

URBIS

SMART PLACES ASSESSMENT

REPORT

**BURRAH PARK
SSD-70316465**

**1953-2109 ELIZABETH DRIVE
BADGERYS CREEK**



PREPARED FOR

THE TRUSTEE FOR THE BURRA PARK PROP TRUST 1

SEPTEMBER 2024



Title: Sacred River Dreaming
Artist: Hayley Pigram
Darug Nation
Sydney, NSW

Urbis acknowledges the important contribution that Aboriginal and Torres Strait Islander people make in creating a strong and vibrant Australian society.

We acknowledge, in each of our offices, the Traditional Owners on whose land we stand.

We also acknowledge the Dharug, Dharawal and Gandangara people and their ongoing connection to culture, lands and waters and their valuable contribution to the community and lands around the Aerotropolis and on which this development is proposed.

We recognise that First Nations sovereignty was never ceded and respect First Nations peoples continuing connection to these lands, waterways and ecosystems for over 60,000 years.

We pay our respects to First Nations Elders, past and present

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Clare Brown
Associate Director	Nathaniel Bavinton
Consultant	Joseph Njaramba
Project Code	P0052408
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1: EXECUTIVE SUMMARY

This Smart Places Assessment Report has been prepared by Urbis Ltd (**Urbis**) to accompany a State Significant Development Application (**SSDA**) for a Concept and Stage 1 SSDA for a Warehouse and Logistics Estate at 1953-2109 Elizaeth Drive, Badgerys Creek.

The site is legally described as Lot 1 in Deposited Plan 1306448.

The applicant, the trustee for Burra Park Prop Trust 1 is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share. HB&B and ISPT have been appointed as the development team to oversee the project's delivery. By leveraging the expertise of both organisations, the venture is well-positioned to maximize Burrah Park's value to the community.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (**SEARs**) issued for the project (**SSD- 70316465**).

Urbis have been engaged by HB&B Property Pty Ltd (**HB&B**) and ISPT Pty Ltd (**ISPT**) to provide strategic advice pertaining to the selection and inclusion of smart infrastructure and technology within the Burrah Park industrial estate Concept Plan and Stage 1 works.

Review of the strategic framework governing the site identifies the Aerotropolis as a leading region embracing smart technologies to achieve a sustainable, liveable city, and enable the development of future-focused industry and jobs. The project was evaluated to identify a range of smart initiatives aligned to these objectives for the Aerotropolis, broader Western Sydney region and for NSW.

This report concludes that the proposed warehouse and distribution estate is suitable and warrants approval subject to the implementation of the following approaches and specific measures:

- Inclusion of the proposed smart initiatives according to the identified deployment principles.
- Adoption of a strategic approach seeking to future proof the site through provision of appropriate spare capacity within enabling infrastructure and expandable digital connectivity networks.
- Adoption of a strategic approach enabling future on-lot activity to leverage emerging technologies and meet performance objectives across employment and sustainability.
- Detailed design be undertaken with reference to the identified technical guidelines and policies to ensure delivery is consistent with policy and industry best practice. These requirements are recommended to be conditioned for future development approvals.

Following the implementation of these approaches, and the more detailed descriptions of specific measures within the body of the Report, the remaining impacts are considered appropriate for the site and represent a set of positive design outcomes in accordance with the strategic objectives positioning the Aerotropolis as Australia's leading smart region.

2: INTRODUCTION

This Smart Places Assessment Report has been prepared by Urbis Ltd (**Urbis**) to accompany an SSDA at 1953-2109 Elizabeth Drive, Badgerys Creek (**SSD- 70316465**). The site is legally described as Lot 1 in Deposited Plan 1306448.

The application seeks consent for a concept plan including future development lots and building footprints. The development also seeks consent for the Stage 1 works which will include bulk earthworks across the site, infrastructure delivery, road access/intersections, internal road construction, civil infrastructure and utilities, stormwater infrastructure works and the construction of three (3) warehouse buildings.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (**SEARS**) issued for the project (**SSD- 70316465**).

Urbis have been engaged by HB&B Property Pty Ltd (**HBB**) and ISPT Pty Ltd (**ISPT**) to provide strategic advice relating to the selection and inclusion of smart infrastructure and technology within the Burrah Park industrial estate Concept Plan and Stage 1 works.

This report outlines how the project proposal integrates smart places initiatives to respond to the strategic objectives for the site consistent with the State Environment Planning Policies and SSD condition requirements, and is consistent with relevant strategic context.

This report also includes an assessment of the proposal against the relevant requirements deriving from the site's location within the Aerotropolis Precinct including the Aerotropolis Development Control Plan.

2.1: THE PROPOSAL

This report has been prepared to accompany an SSDA at 1953-2109 Elizabeth Drive, Badgerys Creek (**SSD- 70316465**). The application seeks consent for a concept plan including future development lots and building footprints. The development also seeks consent for the Stage 1 works which will include bulk earthworks across the site, infrastructure delivery, road access/intersections, internal road construction, civil infrastructure and utilities, stormwater infrastructure works and the construction of three (3) warehouse buildings.

Specifically, development consent is sought for:

Concept Plan

Concept Masterplan for the Burrah Park comprising warehouse buildings, internal road network layout, building locations, GFA, car parking, concept landscaping, building heights, setbacks, signage strategy, public art strategy, design excellence strategy and Connection with Country framework.

- Developable area 131.45ha.
- Total approximate GFA 63.00ha

Stage 1 – site preparation works

- Demolition and removal of existing structures and vegetation.
- Heritage salvage works (if applicable).
- Construction of roads, access infrastructure, including a signalised intersection with Elizabeth Drive.
- Dam de-watering and de-commissioning.
- Bulk earthworks, cut and fill, benching, battering and retaining walls.
- Lead in infrastructure, utilities and servicing.
- Stormwater infrastructure including construction of Sydney Water basins and Water Sensitive Urban Design (WSUD) elements.

Stage 1 – Development

- Construction and fit out of 3 warehouse buildings and ancillary office space.
- Stormwater management, fencing and landscaping.
- Internal road network, active transport network, public domain and open space.

- Subdivision, and
- Estate and on lot signage.
- Total approximate GFA 85,864sqm
 - Warehouse 1.1 – 26,860sqm
 - Warehouse 1.2 – 31,443sqm
 - Warehouse 3.1 – 27,561sqm

The Proposal has the following key objectives:

- Embed Country into the overall design of the estate including the landscape, built form and public domain.
- Create a new global gateway which will be a regionally and nationally significant employment area that leverages off the site's proximate access to the Western Sydney Airport (WSA) to make it the pre-eminent location for global logistics and supply chain operators.
- Facilitate a modern, sustainable, and efficient warehouse and logistics estate that embeds smart technology and digital infrastructure that can respond to the sustainability objectives of the Aerotropolis, deliver a liveable city, and enable development of industry and jobs.
- Design a cool, green warehouse and logistics estate with a landscape led approach that increases urban tree canopy and provides useable landscaped open space areas throughout.

Of these key objectives for the proposal, this report predominantly responds to the intention to create a modern warehouse and logistics estate embedding smart technology and digital infrastructure.

Figure 1: Proposed Concept Plan



Source: Nettletontribe, 2024

Figure 2: Proposed Stage 1 Development



Source: Nettletontribe, 2024

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (**SEARs**) dated 22 May 2024 and issued for the SSDA (**SSD-70316465**). Specifically, this report has been prepared to respond to the SEARs requirement issued below.

Table 1: SEARs Requirements

Description of requirement
• Address 190 and 192 of the Environmental Planning and Assessment Regulation 2021 • Address State Significant Development Guidelines (2021). • Include a clear comprehensive description of the proposal for the site, including details of all land uses, activities and processes proposed to be carried out as part of the development • Include a detailed assessment of the key issues specified below, including: – a description of the existing environment, using sufficient baseline data – an assessment of the potential impacts of all stages and activities that form part of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes – justification for the level of assessment carried out for each of the key issues as they relate to the Concept and Stage 1 development applications – a description of the measures that would be implemented to avoid, minimise, mitigate and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage significant risks to the environment.

Statutory and Strategic Context

Demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, adopted precinct plans, draft district plan(s) and adopted management plans and justification for any inconsistencies. This includes, but is not limited to:

State Environmental Planning Policy (Planning Systems) 2021

State Environmental Planning Policy (Precincts - Western Parkland City) 2021

Western Sydney Aerotropolis Plan 2020

Western Sydney Aerotropolis Precinct Plan 2022

Western Sydney Aerotropolis Development Control Plan (DCP) Phase 2 2022

2.2: THE SITE

The site is located on Dharug Country, and we acknowledge the Dharug people, their elders past and present and their deep and continuing connection to their land.

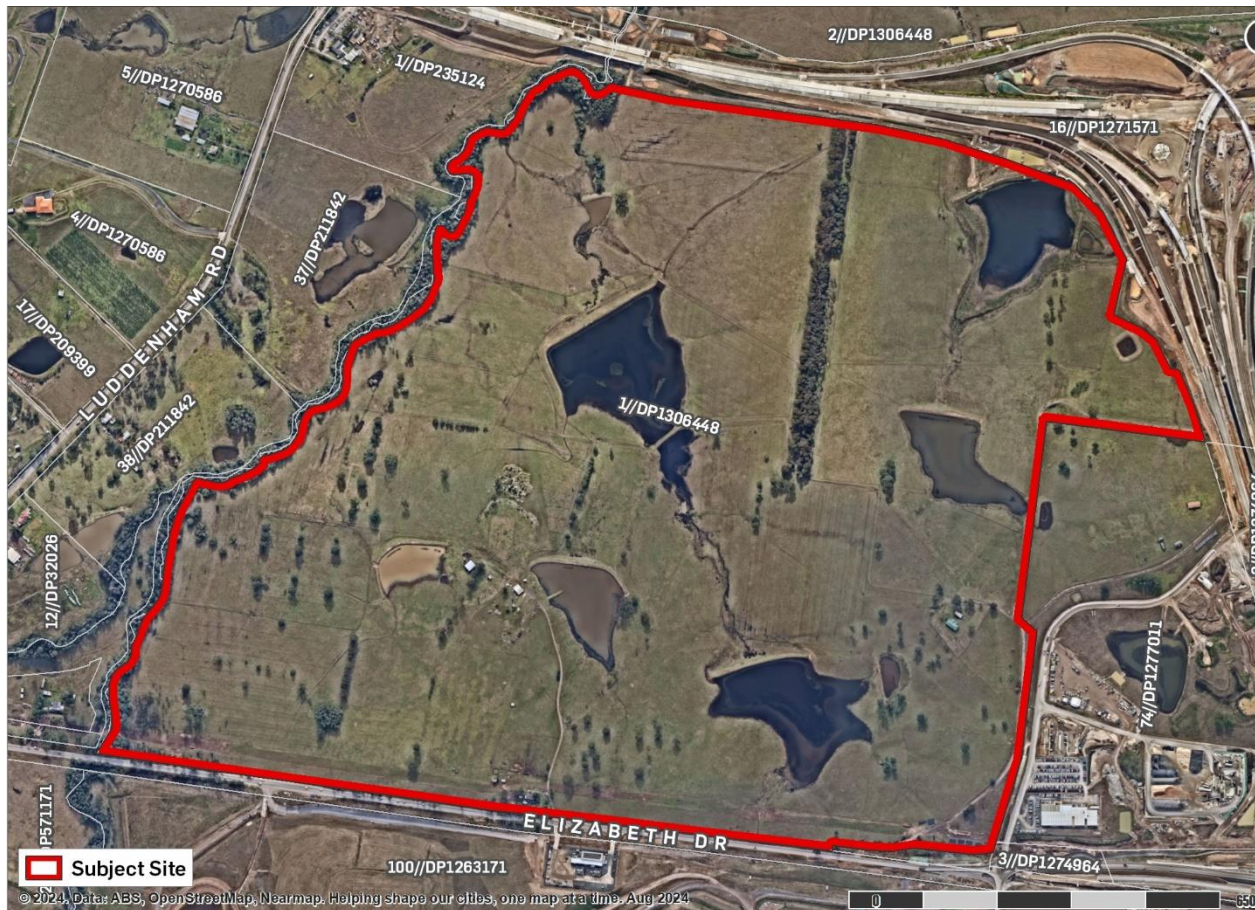
Figure 3 provides regional context and Figure 4 shows an aerial of the developable area be developed as part of this SSD.

Figure 3 Site regional context



Source: Near Maps and Urbis

Figure 4 Site Context – Development Area



Source: Near Maps and Urbis

The key features of the site are summarised in the table below.

Table 2: Key Features of Site and Locality

Descriptor	Site Detail
Land Configuration	The site is legally described as Lot 1 in Deposited Plan 1306448. The site area is 171.84ha. The site generally slopes from high points adjacent to Elizabeth Drive (RL 75) to low points in the northeast corner (RL 40). Topography is characterised by a central ridgeline running from the central portion of the southern boundary towards the northeast.
Surrounding Land Use	Surrounding land uses include: ▪ M12 Motorway and Metro (under construction) to the north and east with predominantly rural uses beyond ▪ Western Sydney Airport is under construction opposite the site on the southern side of Elizabeth Drive, ▪ Rural residential uses on the opposite side of Cosgroves Creek to the west.
Site Access and road network	The site is accessible from Elizabeth Drive, a State arterial road aligned in an east-west direction adjacent to the southern boundary.
Easements and Covenants	An easement for electricity purposes is located on the northern side of the site.
Services	The site has power and water available.
Acid Sulfate Soils	Not mapped.
Contamination	The site has the potential to be contaminated, due to the current agricultural land use. A Detailed Site Investigation will be submitted as part of the SSDA lodgement.

	As per previous Detailed Site Investigation prepared by Douglas Park, the site is appropriate for proposed development subject to remediation works undertaken.
Stormwater and Flooding	As indicated in the <i>Wianamatta (South) Creek Flood Study – Existing Conditions (Prepared by Advisian for Infrastructure NSW, November 2020)</i> the site is subject to 1:100 ARI (average recurrence interval) along the main creek lines of Cosgroves and Badgerys Creek.
Bushfire Prone Land	The site is classified as bushfire prone land. A bushfire report will be submitted with the SSDA.
Flora and Fauna	The site currently consists of cleared rural land with the occasional scattered Cumberland Plain Woodland, trees, weeds, and shrubs. Most of the site is certified under the Cumberland Plain Conservation Plan (CPCP)
Riparian Corridor	Cosgroves Creek and Oaky Creek run along the western part of the site, while Badgerys Creek runs along the eastern side. The proposed development is designed to generally avoid land zoned ENZ. The site contains multiple hydrolines and dams.
Aboriginal Heritage	Aboriginal objects have been identified along the Oaky Creek – Cosgroves Creek corridor along the entirety of the western study area boundary.
European Heritage	The site does not contain any State or locally significant heritage items. The site does form part of the former CSIRO McMaster Field Station which is identified as a potential heritage item under the Precinct Plan. The site is adjacent to the McGarvie Smith Farm which is identified as a local Heritage Item under the <i>State Environmental Planning Policy (Precincts—Western Parkland City) 2021</i>.

