficiency first, electrification through renewables, and elimination of reliance on fossil fuels).

Integrate holistic strategies across the 5 components of urban environments to deliver net zero emissions (urban structure, movement and connection, natural system, public space and built form).

Plan for infrastructure that enables the transition from gas to low-emissions intensive options.

Support EV-ready development. See **Objective 8**.

19.3 Minimise embodied carbon in materials

Reduce embodied carbon in infrastructure and built form through preferencing low-emissions materials, re-use of existing materials, or locally made materials that support the circular economy.

Disclose the embodied carbon emissions associated with the development, any commitments to environmental product declarations (EPDs) and Forest Stewardship Council (FSC) certification. Disclose whether a life-cycle assessment has been prepared and any associated data.

19.4 Consider integrating smart technologies and solutions

Design neighbourhoods so they are readily able to accommodate advances and developments in technology.

Wherever possible, consider smart monitoring equipment e.g. for water quality, ambient temperature, tree canopy cover, soil moisture and movement networks (walking, cycling, car use etc.).

Consider technology that will support efficient and sustainable operation of new infrastructure over time, such as transitions to 'intelligent' street lighting or smart metering to homes.

In key public open spaces, consider installing:
— smart lighting
— a dedicated internet/fibre connection point
— public wi-fi
— security measures
— smart bins with capacity sensors
— smart street furniture with USB charging, wi-fi etc.

PART THREE

Implementing good urban design practice

Sandpit and shaded walkway at Pirrama Park Playground, Pyrmont, by Aspect Studios with Hill Thalis.

3.1 The importance of good urban design process

Good urban design is intended to deliver well-designed urban environments through a collaborative and coordinated effort by multiple professionals and stakeholders, including the community.

An effective process to achieve good urban design is vital as it will ensure:

- clear and transparent expectations are identified for both designers and assessors
- design justification, testing and refinement are achieved through an iterative process, starting from the early establishment of design intent and vision
- design is aligned with strategic planning, and the design process is streamlined with the assessment process
- the urban design response is genuinely place-based and has a distinctive local character
- the involvement of stakeholders and assessors in the design process provides progressive certainty for development.

3.2 The process in practice

Urban design process outputs

The outputs of each phase of the urban design process build a clear line of sight from definition of the case for change, place analysis, setting the vision and design intent, design development including scenario and detailed options testing, refinement and finalisation of the design. Together, the urban design process outputs form a clear narrative about the evolution of the design, to be submitted as part of the design verification statement for development applications.

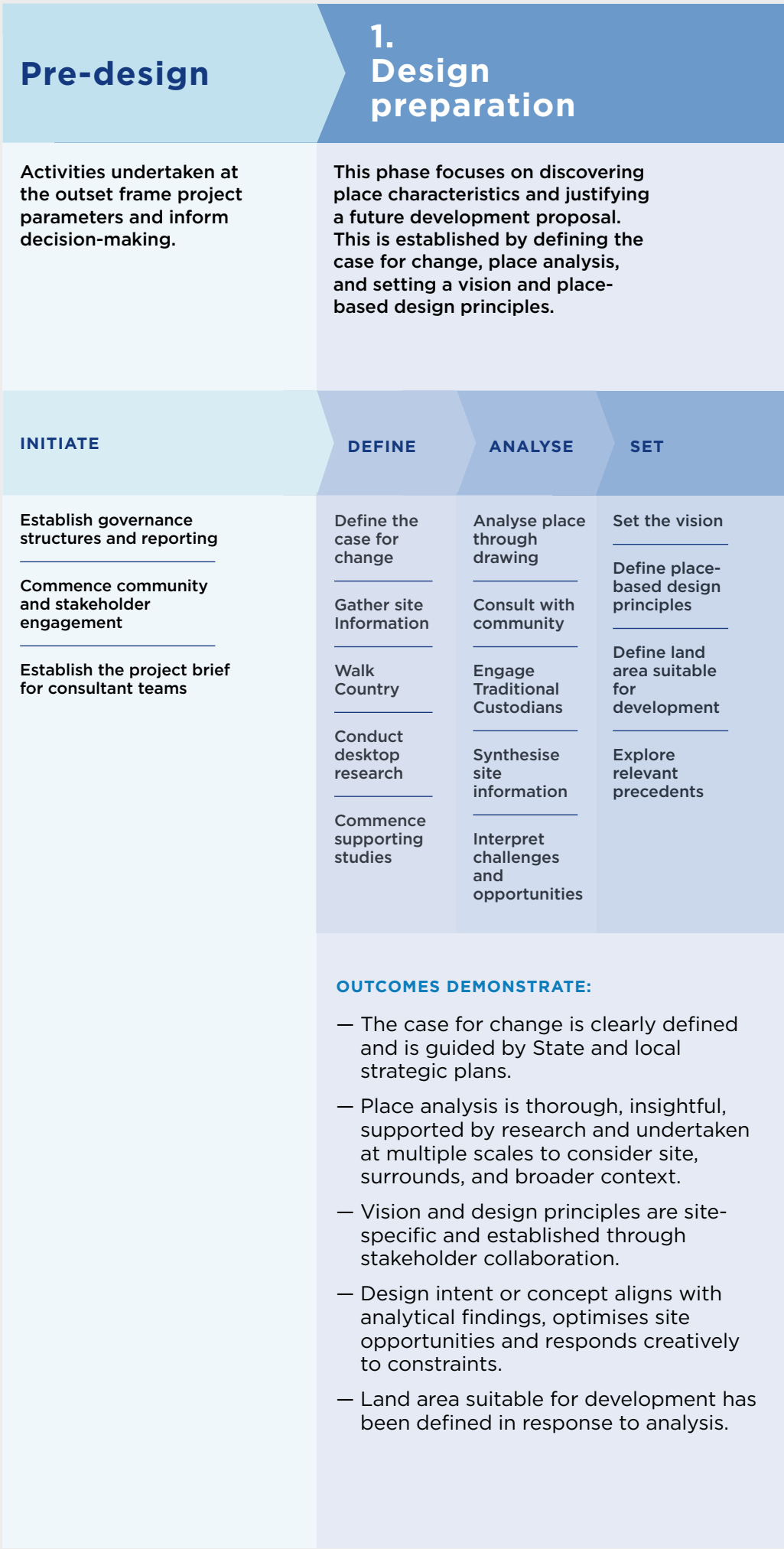
The level of detail required from the outputs of each phase of the urban design process will vary depending on the context, scale, complexity and the nature of each project.

Integrated urban system and accessible open space at Bungarribee Parkland and Shelters. Design: Stanic Harding and JMD Design. Photo: Simon Wood.

3.3 Good urban design process

Good urban design process is iterative and comprises 3 core phases. Key activities that occur before and after the core design process should also be considered and integrated into the overall approach.

Figure 3.1:
Urban design process overview



2. Design development

This phase focuses on exploring opportunities by developing various design scenarios to test different ways to deliver the design intent. This testing informs rigorous decision-making to result in a preferred design.

EXPLORE

- Identify gaps and emerging opportunities
- Collaborate across the team
- Integrate specialist inputs
- Develop a reference scheme
- Develop and test scenarios
- Participate in design review
- Workshop proposal with stakeholders

DEVELOP

- Communicate ideas to stakeholders
- Develop a preferred proposal
- Develop and test detailed options
- Respond to feedback
- Determine and refine the preferred design approach

OUTCOMES DEMONSTRATE:

— The reference scheme has been established.

— A range of scenarios have been workshopped with stakeholders and tested against the reference scheme.

— The preferred design approach has taken into account preceding analysis and testing, and is the optimal solution for the place.

