SYDNEY SCIENCE PARK FIRST COMMUNITY PRECINCT PLAN

Prepared for





SYDNEY SCIENCE PARK WILL CREA TF N INTERNATIONA **RECOGNISED EPICENTRE** FOR RESEARCH **AND DEVELOPMENT IN THE HEART OF** WESTERN SYDNEY

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VISION

Sydney Science Park represents a new vision to cluster leading science based businesses, tertiary institutions and organisations, research and development in one location. Sydney Science Park will foster innovation and cultural development in science and technology in the context of a vibrant, integrated community. The First Community Precinct will be the inaugural phase of this great vision.

Sydney Science Park is envisioned to become an internationally recognised epicentre for research and development in the heart of Western Sydney. Set over 280 hectares, Sydney Science Park will be a fully integrated community that will create more than 12,000 knowledge based jobs, cater to over 10,000 students and be home to over 7,000 residents.

This Precinct Plan document sets out the vision and guidance for the development of Sydney Science Park's first precinct. It provides key design guidance for the development of an innovative ecosystem in a vibrant and activated community. In line with the overall vision of Sydney Science Park, the precinct has been designed to facilitate collaboration and engagement among all of the Park's users, especially its innovators and entrepreneurs.



Figure 1 The First Community artist perspective looking south-west

The Vision for Sydney Science Park is encompassed by six broad aspirations, which guide the development in achieving vibrant, connected and sustainable urban design outcomes:

- A Vibrant Integrated Community
- A Smart City
- A Unique Innovation Hub
- A Sustainable Ecosystem
- A Healthy Living and Working Environment
- A Culture and Arts Community



A SMART CITY



Sydney Science Park will be a place where people want to be. Sydney Science Park will incorporate a series of integrated uses, each with a distinctive character and role. Sydney Science Park will provide a mix of elements that create diversity and choice for individuals, families and enterprises to locate in the area close to work, amenities and services. Key to delivering this strategy is the establishment of compatible and complementary uses comprising commercial enterprises, residential, retail and active and passive recreation.

The mix of land uses will foster the creation of a vibrant, liveable and prosperous community. The strong street grid network provides a flexible framework to support a variety of development options and the co-location of compatible land uses provides intensity and agglomeration.

Sydney Science park will implement contemporary design solutions based on sound urban design principles. Buildings will be designed to address and activate the street while providing permeability for pedestrians at ground level, and buildings are to be modulated in both plan and elevation to express their distinct elements and functions.

Sydney Science Park will be a Smart City. Smart Cities use the power of global communication networks, highly distributed wireless technology, and intelligent management systems to solve current and future challenges and create exciting new urban services.

Smart Cities proactively provide services, notifications, and information to citizens such as where to find a parking spot or a new local shop or even to monitor air pollution.

Smart City innovations complement the urban design aspirations for a vibrant community and the environmental and social outcomes for a sustainable city:

- Smart Cities promote enhanced liveability a better quality of life for city residents. In a Smart City, people have access to a comfortable, clean, engaged, healthy and safe lifestyle.
- Smart cities promote enhanced workability. In the Smart City, people have access to the foundations of prosperity – the fundamental infrastructure services that empowers the capacity to compete in the global economy including broadband connectivity.
- Smart cities promote enhanced sustainability. Smart Cities enable the efficient use of natural, human and economic resources, and create infrastructure outcomes that do more and last longer for less.

A UNIQUE INNOVATION HUB



Sydney Science Park will accommodate start-ups, venture capital, educational and research institutions, and multinational companies. The urban structure of Sydney Science Park will deliver key elements required to build this innovative ecosystem in a vibrant and activated community. The master plan provides a framework that facilitates collaboration and engagement between residents, especially innovators and entrepreneurs; it allows for flexibility for user requirements well into the future by creating adaptable development blocks and streets that can accommodate different space and functional requirements.

In support of the Innovation Ecosystem, an "Urban Living lab" is being co-designed at Sydney Science Park in collaboration with the CSIRO. Celestino is working with the CSIRO to foster a culture of innovation, creativity and entrepreneurship at Sydney Science Park. This involves confirming Sydney Science Park as an "Urban Innovation Zone" and establishing an Urban Living Lab to support long-term urban innovation and experimentation.

Celestino's commitment to curate the innovation ecosystem ensures that the vibrant, integrated community is activated and the vision is preserved for the long term.

The six city aspirations encompass all aspects of life at Sydney Science Park for an integrated experience focused on human-centric outcomes within a sustainable and vibrant local economic and social context:

- A Vibrant Integrated Community
- A Smart City

6

- A Unique Innovation Hub
- A Sustainable Ecosystem
- A Healthy Living and Working Environment
- A Culture and Arts Community

A SUSTAINABLE ECOSYSTEM

Sydney Science Park aspires to create world-leading solutions for sustainable development across the following key elements:

- Energy
- Water
- Ecology
- Transport
- Local production
- WasteFoodMaterials
- Health and well-being
- Social equity

Some more visible initiatives to residents and visitors are already under consideration. From an energy and health and well-being perspective, the landscape is being developed to better address heat and climatic conditions in Western Sydney. From a water perspective, recycled water is conceived to be used to irrigate open space, which could possibly include urban gardens, promoting health and well-being.