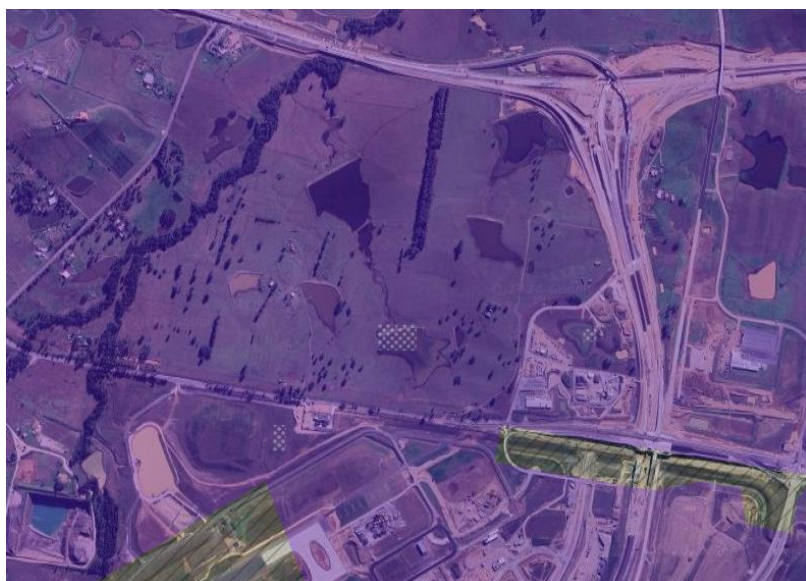
2.2.1: Current provision of broadband network to the site

There is not currently any available fixed broadband service to the site. The current (June 2024) NBN Co rollout delivery map has the area scheduled for future rollout, and notes fixed line broadband connection in two proximal locations, being the Badgerys Creek Airport site development and M12 interchange with Elizabeth Drive building site. See Figure 5 below.

Based on these existing locations of connectivity, it is recommended that the proposal seeks connection to the NBN Co Fibre to the Premises (FTTP) Distribution Network via a utilities trench from Elizabeth Drive at the site entrance, and that this is installed as part of Stage 1 works.

It is further recommended that detailed network design for the site be undertaken by an accredited expert consultant and be consistent with NBN Co New Developments Standards for Deployment of NBN Pit and Pipe Network.

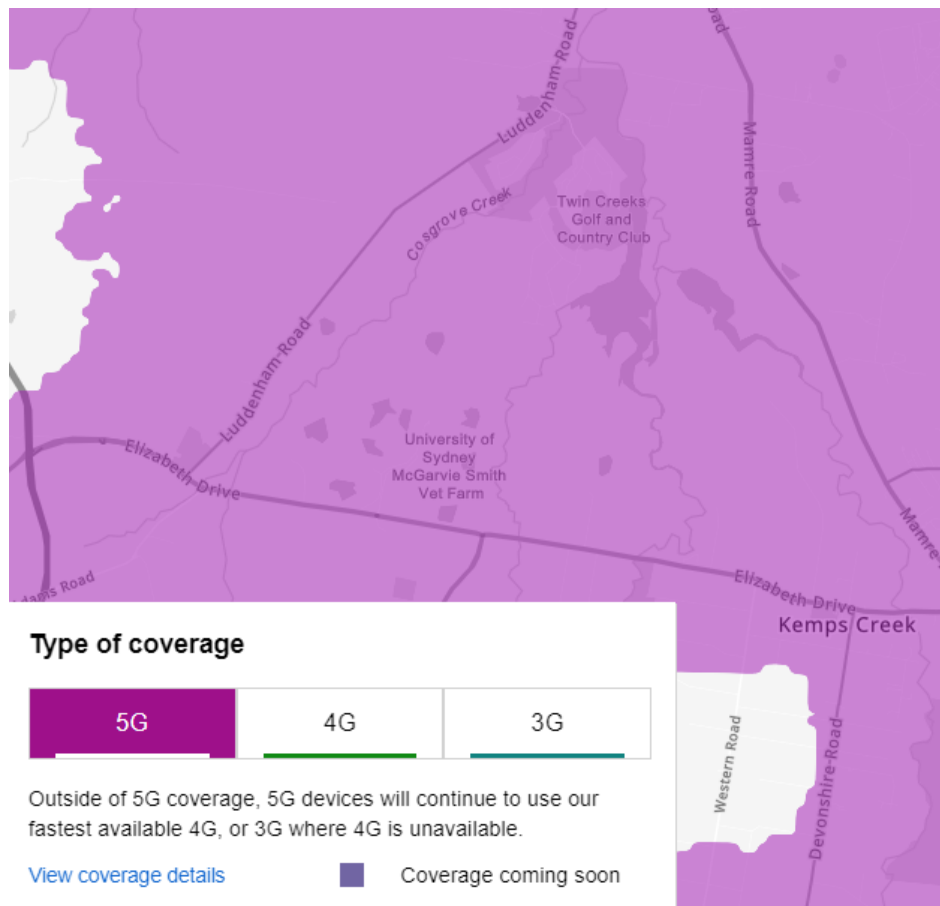
Figure 5: Current NBN Co Broadband rollout map



2.2.2: Current provision of mobile cellular network to the site

Current Telstra 5G coverage maps show the site has 5G wireless network coverage available. This 5G network is delivered across the site without physical telecommunications infrastructure required within site boundaries.

Figure 6: Current Telstra 5G coverage map



2.3: THE SMART PLACES CONTEXT

Burrah Park is nestled right at the heart of Australia's most advanced smart places planning framework.

Smart places are urban areas that leverage digital technologies and smart infrastructure to enhance productivity, liveability, and sustainability. In NSW, smart places are positioned as integral components of urban and regional planning.

Digital connectivity, place-based data, technology infrastructure and digital services are, when understood and judiciously applied, powerful enablers of positive change. The Aerotropolis planning framework prioritises the significant value to be realised through their integration into planning process for place amenity, economic development and data-led planning and management of places and resources.

The Smart NSW Strategy and SmartNSW Roadmap 2022-2027 exemplify this approach, aiming to make NSW a leader in smart technology and innovation. The Roadmap employs a multi-faceted approach to build capabilities, support innovation, encourage data-driven decision-making, and to support the scaling of solutions. It seeks to ensuring inclusivity and leverage technology to enhance public services, foster innovation, and showcase best practices across NSW.

In the Western Sydney Aerotropolis, smart places are central to its vision as Australia's next global gateway. The Western Sydney Aerotropolis Plan envisions a jobs-dense, sustainable urban area focused on sectors like defence, aerospace, advanced manufacturing, and technology. This plan integrates smart infrastructure, connectivity, and a landscape-led approach to foster a vibrant, liveable, sustainable city.

Burrah Park, positioned within the Western Sydney Aerotropolis, benefits from Australia's most advanced smart places legislative framework including the Western Sydney Aerotropolis DCP which provides specific smart places development guidance.

Complementing this, the Smart Western City Program plans the Western Parkland City as a digitally enabled, future-focused area. It leverages today's technology and digital connectivity, and focuses on establishing the physical infrastructure such as multi-function (smart) poles and high-capacity conduits, to support innovation, growth, connectivity, and sustainability, thereby enhancing the quality of life for residents and businesses.

The smart initiatives identified in this report respond directly to this strategic context, and their integration within Burrah Park demonstrates the commitment of the proposal to delivering on the opportunity for the Aerotropolis as a smart and sustainable region.

2.4: SCOPE OF THE REPORT

Urbis has been engaged by HB&B and ISPT to provide strategic advice pertaining to the selection and inclusion of smart infrastructure and technology within the Burrah Park industrial estate concept masterplan and stage 1 works.

This engagement includes the provision of a Smart Places Assessment Report (this report) outlining how the proposal will integrate smart places opportunities to achieve outcomes and ensure the SSDA application is consistent with the compliance requirements relevant to the site and strategic context.

3: METHODOLOGY

The methodology utilised in the preparation of this report reflects the two aspects of the scope for which Urbis was engaged:

1. To provide strategic advice pertaining to the selection and inclusion of smart initiatives
2. To assess the project SSDA proposal against the relevant components of the planning framework

The information in this report has been prepared with reference to the:

- Secretary's Environmental Assessment Requirements
- The State Environmental Planning Policy (Planning Systems) 2021 – Schedule 1
- The State Environmental Planning Policy (Precincts – Western Parkland City) 2021 – Chapter 4 – Western Sydney Aerotropolis
- The Western Sydney Aerotropolis Precinct Plan
- Technical Studies informing the Western Sydney Aerotropolis Precinct Plan
 - Aerotropolis Urban Design Report - Part 4: Northern Gateway Precinct
 - Utilities Audit
 - Sustainability and Heat Report
- The Western Sydney Aerotropolis Development Control Plan

The report has also reviewed and considered the following strategic planning and policy documents, technical reports and guidelines in forming a view on the appropriate smart infrastructure and technology inclusions within the concept plan for the site:

- Smart Places Strategy NSW
- Smart NSW Roadmap 2022-2027
- NSW Net Zero Cities Action Plan
- Western Sydney Street Design Guidelines
- Smart Western City Program
- Penrith City Council Digital Economy Strategy
- 2056 Future Transport Strategy
- NSW Smart Places Customer Charter
- NSW Smart Public Spaces Guide
- NSW Smart Infrastructure Policy
- NSW Digital Infrastructure Technical Report
- NSW Telecommunications Facilities Guideline
- NSW Internet of Things Policy Statement
- NSW Smart Places Data Protection Policy
- NSW Cybersecurity Strategy

Smart Initiatives Development Methodology

The smart initiatives outlined in this report have been developed with reference to identified strategic objectives and desirable place outcomes emerging from this review and analysis of the statutory and strategic planning context. The summary of this review is described in section 3.2, below.

This analysis identifies a set of opportunities that were then aligned with the project objectives for an industrial estate with significant public domain areas. This process included review of the existing baseline conditions for smart technologies, and of the plans and technical reports informing the proposal.

Within this analytical framework, use case categories relevant to industrial land uses were prioritised for further investigation. A set of deployment principles that align with the broader project objectives were developed.

A set of smart initiatives were then developed reflecting current best practice, and further refined through industry engagement. These initiatives have been considered with reference to the deployment principles and overall strategic objectives of the proposal.

Assessment Methodology Outline

The proposal was assessed against the statutory planning framework identified in the SEARs, and specifically sections 2.13 Smart Places and 6.5 Telecommunications Infrastructure of the Aerotropolis Development Control Plan to confirm compliance with the requirements and conditions of the statutory planning framework. This assessment is described in section 5 of the report, along with findings and recommendations.

The assessment process has identified a range of outcomes that demonstrate the project's alignment with the overall performance outcomes of multiple controls within the Aerotropolis DCP.

However, the project has adopted a strategy of moving beyond a minimum compliance mindset to focus on strategic investment in smart places infrastructure and technologies that seek to future-proof the site and enable a wide range of additional potential uses and future applications to be delivered into the estate.

The smart initiatives resulting from this process have been designed to meet the statutory planning requirements governing the site. They represent a set of recommended measures to minimise potential negative impacts while emphasising positive opportunity for the outcomes across the site.

3.1: STRATEGIC CONTEXT

This section provides an overview of the strategic planning policies governing smart places development in NSW and how the vision and intended outcomes for the site will implement or otherwise be consistent with the relevant plans and policies. The following strategic plans were reviewed as part of the preparation of this report:

Table 3: Overview of relevant components of the strategic context

Document	Description
Western Sydney Aerotropolis Plan	The Western Sydney Aerotropolis Plan envisions the Aerotropolis as Australia's next global gateway, centred around the Western Sydney International Airport. It focuses on creating a jobs-dense, sustainable urban area with sectors such as defence, aerospace, advanced manufacturing, and technology. The plan emphasises connectivity, liveability, and a landscape-led approach.
Aerotropolis Precinct Plan 2023	The Western Sydney Aerotropolis Precinct Plan 2023 provides a strategic framework for sustainable development in the Aerotropolis, providing guidance on infrastructure, urban structure, land use and built form. It mandates place-based objectives and requirements, aligning with the Greater Sydney Region Plan.
Smart Places Strategy NSW	The Smart NSW Strategy focuses on digital transformation through integrating technology in the built environment to enhance productivity, liveability, and resilience. It promotes smart infrastructure, data-driven decision-making, and collaboration across government and private sectors to improve the quality of life in NSW's urban and regional areas.
SmartNSW Roadmap 2022-2027	The SmartNSW Roadmap 2022-2027 aims to maintain NSW as the leading smart state in Australia. It focuses on leveraging digital technologies to create sustainable, liveable, and inclusive cities. The roadmap outlines objectives for building capabilities, supporting innovation, and promoting best practices to enhance economic, social, and environmental outcomes.
Net Zero Cities Action Plan	The Net Zero Cities Action Plan outlines the NSW Government's strategy to achieve net zero emissions by 2050, focusing on urban areas as key drivers for innovation and emissions reduction. It includes 17 actions to reduce carbon emissions, improve sustainability, and enhance liveability, fostering partnerships and promoting new technologies in city planning.
Western Sydney Street Design Guidelines	The Western Sydney Street Design Guidelines aim to create environmentally sustainable, socially beneficial, and visually appealing streets. Focused on new developments and significant urban transformations, these guidelines balance community needs and functionality, enhancing liveability and connectivity. They support the integration of innovative design and smart technologies in urban planning.
Smart Western City Program	The Smart Western City Program is part of the planning for the Western Parkland City, aiming to create a future-focused, digitally enabled urban

	area. It ensures the benefits of current technology, supports digital growth, and establishes an ecosystem for innovation with infrastructure like high-capacity conduits and smart poles, enhancing connectivity and sustainability.
Penrith City Council Digital Economy Strategy	The Penrith City Council Digital Economy Strategy leverages high-speed broadband to foster economic and social benefits through digital technologies. It aims to inspire digital innovation, supporting commercial adaptability, new business models, and economic sustainability. This strategy is crucial for enhancing digital infrastructure, connectivity, and promoting economic growth in the region.
Future Transport Strategy 2056	The Future Transport Strategy 2056 sets the vision for an integrated, sustainable, and accessible transport system in NSW. It focuses on enhancing connectivity, supporting economic activity, and creating successful communities through smart planning, multimodal mobility, and environmental sustainability. This strategy guides future planning, investment, and operational decisions to improve transport for all users.
NSW Smart Places Customer charter	The NSW Smart Places Customer Charter guides the ethical and safe use of smart technologies in public spaces. It emphasises six principles and three core values, including connection to Country, sustainability, and benefits for people. The Charter fosters community trust and ensures smart places meet diverse needs and expectations.
NSW Smart Public Spaces Guide	The NSW Smart Public Spaces Guide promotes creating walkable public spaces that enhance community connectivity, health, and well-being. It outlines ten characteristics of walkable spaces and suggests using digital technology to improve the walking experience and accessibility. The guide assists governments and communities in developing vibrant, inclusive public areas.
Smart Infrastructure Policy	The Smart Infrastructure Policy mandates embedding smart technology in all new and upgraded infrastructure projects in NSW. It aims to enhance liveability, productivity, and sustainability by using technology and data to optimise infrastructure performance. This policy supports the NSW Government's vision for smart places, ensuring efficient, innovative, and connected communities.
Digital Infrastructure Technical Report	The Digital Infrastructure Technical Report provides detailed guidelines for planning, designing, and constructing fibre networks to support high-speed, high-bandwidth communication needs in urban development. It ensures a flexible and uniform telecommunications environment for smart infrastructure, supporting advanced connectivity demands like 5G/6G, IoT sensors, and EV charging stations.
NSW Telecommunications facilities Guideline	The NSW Telecommunications Facilities Guideline supports efficient and cost-effective broadband rollout, detailing planning provisions and development controls for telecommunications infrastructure. It outlines approval pathways, design, siting, construction, and operational principles to minimise impacts and comply with national regulations, ensuring community needs for telecommunications services are met.
IoT Policy Guidance	The NSW IoT Policy Guidance provides foundational knowledge for implementing Internet of Things (IoT) projects, detailing project scoping, planning, stakeholder engagement, data management, and risk compliance. It aims to enhance decision-making, service delivery, and operational efficiency through interconnected devices and data, supporting NSW Government's digital transformation initiatives.
Smart Places Data Protection Policy	The Smart Places Data Protection Policy ensures the lawful and best practice management of data in smart places projects across NSW. It guides public and private stakeholders in collecting, storing, and using data while adhering to privacy, security, and ethical standards. The policy supports transparency and trust in smart technology implementations.
NSW Cyber security strategy	The NSW Cyber Security Strategy outlines a risk-based approach to safeguard government data and services. It emphasises secure, integrated, responsive, and holistic cyber capabilities. The strategy ensures government systems are resilient, promoting collaboration and robust cyber practices to protect citizen data and enhance digital transformation, aligning with the NSW Digital Government Strategy.