— Supporting urban framework layers are communicated to inform decision-making.

3. Design delivery

This phase focuses on refining and delivering the design proposal. The design will evolve through detailed testing and documentation and by considering implementation and phasing. Supporting documents are developed concurrently.

TEST

- Test against objectives, principles and vision
- Test against specific require-ments and metrics

RESOLVE

- Integrate design review panel advice
- Refine and resolve the design at various scales
- Document the design for assessment

IMPLEMENT

- Incorporate requirements for approval
- Complete final documentation
- Check design intent is maintained throughout
- Employ design assurance strategies
- Plan for implementation and staging

OUTCOMES DEMONSTRATE:

— The proposal has evolved from the preceding phases and design intent is maintained. Key benefits and initiatives have been realised.

— Detailed options have tested specific limitations or issues to inform the refined proposal.

— The proposal is resolved at mulitple scales via plan, section, model and visualisations, with detail sufficient for the project's size and complexity.

— Supporting documentation is evident including application requirements set by the consent authority.

— Design review panel advice has been addressed.

Post design

Post-design processes allow authorities and proponents to implement urban design effectively. Measurement and monitoring enable evaluation over time.

MONITOR

- Monitor how public spaces and natural systems are managed
- Monitor how the community uses and adopts design initiatives
- Monitor energy generation and offsetting outcomes

EVALUATE

- Evaluate business proposals
- Evaluate emissions reduction strategies
- Check construction and operational waste over time
- Commission post-occupancy evaluations

3.4 DP SEPP and UDG requirements

Application requirements for development applications

The urban design process and its outputs form a clear narrative revealing the design intent and evolution of the design, to be submitted as part of the design verification statement.

Further guidance on application requirements is set out in **Table 3.1**.

Planning proposals

A Ministerial direction under section 9.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that planning proposals greater than 1 hectare consider the DP SEPP and the UDG.

Planning proposals are required to demonstrate how the principles and considerations of the DP SEPP and the objectives of the UDG have been met in the proposal.

Table 3.1: Typical urban design development application requirements

TYPICAL URBAN DESIGN DEVELOPMENT PROJECTS	SUPPORTED BY STRATEGIC PLANNING	APPLICATION REQUIREMENTS		
		MASTER PLAN	DEVELOPMENT CONTROL PLAN (DCP)	DESIGN VERIFICATION STATEMENT*
	This includes the district / regional plans, local strategic planning statement and supporting local strategies.	A master plan illustrates the built form intent of a development and should be informed by the UDG. Master plans may be included in a range of proposals to illustrate the design intent.	A site-specific DCP defines how the development strategy will be implemented and should be informed by the UDG. The DCP sets the development controls to guide future master plans and development applications.	The design verification statement is a formal application requirement, prepared by a qualified urban designer, to demonstrate how each objective of the UDG has been achieved.
State significant development	No	Case for change requires further justification		
	Yes	✓	~	✓
Subdivision development applications	No	Case for change requires further justification		
	Yes	✓	~	✓
Development applications	No	Case for change requires further justification		
	Yes	~	~	✓

LEGEND ✓ Required by the consent authority ~ Level of detail and applicability to be defined on a project-specific basis, as required by the consent authority * New Requirement

BEST PRACTICE EXAMPLES

Iconic architectural design

The Exchange in Darling Square illustrates:

— bold architectural design aimed at creating a landmark building
— public and commercial uses
— activated ground plane
— integrated through site links
— siting to optimise vistas throughout the precinct to and from the building.

Design: Kengo Kuma Architects
Photo: Martin Mischkulnig.

GOOD EXAMPLE OF OBJECTIVES:

1 5 6 12 14 16 17 18

APPENDIX 1

APPLICATION REQUIREMENTS

Design verification statement – template

This template can be used as a guide to help design teams prepare a design verification statement for urban design development. Under the Environmental Planning and Assessment Regulation 2000, this statement is required to be submitted to the consent authority as part of a development application or planning proposal where the Urban Design Guide applies.

Project overview

DEVELOPMENT PROJECT:		
Project address:	*Insert address here*	
Lot reference number(s):	*Insert lot details here*	
	COMPANY	**KEY CONTACT DETAILS** (NAME, POSITION, EMAIL AND PHONE)
Applicant's name and contact details:	*Applicant*	
Developer team names and contact details: Consultant team names, firm, contact details and registration number (where applicable)	*Developer*	
	Urban designer	
	Landscape architect	
	Planner	
	Specialist consultant 1	
	Specialist consultant 2	
	Specialist consultant 3	
Landowner(s)	*Landowner 1*	
	Landowner 2	
	Landowner 3	
Urban designer's qualification:	*Insert a brief statement outlining the qualifications and relevant experience of the urban designer.*	

Urban designer's statement

I confirm that I was responsible for designing the development, and that the development is consistent with the relevant principles of *State Environmental Planning Policy (Design and Place) 2021* (DP SEPP) and the objectives of the *Urban Design Guide* (UDG).

_____ ___ /___ /_____

Signature of urban designer Date

Demonstration of good urban design process

The table below demonstrates the quality of the urban design process. It describes the methods used for the urban design process, and how this process has informed a preferred design approach.

Evidence is either provided in this table, or a reference is provided to explain where the evidence can be found. The evidence could be drawings, reports, tables, maps or images.

GOOD URBAN DESIGN PROCESS	DESIGN RESPONSE
Case for change	*Describe the case for change, including any reference to strategic planning documents, local and state strategies and policies, and any existing master plans or place strategies that inform the development.*
The vision	*Define the project vision and the place-specific design principles. Outline the process used to establish these, with particular reference to place analysis and community and stakeholder engagement processes. Provide cross-references to place analysis, research and stakeholder engagement reports where relevant.*
Place-specific design principles	*Describe how the vision and place-specific design principles have been maintained or amended over the life of the project, and how these have been realised in the preferred design proposal.*
Land area suitable for development	*Define the land suitable for development, including the process used to determine this. Provide cross-references to the design for resilience statement and other supporting evidence where relevant.*
Response to design review	*A template for responding to advice from a design review panel is included in the* Local Government Design Review Panel Manual*, and may be appended to this design verification statement to demonstrate how the design review panel advice has been addressed.*

Design response to the UDG objectives

The table below describes how the proposed development meets the UDG objectives – by following the UDG design guidance or by using alternative solutions. The table demonstrates how the proposed development balances all the UDG objectives to provide the best possible design response. Cross-references are provided to supporting evidence including drawings, reports and diagrams.

