

An aerial photograph of Western Sydney, Australia, overlaid with various urban planning and landscape design elements. These include colored lines representing roads, rail lines, and waterways, as well as shaded areas indicating different land use zones or vegetation cover. The map shows a mix of developed urban areas and green spaces.

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Studio Hollenstein

WESTERN SYDNEY AEROTROPOLIS URBAN DESIGN AND LANDSCAPE PLAN REPORT

GUNDUNGURRA

DHARU

Land of Wianamattagal - people

Wianamatta Nature Reserve

Wianamatta Regional Park

Penrith

St Marys

Mount Drutt

Wawarrawarry

Mulgoa Nature Reserve

Blaxland Creek Reserve

Warragamba, water running over rocks

Luddenham

Bents Basin

Gulguer Nature Reserve

Burraborang Place to hunt kangaroo

Burraborang - kangaroo

Burraborang - eel gal - people

Murrumbidgee Many swamps

Nurranginy named after Aboriginal

Bungarribee a burial place of a

Maraylya much water?

Castlereagh Nature Reserve

Yellomundee Regional Park

Regatta Park

Western Motorway M5

Greater Western Hwy A44

Land of gal - pe

Western Sydney Parklands

Western Link M7

Leppington

Edmonson Regional Park

Ropes Creek

Kemps Creek

Kemps Creek Nature Reserve

Fifteenth Ave

Devonshire Rd

Wianamatta South Creek

Elizabeth Dr

Cessgroves Creek

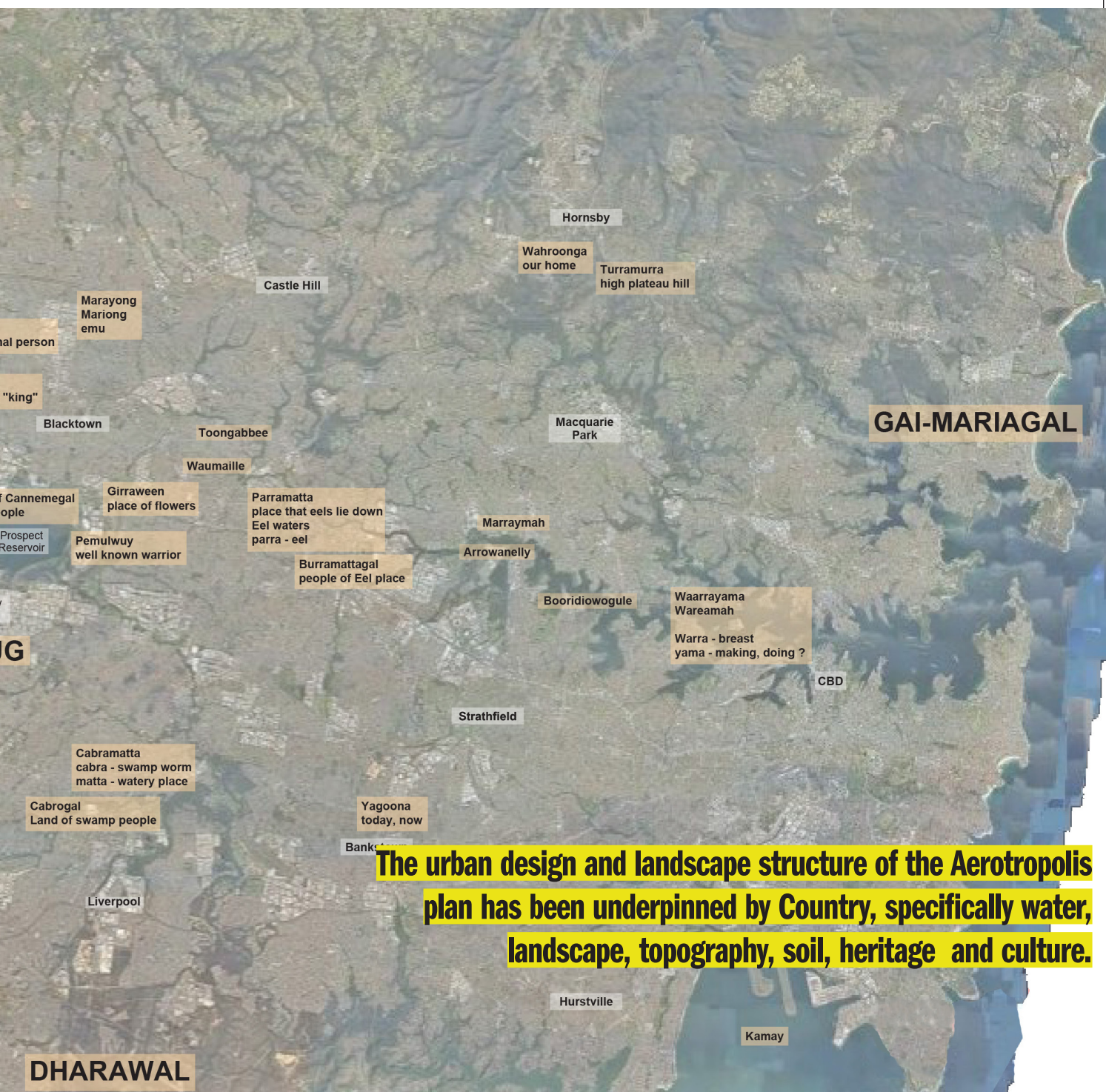
Badgers Creek

Thomson's Creek

Lowes Creek

Riley's Creek

We acknowledge and respect Traditional Owners across Australia as the original custodians of our land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past, present and emerging whose knowledge and wisdom has, and will, ensure the continuation of cultures and traditional practices.





View of the Blue Mountains from Luddenham.
Photography by Daniele Hromek.





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This report has been prepared for:

WESTERN SYDNEY
PLANNING
PARTNERSHIP



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EXECUTIVE SUMMARY

The Aerotropolis will change the face of Western Sydney. A massive opportunity across time and scale, the urban design frameworks for each initial precinct can shape for the world how sustainable urban form can be realised.

This report comprises the urban design, public realm and landscape recommendations informing the Precinct Plan for the Aerotropolis initial precincts.



Looking north east over the Aerotropolis Core, with Thompsons Creek to the right of the image.

A NEW CITY A NEW COMMUNITY A NEW APPROACH

Beyond business as usual

DESIGNING WITH COUNTRY

Country is a leading driver to urban design across the Aerotropolis. The plan and future phases will recognise Aboriginal cultural values in leading design outcomes, cultural heritage, and the approach to the urban system.

"Aboriginal culture is developing a stronger presence in the NSW planning system. Undertaking archaeological investigations and recording Aboriginal heritage is a well established part of the planning process, but response to Country and culture in the design of places is a relatively new idea."

(GANSW, Designing with Country, 2020)

"Country soars high into the atmosphere, deep into the planet crust and far into the oceans. Country incorporates both the tangible and the intangible, for instance, all the knowledges and cultural practices associated with land. Aboriginal people are part of Country, and our identity is derived in a large way in relation to Country. Our belonging, nurturing and reciprocal relationships come through our connection to Country. In this way Country is key to our health and wellbeing"

(Dr Daniele Hromek, 2020)

LANDSCAPE LED

Landscape and parkland will be the defining feature of the Aerotropolis.

Located at the centre of the Western Sydney Parkland City, a fundamental approach to urban design is to be landscape led.

The whole landscape system, including any cultural heritage values, needs to be understood and embedded as a key structuring element to the urban design frameworks. This goes beyond vegetation, to landform, to soils and geology, to water and to biodiversity.

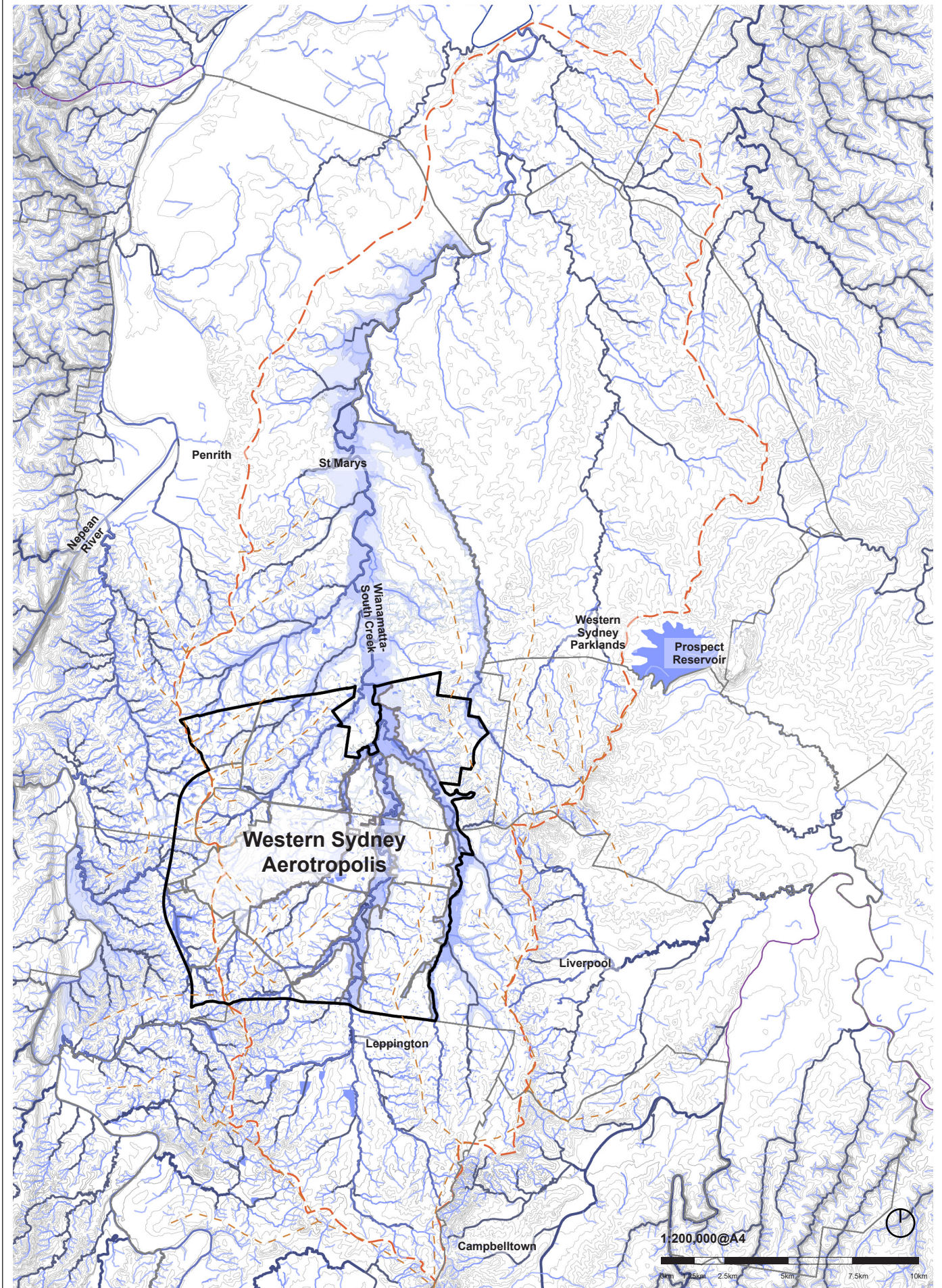
What we do here affects not just the site, but the entire system beyond our boundaries. Therefore a sentiment of custodianship needs to embed the planning, design and development processes.

SHAPED BY WATER

Western Sydney is both hot and cold. It is brown and green. It is dry, and it is wet. Its ephemeral creeks and water systems are a fundamental part of the landscape. It's part of a system that stretches from the Blue Mountains, flowing north to the Nepean, the Hawkesbury and eventually the ocean. It is complex, fragile and subtle.

Water systems are vital to the environment and its biodiversity. They are also critical to social and economic functions of systems, and they help to keep the city cool. Protecting that, and retaining these waterways is fundamental to the urban design approach of the Aerotropolis.

Here, urban design must respond to and protect the waterways. From the broad creeks of the Wianamatta-South Creek, to its most ephemeral arms. In this way, a place connected to landscape, to the culture of our Indigenous Elders, and to resilience can be created.



SHAPING A SUSTAINABLE WESTERN CITY

REBALANCING SYDNEY'S THREE CITIES

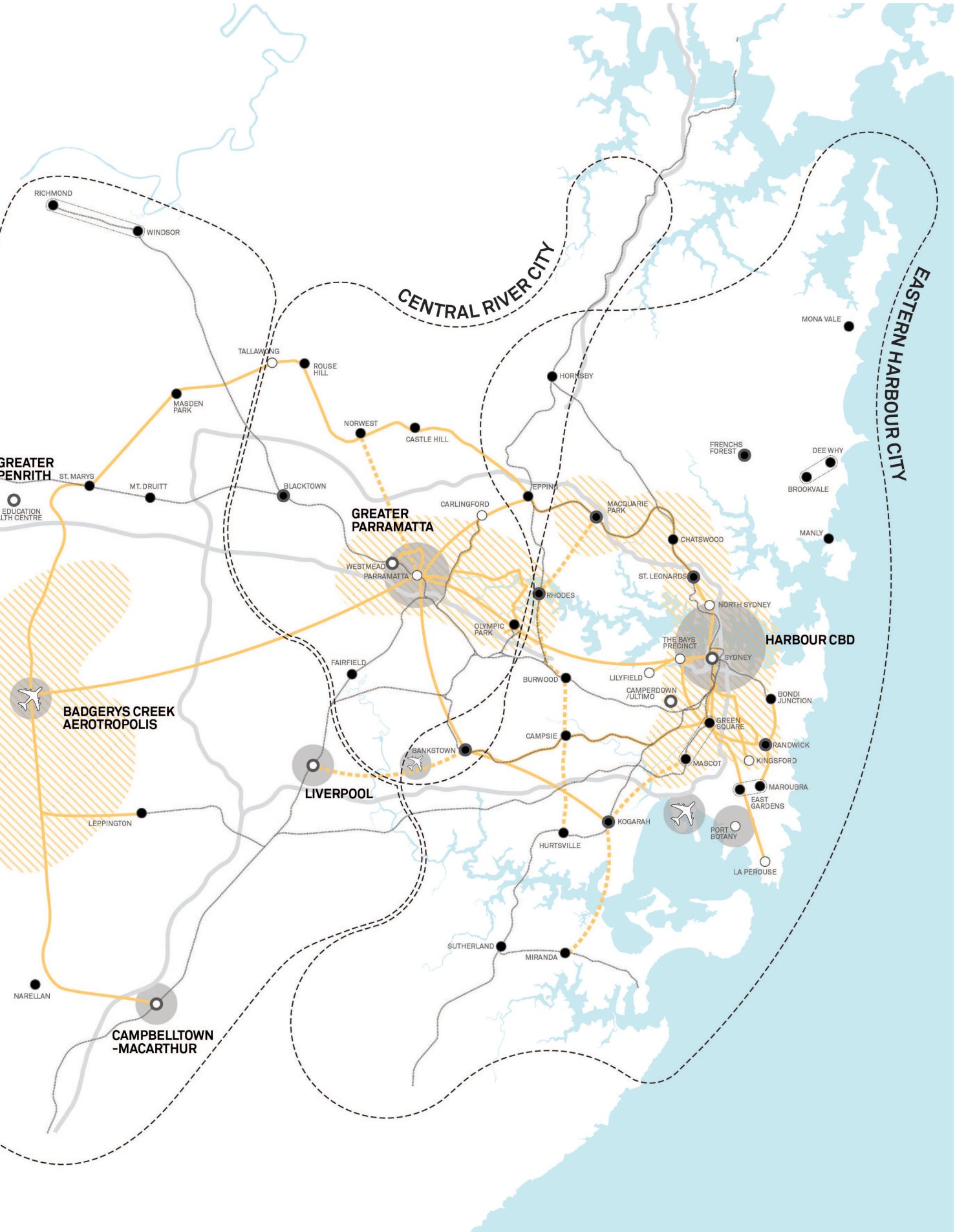
The Greater Sydney Commission has established a clear, overarching vision for Sydney - a Metropolis of Three Cities. Historically, the emphasis of jobs, amenity, growth and infrastructure has been on two of the three - the Eastern Harbour City focused on the Sydney CBD and Central River City focused on Parramatta.

The Aerotropolis will rebalance the Western Parkland City so that it has:

- High quality jobs that will sustain prosperity within the region
- Excellent access and connectivity, provided through public infrastructure (including through the construction of the Sydney Metro)
- Excellent liveability, where a 'beyond business as usual' approach will focus on creating a cooler and greener city - of which a key focus is early planning for the Wianamatta-South Creek Precinct as part of a broader Blue Green Infrastructure framework.

The Aerotropolis and Metropolitan Clusters of Greater Penrith, Liverpool and Campbelltown-Macarthur will connect to Greater Parramatta and the Harbour CBD to realise the vision for Greater Sydney as a metropolis of three cities. The urban design approach to the Aerotropolis urban design frameworks brings jobs, connectivity and liveability together to create a fundamentally sustainable city. By combining these elements, the Western Parkland City can be resilient and adaptable to the future.





THE AEROTROPOLIS

Propelled by Government investment in the Western Sydney International (Nancy-Bird Walton) Airport, Sydney Metro Western Sydney Airport Line and road infrastructure, the Aerotropolis will be the beating heart of the Western Parkland City.

The focus is fundamentally on establishing a 100 year vision for the precincts. This report establishes an urban design, landscape and public realm framework for a sustainable, liveable and prosperous city.

The initial precincts addressed are:

- Aerotropolis Core
- Badgerys Creek
- Wianamatta - South Creek (adjacent to Aerotropolis Core and Badgerys Creek)
- Northern Gateway
- Agribusiness

With this 100 year mindset, the key framework elements of the Aerotropolis are:

1. Country and its landscape form a key structuring element. Ridgetops, creeks, ephemeral streams, remnant vegetation, culture and heritage are retained and enhanced through the Blue-Green Infrastructure Framework.
2. Jobs and mixed use intensity are highest around the Sydney Metro Western Sydney Airport Line stations at the Aerotropolis Core and Luddenham Road (within the Northern Gateway). Here, the centres focus amenity to open space and the creek corridors, embedding place at the heart of the city.
3. The Wianamatta - South Creek and its tributaries, Badgerys, Cosgroves and Thompsons Creek, as well as Duncans Creek, which flows to the Nepean, form the Environment and Recreation spine of the Aerotropolis. These corridors carry critical environmental, cultural and recreation functions to boost liveability and establish the primary elements of a cool, parkland city.
4. New patterns of development will occur throughout the Aerotropolis to fundamentally change the nexus between urban landscapes and water. To maintain and enhance the flood and ecology of the Wianamatta - South Creek, a new approach to water management is required - integrated at a precinct wide scale. It is critical an integrated and connected network of water and open space is coordinated across the Aerotropolis.
5. Movement throughout the Aerotropolis is founded on creating great places. Centres will be people focused, with Metro and bus transit providing frequent connections to broader Sydney. The larger arterial corridors are important connections directing goods to the airport. These are directed around centres, maintaining a focus on place, amenity and liveability, whilst at the same time providing an efficient network.

Note: This project has considered the extent of the Wianamatta-South Creek corridor adjacent to the initial precincts. Future precinct planning work throughout the Rossmore and Kemps Creek precincts will consider appropriate land use, urban design and landscape outcomes for the additional parts of the Wianamatta-South Creek corridor not addressed in this report.

1. Aerotropolis Core City Centre
2. Thompsons Creek Regional Park
3. Luddenham Road Metro Station
4. Luddenham Village
5. Western Sydney International (Nancy-Bird Walton) Airport terminal
6. Western Sydney International (Nancy-Bird Walton) Airport business park





A perspective visualisation of the Aerotropolis Core.



THE PLANS

The Aerotropolis Core, Badgerys Creek and Wianamatta-South Creek Precincts form a continuous urban parkland system. They will offer significant employment opportunities, propelled by their adjacency to the Western Sydney International (Nancy-Bird Walton) Airport.

AEROTROPOLIS CORE

The Core contains the City Centre for the Aerotropolis, forming a complementary centre to the metropolitan cluster of centres including Penrith, Liverpool and Campbelltown.

The City Centre and its Enterprise frame comprise a Parkland City in the true sense. It is a dense urban neighbourhood focused on both the new metro station and Wianamatta - South Creek system. Thompsons Creek will form the regional park, complemented by a network parklands associated with retained creeks.

The Aerotropolis Core precinct has the capacity to accommodate 50,000 to 60,000 jobs and up to 24,000 residents by 2056.

Annotations

1. An intense, large centre with several nodes - one at the Metro Station; a northern focus integrated with creek parkland and Fifteenth Avenue; a Kelvin Park centre.
2. Lower order, but still intense employment land lies north and west of the centre - each with its own focus amenity.
3. West of Badgerys Creek Road, development is coordinated over time to achieve creeks and existing vegetation in linked open space.
4. Open space aligned to existing ephemeral creeks.
5. Larger ridge top parks help share views and connect Wianamatta - South Creek to the urban core.
6. Kelvin Grove is provided impetus via a potential additional Metro station (not a government commitment).

BADGERYS CREEK

The Badgerys Creek precinct is entirely employment focused. It will complement the role of the business park within the Western Sydney International (Nancy-Bird Walton) Airport as well as the Northern Gateway employment functions.

Flanked by Badgerys Creek and the Wianamatta - South Creek, these major green corridors will provide the amenity for future workers. Centres providing conveniences will help to activate these corridors and the employment zone. The precinct will comprise logistics, commercial industry, high technology industry and associated employment uses.

Up to 11,000 jobs will be located across the precinct by 2056.

7. Thompsons Creek and the adjacent Wianamatta - South Creek become the Aerotropolis regional park.
8. Badgerys Creek coordinated into an enterprise grid, utilising existing road and lot patterns where possible.
9. Badgerys Creek precinct centres aligned with the linear creek corridors to maximise amenity benefits.
10. Coordinated development north of Elizabeth Drive to integrate with Northern Gateway west of Badgerys Creek.
11. Waste transfer station retained for circular economy site (consistent with PIC), with potential future network shown.
12. Land north of the M12 corridor becomes conservation area.
13. High risk* flood areas limited to creek and ecological functions.

WIANAMATTA-SOUTH CREEK

The WSC precinct will be used for a variety of environmental and recreation functions established by the Western Sydney Aerotropolis Plan.

It accommodates a range of environmental and recreation functions, including water flows associated with the creek environment, ecology and biodiversity functions, recreation (walking) paths and separate active transport (bicycle) routes, as well as contained areas of active recreation, particularly focused around the Thompsons Creek regional park.

The Wianamatta - South Creek precinct is complemented by a series of east-west corridors through the Aerotropolis Core and Badgerys Creek precincts to achieve a sustainable green grid.

14. Medium risk* flood areas provide active transport and parkland uses.
15. Low risk* flood areas contain active recreation and shared passive open space areas through to development.
16. Fragmented land within the Environment and Recreation zone (Wianamatta South Creek) is publicly accessible through long term development.
17. Existing quarries transition over time to employment land uses. Vegetation is retained where it aligns with flood and biodiversity objectives.

*Risk areas as defined by Liverpool City Council.



WESTERN SYDNEY
(NANCY BIRD-WALTON) AIRPORT

M12 MOTORWAY

ELIZABETH DRIVE

PITT STREET

BADGERYS CREEK

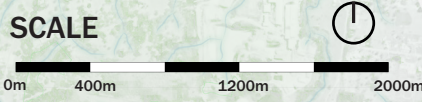
EASTERN RING ROAD

WIANAMATTA CREEK

THE NORTHERN ROAD

THOMPSONS CREEK

BRINGELLY ROAD



Note: This project has considered the extent of the Wianamatta-South Creek corridor adjacent to the initial precincts. Future precinct planning work throughout the Rossmore and Kemps Creek precincts will consider appropriate land use, urban design and landscape outcomes for the additional parts of the Wianamatta-South Creek corridor not addressed in this report.

THE PLANS

The Northern Gateway is a principal area for high quality jobs and employment land framed by existing topography and Cosgroves's Creek. The Northern Gateway Strategic Centre will be a key centre, containing mixed use activity supported by Sydney Metro.

NORTHERN GATEWAY

The structure of the landscape is key to generating the urban form of the precinct plan. The alignment of existing creeks and significant riparian floodplains, the conical hills and natural vegetation have been fundamental in determining the alignment of the street network and the block structure. The significant riparian floodplains are framed and addressed by continuous edge streets, while the perpendicular streets all terminate with open vistas to the landscape and open sky. As a result the urban form is calibrated to and celebrates the rolling topography of the Western Sydney landscape.

The Precinct Plan's structure also draws its inspiration from the existing alignment and character

of Luddenham Road, creating a complementary paired 'sister' street to Luddenham on the slopes west of the ridgeline. Between these two primary structuring streets is a robust north-east oriented grid which forms efficient rectilinear blocks that optimises use of the gentler terrain for development, deforming rationally around hilltops and creek lines to form a coherent public domain network

Where ground is flattest in the south adjacent to the airport, the street and block structure broadens to make larger sites available for logistics and large format uses. Where the terrain rolls more in the centre and north of the precinct the street and block structure reflects a greater density

of smaller footprint building types tailored to the terrain.

In the north and to the west of Luddenham Road, a Specialised Centre is established within the approved Sydney Science Park boundary and around the new Metro station, with commercial buildings and housing to assist with activation. Its layout of the street network is designed to allow residents, workers and visitors to orient themselves directly to significant local and regional open space in the west.

The addition of a new Metro station will further catalyse the Precinct and provide for new opportunities for connectivity throughout the broader Precinct.