Review of these strategies, policies and guidelines has established a comprehensive framework guiding the development of the site with reference to smart places initiatives. The specific items of relevance pertaining to the identification, deployment and management of smart technologies within the Burrah Park estate are identified in the following tables:

Aerotropolis Precinct Plan 2023

Item	Description of requirement
PO 02	Be the location of choice for advanced manufacturing and high technology industries in Australia with accessible infrastructure, public transport and high design quality with fit for purpose buildings and green spaces.
IO6	Ensure utilities design and locations consider space for alternative future services and allow for multi-utility corridors in the future.
IO7	Use technology and data driven solutions to maximise quality of life across the Aerotropolis, in line with the NSW Smart Places Strategy and Smart Western City Program.
LUO2	A blue-green framework is delivered as development occurs that: a. Provides access to open space that meets the needs of workers and residents, students and visitors b. Preserves significant natural features including watercourses and remnant vegetation c. Accommodates infrastructure required to manage the flooding and water quality impacts of development d. Respects and enhances Aboriginal cultural heritage and archaeology and maximises opportunities to connect with Country
BGO1	To integrate blue and green systems across the Aerotropolis for water quality management, biodiversity and recreation.
BGO3	Establish a network of multifunctional stormwater assets that support stormwater management and contribute to broader objectives for waterway health, biodiversity, urban greening and cooling, recreation and amenity.
NG 02	Facilitate the development of a high technology employment precinct.

Smart NSW Strategy

Item	Description of requirement
	Skills, Jobs and Development Use data and smart solutions to improve efficiency in the design, approvals, delivery, maintenance and decommissioning of assets and places. Leverage and multiply economic opportunities in key strategic places in our cities and regional centres through investment in smart places.
	Safety and Security Increase people's sense of safety, so they can fully participate in the social and economic activities at all times of day. Increase the resilience of physical and digital assets to natural and human threats. Increase the safety and security of customers moving to, from and within Smart Places.
	Environmental Quality Provide customers real-time access to information to help them better manage their consumption and resource use. Improve the monitoring and forecasting of environmental conditions, to assist action in real time. Incorporate environmental sensors into new and improved infrastructure assets. Improve the efficiency of resource use and waste generation by using smart initiatives to monitor assets across their whole life and encourage their re-use. Improve and maintain the health of the natural and built environment in Smart Places. Adopt smart solutions to more efficiently use our services and infrastructure to reduce carbon emissions.
	Equity, Accessibility and Inclusion Increase fixed and wireless digital coverage, connectivity and quality across NSW. Use data insights and smart technologies to improve physical and digital accessibility across NSW. Increase connected public spaces to allow people to work and study in more places, boosting access to education and income opportunities. Increase participation in local and digital economies of a place.
	Health and Wellbeing Integrate smart technology to inform the design and maintenance of shared, bike and pedestrian paths to encourage physical activity. Use smart solutions to make public spaces safe and encourage their use at all times of the day. Improve the ability to provide real time data on environmental risk factors that affect health and well-being of customers. Deploy smart technology to make places adaptable to changing community needs.
	Collaboration and Connection Drive adoption of new technologies and approaches by engaging communities early, so the solutions are relevant to the place. Ensure digitally-enabled environments are adaptable and resilient to future technological change. Ensure quality data is collected from all sources with permission from data owners.

SmartNSW Roadmap 2022-2027

Item	Description of requirement
EN5	Treat digital connectivity as a basic utility in new developments and redeveloped areas
PR12	Plan and design for a digitally enabled and connected 6 Cities Region
PR14	Support NSW Government parks, gardens, public spaces and paths to be resilient, green and inviting for visitors using digital connectivity and technology and data solutions

Net Zero Cities Action Plan

Item	Description of requirement
1	Reduce carbon emissions from new infrastructure
9	Enable micromobility as a smarter way to move freight
Priority 1	Drive uptake of proven emissions reduction technologies that grow the economy, create new jobs and reduce the cost of living
Priority 2	Empower consumers and businesses to make sustainable choices
Priority 3	Invest in the next wave of emissions reduction innovation to ensure economic prosperity from decarbonisation beyond 2030

Western Sydney Street Design Guidelines

Item	Description of requirement
C3.7	Electric Vehicle Charging Expand the charging infrastructure network to help make electric vehicles a viable option for all drivers. Thoughtfully place and coordinate charging stations with other street furniture.
C5.1	Shared Utility Trenches Where conditions allow, combine multiple utilities in local streets within shared utility trenches to support the delivery of the Street Design Objectives
C5.2	Multi-Function Poles Reduce street clutter and improve street amenity by implementing multi-function poles Consideration to the placement of Multi-function poles should be given in regard to avoiding mature street tree canopy Consider adding additional arms to Multi-function poles where adjacent amenity requires extra lighting Co-locate multi-function poles with other street elements such as street furniture
C5.6	Telecommunications and Digital Connectivity Place NBN within Telstra pits and co-locate with Telstra network Provide one distribution hub per 384 premises (new fibre-to-the-kerb installations do not require large cabinets) Ensure a Max. 150m between distribution hub and premises Provide one pit per four premises: max. 250m between pits
C6.1	Smart City Gather helpful data that improves user quality and overall street management. Enable digital connectivity to street furniture, such as park benches and bins. Smart poles should include relevant sensing networks, with flexibility to enhance these in the future. This could include Realtime data collection devices like air-quality monitors, noise sensors, and pedestrian, cyclists, and traffic counters. Consider making data available through an open data platform for organisations to create third party resources such as transit maps and schedules, and to inform future design projects Aim to create intelligent ecosystems on streets by incorporating amenities such as WiFi access points, mobile phone applications, real-time transit information, and transit, bikes, and car-sharing facilities Consider making data available to encourage innovation and participation from users of the street
C6.3	Mobile Communications Maximise planning opportunities for co-location of above and below ground infrastructure such as conduits and shared poles.

Adopt a collaborative approach between operators, local authorities and governments to allow readily accessible information about street furniture, existing fixed telecommunications infrastructure and access to power.

Provide 3D as-built model of completed works to help assist the delivery of future precincts. This will allow governments to provide operators with access to existing street furniture data for small cell deployment, which will enable substantial cost savings, and will also help to deploy 5G networks within urban areas much more quickly.

Penrith City Council Digital Economy Strategy

Item	Description of requirement
	Resources and Infrastructure To deliver the infrastructure for the Digital Economy, achieving recognition amongst the Penrith community that the region is taking active steps to become a leader within the Digital Economy.
	Knowledge and Skills Development To drive knowledge and skills regarding digital technology to the extent to where the Penrith region is recognised as a national leader in the Digital Economy.

Future Transport Strategy

Item	Description of requirement
C1.3	C1.3 Facilitate digital connectivity and smart city technologies A. Fibre and power to street furniture and multi-function poles B. Mobile coverage, wi-fi and Internet of Things networks C. EV charging (including for micromobility and e-bikes) D. Light posts and street furniture to house sensors for movement, activated lights and to collect pedestrian and traffic data E. GPS tracking transport for real-time transport information F. Interactive pavement marking and signage to change and allocate priority in peak times G. Live information boards on street furniture and multifunction poles, providing local transport information H. Data and insights on activity for governments and businesses to keep places safe and provide services to customers
C1.4	Improve digital connectivity along our transport corridors C1.4a Continue to support high quality digital access on transport services, corridors and infrastructure. C1.4b Contribute to a government-wide approach to support digital literacy and accessibility, to help customers access Transport and wider government services
C4.3	Expand technology and innovation to improve safety Expand intelligent transport systems technologies for safety on our networks. Make NSW a leading adopter of safety improvements from connected and automated vehicles.

NSW Smart Places Customer charter

Item	Description of requirement
1.	Co-creating smart places - Smart solutions tackle problems that matter most to people. - People and organisations with the right skills and resources contribute and collaborate. - People are clear on the benefits of smart technologies to their community.
3.	Advancing digital inclusivity - More people have better access to the internet and digital services. - More places have internet connections and can be used for work, study or socialising. - More people can engage with smart technology solutions and use data and insights. - People have new digital skills and participate in the digital economy.
6.	Delivering benefits that last - Asset maintenance and operational management of systems and solutions is resourced appropriately. - The lifecycle of assets is maximised.

NSW Smart Public Spaces Guide

Item	Description of requirement
7	Local business and economies Using Smart City solutions to help navigate and find public space, and provide feedback to improve planning and management of public spaces
8	Safe and secure Applying Crime Prevention Through Environmental Design (CPTED) principles, e.g. spaces that are well lit day and night and encourage natural surveillance through openness and visibility.

Smart Infrastructure Policy

Item	Description of requirement
2.1	Requirements for smart infrastructure current and future needs of customers (or users) of the infrastructure location of the infrastructure and data that may be useful to improve the efficiency of that place or the services provided to its citizens and businesses
2.3.1	Smart infrastructure should be deployed for the following infrastructure types: • Power • Water • Waste • Ground & Air quality • Public spaces (safety & capacity) • Building management • Transport • Agriculture Any infrastructure that can obtain data to meet the local community smart place objectives
	Smart infrastructure must adopt privacy by design. This includes minimising the collection of personal information and deidentifying identified data (where possible)
	The smart infrastructure network must implement redundancy and diversity at all layers (where economically feasible) to protect from node or link failure and to facilitate in-service maintenance. In the event of a failure, the network must rapidly reconverge (restore to full operation). The network infrastructure must notify when nodes are offline if redundancy is not feasible.
	Sensors must record their location in accordance with the spatial data requirements set out in the Internet of Things Policy (where possible).
	Smart infrastructure should use appropriate smart sensors and devices that are consistent with the Internet of Things Policy.

Digital Infrastructure Technical Report

Item	Description of requirement
Telecommunication network elements	The modern telecommunication environment requires connectivity to many more locations than telecommunication equipment sites, businesses and residential buildings. These include: • street lights • traffic lights • electricity control devices and meters • water and sewerage equipment • traffic monitoring • parking management solutions • environmental and city management sensors • electrical vehicle charging points • edge computing facilities • V2X (vehicle-to-everything) autonomous vehicles.
Smart pole Type 1 (Full capability)	Potentially integrated technologies • Wi-Fi • CCTV • IoT Sensors (various) • Environment sensor • General power outlet • USB charging

- Help button
- Microphone
- Wayfinding
- LED

NSW Telecommunications facilities Guideline

Item	Description of requirement
1	Principle 1: Design and site telecommunications facilities to minimise visual impact. a. As far as practical, integrate a telecommunications facility that is mounted on an existing building or structure with the design and appearance of the building or structure. b. Minimise the visual impact of telecommunications facilities, reduce visual clutter (particularly on tops of buildings) and ensure physical dimensions (including support mounts) are sympathetic to the scale and height of the building to which it is to be attached and to adjacent buildings. e. Locate and design a telecommunications facility in a way that responds to its setting (rural, residential, industrial or commercial). k. Where possible, consolidate telecommunications facilities to reduce visual clutter and work with other users on co-location sites to minimise cumulative visual impact.
2	Principle 2: Co-locate telecommunications facilities wherever practical a. As far as practical, locate telecommunications lines underground or within an existing underground conduit or duct. b. Where practical, co-locate or attach overhead lines, antennas and ancillary telecommunications facilities to existing buildings, public utility structures, poles, towers or other radiocommunications equipment to minimise clutter. c. Consider extending an existing tower as a practical co-location solution to new towers. d. Demonstrate that co-location is not practicable¹ if choosing not to co-locate a facility. e. If choosing to co-locate, design, install and operate a telecommunications facility so that resultant cumulative levels of radio frequency emissions are within the maximum human exposure levels set out in RPS S-1.

NSW IoT Policy Statement

Item	Description of requirement
	Using IoT for Green Infrastructure IoT can be used in green infrastructure to: • capture data on localised temperature, humidity and air quality and visibility to support proactive measures to protect people's health and safety while enjoying green open spaces. • aggregate and analyse environmental data from IoT devices to provide real time insights on the environment to drive biodiversity and sustainability outcomes. Examples include tree health, soil moisture, water and air pollution levels, urban heat, threatened species monitoring and irrigation management. • provide water monitoring IoT solutions that support water asset maintenance, contributing to water efficiency and waterway health.
	The IoT ecosystem Communication and network: network hardware, software, protocols and services that connect IoT hardware to the internet, whether that is: • Backhaul connectivity: long-haul communications; GPS, cable, LPWANs, cellular • Local connectivity: short-range and machine-to-machine communications; WLAN, mesh networks, Bluetooth, Wi-Fi • IoT gateways: intermediaries between the sensors/actuators and the cloud to process the collected data locally before sending it to the cloud.