Meeting the DP SEPP principles

Meeting the UDG objectives also ensures the 5 DP SEPP Principles are met:

Principle 1: Deliver beauty and amenity to create a sense of belonging for people
Considerations: Overall design quality; comfortable, inclusive and healthy places

Principle 2: Deliver inviting public spaces and enhanced public life to create engaged communities
Considerations: Culture, character and heritage; public space for public life

Principle 3: Promote productive and connected places to enable communities to thrive
Considerations: Vibrant and affordable neighbourhoods; sustainable transport and walkability

Principle 4: Deliver sustainable and greener places to ensure the wellbeing of people and the environment
Considerations: Green infrastructure; resource efficiency and emissions reduction

Principle 5: Deliver resilient, diverse places for enduring communities
Considerations: Resilience and adaptation to change; optimised and diverse land use

	UDG OBJECTIVES	DP SEPP PRINCIPLES	DESIGN RESPONSE INCLUDING CROSS-REFERENCES TO SUPPORTING EVIDENCE
URBAN STRUCTURE	1. Projects start with nature, culture and public space	1 2 4	*Describe how the proposed design meets each objective with reference to the design criteria and guidance for each objective in the UDG.*
	2. District and local routes provide transport choice and accessibility	3	
	3. Compact and diverse neighbourhoods connect to good amenity	1 3 5	
	4. Place-based risks are mitigated and ecological values sustained to ensure resilient communities	4 5	

	UDG OBJECTIVES	DP SEPP PRINCIPLES					DESIGN RESPONSE INCLUDING CROSS-REFERENCES TO SUPPORTING EVIDENCE
MOVEMENT AND CONNEC-TION	5. Walkable neighbourhoods are vibrant and productive		2	3			
	6. Block patterns and fine-grain street networks define legible, permeable neighbourhoods		2	3		5	
	7. Walking and cycling is prioritised, safe and comfortable for people of all abilities	1		3			
	8. Parking is minimised, adaptable and integrated			3	4		
NATURAL SYSTEM	9. Landscape features and microclimates enhance human health and biodiversity	1			4	5	
	10. Tree canopy supports sustainable, liveable and cool neighbourhoods	1			4	5	
	11. Water is retained and water quality improved in urban places				4	5	

	UDG OBJECTIVES	DP SEPP PRINCIPLES	DESIGN RESPONSE INCLUDING CROSS-REFERENCES TO SUPPORTING EVIDENCE
PUBLIC SPACE	12. Public open space is high-quality, varied and adaptable	1 2	
	13. Streets are safe, active and attractive spaces for people	1 2 3	
	14. Public facilities are located in key public places, supporting community and place identity	1 2	
BUILT FORM	15. The lot layout supports green neighbour-hoods and a diversity of built form and uses	2 4 5	
	16. There is a strong sense of place structured around heritage and culture	1	
	17. Scale and massing of built form responds to desired local character	1	
	18. Built form enlivens the ground plane and activates and frames public space	1 2 3	
	19. Developments use resources efficiently, reduce embodied emissions, and consider onsite energy production	4	

APPENDIX 2

PUBLIC OPEN SPACE

This section provides further guidance on how to calculate and provide the public open space benchmarks in the UDG.

What is it?

Public open space is any open space that is publicly owned and accessible and that is planned and managed by the local, state or federal government for the community.

It encompasses parks, natural areas and linkages, foreshore areas, informal parkland, sportsgrounds and courts, children's playgrounds, active transport corridors, waterways and riparian corridors, historical sites, formal gardens, and linear walking, cycling and equestrian tracks.

Public open spaces are used for a broad range of cultural and health-related activities, including outdoor recreation and exercise, organised sport and physical activity, appreciation of nature and heritage, socialising, picnicking, walking, informal group activities, providing visual and landscape amenity, as well as biodiversity and fauna conservation.

Open space types and settings include:

- natural areas of bushland and waterways, including linkages and foreshores (creeks, rivers, lakes, wetlands, beaches)*
- parklands and gardens
- sportsgrounds (field and courts)
- civic plazas and squares
- rooftops and podiums of public facilities*
- streetscapes and shared zones*
- walking and cycling trails.

These types of open space contribute to the network of local, district and regional public open spaces.

*These open space types are not included in the 15 per cent public open space requirement.

What can be included in the public open space provision?

Two types of parks can be combined to achieve the 15 per cent public open space provision. Both types must be represented:

- parks, including district and local parks; in medium and high-density areas, small parks are also required
- linear parks and green corridors.

Requirements for public open space to contribute to the 15 per cent provision include:

- **quantity:** size and distribution must be in accordance with the relevant density and development site size. See UDG **Objectives 5** and **12** for details.

Open space provision must also consider:

- **quality:** site selection, open space uses, amenity and comfort, inclusivity, accessibility and safety
- **connectivity:** for recreational, ecological and tree canopy benefits
- **public amenity:** accessibility, usability, and recreational benefit.

Provision of regional parks and metropolitan parks is considered in addition to the 15 per cent. They provide for a much larger catchment of the community and require planning at a metropolitan level and are therefore not expected to be delivered by development proponents.

The following list of open space land types (often zoned RE1) are excluded from contributing to the 15 per cent open space provision:

- drainage swales, detention basins, large waterbodies
- high-voltage powerline easements and land with limited recreational value due to easements
- inaccessible or fenced-off land
- biodiversity protection areas
- protected riparian corridor buffer zones
- road verges
- open space with little or no recreational benefit.

Open space must be located on safe land with clear and continuous public access.

Criteria for dual-use land

For areas of flood-prone land and riparian corridors, open space can be established but cannot exceed more than 10 per cent of the total provision of public open space. (For example, if 100 ha of public open space are provided, then no more than 10 ha can be dual-use public open space.) For public open space provision, dual-use land must meet the following criteria:

- All public open space provided on dual-use land meets **Objective 12: Public open space is high-quality, varied and adaptable**.
- All public open space is freely and publicly accessible at all times, and available for use at all times.
- Any additional cost burden associated with delivering dual-use public open space is borne by the proponent.
- Active formal recreation (hard courts, sports fields etc.) are not located in these areas. All public open space infrastructure is designed and constructed to meet the requirements of the consent authority for flood management.
- All public open space is sited and designed to ensure user safety.
- All public open space is free of undue restrictions. Examples of undue restrictions include areas where tree planting is restricted, where sports fields and hard courts are restricted, or where there are limitations on landscape planting.
- Dual-use land applies to small and local parks only. District parks are not dual-use and are not located in riparian corridors or on flood affected land.
- The public open space provision calculation does not include standing bodies of water. However, standing bodies of water may be included if they can be used for swimming and other forms of water recreation and meet the required water quality standards for human interaction.
- In riparian corridors, land that is within the vegetated riparian zones (VRZ) as outlined in the NSW *Water Management Act 2000* cannot be included in the open space provision calculation. and aligns with the *Guidelines for riparian corridors on waterfront land* (NSW Office of Water 2012).

If the proponent is able demonstrate that high-quality and innovative open space outcomes can be achieved (such as wetlands, boardwalks and trails) the consent authority may consider the use of land such as detention basins, drainage swales and other stormwater infrastructure as public open space.

Method for providing public open space

This section outlines the 5-step process local councils and developers should use to identify the amount, location and size of public open spaces for a development precinct or site.

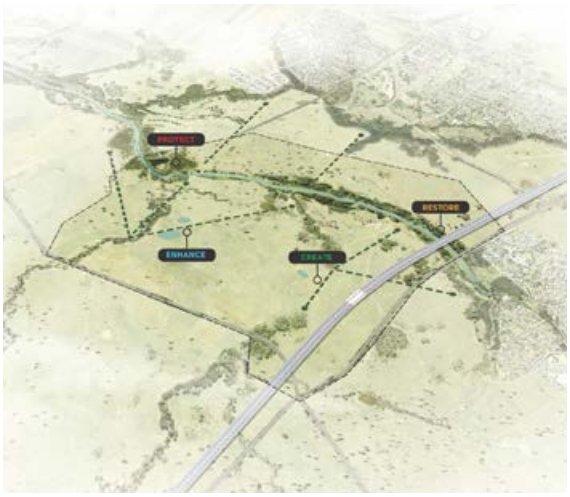
STEP 1: Identify opportunities

Identify all natural features and opportunities to address the UDG natural system, urban structure and movement and connection objectives.

Identify all existing mature trees and stands of vegetation.

Identify opportunities for open space to strengthen and support the UDG objectives including the potential location of corridors and links.

Figure A2.1: Step 1 – Identify opportunities



STEP 2: Identify net developable land and quantify the open space requirements

Identify the net developable land (NDL) for the site. Fifteen per cent of the NDL area is required to be provided as public recreational open space.

