

POLICY DOCUMENT

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Policy Statement:

This Policy commences on the following page.



Sustainability Blueprint for urban release areas

JUNE 2005



* image courtesy of Stockland and LFA

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Part A: Introduction

Council's vision for the City of Penrith is one of a sustainable and prosperous region with a harmony of urban and rural qualities and a strong commitment to environment protection and enhancement. It would offer both the cosmopolitan and cultural lifestyles of a mature city and the casual character of a rural community. In pursuing this vision, Council has a long-term goal to ensure new areas provide well planned, services and cohesive living and working environments.

Council's Strategic Plan 2005-2009 outlines an approach to new release areas which seeks to form cohesive communities based on sustainable, safe and satisfying living and working environments. Importantly, new release areas are to deliver jobs that match incoming workforce participant numbers. They will provide for a diversity of housing opportunities, including affordable housing, consistent with emerging community needs and the development of diverse neighbourhoods. Timely delivery of services to new release areas must be secured.

The Sustainable Penrith Action Plan expresses this commitment to ensuring a higher quality of life for all – both now and in the future – through economic growth, environmental protection and social equity. Council's sustainability agenda is achieved through strategic initiatives, systems and processes outlined within its Strategic Plan and Management Plan.

On the practical level, sustainable development is an approach that aims to integrate social, economic and environmental concerns. Integration is the key. Much development locally, nationally and internationally meets at least one of the social, environmental or economic goals.



However, progress in one area has often been achieved at the expense of quality of life or environmental degradation. It is now accepted that good social conditions require strong economies, strong economies rely on environmental resources, and environmental conditions are inseparable from our quality of life.

The development of socially sustainable communities requires the integration of land-use and access planning, social planning and community and cultural development strategies. This integration is important to assist the building of sustainable, healthy and inclusive communities. Quality of life in Penrith is very closely linked to the quality of the built environment. It affects people's lives in their homes, at work, in education and in their leisure time.

Council has endorsed the United Nations Environmental Program (UNEP) Principles for Sustainable Cities that are intended to guide thinking and help build a vision of environmentally healthy and sustainable cities.

Sustainable outcomes for new release areas cannot be achieved by developers or Council alone – but only through active partnerships between business, governments and the community (existing and future). It means better integrating economic, environmental and social considerations within decision-making.

It includes balancing short-term priorities with longer-term needs, whilst engaging with all stakeholders and the community. Sustainability is about seeking to improve the ways we deliver urban environments and communities – for the benefit of all.



* image courtesy of Stockland and LFA

The 10 UNEP Principles for Sustainable Cities are:

1. Provide a long term vision for cities based on sustainability
2. Achieve long-term economic and social security
3. Recognise the intrinsic value of biodiversity and natural ecosystems and their protection and restoration
4. Enable communities to minimise their ecological footprint
5. Build on the characteristics of ecosystems
6. Recognise and build on the characteristics of cities including their human, cultural, historic and natural systems
7. Empower people and foster participation and inter-generational equity
8. Expand and enable cooperative networks to work towards a common sustainable future
9. Require effective demand management and appropriate use of environmentally sound technologies for cities.
10. Enable continual improvement, accountability and transparency.

Approach to Release Areas

There is a challenge associated with new urban areas being planned within Penrith. The management of these new areas to physical completion, facilitating their development as equitable functioning communities and capturing the opportunities they bring to the City will be the major urban growth management task of Penrith City Council in the next 10-15 years.

Urban release areas planned on the principles of sustainability will ensure that our social, economic and environmental systems can function effectively and in an integrated way on an ongoing basis (this must happen without any one of the systems becoming stressed beyond acceptable limits), and they serve both present and future generations.



Penrith Council's Sustainability Blueprint for Urban Release Areas

The Sustainability Blueprint has been prepared as a guide for Council, developers and other relevant stakeholders involved in planning and development of new release areas within the City of Penrith.

The key aims of the Sustainability Blueprint are to:

1. Provide the framework for delivering quality urban environments and sustainable outcomes in release area planning.
2. Reflect the 'triple bottom line approach' demonstrating best practice in economic, social and environmental sustainability, not only for current communities, but also for future generations.
3. Apply to all new urban release areas, including employment or residential land uses, or a mix of both.

For urban release areas in the initial planning investigation stage, the Sustainability Blueprint will be used as a policy document to inform the preparation and development the local environmental plan (LEP), development control plan (DCP) and Masterplan. For urban release areas that are advanced and reaching implementation, the Sustainability Blueprint can articulate the aims and objectives of adopted LEPs and DCPs in the consideration and assessment of subdivision and development applications in the release area.

Sustainability Criteria for the Metropolitan Strategy

Based on the core objectives of the Metropolitan Strategy, the Department of Infrastructure, Planning and Natural Resources has developed 8 sustainability criteria for application to new land release areas including the North West and South West sectors. The overall goal of applying sustainability criteria to future development is to:

- reduce the city's ecological footprint (water, energy, land, materials, waste),
- enhance the environment,
- improve quality of life (health, housing, employment, community), within the capacity constraints of the city and bioregion.

The Metropolitan Strategy sustainability criteria are pertinent to planning in our new release areas and are reflected in the Blueprint.

The key criteria are:

1. Natural Resources	To live within natural resource limits and minimise ecological footprint
2. Environmental Protection	To protect and enhance biodiversity, air, water and agricultural land
3. Quality Places	To provide quality places to live and play
4. Housing Diversity	To provide a range of housing choices to ensure a broad population can be housed and which can be adapted over time
5. Jobs-Economy	To provide employment opportunities through growing Sydney's role in the global economy and in regionally based jobs
6. Access	To provide sustainable accessibility between homes, jobs, services and recreation
7. Quality and Equity in Services	To ensure quality health, education, security, community development and other government services are provided equitably across the Greater Metropolitan Region
8. Governance	To establish effective, fair and efficient planning and decision-making



Key Sustainable Design Principles

Projects should deliver sustainable best-practice planning, design, engineering and construction, while building on the distinct character and identity of the site. Council's Strategic Plan for the City aims to promote a sustainable, vibrant and resourceful community with its own unique identity. Urban release areas should be at the forefront of this Plan. Penrith Council has developed 10 key sustainability design principles to guide the planning for new urban release areas.

Principle 1:

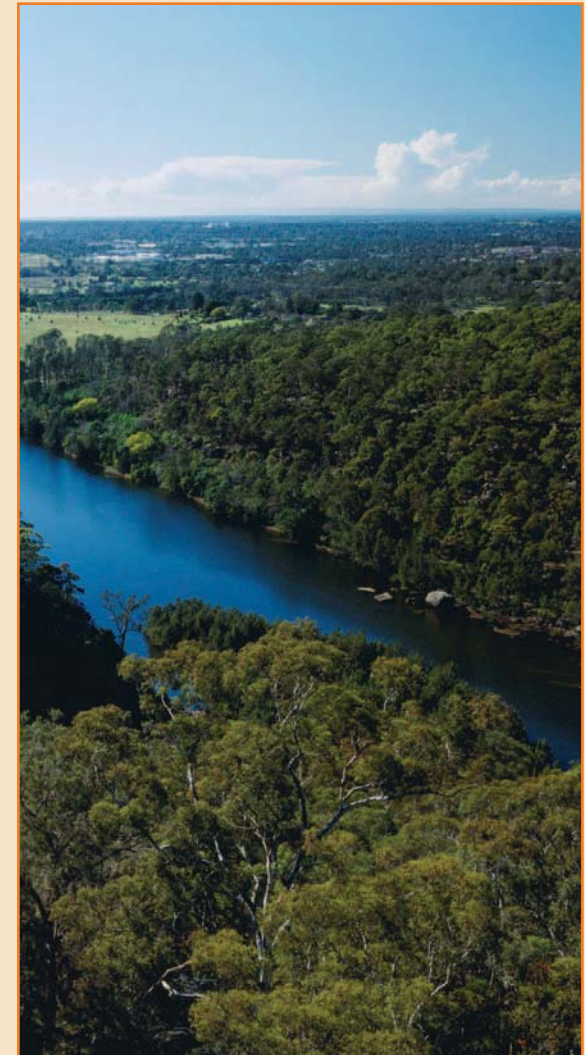
Value the Site Attributes ~ preserve ecosystems, protect biodiversity, air, water, and conserve heritage

The environment of Penrith comprises natural, rural and urban elements. The community values the preservation of the City's unique cultural and environmental heritage. Each site has its own unique ecosystem which has developed over thousands of years that we can learn from (i.e. what grows naturally well there). Planning for new release areas should build on this knowledge by making the most of what exists, rather than replacing the landscape at the end of the process.

There is increasingly a need for communities to live within natural resource limits. Protecting and enhancing biodiversity, valuing water resources, and improving air and water quality contribute to improving quality of life locally and regionally across Western Sydney. Council has a city-wide local environmental plan and development control plan for the conservation and management of heritage items within Penrith.

Key strategies:

- Conserve the natural attributes of the site (topography, orientation, soils, waterways, vegetation and wildlife habitat, environmental and archeological heritage items),
- Create biodiversity corridors which link with flora and fauna corridors, particularly those of regional significance,
- Protect existing trees and soils during construction,
- Work with natural drainage wherever possible,
- Manage potential site impacts such as erosion, contamination, salinity, flooding, bush fire, noise,
- Improve air quality and water quality.



**Principle 2:
Create Localised Landscapes and Quality
Public Domains ~ based on the indigenous
landscape attributes**

The City of Penrith is distinguished by its natural setting and landscape. The Nepean River, areas of bushland, rural and historical landscapes contribute to the character and cultural importance of the area to the community. The 'look' and 'character' of the public domain, plays an integral role in how a community perceives its environment. Vegetation, and in particular native trees, add to the aesthetic and environmental values of a site and act to take up carbon dioxide from the air and return life giving oxygen. A treed environment is a desirable place to be. In planning for a new community it is important to establish a high quality public domain which provides convenient access to facilities and services, and creates a feeling of safety and well being for the community. Utilising indigenous native (local) plantings to the fullest extent practicable can save money and preserve biodiversity.

Council has a city-wide Landscape DCP and Approved Landscape Consultants Register to assist in identifying plant species suitable for use in the City and to ensure the quality of landscaping implemented with development is of a high standard.