3.2: ANALYSIS SUMMARY

The various strategies and plans described above are all relevant to the development and management of urban areas in NSW, particularly the Western Sydney Aerotropolis, and highlight a consistent emphasis on leveraging technology and smart infrastructure to enhance sustainability, liveability, and economic growth.

Collectively they form a guidance framework for the identification of the key areas in which smart places infrastructure and technology can be leveraged to deliver on the strategic and policy objectives governing the site and project. Specifically, they identify key opportunities relevant to the site related to:

Integrate Smart Infrastructure:

- Emphasised in the Smart Places Strategy NSW, SmartNSW Roadmap 2022-2027, Smart Infrastructure Policy, and Digital Infrastructure Technical Report, this theme focuses on embedding advanced technology in urban planning to enhance productivity, liveability, and sustainability.

Focus on Sustainability and Environment:

- The Western Sydney Aerotropolis Plan 2023, Western Sydney Street Design Guidelines, and Future Transport Strategy 2056 prioritise environmentally sustainable development. Plans emphasise the integration of smart technologies to monitor and manage resources efficiently, creating a resilient urban environment and enhancing capacity for data-led decision making.

Enable Innovation and Economic Growth:

- Stressed in the SmartNSW Roadmap 2022-2027, Penrith City Council Digital Economy Strategy, and Future Transport Strategy 2056, fostering innovation and supporting new business models through access to digital capabilities are key to driving economic sustainability and growth.

Deliver Community Liveability and Connectivity:

- The Western Sydney Street Design Guidelines, NSW Smart Public Spaces Guide, and Penrith City Council Digital Economy Strategy emphasise creating socially beneficial, connected, and inclusive public spaces to enhance the quality of life for residents.
- These documents advocate for the development of well-designed, accessible streetscapes and public areas that foster social interaction, promote active lifestyles, and enhance community cohesion. The integration of digital technologies in these spaces aims to improve connectivity and access to services, making urban areas more navigable and user-friendly.
- This holistic approach to urban planning supports the creation of vibrant, liveable communities where technology enhances everyday life and fosters a sense of belonging and well-being

Support Data-Driven Decision-Making:

- Highlighted in the Smart Places Strategy NSW, SmartNSW Roadmap 2022-2027, and IoT Policy Guidance, the use of data for informed decision-making aims to improve service delivery, operational efficiency, and overall urban management.

Prioritise Ethical Technology Use and Data Protection:

- The NSW Smart Places Customer Charter, Smart Places Data Protection Policy, and NSW Cyber Security Strategy focus on ethical considerations, privacy, and data security, ensuring technology benefits are realized responsibly and transparently.

These opportunities have informed the development of a set of relevant use case categories and subsequent smart initiatives that are recommended for inclusion in the proposal.

4: PROPOSED SMART INITIATIVES

4.1: INITIATIVES CATEGORIES

This section describes the proposed smart initiatives recommended for inclusion.

The following categories of initiative have been identified as relevant to the site and in alignment with the strategic framework.

- Enabling Infrastructure
- Digital Connectivity
- Smart Mobility and Travel
- Environmental Management
- Smart Energy
- Amenity and Safety

These categories represent the aspects of the proposal demonstrating opportunity for consideration of smart infrastructure and technology. Within these categories a range of smart initiatives are identified across the site.

These initiatives represent deployment of technologies in alignment with compliance requirements and opportunities to leverage smart infrastructure investment to future proof the Burrah Park site in alignment with strategic planning provisions for the Aerotropolis.

4.2: DEPLOYMENT PRINCIPLES

Smart Places are successfully delivered when enabling electrical and digital infrastructure are appropriately embedded to deliver technology and data-enabled outcomes for people. Burrah Park's considered adoption of smart infrastructure will support its position as a leading industrial estate for warehousing and logistics adequately provisioned to respond to emerging trends in industrial and social applications of technology.

The inclusion and integration of smart infrastructure and technology-led applications within Burrah Park will be led by the following principles:

- **Use case-led applications:** Identification of desirable outcomes aligned to both the strategic planning context and project objectives.
- **Future-proofing logic:** Making strategic decisions regarding capacity and placement that provide for future demand and emerging technology.
- **Digitally enabled outcomes:** Leveraging investment in digital connectivity to deliver benefits in efficiency, resource management and useability
- **Considered deployment:** Alignment to design principles and a distribution that seeks integration, co-location and location of technology only where it is needed.
- **Technology Hierarchy:** Recognition of a hierarchy of technology that informs the technical requirements associated with use cases and smart applications.

The following sections describe the categories and individual smart places initiatives deemed to enhance place outcomes for estate workers and visitors, and to support effective management objectives.

4.3: ENABLING INFRASTRUCTURE

With reference to smart places, enabling infrastructure refers to a system of physical assets that provide for and enable the delivery of services. It includes the passive infrastructure required to support and enable the positioning or conveying of connectivity assets in places, such as pits, conduits, poles and masts and brackets. It also includes electrical and telecommunications infrastructure that enable digital connectivity and place-based technologies.

The early consideration of enabling infrastructure underpinning smart places outcomes is a priority within the Aerotropolis and is in alignment with NSW Government guidance to consider digital infrastructure as critical infrastructure.

The proposal has considered the enabling infrastructure for smart places within development of the concept master plan and provides for effective enablement of digital connectivity outcomes within the Site. These outcomes support Aerotropolis Precinct Plan objectives to facilitate the development of a high technology employment precinct, Penrith City Council objectives to deliver the infrastructure for the digital economy, and NSW Government objectives to deliver Smart City solutions supporting the creation and management of public domain outcomes for workers and visitors to the site. Integrating smart technology, sensors, and advanced infrastructure, this proposal leverages data-driven solutions to enhance connectivity, operational efficiency, and urban management. These strategic integrations align with the broader goals of fostering economic growth, improving community well-being, and ensuring resilient and adaptable urban spaces.

Enabling infrastructure for smart places is most effectively delivered when integrated with other utilities.

The following smart places enabling infrastructure initiatives are included in the proposal:

Table 4: Enabling Infrastructure Initiatives

Smart Initiative	Description	Relevance
4.3.1 Passive Infrastructure	Subterranean civil infrastructure comprising conduits and access pits required for distributing communications and energy distribution networks. Passive infrastructure can also include required above ground civil infrastructure required for attaching and housing smart technology and devices. Includes poles, brackets, fixtures and antennae structures. Can be stand alone or integrated with other infrastructure.	The integration of pit and pipe network with the electrical network ensures the two principle connection requirements enabling a smart infrastructure platform are provided across the built form of the site. Following the street hierarchy ensures shared trenching and dig once frameworks. Above ground infrastructure should seek co-location and integration with existing structures wherever possible. To be designed in accordance with technical guidance identified below.
4.3.2 Multi-Function Poles (MFPs)	Street pole designed to be fibre connected and able to seamlessly house and integrate multiple smart technologies including network components, sensors and other devices.	The inclusion of multi-function poles within the proposal enables the delivery of digital connectivity equipment and place-based technologies in a way that supports co-location of assets and reduction of clutter in the public domain. Location of MFPs, and associated integrated technology, is determined by place-based focus on delivering outcomes for end users.

The fundamental deployment approaches adopted within the proposal for the enabling infrastructure required to deliver smart places are:

- Integration with the principles of the estate concept masterplan. This includes alignment to design principles and a distribution that seeks integration, co-location and location of technology only where it is needed.
- The deployment of pit and pipe in conjunction with other utilities through shared trenching and in close integration with the electrical network. This approach dictates a deployment schema aligned to the road hierarchy and active transport network to reach key sites.
- Deployment of multi-function poles in locations where multiple smart technology functions are required. These functions are determined through processes prioritising outcomes for the end users.
- Allowing for future uses and smart applications within the site of MFP-ready locations in key locations. MFP-ready locations include appropriate passive infrastructure elements such as access pits with conduit connections for electrical and fibre to footings.
- Creating the foundation platforms for achieving broad performance objectives by enabling desirable on-lot activity. Specifically, ensuring all lots have connectivity opportunities and are delivered fibre-ready.

The indicative layout of pit and pipe within the proposal follows the street hierarchy and elements of the active transport pathways network. This deployment schema provides connection to each lot within the estate, and direct connection or proximity to the primary public spaces.

Figure 7: Indicative layout for pit and pipe network



Multi-function poles are included across the Site along Estate Road 1 (five poles) and Estate Road 2 (one pole). A further set of multi-function poles are co-located in three public domain areas of the Site. This deployment schema provides an enabling foundation for a wide range of smart technologies in an integrated manner.

Figure 8: Indicative locations for multi-function poles and MFP-ready locations



MFP-ready locations will be provided in a further 10 locations along secondary Estate Roads. This creates a potential deployment schema considerate of future uses requiring increased digital connectivity provision and density, or deployment of new technologies across the site.

Reference to specific strategies and reports:

- NSW Digital Infrastructure Technical Report
- NSW Telecommunications Facilities Guideline
- NSW Smart Infrastructure Policy
- Western Sydney Street Design Guidelines

The NSW Digital Infrastructure Technical Report provides the follow specific guidance on minimum depth, conduit diameter and bend radius:

Table 5: Minimum provision guidelines for smart city conduit.

Conduit type	Minimum cover to standard ground level
Facility conduit	300 mm
Lead-in conduit	450 mm
Street route (reserve or easement)	450 mm
Road/street crossings	600 mm (or as per local requirements)

Conduit type	Minimum bend radius
Street network P100	5 m
Lead-in conduit P100	5 m
Lead-in conduit P50	300 mm
Lead-in conduit P20	300 mm
Facility conduit P20	300 mm

The NSW Digital Infrastructure Technical Report also provides guidance on pit and pipe network design to ensure appropriate provision of conduits for non-addressable locations and premises connections.

Figure 9: Design guidance for pit and conduit networks for facility connections

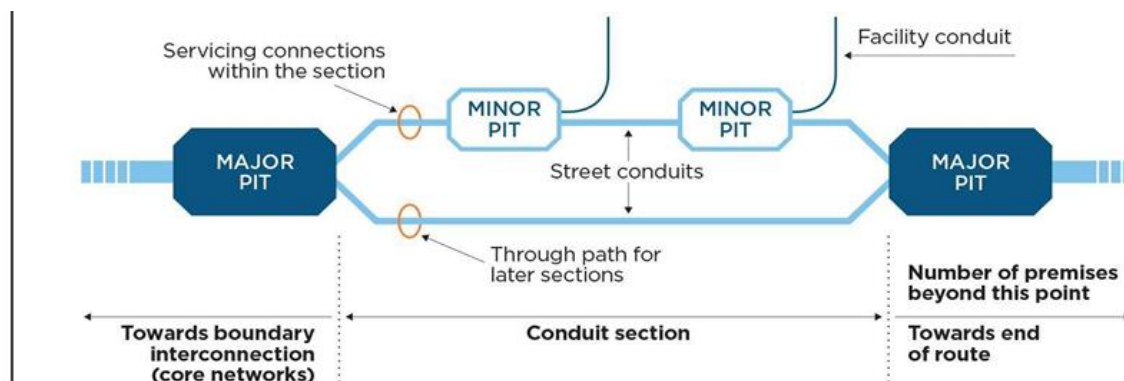
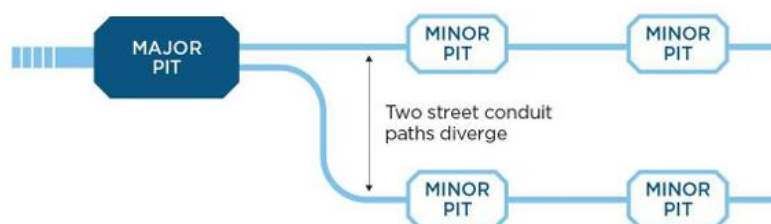


Figure 10: Design guidance for conduit networks for divergent conduit networks



4.4: DIGITAL CONNECTIVITY

Digital connectivity is fundamental to the delivery of smart places. It allows for the connection of devices to the internet and the collection and transmission of data. It provides the basic conditions within which smart initiatives can be developed to support the social, economic and place objectives of regions, cities and places.

Digital connectivity refers to the availability, capacity, and speed of access to the internet provided by networks and integrated services that facilitate a two-way flow of information and data between sensors, devices and software systems. Digital connectivity can be delivered through fixed and wireless connection technologies.

The consideration of digital connectivity underpinning smart places outcomes is a priority within the Aerotropolis and is in alignment with NSW Government guidance to consider digital infrastructure as critical infrastructure.

The proposal has considered the role of appropriate digital connectivity in ways that support economic outcomes for the businesses serviced within the project site. These include provisioning for the delivery of high-speed broadband connection to premises through fibre-ready lots, and provision of an estate wide next generation network supporting the future adoption of Internet of Things applications.

These two initiatives will position the estate to meet the objectives of the precinct within NSW Government and Penrith City Council strategies to leverage digital transformation to enhance innovation and productivity, and provide foundations for advanced businesses and services seeking to operate within the digital economy.

The proposal has also considered the opportunity to provide enhanced public space outcomes through providing digital connectivity, in terms of both accessible internet services, but also the use of digital connectivity to support smart initiatives across other categories, as detailed in subsequent sections.

Digital connectivity for smart places is most effectively delivered when integrated with other utilities. Key initiatives include providing each lot with direct fibre connections for high-speed broadband, enabling smart infrastructure through fibre connections to non-addressable locations, and offering WiFi in public domains for connectivity. An LPWAN network will facilitate IoT sensor usage for data collection and automation, while 4G and 5G mobile networks, managed by telecommunications carriers, will enhance overall connectivity. These initiatives are crucial for fostering a technologically advanced, connected urban environment.

The following smart places digital connectivity initiatives are recommended for inclusion in the proposal:

Table 6: Digital Connectivity Initiatives

Smart Initiative	Description	Relevance
Fibre Backbone 4.4.1	Fibre-optic network connecting premises (lots or buildings) to the internet and allowing services to be provided.	Each lot in the Site will have direct to premise fibre connection allowing for the provision of high speed and capacity broadband internet services by Internet Service Providers (ISPs).
Fibre to Non-Addressable Locations 4.4.2	Fibre-optic network connecting non-addressable assets to the internet. Includes street poles, utility infrastructure, street furniture.	Key locations across the estate will be serviced with a direct fibre connection to physical assets enabling them as smart infrastructure. These include MFPs and locations for installation of wireless network equipment.
Wi-Fi 4.4.3	A technology which allows devices to access the internet wirelessly.	A WiFi network will be provided in key public domain locations to provide internet connectivity for estate workers and visitors
Low Power Wide Area Network (LPWAN) 4.4.4	Low Power Wide Area Network (LPWAN) providing network connectivity for sensors to	A LPWAN network will be provided across the Site to enable the utilisation of Internet of Things sensors for collecting data and

	communicate. Essential foundation for Internet of Things (IoT) services and functions.	automating controls. Utilising the LoRa network protocols and configuration, the LPWAN network will provide sensor connectivity cross the estate enabling a wide variety of current and potential future smart applications.
Mobile Connectivity (5G) 4.4.5	The newest generation of wireless cellular networks that uses cell sites to transmit data through radio waves, allowing the transfer of information.	Provision of 4G and 5G cellular mobile networks across the estate is the responsibility of telecommunications carriers. 5G is currently available at the site without location of cellular network infrastructure within the site boundaries.