Annotations

1. Specialised Centre. A hub with focus on innovation, science, technology as well as other mix of uses such as housing. Contains Metro station. Integrated with the creek parkland
2. Local centre, each with its own focus and amenity (non-residential).
3. Mixed used zoning to support the strategic centre and other enterprise areas throughout the precinct.
4. Finer grain employment area with smaller building types on steeper land. Lot sizes are smaller to minimise extent of cut and fill associated with larger scale building typologies.
5. Larger scale employment area located on flatter parts of the precinct. These areas will accommodate larger block typologies.
6. Hilltops retained as Local Parks. They provide connection to Country by providing celebrating the natural landscape and providing scenic views across the precinct and beyond.
7. District Parks incorporate riparian zones, creeks, open space and existing woodland retained. In lower risk flood zones these areas contain active recreation and a range of shared passive open spaces. Water storage is also incorporated into these parks as part of the open space.
8. Connection to creeks through wide collector streets and sub-arterial roads that create green boulevards. Large verges allow for extensive tree planting and rain gardens in a park like setting with and a range of shared active connections, between creeks.
9. Critical connections across major infrastructure corridors. The M12, and planned OSO corridors disconnect the precinct into alienated fragments of land. In order to achieve minimum walkability and connectivity throughout the precinct, active and vehicular crossings are proposed over and under these corridors.
10. Luddenham Road. This is the primary urban roadway and serves as the major freight and regional rapid bus corridor.
11. Paired street to Luddenham Road. This is a major structuring spine and will serve as a main frequent bus and active transport corridor.
12. Remnant woodland becomes conservation area.
13. Potential strategic crossing over the Warragamba Pipeline to improve connectivity to the Greater Penrith to Eastern Creek (GPEC) investigation area. New road bends slightly to cross pipeline next to Metro line. This would also serve as an active crossing.
14. Lower density dwelling types outside the 1.2km Metro Catchment, consisting of detached and semi detached type housing such town houses fronting open space.
15. 'Missing Middle' type housing located within the 1.2km catchment, such as terraces or walk up apartments.



THE PLANS

The Agribusiness Precinct will be a place for high technology and intense agriculture industries, supported by its interconnectivity with the Western Sydney International (Nancy-Bird Walton) Airport. The rolling hills and chain of dams provide a high quality landscape setting for jobs and the existing Luddenham Village.

AGRIBUSINESS

The Agribusiness Urban Design Framework Plan will create a world-class agribusiness precinct that will support the production and value-adding of sustainable, high quality fresh produce and pre-prepared consumer foods whilst achieving ongoing conservation outcomes in a manner that reflects the enduring spirit of Country. The embedded spiritual connection to land will persist through the weaving of modern and traditional practises and techniques of harvesting the land.

Annotations

1. Growth within and around Luddenham Village is structured to enhance and protect the character and history of the village. As one of the few existing centres within the Aerotropolis, Luddenham village will play a key role in supporting the growth of the broader Aerotropolis as well as the Agribusiness Precinct. The village is identified as a key site within the Urban Design Framework Plan.
2. A new Agribusiness Park (Agri-Park) is located on the southern end of Luddenham Village and preserves and frames landscaped views from the Luddenham Village ridgeline (songline) to the west, through Duncans Creek valley towards the Blue Mountains. The park connects to St James Anglican Church grounds and Sales Park to the north, and extends down into Duncans Creek tributaries to the south. Luddenham Village and the Agri-Park will form part of a regional tourism network.
3. Cosgroves Creek Park is a parkland network framed along Cosgroves Creek with active transport links, playing fields, running and cycling tracks that extends from the Luddenham Village ridgeline, across The Northern Road across Elizabeth Drive to the Northern Gateway Precinct. The park is located to preserve and enhance landscaped view corridors from the songline of the Luddenham Village ridgeline along Cosgrove Creek and towards the city beyond.
4. Duncans Creek reservoir is rehabilitated, using waterway rehabilitation techniques, into a generous lake for active and passive recreation for workers, visitors and residents of the broader Aerotropolis. The reservoir will incorporate details to mitigate bird and waterway functionality. A continuous pathway around its perimeter will

The Agribusiness precinct draws upon the agricultural and horticultural history of the area, continuing to provide food security and supplying Sydney and export markets.

The Agribusiness Urban Design Framework Plan is structured in response to its unique topography, the predominant north south ridgeline traced by the Old Northern Road and shadowed by the Northern Road with creek-lines originating at the head of the broad valleys that form Cosgroves Creek and Badgery's Creek to the east, and Duncans Creek and the Mulgoa Valley to the west.

- provide an almost 5km long track similar in nature to the Bay Run in Iron Cove. A series of stormwater focused open spaces extend like fingers into the adjacent development zone, providing stormwater infrastructure whilst also providing landscape amenity and public access.
5. The Old Northern Road is transformed into a green boulevard through Luddenham Village, celebrating the landscape character of this walkable scaled local centre. The character of the Old Northern Road will evolve into a 'main street' lined with retail, hospitality and commercial offerings. Generous public domain improvements will include new planting, pedestrian footpaths, seating, lighting, cycle paths, street parking, public art and heritage interpretation.
6. Historic elements within Luddenham Village will be revitalised to better suit the needs of the existing and emerging community and visitors. For example, the historic Luddenham Showground continues to support Luddenham Village and the broader Agribusiness Precinct as a centre of community activity. Its sensitive renewal will ensure it can support both the existing and emerging community.
7. A coordinated enterprise development, north of Elizabeth Drive with associated parkland and strong connectivity to the rest of the Agribusiness Precinct, the Northern Gateway and North Luddenham across the M12.
8. Sydney Water Reservoir site located towards the top of the ridgeline within the enterprise development zone.
9. Areas of sensitive ecology form part of a conservation area.

Luddenham Village sits high on the ridgeline, at the core of the Precinct, and acts as an Agribusiness village that is connected to local, district and regional centres by transportation and parkland networks. New parkland will increase the amenity of the village and support its growth.

The Agribusiness precinct is anticipated to accommodate up to 5,400 jobs by 2036, resourcing this from within the aerotropolis and adjoining local government areas.

10. A parallel Northern Road connects across the Agribusiness precinct from Anton Road north across Cosgroves Creek and Elizabeth Drive. Adams Road also extends from east to west, connecting the precinct to Luddenham Road.
11. Neighbourhood hubs are located along creek parkland edges and act as a centre for employment activity.
12. A local employment centre develops adjacent to the airport along the Northern Road with amenity and outlook over Duncans Creek reservoir and adjacent open space.
13. A large employment precinct develops adjacent to the airport. The street layout is developed to facilitate large format land uses clearly framed by parkland.
14. Intensive Food production is supported on the large and relatively flat land holdings in the northern area of the Precinct that harness the connectivity provided by the proximity of the M12 and airport.
15. The planned OSO corridor will consider critical landscape, active and vehicular crossings along its length. It's vertical alignment and design should be responsive to the need to preserve strategic sight lines, landscape and habitat connections from the Agribusiness precinct towards the west and the Blue Mountains.
16. The Hubertus Club, as a registered club, is maintained to support the local community and future development within the precinct.
17. Potential connection to the future Outer Sydney Orbital will maximise connectivity between the precinct, the airport, greater Sydney and NSW.



ROLE OF THE PRECINCT PLAN

Consistent with State Environmental Planning Policy (Western Sydney Aerotropolis) 2020, precinct plan for the identified initial precincts have been prepared to provide a clear picture of the intended urban outcomes through to 2056 and beyond. As part of that process, these urban design frameworks establish the key spatial recommendations to be incorporated into the a Precinct Plan.

The precinct plan establish the strategic vision and general objectives, proposed land uses, performance criteria for development of land, and the approach to both infrastructure and water cycle management.

The precinct plan have been developed consistent with the objectives of the Western Sydney Aerotropolis Plan, and describe the intended outcomes to support the Aerotropolis' place within the Western Parkland City.

PURPOSE OF THIS URBAN DESIGN AND LANDSCAPE PLAN REPORT

The urban design and landscape plan report for the initial precincts provide the rationale for the intended city shape and systems of the Aerotropolis.

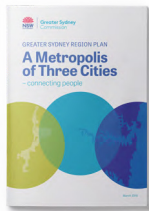
The report has been used to inform the Precinct Plan Report, which contains the required statutory mechanisms to implement the vision described by the Western Sydney Aerotropolis Plan, and the development controls against which development proposals can be considered.

STRUCTURE AND HOW TO READ THE URBAN DESIGN AND LANDSCAPE PLAN REPORT

The urban design and landscape plan report is collated according to the following:

- An executive summary applying to all initial precincts, describing the approach to design and how the Aerotropolis comes together
- Part 1: About the Project - this section describes the key contextual influences to the Aerotropolis
- Part 2: Aerotropolis Wide Framework - this section outlines the critical principles and urban systems that need to be provided throughout all precincts in order to create a 'joined up' city
- Parts 3, 4 and 5: The Urban Design Framework Plans - these sections outline the specific plans and principles for the initial precincts

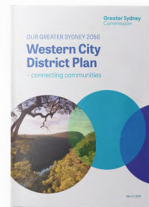
THE WESTERN SYDNEY AEROTROPOLIS STRATEGIC FRAMEWORK



Greater Sydney Region Plan: A Metropolis of Three Cities

Strategic plan created under EP&A Act

- Vision and planning objectives for the Greater Sydney region



Western City District Plan

Strategic plan created under EP&A Act

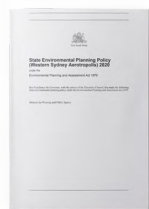
- Vision and planning objectives for the Western City District
- Aligns with the Region Plan



Western Sydney Aerotropolis Plan

Government policy framework

- Vision, Structure Plan, planning objectives and principles for the Aerotropolis
- Aligns with the Region Plan and District Plan
- Informs precinct plans and master plans in the Aerotropolis



Western Sydney Aerotropolis State Environmental Planning Policy 2020

Planning instrument created under EP&A Act

- Objectives and key controls for development in Aerotropolis
- Zones land broadly to permit or prohibit land uses
- Framework for precinct and master planning



Precinct Plan

Mandatory plan created under Aerotropolis SEPP

- Approved by Minister
- Aligns with the Aerotropolis Plan
- Allocates land uses within broad zones
- Development applications must be consistent with this plan



Master Plan

Optional plan created under Aerotropolis SEPP for large sites (over 100ha)

- Approved by Minister
- Aligns with precinct plans
- Unlocks complying development by setting detailed development and design criteria for permitted development



Development Control Plan - Phase 1 & Phase 2

Guideline created under EP&A Act

- Guidance and fine grain development considerations
- Development objectives, performance outcomes and benchmark solutions



Recognise Country Guidelines

- Connecting to culture and Country through the cultural landscape
- Connecting to culture and Country through the built form
- Language and naming

PART 1: ABOUT THE PROJECT

**The Aerotropolis will change the face of Sydney.
A massive opportunity across time and scale,
the urban design frameworks can shape for the world how
sustainable urban form can be realised.**



Looking west over the Aerotropolis, with Wianamatta South Creek in the foreground.

PROJECT DRIVERS

To provide for sustainable urban form, new ways of designing for and enabling development need to be promoted. By starting with Country, the intent for a landscape-led outcome can be achieved. Sustainable practices across resilience, circular economy, job creation and blue-green infrastructure will provide the foundation for a city over the coming 100 years and beyond.



Green streets are important throughout the Aerotropolis to keep urban microclimates cooler

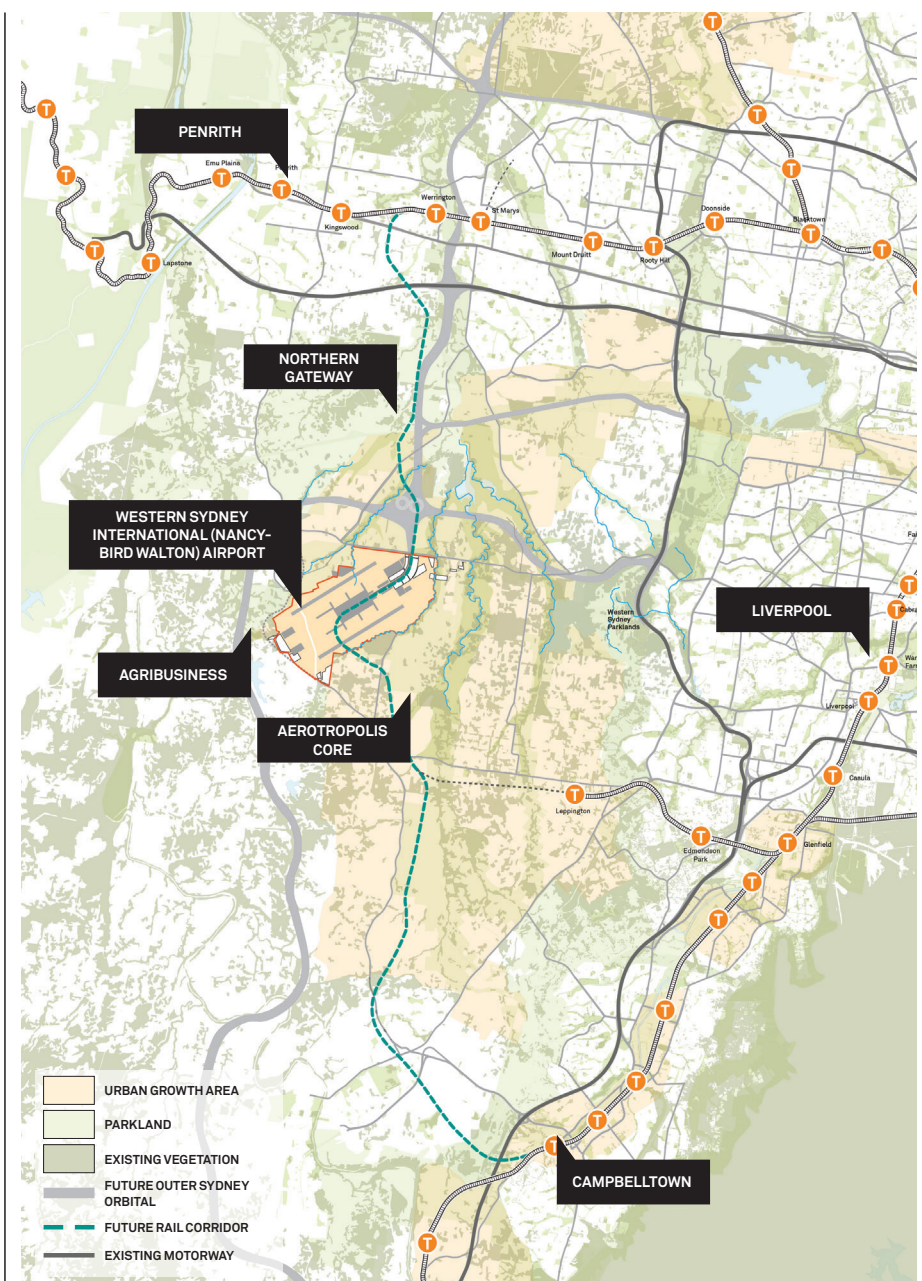
A RICHLY COMPLEX AND LAYERED PLACE

The new airport and surrounding precincts are located in a richly diverse setting of ecological, historic and cultural meaning. This is the home of Darug people - a place of settlement, sustenance and interaction for millennia. It is a place of creeks and streams, rolling hills and landscape at the edge of Sydney. It is a place of established communities, of farmland, of town centres and industry and residential neighbourhoods.

The planning of this future place is a complex process. There will be specific requirements around airport operations. Communities will want to be involved in, and benefit from, how this place changes over time.

Key to this is a demonstrated understanding of and respect for the different layers of this place. Urban design frameworks need to protect and enhance important cultural and ecological spaces, to provide for long-term infrastructure needs, to create a sense of local ownership and meaning.

In this place, blue/green systems will be particularly important, forming the basis for a more sustainable, resilient plan, one that respects and connects with country.



Five Layers of Place

BLUE-GREEN INFRASTRUCTURE FRAMEWORK

- Wianamatta (South), Badgerys and Thompson Creeks running through the precinct cluster are important floodplains for the Cumberland Plain natural water system.
- Conservation and designing with the 1% AEP flood area is vital to the hydrological resilience of this place.
- A precinct cluster with complex and diverse flora.
- Rough-barked Apple, Broad-leaved Apple trees, and a discontinuous understorey of a variety of shrubs and grasses are common on the creek corridor.
- Opportunity for generous local, district and regional green spaces with outdoor amenity, promoting the biodiversity of this place.
- Conservation balanced with access to green spaces for all to enjoy.
- Conservation of the Indigenous and native vegetation is vital to the ecological resilience of the area.

COUNTRY

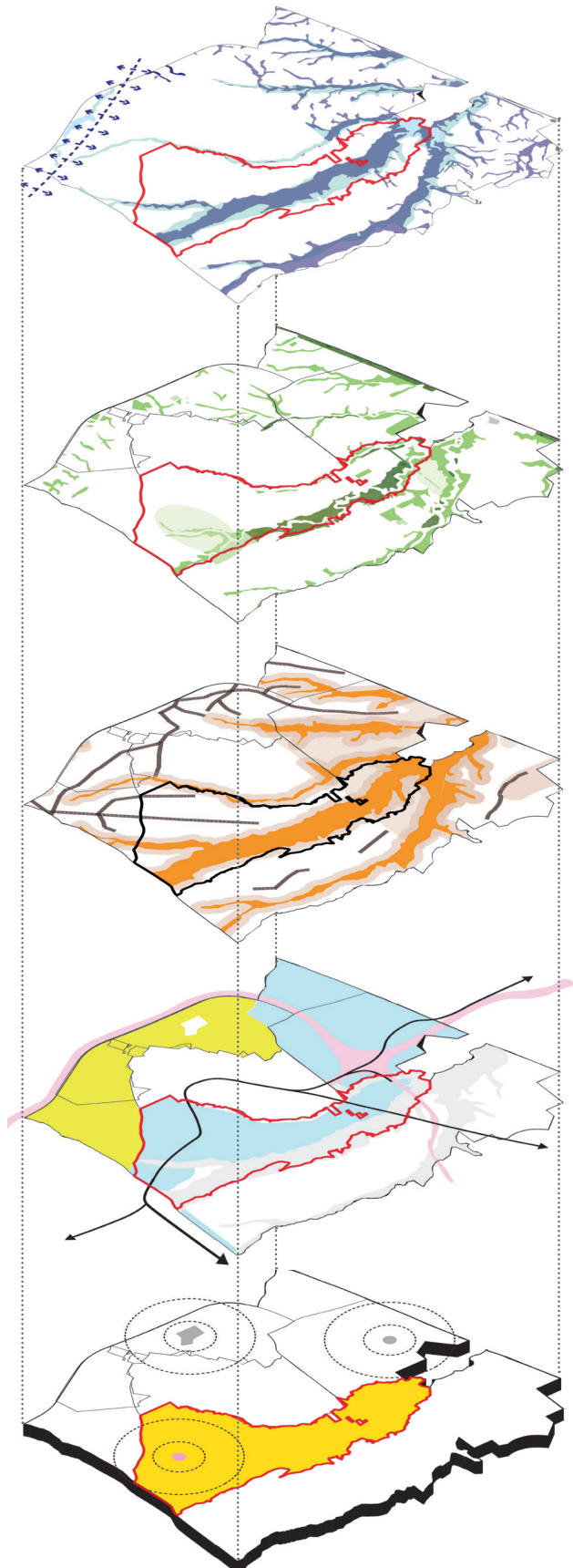
- Understanding and caring for Country through design with Indigenous planning principles - exploring the idea of "Country-led urbanism".
- Understanding the site's flora, fauna, cultural heritage, and hydrological features.
- Management and development of the site to be consistent with the principles of the Burra Charter and heritage best practice.
- Indigenous community consultation should be carried out on an ongoing basis to ensure the appropriate involvement of Indigenous stakeholders in the assessment and decision making regarding their heritage.

CONNECTIVITY

- A diverse, dynamic and sustainable global city precinct.
- Support a high order of employment-focused facilities taking advantage of its connection to the Airport.
- Implementation of emerging and future technologies.
- Sydney Metro Western Sydney Airport Line station and development and transport infrastructure will greatly contribute to the Western Sydney Economic Corridor.

COMMUNITY AND PLACE

- A precinct cluster that is thriving, inclusive with a safe day-to-night economy for workers, residents, and visitors.
- High quality public realm and adaptable infrastructure.
- Site connectivity, and access to green spaces through amenity oriented design.



DRIVER 1: DESIGN WITH COUNTRY

By Dr Daniele Hromek (Budawang | Yuin)

The Sydney Basin is one of the most diverse regions in Australia. It has maintained its distinctive character due to the variety of topographic environments, ecologies, climates and geology. Sydney was a managed landscape prior to non-Indigenous peoples' appropriation of the land.

WHAT'S IN A NAME?

The name Wianamatta tells us this is the place of the mother creek, a place of fertility and related to the cycles of life. The waters need to be understood in relation to females creating in the waters of their bodies. Female voices should be also in the decision making for this place.

The non-Indigenous naming of Emu Plains indicate what was once found in this place.



SACRED WATERS

The waters in Wianamatta are sacred from the Dreaming, they are also all interconnected. The waters must be protected 'to the most insignificant jet.'

The waters shaped the basin, from small creeklets up to larger pools and rivers, to the massive regular floods.

Women have strong enduring relationships with water, from creating watery spaces within their bodies to grow life to having reciprocal care relationships with landscapes of water. Women and their roles in the cycle of life should be honoured in this place.

GENTLE UNDULATING LAYERING

The geology is formed by a series of layers of varied materials that create gentle undulating environments. The shales weather to create clay, while the alluvium weathers to sand.

Sydney is built on layers of history with a deep Aboriginal history as its grounding.

Respect the dynamic movement of water, through the path of least resistance, if there is a block a new path is found.

Songline stories describe the garbuny [fog] time. Waters create fog, at all times of year, though in particular more frequently during the late evening to mid-morning in winter months, when it averages one in five mornings. It is estimated fog could occur 30 times more at Badgerys Creek than Sydney Kingsford Smith Airport. Fog events can last for an extended period of time.

CULTURE IS THE CURE

Both flora and fauna related to this site are now critically vulnerable due to the impacts of colonisation, and are susceptible to invasive species. This implies that a great care and sensitivity must be taken in regard to this place, especially not to perpetuate colonial ways of being, doing and thinking.

Despite experiencing the first impacts of colonisation, Aboriginal peoples in Western Sydney still care for Country and express culture through cultural practices.

Opportunities of cultural maintenance abound as the antidote to colonial practices. Spaces to share culture and knowledge about Country.

HONOUR FIRE LAW

Emus and kangaroos were attracted to these plains because the landscape was designed and managed by Aboriginal peoples.

Colonial records and visuals describe the spaces between groves of trees, clear of scrub or undergrowth. These conditions were achieved due to fire being used to culturally manage the landscape.

Cool burns managed the chance of bushfires, now prevalent in warmer parts of the year. Songs and stories tell the right time for firestick farming.

STORY TELLING

- Water and fire
- Cultural maintenance and sharing
- Recognising longer histories and layered narratives
- Caring for Country and recognising/counteracting the impacts of colonisation.

DRIVER 2: LANDSCAPE LED URBANISM

A connected natural system of blue and green infrastructure is the key structuring element of the urban fabric of Aerotropolis.

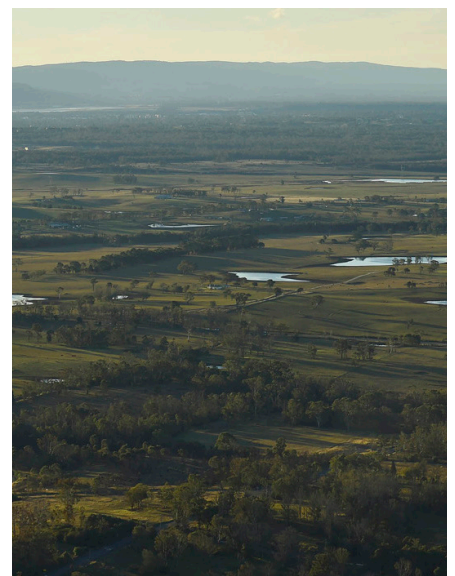
A profound understanding of the landscape of this place, its Aboriginal cultural significance, and natural systems beyond the precinct boundary is paramount to successful realisation of the Western Parkland City.

The connected natural system of blue and green infrastructure is the key structuring element of the urban fabric of the Aerotropolis. The main creeks - Wianamatta - South, Badgerys, Kemps, Cosgroves and Duncans become the spine of the Aerotropolis Parkland City. Smaller creek tributaries then define the public domain and open space framework.

This framework creates a foundation for a well connected, walkable and liveable city. It retains and re-establishes healthy, interconnected Blue-Green and Soil systems. This ensures the ongoing resilience, balance and health of the whole system that preserves landscape's capacity to retain water, provides biodiversity corridors for wildlife and reconnects remnant endemic fauna and flora communities.

'Singularly fine, level, or rising in small hills of a very pleasing and picturesque appearance. The soil excellent, except in a few small spots where it was stony. The trees growing at a distance of from 20-40 feet (6-12 m) from each other, and in general entirely free from brushwood (shrubs)'.

Governor Arthur Phillip reporting on the countryside west of Parramatta, April 1788
Source: Taken for Granted p18



Hills and ridgelines



A Place to Connect

The Physical elements of hills, ridgelines, alluvial creeks, dams, open parkland and forested areas give rise to the intangible and the visible: a connection with Country, a Cumberland Plain character, and landscape elements that foretell of this being a place like no other. This is undeniably Western Sydney - the parkland city.

Tangible and intangible elements of landscape have been identified through substantial past work, including Tyrrell Studio's Western Parkland City Landscape Led Urban Design Guidelines (2020).

By employing landscape led urbanism principles and embedding key landscape elements as an organising structure, the core character of this place can be preserved, protected and enhanced.



Creeks and dams



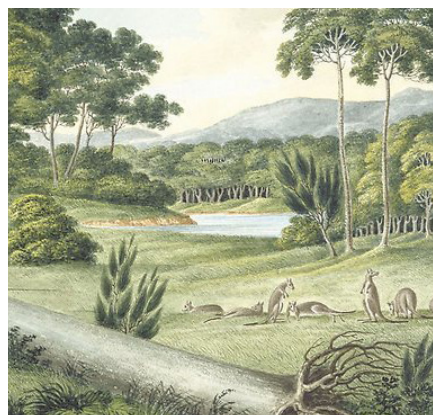
Open parklands



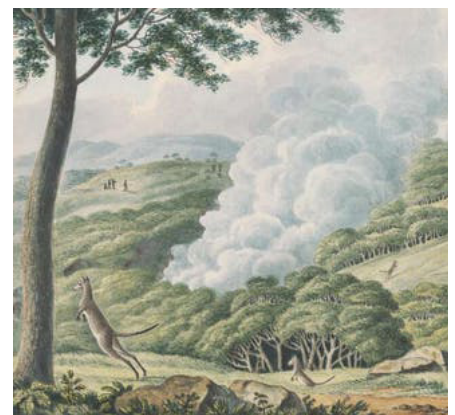
Forested areas



A Watery Place



A Managed Landscape



A Resilient Landscape

DRIVER 3: DELIVERING GREAT PLACES

LIVEABILITY MATTERS

Liveability is a critical planning objective and is fundamental to shaping the Aerotropolis. Liveability will underpin the Aerotropolis' emergence as a strong and resilient place in the emerging global economy where the quality, creativity and value of its citizenry underpins its economic advantage.