Sydney Science Park will create sustainable outcomes that support the needs of our residents and visitors and look to a positive future without burdening our children.

A HEALTHY LIVING AND WORKING ENVIRONMENT



Sydney Science Park will provide a healthy living and working environment by promoting walking and cycling and ensuring that both are accessible and desirable active transport modes.

Integral to the urban design is providing connectivity for pedestrian and cyclist both on street and through permeability across the street grid.

The landscape across Sydney Science Park will be designed to be connected and generate a strong sense of 'place' and provide a rich blend of cultural and ecological sound sustainable landscapes. This interconnected series of high quality public spaces will enhance connectivity and promote interactions between workers, students, residents, visitors and the like.

A CULTURE AND ARTS COMMUNITY



A Public Art Masterplan for Sydney Science Park is underway. This recognises that exceptional communities are built through collective efforts of many people with a willingness to be daring, bold and courageous.

The visioning objectives in the Public Art Masterplan are to guide the site-specific development of a unique, innovative and site responsive public art program for Sydney Science Park. page left intentionally blank

CONTEXT

Sydney Science Park is strategically located at Luddenham in the epicentre of Sydney's Western City centred on Sydney's future Badgery's Creek Airport Precinct. Approximately 3kms north of the Airport, the site offers easy access to the existing infrastructure of M4 and M7 motorways, and it is within minutes of major town centres -- 10 minutes to Penrith, 15 minutes to Liverpool and 20 minutes to Parramatta.

Sydney Science Park is located within the Western Sydney Priority Growth Area. Planned future transport corridors such as the Outer Sydney Orbital and the North-South and South-West Rail extensions enhance the site providing greater regional connectivity and opportunities.



Figure 2 Regional Context

Sydney Science Park O Railway stations

Legend:

Railway line

— The Northern Road Realignment

Airport Precinct Western Sydney Employment Area

Western Sydney Priority Growth Area Priority Land Release Area

PLANNING CONTEXT

A Precinct Plan within the broader statutory planning framework is shown below in Figure 4.

A Precinct Plan provides the context to support the submission of future development applications, illustrating how each will contribute to the creation of the subject area. A Precinct Plan is able to be revised in future as agreed with Council. Where departures from a Precinct Plan are proposed, these are to be considered on their merits.

Section E16.2.1.3 of the Penrith Development Control Plan (DCP) 2014 requires a precinct plan showing the indicative urban structure of a Precinct to be submitted concurrently with the first subdivision DA for that Precinct.

A Precinct Plan provides a greater level of detail, and prevails over the DCP to the extent of inconsistency.

Any Precinct Plan is required to set out indicative information relating to the following, as relevant:

- **1.** The existing physical, built and environmental features and constraints of the Precinct;
- 2. The general indication of the phasing of development;
- **3.** The proposed site layout including an indicative road layout;
- 4. The distribution of land uses;
- Pedestrian, vehicular and cycle access and circulation networks, traffic management facilities and car parking;
- **6.** An urban design strategy, including design principles, built form guidelines and setbacks, and identification of gateway sites and corridors;
- 7. A landscape and fencing strategy;
- **8.** Location and function of open space;
- 9. An infrastructure strategy; and
- 10. A public art strategy for the Precinct.

This Precinct Plan has been prepared in accordance with these requirements.

Land Use Zoning

The First Community Precinct is zoned B7 Business Park and RE1 Public Recreation under the PLEP 2010.

Land zoned B7 Business Park is intended to accommodate a mix of uses including research, commercial, small scale retail, education, office and residential uses. Land zoned RE1 Public Recreation is intended to accommodate public open space.



Figure 4 Land Zoning (PLEP 2010)



Figure 3 Statutory Context of a Precinct Plan

Legend	
[]]	Sydney Science Park Boundary
[]]	First community
	B4 Mixed use
	B7 Business park
	RE1 Public recreation
	RU2 Rural landscape

SITE DESCRIPTION

The First Community comprises approximately 37 hectares of land in the south eastern sector of Sydney Science Park. The location of the First Community in the context of Sydney Science Park is shown in Figure 5.



Figure 5 First Community Precinct

Legend	
[]]	Sydney Science Park Boundary
C:3	First Community

EXISTING FEATURES

Sydney Science Park has an approximate area of 288 hectares. The site is generally bounded by the Warragamba to Prospect Water Supply Pipeline to the north; Luddenham Road to the east and existing agricultural land to the south and west. A 60m wide electricity transmission corridor bisects the site north to south.