The fundamental deployment approaches adopted for digital connectivity required to deliver smart places initiatives within the proposal are:

- Integration with the principles of the estate concept masterplan. This includes a technology approach and network design that seeks to minimise the impacts of technology on the non-built landscape in both development and operation of the site.
- The deployment of fixed line fibre digital connectivity infrastructure via passive infrastructure (pit and pipe) established in alignment with the street hierarchy and active transport network to minimise additional trenching. An emphasis on shared trenching will deliver expectations of estate-wide fibre ready lots.
- Connection of a range of non-addressable locations to the fibre network, also delivered via passive infrastructure (pit and pipe) established in alignment with the street hierarchy and active transport network, including MFPs on Estate Roads and in select locations within the public domain and town centre.
- The prioritisation of wireless networks to extend digital connectivity within the estate while minimising the requirement for installing physical network infrastructure.
- Provision of publicly accessible WiFi in key locations within the public domain intended for leisure uses and social gathering.
- Positioning of a centrally located LPWAN network node within the town centre with extension across the site enabling internet of things (IoT) applications to be used for future on-lot activities by tenants, and across the public domain and naturally landscaped areas of the site.

Figure 11: Indicative design for smart city fibre network



Figure 12: Indicative antennae location and coverage for public Wi-Fi network



Figure 13: Indicative location for LPWAN antennae and LoRa network coverage



Reference to specific strategies and reports:

- NSW Smart Infrastructure Policy
- NSW Digital Infrastructure Technical Report
- NSW Telecommunications Facilities Guideline
- NBN Co New Developments Standards for Deployment of NBN Pit and Pipe Network

Provision of digital connectivity services within the site

The provision of digital connectivity to end users through the fibre and wireless networks recommended for the site will be delivered by contracted services provision from Internet Service Providers (ISPs) or managed service providers.

It is recommended that industry engagement with ISPs and service providers be undertaken early in the detailed design processes. Different technology options may have variations in network design requirements and product capabilities and constraints that need to be factored into the overall connectivity strategy for the site.

4.5: SMART MOBILITY AND TRAVEL

In terms of smart places, smart mobility is the innovative use of technology and data to enhance transportation systems and networks, making them more efficient, sustainable and useful to workers and visitors. Generally, it can encompass applications leveraging real-time data, electric vehicles infrastructure, and to ensure appropriate amenity with respect to active transportation modes and shared resources such as parking.

The proposal has considered how the site can respond to Government strategic objectives to support the adoption and utilisation of electric vehicles in support of decarbonisation trajectories for the state.

It has also considered how active transport can be supported across the site. Extensive active travel networks have been integrated into the concept master plan, and a role for smart technologies has been identified in enabling the safe and effective use of these shared paths and routes and enabling modal diversity through support of micro-mobilities.

Finally, smart mobility applications seek to utilise data to support decision-making by end users and to enhance the effective management of estate resources with respect to visitor parking in key site locations.

Smart technology applications supporting smart mobility and travel are most effectively delivered when considered in conjunction with transport planning and integrated with other utilities.

The following smart places mobility and travel initiatives are recommended for inclusion in the proposal.

Table 7: Smart mobility and travel Initiatives

Smart Initiative	Description	Relevance
Active Transport Smart Lighting 4.5.1	Lighting which turns on or increases light when movement is detected. Some systems can light pathways in advance to increase visibility and safety. Incorporation of renewable energy and enhance estate sustainability outcomes.	Smart lighting on key active travel routes can increase the uptake for pedestrians, cyclists and recreational users by enhancing the safety of these networks.
Smart Parking 4.5.2	A network of embedded sensors or cameras able to monitor car park availability and provide data to users to assist with finding available parking and managing transactions. Smart parking can also support	Installation of smart parking technologies will assist in the use and monitoring of parking resources. By providing parking utilisation data, these systems can help manage equitable access to visitor parking and encourage compliance with time limits.
EV Ready Buildings 4.5.3	Designing buildings, car parks and roadways in a way which enables the quick installation of EV charging systems with minimal impact on time, resources and cost.	Provision of all lots as EV-ready involves the effective design of the electrical network with appropriate capacity to manage future EV loads, and the provisioning of electrical network connections to on-lot car parks to be ready for future owners and tenants to easily

		install EV charging equipment specific to their needs.
Public EV Charging 4.5.4	Electric Vehicle (EV) charging owned by public or private entities which are located in areas accessible to the public.	Provision of public EV charging systems in key visitor car parks and in proximity to key public locations such as the town centre and recreational hubs and spaces. Providing publicly accessible EV charging infrastructure supports strategic aims to enhance uptake and use of electric vehicles.
EV-Micro mobility Charging 4.5.5	Electric Vehicle (EV) charging systems for servicing small scale vehicles such as electric scooters and electric bikes. These can be publicly or privately accessible.	Factoring expected increased demand for e-micro-mobility such as e-bikes through EV-ready buildings can support these modes for use as commuting alternatives for estate workers. Inclusion of publicly accessible charging systems in key public space locations can assist in the integration of the estate active travel networks into broader transport systems and increase amenity of the estate's public domain areas.

The fundamental deployment approaches adopted for smart mobility and travel within the proposal are:

- Integration with the principles of the estate concept masterplan. This includes a technology approach and network design that seeks to minimise the impacts of technology on the non-built landscape in both development and operation of the site.
- The integrated deployment of communications and electrical network infrastructure to enable the delivery of smart energy systems to key locations. An emphasis on shared trenching in alignment with the street hierarchy and active transport network will deliver expectations of estate-wide EV-ready lots.
- The colocation of smart infrastructure elements to reduce clutter and increase the amenity public space interventions.
- The prioritisation of wireless networks to extend digital connectivity within the estate while minimising the requirement for installing physical network infrastructure. Specifically, the deployment of a centrally located LPWAN network node within the town centre with extension across the site enabling internet of things (IoT) applications including smart lighting controls and smart parking systems.
- Creating the foundation platforms for achieving broad performance objectives by enabling desirable on-lot activity. Specifically, the delivery of lots as EV-ready to support decarbonisation initiatives in future on-lot activities.
- Sensor-activated lighting will enhance opportunity and useability of active travel shared pathways across the site.

Figure 14: Active travel networks throughout the site as indicative locations for sensor-based smart lighting.



Smart parking will be prioritised in visitor parking zones within the town centre and proximate to recreational hubs.

Figure 15: Indicative locations for smart parking in public parking areas



The same public car parking located within the town centre and co-located with the sports field recreation hub represent ideal locations for the public EV-charging. Indeed, smart parking sensing can be used in conjunction with public EV chargers to provide real-time data on availability, and to manage the shared resource of this infrastructure for the public.

Figure 16: Indicative locations for public EV-charging in public parking areas



4.6: SMART ENVIRONMENT

The utilisation of smart technologies to support environment management relates primarily to the use of advanced sensor technologies and data analytics to monitor, predict and enhance the state of the environment. It involves data collection and analysis of various environmental systems including factors such as air quality, heat, humidity, soil moisture, and the use of this data in management systems. Use of smart metering for energy and water can further improve resource management through monitoring use for efficiency, early detection of leaks or waste, and better planning for resource conservation.

The proposal has deeply considered the environmental objectives of the SEARs within the proposal. In relation to smart initiatives, the emphasis is on utilising opportunities afforded through the presence of an estate-wide IoT network to enable smart sensing to collect real-time data on local natural systems, and control of smart devices to manage efficiency and effectiveness of operations.

Data collection in key locations across the site measuring air quality, temperature, humidity and other atmospheric factors can play an important role in monitoring estate performance objectives such as air quality standards and urban heat / cooling. Enabling smart controls of devices can ensure on-lot water efficiency through smart metering, and smart irrigation systems can maintain public amenity in shared greenspaces in efficient ways through the integration of rainfall prediction data, and local conditions (soil moisture) to inform dynamic scheduling of irrigation systems.

Future environmental sensing applications are enabled through the estate's strategic future proofing approach.

Technology and data applications supporting smarter environmental management dovetail objectives shared across a range of other disciplines including landscape design, and environmentally sustainable development.

The following smart environment initiatives are recommended for inclusion in the proposal.

Table 8: Smart Environment Initiatives

Smart Initiative	Description	Relevance
Smart Water Meters	Devices that measure water usage and communicate results to the provider and/or the consumer to understand water usage patterns and inform management practices.	Use of smart water meters on lot and within public systems can improve the efficient use of water through provision of detailed real-time data. Water metres also play a role in early leak detection.
Air Quality Sensing	Real-time monitoring sensors that measure quality indicators such as the concentration of particulates and air pollutants. These can provide advice on hazardous or risky situations, and inform management strategies and responses.	Deployment of air quality sensing at PM2.5 and PM10 can provide data on the performance of the site against regulatory metrics. Noting the site is within a bushfire hazard zone, it can also provide notification of potential hazard and inform other monitoring activity.
Temperature and Humidity Sensing	A series of real-time monitoring sensors which measure ambient air temperature, humidity and a range of other ambient factors. The data can inform community safety and environmental studies.	Deployment of integrated weather stations in MFPs in key locations will provide hyper-local data on conditions and can support community outcomes through data-ed decision making and improved monitoring of heat island and urban cooling initiatives.
Smart Irrigation	Sensor based irrigation systems that can control water use to improve efficiency. Can ingest local data (eg soil moisture) and forecast data (predicted rain) to determine when to irrigate.	Integration of smart irrigation systems will focus on ensuring efficiency of water use in the maintenance of community green assets such as playing fields and recreational spaces. Reticulation to grey water systems will support achievement of water targets while supporting urban cooling.

The fundamental deployment approaches adopted for smart environmental initiatives within the proposal are:

- Integration with the principles of the estate concept masterplan. This includes a technology approach and network design that seeks to minimise the impacts of technology on the non-built landscape in both development and operation of the site.
- The prioritisation of wireless networks to extend digital connectivity within the estate while minimising the requirement for installing physical network infrastructure. Specifically, the deployment of a centrally located LPWAN network node within the town centre with extension across the site enabling internet of things (IoT) applications including environmental sensing units.
- The colocation of smart infrastructure elements to reduce clutter and increase the amenity public space interventions. Environmental sensing will be primarily integrated with MFPs.
- Creating the foundation platforms for achieving broad performance objectives by enabling desirable on-lot activity. Specifically, provision of smart water metering to ensure efficient water utilisation in future on-lot uses.

Environmental sensors will be co-located in multifunction poles. Air quality sensing will be positioned in key locations including the primary gateway to the site and framing the 'liveability' triangle encompassing the key public domain areas. Temperature and humidity sensors will be located in three key recreational spaces to assist in measuring the liveability of these areas with reference to urban heat island impacts and local amenity.

Figure 17: Indicative locations for IoT sensors for environmental sensing



Smart irrigation systems will enable water efficient management of green space resources in three key public space areas including the sports fields and community greens.

Figure 18: Indicative locations for smart irrigation systems in key public domain community green spaces.



4.7: SMART ENERGY

Sustainable urban development practices are no longer optional extras, but critical in developing resilient, viable and appealing communities. With reference to smart places infrastructure and technology, there is significant opportunity for enhancing the sustainability performance of the proposal and contributing effectively to NSW net zero objectives by leveraging smart controls on local energy systems.

The proposal has considered opportunities to maximise deployment of solar energy generation, in conjunction with a range of other sustainability goals embedded into indicative warehouse design. The proposal has also considered how to optimise the impact of this local renewable energy generative capacity through encouraging future on-lot inclusion of battery systems. In doing so the proposal has considered how to enhance the energy independence and resilience of the estate through minimising its overall impact on the grid.

Smart infrastructure for distributed energy resource systems is most effectively delivered when integrated with other utilities.

The following smart energy initiatives are recommended for inclusion in the proposal:

Table 9: Smart Energy Initiatives

Smart Initiative	Description	Relevance
On-Lot Solar PV systems 4.7.1	Photovoltaic systems that convert the energy from sunlight into electricity enable lower environmental impact and increased savings on energy. Can be roof-top mounted or on standalone structures.	The proposal adopts a strong position on the integration of renewable energy generation. Warehouse structures are particularly amenable to rooftop solar PV. Minimum ratio targets will be exceeded by conditioning all future on-lot development to maximise local energy generation. Provisioning for on-lot BESS systems as part of development consent will ensure maximised use of renewable energy in site operation.

The fundamental deployment approaches adopted for smart energy solutions within the proposal are:

- Integration with the principles of the estate concept masterplan. This includes alignment to design principles and a distribution that seeks integration, co-location and location of technology only where it is needed.
- Ensuring effective local energy generation and use through conditioning minimum requirements of rooftop solar PV installation, and consideration of on-lot battery systems as part of future development.
- Creating the foundation platforms for achieving broad performance objectives by enabling desirable on-lot activity. Specifically, ensuring all lots have connectivity opportunities and are integrated to the private electrical network to enable energy aggregation in the precinct battery and potential future energy sharing solutions.

The smart energy initiatives overlap with the suite of electric-vehicle charging initiatives outlined in the above smart mobility and transport section.

4.8: AMENITY AND SAFETY

Amenity refers to the aspects of a place that contribute to its overall character and the enjoyment of residents or visitors. This may specifically include access to digital services and technology-enabled features in public spaces. Including a connectivity and technology layer in the design of public domains can enhance quality of life and contribute to an area's overall attractiveness and useability.

In addition to the provision of digital connectivity in key areas of public domain across the site the proposal has considered the role of smart infrastructure and technologies in supporting enhanced safety and place amenity outcomes for community

The provision of safety initiatives underpinned by smart technologies include servicing of CCTV cameras in appropriate locations with fibre connections and smart lighting in key areas of public domain. Provision of smart amenity has been considered in the inclusion of smart street furniture in key public domain locations.

Technology and data applications supporting public space amenity and safety should be read in conjunction with other disciplines including landscape design, and Crime Prevention Through Environmental Design.

The following smart amenity and safety initiatives are recommended for inclusion in the proposal.