Liveability and high quality city environment help to attract and retain talent - and the business types identified by the Western Sydney Aerotropolis Plan. The concept of creative and social capital, introduced in Richard Florida's Creative Class (Florida, 2002), is proving to be more relevant than ever, where creative professionals gravitate toward cities that provide talent, tolerance and technology. These concepts are reinforced in Charles Landry's Creative City, which illustrates that people first choose a city that suits their lifestyle, before choosing a job.



20 YEARS AGO

80%

PEOPLE LOCATED BASED ON
JOB OPPORTUNITIES



TODAY

64%

PEOPLE CHOOSE A
CITY FIRST THEN A JOB

(Landry, 1995)

THE 7 DIMENSIONS OF AMENITY



NATURAL

VIEWS
TOPOGRAPHY
LANDSCAPE
WATER

Shaping future development to celebrate distinctive natural features as key ingredients underpinning the Aerotropolis' future growth.



GREEN

GREAT
STREETS

Phasing the Master Plan to unlock an integrated mesh of green streets, lush parkland and urban spaces can boost the quality and diversity of the city.



URBAN BUZZ

AUTHENTICITY
URBAN 'GRIT'

Providing a framework for the city's future population and character through concentrating active uses around a high-quality retail food and centre amenity.



ACCESS

TRANSPORT
EASE OF MOVEMENT

Improving the convenience and accessibility of the city by providing logical adjacencies, ease of movement and building in provision for high-frequency public transport.



AGGLOMERATION

ECONOMIC VITALITY
JOBS
COMPETITIVENESS
'EXCHANGE'

Strengthening the city as a strategically important place, supporting innovation, the exchange of ideas and economic activity to attract and retain high-value workers, residents and students.



COMMUNITY

SCHOOLS
FACILITIES

Delivering community-oriented functions to pair infrastructure with centre, broadening the offer of the precinct and supporting the activities of its population.



CLIMATE LIVING

BETTER HOUSING
RESPONSIVE TO
DEMOGRAPHICS

Boost the quality, sustainability and climate responsiveness of future buildings, places and spaces, unlocking greater levels of user comfort and establishing a tropical identity.

THE IMPORTANCE OF PLACE

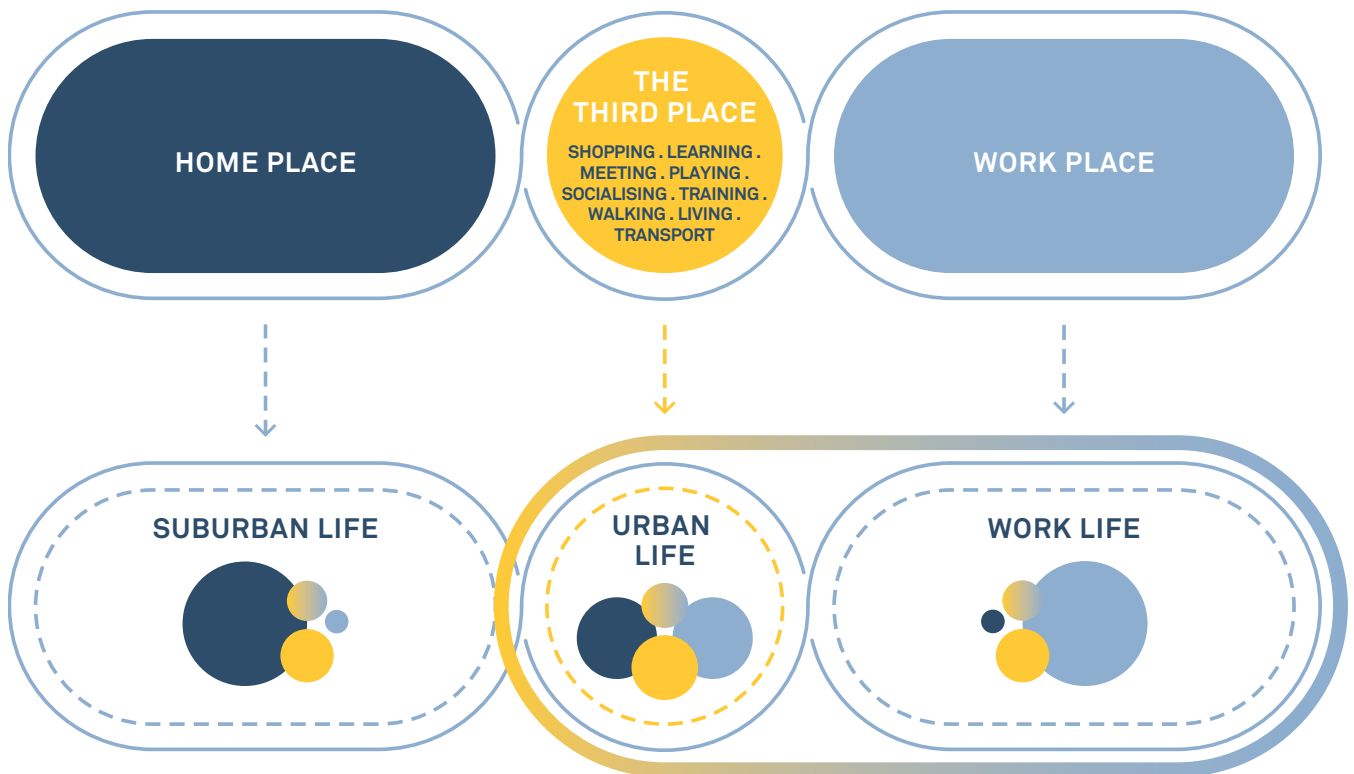
The role of 'place' is recognised as a key factor in the attraction and retention of knowledge businesses and workers. The growing emphasis on clustering, combined with spatial and cultural integration, is a critical factor. People respond well to places that are distinctive, memorable, and meaningful to create a sense of community.

Places conducive to a creative environment not only deliver good outcomes for the broader community, but also provide a high-quality domestic and public life for workers and their families.

Well designed places improve collaboration and interaction between workers, and provide urban environments that recognise and cater for their particular needs and circumstances. Creating successful knowledge-supportive places relies upon these vibrant and engaging precincts.

THE THIRD PLACE

Human life is played out in three primary realms or places: the home, work place and the 'third place' – the life between home and work. The development of genuine quality of life is linked to the quality of the third place where most of a person's day-to-day social interaction, community and civic life, recreation and relaxation takes place. It is essential the third place caters for the particular needs of knowledge workers in their work and everyday lives.



SUBURBAN LIFE

- Residential uses dominant
- Work opportunities focused in business and industry districts
- Long commute to work
- Regular shopping at local/district centre
- Limited dining and café offer
- Specialty shopping at regional shopping centre/mall or CBD
- Social/family networks orientated around home/district
- Local primary and secondary education with limited potential for tertiary education, which is typically available in the city

URBAN LIFE

- Mixture of uses can range from residential focus to work oriented focus
- Work opportunities integrated with other uses
- Regular shopping on main street
- Dining and cafés and some entertainment
- Specialty shopping at regional shopping centre/mall or CBD
- Social/family networks varied
- Local primary and secondary education with potential for integrated tertiary education

WORK LIFE

- Commercial uses dominant
- Limited if any residential uses
- Limited range of support activities unless within CBD
- Wide range of uses within major city CBDs including:
 - Civic uses
 - Education
 - Short term accommodation
 - Retail
 - Dining and cafés
 - Entertainment

DRIVER 4: AIRPORT, METRO AND JOBS

Western Sydney is set to transform over the coming decades, propelled by once in a generation government investment in infrastructure. The new Western Sydney International (Nancy-Bird Walton) Airport will anchor the Western Parkland City, supported by new rail infrastructure - the first stage being a north south rail link from St Mary's to the Aerotropolis. The Outer Sydney Orbital and M12 motorways will provide regional road access.

The Western Sydney Aerotropolis will be at the centre of a new urban area for Sydney - The Western Parkland City is projected to grow from 740,000 today to well over 1.5 million by 2056. The Aerotropolis will make a significant contribution to 200,000 jobs across Western Sydney - creating an innovation precinct and a home for technology, science and creative industries.

The Western Sydney City Deal, between Federal, State and local governments, catalyses a collaborative approach to create world class jobs and a high quality of life. The deal aligns government investment and policy actions to propel delivery of new infrastructure. Critical to the City Deal is skilling residents in the region, allowing maximum benefit from the limitless opportunity of the Western Parkland City.

The Western Sydney International (Nancy-Bird Walton) Airport is the catalyst for much of Western Sydney's future urbanisation. It and the associated Aerotropolis will accommodate a significant number of jobs and economic activity.

The Airport and associated infrastructure is due for completion and operating by December 2026. Airport rail and associated rail infrastructure is intended to be operational upon the Airport being commissioned.

SYDNEY METRO WESTERN SYDNEY AIRPORT LINE

New metro rail will become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport and the growing region.

The city-shaping project, from St Marys through to the new airport and the Western Sydney Aerotropolis, will provide a major economic stimulus for western Sydney, creating more than 14,000 jobs during construction for the NSW and national economies.

The new metro will link residential areas with job hubs including the new Aerotropolis, and connect travellers from the new airport to the rest of Sydney's public transport system.



An artist's impression of the Luddenham Station, being delivered as part of the Sydney Metro – Western Sydney Airport project. This is Luddenham Station as viewed from the station plaza looking north. Source: Sydney Metro.

RAPID TRANSIT CORRIDORS

As a commitment of the Western Sydney City Deal, the NSW Government will establish rapid bus services from the metropolitan centres of Penrith, Liverpool and Campbelltown to Western Sydney International (Nancy-Bird Walton) Airport before it opens in 2026, and to the Aerotropolis.

The corridors will be a key gateway for visitors to Australia showcasing the unique natural environment of the Parkland City. The corridors will be inviting and vegetated with transport infrastructure forming part of the landscape. These parkways will reinforce the city's commitment to effective public transport and active transport, such as cycling and walking.

The Aerotropolis Urban design framework will provide for medium/high-density development along the corridors. Design decisions will prioritise affordability and achievability while ensuring high quality place-making and connection to existing natural assets.

(Source: Western Sydney City Deal and Liverpool City Council)



An artist's impression of the Airport Terminal Station, being delivered as part of the Sydney Metro – Western Sydney Airport project. This is the Airport Terminal Station as viewed from northern side of the station. Source: Sydney Metro.

DRIVER 5: CIRCULAR ECONOMY

With Dr Heinz Schandl, CSIRO and Alluvium | Mosaic Insights | UTS

The Aerotropolis provides an unparalleled opportunity to showcase ‘regenerative’ development principles that cities of the future will need to embody. Regenerative development is the new frontier for city and precinct design. While the conventional approach to sustainable development is focused on minimising adverse outcomes, regenerative development targets ‘net positive’ outcomes and supports cyclical resource flows.

Regenerative goals may seem ambitious and challenging in today’s context, but they are a necessary path towards resilient, thriving cities and suburbs. As a significant new land release, the Aerotropolis provides an effective opportunity to lock in the principles and foundations of regenerative development. While some outcomes may not be achievable upfront, the transition can be modelled and planned for.

A circular economy city is one that keeps resources in use for as long as possible, extracts the maximum value from them whilst in use, then recovers and regenerates products and materials at the end their life. It is a more efficient and environmentally sound alternative to the traditional linear economy in which we make, use and dispose of resources.

Source: (Climate-KIC, 2018)

CIRCULAR ECONOMY CITIES

- Things are made smarter, cheaper and more resource efficient
- Recovery of the resources and synergies between companies
- Incubators for circular economy start-ups, markets and innovation
- Carbon neutral
- Transition from waste landfills to waste mining.
- City that is fairer, more inclusive and more sustainable.
- Sharing economy
- Enabled through procurement



**THE AEROTROPOLIS
COULD BE A CARBON
POSITIVE PRECINCT
BY 2050**



Global Change Institute, University of Queensland

WASTE MANAGEMENT



Waste management plays a central role in transition to the circular economy operation that Western Sydney Aerotropolis aspires to achieve.

It requires a transition from a linear approach of **TAKE – MAKE – THROW**, the disposal of waste to a recognition of waste as resource with circularity, where discarded materials are resources in another process in a **TAKE-MAKE – RECOVER – REMAKE** model.

It requires the establishment of resource separation, collection and processing for the residential, commercial and institutional sectors. While historically energy and water have been attentively considered in sustainability planning, waste is often not, despite its significant contributions to greenhouse gasses emission and the innovation opportunities for urban resource mining and job creation.

CASE STUDY: GLOBAL CHANGE INSTITUTE, UNIVERSITY OF QUEENSLAND

“The Global Change Institute was founded on the promise of dealing with change ... GCI stimulates thinking and generates new ideas to answer community puzzles and global problems.”

Penelope Wensley AC, Former Queensland Governor

Designed to encourage new thinking about how we can live and work in a low-carbon world, the GCI Living Building is a flagship sustainability project of The University of Queensland.

As a pilot for sustainable designs of the future, the GCI building is a living example of what measures can be taken to minimise the amount of energy buildings consume and still enjoy a vibrant, healthy, working environment.

Throughout the year, the building generates more energy than it consumes through abundant use of natural light, low-energy lighting, and capturing its own energy via solar panels on the roof.

DRIVER 6: RESILIENCE

With Dr Frank Thomalla, Climate and Disaster Risk Research and Consulting

Urbanisation and the complex characteristics of cities can present opportunities for inclusive, equitable, resilient and ecologically sustainable development. At the same time, they have the potential to increase or to create new vulnerabilities and risks, if these are not adequately considered in the planning process. Building a resilient city means creating a city that is well prepared for and ready to respond to a range of potential shocks and surprises.

WHAT IS A RESILIENT CITY?

The United Nations Office for Disaster Risk Reduction (UNISDR, 2017) defines a resilient city as one, where:

- There is strong leadership and coordination and responsibilities in disaster risk management are clearly delineated. This includes effective stakeholder engagement, well defined policies and strategies and distribution of tasks, effective lines of communication and mechanisms that facilitate effective risk management.
- The city is up-to-date on knowledge about hazards. Risk assessments are routinely prepared as a basis for urban planning and long-term development, including current and future investment decisions that contribute to improved resilience.

- There is an adequate financial plan that complements and promotes mechanisms to support resilience activities.
- Urban planning is carried out based on up-to-date risk information with a focus on the most vulnerable groups. Realistic and risk compliant building regulations are applied and enforced to effectively reduce physical risk.
- Natural ecosystems within and around the city's territory are identified, protected and monitored to sustain and safeguard their protective functions as natural buffers.
- All institutions relevant to a city's resilience are strengthened to have the capabilities they need to execute their roles.
- The social connectedness and culture of mutual help are strengthened through community, education, and multi-media channels of communication.

- There is a strategy to protect, update and maintain critical infrastructure to ensure that services continue and to increase resilience against hazards and the impacts of climate change.
- Effective disaster response is ensured by creating and regularly updating preparedness plans, connecting to early warning systems and increasing emergency and management capacities through public preparedness drills.
- Post-disaster recovery, rehabilitation, and reconstruction strategies are aligned with long term planning and provide an improved city environment after disaster events.

Source: UNISDR. 2017, p. 14. How To Make Cities More Resilient - A Handbook For Local Government Leaders.

ESSENTIALS FOR MAKING CITIES RESILIENT

1. Identify, Understand and use Current and Future Risk Scenarios

- Identify hazards, exposures and vulnerabilities
- How might hazards change over time?
- How might multiple hazards combine in their impact over time?
- Which geographic areas are exposed and what is the impact?
- Which communities and housing are exposed?
- Which economic assets and activities are exposed?
- Which critical infrastructure assets are exposed, what are the consequent risk of cascading failures from one asset system to another?
- What are the timescales over which impacts occur and what responses are required?

2. Pursue Resilient Urban Development

- Land zoning and management of urban growth to avoid exacerbating resilience issues – identification of suitable land for future development taking into consideration of how low-income groups can access suitable land

- Risk-aware planning, design and implementation of new buildings, neighbourhoods and infrastructure, using innovative or existing/traditional techniques as applicable
- Development and implementation of appropriate building codes
- Maximizing use of urban design solutions such as permeable surfaces, green areas, shadowing, water retention areas, ventilation corridors etc) that can cope with risks and also reduce the dependency on technical infrastructure
- Engaging affected stakeholders in appropriate and proportional participatory decision-making
- Incorporating exemplary sustainable design principles into new development. Link to other existing standards where appropriate (BREEAM, LEED, Greenstar, etc)

3. Safeguard Natural Buffers to Enhance the Protective Functions Offered by Natural Ecosystems

- Identify, protect and monitor critical ecosystem services that confer a disaster resilient benefit.
- Anticipate changes from climate trends and urbanization, and plan to enable ecosystem services to withstand these, enhanced as required by green and blue infrastructure.

4. Strengthen Societal Capacity for Resilience

- Cultivate an environment for social connectedness which promotes a culture of mutual help through recognition of the role of cultural heritage and education in disaster risk reduction.
- Social connectedness and a culture of mutual help have a major impact on the actual outcomes of disasters of any given magnitude.

5. Increase Infrastructure Resilience

- Address how critical infrastructure systems will cope with disasters and develop contingencies to manage risks caused by these outcomes.

DRIVER 7: URBAN COMFORT AND GREEN STREETS

Designing streets that respond to their environment will have numerous benefits that improve the liveability, urban cooling and sustainability outcomes of cities, while also emphasising Western Sydney's character.



NOISE & AIR POLLUTION

Cars and trucks account for approximately 40% of carbon emissions globally, while public transportation produces 95% less monoxide than cars (Robert J. Shapiro, Kevin A. Hassett, and Frank S. Arnold, *Conserving Energy and Preserving the Environment: The Role of Public Transportation*, 2002). A balanced street network that accommodates rapid transit and recognises cyclists and pedestrians can help reduce private vehicle use, reducing emissions and improving air quality. Street trees, planting and vegetation have also been shown to reduce urban noise by up to 3-5 decibels

(David Nowalk et al., *Understanding the Benefits and Costs of Urban Forest Ecosystems: Handbook of Urban and Community Forestry in the Northeast New York*, 2007).



WATER SENSITIVE URBAN DESIGN

Water Sensitive Urban Design can ensure streets play an active role in sustainability and water quality. Tree planting is estimated to be 3-6 times more effective in managing stormwater and reduce hard infrastructure cost. Incorporating green street infrastructure can improve the efficiency of stormwater management and reduce the need for irrigation.

(Foster, *The Value of Green Infrastructure for Urban Climate Adaptation*)



ENERGY EFFICIENCY

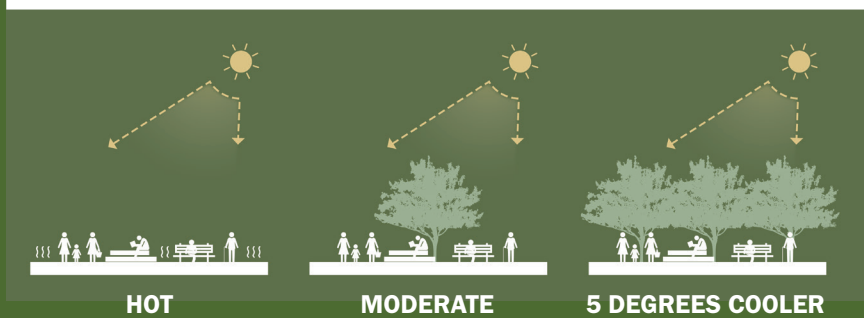
Utilising sustainable, low impact materials and encouraging renewable energy technologies can reduce energy costs. Replacing street lights with LED bulbs can create significant energy savings over time. New York City replaced all of its street lights with LEDs across a period of 10 years, reporting annual energy savings of about 81%

(Global Street Design Guide from Global Designing Cities Initiative, 2016).



Benefits of Street Trees

With the transformative potential to define how the Aerotropolis appears and is perceived, as well as unlocking economic, environmental, social and health benefits - introducing street trees is perhaps the most important and impactful investment in streetscape design.



Street Comfort & Climate

Street trees are an important ingredient in a quality public realm, and in a seasonal climate with hot summers, they are critical to achieving appropriate levels of shade and shelter. In Western Sydney, shade is a critical factor in pedestrian comfort and a key influence on journey choice. Research indicates

that dense tree cover can reduce temperatures by up to 5° Celsius making shade trees an essential outcome for major active transport connections (Trees are Crucial to the Future of our Cities from University of Wisconsin-Madison, 2019). This approach is desirable for addressing the Urban Heat Island effect.

Health and wellbeing benefits

A multitude of studies have shown that natural environments can enhance public health and general wellbeing. These studies indicate that people who live in neighbourhoods with a higher density of trees on their streets report significantly less cardio-metabolic conditions (Kardan, O., Gozdyra, P., Misic, B. et al. Neighbourhood Greenspace and Health in a Large Urban Centre, 2015).

Case Study: Deaderick Street, Nashville



Before street trees



After street trees

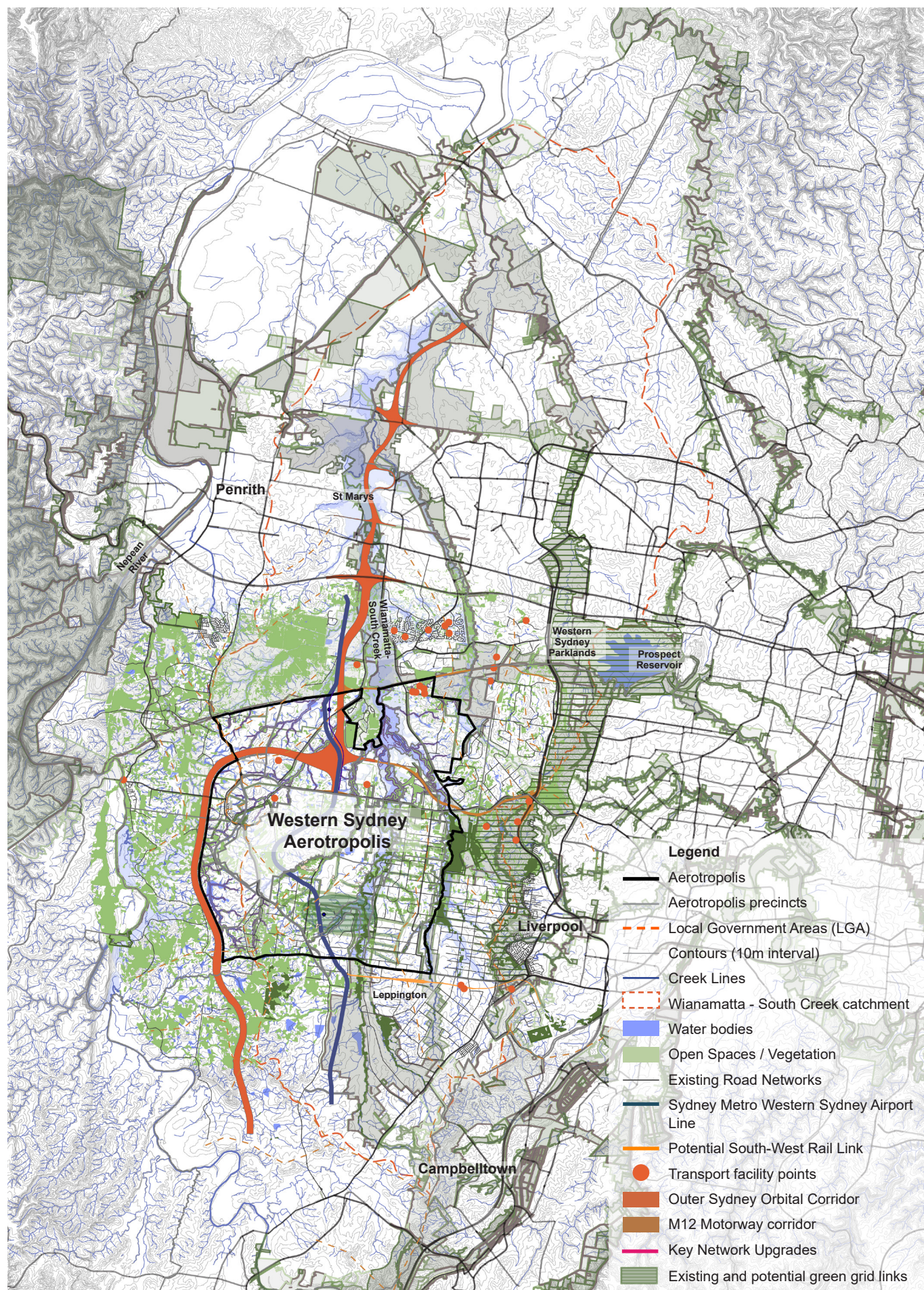
Street trees can redefine how a city appears and is perceived. Deaderick Street in Nashville was a central transfer point for the metro bus system, filled with empty bus shelters, had no trees, and had a storm water and sewage overflow problem. The introduction of 102

trees and 4,249 shrubs reduced average daily traffic volume, and created a more pedestrian-friendly environment. Additionally, there was an increase in tourists and patronage of concert venues on the street. Rain gardens and bio-swales were designed to allow infiltration

and planted with native plants, adaptable to the local context. It is estimated that over 4.5 million litres were removed from the system on an annual basis (Burns, J., Deaderick Hailed as State's First 'Green Street', Nashville Business Journal, 2009).

REGIONAL CONTEXT

The context informing the Aerotropolis is across many scales. The airport is a nation-building project, it being a critical piece of infrastructure driving Sydney's 24 hour economy. It is significant at the state and metropolitan scales as a centre for activity. And it will be a main arrival point to the Western Parkland City for visitors from around the globe.