Key strategies:

- Recognise and reinforce the natural setting and landscape of Penrith including landscape and landmark elements, views and vistas.
- Provide a high quality public domain which affords the community with a high level of amenity and sense of place,
- Provide accessible buildings, facilities and spaces for public recreation and community use which are linked to the pedestrian/ cycleway network and accommodate the needs of the incoming population,
- Incorporate 'adaptable' or 'inclusive' design principles' in the provision of infrastructure, facilities and services,
- Include a range of passive and active open space opportunities.
- Incorporate existing vegetation and public art within the design of public open space/domain,
- Develop plans of management for open space or recreation areas proposed to be dedicated to Council as public assets.
- Demonstrate best practice landscaping that enhances a distinct sense of place.
- Design and landscape attractive public realms and not just in 'left-over' corners.
- Develop a plan for the public domain including future on-going management all facilities and infrastructure provided,
- Design landscaping around existing trees and vegetation to the fullest extent,
- Minimise the extent of paving to reduce water recharge,
- (Re) introduce native endemic (local) species with good landscape design,
- Use plant species derived from local seed-stock to preserve genetic diversity.

Principle 3: Create Communities ~ not just housing estates

The development of socially sustainable communities requires the integration of land use and access planning, social planning, and community and cultural development strategies. This integration is important to assist the building of sustainable, healthy and inclusive communities.

Social connectivity and interaction are supported by a pleasant living environment, including formal and informal meeting places that encourage people of all ages to participate in passive and active recreation and leisure opportunities.

The provision of quality recreational, educational, health, and community facilities and services, which are accessible, are essential to creating a quality place for a new community to live, play and work in. In creating communities, it is imperative that a base-line of services/ facilities is provided up-front to service the initial population.

This includes a small convenience/corner shop, transport/bus services, access to open space/ recreation areas, facilities and meeting places that support a healthy community (e.g. playgroups, mums groups, youth activities, seniors group, children services, medical services, mail box, telephone).

Key strategies:

- Develop integrated plans that foster social and cultural interaction,
- Provide a mix of dwelling sizes and types within the development to support opportunities for generational and lifestyle change within a community,
- Include affordable housing opportunities (minimum 3% of housing stock).

- Provide a range of recreational and leisure opportunities for the community and include public art to support place-making and community engagement,
- Co-ordinate the provision of quality educational, health and community services to support the new community,
- Create vital and vibrant centres of community activity as a hub for social gatherings, retail/commercial and other community facilities/services.
- Incorporate Universal Design Principles (inclusive design for people of diverse abilities) in the provision of infrastructure, facilities and services,
- Plan for early delivery of quality community facilities, including retail services, and meeting places to support community development activities,
- Consider engaging community development practitioners to support community development activities,
- Design for access to public transport, pedestrian, and bicycle paths,
- Provide an interconnected and permeable street system, avoiding circuitous roads and cul-de-sacs, but cognisant of topography and site features.
- Co-locate major trip generating land uses. Link streets, walkways and cycleways to public open space, sporting facilities, schools, community facilities, educational facilities, shops and public transport services,
- Develop a plan for the delivery and future on-going management all facilities and infrastructure.



Principle 4:
Create Employment ~ promote the economic growth of the City and minimise the need for commuting

Localised opportunities for employment shall be developed to create economic well-being and to minimise the need for commuting – especially car-based. New jobs are to be created which at least match incoming residential workforce participants. Local /home-based employment enriches the community and family lifestyle through giving reason for local goods and services, social interaction and hence a vibrant living community. Council has adopted a policy for self-sufficiency for new urban release areas, where the delivery of jobs, both on and off-site, should at least match the incoming workforce participants expected in the new community.

Key strategies:

- Respond to site location and public transport infrastructure in relation to generating employment options,
- Provide for employment generating development opportunities that balance the supply of housing,
- Encourage a broad range of employment generating uses that promote the economic and employment growth of the City,
- Consider and quantify employment generating development(s) both onsite or nearby,
- Develop niche employment opportunities as well as encouraging home-based businesses,
- Provide infrastructure that supports a variety of business activities and addresses best practice environmental management.





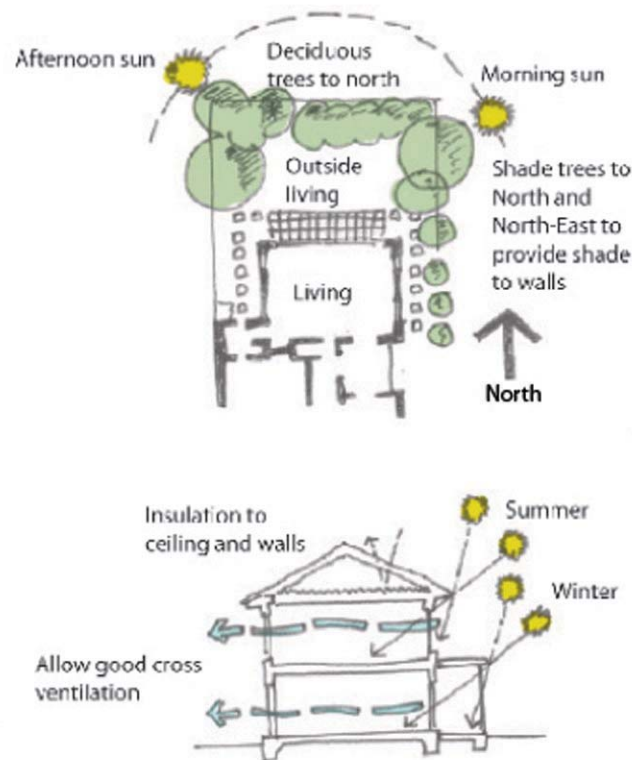
* image courtesy of www.wsud.org

Principle 5: Save Water ~ Water Sensitive Urban Design (WSUD)

The Hawkesbury/Nepean River system is an integral part of the region as an important ecological, hydrological and recreational resource. The conservation and rehabilitation of natural areas and watercourses as well as the development and implementation of water conservation strategies will contribute to securing an ecologically sustainable environment in Penrith. Conserving water is now essential (mandated by BASIX) at all levels of planning, residential design and construction. WSUD goes further in making better practical and creative use of this valuable resource.

Key strategies:

- Provide for the retention, and where practical, restoration of natural watercourses, native riparian vegetation, wetlands and other natural features.
- Incorporate waterway corridors as the spine of the open space and habitat corridor system,
- Provide for the retention and restoration of existing native vegetation (including understorey) as part of the open space network,
- Demonstrate world best practice water sensitive design ensuring water is retained and reused,
- Collect and use rainwater within the development.
- Allow for groundwater recharge through minimising paving and maximising infiltration,
- Consider recycling sewage and grey water,
- Select local vegetation species that minimise additional water use,
- Develop creative opportunities for displaying water within the landscape.



* image courtesy of Stockland and LFA

Principle 6: Save Energy and Greenhouse Gases ~ 'smart-lot' design

In planning new urban release areas it is important that the principles of energy efficiency are considered and incorporated in the planning and design of all building types (residential, industrial, commercial, and community). Subdivision and lot layouts that encourage/permit the predominance of dwellings to have north-facing living areas and sunny courtyards /gardens can provide significant benefits to future residents in terms of liveability. Reducing energy demand and greenhouse gas emissions start with lot layout, with these design decisions affecting environmental performance and household operating costs for decades to come. It is now mandated by BASIX.

Key strategies

- Plan roads and lot layout to enable houses to benefit from northerly orientation (grid patterns are more effective),
- Plan appropriate building envelopes for each lot with solar design in mind,
- Ensure the predominance of glazing faces close to North,
- Consider shadowing from trees and neighbours,
- Demonstrate an appropriate response to local climate, the site and its context in the layout and design of buildings (residential, industrial, commercial or community),
- Incorporate 'passive solar' and 'passive ventilation' in the design of buildings (residential, industrial, commercial or community),
- Demonstrate an integrated package of measures to planning and design, construction and building services, which reduces the energy consumed by conventionally planned and constructed buildings. This includes residential, industrial, commercial and community buildings.

Principle 7:

Maximise Liveability & Longevity ~ design for durability and adaptability

The longer the infrastructure and buildings last, the lesser the overall environmental impact. Consider 'whole of life' costing rather than just initial capital cost because over time, quality construction costs less (less maintenance, reduced call-backs, etc).

Key strategies:

- Design for adaptability and accessibility to accommodate people of all ages and abilities, recognising that needs change over time,
- Specify suitably durable materials even if initial cost is a little more (it saves money and resources over time),
- Design for easy maintenance and replacement,
- Allocate sufficient funds for ongoing maintenance and improvement.



Principle 8:

Reduce Resource Consumption ~ energy, land, water and materials

All materials have environmental and health consequences in extraction, manufacture, transport, storage and use. Some materials have significant impacts for maintenance and disposal. These should be consciously addressed in material selection at design and specification stages.

Key strategies

- Design for sufficiency – not excess (small is better),
- Specify materials salvaged or with recycled content,
- Make suitable selections from EcoSpecifier or similar source,
- Avoid using high environmental/health impact materials (e.g. volatile organic compounds (VOCs), hydrochlorofluoro-carbons (HCFCs)),
- Specify materials with low embodied energy (the energy used to extract, manufacture and transport the material),
- Avoid materials that unduly deplete limited natural resources (e.g. rainforest timbers).



Principle 9:
Minimise Waste ~ return, reuse, recycle

Sorting and recycling of construction and demolition waste onsite usually saves dollars, hassles and the environment. Construction waste costs three times over – the (wasted) cost of the material(s); the (wasted) transport, handling and storage; and (wasted) landfill fees; when fuller use of the resource could have benefited everyone and the environment. Council has a city-wide Waste Planning DCP to minimise the volume of waste generated during demolition, construction and on-going use of a premises.

Key strategies:

- Plan, design and construct for waste minimisation,
- Establish (and use) collection and recycling opportunities in the region,
- Make each trade /contractor responsible for removing their own wastes,
- Market your resource-efficient design / construction.



**Principle 10:
Build-in Community Safety & Crime
Prevention Measures ~ thoughtful design
of the public domain**

Well-used and attractive public spaces overlooked from the private realm reduce the opportunity for crime, whilst encouraging public safety. Council has a city-wide Community Safety Plan DCP that addresses, Crime Prevention Through Environmental Design (CPTED). It emphasises the importance of surveillance, controlled access, territorial reinforcement and management of space.

Key strategies:

- Surveillance through clear sight lines, effective lighting and attractive landscaping that avoids hidden areas,
- Controlled access through physical and symbolic barriers that clearly defines public and private realms, without creating compounds.
- Reinforce territory through clear design cues on who is to use space and what it is to be used for,
- Design attractive areas of public space that encourages people to gather and fosters community engagement.