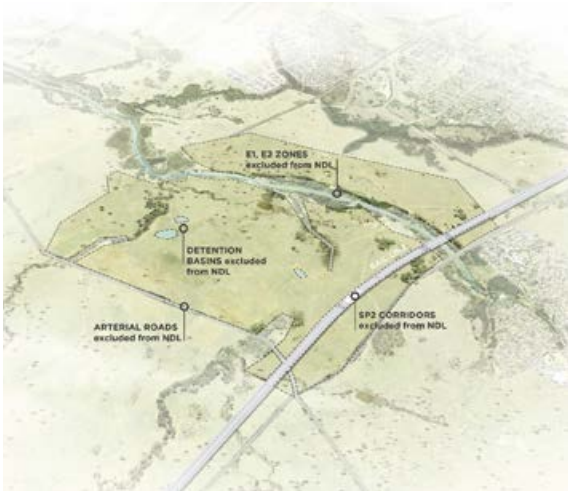
The NDL includes the following land-use types:

—residential zoning (R1–R4)
—commercial zoning (B1–B8)
—public recreational open space (RE1)
—local roads and streets
—schools (SP2)
—local hospitals, community centres and facilities
—tourist facilities (including SP3)
—car parks
—environmental and bushland zones that are publicly accessible and can be used for public recreation (E2–E3).

The following land use types are excluded from the NDL:

—roads and motorways (SP1–SP2)
—rail corridors (SP1–SP2)
—utilities infrastructure (SP2)
—drainage infrastructure (SP2)
—private recreation (RE2)
—waterways, rivers, creeks, ponds (including W1–W3)
—national parks (E1)
—large lot residential (R5)
—environmental living (E4)
—rural (RU1–RU6)
—industrial lands (IN1–IN4)
—universities.

Figure A2.2: Step 2 – Identify net developable land and quantify open space requirements



STEP 3: Locate parks according to size and catchment requirements

Lay out parks (local parks and district parks) in accordance with size and catchment distribution requirements.

Look for opportunity sites where open space can support urban ecosystems.

Seek to locate parks:

—near urban centres, urban attractors, or areas of natural amenity
—together with remnant trees and other existing planted areas
—where they might be joined by linear parks in the next step.

Figure A2.3: Step 3 – Locate parks according to size and catchment requirements

STEP 4: Locate a network of linear parks

Create a linear park network that links together the following:

- —opportunities identified in Step 1
- —new parks laid out in Step 3
- —urban centres and urban attractors including schools and community facilities.

Look for opportunities to co-locate linear parks along the fringes of landscape features including waterways, riparian corridors, high points, ridges and valleys.

Align the linear park network so it can link to adjacent development sites, other linear parks, and green grid corridors on nearby sites.

Refer to the UDG movement and connection objectives and create a network that provides active transport corridors throughout the development area and that aligns with the broader local government area priority corridors.

STEP 5: Check areas meet 15 per cent open space provision and revise open spaces to suit

Review the open space provided and add open space to the network as required to meet or surpass the 15 per cent public open space requirement.

This can be done in 4 ways:

1. **Extend parks** – some parks may benefit from being larger. This could include making the larger parks even larger or making the smallest parks larger so they can provide more uses.

2. **Add new parks** – provide new parks in areas that have minimal access to open space.

3. **Widen linear parks** – where linear parks are adjacent to major urban ecosystem corridors, or align with green grid priority corridors or local government area priorities, consider making these linear parks wider to maximise their usable space. As shown in many linear park case studies, these could become local or district parks and linear parks combined.
4. **Add new linear parks** – where additional corridors would increase connectivity benefits, add new linear parks. Avoid providing linear parks where these are short or do not add value to linear parks already intended for the network.

Figure A2.4: Step 4 – Locate a network of linear parks

Figure A2.5: Step 5 – Check areas meet 15 per cent open space provision and revise open spaces to suit

Providing 15 per cent open space at different sizes and densities

The 15 per cent public open space provision is to be made up of a mix of parks and linear parks. The exact mix will vary depending on the site and proposed development density.

In low-density developments (8 to 20 dwellings/ha net), a mix of parks and linear parks should be provided that meet the minimum requirements. Any additional open space required to reach 15 per cent can be provided by either increasing park size or linear park provision. Low-density environments typically contain more opportunities to connect to existing ecological systems or provide linear parks through the less-connected areas of the street network.

For medium-density to high-density developments (20 dwellings/ha net or greater), open space planning should prioritise increasing the sizes of parks over linear park provision in delivering 15 per cent public open space. This is in order to maximise usability and solar access impacts from adjacent areas to significant built form. This will avoid the issue of small parks that are overshadowed for the entire day. Some linear parks may be provided, however the street network in high-density environments often has potential to provide similar benefits if designed with generous tree planting, wide footpaths, and active transport corridors. Street networks should be designed in this way to allow for parks to make up the bulk of the open space provision.

Exemptions

A series of exemptions to the open space benchmarks apply based on the site area of development. These are set out below.

Sites under 25 ha

Linear park length

Minimum length requirements of linear parks in low-density, medium-density and high-density developments of under 25 ha do not apply. Instead linear parks should be provided in a way that connects to adjacent existing or proposed linear parks, urban ecosystems or active transport corridors that are near attractors. Any linear corridors need to align with local council green infrastructure, green grid or linear green network plans.

Linear park widths

The minimum width of linear parks in high-density areas is recommended but not critical. If narrower linear parks are provided, they should generally be 8 to 15 m wide and provide tree canopy, planting, and active transport connections at a minimum.

Rather than a minimum width, it is more important that streets and linear parks are connected to the surrounding active transport corridors, connected to major links in adjacent development sites, urban attractors, high-amenity walkable local streets, or urban ecosystem corridors. Designing high-amenity streets throughout the development also needs to be prioritised.

Sites of 1 to 5 ha

Local open space median size does not apply to sites between 1 and 5 ha. Open space should be provided as a large, connected space for these sites, to maximise solar access and usable space. The open space should also act as a linear connector through the site or to adjacent attractors.

Open spaces should align with local council open space plans. If the local open space strategy does not consider open space appropriate on this site, the proponent will need to look for opportunities to provide connectivity and contribute to nearby open spaces.

Sites between 5 and 25 ha

Local open space median size does not apply to sites between 5 and 25 ha. In these instances, the approach provides one local open space as large as comfortably possible within the site to maximise solar access and usable space.

The space should also seek to act as a linear connector through the site or to adjacent attractors.

An indicative size guide for this local open space should be 15 per cent of the NDL for sites of 5 ha, up to 10 per cent of NDL for sites of 25 ha. This park should be sited prominently in the site and act as the ‘main’ local park.

APPENDIX 3

URBAN TREE CANOPY IN LARGE DEVELOPMENTS

This section provides guidance setting tree canopy targets for large-scaled urban design development. The aim is to ensure all categories of land enhance urban canopy and contribute to an integrated and connected network of green infrastructure across NSW.

What is it?

Urban tree canopy refers to trees on public and private land within urban areas. It comprises a variety of tree types such as exotics, deciduous trees, and evergreens occupying a range of environments from busy city centres to regional main streets and suburbs.

Urban tree canopy is the leaves, branches and stems of trees that cover the ground when viewed from above. Urban tree canopy is an important element of green infrastructure.

Method for setting large-scale development tree canopy targets

1. **Establish the current canopy baseline**
   a. Calculate the total site area (m^2 or ha).
   b. Identify the current canopy area within the site boundary; canopy data from the NSW Government SEED Portal can be used.
   c. Divide the current canopy area by the total site area, to determine the percentage of canopy cover for the site.