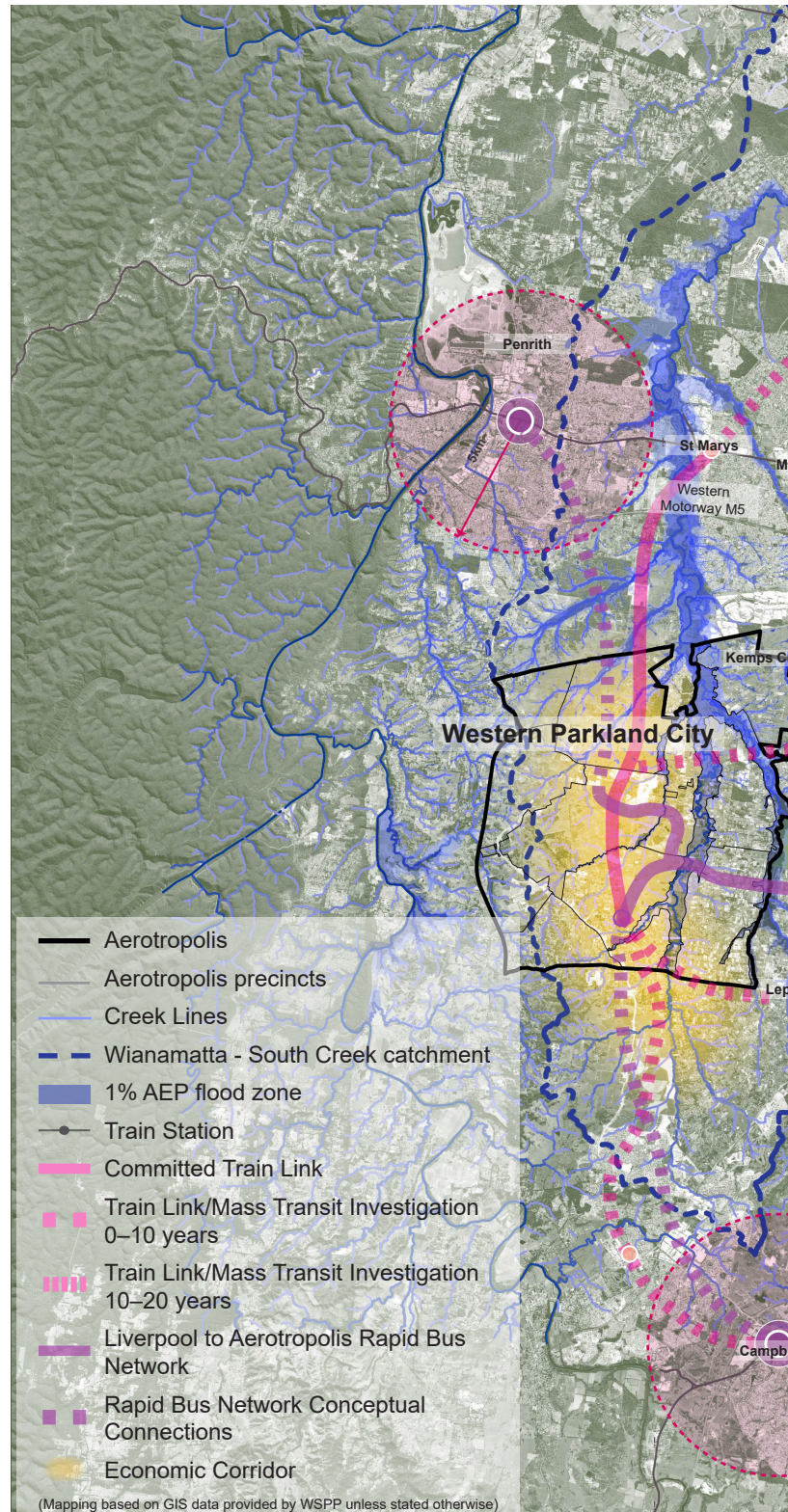
THE WESTERN PARKLAND CITY

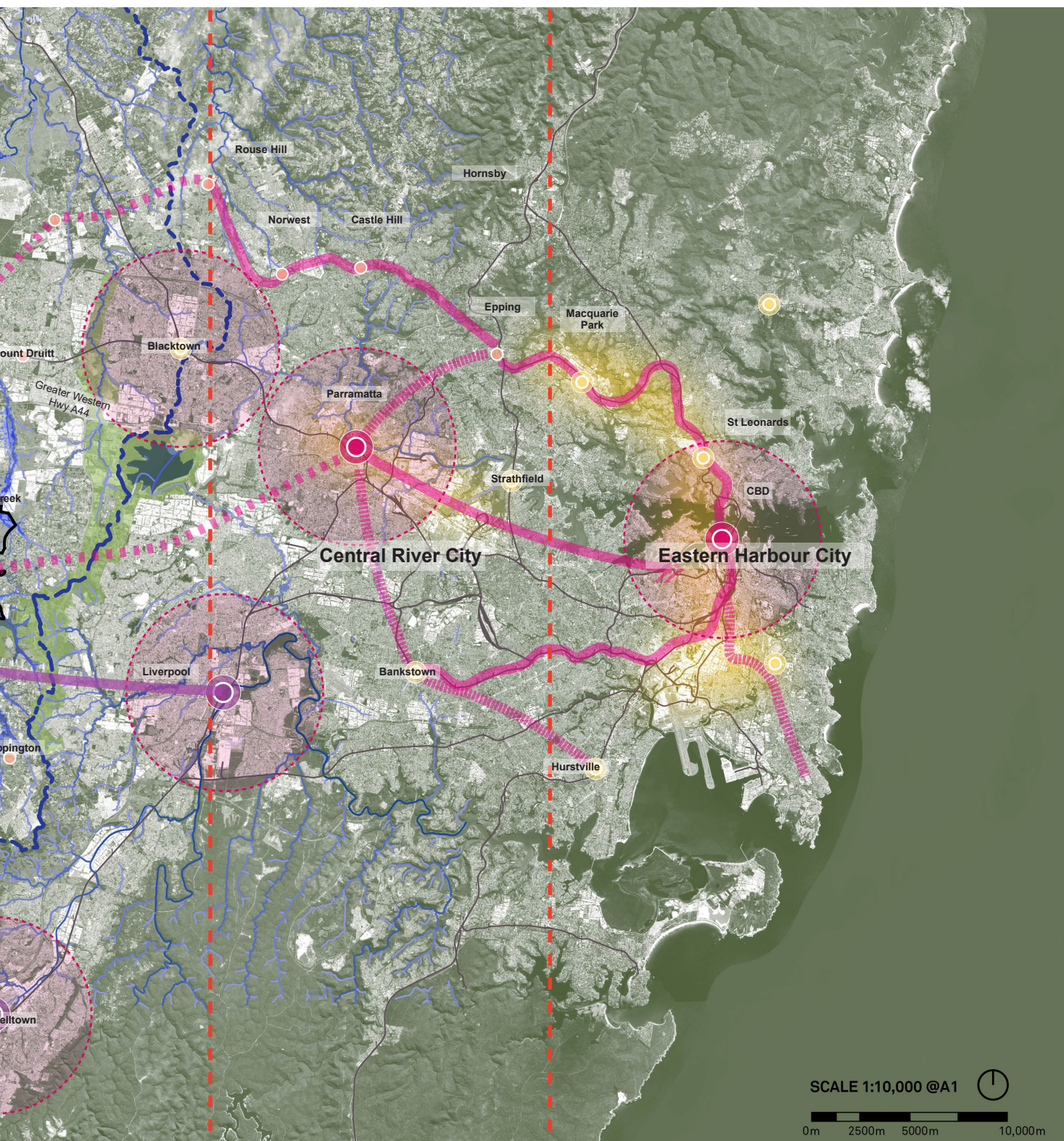
IMPLEMENTING THE REGION PLAN

The Greater Sydney Commission's Region Plan for Sydney establishes a metropolis of three cities; the Eastern Harbour City, the Central River City and the Western Parkland City. Founded on the principle of the 30 minute city, each metropolis has a central employment and amenity focus. For the Western Parkland City, this is the metropolitan cluster of centres comprising the Aerotropolis, Penrith, Liverpool and Campbelltown; and the amenity focus of its myriad waterways, all linked to the Wianamatta South Creek - the Mother Place.

The Aerotropolis sits at the centre of the Western Parkland City. It forms the core of the Western Economic Corridor, where the airport provides the foundation for defence and aerospace activities, trade, freight and logistics and advanced manufacturing. The Sydney Metro provides critical public transit connections from the Aerotropolis to metropolitan Sydney, and with future connections planned to Campbelltown and Parramatta. The Western Sydney City Deal also establishes rapid bus transit links to Liverpool, Penrith and Campbelltown.

For each city across the metropolis, water forms the foundational amenity and place signifier. For the Eastern Harbour City it is Sydney Harbour; for the Central River City it is the Parramatta River. In the case of the Western Parkland City, the water system is far more subtle - the fragile and interlaced system associated with the Wianamatta Creek and Nepean River systems. Ephemeral waterways traverse the Cumberland Plain, offering an existing network from which to derive new parkland.





STATE POLICY



The strategic policy context establishes the high order directions for the Aerotropolis across State, Regional and Local planning frameworks. These policies drive the Western Parkland City, greening and sustainability agendas that are formative to the Aerotropolis.

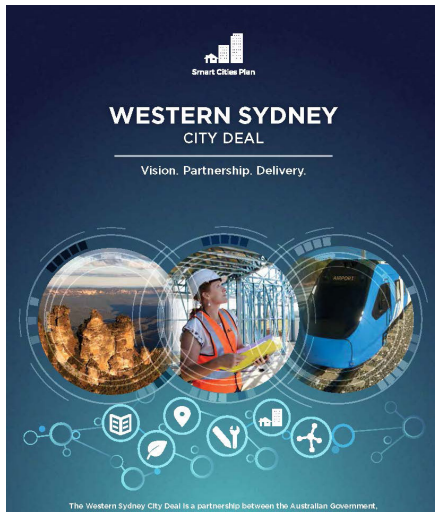
PREMIER'S PRIORITIES

In June 2019, NSW Premier Gladys Berejiklian unveiled 14 Premier's Priorities which represent the NSW Government's commitment to making a significant difference to enhance the quality of life of the people of NSW.

- Bumping up education result for children
- Increasing the number of Aboriginal young people reaching their learning potential
- Protecting our most vulnerable children
- Increasing permanency for children in out-of-home care
- Reducing domestic violence re-offending
- Reducing recidivism in the prison population
- Reducing homelessness
- Improving service levels in hospitals
- Improving outpatient and community care
- Towards zero suicides
- Greener public spaces
- Greening our city
- Government made easy
- World class public service

The relevant priorities to the Aerotropolis include:

- Greener public spaces: Increase the proportion of homes in urban areas within 10 minutes' walk of quality green, open and public space by 10 per cent by 2023
- Greening our city: Increase the tree canopy and green cover across Greater Sydney by planting one million trees by 2022.



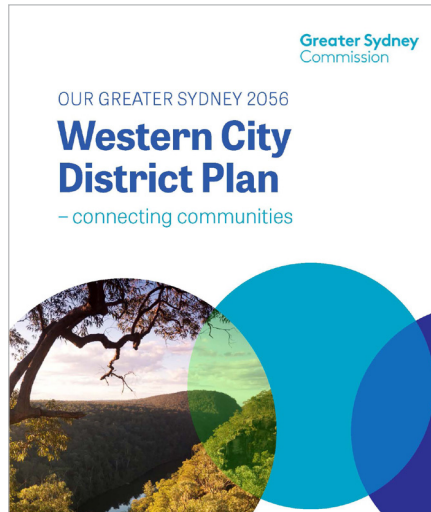
WESTERN SYDNEY CITY DEAL

The Western Sydney City Deal is the catalyst for a collaborative approach across three tiers of government to create world-class jobs and a great quality of life through the vision of the Western Parkland City.

The City Deal is a partnership with the core goals of:

- Realising the 30-minute city by delivering the Sydney Metro Greater West (formerly the North South Rail Link).
- Creating 200,000 jobs by supercharging the Aerotropolis and agribusiness precinct as catalysts.
- Skilling residents in the region and initiating an Aerospace Institute.
- Respecting and building on local character through a \$170 million Liveability Program.
- Coordination and innovation through a Planning Partnership.
- Getting on with delivering for the Western Parkland City with enduring tri-level governance.

<https://www.infrastructure.gov.au/cities/city-deals/western-sydney/>



WESTERN CITY DISTRICT PLAN

The Western Parkland City vision draws on the strength of the new Western Sydney International (Nancy-Bird Walton) Airport, Aerotropolis and the Sydney Metro Western Sydney Airport Line to plan for a Western Economic Corridor. The vision is to establish a metropolitan cluster capitalising on established centres of Liverpool, Greater Penrith and Campbelltown-Macarthur.

The WCDP identifies planning priorities (these reflect the GSRP planning objectives) within framework of infrastructure & collaboration, liveability, productivity and sustainability.

- Creating a once-in-a-generation economic boom with the Western Sydney Aerotropolis bringing together infrastructure, businesses and knowledge-intensive jobs
- Delivering the first stage of the North South Rail Link
- Collaborating and building strong relationships between Liverpool, Greater Penrith and Campbelltown-Macarthur reinforced by the emerging Badgerys Creek Aerotropolis forming a unique metropolitan cluster

- Providing major transport links for people and freight by unprecedented transport investments
- Developing a range of housing, providing access to public transport and infrastructure including schools, hospitals and community facilities
- Linking walking and cycling paths, bushland and a green
- Greater Blue Mountains World Heritage Area, the Scenic Hills and Western Sydney Parklands
- Enhancing and protecting South Creek, Georges River and Hawkesbury-Nepean river systems
- Mitigating the heat island effect and providing cooler places by extending urban tree canopy and retaining water in the landscape
- The target for the Greater Sydney Region is to achieve 40% urban tree canopy cover by 2056. The current state of tree canopy in Greater Sydney is 21%
- Protecting the District's natural landscapes, heritage and tourism assets, unique rural areas and villages
- Protecting the environmental, social and economic values of the Metropolitan Rural Area.



WESTERN SYDNEY AEROTROPOLIS PLAN

The planning for and around the Western Sydney Aerotropolis is complex, involving a number of different federal, state and local level statutory plans and strategic policies.

However, since the release of A Metropolis of Three Cities (Department of Planning, Industry and Environment, March 2018), the state level policies that will guide the development of the Aerotropolis provide consistent messages, themes and principles.

The key documents for planning these three Precincts are:

- Western Sydney Aerotropolis Plan
- State Environmental Planning Policy (Western Sydney Aerotropolis) 2020
- Western Sydney Aerotropolis Development Control Plan 2019 Phase 1 and Phase 2.

The Western Sydney Aerotropolis Plan provides the vision and high-level planning framework for the Aerotropolis including objectives, strategic outcomes and implementation strategies for all precincts

Planning Framework



Source: Western Sydney Aerotropolis – Summary of Key Planning Documents (p. 7, December 2019)

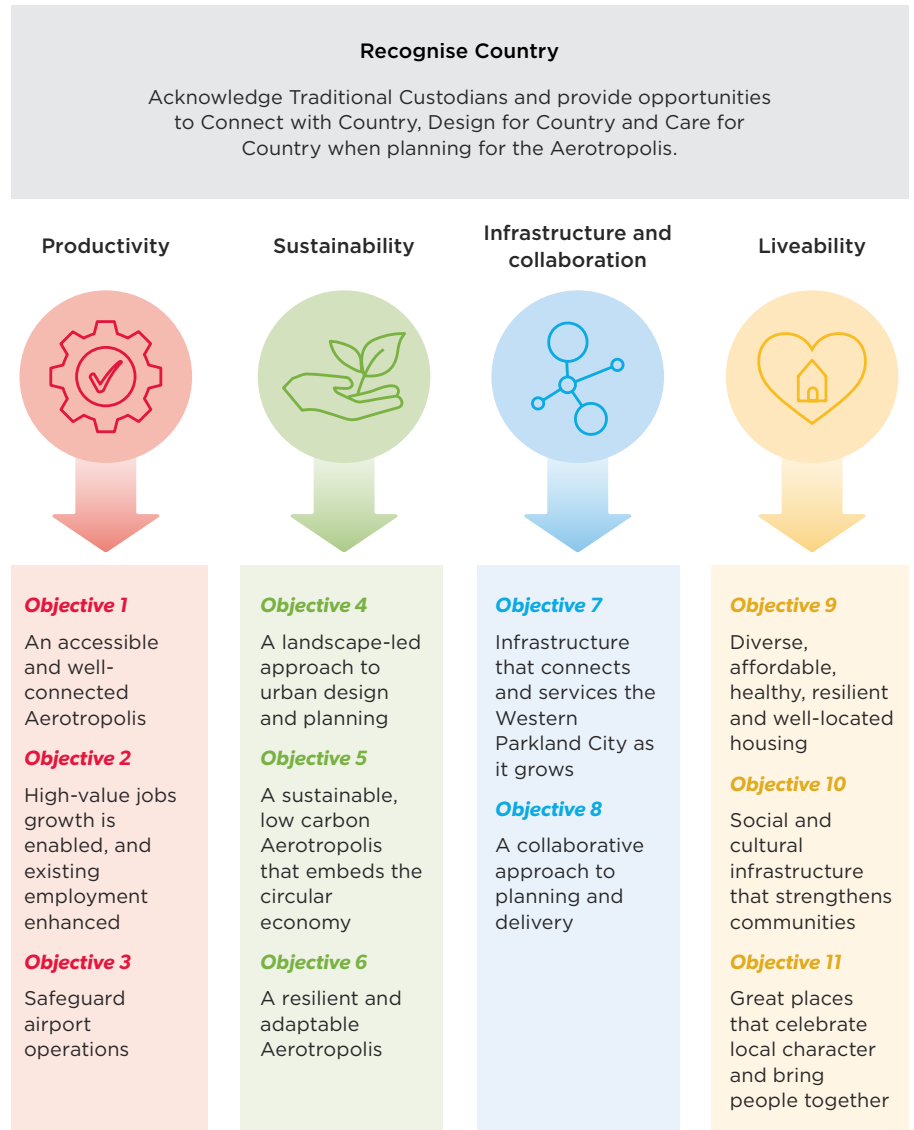
A single, overarching objective underpins this Plan and will be integrated into all planning.

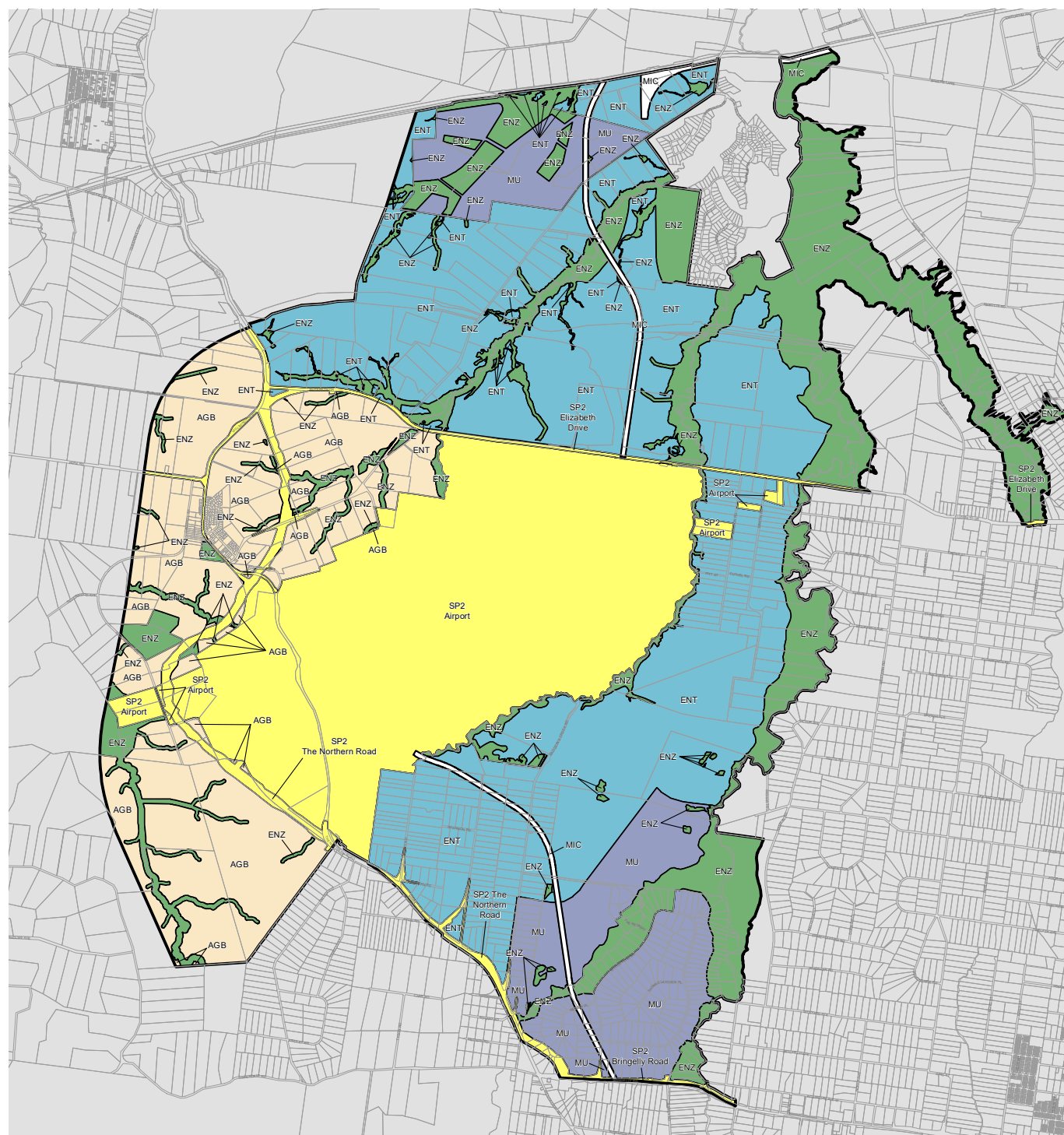
The vision for the Western Sydney Aerotropolis is a landscape-led approach to urban design and planning. Ways to achieve this vision are:

- Start with Country
- Retain water in the landscape
- Preserve, extend and restore the green
- Located transit corridors within walking distance to landscape amenity
- Orientate urban development towards landscape amenity, connected to transit corridors
- Adopt urban typologies.

The key themes that need to be addressed:

- Productivity – accessible and well connected Aerotropolis, enhance existing employment, enable job growth and safeguard airport operations
- Sustainability – landscape-led approach to urban design and planning, environmental sustainability (low carbon) and resilient and adaptable
- Infrastructure and collaboration – infrastructure that connects and services Western Parkland City and collaborative approach to planning and delivery
- Liveability – diverse, affordable and well located housing (30-minute city) and provision of social and cultural infrastructure (including affordable rental housing)





Land Zoning Map 2021

- Land Application
- Zone**
- AGB Agribusiness
- ENT Enterprise
- ENZ Environment and Recreation
- MU Mixed Use
- SP2 Infrastructure
- MIC SEPP (Major Infrastructure Corridors) 2020
- Cadastre**
- Cadastre 06/10/2021 © Spatial Services

The subject land is affected by the following zones:

Environment and Recreation Zone

- Applied to Wianamatta-South Creek Precinct for conservation and blue-green corridors. This includes those areas located within the 1% AEP. By preserving areas for recreation and relaxation, this zone will be vital to the Western Parkland City's liveability.
- Land that is of high biodiversity value is to be protected and will therefore benefit from additional planning controls in the proposed SEPP that prohibit the clearing of vegetation.

Enterprise Zone

- Permits land uses that supplement or complement the functions of the city and the Airport as a 24-hour transport hub. The zone will enable uses typically associated with employment and supporting a range of commercial and industrial sectors that will benefit from proximity to the airport such as distribution centres, landscape material supplies and vehicle repair workshops.
- Residential development and other noise sensitive uses such as schools and hospitals will not be permitted in this zone.

Mixed Use Zone

- Permits mixed use developments that integrate residential and commercial uses. This zone will ensure higher density residential and employment areas are located in places with high amenity. This includes having access to high frequency public transport, good connections to the State road network, open spaces including parks and waterways, pedestrian and cycle linkages and public squares, and will ensure residential uses are well outside of aircraft noise contours.

Agribusiness Zone

- Supports high-tech agribusiness uses, including freight, logistics and horticulture in the Agribusiness Precinct

SP2 Infrastructure Zone

- New and existing road and rail corridors, transport facilities, land required for utilities, the Airport and associated land in Commonwealth ownership to support airport operations. The SEPP will need to be amended to accommodate infrastructure as it is planned and as corridor and site boundaries are further refined.



Better Placed - Government Architect New South Wales

Better Placed is an integrated design policy for the built environment of NSW. It promotes good design to create a healthy, responsive, integrated, equitable and resilient built environment.

The policy establishes key design objectives and provides a framework for examining and reviewing design proposals.

The policy's seven objectives are:

1. Better fit - contextual, local and of its place
2. Better performance - sustainable, adaptable and durable
3. Better for community - inclusive, connected and diverse
4. Better for people - safe, comfortable and liveable
5. Better working - functional, efficient and fit for purpose
6. Better value - creating and adding value
7. Better look and feel - engaging, inviting and attractive



Better Placed; Aligning Movement and Place - Government Architect New South Wales

Aligning Movement and Place is a state design guide which sets out an approach, methods and processes to aligning movement infrastructure and places and promotes place-based approach to planning and delivery of transport network.

The guide further outlines seven objectives established in Better Placed with regard to relationship between movement and place.

This document is supported the Practitioners Guide to Movement and Place and will be further supported by a Toolkit which will provide:

- Tools for delivering better places on movement links,
- Indicators to recognise the degree of balance required in a given context,
- Mechanism for shaping project briefs to reduce severance and improve mobility,
- Mechanism for ensuring place benefits are included in briefs and realised.



Greener Places - Government Architect New South Wales

Greener Places promotes connection and integration of green assets.