As shown in Figure 6 the site is generally, moderately undulating. A number of dams exist within the two water courses traversing through the site. The water courses flow in a north-easterly direction forming a tributary to Blaxland Creek.

EXISTING LANDSCAPE SETTING

The Sydney Science Park site has a distinctive existing landscape setting of ridge lines, water bodies and creek lines which traverse through the site. The water courses typically flow in a north-easterly direction forming an unnamed tributary to Blaxland Creek before flowing onto South Creek, approximately 4 km to the north.

The proposed landscape design aims to reflect this setting at both the macro and micro level. At a site wide (macro) level the existing topography has informed the overall proposed bulk earthworks, where the existing ridge lines and valleys are retained and married in with the proposed future road network. Enhanced riparian and ecological corridors are planned along the major water courses in the master plan. Site wide street trees have been assessed for their suitability to the existing site conditions (including soils, aspect, drainage and micro-climate) and will be a mix of native and exotics with proven endurance for Western Sydney conditions. At a local (micro) level native and where possible endemic vegetation will be selected, sculptural landforms will be proposed in public parks and private lots that reference the site topography and water has been celebrated and reused. From a water perspective, recycled water is conceived to be used to irrigate open space, which could possibly include urban gardens, promoting health and well-being.



Figure 6 Existing attributes

Legend

[]]	Sydney Scie Boundary
[]]	First comm
	Topography
	Ridae Line

Existin

Existing Trees

nunity

y (1m)

,

Existing Roads	
Existing Water Body	
Riparian Corridor Existing 1% AEP Floo Extent	d
Transmission Corrido	r
Potential Railway Corridor	

CHARACTER

This Precinct Plan sets out the character of and provides design principles for the development of Sydney Science Park's (SSP) premier precinct. The First Community will deliver the key elements required to build an innovative ecosystem in a vibrant and activated community. The precinct has been designed to facilitate collaboration and engagement among all of its residents, workers and visitors, especially its innovators and entrepreneurs.

The First Community will have an extensive range of users who will create a vibrant and unique research and development (R&D) ecosystem and business environment. Residents will include start-ups, educational establishments, leading International R&D firms, world class laboratories and multinational corporations.

Equally, the First Community will include high quality lifestyle, employment and residential opportunities and will include amenities such as parks, restaurants and civic spaces.

KEY URBAN DESIGN PRINCIPLES DEFINING THE CHARACTER OF THE FIRST PRECINCT

The key urban principles for the First Community are:

- 1. Vital mixed-use zone: Maximise activation for residents, workers and visitors to create a safe and vibrant neighbourhood at all times of the day, seven days a week.
- 2. Active boulevards: Frame the Boulevard Road and the journey to the precinct with an active built form edge.
- 3. Green network: Create a network of green streets that link to and across riparian corridors, parks and other green spaces providing residents and workers with a high level of amenity and access to key destinations.
- 4. Ensure access and permeability: Introduce a fine grain network of roads and pedestrian lanes that break down the scale of the grid creating walkable blocks.
- 5. Ensure legibility and way-finding: Provide memorable landmark buildings with a logical road hierarchy with clear way-finding elements throughout the precinct.
- 6. Integrated outcomes: Integrate public transport corridors with pedestrian and cycleway connections to provide truly multi-modal transport opportunities.

ORGANISING PRINCIPLES FOR THIS PRECINCT PLAN

Sydney Science Park is committed to world-class design. The objective of this design guidance is to assist development to achieve urban and built form outcomes that respond to the site's orientation and climate as well as the needs of residents, workers and visitors.

This section outlines the outcomes for the following structuring elements:

- Landscape and Environment
- Access and Movement
- Built Environment

The guidance aims to set a standard for the functional aspects of the precinct rather than suggesting a prescriptive outcome.



Landscape and Environment



Access and Movement



Built Environment

3.1 LANDSCAPE AND ENVIRONMENT

LANDSCAPE DESIGN PRINCIPLES

The public domain and landscape follows a systems approach where the major landscape design elements such as micro-climate, vegetation, water and materials form the public domain experiences.

The landscape seeks to actively pursue the potential regional and district public open space connections via riparian corridors and other linear pedestrian and cycle paths.

The First Community's key principles for the Landscape and Environment include:

- **1.** Generate a strong sense of 'place' that fits the location.
- 2. Respect the areas landscape setting and achieve a high level of scenic quality. Create a public realm that is a rich blend of culturally vibrant and ecologically sound sustainable and connected landscapes.
- **3.** Facilitate opportunities for passive, active and programmed activities.
- **4.** Provision of open space along a rich network of riparian corridors which are intensively used for recreation facilities.
- **5.** Provision of trees, vegetation, green walls, green roofs, cooling roofs and permeable surfaces providing comfort and amenity, to minimise urban heat island effect.