Part B: Sustainable Planning & Development Criteria

The sustainable planning and development criteria below underpin the delivery of the key principles and strategies outlined in Part A. Council will require that each new release area demonstrate that the proposal satisfies the criteria set out in Part B below.

Principle 1 : Value the Site attributes

(A) Site Assessment & Values

(Topography, slope stability, erosion, contamination, salinity, flooding, bush fire, etc)

Objectives

To live within natural resource limits of the site.

To protect and enhance biodiversity, and improve air and water quality.

To conserve the natural attributes of the site.

To protect the sites' landscape character and minimise any detrimental environmental impacts which may arise from future development.

To ensure appropriate studies are carried out and measures identified to manage site constraints and hazards, having regard to legislative requirements, public health and safety, plus sustainability requirements.

Design approach

Undertake a site assessment and identify the natural attributes of the site (topography, orientation, soils, waterways, vegetation and wildlife habitat, environmental and archeological heritage items).

Identify ways to protect and enhance significant natural attributes.

Consider world 'best' practice in ways to protect the environment.

Where applicable, submission of the following studies/reports may be required:

- geotechnical study,
- salinity study,
- flooding study,
- bushfire study,
- Studies undertaken should include measures to manage identified site constraints, risks and hazards.

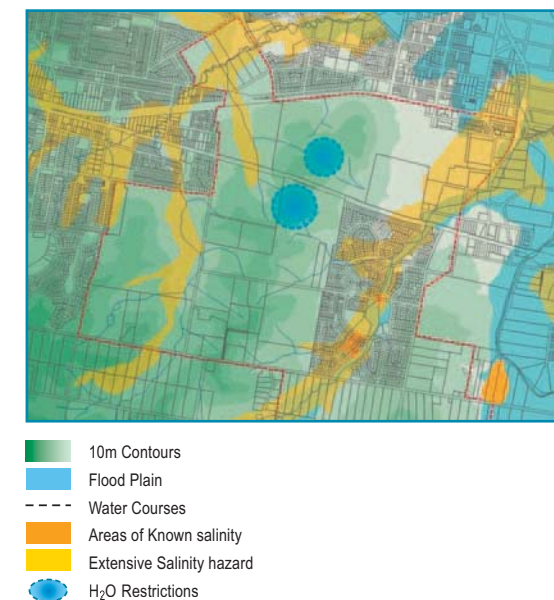
In circumstances where land contamination may be an issue, State Environmental Planning Policy No.55 – Remediation of Land should be followed to demonstrate that the land is suitable for the proposed use or can be made suitable, either by remediation, or by the way the land is used. Any contaminated land is to be remediated to a standard, which is safe and suitable for the range of land uses proposed, in accordance with legislative and council requirements.

In areas adjoining major transport corridors (i.e. rail, arterial roads), and/or where surrounding or proposed land uses may potential impact upon the residential amenity of existing and/or future residents an acoustic assessment may be required.

Performance Criteria

Required Studies /Reports comprehensively address the relevant issue(s) to a professional standard acceptable to Council.

Figure 1: Identify natural attributes of the site



(B) Flora and Fauna

Objective

To retain and conserve indigenous vegetation and wildlife habitat and corridors.



Design approach

- Identify areas of high conservation value and exclude these from the developable area of the site.
- Create biodiversity corridors which link flora and fauna corridors, particularly those of regional significance.
- Identify the appropriate control for protecting the area of high conservation value and most appropriate short and long term management.
Develop a Plan of Management
Public ~ local or state management
Private ~ financial mechanism to ensure area is cared for in perpetuity.
- Extent of development impact.



Performance Criteria

The submission of a **Flora and Fauna Strategy** which retains and conserves indigenous vegetation and wildlife habitat in accordance with the requirements set out at **Appendix A**.

- Type and significance of species potentially affected
- Area, suitability and % of the site allocated for conservation areas, wildlife corridors
- Area and % of land cleared and habitat lost
- Area and % of land enhanced/ regenerated, with habitat gained and/or restored

(C) Heritage

Objectives

To conserve the environmental heritage of the site, heritage items, or conservation areas in the vicinity of the site.

To conserve the archaeological heritage of the site.

To conserve the heritage significance of existing fabric, relics, settings and views associated with the heritage significance of heritage items and heritage conservation areas.

Design approach

Heritage studies and assessment of the impact of the proposed development are required for any item of cultural (Aboriginal and non-Aboriginal) heritage located on a site, or in the vicinity of the site that is likely to be affected by the proposed development.

Significant cultural heritage assets, curtilage, cultural landscapes including views and vistas to items etc. are identified.

A statement of the history and significance of all cultural heritage items is prepared. Policies and plans are formulated for the conservation and management of the identified cultural heritage assets.

Strategies providing for the commemoration, communication and interpretation of the significant cultural heritage items are developed.

Where appropriate, preparation of a detailed works schedule required for the on-going effective management and maintenance of the heritage asset.

Heritage strategies reflect accepted ICOMOS 'best practice' and are prepared in accordance with the heritage requirements contained within Penrith Local Environmental Plan 1991 (Heritage Conservation) and Penrith Development Control Plan 2002 (Heritage Management).

Performance Criteria

Heritage strategies proposed which are consistent with accepted ICOMOS 'best practice', the National Parks and Wildlife Services Act and is endorsed by Council.



Figure 2: Views and Heritage



Principle 2 : Create Localised Landscapes and Quality Public Domains

(A) Public Domain

Objectives

To recognise the natural setting and landscape of Penrith.

To create attractive streetscapes, which retain and enhance significant views and vistas, landmark elements and landscape features

To provide a high quality public domain, which affords the community with a high level of amenity and sense of place.



Design approach

Historical features/landmarks, significant natural features, views and vistas on the site are retained and, where possible, incorporated within the public domain.

Natural areas such as remnant bushland, riparian corridors, wetlands and/or areas of significant habitat are set aside for conservation.

The car environment is defined from other users of the street. Details on street types, design, and widths including pedestrian and cycleways are provided.

Street networks, walkways and cycleways are clearly defined and linked to public transport, schools, sporting facilities, community facilities and recreation areas.

Footpaths are provided on both sides of every street.

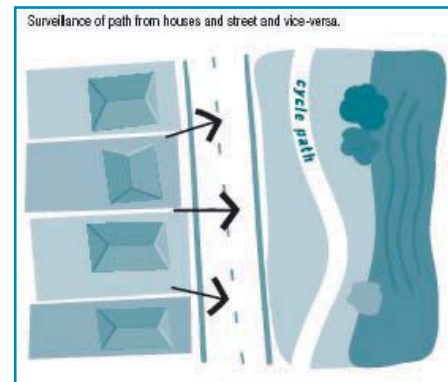


Figure 3: Housing facing green corridors
(Courtesy of DIPNR (2004) *Planning guidelines for walking and cycling*)

A schedule of tree species and vegetation, including street planting is provided.

The quality, type and standard of any public domain embellishments including, but not limited to, seats/benches, picnic tables, bins, bus shelters, bicycle storage facilities, amenities, street lighting and paving treatment is clearly documented.

Performance Criteria

Formulation and delivery of a **Public Domain Strategy (PDS)** which establishes the 'look; and 'character of the public domain, including future management regimes and costing for all facilities and infrastructure (refer **Appendix B** for PDS requirements).

Street networks and open space is functional and linked to public services and facilities.

The quality of facilities and associated embellishments within the public domain (i.e. seats/benches, signage, tables, signage, paving, lighting, bins, bus shelters etc) is to a high standard, robust and readily maintained.

The PDS is endorsed by Council



(A) Public Domain (cont)

Objective

To provide facilities for public recreation and community use which meet the needs of the incoming population.



Design approach

Public art to create interest and vibrancy is included in the public domain.

The use of best-practice accessibility standards (i.e. Universal design or inclusive design) in the provision, and access to, infrastructure, facilities and services is encouraged.

A range of passive and active open space is provided.

The nature and character of each park and open space area is identified.

Open space is designed as a linked network incorporating sporting fields, neighbourhood parks, drainage reserves and landscaped streets/boulevards.

A range of attractive community facilities appropriately located for active and passive recreation is provided.

Plans of Management for open space or recreation areas, proposed to be dedicated to Council are developed.

Future management regimes and costing for all facilities and infrastructure is provided.

Performance Criteria



(B) Landscape Design

Objectives

To ensure that the quality of landscaping is of a high standard and enhances the aesthetic and environmental values of the site.

Establish a landscape design that reinforces the identified natural attributes of the site

To demonstrate best practice landscaping that enhances a distinct sense of place.

To identify a selection of plant species that is suitable to the City of Penrith.

Design approach

Landscape design reinforces the identified natural attributes of the site, such as watercourses, landmark elements, views and vistas, significant trees, historic buildings.

Landscaping demonstrates best-practice that enhances a distinct sense of place.

The selection of plant species is suitable to the Penrith environment.

Use local species and native grasses, which need less water and maintenance than exotic.

The design of public open space incorporates existing vegetation.

Habitat for native wildlife is provided where appropriate.

Performance Criteria

Preparation and delivery of a PDS including **Landscape Masterplan** (refer **Appendix B** for requirements).



Principle 3 : Create Communities

(A) Social Infrastructure

Including community facilities, cultural, educational and recreational facilities and services

Objectives

To identify public infrastructure, community, educational, cultural and recreational facilities requirements for a new release area, including associated costing and delivery timeframes.

To deliver innovative and sustainable infrastructure, services, facilities and networks with adherence to principles of social justice, equity and accessibility.

To design community facilities and public buildings to support opportunities for generational and lifestyle change within a community.

To incorporate the principles of universal design in the provision of and access to infrastructure, facilities and services.

To integrate the planning of new release areas with public infrastructure provision and community service provision

Design approach

Establish the likely population and social profile of future residents

Identify all infrastructure, including civil works, utility services, community, cultural and recreational facilities required to service a new release area.

Educational facilities for primary and high school aged children in the in-coming population are met by existing and/or new schools (public and private).

Co-ordinate the provision of quality educational, health and community facilities to support the new community.

Develop integrated plans that foster social and cultural interaction.

Ensure retail services are established early in the development of new estates.

Innovative and sustainable infrastructure is explored and utilised.

Future management regimes and costing for all facilities and infrastructure is provided.

Design community facilities, public buildings and amenities to incorporate 'adaptable' design principles such as those required within AS 4299-1995 ('Adaptable housing') Class C (minimum) for users of all ages and abilities.

Create vital and vibrant centres of community activity as a hub for social gatherings, retail/commercial and other community facilities/services.