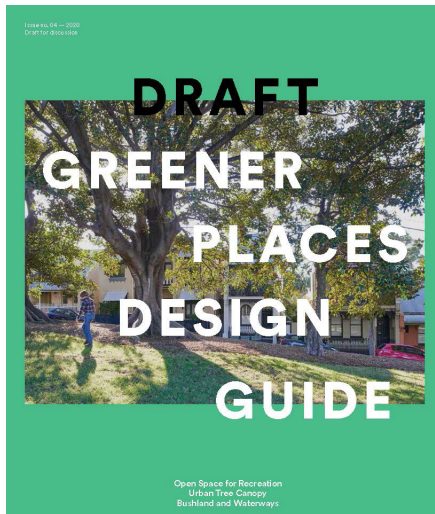
_Overarching document outlining NSW Government position on green infrastructure.

Four principles help deliver green infrastructure in NSW:

1. Integration - combine green infrastructure with urban development and grey infrastructure
2. Connectivity - create and interconnected network of open space
3. Multifunctionality - deliver multiple ecosystem services simultaneously
4. Participation - involve stakeholders in development and implementation

_Greener Places is supported by Greener Places Design Guide, which includes information relating to:

- Open Space for Recreation - Green infrastructure for people
- Urban Tree Canopy - Green infrastructure for climate adaptation and resilience
- Bushland and Waterways - Green infrastructure for habitat and ecological health.



Draft Greener Places Design Guide - Government Architect New South Wales

The Draft Greener Places Design Guide framework provides information and methodology on how to design, plan, and implement green infrastructure in urban areas throughout NSW.

The major components that make up the green infrastructure network fall into three categories:

1. Open space for recreation - provides a framework for improved public open space planning.
2. Urban tree canopy - provides recommendations for planning and improvement in urban tree canopy.
3. Connecting bushland and waterways - provides a framework for improving connectivity between bushland and waterways supporting habitat and biodiversity in urban areas. It promotes the connection of people to nature within a sustainable environment.

The Greener Places Design Guide framework supports two of the NSW Government Premier's Priorities:

- Greening Our City, and
- Greener Public Spaces

Open space for recreation

_Strategies:

- Improve the provision and diversity of open space for recreation
- Understand the demands on existing open space, and plan for open space in new and growing communities
- Improve the quality of open space for better parks and facilities
- Use open space to connect to nature
- Link to the network of green infrastructure
- Encourage physical activity by providing better parks and amenity
- Provide open space that is multifunctional and fit for purpose
- Design versatile, flexible spaces
- Consider life-cycle costs, management, and maintenance

Six criteria guide performance outcomes for the planning of open space for recreation:

- accessibility and connectivity
- distribution
- size and shape
- quantity
- quality
- diversity

Urban tree canopy

_Strategies:

- Protect, maintain, and enhance the existing urban tree canopy
- Create an interconnected urban tree canopy across NSW
- Build knowledge and awareness of urban tree canopy across State and local government, and the community

Bushland and waterways

_Strategies:

- Protect and conserve ecological values
- Restore disturbed ecosystems to enhance ecological value and function
- Create new ecosystems
- Connect people to nature
- Connect urban habitats




















THE BLUE-GREEN INFRASTRUCTURE FRAMEWORK

- The Blue–Green Infrastructure Framework is the combined network of blue and green systems including waterways, riparian areas, bushland, parks and open spaces, tree canopy (including street trees), private gardens, walking paths and cycling tracks.
- Wianamatta–South Creek is a natural core spine of the blue and

- green systems.
- Wianamatta–South Creek and Kemps Creek are identified as north-south Green Grid priority corridors in the Western City District Plan with the aim to create continuous, regionally significant open space corridors providing ecological protection & enhancement, stormwater treatment and regional recreational opportunities.

- The Western City District Plan further identifies a Green grid corridors running along Cosgroves Creek and south of the Aerotropolis.
- These natural north-south blue-green spines are proposed to be complemented with parklands, providing complementary connection and materialising the strengthened connection to Western Sydney Parklands.

Legend

-  Aerotropolis
-  Aerotropolis precincts
-  Local Government Areas
-  Contours (10m interval)
-  Hydrology network & water bodies
-  1% AEP flood zone
-  Wianamatta - South Creek catchment
-  Ridgelines
-  CPCP
-  ENV to be retained
-  Reserve Site for biodiversity purpose
-  Reserve Site for other purposes
-  Reserves and National Parks
-  Western Sydney Parklands
-  Vegetation
-  Potential Parks: (source NSW Western Sydney Aerotropolis Plan)
-  Regional Parks (potential)
-  Linear Parks (potential)
-  Green Grid (potential):
(Source NSW Government Architects Office)

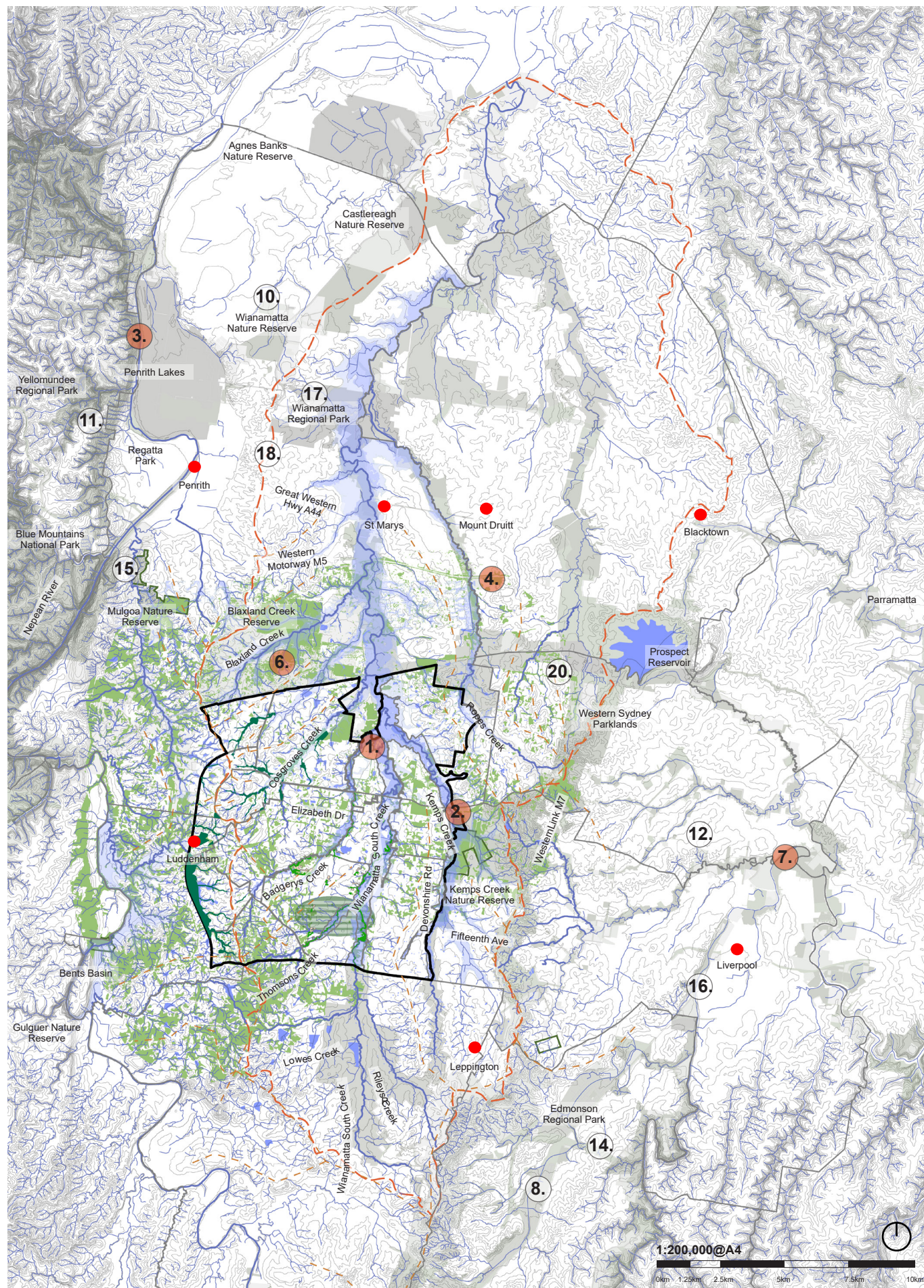
Priority Corridors (source Western City District Plan)

1. South Creek
2. Kemps Creek and Kemps Creek Nature Reserve
3. Penrith Lakes Parklands
4. Ropes Creek
6. Blaxland Creek and Bushland Reserve
7. Georges River Parklands and Chipping Norton Lakes

Projects Important to the District (source: Western City District Plan)

8. Bunbury Curran Creek and Bow Bowling Creek
10. Cranebrook to Windsor Nature Reserve Corridor
11. Eastern Escarpment open space and trails
12. Five Fairfield Creeks
14. Kayess Park Open Space Corridor
15. Nepean Creeks - Peach Tree, Mulgoa and Surveyors Creeks
16. Prospect Creek and Prospect Reservoir Parklands
17. Shanes Park and Wianamatta - South Creek Regional Park
18. South Western Creeks, Badgerys and Cosgroves Creeks
20. Western Sydney Parklands and Eastern Creek

(Mapping based on GIS data provided by WSPP unless stated otherwise)



BIODIVERSITY

Conservation and enhancement of biodiversity values is a key objective of the Greater Sydney Region Plan.

Objective 27: Biodiversity is protected, urban bushland and remnant vegetation is enhanced.

This provides a very clear mandate to ensure vegetation across the Aerotropolis is retained and enhanced as part of the Western Parkland City. In addition to recreation, water and other environmental functions, biodiversity therefore needs to form an important part of both the arrangement of the public realm, as well as site design within the private realm.

The Western Sydney Aerotropolis Plan also recognises the Draft Cumberland Plain Conservation Plan, which aims to protect threatened plants and animals in Western Sydney while supporting the delivery of housing, infrastructure, open and green spaces.

In addition, areas to the east of the Airport site and south of Elizabeth Drive sit within the South West Growth Centre under State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (Growth Centres SEPP).

Legend

- Aerotropolis
- Aerotropolis precincts
- Precincts subject to this report
- Local Government Areas
- Contours (10m interval)
- Road Network
- Hydrology network & water bodies
- 1% AEP flood zone
- Wianamatta - South Creek catchment
- Ridgelines
- Vegetation types:
- Castlereagh Scribbly Gum Woodland
- Cooks River / Castlereagh Ironbark Forest
- Cumberland Plain Woodland
- Freshwater Wetlands in floodplains
- Moist Shale Woodland
- River-flat Eucalypt Forest
- Shale Gravel Transition Forest
- Shale Sandstone Transition Forest
- Swamp Oak Floodplain Forest
- Western Sydney Dry Rainforest
- CPCP
- Env to be retained

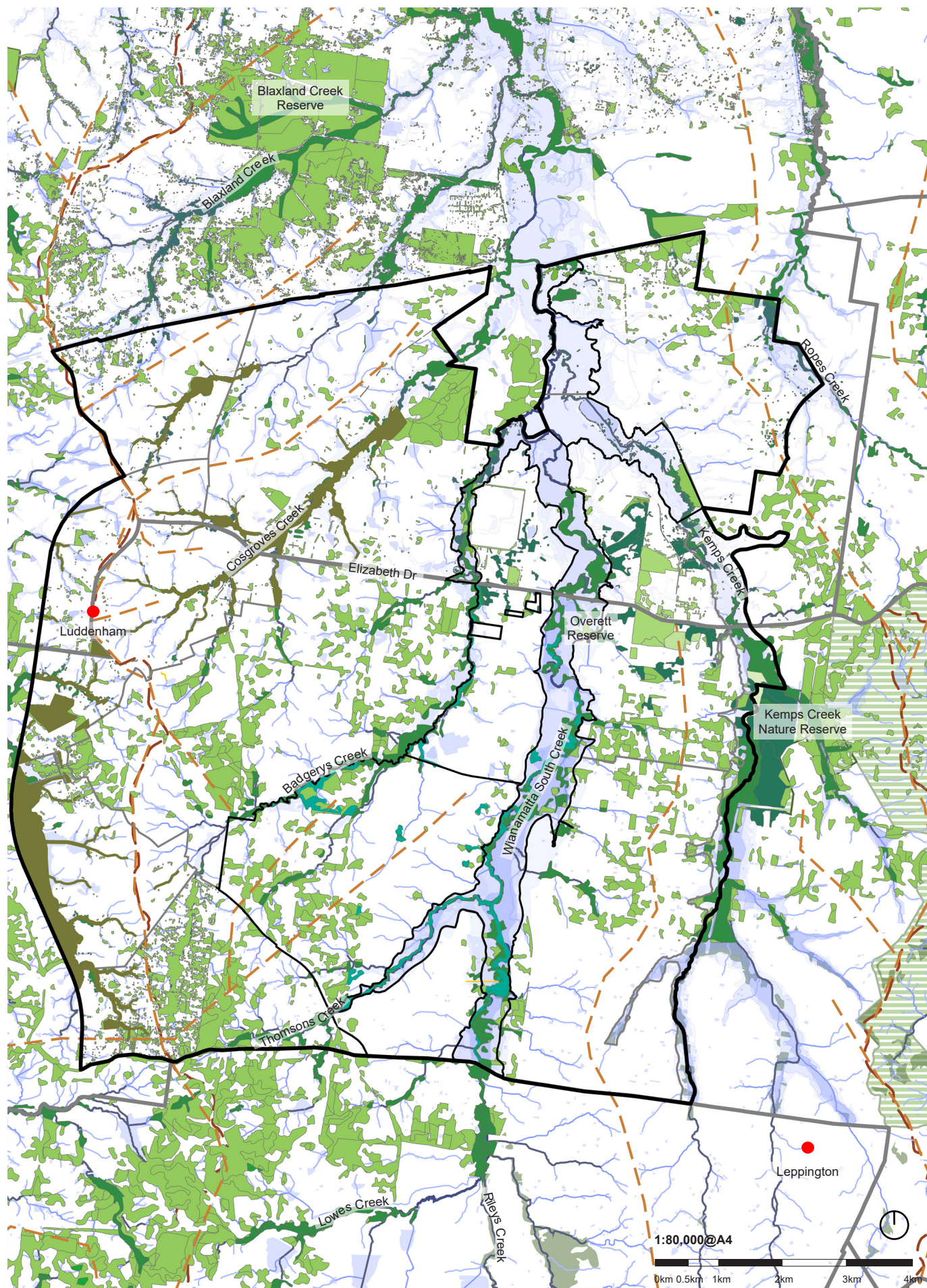
- Land within the Aerotropolis initial precincts is subject to the Order to confer biodiversity certification on the State Environmental Planning Policy (Sydney Region Growth Centres) 2006, 2000 ha of Existing Native Vegetation (ENV) within the Growth Centres must be protected. The requirements of the Order will have an implication on the preferred scenario for the Precincts.
- The draft Growth Centres Conservation Plan (2007) identified areas of high biodiversity value within the Growth Centres to be considered for protection and/or rehabilitation during the precinct planning for each precinct.
- Wianamatta - South Creek supports a number of rare species.
- Creeklines provide continuous thread of remnant floodplain forest. Pockets of Cumberland Plain woodlands are present in these precincts. Both are of high ecological and aesthetic value.
- Combination of exotic and native vegetation is present within privately own land, generally around perimeter of the property.

Existing vegetation throughout the project area is a remnant of a broader Cumberland Plain vegetation community that occupied the plains pre-European settlement.

Current remnant vegetation throughout the project area:

- River-flat Eucalypt Forest,
- pockets of Swamp Oak Floodplain Forest,
- Cumberland Plain Eucalypt Woodland + grassland ground cover,
- pockets of Shale Gravel Transition Forest
- And Castlereagh Ironbark Forest.

(Mapping based on GIS data provided by WSPP unless stated otherwise)



URBAN CONTEXT

Planning and urban design of the Aerotropolis needs to have careful consideration of the urban context.

The Aerotropolis sits central to an urban economic corridor stretching from Lowes Creek and Leppington in the south to Penrith and Eastern Creek in the north. This includes:

WESTERN SYDNEY EMPLOYMENT AREA

The Western Sydney Employment Area is located east of the Aerotropolis, generally along the Warragamba pipeline, and integrates with the Mamre Road precinct within the Aerotropolis. The focus for employment business in the Western Sydney Employment Area is to leverage the accessibility benefits of the motorway network for transport, logistics, warehousing and offices.

GREATER PENRITH TO EASTERN CREEK CORRIDOR

This is an investigation area for future urban development, linking existing communities and jobs to major infrastructure. Committed as part of the Western Sydney City Deal, new housing will be planned, delivered and integrated with new infrastructure such as schools, health care and transport.

SOUTH WEST GROWTH AREA

East and south of the Aerotropolis, new neighbourhoods and employment areas will be focused around amenity and transit, such as the Leppington train station and Fifteenth Avenue Transit corridor. The Wianamatta - South Creek extends south through the Growth Area, providing amenity and active transport connection opportunities to the Aerotropolis.














METROPOLITAN CLUSTER OF CENTRES

The metropolitan cluster model of centres will be enhanced through rapid bus connections between the existing centres of Penrith, Liverpool and Campbelltown to the Aerotropolis and airport. Over the long term, the South West Rail Link between Leppington and the airport will strengthen these connections.

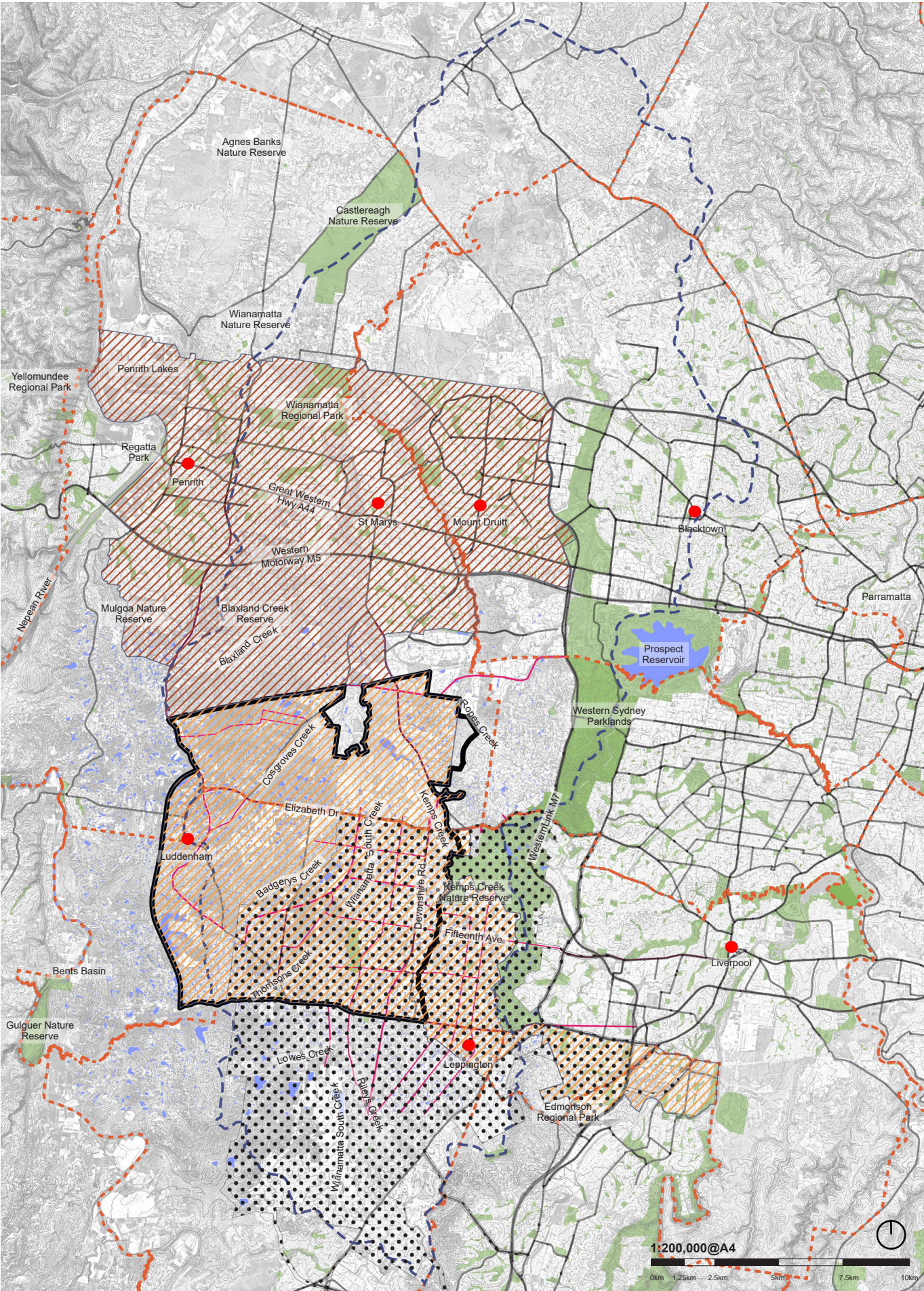
RURAL HINTERLAND

To the west of the Aerotropolis lies the Metropolitan Rural Area. Here, the economic viability of agriculture and peri-urban activities will be supported as the Aerotropolis develops. In addition to its economic functions, the rural area provides an important social value through its landscape qualities, enabling long views from the Aerotropolis to the Blue Mountains.

Legend

-  Aerotropolis
-  Aerotropolis precincts
-  Local Government Areas (LGA)
-  Greater Penrith to East Creek Corridor
-  Western Sydney Aerotropolis Growth Area
-  South West Growth Centre
-  Road Networks
-  Creek Lines
-  Wianamatta - South Creek catchment
-  Water bodies
-  1% AEP flood zone
-  Open Spaces
-  Strategic Centres

(Mapping based on GIS data provided by WSPP unless stated otherwise)



TRANSPORT CONTEXT

Substantial investment in transport infrastructure is driving the Aerotropolis forward. The proposed infrastructure identifies the planned roads, corridors and Sydney Metro Western Sydney Airport Line alignments. It enables the alignment of future planned infrastructure to be considered as well as the transport hierarchy for the future Aerotropolis site. In addition to the Western Sydney International (Nancy-Bird Walton) Airport, key transport infrastructure informing and shaping the urban design frameworks are:

WESTERN SYDNEY AIRPORT METRO LINE

Six new stations will anchor destinations along the metro line connecting St Marys to the Aerotropolis Core. The stations within the Aerotropolis are:

- Luddenham, to service a future education, innovation and commercial precinct
- Two stations within the airport site, at the airport terminal and at the airport business park
- Aerotropolis Core, the commercial heart of the Western Sydney Aerotropolis

FREIGHT RAIL
















Long term planning is being undertaken for future freight rail. As part of significant rail freight capacity upgrades for Sydney, the Western Sydney Freight Line project is identifying corridor protection for future rail connections to serve Western Sydney International (Nancy-Bird Walton) Airport, Western NSW and Port Botany. Additionally, a corridor within the Outer Sydney Orbital is being planned as part of freight connections between the Central Coast and southern NSW.

ROAD INFRASTRUCTURE INVESTMENT AND PLANNING

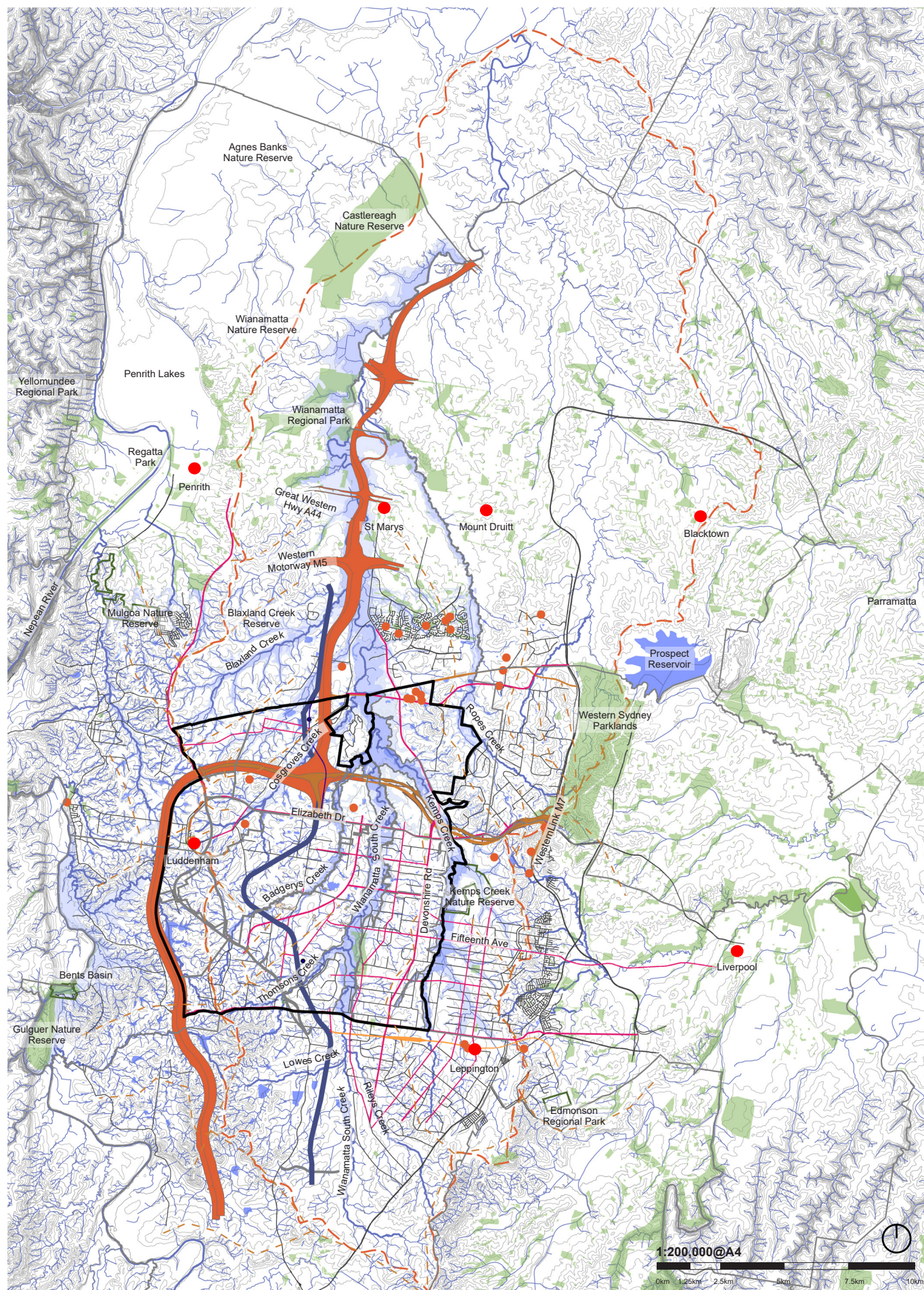
Substantial planning and investment is being undertaken by the Western Sydney Planning Partnership, Transport for NSW and local governments to service the Aerotropolis, across major new motorways, upgrades to existing roads, extension of district corridors from the east. This includes:

- The M12 motorway
- Upgrades to Elizabeth Drive
- The Northern Road upgrade
- Corridor planning for Luddenham Road, the Eastern Ring Road and other connections to the surrounding urban context
- Rapid bus connections from Liverpool, Penrith, Blacktown, Parramatta and Campbelltown to the Aerotropolis Core and Western Sydney International (Nancy-Bird Walton) Airport
- Long term planning for the Outer Sydney Orbital

Legend

-  Aerotropolis
-  Aerotropolis precincts
-  Local Government Areas (LGA)
-  Contours (10m interval)
-  Creek Lines
-  Wianamatta - South Creek catchment
-  Water bodies
-  Open Spaces / Vegetation
-  Existing Road Networks
-  Sydney Metro Western Sydney Airport Line
-  Potential South-West Rail Link
-  Transport facility points
-  Outer Sydney Orbital Corridor
-  M12 Motorway corridor
-  Key Network Upgrades

(Mapping based on GIS data provided by WSPP unless stated otherwise)



LOCAL CONTEXT

The local context of the Aerotropolis shapes the urban design frameworks. Country, landscapes, environmental systems, creeks, ownership patterns and the immediate urban surrounds inform city shape.