The following subsections outline the guiding principles for the following landscape elements:

- Open Space Network
- Street Landscape Design
- Landscape Design In Development Lots
- Fencing Design

These sections aim to set a standard for the functional aspects of the precinct rather than suggesting a prescriptive outcome.











Public open space with rich and active programs



Active program - community garden

* Images used are indicative only and are intended to set the standard to be achieved.



Creative urban life

Active environment

Active open space - children's playground

OPEN SPACE NETWORK

The open space network has been developed in the Precinct Plan to meet the needs of future users, which includes four typologies:

- <u>Neighbourhood Park</u> accommodates active and passive programs, events space, productive gardens and café.
- <u>Linear Urban Park</u> incorporates a storm-water channel targeting water sensitive urban design, pedestrian and cycleway networks and passive parkland.
- <u>Buffer Landscaping</u> landscape interface along Luddenham Road, which provides passive surveillance and incorporates water sensitive urban design.
- Boulevard Road Landscape grand streetscapes along Boulevard Roads.



Figure 7 Open Space Network

14 Sydney Science Park First Community Precinct Plan

pedestrian & cycleway

Legend	
E13	First community
	Neighbourhood Park
	Linear Urban Park
	Buffer Landscaping
	Boulevard Road Landscape

OPEN SPACE TREATMENTS

Indicative example treatments are shown in Figure 8 underpinning the proposed open space network. The key principles for the open space treatments are to:

- Embrace the site's undulating topography and vistas to the Blue Mountains;
- Create a living and working environment that promotes health, well-being, active living and sociability;
- Use open space as a way to establish connections between workers, students and residents and nature;
- Celebrate food production through community supported agriculture, community gardens and opportunities to cultivate roadside land for food production where appropriate;
- Harmonise outcomes for Boulevards and Streetscapes with the open space; and
- Establish riparian ecological / recreational corridor to the west of the First Community (not included in First Community Precinct - subject to future precinct).



Figure 8 Indicative Open Space Treatments

Legend	
[]]	First community
	Indicative Landscape Treatments in the First Community
	Indicative Landscape Treatments- subject to future precinct

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Development Lots

STREET LANDSCAPE DESIGN

Streets form a major part of the public domain experience of any development. Active and passive streets, including plazas, connect people and provide memorable landscape settings for communities, which influence the quality of living.

The key design principles for SSP street landscape include:

- Create a clear landscape hierarchy and character of higher order as well as local;
- Provide a high quality landscape continuously along each street to reinforce the overall landscape vision;
- Create a comfortable, safe, pedestrian friendly, shady street;
- Create a strong visual linear tree planting; and
- Provide a sustainable ground plane of native grasses and ground-cover planting where possible.

Street tree species selection will be informed by the following principles:

- Plant selection for all landscaping works must consider and will be assessed for its suitability to existing site conditions such as soils, aspect, drainage, micro-climate and shade and suitability for cohesion with road and utility service infrastructure.
- Tree species will be a mix of native and exotic with proven endurance for Western Sydney conditions.



PUBLIC ART DESIGN PRINCIPLES

Sydney Science Park will be a place for big thinkers, where artists, scientists and creative visionaries alike unite to create tomorrow's future collectively.

For the First Community, three high-level sub-themes have been created to further inspire artists to react and relate to the aspirational Curatorial Vision —'Think Big: Challenge the Status Quo". These include:

- **1.** Individual & Collective
- 2. Macro & Micro
- **3.** Natural & Manmade

Art for the precinct is envisioned to be divided into two defining categories: Big Statements and Small Interventions. These could be:

Big Statements

- Destination-making pieces
- Highly captivating and memorable landmarks
- Engaging architectural intervention

Small Interventions

- Fine-grain discovery works
- Ingrained urban elements
- Unique and intimate experiences

Example treatments are shown in Figure 10.



DRAFT

LANDSCAPE DESIGN IN **DEVELOPMENT LOTS**

The landscape design of the private lots will promote landscape design and character that fully integrates with the overall site landscaping. Key development lot landscape design principles include:

- Ensure that landscape design reinforces the principles of Ecologically Sustainable Development;
- Ensure landscape design takes into account the site's context, landscape and visual character, existing landscape features and amenity, both at the local and regional scale;
- Encourage the development of quality landscape design associated with new development that is consistent with industry best-practice;
- Encourage the retention of existing trees and vegetation to enhance landscape character;
- Ensure landscape design adequately complements the proposed built form and minimises the impacts of scale, mass and bulk of the development in its context;
- Encourage landscape design that can be effectively maintained to a high standard for the life of that development; and
- Address urban heat issues through landscaping.













* Images used are indicative only and are intended to set the standard to be achieved.

FENCING DESIGN PRINCIPLES

A key element for the vision of Sydney Science Park is to foster permeability of the physical environment to encourage movement and connections. This includes connections through development lots. Fencing will be discouraged in the First Community and throughout Sydney Science Park. Where possible, the preference is for private lot boundaries to be defined by edge planting and the public footpath.