To consider best-practice accessibility standards i.e. Universal Design (or inclusive design) in the provision, and access to, infrastructure, facilities and services.

Develop a framework for the timely provision of social infrastructure which includes up-front, 'base-line' provision, including small-scale retail/convenience store, access to transport/bus services and open space/recreation areas, facilities and meeting places to support a health community (i.e. playgroups, mums groups, youth activities, seniors groups, children services, medical, mail box, telephone) to service the initial population.

Performance Criteria

The formulation and delivery of an **Infrastructure Delivery Plan (IDP)** which identifies the infrastructure, community, cultural and recreational facilities requirements for the new release area. This includes associated costing (including on-going operating and maintenance costs) and delivery timeframes (refer **Appendix C**).

The IDP is endorsed by Council.



Facilities and services are established at the earliest possible time to service the growing needs of the community.

(A) Social Infrastructure (cont)

Objectives

To design for social interactive communities that fosters social and community engagement supported by a pleasant urban environment.

To provide quality places to live and play.



To provide for a range of recreational and leisure opportunities which are accessible and contribute to people's enjoyment of their environment, as well as their health and sense of well-being.

Design approach

The road system and cycleway/pedestrian network links with existing and new infrastructure, public transport services, shopping centres, schools, community facilities and recreational areas.

Provide easy accessibility for walking and cycling.

Design streets and public buildings that provide attractive and quality urban spaces and provide a high level of amenity.

Formal and informal community meeting places are developed to support community development activities. The early delivery of facilities and meeting places to support community development activities is planned for.

The engagement of a community development practitioner(s) to support community development activities is considered.

Provide local parks and recreation facilities ahead of development.

Develop integrated plans that foster social and cultural interaction.

Create informal and formal community meeting spaces to encourage social interaction and connectivity and to support community development activities. Consider opportunities to engage a community development practitioner(s) to support community development activities. The early delivery of these facilities and meeting places should be planned for.

Provide a range of recreational and leisure opportunities for the community and include public art to support place-making and community engagement.

Performance Criteria



Masterplans incorporate designs which optimise community recreation and leisure activities.

(A) Social Infrastructure (cont)



To provide for cost effective and efficient energy supply and service delivery (water, sewer, telecommunications) for development.

Create vital and vibrant centres of community activity as a hub for social gatherings, retail/commercial and other community facilities/services.

Provide disabled access to and within community facilities in accordance with AS 1428 'Design for Access and Disability.'

Provide a road system and cycleway/pedestrian network that links with existing and new infrastructure, public transport services, shopping centres, schools, community facilities and recreational areas.

Co-locate major trip generating land uses. Provide walkways and cycleways that are linked to public transport, schools, sporting facilities, community facilities and recreational areas. Provide easy accessibility for walking and cycling.

Make provision for educational facilities to meet projected demand as determined by the Department of Education.

Provide a range of passive and active recreational opportunities to support the emerging community needs.

Include public art to create interest and vibrancy.

Underground cabling of all utility services including gas, water, electricity and telecommunications (broad-banding capability).

Adequate arrangements are made to ensure that all water, sewerage, electricity, gas services and communication services required to meet the demand of the incoming community are available and provided in a timely manner.

2.83 hectares/1,000 people minimum provision for open space of which 1.21-1.8 hectares/1,000 people is provided for active recreation (eg, Sport fields) and 1.03-1.62 hectares/ 1,000 people is provided for passive recreation.



Adequate services are available to service the developed site to the satisfaction of council and relevant government authorities.

(B) Transport and land use

Objectives

To incorporate State Government metropolitan strategy initiatives for higher densities adjacent to transport infrastructure, services, and facilities.

To provide a hierarchical grid street network providing safe and effective vehicle and pedestrian access.

To establish a walkable estate focused on a village centre and linked to public transport, schools, sporting facilities, community facilities and recreational areas.

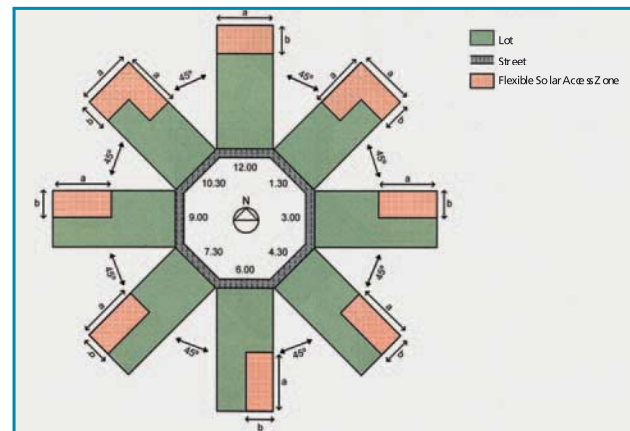
To provide a safe and efficient road network.

Figure 4: Lots with flexible solar access zones
* image courtesy of Stockland and LFA

Design approach

A minimum density of 15 dwellings per hectare. It is recognised that environmental priorities such as riparian corridor setbacks, rural landscape context, environmental heritage items, vegetation and wildlife habitat and corridors may influence the development density achieved.

The lot layout is generally in accordance with "Solar Access for Lots- guidelines for residential subdivision in NSW" prepared by the Sustainable Energy Development Authority (SEDA).



Providing an interconnected and permeable street system, avoiding circuitous roads and cul-de-sacs, but cognisant of topography and site features.

Streets, walkways and cycleways are linked to public open space, sporting facilities, centers, schools, community facilities, shops and public transport services. Accessibility for walking and cycling is a priority. Where relevant proposed networks are integrated with regional walking/cycling networks.

For safety, appropriate traffic calming measures are employed that cater for all pedestrians including older people, children, the mobility challenged and the vision impaired.

Performance criteria

Formulation and delivery of a **Transport Management and Accessibility Plan (TMAP)** in accordance with the requirements set out at (**Appendix D**).

A minimum density of 15 dwellings per hectare is provided.

A legible and permeable layout is created which provides neighbourhood definition whilst avoiding visitor confusion.

The TMAP has been endorsed by Council.

(B) Transport and land use (cont)

To integrate the planning of land use with public transport infrastructure.

To encourage a mix of housing, employment, recreation, services, community facilities in accessible locations.

To create a secure, safe and attractive street environment that encourages people to walk and cycle.

Adopt an integrated approach to the planning of land uses and transportation.

When developing land use patterns and transport links for a new release area consideration should be given to the following, but not limited to:

- Providing a mix of land-uses including residential, recreation, employment, community, retail and business in accessible locations, with higher density development and mixed uses being focused on major public transport routes/stops and centres. Within accessible centres residential and commercial uses are mixed and major trip generators are brought together (co-located).
- Establish local neighbourhood or town centres appropriately. The location of these at the intersection of major streets, can provide for retail exposure and accessibility. Neighbourhood centres are best located close to, but not on, arterial roads. Group community facilities in, or adjacent to Centres.

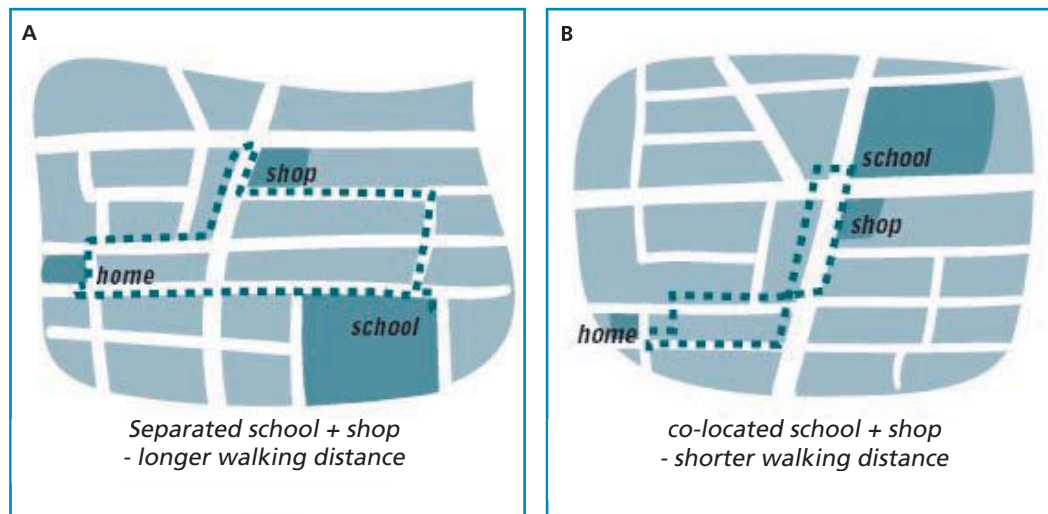


Figure 6(A & B): Co-location in neighbourhood centres.
(Courtesy of DIPNR (2004) *Planning guidelines for walking and cycling*)

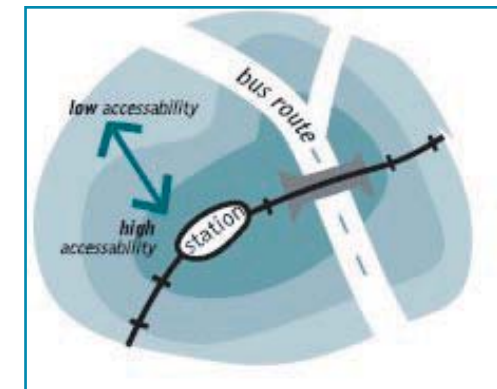


Figure 5: Principles of accessibility zoning
(Courtesy of DIPNR (2004) *Planning guidelines for walking and cycling*)

(B) Transport and land use (cont)

	<p>Neighbourhood employment opportunities such as home offices and tele-working should be encouraged.</p> <ul style="list-style-type: none"> - Active street frontages such as cafes, mixed uses, home based business opportunities - Co-locating activities in special places, creates the opportunity for the multiple use of facilities such as school halls and carparks. The location of primary schools in relation to neighbourhood centers is a major contributor to co-locational advantage enjoyed by these centres. <p>Locating land uses and designing development to encourage the use of sustainable transport such as public transport, walking and cycling. Key land uses (i.e. shops, library, childcare centres, open space, bus/rail links) are located within walking distance of each other.</p>	
<p>To provide a transport system which emphasises, walking, biking and facilitates the use of public transport.</p> <p>To reduce the dependence on cars and promote the use of alternate transport.</p> <p>Improve air quality at the western edge of the Sydney basin whilst reducing greenhouse gas emissions.</p>	<p>Development should aim to have over 95% of dwellings within 400m walking distance of a bus route, and not more than 500m from the nearest or nearest potential bus stop.</p> <p>Visitors and residents are able to choose a variety of routes to a destination.</p> <p>View corridors are created along streets so people can find their way.</p> <p>Footpaths are provided on both sides of every street. The vehicular environment is defined and separated from other uses on the street.</p> <p>Provision of shared pedestrian/cycle paths is encouraged along major travel desire lines, particularly shops and schools.</p> <p>The arterial and major collector road network being designed and engineered to accommodate public transport vehicles, as well as access to public transport stops for pedestrians and cyclists.</p> <p>To make the early provision of bus services feasible within a new release area development should be staged to ensure that the required roads and footpaths are available.</p>	<p>% of dwellings located within 400 m (5 min walk) of a bus stop or centre.</p> <p>Length (ratio) of footpaths and cycleways compared to roadways.</p> <p>Calculated reductions in greenhouse gas emissions through success with the above measures.</p>
<p>To provide for adequate bus transport to service the new community</p>		<p>Success in attracting bus services along the planned bus routes.</p>

(C) Housing type, dwelling mix & building distribution

Objectives

To create diverse communities by providing a range of lot and housing types across a site.