2. **Calculate the urban canopy target for each land-use category**
   a. Calculate the area (m^2 or ha) of each urban land-use category proposed for the new development.
   b. Multiply the land-use category by the site target (see **Objective 10** design criteria: tree canopy targets for large developments). This will give you the canopy area for each land-use category.

3. **Calculate the total urban canopy target**
   a. Add up the canopy area for each land-use category to give the total canopy area.
   b. Divide the total canopy area by the total site area to give an overall urban canopy target.

APPENDIX 4

STREET DWELL SPACE

This section provides further guidance on how to calculate and provide 'dwell space' behind the kerb.

This does not replace guidance by TfNSW or local councils, and is intended as a reference for calculating whether sufficient space is allocated for the purposes of **Objective 13**.

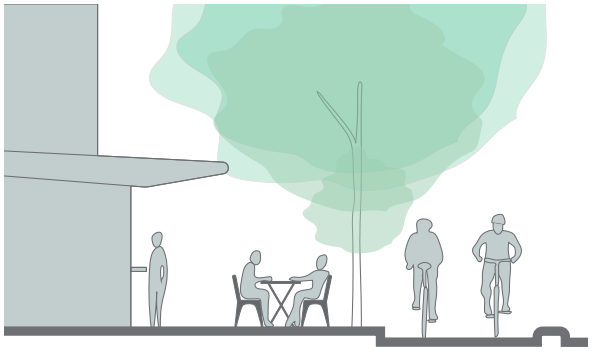
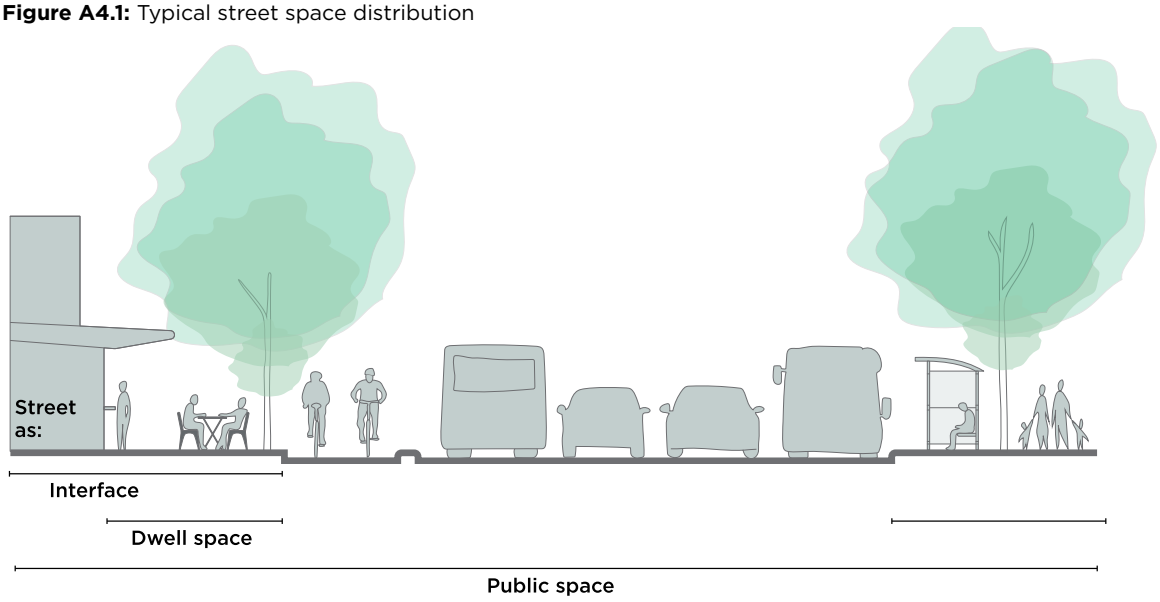


Figure A4.1: Typical street space distribution



Dwell space can be segmented into the following:

BUILDING ZONE OR GATHERING SPACE	CLEAR PATH OF TRAVEL	FURNITURE AND PLANTING ZONE	BUFFER ZONE
Space for place-based activities such as window shopping, collecting or eating take-away food, or on-street dining – this is required in addition to the clear path of travel	Space for pedestrians to walk comfortably	Space for deep soil for trees and street furniture Residual space can be used as gathering space	Additional space to reduce the friction between fast- and slow-moving modes – which may be minimised if combined with cycleways, parking and planting zones

See the *Practitioner's Guide to Movement and Place* (GANSW 2020) for further guidance.

Building zone or gathering space

Space should be sized to suit the interface with the adjacent land use. Example widths are set out in **Table A4.1**.

As a minimum, 200 mm should be provided between a building edge and the clear footpath width. If this is omitted, such as in residential subdivisions with front setbacks, care should be taken that junction boxes are not placed in the clear footway zone.

Table A4.1: Dwell space width for the building zone or gathering space. Derived from standard street furniture in NSW and buffers from the *Pedestrian Comfort Guidance for London*, Appendix C (Transport for London 2019)

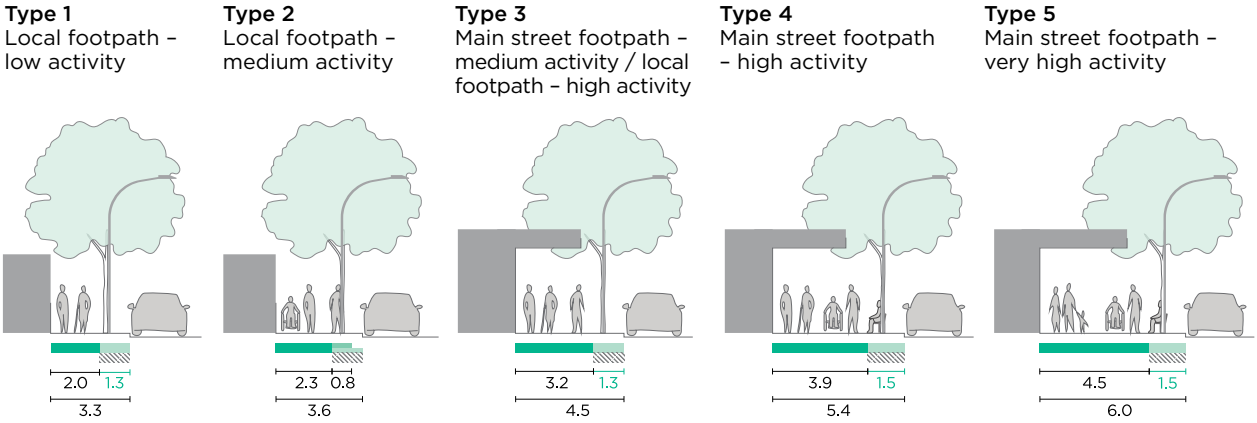
BUILDING / SHOP-FRONT	ATM / STREET VENDOR / TAKE-AWAY WINDOW (W/O QUEUE)	CAFÉ TABLE (900 MM)	BENCH FOR SITTING (500 MM)	ATM / STREET VENDOR / TAKE-AWAY WINDOW (WITH QUEUE)	STAND ASSOCIATED WITH SHOPFRONT (600 MM)	WAYFINDING SIGN OR MAP
200 mm	900 mm	1,100 mm	1,200 mm	1,500–3,000 mm	2,000 mm	2,000 mm

Clear path of travel (pedestrians)

This should be sized in accordance with the *Walking Space Guide* (TfNSW 2020). As an indication of typical widths, where a calculation of the pedestrian volumes has not been made, the following guidance is provided. Greater widths may be required for social distancing (see pp. 14–15 of that guide).