Photograph of Western Sydney Aerotropolis landscape. Image source: WSPP

LOCAL CHARACTER

- Aerotropolis precincts have character of a managed, productive landscape, that has been cleared for grazing and farming in the past. It is characterised by a patchwork of grazing land, greenhouses, 'rural-residential' lots, tree nurseries, landscape supplies and extraction sites.
- Aerotropolis Core and Badgerys Creek precincts are bound by Wianamatta-South Creek along the east edge and Badgerys Creek to the west.

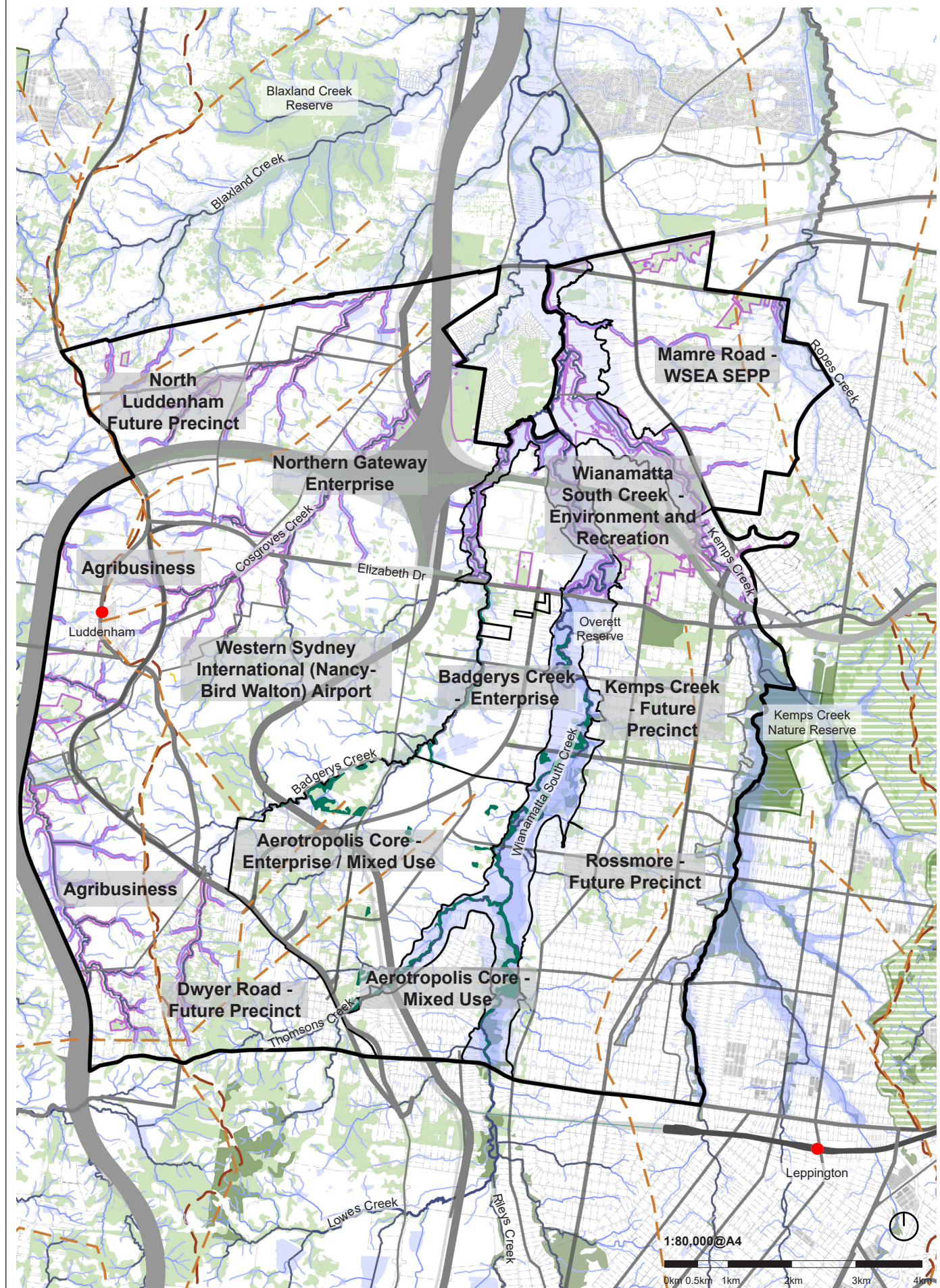
Legend

-  Aerotropolis
-  Aerotropolis precincts
-  Precincts subject to this report
-  Local Government Areas
-  Contours (10m interval)
-  Road Network
-  Protected Areas 2006
-  Reserves
-  Western Sydney Parklands
-  Vegetation (Tree Canopy)
-  CPCP
-  ENV to be retained
-  Regional Parks (potential)
-  Water bodies
-  1% AEP Flood Zone
-  Creek Lines
-  Wianamatta - South Creek catchment
-  Ridgelines
-  Sydney Metro Greater West
-  Potential South-West Rail Link
-  Outer Sydney Orbital Corridor
-  M12 Motorway Corridor
-  Potential East-west Link, Stabling and Critical infrastructure
-  Key Network Upgrades
-  Road Alignment Upgrade

(Mapping based on GIS data provided by WSPP unless stated otherwise)

- The landscape is relatively flat and open, only gently undulating, with numerous small farm dams and ephemeral creeks feeding into Wianamatta-South Creek.
- Views are dominated by the presence of the sky and confined / framed by clusters of vegetation mainly around main creek lines and lines of trees along property boundaries and access roads. Ridgelines are rather subtle.
- Creeklines provide continuous thread of remnant floodplain forest.

- Pockets of Cumberland Plain woodlands are present in these precincts. Both are of high ecological and aesthetic value.
- A combination of exotic and native vegetation is present within privately own land, generally around perimeter of the properties.
- The precincts are accessible via the Northern Road (currently being upgraded) and Bringelly Road at the southern end. Within the precincts, the roads are of rural character - the main roads are Elizabeth Drive traversing east-west across the precincts, Badgerys Creek Road connecting north-south and then a series of disconnected local roads throughout.





A view across existing pasture to Wianamatta-South Creek,
near to Luddenham Road.
Photography by Daniele Hromek.



AEROTROPOLIS CORE EXISTING CHARACTER

The Aerotropolis Core has a markedly different character from its intended future. Peri-urban and rural in character, the existing landscape conditions are rapidly changing with the construction of the Western Sydney International (Nancy-Bird Walton) Airport, The Northern Road and the committed upgrades to Elizabeth Drive and the future M12 Motorway.

The existing landscape comprises a gentle land, with a filigree of ephemeral creeks tracing the ground towards both Badgerys and Wianamatta - South Creeks. A ridge line bisects the precinct, roughly mid-way between both creek corridors. This emphasises views to distant tree lines and the generally open landscape. Due to the presence of woodlands along Badgerys and Wianamatta - South Creeks, views to the Blue Mountains at ground level are not evident.

The fragmented land ownership throughout the Aerotropolis Core has led to a disrupted landscape. Distinctions between ownership boundaries are evident through fences, differing planting and site organisation patterns. Buildings are generally low in scale, being one to two storeys, and ordinarily comprise single houses, workshops, sheds and outbuildings.

Kelvin Park Homestead is a State Heritage listed item and lies to the west of Thompsons Creek. The homestead is a direct connection to the pastoral history of the district, and it is situated atop a small rise, looking over the broader landscape. The former function of much of the Aerotropolis Core as pasture land is reflected in this ongoing activity to the north of the homestead, between Wianamatta - South Creek and Badgerys Creek Road.

An existing quarry lies to the west of Badgerys Creek Road, between it and the creek - reflective of the alluvial sands in this part of the precinct. Its position is flanked by wooded vegetation, tracing the ephemeral creek system southward towards the Northern Road.



Right: Aerial photography of Thompsons Creek and part of the Aerotropolis Core. Existing agricultural practices and use of the land can be clearly seen.



Images:

1. Looking from Kelvin Park Drive towards distant tree canopy.
2. Existing access drive to the former Defence Lands within the Aerotropolis Core.
3. Existing creek vegetation character.
4. The Aerotropolis Core contains existing single houses on large lots, many of which comprise open grassland and former pasture.
5. The relatively flat landscape of the Core is bisected by a fragmented land ownership pattern.
6. Existing verge vegetation along Badgerys Creek Road.



BADGERYS CREEK EXISTING CHARACTER

The Badgery's Creek precinct lies in the narrow area of land between the Badgery's and Wianamatta - South Creek systems. Largely flat, the land falls away from a gentle ridge that lies largely central between the creeks.

Elizabeth Drive bisects the precinct, and its east-west orientation provides drivers with a good sense of the undulating topography - being aligned perpendicular to the contours of the land. In this way, a sense of ridgetop, creek and Cumberland Plain landscapes is experienced.

South of Elizabeth Drive, a patchwork of lots are arranged along Martin and Lawson Roads. An eclectic mix of rural-residential housing, productive orchards, plant nurseries and peri-urban agriculture occurs throughout. Views across the open grassland of lots terminate in the woodlands of the creek systems, and so there is a strong sense of open grassland, distant vegetated creeks and sky. Much like Aerotropolis Core, existing buildings relate to the functionality of the land, with simple residential structures, outbuildings and workshops. These buildings sit within the landscape, such that the broader views and water systems are the dominant feature.

North of Elizabeth Drive, larger lots provide a setting for open pasture, farm dams and the meandering creeks. A small cluster of Cumberland Plain woodland is located central to this area. A waste transfer station is located adjacent Badgerys Creek, demonstrating the circular economy potential of the Aerotropolis.

A defining feature at the southern edge of the precinct is the existing quarries. These continue the circular economy credentials, and will continue to operate for some time.

WIANAMATTA - SOUTH CREEK EXISTING CHARACTER

The existing Precinct character is defined by the creek corridor - a generally thickly vegetated, but narrow corridor running south to north through the Aerotropolis. Largely in private ownership across hundreds of land holders, peri-urban activities about the edge of the vegetated corridor.

Right: Aerial photography of the Badgerys Creek Precinct, showing Wianamatta-South Creek and Martin Road.





Images:
Photographs showing scenes throughout Badgerys
Creek and Wianamatta - South Creek.

AGRIBUSINESS EXISTING CHARACTER

Located between the watershed of the Nepean River to the west and the Wianamatta Creek and proposed airport to the east, the Agribusiness Precinct spans the ridgeline on which the Northern Road is situated, this road historically linking Penrith and Campbelltown. Luddenham, positioned on the Northern Road is a village that provides service facilities to the surrounding agricultural lands.

Luddenham Village is distinguished by its low built form and scale and features a selection of heritage listed buildings including St James Anglican Church and the Luddenham showground. The village is set within an agricultural setting of open pasture and groups of native trees with significant views to the Blue Mountains to the west and wooded ridgelines and surrounding landscape including Cosgroves Creek to the east. These views, from the highest ridgeline within the Aerotropolis, significantly inform your impression of place and its relationship to context.

The fluvial nature of the landscape is highlighted by the drainage and creek lines that are identified by a series of dams and water bodies. These water bodies serve as reservoirs for the small scale agricultural and horticultural activities of the area. Duncan's Creek reservoir to the south is the largest and has been known to be used for recreational activities. To the east, the landscape character is open grassland with minor groups of trees located in irregular patterns across the landscape. To the west of the ridgeline, the valleys are characterised by remnant woodlands and are more incised than those valleys to the east. Overall, the undulating topography, open pasture and groupings of remnant woodlands provide traditional aesthetic pastoral values associated with the Cumberland Plain.

Right: Aerial photograph of the Agribusiness Precinct, showing Luddenham Village, The Northern Road and existing pasture land.





Images courtesy of Studio Hollenstein:

1. View to south west from Northern Road, Luddenham, over Lawsons Inn Site
2. Cumberland Plain Woodland
3. Dam and field crops, Willowdene Rd. Luddenham
4. St James Anglican Church and Graveyard, Luddenham

NORTHERN GATEWAY EXISTING CHARACTER

The Northern Gateway is characterised by undulating terrain with significant hill tops and ridgelines affording views across the Cumberland plain to the Blue Mountains in the west and the Georges River Valley.

It is bounded by Elizabeth Drive in the south, the Warragamba pipeline in the north and Badgery's Creek in the east, and covers an area of approximately 1616ha.

Luddenham Road bisects the precinct, running north-east from Elizabeth Drive almost parallel to Cosgroves Creek and along the eastern slopes of the ridgeline, avoiding the steepest hilltops which dot the southern half of the precinct.

It has a pleasant rural character and is lined with stands of mature native trees along its southern boundary.

Significant creek lines cut through the gentler terrain forming a tube of subtle fingers and valleys which are dotted with farm dams and remnant Cumberland Plain Woodland.



Right: Aerial photography of the Northern Gateway Precinct, showing Cosgroves Creek and existing farm dams.



Images courtesy of Hill Thalix.

1. Luddenham Road and the important roadside tree line.
2. Hilltops are prominent landscape features within the precinct.
3. Farm dams and ridgelines signify the existing landscape character.
4. Open views from the roadside to dams and creek vegetation.



Images of the Aerotropolis project area.
Photography by Daniele Hromek.



Images of the Aerotropolis project area.
Photography by Daniele Hromek.

















SOIL AND GEOMORPHOLOGY

Soils make up a network of interconnected undisturbed site soils. It occurs in riparian corridors, parks and specially designed Brown Corridors. Soils are key to achieving healthy ecosystems and good water retention in clay landscape of the Cumberland Plain.

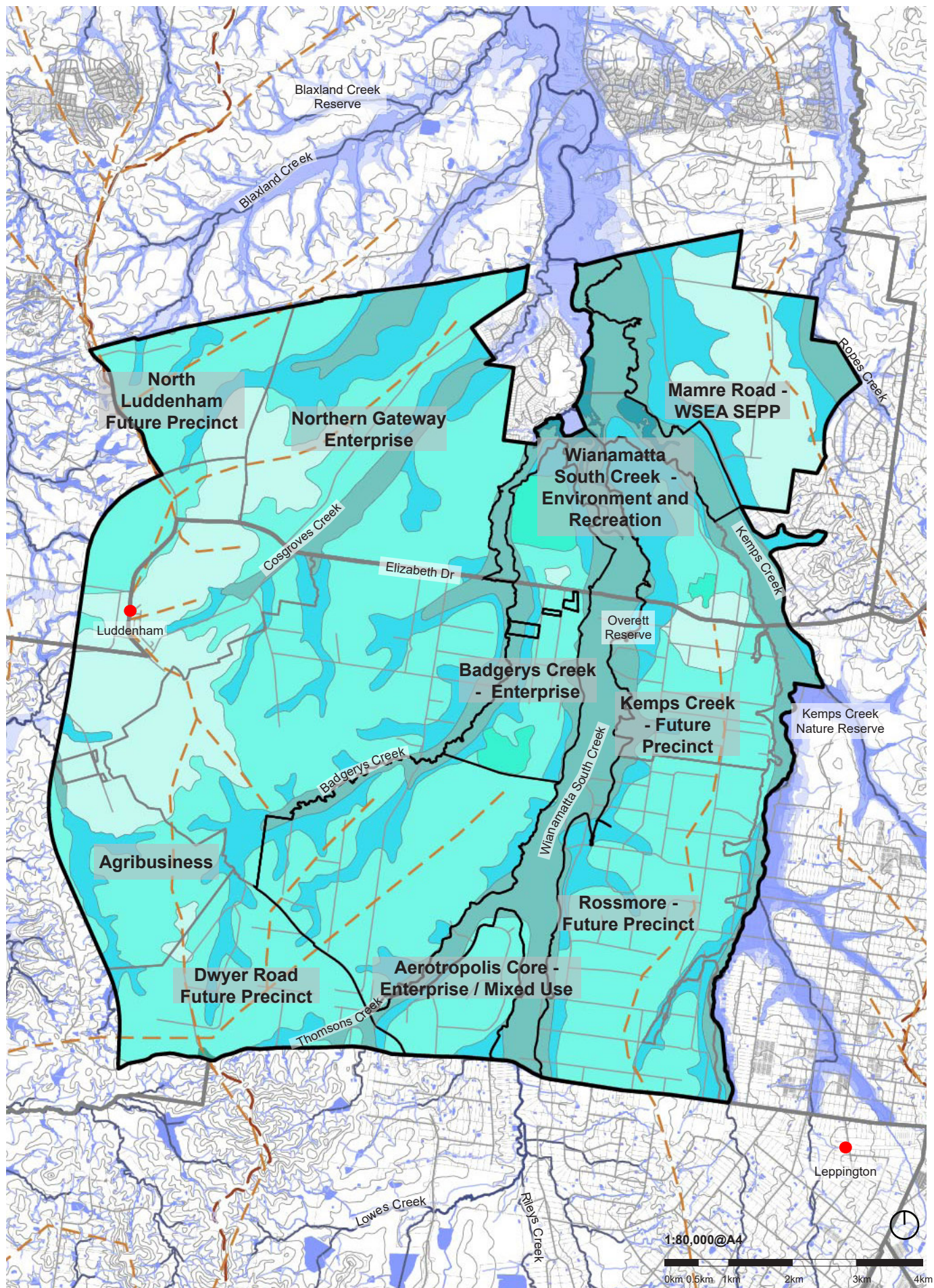
The soils of western Sydney Cumberland Plain when in their undisturbed state are integral to the proper functioning of the Green and Blue infrastructure framework. A healthy soil ecology plays a complex, dynamic role via living biota in the overall ecology of place as the major driver of all energy systems; increasing the water absorption of soils by providing increased in ground carbon storage, increased nutrient and mineral availability and by suppressing soil pathogens and salinity. A network of undisturbed soils is the foundation for the health of the Blue and Green Infrastructure Framework.

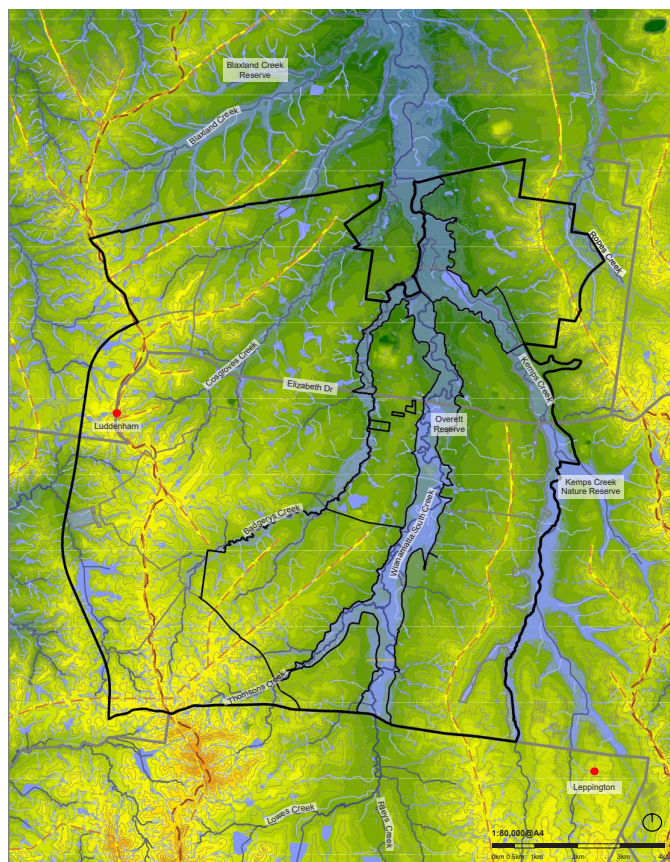
Soils in areas identified by the urban design frameworks are to remain undisturbed and be continuous, allowing for connectivity of soil ecology. Engineered cut and fill and topographic alteration should be limited due to the damage this causes to soil profiles and the ecologies therein. Localised excavation for footings, shallow sub-bases to paths, tree planting holes and the like are permitted, however the A and B soil horizons are to be removed separately stored separately and replaced in their correct order.

Legend

-  Aerotropolis
-  Aerotropolis precincts
-  Precincts subject to this report
-  Local Government Areas
-  Contours (10m interval)
-  Hydrology network & water bodies
-  1% AEP flood zone
- Great Soil Groups:
-  Gleyed Podzolic Soils
-  Red Podzolic Soils - less fertile (granites and meta-sediments)
-  Red Podzolic Soils - more fertile (volcanics and granodiorites)
-  Soloths
-  Yellow Podzolic Soils - less fertile (granites and meta-sediments)
-  Water
-  Not assessed
-  Wianamatta - South Creek catchment
-  Ridgelines

(Mapping based on GIS data provided by WSPP unless stated otherwise)

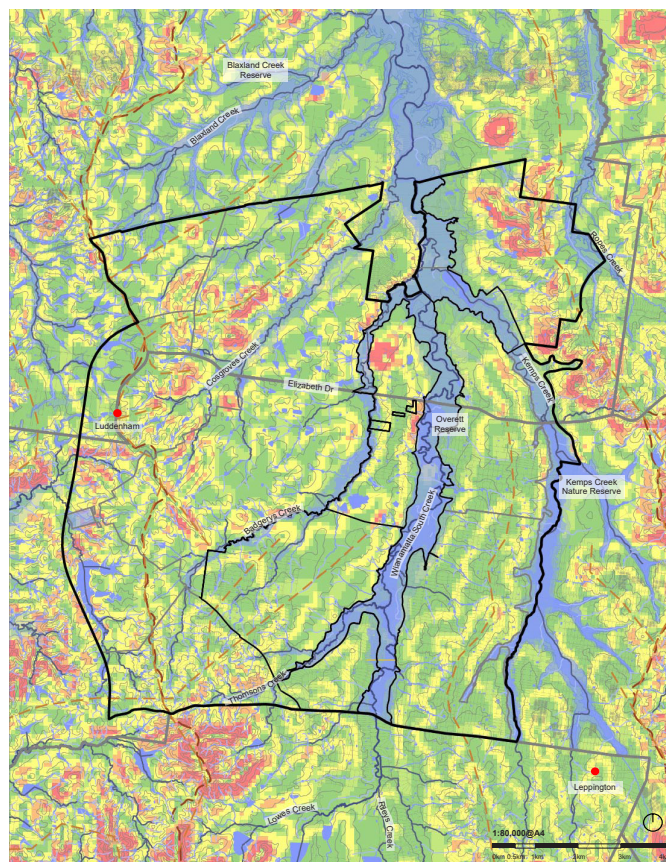




Topography and landform

Legend

- Aerotropolis
- Aerotropolis precincts
- Precincts subject to this report
- Local Government Areas
- Contours (10m interval)
- Road Network
- Hydrology network & water bodies
- 1% AEP flood zone
- Terrain:
- -5 - 20m elevation
- 20 - 45m elevation
- 45 - 70m elevation
- 70 - 95m elevation
- 95 - 120m elevation
- 120 - 145m elevation
- 145 - 170m elevation
- Wianamatta - South Creek catchment
- Ridgelines
- ➔ Key views / view corridors
- ➔ Visual Precincts

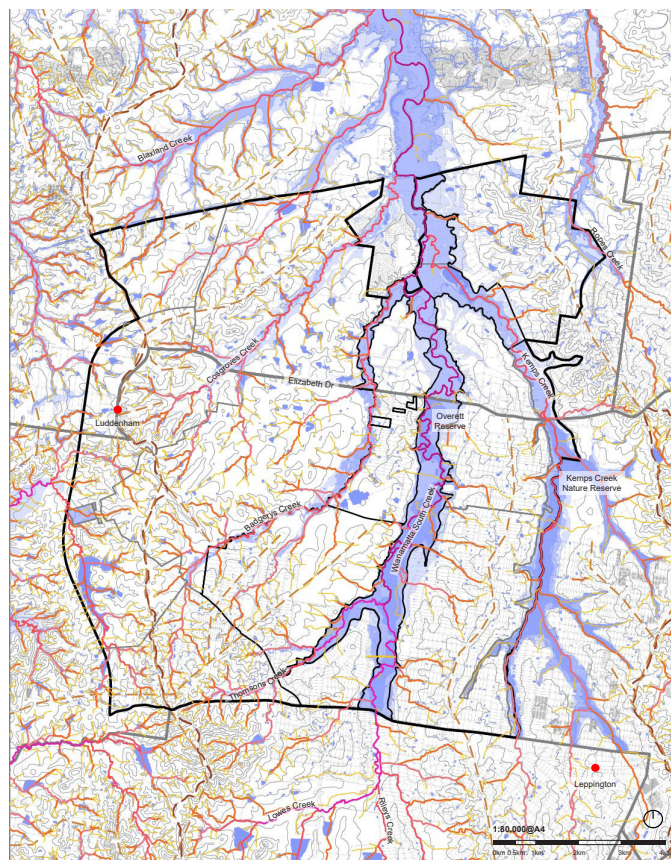


Slope

Legend

- Aerotropolis
- Aerotropolis precincts
- Precincts subject to this report
- Local Government Areas
- Contours (10m interval)
- Hydrology network & water bodies
- 1% AEP flood zone
- Terrain:
- 1:100-1:50
- 1:50-1:35
- 1:35-1:20
- 1:20-1:14
- 1:14- 1:8
- Wianamatta - South Creek catchment
- Ridgelines