To provide a range of housing which can be adapted over time to meet changing household requirements, such as aging population.

To provide opportunities for density and mix of uses that reduce car dependency and promote efficient land use.

Design approach

Consider the existing and projected demographic profile of the City of Penrith in determining the appropriate type and mix of dwellings to house the new community.

Include a mix of lots sizes and residential types to appeal to range of demographic groups and range of incomes within the community.

Dwelling types respond to likely future community needs.

Adaptable housing designs are encouraged which cater for household change over time.

Provide a mix of land uses and densities that facilitate walking and cycling and reduce car dependency.

Home-based business opportunities are optimised.

Multi-unit housing provides a range of 1 bedroom, 2 bedroom and 3 bedroom dwellings.

Performance Criteria

Dwelling choice, mix and location reflect current and future demographic profiles.

Adaptable housing designs are provided.



(D) Affordable housing

Objective

To provide affordable housing opportunities across the site.



Design approach

A minimum of 3% of all residential allotments to be provided for the purpose of affordable housing.

Alternately, in some instances, a monetary contribution to enable housing units to be constructed elsewhere within the City of Penrith. However, on-site provision is encouraged and preferred.

Performance criteria

At least 3% of residential allotments are provided for the purpose of affordable housing.

Alternately, an appropriate monetary contribution to provide affordable housing units elsewhere within the City of Penrith is provided.

Principle 4 : Create Employment

(A) Employment

Objectives

To ensure new jobs are created (both on and off-site) which match the number of incoming resident workforce participants as the community grows.

To encourage a broad range of employment generating uses that promote the economic and employment growth of the City of Penrith.

To optimise the economic and employment potential of the land.

To provide for infrastructure that supports a variety of business activities; and addresses best practices of environmental management

Design approach

Respond to site location and public transport infrastructure in relation to generating employment options,

Provide sufficient employment generating development that balances the timing and supply of housing. Ensure that employment related land is provided.

Encourage a broad range of employment generating uses that promote the economic and employment growth of the City of Penrith.

Consider and quantify employment generating development(s) both onsite or nearby,

Develop niche employment opportunities as well as encouraging home-based businesses,

Allow for larger lots along major roads that may be suitable for home industries.



Performance Criteria

Formulation of an **Employment Development Strategy (EDS)**, which delivers jobs, both on and off-site, that at least matches the incoming workforce participant numbers within the new community (refer **Appendix E**).

The EDS is endorsed by Council.

(B) Telecommunication facilities and networks

Objective

To provide for advanced telecommunication systems necessary to establish and support employment activities

Design approach

Modern telecommunication infrastructure and services are fundamental to the effective operation of business, home business and residential dwellings.

Telecommunication infrastructure in new release areas should provide the following:

- Multiple telecom services including high speed internet (including broadband), voice and data systems.
- Cabling from all telephone lines, cable TV, internet is built into all buildings from the outset.
- Telecommunications infrastructure is located underground.
- Consider centralised (C.A.T.V) system is provided rather than individual antennae or dishes.

Performance Criteria

Demonstrate appropriate provision of telecommunication infrastructure throughout the development.

Telecommunication infrastructure is predominantly below ground.

Principle 5 : Save Water

(A) Water Sensitive Urban Design

Objectives

To establish an integrated sustainable water and stormwater system addressing, consumption, treatment and re-use opportunities.

To ensure appropriate studies are carried out and measures identified to manage site constraints and hazards, having regard to legislative requirements, public health and safety

To develop innovative approaches that reduce on-going maintenance costs.

To minimise any detrimental environmental impacts which may arise from future development.

To protect and where possible improve the water quality of the Nepean-Hawkesbury River, South Creek and their tributaries by removing water-borne pollutants prior to discharge into receiving waters.



Design approach

An integrated approach for water cycle management in a new release area needs to be demonstrated. This includes, where required, measures to manage:

- drainage/stormwater;
- wastewater treatment and reuse;
- water quality control (stormwater and water);
- slope stability, soil erosion and sedimentation;
- flood risk management;
- open space provision; and
- ecological protection issues.
- sewerage;
- groundwater;
- salinity;
- acid sulphate soils;
- contaminated land;

World best practice water sensitive design is embraced ensuring water is retained and reused.

Innovate solutions to managing stormwater, over the longer term, should be explored and implemented. This also includes the option for community title schemes for on-going maintenance.

Water quality targets based on EPA best practice guidelines 'Managing Urban Stormwater' is followed.



Performance Criteria

Formulation and delivery of a **Water Sensitive Urban Design (WSUD) Strategy** including appropriate maintenance and future management regimes for all infrastructure/ stormwater source controls (refer **Appendix F**).

The WSUD Strategy conforms to statutory, Council and EPA requirements and demonstrates industry best practice.

Storm discharge or run-off from a site, post development, does not exceed that of pre-development levels for the 1.5 year ARI event



*1st three images courtesy of www.wsud.org

(A) Water Sensitive Urban Design (cont)

Objectives

To develop a drainage / stormwater management system that protects and enhances natural ecological attributes, and provide for appropriate recreational, educational and amenity opportunities.

To minimise wastage and reduce demand for potable water, by promoting more efficient use of water.

To minimise the dependency on water mains and water supply by installing a system to store water, including rain water tanks and water efficient fittings and appliances.

Design approach

Site planning and the design of the major drainage system should take into account:

- the space and functional requirements of stormwater mitigation measures such as retention basins and artificial wetlands;
- the retention, and where practical, restoration of natural watercourses, native riparian vegetation, wetlands, other natural features, existing native vegetation, including understorey.
- Recreational opportunities associated with multiple use drainage systems, including waterway corridors forming the spine of the open space and habitat corridor system.
- Retain the natural alignment and profile of watercourses.

Buildings are designed to conserve water in accordance with State Environmental Planning Policy 65 (Building Sustainability Index: BASIX) 2004.

Demonstrate provision of opportunities to reduce the demand for potable supplies through conservation measures including recycling and reuse of treated waste waters. Opportunities include:

- Using non-potable sources (i.e. rainwater harvesting, treated grey water etc) to supply water demand for public open space irrigation.
- Practical re-use of treated effluent from Sydney Water's STPs.
- Adopt appropriate water-wise landscape practices (resident education, native gardens etc).
- Other sustainable technologies to minimise dependency on water mains and water supply are encouraged.

Performance Criteria

WSUD measures are made explicit in planning and design.

WSUD measures are utilised for their ecological, recreational, educational and amenity opportunities.

BASIX approvals for individual dwellings are facilitated through effective water-sensitive planning and design.



Principle 6 : Save Energy and Greenhouse Gases

(A) Energy Efficiency

Objectives

To provide development that contributes to the sustainability of Penrith as a City.

To reduce greenhouse gas emissions.

To increase the thermal performance of buildings.

To improve dwelling liveability.

To achieve a high level of thermal comfort within buildings, and minimise energy required for construction, heating, lighting and cooling.

To incorporate innovative technologies that reduce on-going maintenance costs.

Design approach

Buildings are designed for energy efficiency and greenhouse gas reduction in accordance with State Environmental Planning Policy 65 (Building Sustainability Index: BASIX) 2004.

Building design (residential, industrial, commercial or community) demonstrates an appropriate response to local climate, the site and its context.

'Passive solar' and 'passive ventilation' is incorporated in the design of buildings (residential, industrial, commercial or community) to minimise reliance on electrical and mechanical systems.

Demonstrate an integrated package of measures to planning and design, construction and building services, which reduces the energy consumed by conventionally planned and constructed buildings. This includes residential, industrial, commercial and community buildings.

Consideration should be given to, but not limited to the following:

- Use of renewable energy sources such as solar or heat pump hot water systems;
- Use of efficient gas appliances;
- Use of renewable and recyclable building materials rather than non-renewable;
- Insulating roof and wall systems to comply with the relevant Australian Standards and Guidelines.
- The use of sustainable energy technologies such as photovoltaic cells, gas - turbines, co-generation, micro gas turbines, and/or wind power in appropriate locations/applications.

Lighting

Maximise the use of natural light to internal spaces through window type and location, highlights, and where appropriate, insulated roof windows.

Use of energy efficient (low energy demand) lamps, fittings and switches. For multi-unit housing light switches in common areas are time switched and motion detectors are used for unit entries, lobbies and outdoor security.

Performance Criteria

BASIX approvals for individual dwellings are facilitated through effective planning and design.