As a minimum, 2,000 m is recommended for local streets, and 3,200 mm for main streets.

Figure A4.2: Walking space allocation



Furniture and planting zone

The planting zone should be sized to suit the selected species and deep soil requirements set out in **Objective 10**. Wider areas may be required to accommodate large street furniture including buffers, such as bus stops, particularly if cycle bypasses are required. As a minimum, the *Walking Space Guide* recommends allowing a landscape zone width of 1,300 mm.

Avoid linear cabling in this zone. Small junction boxes may be located in this zone in preference to the clear path of travel provided they are clear of deep soil zones and cabling remains outside the zone.

Buffer zone

The *Walking Space Guide* recommends a traffic buffer based on the adjacent traffic speed in **Table A4.2**. The buffer ranges from 0 m (speeds of 15 km/h, cycle lane or parking lane), 1,200 m to 1,650 m for local streets of 40–50 km/h respectively, and 2,150 mm for speeds over 55 km/h.

Carriageway

Consideration needs to be given to the carriageway width and how it has been allocated. To reinforce slower speeds and make room for cycling or space behind the kerb, consider reallocating existing road space in accordance with the *Road User Space Allocation Policy* (TfNSW 2021), particularly where lane widths exceed 3.2 m on regional and local roads.

Where cycling networks are specified, sufficient space should be provided in accordance with the *Cycleway Design Toolbox* (TfNSW 2020). In limited circumstances where both walking and cycling volumes and speeds are low, a shared path may be appropriate.

Table A4.2: Example calculations of dwell space

	BUILDING ZONE	CLEAR PATH OF TRAVEL	FURNITURE / PLANTING ZONE	BUFFER ZONE	BUFFER ZONE TOTAL (EACH SIDE OF THE STREET)
Local street (low fence, front setback, 40 km/h street, no parking lane)	0 m	2,000 mm	1,300 mm	0 m (provided by planting zone)	3,300 mm
Main street (take-away shops, 50 km/h, parking lane)	900 mm	3,200 mm	1,300 mm	0 m (provided by parking)	5,400 mm

GLOSSARY

ACRONYMS

ADG	*Apartment Design Guide*
DA	development application
DCP	development control plan
DPIE	Department of Planning, Industry and Environment
DP SEPP	*State Environmental Planning Policy (Design and Place)* 2021
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EV	electric vehicle
GANSW	Government Architect New South Wales
NDL	net developable land
NSW SDRP	NSW State Design Review Panel
NSW LGDRPM	*Local Government Design Review Panel Manual*
TfNSW	Transport for New South Wales
UDG	*Urban Design Guide*

A

Adaptation	Defined in the Burra Charter as changing a heritage place to facilitate compatible new uses. This could involve alterations and additions to suit an existing use or meet current expectations of comfort and function or upgrade a building or site to respond to new needs and procedures associated with an existing function.
Adaptive re-use	Projects that give new life to an existing place, building or structure through sympathetic alterations, conversions and additions that enable compatible new uses and functions, while maintaining the heritage significance where applicable.
Amenity	The 'liveability', comfort or quality of a place which makes it pleasant and agreeable to be in for individuals and the community. Amenity is important in the public, communal and private domains and includes the enjoyment of sunlight, views, privacy and quiet. It also includes protection from pollution and odours. Expectations of amenity and comfort are contextual and change over time.

B

Built environment	Comprises the extent of our human-made environment, as distinguished from the natural environment. It includes all aspects of our surroundings made by people that provide the place for human activity. The built environment can include cities and towns, neighbourhoods, parks, roads, buildings and even utilities like water and electricity.
Bushland	Land on which there is vegetation which is either a remnant of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation. (Source: *State Environmental Planning Policy No SEPP 19 – Bushland in Urban Areas*).

C

Case study	A specific building, place or space that has been researched and analysed to demonstrate and evaluate its worthiness. A case study can help in the design of new spaces by presenting best practice and lessons learnt.
Catchment (1)	Watershed catchment or subcatchment or barriers such as arterial roads, creeks or rivers, or very steep landforms.
Catchment (2)	The area from which people will be drawn to a destination. For example, district open space catchment is an area approximately 2 km x 2 km.
Catchment (3)	A walking catchment is an area of land accessible from a defined destination, measured along publicly accessible streets, open spaces and linkages.
Character	The combination of the attributes, characteristics, and qualities of a place.
Chronic stresses	Regular or cyclical events that over time diminish a place, community, or local environment, such as climate change or lack of affordable housing.
Context	The physical, social, cultural, economic, environmental, and geographic circumstances that form the setting for a place or building. This includes views to and from the site.
Contextual	A building, place or space that responds to the context in which it is designed.
Continuous soil (natural component)	Unobstructed, interconnected, and undisturbed soil, derived from local geology and connected to the local groundwater system.

D

Deep soil	A landscaped area connected horizontally to the soil system and local groundwater system beyond and unimpeded by any building or structure above or below ground with the exception of minor structures (as defined below).
Dwell space	Road space available for pedestrian activities, such as walking and dwelling, or landscaping – generally being the space between the edge of the carriageway (kerb) and the road reserve boundary, or the entire road in the case of shared zones.

E

Episodic shocks	Sudden, short-term events that threaten a community, such as natural hazards (heatwaves, bushfires, floods, extreme weather, and coastal hazards).

Equitable	A built environment that is fair and accessible for all citizens.
G	
Good design	Good design creates useable, user-friendly, enjoyable, and attractive places and spaces, which continue to provide value and benefits to people, the place, and the natural environment over extended periods. Good design brings benefits socially, environmentally, and economically and builds on these benefits over time – it adds value.
Green Grid	Strategic planning document for the Greater Sydney region, and a precursor to the Greener Places design framework comprising a cohesive map of green assets across metropolitan Sydney.
Green infrastructure	The network of green spaces (either natural or constructed), urban tree canopy in streets, continuous soil and water systems that deliver multiple environmental, economic, and social values and benefits to urban communities.
Gross residential density	The measure of the overall net residential density, combined with the impact of local land use at the neighbourhood scale. Gross residential density is the ratio of the number of dwellings to the area of land they occupy. The area includes internal public streets, all areas of local open space (including parks, sports fields, drainage reserves, landscape buffers, bushfire asset protection zones) local or neighbourhood shops, primary and secondary schools, local community services, local employment areas and half the width of adjoining arterial roads.
I	
Integration	Combining green space with urban development and grey infrastructure.
L	
Liveable	A built environment that supports and responds to people's living patterns and is suitable and appropriate for habitation, promoting enjoyment, safety, and prosperity.
M	
Master plan	A framework document showing how development will occur in each place and including building parameters like height, density, shadowing, and environmental concerns. It is a visual document that details a clear strategy or plan for the physical transformation of a place, supported by financial, economic, and social policy documents which outline delivery mechanisms and implementation strategies.
Minor structures	For the purpose of calculating deep soil, the following may be included in the deep soil area where they have at least 1.2 m clear width of deep soil to either side: (a) a path, access ramp or area of paving with a maximum width up to 1.2 m (b) essential services infrastructure (such as stormwater pipes) with a maximum diameter up to 300 mm (c) landscape structures (such as lightweight fences, light poles or seating) requiring a footing with a maximum size of up to 300 mm x 300 mm in cross-section.
Movement and connection	Movement of people and goods by any mode whether on foot, pram, wheelchair, bicycle, car, truck, bus, tram or train – considering both mobility and local access. The total movement in a place is made up of trips through that place, to and from that place, and within that place. Movement generally occurs along dedicated 'ways', such as roads, railway corridors, or footpaths. Movement facilitates the transport of goods, services and people between urban settlements.
Multifunction-ality	The ability of green infrastructure to deliver multiple ecosystem services simultaneously, providing added value, and improved health and wellbeing.
N	
Natural	Either existing in or produced by nature.
Natural environment	The natural environment encompasses all living and non-living things occurring naturally, meaning in this case not artificial.
Natural hazards	The capacity of a social or ecological system to cope with a hazardous event or disturbance, responding or reorganising in ways that maintain its essential function, identity and structure, while also maintaining the capacity for adaptation, learning, and transformation. Natural hazards are predominantly associated with natural processes and phenomena.
Network	An arrangement of related, interconnected elements that integrate to establish a wider system.
P	
Participation	The involvement of stakeholders in the development and implementation of neighbourhood, local, district, and regional infrastructure policies and actions.
Place	A social and a physical concept – a physical setting, point or area in space conceived and designated by people and communities. In this sense, place can describe different scales of the built environment – for example, a town is a place, and a building can be a place.