(Mapping based on GIS data provided by WSPP unless stated otherwise)

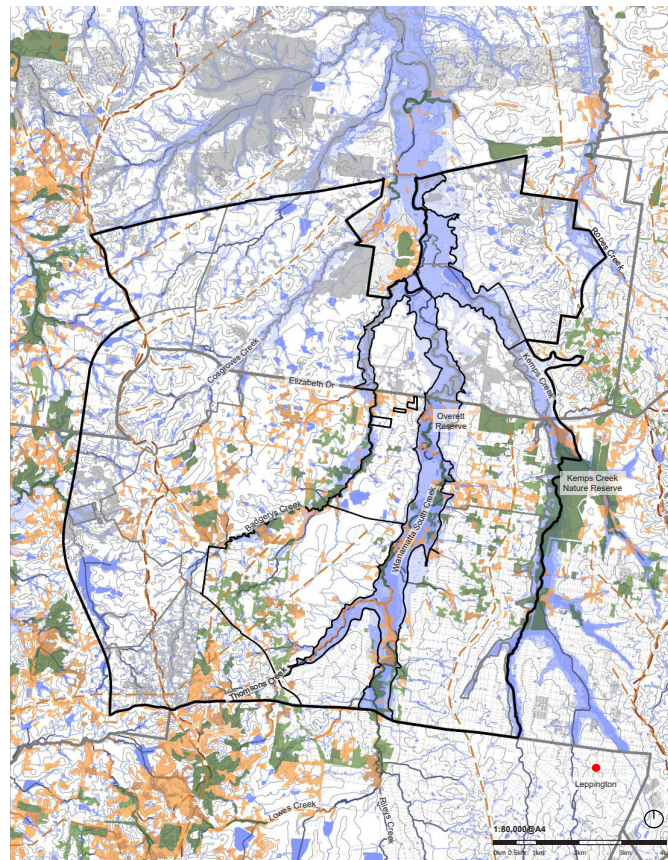


Creeks and 1% AEP flood extents

Legend (Strahler System stream order)

- Aerotropolis
- Aerotropolis precincts
- Precincts subject to this report
- Local Government Areas
- Contours (10m interval)
- Road Network
- Hydrology network & water bodies
- Stream Classification**
- 7th Class
- 6th Class
- 5th Class
- 4th Class
- 3rd Class
- 2nd Class
- 1st Class
- 1% AEP flood zone
- Probable Maximum Flood zone
- Wianamatta - South Creek catchment
- Ridgelines

(Mapping based on GIS data provided by WSPP unless stated otherwise)



Vegetation, canopy and disturbance levels

Legend

- Aerotropolis
- Aerotropolis precincts
- Precincts subject to this report
- Local Government Areas
- Contours (10m interval)
- Hydrology network & water bodies
- 1% AEP flood zone
- Wianamatta - South Creek catchment
- Ridgelines
- Retention Value:**
- Low
- Medium
- High
- Very High
- Lowest Disturbance Levels
- Medium Level of Disturbance
- High Disturbance Levels
- Scattered trees grazing understorey
- Scattered trees above rural residential
- Scattered trees above urban development
- Unlabelled

(Mapping based on GIS data provided by WSPP unless stated otherwise)

HERITAGE

We acknowledge that while there are important sites in this area, all of Country is important as part of the wider cultural landscape.

COUNTRY AND ABORIGINAL HERITAGE

The Aboriginal Cultural Heritage assessment identified 138 known Aboriginal heritage sites within the initial precincts which includes objects, places, and declared Aboriginal Places.

Among the 138 identified sites the majority (115) are identified as 'artefact' sites comprising artefact scatters and isolated finds. The remaining sites largely comprise potential archaeological deposits (PADs) (19), most of which (15) were found in association with artefacts.

Other site types that have been identified within the five precincts include three culturally-modified trees (carved or scarred) and one grinding groove site.

The identified sites have been identified across the landscape and concentrated within areas where relatively low amount of land disturbances have occurred. Culturally modified trees are located in areas where remnant vegetation remains extant (e.g. along creek lines and away from urban areas), whereas grinding groove sites are located close to creek lines due to the need for water in the grinding process.

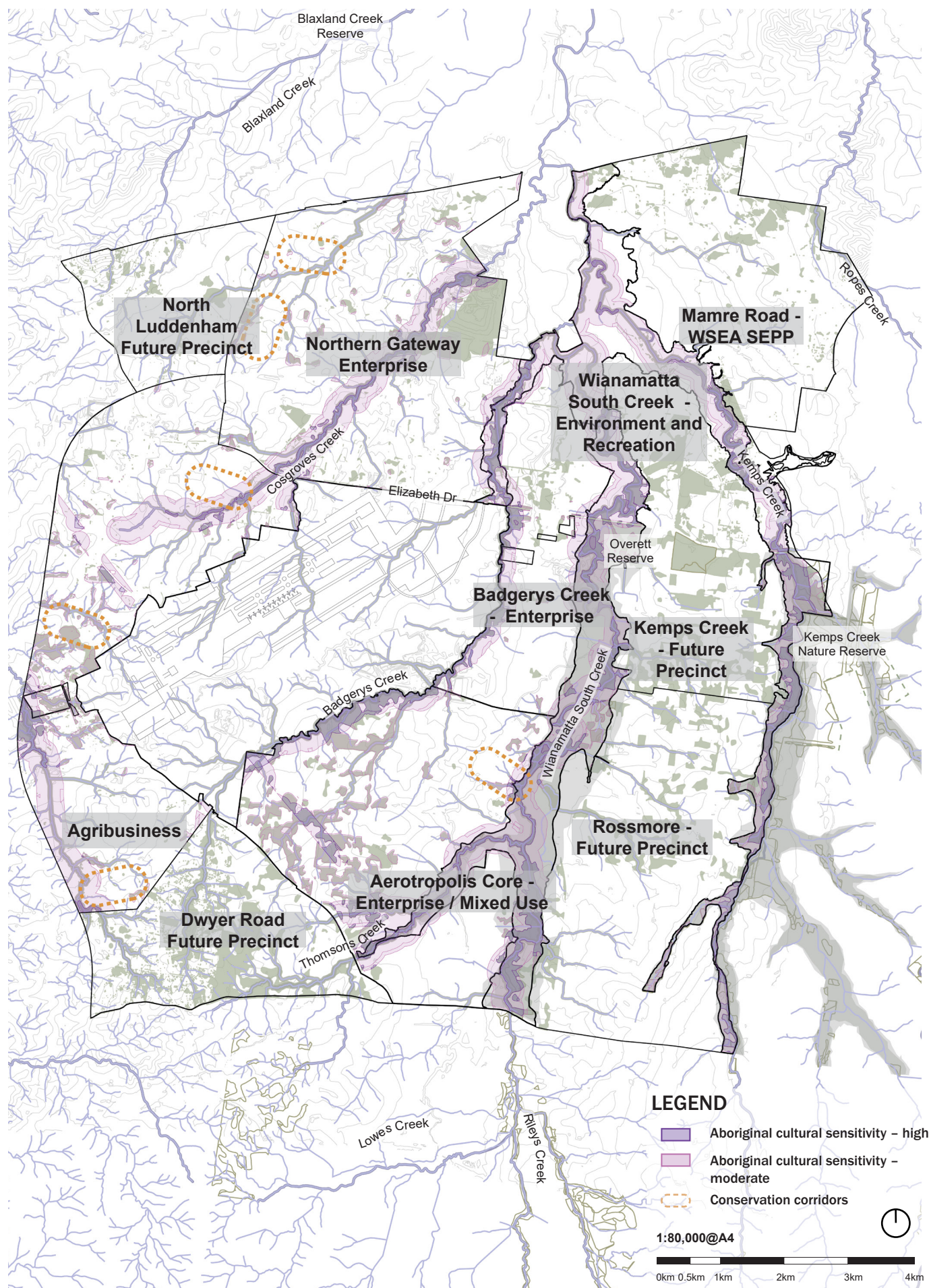
The known PADs occur most often on lower elevations and along or between creek lines, and few are known in areas of high elevations such as hills or ridgelines. In addition to the identification of known sites, the assessment mapped the Aboriginal heritage sensitivity across the initial precincts and identified several potential conservation corridors which contain Aboriginal heritage values (see adjacent figure).

Note: Whilst the specific locations of known Aboriginal heritage sites and AHIMS data have been identified and considered in the urban design work, a map showing these sites has not been included within this report due to sensitivity reasons.

ABORIGINAL CULTURAL VALUE

Complementary to Aboriginal heritage is a broader consideration of Aboriginal cultural values. These are additional to any information found through an Aboriginal Heritage Information Management System (AHIMS) search, archaeological investigation or desktop research. It is important to understand the values of the place and the critical elements of the cultural landscape that inform precinct design. Aboriginal culture is living, and preserving cultural values within landscape, and precinct design more broadly, this culture can be sustained.

Aboriginal values for a site sit within the context of a broader story which extend well beyond a site's boundary. Design processes and technical assessments should ensure proposals fit within this cultural landscape by broader contextual positioning. This will help inform decisions around urban design structure and spatial composition. As proposals are developed, proponents should consider the work undertaken to date to identify potential cultural heritage values, including the conservation corridors and areas of heritage sensitivity. Further engagement with the Aboriginal community and Knowledge Holders will allow more informed and detailed design decisions to be made



POST COLONIAL HERITAGE

The precincts encompass sites that have the potential to contain historical archaeological remains associated with the early nineteenth century and twentieth century development of the district. Broadly, the level of survival of these items will vary across the sites, and is dependent on the type of site, the methods of demolition, later phases of construction and the impact of service installation in the twentieth and twenty-first centuries.

Four properties have the potential to contain State significant archaeological remains. Any impacts in these areas will require specific management due to specific legislative controls. A detailed assessment would also be required before any proposed development can be considered.

Five properties (mainly large rural or former government sites) have the potential to contain multiple archaeological sites. These potential sites are likely to be dispersed across the large land units and will require further investigation to prepare appropriate curtilages for management for each discrete area.

The existing road grids associated with the mid to late nineteenth century subdivisions (Luddenham village, Exeter Farms subdivision, Devonshire subdivision and the Hutchinson Subdivision) should be maintained as much as possible, as this will reduce impacts on potential archaeological sites.

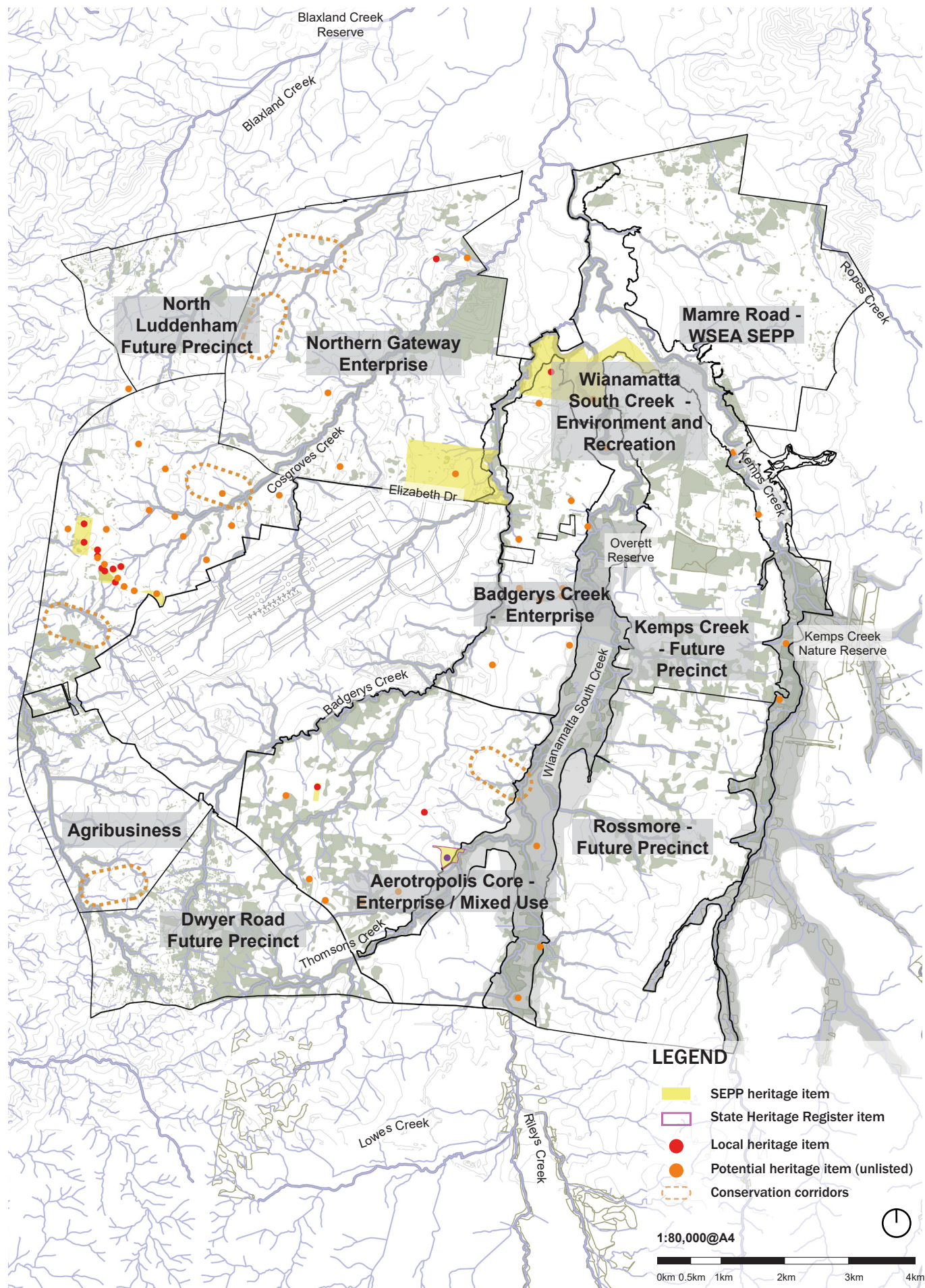
Kelvin Homestead is a colonial homestead group of structures with historical, associative, and representative values as an early Georgian farmstead. The existing landscaping around the house, and its setting on a knoll above a creek, is a significant part of its character. The site is also noted to have a high archaeological potential.

This item is protected under the provisions of the Heritage Act 1977 (NSW), which requires any change that affects the item's significance to be subject to assessment and approval by the NSW Heritage Council.

The collection of local heritage items is quite varied in the types of items and their value as locally significant items. What does become apparent are that the items listed relate to particular themes that are prevalent throughout the area, particularly relating to agriculture, pastoralism and the way of life during the early 19th century.

Several special sites warrant specific consideration:

- The Fleurs Radiotelescope Site
- McGarvie-Smith Farm (Item 857)
- McMaster Field Station/McMaster Farm (unlisted)
- Luddenham Road Alignment (item 843)
- Luddenham Village
- Lawson's Inn Site
- Exeter Farm
- Kelvin Park
- Bringelly Radio Receiving Station Complex (Former OTC Site)
- 'Bayly Park' Complex



AIRPORT CONSIDERATIONS

The Western Sydney International (Nancy-Bird Walton) Airport will operate 24 hours a day, 7 days a week.

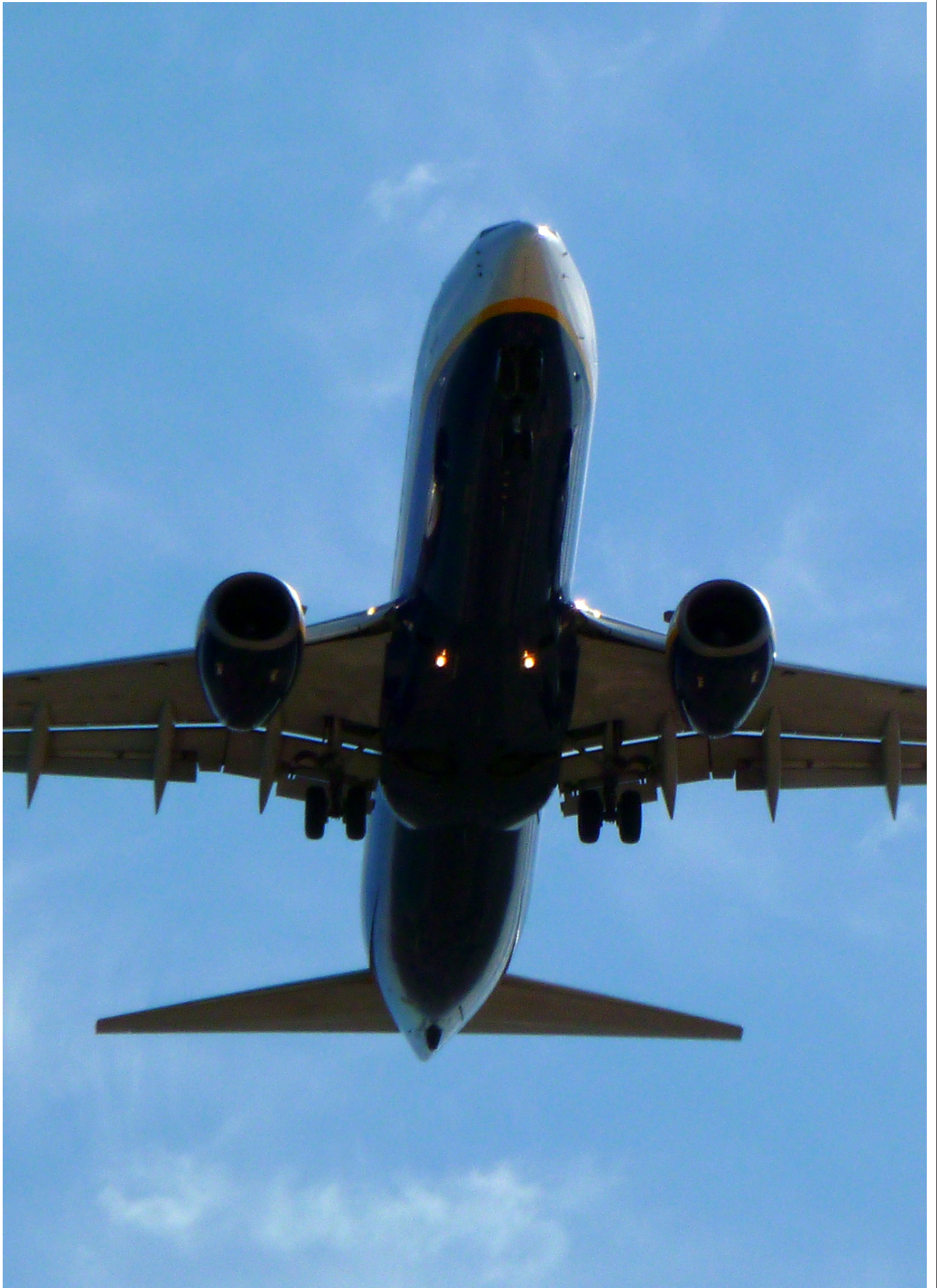
A core planning objective for the Western Sydney Aerotropolis is to safeguard the 24-hour operations of the Western Sydney International (Nancy-Bird Walton) Airport, while also minimising the amenity impacts on existing and future communities. As such, the following airport safeguarding considerations need to be considered and managed:

- aircraft noise;
- windshear and turbulence;
- wildlife strike;
- wind turbines;
- lighting distractions to pilots;
- intrusions into protected airspace of airports;
- communications, navigations and surveillance facilities; and
- public safety areas at the end of runways.

Part 3 of the Aerotropolis SEPP relates to aviation safeguarding provisions and in some instances relates to land outside the Aerotropolis boundary.

The Aerotropolis SEPP is supported by the Aerotropolis DCP which identifies the objectives, performance outcomes and benchmark solutions to allow appropriate development within the Aerotropolis, including those relating to aviation safeguarding. Accompanying the Aerotropolis DCP is the Aviation Safeguarding Guidelines which aims to assist relevant planning authorities, consultants and proponents when assessing and, preparing development applications which are impacted by aviation safeguarding controls.

The aviation safeguarding controls within the Aerotropolis SEPP and Aerotropolis DCP have informed various components of the Aerotropolis Precinct Plan such as land use allocation, appropriate building heights and landscape management.



SURROUNDING PRECINCTS

RELATIONSHIPS AND CONNECTIONS

The initial precincts of Aerotropolis Core, Badgerys Creek, adjacent parts of Wlanamatta-South Creek, the Northern Gateway and Agribusiness precincts are not being planned in isolation. Connections and relationships between these are important for the overall success of the Aerotropolis system.

In addition, planning needs to be cognisant of the future precincts:

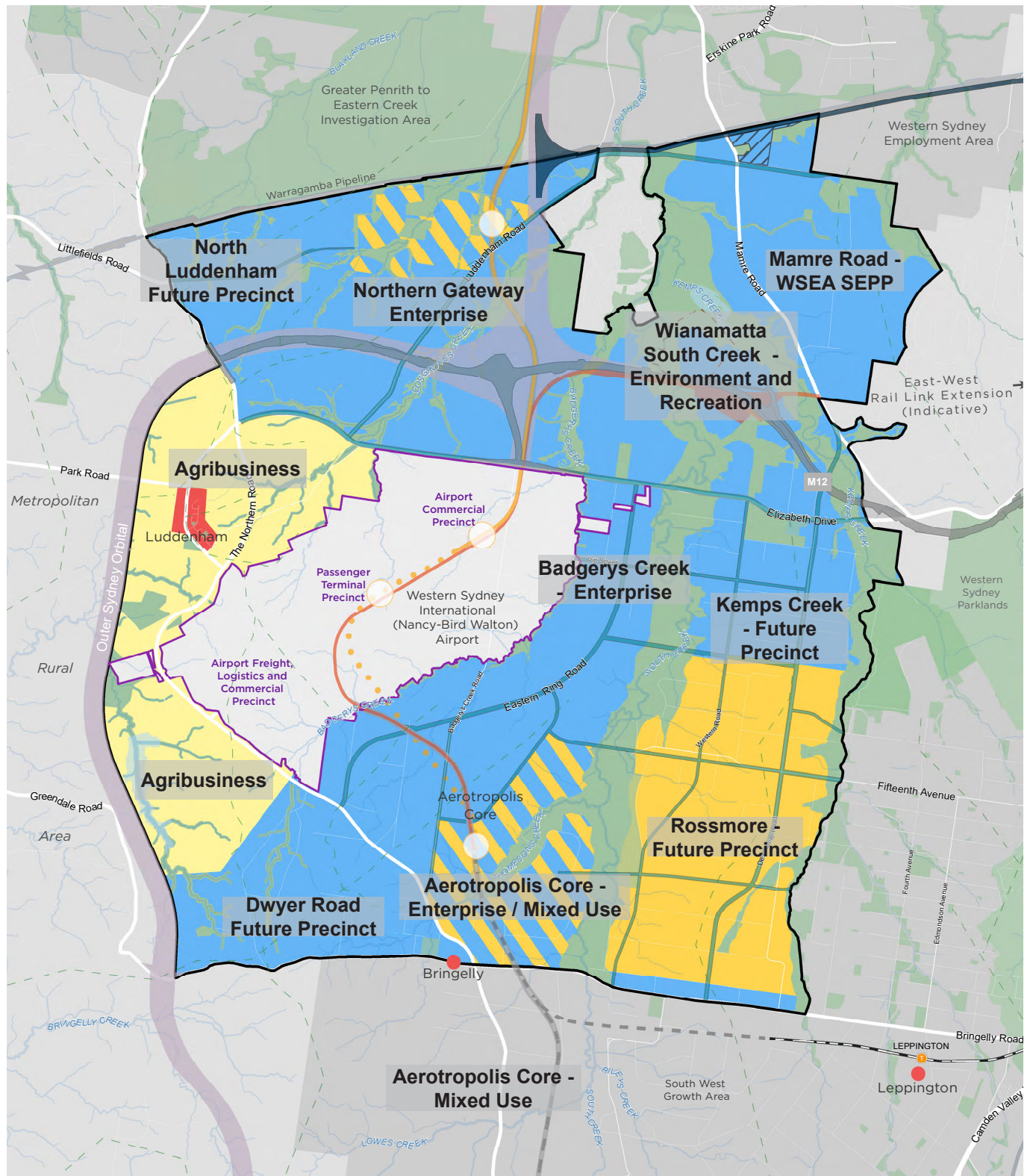
- Urban land within the Rossmore precinct
- Flexible employment within the North Luddenham, Kemps Creek and Dwyer Road precincts.

The urban design frameworks therefore need to address:

- Connections across all travel mode types;
- Regular crossings of the creek corridors to enable walkable neighbourhoods and catchments to centres and amenity;
- Careful location of centres such that catchments are considered beyond precinct boundaries;
- Land use interfaces that complement the adjacent precinct functions.

EXISTING LOCAL ENVIRONMENT PLANS

The local planning context of the Aerotropolis is one of change. The existing LEP zonings will change according to the Western Sydney Aerotropolis Plan and its associated State Environment Planning Policy.