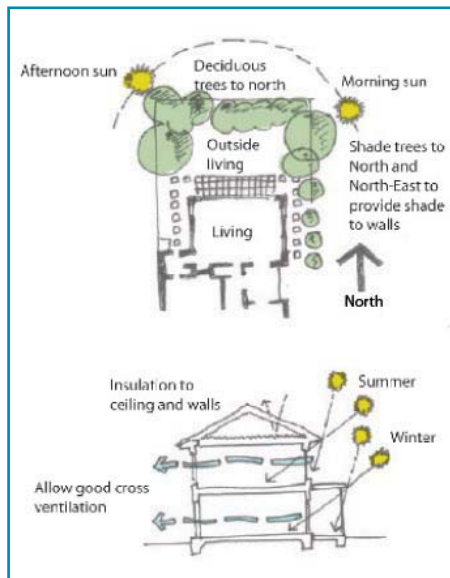


Figure 7: Sun and airflow diagrams
(Courtesy of Stockland and LFA)

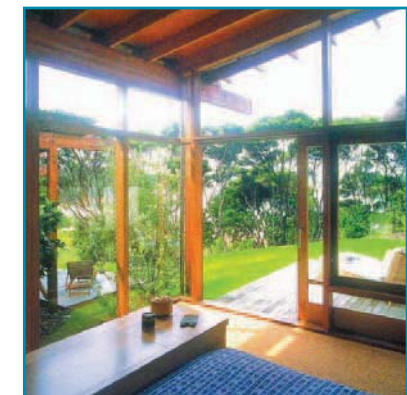


Figure 8: Connect indoor and outdoors
(Courtesy of Stockland and LFA)

(A) Energy Efficiency (cont)



Figure 9: Protection from the elements with eaves and pergolas.
(Courtesy of Stockland and LFA)

Design approach

Solar access

Dwellings should be sited in accordance with energy smart lot design principles such as "Solar Access for Lots- guidelines for residential subdivision in NSW" prepared by the Sustainable Energy Development Authority (SEDA).

Maximise solar access to principal living areas and private open space areas in mid winter, in accordance with Council's Residential DCP. Maximise north facing windows for living areas.

For multi-unit developments 65% of dwellings should receive at least three hours of sunlight to their principal living room at mid-winter.

Minimise the number and size of east and west facing windows, due to the hot, low summer sun. Provide suitable external shading devices, which are integrated into the overall elevation design.

Shade protection of windows by appropriately sized eaves, hoods or pergolas is required.

Landscaping

The use of low water demand plants for landscaping is required.

Utilise landscaping that provides shade in summer and allows sunlight in winter to windows, solar collectors, drying areas etc.

Minimum landscaped area of lots 350m² or greater is to be 50% (excluding paved areas, driveways, parking areas, swimming pools etc).

For lots >350m² the landscaped area is to be a minimum of 40%.

Ventilation

Promote natural cross ventilation of dwellings by considering building orientation, window design, internal circulation, and space between buildings.

Ventilate all roof spaces.

Consider window types (e.g. glass louvers) to control ventilation.

Air conditioners are generally not encouraged.

Performance Criteria

Most dwellings can be orientated to receive at least three hours of sunlight to living areas in mid-winter.

BASIX certificate illustrates better practice.

The amount and ratio of local native vegetation compared to lawns or water-succulent landscaping is to be stated.

The Landscape Masterplan is consistent with Council's Landscape Development Control Plan and has been endorsed by Council.

The provision and effectiveness of passive (cross) ventilation will be considered.



Figure 10: Landscape treatment of front setback/fence integrated with dwellings.

Principle 7 : Maximise Liveability & Longevity

(A) Urban Design

Objectives

To provide a high quality and standard of housing and development on the site.



Figure 11: Example of corner articulation.

Design approach

Provide a range of building types across the site that can be adapted over time to meet the changing needs of the population (e.g. ageing).

Building design should respond to the particular site's context, topography, setting, views etc.

Articulation of building forms and facades, particularly those parts of a dwelling visible from a public place. This can be achieved by varying setbacks, the choice of materials and finishes, fenestration, incorporating building elements such as balconies, verandahs and sun control devices, avoiding long blank walls, defining dwelling entries with porticos or blade walls.

Dwellings on corner sites are to be given design emphasis and are encouraged to have feature elements to both streets. Dual occupancy can be better managed on corner sites.

Living rooms and entrances should face the street to provide an address and passive surveillance.

Front, side and rear setbacks should recognise the configuration of proposed and existing buildings, gardens and private open spaces on neighbouring allotments.

Direct overlooking of main internal living areas and/or private open space of other dwellings is to be avoided. In this regard, the location of balconies and window openings should be considered carefully.

Garages are integrated with the main dwelling and should not dominate the streetscape. Consider use of rear laneways and occupancy of above garages.

(A) Urban Design

Useable private open space is to be provided at ground levels as a garden or courtyard or balconies to above- ground level units.

A high quality of materials and finishes with high durability is expected.

Roof forms are simple rather than complex, and are considered in their context.

The design explores a more open street character by utilising landscaping to achieve definition rather than traditional/standard timber or masonry fences.

Maximise the potential for active street frontages. Active street frontages such as cafes, mixed uses, home-based business, particularly around centres allow for greater surveillance of the public domain.

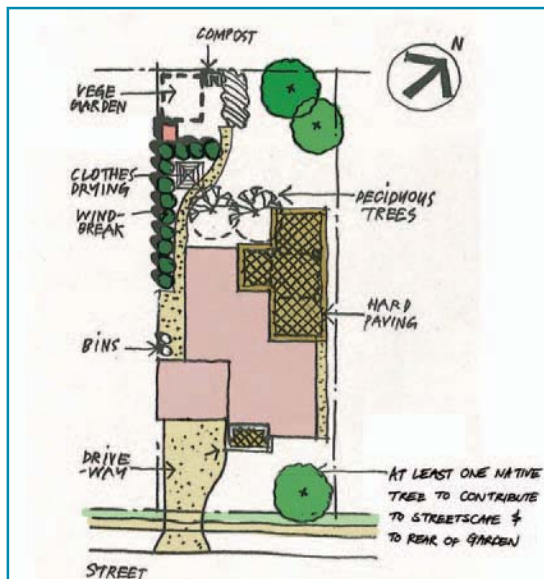


Figure 12: Understanding your site and its orientation, outdoor functions and living spaces.

(*image Courtesy of Stockland and LFA)



Design approach

Documents for reference prepared by the Department of Urban Affairs and Planning Urban Design Advisory Service include:

- Neighbourhood Character – An Urban Design Approach to Identifying Neighbourhood Character (1998);
- Urban Form – An Urban Design Approach for Understanding the Urban Form of Regional Centres (1998);
- Residential densities – A Handbook Illustrating the Urban Design Characteristics of Different Densities (1998); and
- Residential Subdivisions ' A Handbook for the Design and Planning of New Neighbourhoods (2000).

(B) Accessible & Adaptable housing

Objective

To ensure that dwellings are accessible and capable of being adapted to accommodate people of all ages and abilities.

Design approach

Dwellings are designed to incorporate 'adaptable' design principles in accordance with AS 4299-1995 'Adaptable housing' for users of all ages and abilities.

A minimum of 5% of multi-unit dwellings are accessible to at least 'Class C' of AS 4299-1995 'Adaptable housing'.

Design for adaptability and accessibility to accommodate people of all ages and abilities, recognising that needs change over time.

Specify suitably durable materials even if initial cost is a little more.

Design for easy maintenance and replacement.

Allocate sufficient funds for ongoing maintenance and improvement.

Performance Criteria

Dwellings are designed in accordance with AS 4299-1995 'Adaptable housing'.

The % of dwellings capable of being adapted as defined by AS 4299-1995 'Adaptable housing'

The percentage of multi-unit housing forms that are adaptable to Class A, Class B or Class C.

Principle 8 : Reduce Resource Consumption

(A) Resource Consumption

Objectives

To promote quality development whilst minimizing resource use (consumption) through efficient and resourceful planning, design, construction and operation.

To provide appropriate 'design – life' for all aspects of the development – typically, 5, 15 and 50 years (minimum).

Design approach

Design for sufficiency rather than excess.

Avoid or reduce the dependence on non-renewable resources (eg. oil, petrol).

Increase resource efficiency through recovered, reused and recycled materials.

Specify materials with low embodied energy (the energy used to extract, manufacture and transport the material).

Specify healthy materials with low toxicity to living things.

Consider material/component life-cycles and appropriate design-life (including durability and maintenance).

Performance Criteria

Demonstrated selection of environmentally preferred materials ('Eco-materials') through reference to Ecospecifier selections.

Demonstrated response to 'design-life' through stipulating the intended time that infrastructure, buildings and landscape are expected to fulfill their intended function(s).

Principle 9 : Minimise Waste

(A) Waste Management

Objectives

To promote and facilitate efficient, effective and sustainable waste management practices

Design approach

Waste Management Strategies are consistent with Council's Waste Planning DCP.
Plan, design and construct for waste minimisation,
Establish (and use) collection and recycling opportunities in the region.
Make each trade /contractor responsible for removing their own wastes.
Market your resource-efficient design construction.

Performance Criteria

A **Waste Management Plan** acceptable to Council is submitted and followed throughout the development.
Every opportunity is used and demonstrated to avoid, reduce, re-use and recycle materials – rather than remove them to landfill.



Principle 10 : Built-in Community Safety & Crime Prevention Measures

(A) Crime Prevention & Community Safety

Objectives

To create vibrant and liveable neighbourhood and public domain, which creates a feeling of safety and well being for the community.

To integrate planning and development of the built form, public domain, parks, infrastructure, and access to services and community facilities.

To create a physical environment that encourages a feeling of safety.

Design approach

Active street frontages such as cafes, mixed uses, home-based business, particularly around centres allow for greater surveillance of the public domain.

Parks and open space corridors should be bounded by public street and fronted by houses, rather than being lined with back fences to allow for passive surveillance.

Surveillance through clear sight lines between public and private places is provided.

Effective lighting of public places and attractive landscaping that avoids hidden areas. Appropriate lighting should be provided along footpaths.

Controlled access through physical and symbolic barriers that clearly defines public and private realms, without creating compounds.

Design attractive areas of public space that encourages people to gather. Well-used places may reduce opportunities for crime and increase risk to criminals.

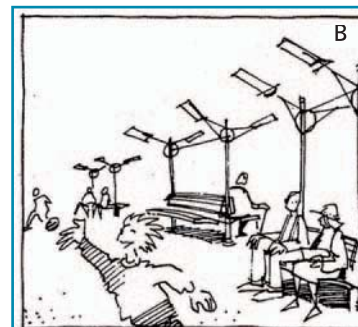
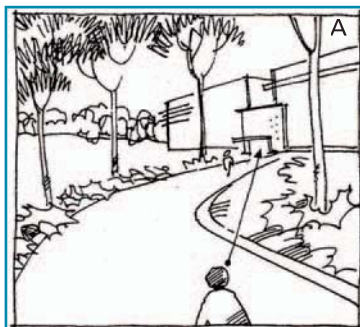
Performance Criteria

Formulation and delivery of a **Community Safety and Crime Prevention (CSCP) Strategy** which incorporates the principles of Crime Prevention Through Environmental Design (refer **Appendix G**).