Where required for safety or other compelling reasons, the overarching principles for the Precinct Plan's fencing strategy are:

- Minimise the visual impact of fences/barriers on the streets;
- Ensure an open and transparent design response; and
- Be unobtrusive so that the fencing does not dominate the street character.

Generally, it is preferred to have vertical bar railings, powder coated black with planting (shrubs and hedges) in front (street or public space side).





Residential fencing

* Images used are indicative only and are intended to set the standard to be achieved.

3.2 ACCESS AND **MOVEMENT**

The First Community Precinct is planned to provide high levels of accessibility for pedestrians, cyclists and general traffic and to ensure effective links to surrounding regional road networks. A street hierarchy has been prepared for the First Community Precinct and is illustrated in Figure 11.

Streets within the precinct have been designed to suit their purpose. They are sufficiently wide to accommodate their functions and the design makes clear the intended behaviour of the various users. A strong street grid network provides a flexible framework to support a variety of development options within Sydney Science Park.

STREET HIERARCHY

The street hierarchy plan outlines the location of collector roads, and local streets within the Precinct. The proposed street hierarchy is generally consistent with those identified in the Sydney Science DCP with provision made for open space connections. Typical road cross sections are in accordance with the street types identified in the DCP.

There are three general street types for the precinct:

- Boulevard Road (identified as Commercial Road in the DCP)
- Connector Road
- Residential Street
- Park Edge Street

TRAFFIC MANAGEMENT

All intersections and kerb returns are to be designed in accordance with Austroads and shall be designed to permit the movement of vehicles as appropriate, in line with the intended functions of the roads.

Where appropriate at lower order intersections, give way lines may be utilised with preference given to the direction with greater traffic volumes. The signalisation, or use of roundabouts, of higher order intersections is likely to be appropriate.



* Images used are indicative only and are intended to set the standard to be achieved.

Figure 11 Street hierarchy

	Boulevard Road
	Connector Road
_	Residential Street
	Park Edge Street
SZ.	Indicative Bus Stop
	Location

STREET TYPOLOGIES

Boulevard Road

The Boulevard Road provides the primary point of access and address for Sydney Science Park. It is located on the northern boundary of the First Community Precinct intersecting at Luddenham Road to the east and traverses the length of Sydney Science Park, through the major open space corridor and connecting to the western portion of the site. The Boulevard Road is intended to establish a strong address for Sydney Science Park. It has been designed in stages to adapt to changing transportation requirements in the future.

To accommodate traffic for the First Community, the road reserve comprises:

- One traffic lane in each direction with parallel parking on both sides indented with accommodation for bus stops.
- The southern verge accommodates a shared off road pedestrian/cycle path, allowance for services and edge planting on either side.
- The northern verge accommodates a linear park linking spaces in the First Precinct to other destinations within Sydney Science Park.





Figure 12 Boulevard Road Section and Plan



STREET TYPOLOGIES

Connector Road

The connector road comprises a 20.8 metre road reserve serving as local commercial roads throughout the precinct. It comprises:

- A 12.2 metre carriageway with one lane of traffic in each direction and parallel parking.
- A 4.3 metre verge comprising street trees and shared path on both sides of the street.

Residential Street

The Residential Street comprises a total of a 22.6 metre road reserve located as the main road throughout the mixed-use and residential precinct. It comprises:

- A 10.6 metre carriageway with one lane of traffic in each direction and parallel parking.
- A 6 metre verge comprising landscaping, pedestrian footpath and a 1.5 metre one-way designated off road cycle path on both sides of the street.

Park Edge Street

The Park Edge Street comprises a total of a 13.1 metre road reserve located at roads next to open space corridors. It comprises:

- A 8.6 metre carriageway with one lane of traffic in each direction and parallel parking bays on the park side of the road.
- A 3.5 metre verge comprising grass and pedestrian footpath on the development side of the street and 1m grass strip and shared off road pedestrian/cycle path on the park-side verge.







Figure 13 Connector Road Section and Plan



Figure 14 Residential Street Section and Plan



Figure 15 Park Edge Street Section and Plan

PEDESTRIAN AND CYCLE NETWORK

A key feature of Sydney Science Park is its clear pedestrian and cycle network that provides links between employment areas, education facilities, open space areas and the Town Centre. These networks provide critical linkages between the different uses and will be established as a healthy option for the community.

The key objectives of the pedestrian and cycle movement network for the first community precinct is to create a connected community that is well integrated with key connections via a regional and local pathway system. The pedestrian and cycle network is carefully considered to respond to street types and streetscapes, which includes four types:

- Shared off road pedestrian/cycle path
- Shared on road cycle path with shared off road pedestrian/cycle path
- Shared on road cycle path
- Shared pedestrian/cycle path in open space

It is intended for the pedestrian and cycle network to be an integrated commuter and recreational cycling strategy, with a bias for off road cycling in areas of high recreational amenity and on road cycling in commercial areas.