Table 10: Amenity and Safety Initiatives

Smart Initiative	Description	Relevance
Public CCTV security systems 4.8.1	Visual sensors providing surveillance in public space and storing or transmitting recorded footage or data within a secure private system. Can include visual analytics-driven identification of activity and be used to control systems or to notify security actors.	The presence of CCTV visual surveillance cameras can enhance the feelings of safety and security in public places. It is not proposed they be monitored, but can provide a record of activity that can be used after an event to support police investigation. In order to increase the efficacy of un-monitored systems and limit retention of personally identifying information, it is recommended that surveillance systems utilise visual analytics.
Public Domain Sensor Lighting 4.8.2	Lighting which turns on or increases light when movement is detected. Some systems can light pathways in advance to increase visibility and safety.	Key public domain areas and parts of the active transport network will utilise sensor-based smart lighting. Sensor dimmable lighting can reduce power consumption by shifting between a 'low power mode' when no humans are detected and brightening to provide higher lux levels when required for visibility and safety. These lighting control systems can balance efficient use of energy with provision of appropriate lighting when and where required.
Smart Street Furniture 4.8.3	Street furniture that is connected to digital and electrical networks to provide additional features to the public. May include renewable power, lighting, wifi and publicly accessible ports for charging devices at no cost to the consumer.	Visitor and worker expectations of digital access in public spaces is increasing. Smart street furniture provides place-based access to digital amenity through integration of technology into features such as benches, tables and shelters. Smart street furniture will be included in key locations.

The fundamental deployment approaches adopted for smart mobility and travel within the proposal are:

- Integration with the principles of the estate concept masterplan. This includes a technology approach and network design that seeks to minimise the impacts of technology on the non-built landscape in both development and operation of the site.
- The integrated deployment of communications and electrical network infrastructure to enable the delivery of required connectivity to key locations.
- The prioritisation of wireless networks to extend digital connectivity within the estate while minimising the requirement for installing physical network infrastructure. Specifically, the deployment of a centrally located LPWAN network node within the town centre with extension across the site enabling internet of things (IoT) applications including smart lighting controls and smart parking systems.
- The colocation of smart infrastructure elements to reduce clutter and increase the amenity of public space interventions.

CCTV locations are proposed for key public space areas. Where possible they are co-located in multi-function poles.

Figure 19: Indicative locations for CCTV at key public domain locations



Smart street furniture will be prioritised in the below public domain areas. These key locations have been identified as potential locations for ‘smart hub’ approaches that will co-locate smart street furniture providing amenity enhancements such as public charging, micro-mobility charging, Wi-Fi access and so on.

Figure 20: Indicative locations for inclusion of smart street furniture in key public domain locations



5: ASSESSMENT AND FINDINGS

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 22 May 2024 and issued for the SSDA (SSD-70316465). Specifically, this report has been prepared to respond to the SEARs requirement issued below.

The assessment has reviewed the proposal against the required elements of the statutory planning framework with the outcomes of the assessment described below.

5.1: STATE ENVIRONMENTAL PLANNING POLICIES (SEPPS)

State Environmental Planning Policies (SEPPs) in NSW provide a framework for environmental planning and development control across the state. SEPPs address various aspects, including urban growth, environmental protection, housing, and infrastructure, ensuring consistency in planning decisions. They support sustainable development and integrate advanced technologies to enhance urban liveability and economic growth.

The State Environmental Planning Policy (Planning Systems) 2021 - Schedule 1

The NSW State Environmental Planning Policy (Planning Systems) 2021 – Schedule 1 outlines criteria for state significant development. This includes projects like intensive livestock agriculture, aquaculture, mining, and infrastructure developments exceeding \$30 million in cost. The policy ensures that large-scale and environmentally impactful projects undergo thorough assessment and align with NSW's strategic planning objectives, integrating advanced technologies and sustainable practices to support smart city initiatives and improve urban infrastructure.

Table 11: Relevant requirements within the SEPP (Planning Systems) 2021-Schedule 1

Item	Description of requirement	Assessment
11	Other manufacturing industries Development that has an estimated development cost of more than \$30 million for any of the following purposes— (a) laboratory, research or development facilities, (b) medical products manufacturing, (c) printing or publishing, (d) textile, clothing, footwear or leather manufacturing, (e) furniture manufacturing, (f) machinery or equipment manufacturing, (g) the vehicle, defence or aerospace industry, (h) vessel or boat building and repair facilities (not including marinas).	The project is deemed appropriate for consideration through the SSD pathway. This pathway provides assurance that significant development will be aligned to the NSW strategic guidance framework for adoption of smart places.
12	Warehouses or distribution centres (1) Development that has an estimated development cost of more than the relevant amount for the purpose of warehouses or distribution centres (including container storage facilities) at one location and related to the same operation. (2) This section does not apply to development for the purposes of warehouses or distribution centres to which section 18 or 19 applies. (3) In this section— relevant amount means— (a) for development in relation to which the relevant environmental assessment requirements are notified under the Act on or before 31 May 2023—\$30 million, or (b) for any other development—\$50 million.	The project is deemed appropriate for consideration through the SSD pathway. This pathway provides assurance that significant development will be aligned to the NSW strategic guidance framework for adoption of smart places.

The State Environmental Planning Policy (Precincts – Western Parkland City) 2021 – Chapter 4 – Western Sydney Aerotropolis

The development is in the Aerotropolis. Chapter 4 of the WPC SEPP is the principal environmental planning instrument that sets out land use zones and development controls for the Aerotropolis.

Table 12: Relevant requirements within the SEPP (Precincts – Western Parkland City) 2021-Chapter 4 – Western Sydney Aerotropolis

Item	Description of requirement	Assessment
	4.1 Aims of Chapter The aims of this Chapter are as follows— (a) to facilitate development in the Western Sydney Aerotropolis in accordance with the objectives and principles of the Western Sydney Aerotropolis Plan, (b) to promote sustainable, orderly and transformational development in the Western Sydney Aerotropolis, (c) to ensure development is compatible with the long-term growth and development of the Western Sydney Airport (including in relation to the operation of the Airport 24 hours a day) and other critical transport infrastructure, (d) to promote employment and world-class innovation and provide for residential development in suitable locations, (g) to protect, maintain and enhance, and to minimise the impact of development on, trees and vegetation, soil quality and the health of waterways and to contribute to the conservation of biodiversity,	This assessment has considered the role of smart initiatives recommended in this report for inclusion in the proposal in meeting the requirements of Chapter 4 of the SEPP (Precincts Western Parkland City) 2021. The proposal, subject to inclusion of the recommended initiatives in this report, meets the objectives of the Western Sydney Aerotropolis Plan. The strategic approach to enabling digitally driven industry and economic activity is consistent with the requirements. Providing fibre-ready and IoT-ready lots ensures future economic uses can appropriately leverage emerging technologies. The leveraging of digital networks and smart sensors to monitor environmental systems provides for data-informed and sustainable management to measure and minimise impacts.
	1 Objectives of zone • To encourage employment and businesses related to professional services, high technology, aviation, logistics, food production and processing, health, education and creative industries. • To provide a range of employment uses (including aerospace and defence industries) that are compatible with future technology and work arrangements. • To encourage development that promotes the efficient use of resources, through waste minimisation, recycling and re-use. • To ensure an appropriate transition from non-urban land uses and environmental conservation areas in surrounding areas to employment uses in the zone. • To prevent development that is not compatible with or that may detract from the future commercial uses of the land. • To provide facilities and services to meet the needs of businesses and workers.	The inclusion of the range of smart initiatives outlined in this report contributes to the proposal meeting the objectives of the zone. Specifically, the proposal enables business development and employment utilising high technology, and compatible with future technology and work arrangements. The proposal encourages development that efficiently utilises resources and enhances conservation through use of technology and data-led monitoring of environmental systems, energy and water efficiency activity. The proposal provides for amenity for businesses and workers through provision of digital connectivity and smart amenity.

5.2: AEROTROPOLIS PLANNING FRAMEWORK

The Aerotropolis Planning Framework sets the strategic vision for the Western Sydney Aerotropolis, centred around the Western Sydney International Airport. It integrates urban planning, infrastructure, and

environmental management to create a sustainable, jobs-dense urban area. The framework supports advanced industries, promotes connectivity, and ensures resilient development aligning with broader regional goals.

5.2.1: Western Sydney Aerotropolis Plan

The Western Sydney Aerotropolis Plan envisions the Aerotropolis as a global gateway centred around the Western Sydney International Airport, focusing on employment in sectors like defence, advanced manufacturing, and technology. It emphasises sustainability, connectivity, and liveability through integrated transport, digital networks, and a landscape-led approach.

The proposal was assessed against the following requirements.

Table 13: Relevant requirements within the Western Sydney Aerotropolis Plan

Item	Description of requirement	Assessment
O2	Productivity Objective 2 High-value jobs growth is enabled, and existing employment enhanced	The proposal will contribute to Aerotropolis productivity objectives through delivery of a warehouse and logistic estate enabled for industries able to leverage digital connectivity and emerging technologies.
O5 O6	Sustainability Objective 5 A sustainable, low carbon Aerotropolis that embeds the circular economy Objective 6 A resilient and adaptable Aerotropolis	The proposal will contribute to Aerotropolis sustainability objectives through the use of renewable energy generation providing for lower carbon uses and smart technology and sensor-based controls that support enhanced resource efficiency.
O7 O8	Infrastructure and collaboration Objective 7 Infrastructure that connects and services the Western Parkland City as it grows Objective 8 A collaborative approach to planning and delivery	The proposal will contribute to Aerotropolis infrastructure and collaboration objectives through provision of accessible public amenity within an industrial estate, and a thorough engagement approach, particularly prioritising first nations perspectives of country in landscape design.
O10 O11	Liveability Objective 10 Social and cultural infrastructure that strengthens communities Objective 11 Great places that celebrate local character and bring people together	The proposal will contribute to Aerotropolis liveability objectives through provision of accessible public amenity and spaces of community gathering. These key locations will be enhanced through smart amenity and access to free charging, public Wi-Fi and EV-charging for cars and micro-mobility vehicles.

5.2.2: Aerotropolis Precinct Plan 2023

The Aerotropolis Precinct Plan has statutory weight under Chapter 4 of the WPC SEPP. The proposal was assessed against the following requirements.

Table 14: Relevant requirements within the Aerotropolis Precinct Plan 2023

Item	Description of requirement	Assessment
PO 02	Be the location of choice for advanced manufacturing and high technology industries in Australia with accessible infrastructure, public transport and high design quality with fit for purpose buildings and green spaces.	The proposal supports the development of the Aerotropolis as a location of choice for high technology industries. The provision of lots in the estate as fibre-ready, IoT-ready and EV-ready equips for future uses that may require digital connectivity and innovative technologies.
IO6	Ensure utilities design and locations consider space for alternative future services and allow for multi-utility corridors in the future.	The proposal supports the development of the Aerotropolis in foreseeing increased density of digital demand and ensuring adequate capacity and future locations for integrated multi-function poles to accommodate increased density of

		technology within the estate without compromising visual amenity or public domain useability.
I07	Use technology and data driven solutions to maximise quality of life across the Aerotropolis, in line with the NSW Smart Places Strategy and Smart Western City Program.	The proposal supports the development of the Aerotropolis through the integrated inclusion of a range of enabling infrastructure, digital networks and smart initiatives that reflect the principles and objectives of the NSW Smart Places Strategy and the Smart Western Sydney Program
NG 02	Facilitate the development of a high technology employment precinct.	The proposal supports the development of the Aerotropolis as high technology employment precinct. The provision of lots in the estate as fibre-ready, IoT-ready and EV-ready equips for future uses that may require digital connectivity and innovative technologies.

5.3: TECHNICAL STUDIES INFORMING THE WESTERN SYDNEY AEROTROPOLIS PRECINCT PLAN

The technical studies for the Western Sydney Aerotropolis Precinct Plan were chosen to ensure a comprehensive understanding of the area's development needs and potential impacts. These studies include urban design, biodiversity, bushfire management, cultural assessments, air quality, noise and vibration, transport planning, social infrastructure, and water management. Each study addresses critical aspects of creating a sustainable, resilient, and well-connected urban environment, supporting the strategic vision and proposed land uses for the Aerotropolis. The technical studies reviewed below prescribe technical requirements relevant to the proposal.

5.3.1: Aerotropolis Urban Design Report - Part 4: Northern Gateway Precinct

The Northern Gateway Precinct, part of the Western Sydney Aerotropolis, is a 1,616-hectare urban project that integrates landscape-led design, recognising Country and sustainability. It will host manufacturing, warehousing, and a mixed-use Specialised Centre. Key features include parklands, creek preservation, and robust transport links, supporting Sydney's growth and connectivity. The proposal was assessed against the following requirements:

Table 15: Relevant requirements within the Aerotropolis Urban Design Report – Part 4: Northern Gateway Precinct, supporting the Aerotropolis Precinct Plan

Item	Description of requirement	Assessment
	Infrastructure Challenge: Connectivity between these segregated areas is key to a sustainable urban development. Opportunity: Create enlivened urban environments and open space utilising infrastructure	The proposal supports the development of the Northern Gateway Precinct of the Aerotropolis through close attention to landscape-led design. The principles of smart places deployment are well calibrated to these priorities and ensure that technology is situated only where it is required, and in ways that seek to minimise impacts. Th proposal acts to address infrastructure connectivity requirements through provision of digital networks. It acts on the opportunity to provide enlivened urban environments and open spaces though provision of well-located smart amenity increasing the attraction, safety and desirability of local community and recreational places within the estate.

5.3.2: Utilities Audit

The report identifies existing utility services and infrastructure in the Western Sydney Aerotropolis, assessing their capacity and constraints to support future growth. It reviews water, wastewater, electricity, gas, telecommunications, and stormwater services, providing a baseline for future planning and highlighting the need for significant infrastructure upgrades to accommodate development.