The proposal is consistent with Council's DCP on CPTED and is endorsed by Council



- A: Clear sight lines
- B: Seating in active areas
- C: Fencing design that promotes natural surveillance
- D: Dwellings addressing the street



Appendix A: Flora and Fauna Strategy

Penrith is distinguished by its natural setting, the finest in Western Sydney. Its western edge is defined by the flow of the Nepean River and rise of the Blue Mountains. The river flows through the tranquil Nepean gorge, once of the most spectacular sights in Australia. Areas of bushland with rural and historical landscapes abound, adding to its character.

A **Flora and Fauna Strategy** is required to be submitted for all new release areas, which have significant, vulnerable and/or threatened ecological communities on the site. To determine the significance of ecological communities on a site, as part of planning investigations, a survey of flora and fauna located on the site should be undertaken, as well as an assessment of its significance, in accordance with Local Government, State and Federal Legislation.

The Flora and Fauna Strategy should:

- Include a tree survey of the study area identifying the location and significance of stands of trees and vegetation.
- Include a fauna survey identifying the location and significance of any rare and/or endangered species as well as those of local concern.
- Assess the significance of any ecological communities, flora and fauna located on a site or potentially affected by site development.
- Provide a plan and statement demonstrating how significant trees and vegetation are to be retained. This includes significant vegetation or trees located within developable areas, as well as public areas, and areas of significant fauna habitat.
- Provide for the protection of vegetation areas along creek lines. Where practical, restoration of natural watercourses, native riparian vegetation, wetlands and other natural features should be included.
- Demonstrate how identified significant fauna and/or their habitat will be conserved.
- Demonstrate that the natural alignment and profile of watercourse has been protected.
- Provide for the retention and restoration of existing native vegetation (including understorey) as part of the open space network.
- Where possible provide vegetated links between isolated native remnant vegetation for wildlife corridors.
- Determine the width of corridors with reference to biodiversity and flood hazard criteria.
- Develop, in collaboration with Council, a Plan of Management

Appendix B: Public Domain Strategy

Council aims to establish a high quality and vibrant urban environment, creating a high level of amenity, convenient access to facilities and services, and a feeling of safety and well being for the community. The PDS should explore opportunities for the delivery of innovative and sustainable infrastructure, services, facilities and networks with adherence to the principles of social justice, equity and accessibility. The type and character of vegetation is one of the key influences in determining the quality and character of the environment created. Vegetation, and in particular native trees, adds to the aesthetic and environmental values of a site and acts as a natural screen against the direct rays of the sun, dust, falling air pollution, wind and noise. Trees take up carbon dioxide from the air and return life-giving oxygen. A treed environment is an attractive and a desirable place to be.

The preparation and submission of a **Public Domain Strategy (PDS)** and **Landscape Masterplan** is required for all new release areas. The PDS is required to establish the 'look' and 'character' of the public domain, which is an integral part of how a community perceives its environment. Importantly, the PDS will also establish the appropriate maintenance and future management regimes for all facilities and infrastructure comprised in the public domain.

The PDS is to incorporate design and management requirements for all streets, open spaces and parks and include aims/objectives, design and character statements, a schedule of works, delivery timeframes and the maintenance requirements for each element.

Specifically, the PDS should:

- Identify street types, design and widths, including pedestrian pathways and cycleways.
- Provide details on street planting including species selection and location.
- Identify the size, character and nature (passive, active, conservation) of each park and open space area. This may include natural areas such as remnant bushland, riparian corridors, wetlands and/or areas of significant habitat set aside for conservation.
- Provide a schedule of tree species and vegetation – existing and proposed.
- Detail the quality, type, number and standard of any seat/benches, picnic tables, bins, signage, shelter, bicycle storage facilities, bus shelters, amenities, street lighting, including poles and fittings, and paving treatment.
- Include public art to create interest and vibrancy.
- Provide facilities that are accessible and designed to incorporate 'adaptable design principles' such as required within AS 4299 1995- Level C ('Adaptable housing') of all ages and abilities. The use of best-practice accessibility standards (i.e. Universal Design or inclusive design) in the provision, and access to, infrastructure, facilities and services is encouraged.
- Provide a detailed maintenance regime and works schedule required for the effective ongoing management, maintenance and operation of the above elements.
- Develop Plans of Management for open space or recreation areas, which are proposed to be dedicated to Council as public assets. Costs schedules for on-going maintenance requirements need to be included.

The Landscape Masterplan should:

- recognise identified natural attributes of the site and reinforce the natural setting and landscape of Penrith;
- demonstrate best practice landscaping that enhances a distinct sense of place;
- provide a high quality public domain, which affords the community with a high level of amenity and sense of place;
- create attractive streetscapes, which retain and enhance significant views and vistas, landmark elements and landscape features;
- include streets, walkways and cycleways that are linked to public open space, sporting facilities, schools, community facilities, shops and public transport services;
- utilise landscaping that is of a high standard and enhances the aesthetic and environmental values of the site;
- incorporate existing vegetation within the design of public open space on the site;
- incorporate a selection of plant species that is suitable to the City of Penrith;
- use plant species derived from local seed-stock to preserve genetic diversity; and
- utilise native grasses rather than water-thirsty, exotic lawns.

Council has a city-wide Landscape DCP and Approved Landscape Consultants Register to assist in identifying plant species suitable for use in the City and to ensure the quality of landscaping implemented with development is of a high standard.

Appendix C: Infrastructure Delivery Plan

Council has a long-term goal of delivering quality assets that meet the needs of the community in a sustainable manner. The preparation and submission of an **Infrastructure Delivery Plan (IDP)** is required for all new release areas. The IDP is required to identify all infrastructure, including civil works, utility services, community, social, cultural and recreational facilities to service a new release area and establish a framework for its timely provision. The IDP should include associated costing (including on-going operating and maintenance costs) and estimated delivery timeframes for all infrastructure, with a commitment to up front service provision required early in the life of new estates. Where possible, the IDP should demonstrate efficient use and/or extension of existing infrastructure. The IDP should explore opportunities for the delivery of innovative and sustainable infrastructure, services, facilities and networks with adherence to the principles of social justice, equity and accessibility.

The IDP will provide an accurate costing for all infrastructure to be provided and delivery program with key pre-planning design and construction phases identified. It shall also incorporate relevant apportionment of costs where it is agreed those will be shared with other providers. The IDP will form the basis for the development of Section 94 Contributions Plans and/or Development Agreements, as well as agreements required to be entered into with the State Government and its agencies for the delivery of regional based facilities.

The following infrastructure and services are to be identified and provided for all new release areas:

- Identify the likely population and social profile of future residents.
- A safe, efficient, and effective road system and cycleway/pedestrian network which links with existing and new infrastructure, public transport services, shopping centres, community facilities and recreation areas.
- Public transport networks and systems which deliver effective access to major destinations and other transport mode connections. A **Transport Management Accessibility Plan (TMAP)** will be required to identify public transport systems improvements generated by new release areas.
- Underground routing of all utility services including gas, water, sewer, electricity and telecommunications (including broad-banding capability).
- Planned development of infrastructure that meets local energy, water and sewer authority standards.
- Modern telecommunication infrastructure with the capacity to support multiple telecommunications services, such as high-speed internet (including broad band), voice and data systems, and community intranets. Shared service corridors should have capacity to accommodate technology advancements and any increases in demand.
- Community, social, cultural, educational and recreational facilities to service the new community.
- Identify community, cultural and recreational facilities and services required to meet the needs of the incoming population, estimated costs of these facilities and time frame for delivery (eg, relationship to housing production).
- Develop strategies for the up-front provision of a base-line level of services and facilities to service the initial population. This includes a framework for the timely provision of social infrastructure including small-scale retail/convenience store, access to transport/ bus services and open space/recreation areas, facilities and meeting places to support a health community (eg, playgroups, mums groups, youth activities, seniors group, children services, medical, mail box, telephone) to service the initial population.
- Accurate costings for all infrastructure are to be provided and a delivery program with key pre-planning design and construction phases identified. It shall also incorporate relevant apportionment of costs where it is agreed those will be shared with other providers.
- Identify and cost all necessary maintenance requirements for infrastructure assets proposed to be transferred to Council for ownership and ongoing care including future replacement costs where necessary.
- Identify the interim management and maintenance arrangements for infrastructure assets which will be retained in the short term by the developer pending transfer to Council.
- Develop Plans of Management consistent with the requirements of the Local Government Act for all open space areas proposed to be transferred to Council.

Appendix D: Transport Management and Accessibility Plan

The delivery of an efficient and safe transport system for all travel modes is central in delivering sustainable urban release outcomes. This involves maximising opportunities for public transport through an efficient road layout that supports bus routes, cycleways and pedestrian paths that link to existing or planned community, recreational and business services and facilities. In other words, integrating the planning land uses with public transport infrastructure.

A Transport Management and Accessibility Plan (TMAP) is required to be submitted for all new release areas. The TMAP should:

- Integrate the planning of land use with public transport infrastructure.
- Incorporate State Government metropolitan strategy initiatives for higher densities adjacent to transport infrastructure, services, and facilities.
- A minimum density of 15 dwellings per hectare is required. Note that higher densities support a transport system which encourages public transport, biking and walking. (It is recognised that environmental priorities such as riparian corridor setbacks, rural landscape context, environmental heritage items, vegetation and wildlife habitat and corridors may influence the development density achieved).
- Provide an arterial and major collector road network designed and engineered to accommodate public transport vehicles
- Provide a safe, efficient and effective vehicular traffic system, which does not adversely affect traffic flows on existing roads.
- Provide a hierarchical and interconnected street network 'grid' that provides safe, effective and legible, vehicle and pedestrian access. Circuitous roads and cul-de-sacs should be avoided.
- Provide appropriate traffic calming measures to cater for pedestrians, including older people, children and the mobility and vision impaired.
- Emphasise a walkable estate focused on a village centre and linked to public transport, schools, sporting facilities, community facilities and recreational areas. Development should aim to have 95% of dwellings within walking distance of a bus route and not more than 400m from the nearest or nearest potential bus stop.
- Provide footpaths on every street. Provide cycleways where appropriate connection can be made to adjacent or future links.
- Provide vistas to identified landmarks and public transport to assist legibility, based on open space, shops, schools, community facilities, recreational facilities and other local landmarks.
- Provide a mix of housing, employment, recreation, services, and community facilities in accessible locations.
- Explore and report upon neighbourhood employment opportunities such as home offices and teleworking.
- Explore opportunities to bring bus services in as early as possible into new estates as they grow.
- Contribute to the improvement of air quality at the western edge of the Sydney basin through minimising car dependency and maximising walking, bicycles and public transport opportunities.