- cycle path

3.3 BUILT ENVIRONMENT

PRINCIPLES INFORMING THE BUILT ENVIRONMENT

The built environment on development lots will support the key urban design principles informing the character of the First Community and foster the vision for Sydney Science Park. The built environment design principles cover the key interfaces of buildings with the rest of the environment:

- Access and Servicing how buildings are accessed and serviced by pedestrians and vehicles.
 - Structured Access;
 - Logistic Support and loading docks; and
 - Car Parking.
- Orientation and Design how buildings are oriented and key architectural design requirements.
- Passive Solar Design;
- Vegetation and/or structures for shading; and
- Responsive architectural form and design.
- Connections and Integration how the building is linked with the surrounding environment and spaces:
 - Common Areas;
 - Pocket Greens and Connections: and
 - Place-making and Way-finding.



Access and Servicing

- Promote a pedestrian friendly environment with pedestrian and vehicular routes designed for complementary access.
- Create legible and responsive pedestrian and vehicular networks with a distinct street-scape character.
- Define separation of pedestrians, transport and built form with landscape.
- Define access areas for logistics.



Orientation and Design

- Promote passive solar design by orienting buildings north where possible.
- East and west orientation for buildings may be desirable but should be augmented with suitably placed vegetation or other structures used to screen unwanted summer heat gain.
- Buildings are to be designed to create streetscapes that are characterised by:
 - clearly defined edges and corners;
 - architectural treatments that provide visual interest and maximise the opportunity to establish new architectural forms directly responding to environmental needs;
 - enabling tall, slender building form and design that allows for light, separation and views between buildings.



Common Areas

- Provide communal amenities and a focal point for large lot developments.
- The focal open space is ideally framed by the building with pedestrian access and facade opening that provides passive surveillance.
- Orientations of the buildings around the open space should allow sufficient sunlight and natural ventilation throughout it.





Pocket Greens and Connections

- Provide pocket greens and connections along the internal pedestrian links to provide internalised amenity and private open space.
- Allow flexibility for through-site links and permeability.

PRINCIPLES INFORMING THE BUILT ENVIRONMENT

The built environment on development lots will support the key urban design principles informing the character of the First Community and foster the vision for Sydney Science Park. The built environment design principles cover the key interfaces of buildings with the rest of the environment:

- Placemaking and Wayfinding how spaces are experienced and connected:
 - Sense of Place;
 - Nodes and Destinations;
 - Car Parking.
- Variation to Setbacks how buildings set back to provide modulation and street character:
 - Consistent setbacks for most buildings;
 - Allowances for variation to allow for landscape, entrances and courtyards.
- Interfaces at Boundaries:
 - Variations to Setbacks;
 - Reinforcing Primary frontages and Corners.
- Car-parking:
 - Vehicular access and servicing;
 - Minimise pedestrian conflict;
 - Preferred location and treatment;
 - Provision of landscape and screening.



Placemaking and Wayfinding

enhance connectedness.

Creating nodes and walking

throughout the precinct.

Incremental placemaking

intersections.

potential.

Provide visual markers on key

The character and amenity of the

precinct and a sense of place is to

corridors that direct pedestrians

to key destinations is encouraged

opportunities will capitalise on local

community's assets, inspiration, and



Primary Road ተተ

Variation To Setbacks

- The majority of building frontages are to be built to a uniform setback.
- Allowances for variation in setbacks is permitted to allow for modulation such as entrances or courtyards with good landscape amenity.

Reinforcing Primary Frontages and Corners

- To provide good street address, building to perimeter and corners on primary roads is encouraged.
- Built form to perimeter blocks are to provide articulation or landscape shading to form the street and provide passive surveillance.
- Generally, awnings are to be provided where there is a continuous activated frontage occurring along the primary road.





Car Parking

- Minimise vehicular access from the primary road to ensure pedestrian friendliness, safety and clearly legible address.
- Vehicular access is encouraged from connector or secondary streets.
- Where possible, car parking is preferred on street, within basements for private parking or screened multi-storey parking structures for public parking.
- Multi-story parking structures should be designed with facade treatment, articulation and should not dominate the street.
- Provide perimeter landscape planting and between parking bays to screen surface car parking ensuring good street character and amenity.

The built form character of Sydney Science Park will be defined by the building heights, setbacks and massing of the various streets to accommodate for flexible character to the overall plan while providing definition and scale to streets.

The overall principles of built form controls are to:

- Respond to the uses within each block shaping the spaces between buildings to support and enhance the varied uses.
- Reinforce the urban character and improve pedestrian accessibility, amenity and activity at street level.
- Maximise view corridors, ventilation and daylight access while increasing privacy.
- Allocate space for landscape areas and enhance streetscape character along with the continuity of street façades.
- Building designs that maximise the opportunity to establish new architectural forms that directly respond to environmental needs.
- Create building designs that recognise and architecturally respond to unique streetscape characteristics to achieve dramatic and picturesque visual effects.
- Communal carparking is encouraged, but where private carparking is required, the preference is for facade treatment to street frontage and landscaping to provide shade and amenity.