Place making	A multifaceted approach to the planning, design and management of public spaces. Place making looks at understanding the local community to create public spaces that promote health and wellbeing.
Public facilities	Libraries, museums, galleries, civic and community centres, showgrounds and indoor public sports facilities.
Public open space	Land that has been reserved for the purpose of recreation and sport, preservation of natural environments, and provision of green space.
Public open space for recreation	Recreation core provision where the primary purpose of the land is recreation, e.g. parklands (parks, gardens, reserves) or sportsgrounds (field and court facilities), civic spaces, plazas and squares; and rooftops and podiums (public space over structures).
Public realm	The collective, communal part of cities and towns, with shared access for all. It is the space of movement, recreation, gathering, events, contemplation, and relaxation. The public realm includes streets, pathways, rights of way, parks, accessible open spaces, plazas, and waterways that are physically and visually accessible regardless of ownership.
Public space	Places publicly owned, or designated for public use, that are accessible and enjoyable for all, free of charge and without a profit motive, including: — **public open spaces** – active and passive spaces including parks, gardens, playgrounds, public beaches, riverbanks and waterfronts, outdoor playing fields and sports courts, and publicly accessible bushland — **public facilities** – public libraries, museums, galleries, civic and community centres, show grounds and indoor public sports facilities — **streets** – streets, avenues and boulevards, squares and plazas, pavements, passages and lanes, and bicycle paths. This definition refers to public space as a concept, not a land-use term or development type.
Q	
Quality	The standard of something, measured comparatively against things of a similar kind.
R	
Reference scheme	In relation to the UDG a reference scheme is a design that implements all the UDG objectives on the site. The reference scheme is to be used to benchmark alternative scenarios and provide the rationale for design decisions.
Resilient	Able to withstand or recover from difficult conditions.
Resilience	A complex and dynamic system-based concept used differently in various disciplines referring to the ability of a system to return to a previous or improved set of dynamics following a shock. It also refers to the potential for individuals, communities, and ecosystems to prevent, absorb, accommodate, and recover from a range of shocks and stresses, including but not limited to bushfires, flooding, extreme heat and coastal hazards.
Road reserve	A legally defined area of land within which facilities such as roads, footpaths and associated features may be constructed for public travel.
S	
Scale	The relative size or extent of something – scale is a device used to quantify objects in a sequence by size, for example a city scale, or a building scale. In architecture, scale is also used to describe a ratio of size in a map, model, drawing or plan.
Setting (1)	The physical, social, cultural, economic, environmental and geographic circumstances that form the context for a site, place or building. This includes views to and from the site.
Setting (2)	The area around a heritage place, which contributes to its heritage significance and may include views to and from the heritage item. The listing boundary or curtilage of a heritage place does not always include the whole of its setting. (See Article 8 of the Burra Charter.)
Site	An area or piece of land that is being considered for future development.
Shocks and stresses	Episodic shocks and chronic stresses.
Spatial framework	A design and research document that is produced to provide background understanding and analysis for a particular area or place. It is completed before traditional design stages or master plan phases of a project. The framework follows a process of analysis, data collection and reporting in order to propose a delivery strategy and vision for the area being analysed.
State environmental planning policy (SEPP)	A statutory plan, typically prepared by the Department of Planning, Industry and Environment and endorsed by the Minister for Planning. It can be a spatial plan for particular land in NSW, or it can set policy which applies to particular land or all land in NSW.

Statutory plan	A part of the planning process that is concerned with the regulation and management of changes to land use and development.
Strategic plan	Document that guides the implementation of a strategy for a particular area.
Streets	Public spaces contained within road reserves, generally contained between cadastre boundaries of private lots or other publicly owned land and containing a mix of: — streets (local streets, avenues, boulevards) — public spaces within streets (civic forecourts, incidental spaces or squares and plazas) — footpaths — bicycle paths — space for street-tree planting and understorey vegetation — utilities and infrastructure.
Sustainable	Relates to the endurance of systems, buildings, spaces, and processes – their ability to be maintained at a certain rate or level, which contributes positively to environmental, economic and social outcomes.
T	
Tree	Long-lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks (or as defined by the determining authority) *(AS 4970-2009 Protection of trees on development sites).*
Tree planting rate	The number of trees required to be planted in deep soil.
U	
Urban area	Comprises cities, towns or neighbourhoods where people live at high densities in a variety of housing forms supported by commercial and industrial land uses and essential infrastructure. In Greater Sydney the urban area is mapped in the *Greater Sydney Region Plan: A Metropolis of Three Cities* (Figure 51, Boundary of urban area, p. 162). For regional NSW, urban areas are typically characterised by places that contain an urban centre – including regional cities, strategic centres and local centres (or other centre types) as outlined in the Department of Planning, Industry and Environment regional plans.
Urban design development	Is defined as: — development on land that is not in an industrial zone that has a site area greater than 1 ha, or — development on land in an industrial zone (IN1 General Industrial, IN2 Light Industrial and IN4 Working Waterfront) that has: i. a capital investment value of $30 million or more, and ii. a site area greater than 1 ha, or — development in relation to which an environmental planning instrument requires a development control plan or master plan to be prepared for the land before development consent may be granted for the development.
Urban structure	The arrangement of streets, paths, blocks and lots, public open spaces, activity centres, public transport nodes and corridors, and residential neighbourhoods.
Urban tree canopy	The layer of leaves, branches and stems of a tree that provide coverage of the ground when viewed from above. Urban tree canopy refers to trees on public and private land within urban areas and comprises a variety of tree types such as exotics, deciduous trees, and evergreens.
W	
Walkability	Refers to measures that support safe, comfortable, and direct walking to destinations such as footpaths, crossings, shading, protection from traffic, connected paths along desire lines and proximity, typically 1600 m or less to destinations by the shortest route.
Waterway	Long, longitudinal water conveyance structures that do not have, as an important part of their design, significant infiltration capacities, although this might occur. Their water conveyance capabilities should be protected by selection of suitable non-erodible grasses. Normally, these outlet to the natural drainage system, either directly or indirectly. (Source: *Managing Urban Stormwater: Soils and Construction,* Landcom, Fourth edition 2004.)
Water-sensitive urban design	Includes techniques such as raingardens, constructed wetlands, bioretention infrastructure and swales, aiming to improve the ability of urban environments to capture, treat and re-use stormwater before it has the chance to pollute and degrade creeks and rivers.