The proposal was assessed against the following requirements:

Table 16: Relevant requirements within the Utilities Audit Technical Report, supporting the Aerotropolis Precinct Plan

Item	Description of requirement	Assessment
3.5	Telecommunications Telecommunications servicing is not seen as a constraint to development however, should be a consideration when designing future service allocations to ensure sufficient space is available for growth and the current and growing increase in demand for digital data intensive workplaces and industries. New fibre networks will need to be rolled out in the future as development occurs. Rollout plans for the various service providers are staged to match the location and pace of development in the Aerotropolis.	The proposal will increase the demand for fixed line broadband fibre connectivity within the Northern Gateway Precinct of the Aerotropolis. Approval of the proposal will assist in acceleration of the delivery of telecommunications infrastructure into the area. The Utilities Audit Technical Study accompanying the Aerotropolis Precinct Plan was published in 2020. It shows broadband rollout plans in close proximity to the Estate and the development of Burrah Park will require the extension of these services. See Figure 21 below. This assessment notes that since the time of publication of the Utilities Report deployment of NBN Co broadband networks across the region have continued. Fixed line broadband services are currently available in areas of close proximity and the development of Burrah Park will require the extension of these services. It is recommended that detailed design of estate master planning includes engagement with NBN Co to ensure the enabling infrastructure design proceeds in accordance with NBN Co New Developments Standards for Deployment of NBN Pit and Pipe Network.
3.5.3	Mobile Coverage Some 5G coverage exists north west of Cecil Park and south of Kemps Creek while planned works near Hinchinbrook, the Airport and the part of the Northern Gateway Precinct are underway. Figure 16 shows the current 5G coverage for Telstra in pink and planned works in purple. Future infrastructure rollout across the region is likely to be staged to match the pace of overall development in the Aerotropolis which includes the additional telecommunications towers. Similarly, whilst this shows the Telstra 5G coverage other mobile providers are known to also be expanding this technology as well, allowing future residents access to multiple providers.	The proposal will increase the demand for 5G wireless connectivity within the Northern Gateway Precinct of the Aerotropolis. The Utilities Audit Technical Study accompanying the Aerotropolis Precinct Plan was published in 2020. It shows 5G rollout plans show network coverage in close proximity to the Estate and the development of Burrah Park will require the extension of these services. See Figure 21 below. This assessment notes that since the time of publication of the Utilities Report deployment of 5G networks across the region have continued. Current Telstra 5G coverage maps show the site has subsequently been upgraded and 5G wireless network coverage is now available. This 5G network is delivered across the site without

		physical telecommunications infrastructure required within site boundaries. It is not expected that the public demand for 5G services within the industrial state will at the time of development approval require the inclusion of small cell antennae, which require location closer to the end-device and so typically are located within the streetscape, as opposed to a macro tower. Future industrial uses on the estate may warrant the integration of small cell technologies within in the public domain for overall 5G density across the estate, or specific to individual lots to facilitate high-bandwidth low-latency functions such as advanced real-time telemetry and automation, robotics and autonomous vehicles. The deployment strategy for enabling infrastructure has identified a range of additional MFP-ready locations that can house future 5G small cells, if required, in ways that do not negatively impact streetscape visual amenity. It is recommended that detailed design of estate master planning includes engagement with telecommunications providers to ensure the enabling infrastructure design proceeds in accordance with NSW Telecommunications Facilities Guideline.
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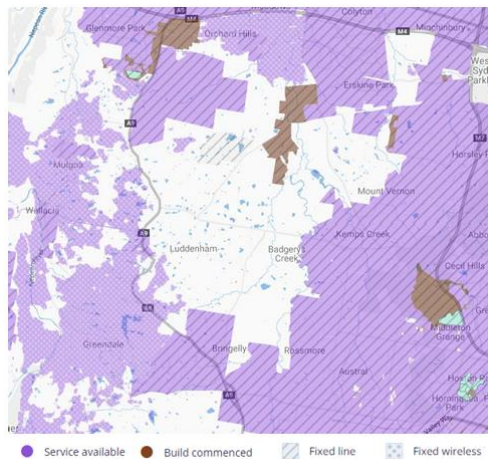


Figure 15: NBN Coverage in the Aerotropolis and surrounding region (Source: NBN)

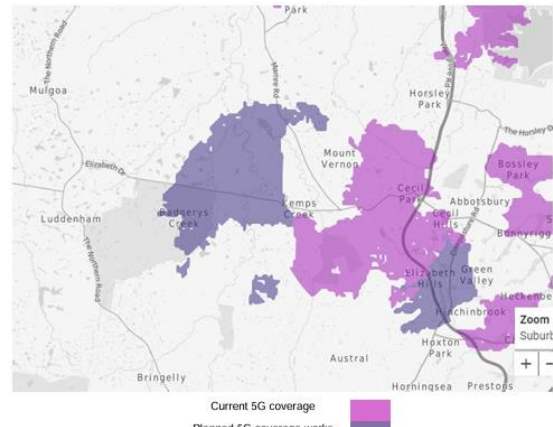


Figure 16: Current and Planned 5G Coverage in the Aerotropolis and surrounding region (Telstra)

Figures 21: NBN Co fixed broadband coverage and Telstra 5G coverage as outlined in the Utilities Report*

Note: These coverage maps are superseded by current digital connectivity provision outlined in Section 2.2.

5.3.3: Sustainability and Heat Report

The Sustainability and Heat Study for the Western Sydney Aerotropolis provides innovative strategies for sustainability and heat mitigation. It promotes water-sensitive cities, low-carbon communities, circular

economies, and cool suburbs, recommending a sustainable, regenerative approach for long-term ecological, social, and economic benefits, aligned with the Aerotropolis' vision for a leading global city. The proposal was assessed against the following requirements:

Table 17: Relevant guidance within the Sustainability and Heat Technical Report, supporting the Aerotropolis Precinct Plan

Item	Description of requirement	Assessment
	Energy Design and regulate for greening Infrastructure in public realm and private spaces for cooling, shade, amenity • Implement in the Street Design Guidelines the transition from individual use of infrastructure such as on and off road to shared adaptive infrastructure • Adaptable infrastructure for Charging stations – public facilities transition to private charging • Create equity of access to solar or renewables - removal of barriers to solar or renewables - Cost, rentals, heritage, solar access	The proposal supports achievement of the Energy objectives contained within the Sustainability and Heat Report accompanying the Aerotropolis Precinct Plan. Specifically with regard to energy, the proposal includes provision of EV-ready lots and public charging infrastructure for private vehicles and micro-mobilities. The proposal will also encourage the adoption of rooftop solar through design excellence standards, and condition for future development assessments on individual lots that appropriate provision for on-lot BESS be provided to enhance capacity for future warehouses to harness renewables in their energy operations.
	Sustainability A low-carbon city contributes to net zero emissions by 2050 & mitigates climate change Energy & water flows are captured, used, and re-used More waste is reused and recycled to support the development of a circular economy Reduced transport- related greenhouse gas emissions; Reduced energy use per capita	The proposal supports achievement of the Sustainability objectives contained within the Sustainability and Heat Report accompanying the Aerotropolis Precinct Plan. Specifically with regard to net zero emissions the proposal adopts infrastructure supporting the uptake of electric vehicles, encourages the use of renewable energy for on-lot activity, and prioritises active travel through well-designed, safe, shared pathways.
	Water Sensitive Aerotropolis Precinct scenarios Leading Industry Practice 2036 Actions to achieve a 60% reduction in water consumption in all buildings and landscapes includes all actions covered in the Business as Usual scenario as well as: Smart metering and integrated management of fit for purpose water. Sustainable Regenerative 2036 Actions to achieve 75% reduction in water use in all buildings and landscapes includes all actions covered in the Business as Usual scenario as well as achievement of the Parkland City vision where stormwater reuse is the priority with recycled water then potable water backup as well as: SMART infrastructure to integrate quality and quantity management of water across a region and on-site detention and storage for stormwater run-off mitigation and management	The proposal supports achievement of the Water Sensitive Precinct objectives contained within the Sustainability and Heat Report accompanying the Aerotropolis Precinct Plan. Specifically with regard to smart technology enabled water sensitive design, the proposal includes smart water metering and sensor-based automated irrigation controls.

5.4: AEROTROPOLIS DEVELOPMENT CONTROL PLAN

The Western Sydney Aerotropolis Development Control Plan provides the planning, design and environmental objectives and controls which will inform the preparation and assessment of Development Applications (DA's). These objectives and controls supplement those in Chapter 4 of the State Environmental Planning Policy (Precincts—Western Parkland City) 2021 (Parkland City SEPP) and the Western Sydney Aerotropolis Precinct Plan (Aerotropolis Precinct Plan).

The proposal was assessed against the following requirements.

Table 18: Relevant requirements within the Aerotropolis Development Control Plan

2.13 Smart Places		
Benchmark Solution	Assessment	Consistent
Performance Outcome 1 Implement multi-function poles (Smart Poles) where street poles are required that accommodate multiple functions.		
1. Potential services which could be incorporated into multi-function poles include: a. RMS signals and signage; b. Street lighting; c. Telecommunications (such as mobile cellular network providers); d. Council digital infrastructure requirements (e.g. CCTV, signage, lighting); and e. Relevant sensing networks, with flexibility to enhance these in the future.	Multi-Function Poles (MFPs) are included in the proposal as a foundation infrastructure for delivering smart technologies into the estate. Locations of MFPs have been selected according to a use case-led process determining sites where multiple functions can be integrated. These functions include: • Street lighting, • sensor networks, • fixed and wireless communications networks. Additionally, a range of MFP-ready locations have been identified and will be serviced as fibre-ready with appropriate pit and pipe access and footings to enable expansion of the MFP network across the site. A LPWAN network (LoRa protocol) will be deployed across the site providing for future expansion of sensing networks into MFPs. This strategic deployment of fibre and LPWAN enabled MFPs provides Burrah Park capacity for delivery of diverse smart applications now, and future uses to be added with low cost and minimal impact.	Yes
2. Meet the following design requirements: a. Placement is a minimum of 600mm from the face of kerb; b. Placement avoids impacts on existing and future mature street tree canopies; c. Co-locate with other street furniture; and Pit and pipe to each light pole is provided to enable the future upgrading to 'intelligent' lights and the installation of 'smart meter' to Council specification at each new lot.	Deployment of MFPs in the Estate Roads should be undertaken in accordance with the specifications contained in the Digital Infrastructure Technical Report: Western Parkland City and the specifications referenced in Western Sydney Street Design Guidelines. This requirement should be conditioned in the approval. Conditioning compliance with these specifications will ensure appropriate placement with reference to shared trenching and street trees. Pit and pipe to premises provide for installation of smart meters at each new lot. Smart controls enabling 'intelligent' lights are proposed for active travel shared paths in the estate.	Yes
Performance Objective 2		

Pit and pipe infrastructure support future requirements to service smart city infrastructure.		
1. Where developments are providing pit and pipe infrastructure, specifications in the <i>Digital Infrastructure Technical Report: Western Parkland City</i> are met to accommodate future smart city infrastructure.	Enabling infrastructure including pit and pipe and MFP ready footings have been incorporated into the proposal. Detailed design of these enabling infrastructures should be undertaken according to the specifications in the Digital Infrastructure Technical Report: Western Parkland City. This requirement should be conditioned in the approval.	Yes
Performance Objective 3 Buildings utilise smart technologies to promote performance, sustainability, resilience, and resource management throughout their operational lives		
1. Where new connections to the water and recycled network are proposed, include smart water meters and fittings to minimise water consumption. 2. Use smart technologies to monitor and self-regulate building environment and operations (e.g. lighting, heat, ventilation, and air conditioning). 3. Install smart energy solutions to increase self-sustainability and reduce reliance on the main energy grid. 4. Demonstrate alignment to relevant NSW policy, including but not limited to the NSW Internet of Things (IoT) policy, NSW Cyber Security Policy and NSW Smart Infrastructure Policy.	Smart water meters have been recommended for inclusion on each lot and for public domain water network infrastructure. The proposal has considered the enabling infrastructure to provide for the on-lot addition of smart technologies for the purposes of monitoring and managing building operations and environments. This is achieved through the provision of fixed and wireless connectivity in the form of fibre-ready lots and estate-wide LPWAN. Provision of lots as IoT-ready provides maximum opportunity for future tenants to utilise smart technologies in their on-lot operations. This strategic approach across the estate is considered to meet the performance outcome in situations where future on-lot activity will be determined and specified by owners/tenants according to their own needs. Smart energy solutions within the proposal include minimum standards for rooftop solar generation, and encouragement of adequate provision for on-lot BESS systems to enable energy self-sustainability and efficiency. Alignment of future on-lot smart technology solutions with NSW policy should be achieved by conditioning compliance with NSW IoT Policy and NSW Cybersecurity Policy. This requirement should be conditioned in the approval. These performance objectives across the estate should be appropriately reflected in the design excellence framework as a mechanism to ensure future development complies with these policy requirements.	Yes
Performance Objective 4 Embedding smart technologies enhances experiences in the public domain and creates liveable public open spaces.		
1. Install smart monitoring equipment, including for water quality, ambient temperature, tree canopy	The proposal includes the installation of a LPWAN network sufficient to provide coverage across the estate. This network can support a wide range of applications leveraging Internet of	Yes

cover and soil moisture content, cycle, and car movements. Specific monitoring requirements for each development are provided by the consent authority.	Things (IoT) to provide smart monitoring of urban and natural systems. The project proposes to include sensor-based monitoring for environmental management and smart mobility.	
2. The following smart solutions meet Council's system interoperability and data source requirements and are to be installed in key locations such as open space and public domain areas: a. Dedicated internet/fibre connection points; b. Public Wi-Fi network that provides sufficient coverage to the whole public space; c. Smart lighting where key locations may be used at night-time for active uses, ensuring lighting is adequate for active and passive uses; d. Security cameras at key locations to ensure coverage within the public space; e. 'Smart bins' with capacity rubbish bin sensors; f. 'Smart park furniture' with USB-charging capacity and potentially Wi-Fi connectivity; g. Digital display screen, linked to a Council-accessible network to share key community information, data, and activities; h. Weather monitoring network/devices	The following smart initiatives are proposed for inclusion in the public domain and shared spaces of the estate. Dedicated fibre connection points to non-addressable locations including MFPS, and smart street furniture locations. Public Wi-Fi provided in public domain locations. This public Wi-Fi network does not cover the entire public space, which is inclusive of significant riparian zones, waterways and water detention basins where the deployment principles adopted for the project do not support installation of technologies. Locations considered appropriate for public Wi-Fi have been determined by considering places of gathering and dwelling according to the landscape design. Smart lighting is included in the proposal in key public domain locations and along the primary active travel shared pathway systems. CCTV cameras are included in the proposal in key public domain locations of significant gathering and dwelling. Cameras will be integrated into MFPS and have dedicated fibre connection. Smart street furniture is included in the proposal in key public domain locations including the neighbourhood centre, the sports fields, the playground and the community green. This smart furniture will have the capacity to integrate Wi-Fi, and supply free charging and Bluetooth connectivity. Environmental sensing smart applications are included in the proposal and will monitor air quality, temperature and humidity and other weather conditions (such as wind direction and rainfall) providing data on comfort levels for estate workers and visitors. Smart bins and digital information screens are not included in the proposal based on expected public demand given the estate's nature as an industrial warehousing and logistics estate. Smart bins typically have benefits when considered as part of a broader waste collection network in which advance knowledge of bin fullness can be used to optimise waste collection routes. Simple waste collection regimes where the route goes past each waste receptacle as part of normal collection procedure do not typically benefit from smart bin data. Information kiosks or digital smart screens are typically deployed in locations of high density of public interactions, and high	Yes