Key Frontages / Commercial /Mixed Use

Primary roads will require buildings with a strong street presence and architecturally responsive built forms. Buildings for commercial purposes may have a mix of multifunctional uses such as offices, laboratories, R&D and/or retail. Key functional requirements include:

- Clear, separate and legible entrances for pedestrians, vehicles and servicing.
- Vehicular access and parking to be located discretely underground or screened away on prominent street edges.
- Activate frontages for buildings set close to the street with complimentary use landscape planting or awnings to ensure amenity for pedestrians.
- Design for building modulation and articulation to provide scale and visual interest.
- Establish sufficient density and range of uses in mixed use areas to enable them to become key destinations and activated centres.

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Figure 17 Key Frontage / Commercial

Sydney Science Park First Community Precinct Plan

Education

Legibility of the educational facility or campus is to be reinforced by a series of spaces including:

- Major and supporting spaces for gathering of students, staff and visitors;
- Connecting spaces for moving around campus; and
- Contemplation spaces for quiet retreat and relaxation.

Ensure that the legibility of the campus is optimised for the benefit of all students, staff and visitors by providing:

- Equity of access across the facility/campus through identifiable and dignified routes for people with disabilities;
- Clear and welcoming entry/address points with links to surrounding activities and services;
- Public spaces and clear routes that are evenly distributed:
- Clear definition of public and private spaces, achieving good sight lines and visual connectivity; and
- Consistent signage and wayfindng across the campus facility.

Optimise the design quality of the built form by:

- Adopting a whole-of-life cycle approach, ensuring sustainable outcomes, allowing for flexibility and adaptation to accommodate:
 - Multi-purpose use during different times of the day
 - Future-proofing to ensure new approaches to teaching and research;
- Alignment, height and scale which contribute to the overall campus built form;
- Orientating buildings to facilitate passive solar design, good street presence, security and legibility;
- Ensuring that buildings define and address the public domain or communal open space areas that is appropriate to the location, character, building function and type of open space; and
- Ensuring that internal design of buildings foster interaction and learning whilst optimising comfort and safety.
- Where appropriate, utilise perimeter block principles and landscape design to ensure territorial definition promoting safety and perimeter security.



amenity.

Figure 18 Education

providing shade and amenity.

High Tech Industrial

High performance buildings that accommodate STEM workers may require a proportion of specialised office type spaces that promote research, collaboration. It should allow for flexibility and comfort for non-routine cognitive work environments, which include providing:

- Orientation of work spaces that promote passive solar design and natural daylighting, reducing the use of mechanised/active cooling systems.
- Shading to spaces that have high solar heat gain with trees or other structures.
- Cool or air-conditioned spaces that house specialised equipment such as computers, server rooms away from orientations that are sensitive to high solar heat gain.
- Circulation routes and common spaces that allow for casual meetings to foster collaboration and knowledge transfer.
- Landscape areas for outlook, break out or contemplation that provide shade as well as passive and active recreation.
- Reduce urban heat island effect with a good proportion of permeable surfaces and tree planting.
- Vehicular access and parking to be located discretely underground or screened away on prominent street edges.



Figure 19 High-tech Industry for smaller building footprints

Advanced Manufacturing

Ground-breaking manufacturing facilities require relatively larger building footprints to accommodate specialised equipment for design, prototyping and manufacturing. These uses also require a proportion of clustered and highly adaptable studios that foster innovation, collaboration and production. Some key functional requirements include:

- Orientating work spaces that promote passive solar design and natural daylighting.
- Internal spaces with taller clearances that may house specialised equipment for manufacturing;
- Clear, separate and legible entrances for pedestrians, vehicles and servicing with logical circulation routes for wayfinding.
- Landscape areas for break out or to screen service areas such as car parking or large heavy rigid vehicles;
- Vehicular access and parking to be located discretely underground or screened away on prominent street edges.
- Building modulation or facade treatment to enhance visual definition for bulkier building forms.

Figure 20 Advanced Manufacturing for large building footprints

····· Landscape to provide shade and amenity

DISTRIBUTION OF LAND USES

The First Community is to enable and integrate live, work, and lifestyle outcomes. The flexible B7 zoning provides for a variety of land uses to create vibrancy and activation. However, certain uses are likely to gravitate naturally to agglomerate in clusters. The proposed distribution of uses for the First Community generally encourages business and commercial towards the west, educational centrally located and mixed use and residential towards Luddenham Road.