REFERENCES AND FURTHER READING

Architecture and design

DPIE (2021), *Apartment Design* Guide (draft), Department of Planning, Industry and Environment

DPIE (2020), *Low Rise Housing Diversity Design Guide for development applications*, NSW Department of Planning, Industry and Environment

Energy, emissions, sustainability and waste

DPIE (2021), *NSW Waste and Sustainable Materials Strategy 2041*, Department of Planning, Industry and Environment

EES (2020), *Net Zero Plan Stage 1: 2020–2030*, Environment, Energy and Science; Department of Planning, Industry and Environment

EES (2021), *NSW Electric Vehicle Strategy*, Environment, Energy and Science; Department of Planning, Industry and Environment

Street design

TfNSW (2020), *Beyond the Pavement 2020: Urban design approach and procedures for road and maritime infrastructure planning, design and construction*, Transport for NSW and Centre for Urban Design

TfNSW (2020), *Walking Space Guide: Towards Pedestrian Comfort and Safety*, Transport for NSW

TfNSW (2020), *Cycleway Design Toolbox: Designing for cycling and micromobility*, Transport for NSW

Transport for London (2019), *Pedestrian Comfort Guidance for London*, Transport for London

Urban design and planning

Auckland Council (2014), *Auckland Design Manual*, Auckland Council

Australian Government (2011), *Creating Places for People: An Urban Design Protocol for Australian Cities*, Australian Government in collaboration with state and territory governments and others

CABE (2003), *Protecting Design Quality in Planning*, Commission for Architecture and the Built Environment, UK

CABE (2003), *The Councillor's Guide to Urban Design*, Commission for Architecture and the Built Environment, UK

CABE (2015), *Building for Life 12: The Sign of a Good Place to Live*, Commission for Architecture and the Built Environment at the Design Council, UK; Nottingham Trent University: CADBE for the Building for Life Partnership

City of Adelaide (2014), *Adelaide Design Manual: Building Interface Guidelines*, City of Adelaide

City of Melbourne (1994, 2005, 2015), *Places for People Study*, City of Melbourne

City of Melbourne (2021), *Central Melbourne Design Guide*, City of Melbourne

City of Sydney (2012), *Fine Grain Review Recommendations for a Lively and Engaging City Centre*, City of Sydney

Coastal Council (2003), *Coastal Design Guidelines for NSW*, Coastal Council, NSW Government

CUR (2017), *Creating Livable Cities in Australia: Mapping urban policy implementation and evidence-based national liveability indicators*, Centre for Urban Research, RMIT University

DELWP (2016), *Central City Built Form Review: Existing Context Report*, Department of Environment, Land, Water and Planning, Victoria State Government

Dovey K, Adams R & Jones R (eds) (2018), *Urban Choreography: Central Melbourne 1985*, Melbourne University Press

DPIE (2019) *Local Character and Place Guideline*, NSW Department of Planning, Industry and Environment

DPIE (2020), *Draft NSW Public Spaces Charter*, Department of Planning, Industry and Environment

DPIE (2020), *Explanation of Intended Effect for a new Design and Place SEPP*, Department of Planning, Industry and Environment

DPIE (2020), *Low Rise Housing Diversity Design Guide for complying development*, NSW Department of Planning, Industry and Environment

DPIE (2021), *Local Government Design Review Panel Manual* (draft), Department of Planning, Industry and Environment

DPIE (2021), *Planning for a more resilient NSW: Strategic Guide to Planning for Natural Hazards* (draft), Department of Planning, Industry and Environment

DSDMIP (2020), *Creating healthy and active communities: mandatory provisions for neighbourhood design* (draft), Department of State Development, Manufacturing, Infrastructure and Planning, Queensland Government

GANSW (2017), *Better Placed: An integrated design policy for the built environment of NSW*, Government Architect New South Wales

GANSW (2018), *Evaluating Good Design: Implementing Better Placed design objectives into projects*, Government Architect New South Wales

GANSW (2018), *Implementing Good Design: Implementing Better Placed design process into projects*, Government Architect New South Wales

GANSW (2018), *Design Guide for Heritage: Implementing the Better Placed policy for heritage buildings, sites, and precincts*, Government Architect New South Wales

GANSW (2019), *Aligning Movement and Place: Outline for understanding places in relation to movement infrastructure*, Government Architect New South Wales, Department of Planning, Industry and Environment

GANSW (2019) *Place Analysis: GANSW Advisory Note*, Government Architect New South Wales, Department of Planning, Industry and Environment

GANSW (*2020), Draft Connecting with Country: A draft framework for understanding the value of Aboriginal knowledge in the design and planning of places*, Government Architect New South Wales, Department of Planning, Industry and Environment

GANSW (2020), *Draft Greener Places Design Guide: Open space for recreation, Urban tree canopy, Bushland and waterways*, Government Architect New South Wales, Department of Planning, Industry and Environment

GANSW (2020), *Greener Places: An urban green infrastructure design framework for NSW*, Government Architect New South Wales, Department of Planning, Industry and Environment

GANSW (2020), *Practitioner's Guide to Movement and Place: Implementing Movement and Place in NSW*, Government Architect New South Wales, Department of Planning, Industry and Environment

GANSW (2020), *Urban Design for Regional NSW: A guide for creating healthy built environments in regional NSW*, Government Architect New South Wales, Department of Planning, Industry and Environment

Glaser M, van't Hoff M et al. (eds) (2017), *The City at Eye Level, Lessons for Street Plinths*, 2nd edition, Eburon Academic Publishers, Utrecht, Netherlands

Greater Sydney Commission (2018), *Greater Sydney Region Plan: A Metropolis of Three Cities*, Greater Sydney Commission

Maribyrnong City Council (2014), *Good Design Standard: Better neighbourhoods, streetscapes and homes*, Maribyrnong City Council

Ministry for the Environment (NZ) (2005), *The value of urban design: the economic, environmental and social benefits of urban design*, Ministry for the Environment, New Zealand

NACTO (2013), *Urban Street Design Guide, National Association of City Transportation Officials*, New York, USA

NSW Government (2018), *Guide for Establishing and Managing Night Time Economy Uses*, NSW Government

NSW Government (2020), *Movement and Place Evaluator's Guide: A guide to evaluating built environment projects and plans that balance movement and place in NSW*, Government Architect New South Wales and Transport for NSW, NSW Government

NSW Government (2021), *State Environmental Planning Policy (Design and Place) 2021* (draft), NSW Government

NSW Health (2020), *Healthy Built Environment Checklist: A guide for considering health in development policies, plans and proposals*, NSW Ministry of Health

NSW Premier's Priorities – Greener public spaces, Greening our city, www.nsw.gov.au/premiers-priorities

OVGA (n.d.), *Good Design + Local Government – Issue 4*, Office of the Victorian Government Architect

Urban Design Advisory Service (1998), *Better urban living: guidelines for urban housing in NSW*, Urban Design Advisory Service, NSW Government Architect, NSW Department of Public Works and Services

Urban Design Advisory Service (1998), *Residential Densities: A Handbook illustrating the Urban Design Characteristics of Different Densities*, Department of Urban Affairs and Planning

Western Sydney Planning Partnership (2020), *Western Sydney Street Design Guidelines*, Western Sydney Planning Partnership

BEST PRACTICE EXAMPLES

Inner city regeneration

Casba, Waterloo, Sydney illustrates:

— heritage and new build
— public through-site connection
— built form responding to the character of the 2 streets
— public open space within the centre of a site
— recycled and honest materials.

Design: SJB, Billard Leece Partnership
Photo: SJB

GOOD EXAMPLE OF OBJECTIVES:

1 12 15 16

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Sydney Park Skate Park provides recreation for all ages and urban greening. Credit: DPIE 2020

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