Appendix E: Employment Development Strategy

Penrith is recognised as a major economic, social and administrative centre within metropolitan Sydney. Council is determined to lead and facilitate strong and sustainable local economic development and lead in making the City an effective competitor for employment generating investment. Council has a long-term goal for the supply of jobs to match both demand and skills of the City's workforce and increase the local job-to-workforce ratio. Council's strategic position on managing urban growth includes requiring new job creation to match incoming resident workforce participant numbers. Council has adopted a policy for self-sufficiency for new urban release areas, where the delivery of jobs, both on and off-site, should at least match the incoming workforce participants expected in the new community.

An **Employment Development Strategy (EDS)** that builds on the strength of the sites' location is required to be submitted and implemented as part of planning for all new release areas. An EDS:

- defines the land to which the employment development strategy relates (the site), and
- establishes objectives for employment and business development, particularly encouraging high employment generating uses on the site, and
- examines current demographic and labour force trends to identify employment requirements that will be generated by the development of the site, and
- identifies proposed employment generating land uses, and
- provides clear measures that can be implemented to deliver jobs, both on and off-site, that at least match the incoming workforce participants expected in the new community, and
- articulates the staged delivery of jobs to match housing and population, and
- outlines the opportunities and constraints of the site for achieving the employment objectives such as location, accessibility, exposure, and land with competing employment opportunities,
- outlines the strategies for achieving the objectives relating to employment and business development, such as marketing and support services, and
- provides appropriately for home business or home occupation employment opportunities, and
- provides mechanisms for monitoring and review of job delivery performance.

Appendix F: Water Sensitive Urban Design Strategy

Water Sensitive Urban Design (WSUD) principles involve reducing water input, water output, water demand, and maintaining the natural water cycle balance. Integrated water cycle management includes initiatives for water conservation, pollution control and mitigation in response to increased urbanisation and increased development. Council's Strategic and Management Plans recognise the importance of the Hawkesbury/Nepean River system and its contribution to the region as an important ecological, hydrological and recreational resource. Encroaching urban and rural development is continually placing increasing pressures on this system. A long term goal of these Plans is to secure an ecologically sustainable environment in Penrith. The conservation and rehabilitation of natural areas as well as the development and implementation of water conservation strategies can positively contribute to achieving this.

A WSUD Strategy is required to be submitted for all new release areas. The WSUD Strategy is to include aims/objectives, a maintenance schedule for stormwater source controls, delivery timeframes, on-going maintenance costs, and a monitoring program. Storm discharge or run-off from a site, post development, must not exceed that of pre-development levels for the 1.5 year ARI event.

Specifically the WSUD Strategy should provide a development strategy and infrastructure program that integrates:

- water supply, sewerage, and drainage,
- wastewater treatment and reuse, including practical reuse of treated effluent from Sydney Water's STPs.
- water quality control,
- flood risk management,
- open space provision, and
- ecological protection issues,
- includes a concept stormwater/drainage plan,
- Provide appropriate stormwater attenuation measures. These may include, but should not be limited to, sand/gravel filter/grease arrester, grassed swales, vegetated filter strip. The design of stormwater quality treatment devices is to comply with Council's technical requirements for performance and maintenance. Similarly litter control structures should comply with Council's technical requirements for performance and maintenance.
- Develop innovative solutions to reduce on-going maintenance costs. This includes options for community title schemes.
- Design detention, retention and pollution control structures to avoid aesthetic and ecological impacts on stream corridors.
- Identify ways to minimise the dependency on water mains water supply. This includes, but should not be limited to, installing a system to store water (rain water tanks), using water efficient fittings and appliances.

- Identify ways to minimise wastage and reduce demand for potable water and promoting more efficient use of water, through conservation measures including recycling and reuse of treated waste waters. For example:
 - Using non-potable sources (i.e. rainwater harvesting, treated grey water etc) to supply water demand for public open space irrigation.
 - Adopting appropriate water wise landscape practices (resident education, native gardens etc.).
 - Proposing measures to manage site constraints and hazards such as flooding, slope stability, erosion, salinity, acid sulphate soils, and land contamination.
 - Proposing measures to manage water quality, flooding, stream flow, groundwater, soil salinity and water consumption.
 - Encouraging and providing for the design of street systems, which do not necessitate large-scale earth moving, or modification of natural lanforms.

The structure and configuration of urban development should respond and contribute positively to the hydrological and ecological functions of natural watercourses, floodplains, wetlands and native vegetation.

Site planning and the design of the major drainage system should:

- Take into account the space and functional requirements of stormwater mitigation measures such as retention basins and artificial wetlands.
- Provide for the retention, and where practical, restoration of natural watercourses, native riparian vegetation, wetlands and other natural features.
- Retain the natural alignment and profile of watercourses.
- Incorporate waterway corridors as the spine of the open space and habitat corridor system
- Provide for the retention and restoration of existing native vegetation (including understorey) as part of the open space network
- Where possible provide vegetated links between isolated native remnant vegetation to provide habitat corridors.
- Determine the width of corridors with reference to biodiversity and flood hazard criteria.
- Consider recreational opportunities associated with multiple use drainage systems.

Where the land is identified as being flood liable, development is to conform to the NSW Government Department of Infrastructure, Planning and Natural Resources Floodplain Management Manual. All development under this Manual is deemed to be flood liable where such land lies below the level of the Probable Maximum Flood (PMF).

Appendix G: Community Safety and Crime Prevention Strategy

Council has a long-term goal of providing a safer community both real and perceived and has a City-wide Community Safety Plan, supported by the community, in place. The principles of **crime prevention through environmental design (CPTED)** can be addressed in the consideration of surveillance, access, carparking, landscaping, fencing, open space, footpaths, bicycle paths, lighting, building design, bus stops and taxi ramps, public toilets and underpasses in initial planning for a release area. Incorporating the principles of CPTED in the development of a site can enhance and improve community safety within the City of Penrith by creating a physical environment that encourages a feeling of safety. This can also assist to minimise the incidence of crime and prevent the opportunity for criminal activity.

The submission and implementation of a Community Safety and Crime Prevention Strategy is required for all new release areas. Council's adopted Development Control Plan should guide the preparation of the Strategy for CPTED (2003).

The Strategy should clearly identify how the principles of CPTED will be employed in the planning, design and development of the site, particularly in terms of:

(i) Surveillance

Providing opportunities for effective surveillance, both natural and technical, can reduce the attractiveness of crime targets. Good surveillance means that people can see what others are doing. People feel safe in public areas when they can easily see and interact with others.

Would be offenders are often deterred from committing crime in areas with high levels of surveillance. From a design perspective, 'deterrence' can be achieved by:

- clear sightlines between public and private places,
- effective lighting of public places,
- landscaping that makes places attractive, but does not provide offenders with a place to hide or entrap victims.

(ii) Access control

Physical and symbolic barriers can be used to attract, channel or restrict the movement of people. They minimise opportunities for crime and increase the effort required to commit crime. By making it clear where people are permitted to go or not go, it becomes difficult for potential offenders to reach and victimise people and their property. Illegible boundary markers and confusing spatial definition make it easy for criminals to make excuses for being in restricted areas. However, care needs to be taken to ensure that the barriers are not tall or hostile as to create the effect of a compound. Effective access control can be achieved by creating:

- landscapes and physical locations that channel and group pedestrians into target areas,
- public spaces which attract, rather than discourage people from gathering, restricted access to internal areas or high-risk areas (like carparks or other rarely visited areas). This is often achieved through the use of physical barriers.

(iii) Territorial reinforcement

Community ownership of public space sends positive signals. People often feel comfortable in, and are more likely to visit, places which feel owned and cared for. Well-used places also reduce opportunities for crime and increase risk to criminals. If people feel that they have some ownership of public space, they are more likely to gather and to enjoy that space. Community ownership also increases the likelihood that people who witness crime will respond by quickly reporting it or by attempting to prevent it. Territorial reinforcement can be achieved through:

- design that encourages people to gather in public space and to feel some responsibility for its use and condition
- design with clear transitions and boundaries between public and private space
- clear design cues on who is to use space and what it is to be used for. Care is needed to ensure that territorial reinforcement is not achieved by making public spaces private spaces, through gates and enclosures.

(iv) Space management

Popular public space is often attractive, well maintained and well used space. Linked to the principle of territorial reinforcement, space management ensures that space is appropriately utilised and well cared for. Space management strategies include activity coordination, site cleanliness, rapid repair of vandalism and graffiti, the replacement of burned out pedestrian and car park lighting and the removal or refurbishment of decayed physical elements.

References

- a. Department of Infrastructure, Planning and Natural Resources ~ Sustainability Criteria for Metropolitan Strategy, Sydney.
- b. NSW Government Department of Infrastructure, Planning and Natural Resources Floodplain Management Manual (April 2005).
- c. Documents for reference prepared by the Department of Urban Affairs and Planning Urban Design Advisory Service include:
 - Neighbourhood Character – An Urban Design Approach to Identifying Neighbourhood Character (1998);
 - Urban Form – An Urban Design Approach for Understanding the Urban Form of Regional Centres (1998);
 - Residential densities – A Handbook Illustrating the Urban Design Characteristics of Different Densities (1998); and
 - Residential Subdivisions ' A Handbook for the Design and Planning of New Neighbourhoods (2000).
- d. Solar Access for Lots – Guidelines for Residential Subdivision in NSW, Sustainable Energy Development Authority (SEDA)
- e. Best Practice Guidelines for Greener Subdivisions Western Sydney, Stormwater Trust (March 2002)
- f. Water Sensitive Resource Kit for the Sydney Region, WSROC/Upper Parramatta River Catchment Trust/Stormwater Trust (November 2003)
- g. The Recreation and Sport Planning Design – A Guidelines Manual, Jim Daley (1995)
- h. Penrith City Council documents available for viewing on our website: www.penrithcity.nsw.gov.au
 - Strategic Plan
 - Sustainability Action Plan for Penrith
 - People's Lifestyle Aspirations and Needs Study (PLANS) Strategy Report (March 2004)
 - Recreational and Cultural Strategy
 - Employment Lands Study (2004)
 - Penrith Heritage Study (1987)
 - Penrith Local Environmental Plan 1991 (Heritage Conservation)
 - Heritage Management Development Control Plan (December 2002)
 - Landscape Development Control Plan (May 2002)
 - Biodiversity Strategy (2004)
 - Crime Prevention Through Environmental Design Development Control Plan (28 May 2003)
 - Waste Planning Development Control Plan (May 2002)