Figure 21 Distribution of land uses with indicative lot size area

C13	Sydney Science Park Boundary
[]]	First community
	Business park
	Mixed use / Residential
	Education
	Public open space

SETBACKS AND BUILDINGS WITH STREET FRONTAGE

Buildings setbacks proposed are to achieve the following:

- Avoid blank walls along the street and facing public domain.
- Promote articulation of building façades along the street frontages.
- Prioritise the pedestrian environment and provide passive surveillance to the streets.
- Promote active uses at ground level along Boulevard Streets with awnings and limiting vehicular access points.
- Where appropriate an allowance for Om setback to reinforce corners or activated frontages.
- These setbacks may be varied with Council approval to achieve site-specific outcomes in the context of precinct character.
- Setbacks of buildings on identified Gateway Sites may vary from the above and will be determined having regard to the design intent.
- Setbacks to be co-ordinated with street landscaping as appropriate.

Figure 22 Setback controls

Generally 5-10m along Boulevard Streets with allowance for 0m on corners or activated edges
Minimum 0-5m setback
Minimum 5-10m setback
Public open space

GATEWAY SITES

Prominent sites within the First Community have the potential to accommodate landmark buildings.

- Buildings contributing to gateway markers are to be iconic in form and located on corner allotments to denote and reinforce the street intersections.
- The design of these buildings should incorporate special emphasis on the architectural quality and detailing.
- Buildings on Gateway Sites may exhibit greater height to reinforce their prominence.
- Built form on Gateway Sites needs to respond to the adjacent context and streetscapes in both scale and building articulation to deliver a strong sense of place and community.

* Images used are indicative only and are intended to set the standard to be achieved.

Figure 23 Gateway sites

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DELIVERY

PHASING OF DEVELOPMENT

Development of Sydney Science Park is to be carried out in stages over an approximate 25 year period, with the First Community commencement being envisaged in the south-east quadrant of the site in late 2016.

In a progressive manner while delivering the precinct, more than one phase may be under construction at particular time. Nevertheless, site access will be maintained throughout the development stages apart from the service and construction access. All infrastructure and services, including public transportation, will be provided at relevant stages of development where necessary.

PHASING OF DEVELOPMENT

The First Community development phasing strategy is aimed at providing a logical sequence to development to ensure services and infrastructure are in place at the right time.

- The first phase comprises the construction of the lead-in road up to the first commercial building block as well as the connector road east of the block.
- The second phase comprise the construction of the first commercial building and associated landscape works.
- The third phase (a) is associated with the development of a mixed-use precinct.
- The third phase (b) is associated with the construction of an educational facility and an open space lot.
- The fourth stage comprise the development of the western most section of the First Community precinct.

Figure 25 Phasing of development

INFRASTRUCTURE AND SERVICING

First Community Precinct Plan – Proposed Infrastructure Servicing

An overarching consideration for the infrastructure servicing strategy is that the business as usual servicing strategies outlined below will not preclude the future adoption of alternative servicing strategies. There are ongoing discussions with service providers, which will continue as the development of Sydney Science Park progresses, to ensure that sustainable and environmentally sensitive infrastructure servicing strategies are implemented. In line with the overall vision for Sydney Science Park, these strategies are being investigated and will be implemented where appropriate.

Electrical

The First Community can be supplied with electricity through an extension of the existing network from the Luddenham Zone Substation located on The Northern Road. Sydney Science Park falls within the Endeavour Energy supply zone and current advice from Endeavour is that two 11kV feeders would be required to service the anticipated loads within the First Community.

These two new 11kV feeders are expected to be brought in via Gates Road, and extended to the boundary of the first community. The new feeders will be reticulated through the road network within the First Community to ensure supply is available to all lots.

Communications

Telecommunications services can be provided by NBN Co. and will be provided to each lot within the First Community. The NBN lead-in backhaul is expected to be from The Northern Road and will be reticulated through the road network within the First Community to ensure supply is available to all lots.

 Indicative path of
possible communication
lead-in
 Indicative path of
possible electrical lead-
in

INFRASTRUCTURE AND SERVICING

Potable Water

The First Community can be serviced by Sydney Water. Celestino are currently undertaking Strategic Planning with Sydney Water to determine the most appropriate and cost effective servicing connection point and route for a lead in water main. It is expected that a trunk main can be extended to the First Community from a connection point within the Cecil Park water supply zones.

Potable water will be reticulated from the point of connection with the lead-in trunk main, through the road network within the First Community to ensure supply is available to all lots.

Sewer

Celestino is currently undertaking Strategic Planning with Sydney Water to determine the future servicing options. In the interim, each lot within the First Community will require an individual wastewater treatment solution, approval for which will be sought from Council at the same time development approval is sought for buildings on individual lots.

Alternative solutions notwithstanding, it is intended that the ultimate trunk infrastructure can be connected to either the St Mary's Sydney Water STPs or to a decentralised Sydney Science Park STP.

 Indicative path of
possible centralised
water connection
 Indicative path of
possible centralised
sewer connection

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