to monitor temperature and weather within the park and have this accessible to the public; and	wayfinding uncertainty or information demands to support visitor interaction with the site. Burrah Park's status as an industrial estate is not considered to meet these demand expectations.	
i. Wireless connectivity (e.g. Bluetooth) with free access within the community's parks, particularly in proximity to the basketball court/youth spaces.	The overall inclusion of smart initiatives is highly ambitious for an industrial estate and meets the performance objectives for the site.	
6.5 Telecommunication facilities		
Benchmark Solution	Assessment	Consistent
Performance Outcome 1		
Co-location of telecommunication facilities minimises the number of facilities required.		
The siting and design telecommunication facilities consider the existing and future potential for co-location of additional telecommunications facilities.	The fibreoptic cables and wireless network access points (Wi-Fi and LPWAN) proposed for the site constitute telecommunications facilities according to the NSW Telecommunications Facilities Guideline. Fibre networks are proposed to co-locate with utilities trenches. A range of locations will be enabled as multi-function pole ready to enable the future installation of additional infrastructure and technologies.	Yes
Performance Outcome 2		
Telecommunication facilities do not have adverse impacts on the environment.		
Telecommunication facilities are not located on Environmentally Significant Land or on land below the PMF level.	Smart infrastructure and digital connectivity equipment is not located in environmentally significant land. Deployment principles prioritising minimal technology impact have been utilised which ensure alignment with the landscape design honouring the reinstated riparian zones and the PMF level boundary.	Yes
Performance Outcome 3		
Telecommunication facilities ensure human health and safety, including risks associated with the emission of electro-magnetic radiation.		
- Consult with the local community and ensure compliance with NSW Telecommunications Facilities Guideline including Broadband or any further updates. - Provide a minimum 300m separation from any residential area or other sensitive use. - The level of electro-	Deployment of fibre broadband to premises and to non-addressable locations should be undertaken consistent with guidelines outlined in the NSW Telecommunications Facilities Guideline. This requirement should be conditioned in the approval. Wireless connectivity (Wi-Fi and LPWAN) networks are proposed for the site. While within 300m of residential areas to the west of the site along Luddenham Road, these infrastructures are very low powered and emit non-ionizing electromagnetic radiation not considered harmful.	Yes

magnetic radiation emitted from any telecommunications facility does not exceed the limit of 0.2uW/cm2. 4. Signs are erected around a telecommunications facility displaying warnings and information to minimise public risk. 5. The facility is enclosed with a minimum 1.8m high open mesh (or similar) to prevent public access to the site.	Selection of specific technology product through procurement should be mindful of the requirements under the NSW Telecommunications Facilities Guideline.	
Performance Outcome 4 Visual impact on the public domain is minimised.		
1. Locate the facility so that it does not detract from: a. The heritage significance or settings of a heritage item or potential archaeological site; b. The amenity of open spaces; or c. Key regional and district views and vistas. 2. Facilities are of a “slimline monopole” construction. 3. The facility does not include advertising signs, including logos. 4. The facility does not contain night illumination (except where a proposed telecommunications facility infringes the Obstacle Limitation Surface (OLS) for aircraft safety).	The proposal actively seeks to minimise visual impact of telecommunications equipment through the following mitigations: Co-location of equipment with other planned structures and integration into multi-function poles. To ensure compliance with item 3 of this performance objective, it should be conditioned in the approval that advertising on smart infrastructure equipment be non-permissible.	Yes
Performance Outcome 5 Landscaping screens the facility from the public domain.		
1. Locate the facility where vegetation, landform or open space features screen or can reduce its visual impact. 2. Additional landscaping shall be provided where existing vegetation does not adequately screen the facility.	Smart infrastructure will be located in the streetscape and consistent with the Western Sydney Public Space design guidelines to be positioned to co-exist with urban plantings and landscaping.	Yes

5.5: IMPACTS AND RECOMMENDED MITIGATIONS

Cumulative impacts are the result of incremental, sustained and combined effects of human action and natural variations over time, and can be both positive and negative and are caused by compounding effects of a single project or multiple projects in an area, and by the accumulation of effects from past, current, and future activities.

There are several state significant and local projects operating or intended to operate in and around the site which may contribute to cumulative impacts to the Project.

5.5.1: Other Development in the Area

The site is located within Badgerys Creek. Approved and likely future SSDAs/Significant Projects which may be relevant in the cumulative impact assessment of the proposal are summarised in Table 19.

Table 19: Known proximate development

SSDA Reference	Development Description	Current Status
DHL Warehouse and Logistics Facility (Southern Site) SSD-38206707	Construction of two single storey warehouse buildings, landscaping works, associated vehicle crossings and drainage connection to the road drainage system, signage and wayfinding.	Re-application for SEARs and Environmental Impact Statement being prepared
DHL Logistics Facility, Badgerys Creek (North) SSD-38201739	Construction of two single storey warehouse buildings, landscaping works, associated vehicle crossings and drainage connection to the road drainage system, signage and wayfinding.	Re-application for SEARs and Environmental Impact Statement being prepared
Building 2 Advanced Manufacturing Research Facility 215 Badgerys Creek Road, Bradfield (SSD-58591961)	Construction, fit out and use of AMRF. The AMRF will provide services, specialist equipment and work spaces for small to medium enterprises, start-ups and large multinationals.	Prepare Environmental Impact Statement
Sydney Clean Energy Compost Manufacturing Facility 30-40 Martin Road, Badgerys Creek (SSD-43956805)	Construction and operation of a compost manufacturing facility, involving the receipt and processing of garden, food and wood waste and a renewable energy (anaerobic digestion) plant, office and educational space and car parking	Prepare Environmental Impact Statement
Altis Warehousing Estate, 2289-2309, 2311 Elizabeth Drive, Luddenham (SSD-48438209)	Construction and operation of a warehouse and distribution estate.	Response to Submissions
Elizabeth Enterprise Precinct - Stage 1 1669-1723 Elizabeth Drive, Badgerys Creek	Concept Masterplan and Stage1 Development for general industry and warehouse distribution centres	Prepare Environmental Impact Statement

(SSD-19618251)		
475 Badgerys Creek Road, Bradfield	Ingham Property Group are preparing a masterplan for this 182-hectare site. A master plan request was lodged in March 2022. The site will predominately comprise 'enterprise and light industry' uses. 'Business and enterprise' and a 'local/neighbourhood centre' are also envisaged.	TAP Process
(WSA_MP01)		
First Building Bradfield City Centre	Construction and operation of an advanced manufacturing research facility, including workspaces, manufacturing hall, exhibition spaces, landscaping, parking and ancillary works.	Approved on the 9 September 2022. Construction has commenced on the First Building in the Bradfield City Centre. Scheduled for completion in 2024
(SSD-25452459)		
230 Martin Road Industrial Development	Construction and operation of two large format warehouses	Prepare Environmental Impact Statement
(SSD-65529236)		
Elizabeth Drive Upgrades	The upgraded road will provide two lanes in each direction together with a median island, landscaping and paths. The proposed upgrades relate to 11.4km of road.	Consultation on the REF closed 31st October 2023
Boral's Badgerys Creek Industrial Area	Concept and Stage 1 application for Boral's Badgerys Creek Industrial Area comprised of: Stage 1 - concrete batching plant and research & development lab Stage 2 - resource management facility for the processing of construction & demolition waste.	Prepare Environmental Impact Statement
235 Martin Road, Badgerys Creek		
(SSD-60644466)		
Mixed Use Hotel and Commercial Development	A concept masterplan to support development for the purpose of tourist and visitor accommodation and commercial premises.	Prepare Environmental Impact Statement
1990 Elizabeth Drive, Badgerys Creek		
(SSD-53643233)		
50 Martin Road, Badgerys Creek	Demolition of existing buildings, remediation of site, construction of gravel hardstand areas, temporary office, temporary use as depot.	Application lodged 27/06/2022
(DA-723/2022)		
Western Sydney Airport Business Park	Construction and operation of the Western Sydney Airport Business Park comprising earthworks, retaining walls, estate wide infrastructure, development of nine buildings for agribusiness uses, landscaping and riparian corridor works.	Prepare Environmental Impact Statement
The Northern Road, Luddenham		
(SSD-64409468)		
40 The Retreat Bringelly	Construction and operation of mixed-use residential development within the Western Sydney Aerotropolis	Prepare Environmental Impact Statement
(SSD-65729209)		
Luddenham Resource Recovery Facility	Construction of a Resource Recovery Facility accepting up to 600,000 tpa of construction and demolition waste and commercial and industrial waste.	Assessment – more information required.
275 Adams Road, Luddenham		
(SSD-10446)		
Central Park, Bradfield City Centre	Construction of the Bradfield City Centre Central Park including associated structures and landscaping works.	Prepare Environmental Impact Statement
(SSD-65490715)		

WSI Airport (2014-7391)	Staged proposal comprising the construction and operation of a new international airport.	Under construction, proposed to be operational by December 2026.
M12 Motorway (SSI-9364)	A new dual-carriageway motorway to connect the M7 Motorway with the Western Sydney Airport and The Northern Road. The motorway will be initially two lanes in each direction, with capacity for an additional future lane in each direction.	Approved 23 April 2021. Construction commenced mid-2022 and is to be complete in late 2025.
Western Sydney Freight Line	Proposed dedicated freight rail line connection between the Western Parkland City and Port Botany. The new freight rail line will free up the Main West Rail Line to allow more passenger services over time.	Stage 1 Corridor – connecting from OSO to Horsley Park and M7 is now protected and acquiring properties.
Sydney Metro – Western Sydney Airport (SSI-10051)	A new metro line to service Western Sydney International Airport, the Western Sydney Aerotropolis and interchanging with the T1 Western Line at St Marys	Approved 23 July 2021. Construction is to commence in December 2022 and to be completed in late 2026 to coincide with the WSA

From a smart place perspective, the proposal is in alignment with the development objectives of the Aerotropolis Precinct Plan. The primary cumulative impact of the development of the site in relation to the range of proposed developments listed above is to collectively accelerate demand for digital connectivity across the region. This is understood as a positive outcome benefiting the overall development of the Aerotropolis in accordance with the planning framework.

5.5.2 Ensuring Positive Design Outcomes

This report recommends that the suite of smart initiatives outlined within this report be implemented as part of the proposal to assure the positive design outcomes associated with development of the site.

These recommended initiatives include:

- Enabling infrastructure including pit and pipe network in shared trenches aligned to the street hierarchy, and multi-function poles (MFP) in key locations where multiple technology uses are required. An additional set of MFP-ready locations to be provisioned across the estate to provide for increased demand for digital connectivity and for future technology requirements and industrial applications.
- Digital connectivity networks including fibre to the premises fixed broadband connections for each lot. Additional fibre connections to non-addressable locations including MFP locations and identified sites for wireless network antennae and gateways. Pit and Pipe will be designed to permit extension of the non-addressable network to MFP-ready locations to provide for future uses.
- Wireless digital connectivity networks including Wi-Fi for public access to be provided at key community and recreational public domain sites, and a Low Power Wide Area Network (LPWAN), recommended to utilise the LoRa network protocol to enhance interoperability with council systems. LPWAN will provide for Internet of Things (IoT) coverage across the estate enabling industrial applications and supporting sensor-enabled data-led management of estate activities.
- Smart Mobility and Travel initiatives including sensor-based lighting on shared active transport networks to enhance useability and energy efficiency, smart parking in visitor car parks to ensure equitable access to parking resources, and electrical charging infrastructure supporting the adoption of EVs.
- Smart Environment initiatives including IoT-based environmental sensing of air quality, temperature and humidity across the estate to support safety and provide for monitoring and data-led management procedures of Urban Heat Island effect over time.
- Smart Environment initiatives utilising sensors, controls and meters to support the efficient use of water across the site. Including smart water metering for each lot, and smart irrigation systems in key green spaces within the public domain.

- Smart Energy initiatives will include the adoption of rooftop solar PV systems on lots, and the conditioning for the provision of appropriate space and electrical design considerations to enable on-lot battery energy storage systems (BESS) to enhance the use of renewable energy in future on-lot operations.
- Smart amenity initiatives include smart public domain infrastructure offering integrated Wi-Fi and free device charging. Public safety initiatives include the provision of CCTV security integrated to MFPs at key public domain and community space locations. Sensor-enabled smart lighting to enhance the appeal, sense of safety and utilisation of active transport networks

The implementation of these smart initiatives should be undertaken with reference to the following technical guidance:

- Enabling Infrastructure including the detailed design of pit and conduit to premises (lots) and non-addressable locations should be considered and undertaken in accordance with the technical specifications of the NSW Digital Infrastructure Technical Report: Western Parkland City. Specifically, the minimum conduit diameter, minimum depth noting required separation from other utilities within shared trenches, and guidance on effective pit and conduit layout.
- It is also recommended that pit and conduit network be designed with reference to the NBN Co New Developments Standards for Deployment of NBN Pit and Pipe Network and design undertaken by a suitably accredited technician to ensure consistency with NBN Co requirements.
- The detailed location and placement of MFPs within the Estate Roads should be undertaken with reference to the specifications referenced in Western Sydney Street Design Guidelines. Noting the requirements for distance from the kerb as per section C5.2.
- The installation of digital networks including fibre to premises broadband, and the specific siting of wireless networks equipment including antennae, routers, fibre backhaul and any passive infrastructure including brackets should be undertaken with reference to the NSW Telecommunications Facilities Guideline and specifications referenced in Western Sydney Street Design Guidelines in section C5.6.
- Future on-lot additions of smart technologies should be considered and designed with reference to NSW IoT policy and NSW Cybersecurity Policy.

Future development within the estate should have these requirements noted as conditions of approval.

These inclusions will ensure the project is delivered, and is able to be managed, in accordance with the strategic intentions and objectives for the State and Western Sydney Aerotropolis precincts, and in compliance with the conditions and requirement of the statutory planning framework governing the site.

6: CONCLUSION

This report has documented the analysis and assessment of requirements and opportunities for inclusion of smart technologies within the Burrah Park SSDA. This Smart Places Assessment Report supports development of a concept plan and Stage 1 development for an industrial warehouse and logistics estate located at 1953-2109 Elizabeth Drive Badgerys Creek, NSW 2555.

To ensure the project proceeds through subsequent phases to construction in alignment with relevant statutory requirements and strategic outcomes, the following specific recommendations have been identified:

- Inclusion of the proposed smart initiatives according to the identified deployment principles.
- Adoption of a strategic approach seeking to future proof the site through provision of appropriate spare capacity within enabling infrastructure and expandable digital connectivity networks.
- Adoption of a strategic approach enabling future on-lot activity to leverage emerging technologies and meet the estates performance objectives across employment and sustainability.
- Detailed design be undertaken with reference to the identified technical guidelines and policies to ensure delivery is consistent with policy and industry best practice.

Through the inclusion of these technologies within the proposal, the development meets the requirements of the Aerotropolis DCP and goes beyond. From a perspective of effectively integrating smart places initiatives and technologies within the design and future function of the site, it represents an ambitious undertaking for an industrial estate, and an apt contribution to the overall intended outcomes for the Aerotropolis.

Not only are performance objectives pertaining to delivery of smart places met, but a range of other performance outcomes are also enhanced. Further, through a strategic focus on future proofing the site via the approach to smart places set out in this report, the project invests in an underlying infrastructure and diverse approach to digital connectivity that can support future use cases and technology solutions while minimising future impacts.

In conclusion, this Smart Places Assessment Report outlines the recommended initiatives required to meet identified performance objectives set out in the SEARs and subsequent planning framework.

Through a considered process aiming to effectively integrate smart places into the design, the commitment across the site to support the establishment of smart places in NSW in alignment with NSW Government and Western Parklands City strategy and legislation is affirmed.

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