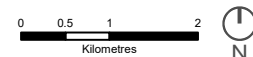


Structure Plan Western Sydney Aerotropolis

- Western Sydney Aerotropolis
- Western Sydney International (Nancy-Bird Walton) Airport
- Key Network Upgrade
- M12 Motorway Corridor
- Proposed Transport Corridor Potential
- Intermodal Terminal
- Upper South Creek Advanced Water Recycling Centre

- Metro Station
- Sydney Metro - Western Sydney Airport
- Sydney Metro - Western Sydney Airport Tunnel Alignment
- Proposed Future Rail Links
- Potential East-West Rail Link and Stabling
- Western Sydney Freight Line Corridor
- North South Rail Line Corridor

- Centre
- Topographic Ridgeline
- Luddenham Village
- Agribusiness
- Environment and Recreation
- Enterprise
- Urban Land
- Mixed Use



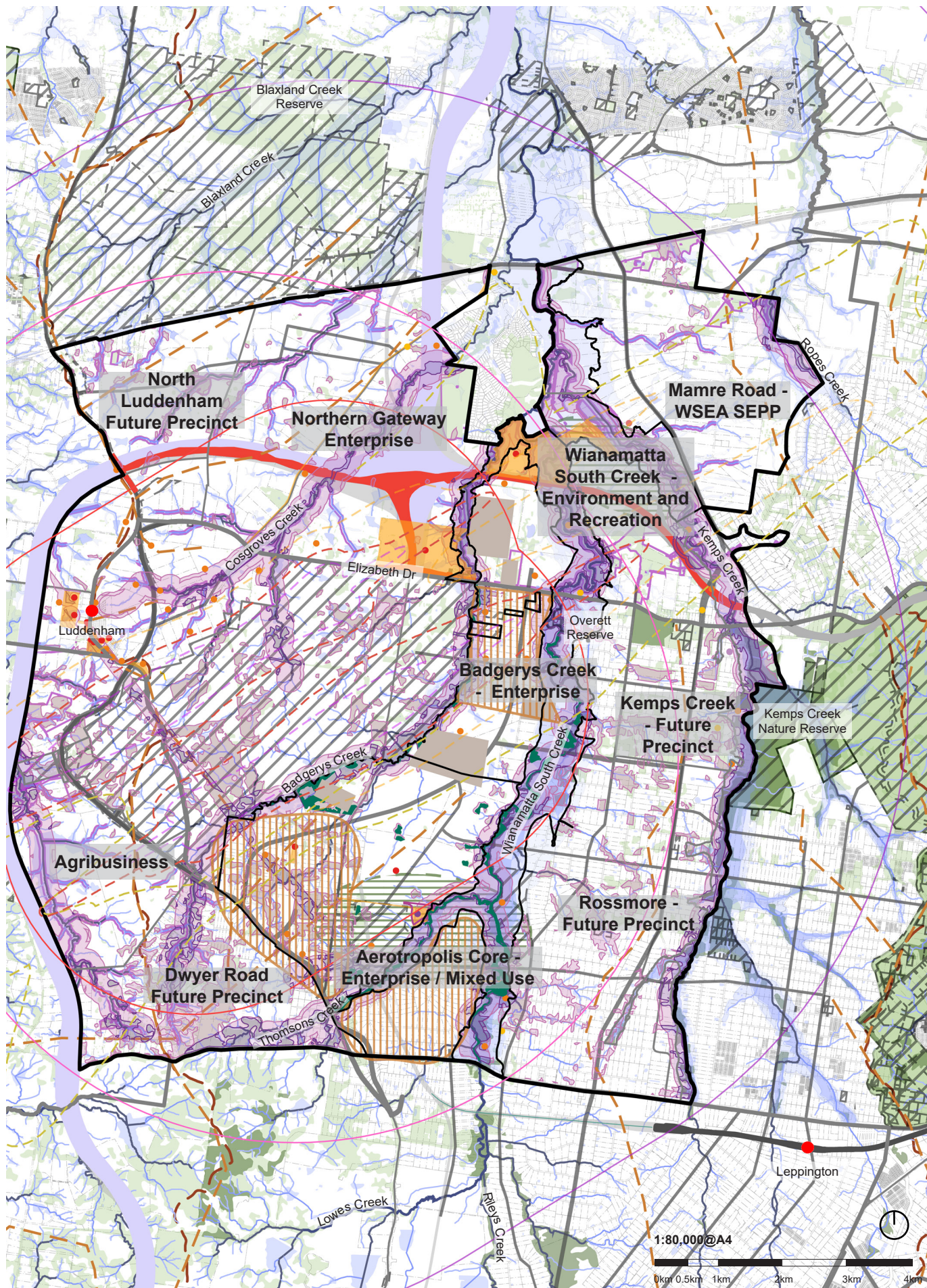
OPPORTUNITIES AND CHALLENGES



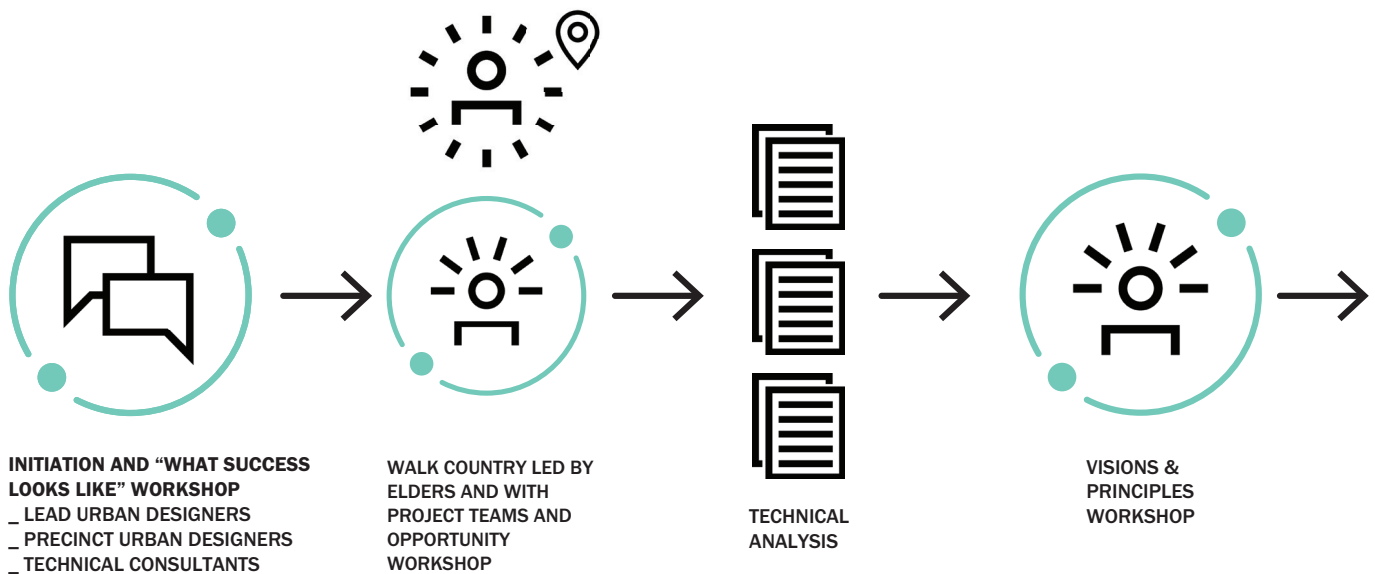
(Mapping based on GIS data provided by WSPP unless stated otherwise)

COMMON OPPORTUNITIES ACROSS THE AEROTROPOLIS

- Ensure development areas are contained outside the recent flood modelling 1% Annual Exceedance Probability
- Retain creeks within the landscape, especially those nominated Strahler 2 and above
- Retain and enhance existing vegetation for biodiversity purposes
- Respect topography through urban form and city shape, and in particular, ensure clear links between ridgetops and creek lines
- Provide public (street) edges to creek corridors, open space and key infrastructure items
- Focus density towards areas of amenity: the creek corridors, open space, and employment density around Metro Stations
- Align streets to provide views and access to the creek corridors
- Enable amalgamation of lots to coordinate development across land use, transport, open space, water, environmental and infrastructure outcomes - this is particularly important across the mixed use zone between Thompsons and Wianamatta - South Creeks, and to the Enterprise zone west of Badgerys Creek Road and south of Elizabeth Drive
- Ensure sensitive land uses are located outside of airport ANEF 20 contours, and public safety areas contain low density, low risk businesses
- Coordinate development densities to balance urban structure outcomes with the height limitations of the OLS
- Retain Indigenous heritage items in open space where possible
- Respect and enable conservation of non-Indigenous heritage items
- Provide a connected urban grid that responds to topography, climate risks (such as flood and bushfire), allows a walkable environment and facilitates both rapid and frequent bus services
- Leverage the local distinctiveness of Luddenham Village and a continued place of residence and sustainable community
- Allow existing quarries and extractive industries to operate, facilitating circular economy outcomes



PROJECT PROCESS



A CO-DESIGN PROCESS

The Aerotropolis project has, at its outset, aimed to go beyond business as usual. The design process has continued that theme, promoting co-design as a mechanism to engage across technical disciplines, client groups and external stakeholders.

Initial workshops allowed the design teams and technical consultants to ascertain the key areas of opportunity and define spatial principles.

Two enquiry-by-design workshops were held with representatives across the Western Sydney Planning Partnership, and with identified stakeholders. These allowed design scenarios to be tested, for design objectives to be clarified, and for a preferred approach to precinct design to be identified.

Complementing the enquiry-by-design workshops, two community sessions were held to work through particular landowner aspirations and align those with the Aerotropolis strategic outcomes.

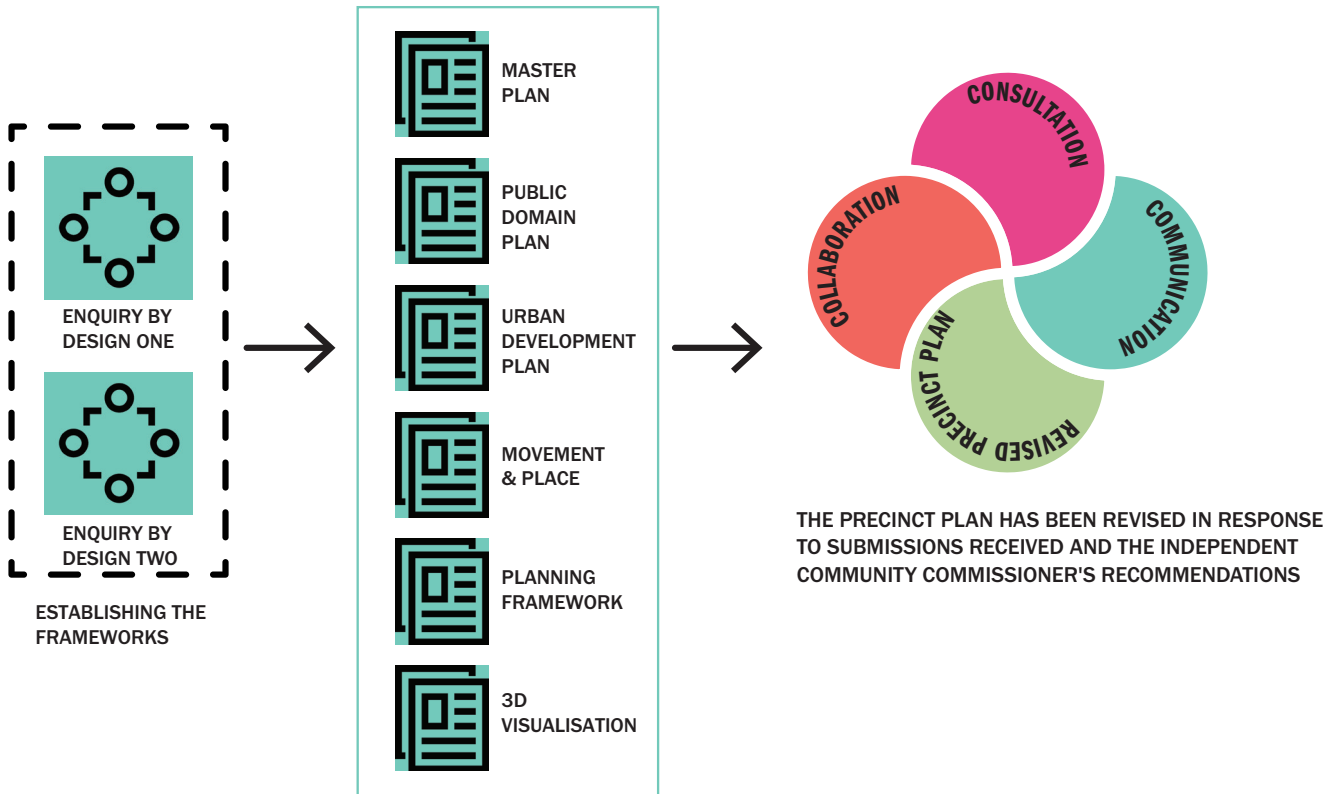
TECHNICAL WORKING GROUPS

Several technical working groups helped to shape the urban design frameworks. These groups addressed:

- Urban design
- Transport
- Environment and sustainability
- Water
- Urban economics and feasibility
- Servicing and land capability

The technical working groups comprised personnel from Councils, State Agencies and technical consultants.

The working groups met regularly throughout the design period to input to, review and refine urban design frameworks.



GANSW DESIGN REVIEWS

The urban design frameworks and associated content was presented to and reviewed by the Government Architect NSW throughout the project.

The four reviews focused on:

- Context, analysis and drivers
- Scenario development
- Integration across precinct boundaries
- Ensuring Design with Country and Landscape Led design outcomes

THREE URBAN DESIGN SCENARIOS

Each precinct group explored differing scenarios based on their particular contexts and precinct specific issues.

The three urban design scenarios prepared across the precincts focused on three themes in order to test ideas, objectives and outcomes:

1. Aerotropolis Core, Badgerys Creek and Wianamatta - South: Ownership; Creeks and Water; Coordination.
2. Northern Gateway: Existing Lot Structure; Western Sydney Grid; Two Grids.
3. Agribusiness: Connected Landscape; Landscape Buffer; Fragmented Landscape.

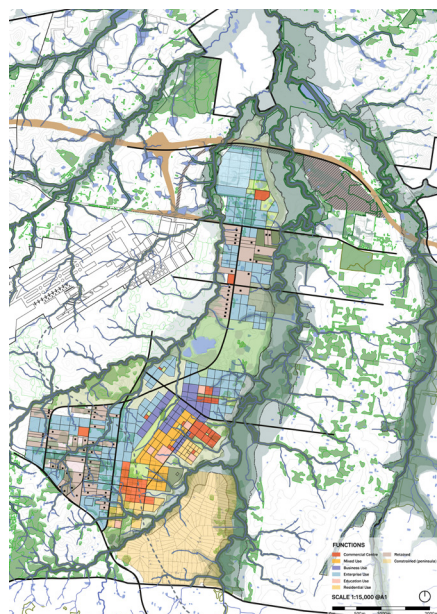
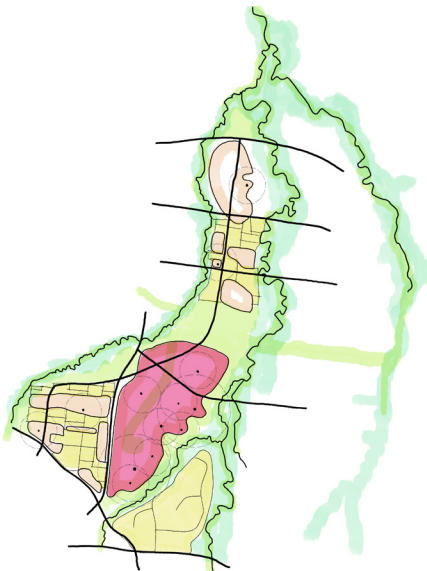
The scenario planning exercise tested design considerations and provided a mechanism from which stakeholders and the design teams could carry forward a preferred concept. This was more broadly tested during public exhibition, after which, the plan has been revised based on the written submissions received.

AEROTROPOLIS CORE, BADGERYS CREEK AND WIANAMATTA SCENARIOS

By Hassell

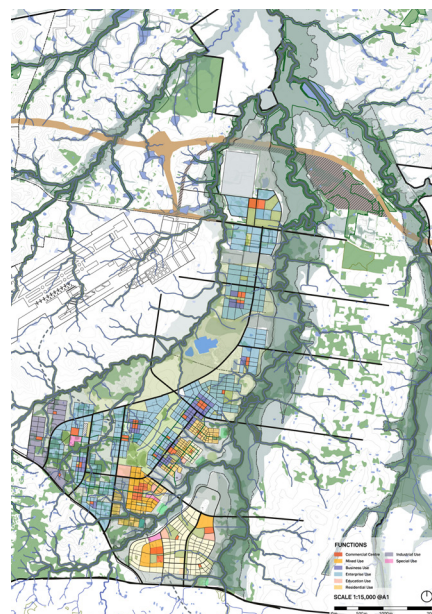
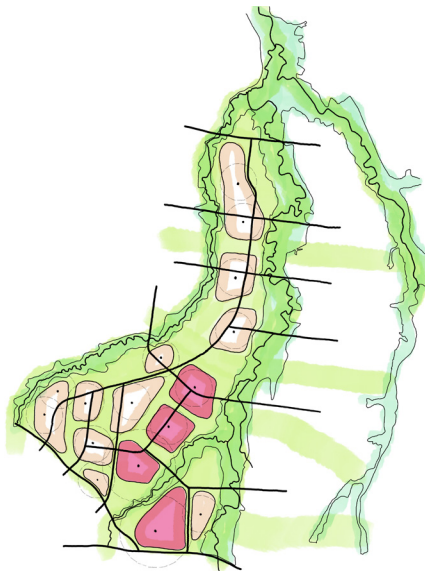
SCENARIO 1 - OWNERSHIP

- Development limited by fragmented land ownership
- Focused intensity to large land holdings
- No intensification south of Thompsons Creek in Kelvin Park neighbourhood
- A centralised regional park



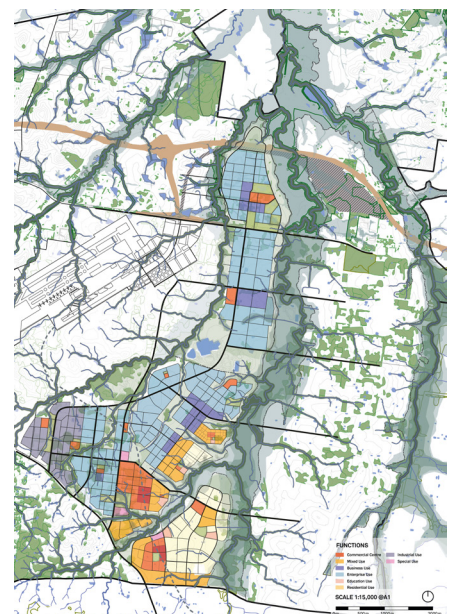
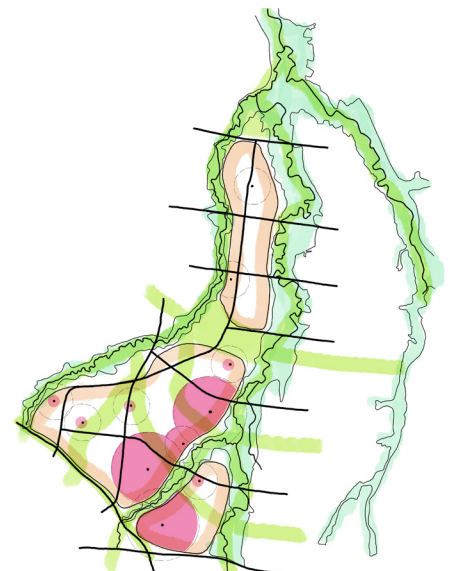
SCENARIO 2 - CREEKS & WATER

- Neighbourhood clusters enveloped by green corridors aligned to ephemeral creeks
- Intensity spread across each cluster, with greatest intensity around the Sydney Metro Western Sydney Airport Line station
- Additional station at Kelvin Park to enable development impetus
- A networked regional park system



SCENARIO 3 - COORDINATION

- Three development clusters each surrounded by a 'park' edge
- Intensity focused to Thompsons Creek and Metro Stations
- Green corridors along creek alignments are 'integrators' rather than 'separators'
- A centralised regional park

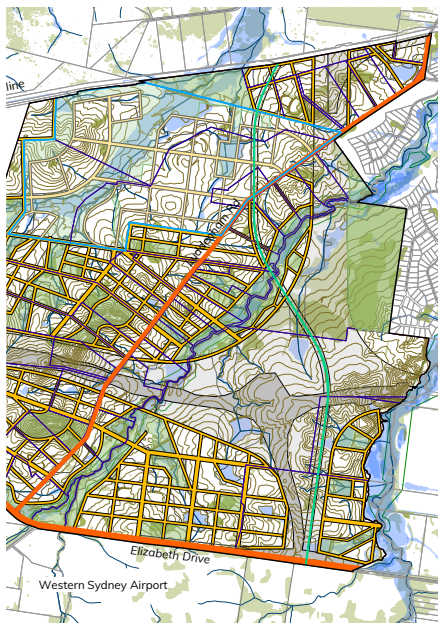


NORTHERN GATEWAY SCENARIOS

By Hill Thalix

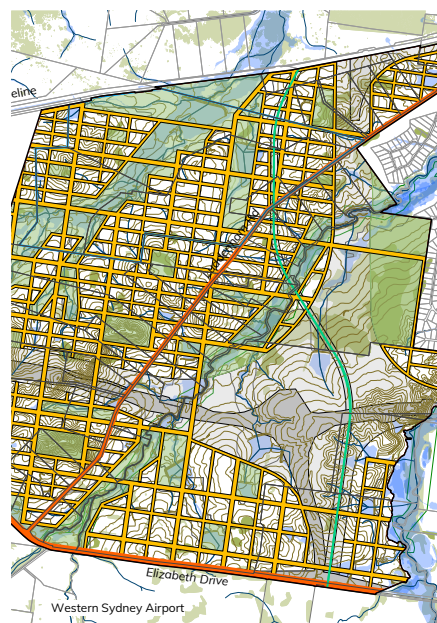
SCENARIO 1 - EXISTING LOT STRUCTURE

- Development and urban structure limited by fragmented land ownership
- Limited connectivity
- limited opportunity for creek to creek connections



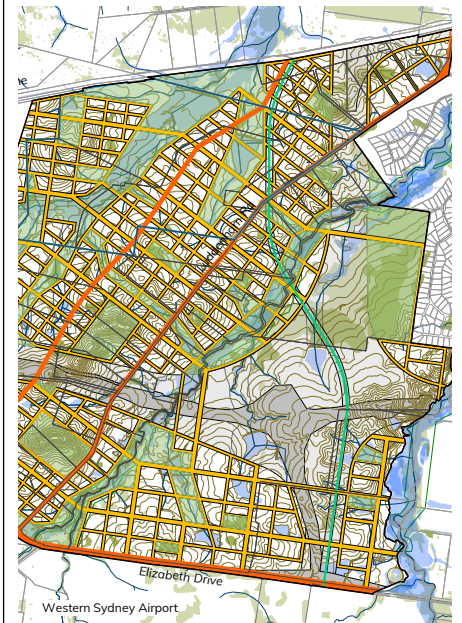
SCENARIO 2 - WESTERN SYDNEY GRID

- A more connected grid
- More reworking of creeks
- Optimal Orientation
- Difficult lot geometry becomes difficult along Luddenham road limiting development



SCENARIO 3 - TWO GRIDS

- A more connected grid
- less reworking of creeks and more opportunity to connect with Country
- Twin road allows alternate transport route and connectivity
- Optimal orientation along Western Sydney Grid. Orientation manageable along Luddenham grid

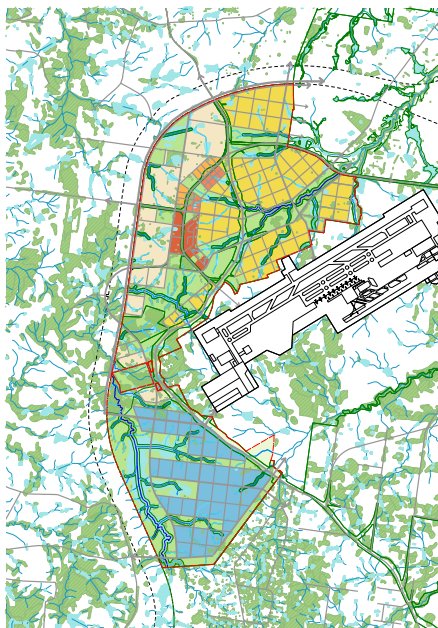
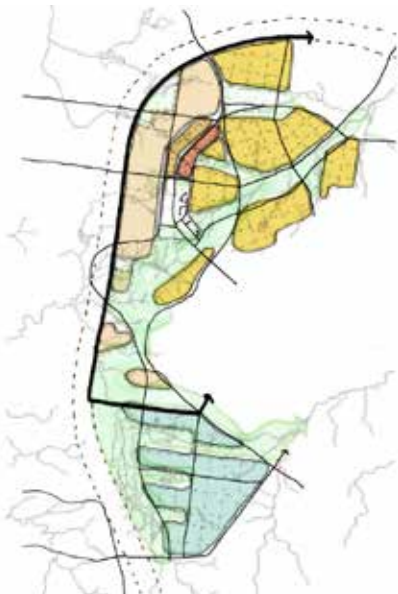


AGRIBUSINESS SCENARIOS

By Studio Hollenstein

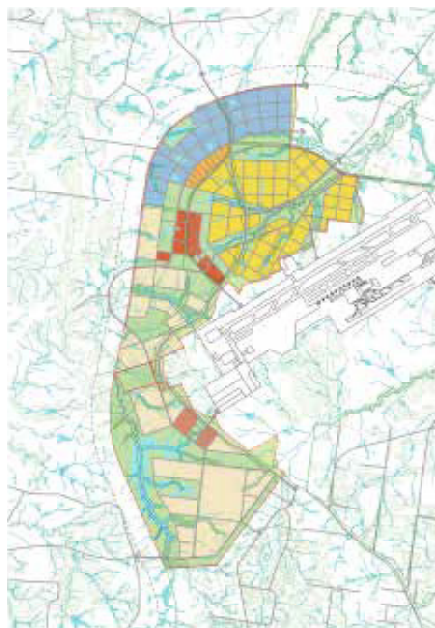
SCENARIO 1 - CONNECTED LANDSCAPE

- Land uses distributed to maximise connectivity with the airport freight entry
- Luddenham Village expands north with employment uses along the Northern Road
- Smaller centres are distributed throughout
- A connected landscape links Duncans Creek, Luddenham Village and Cosgroves Creek



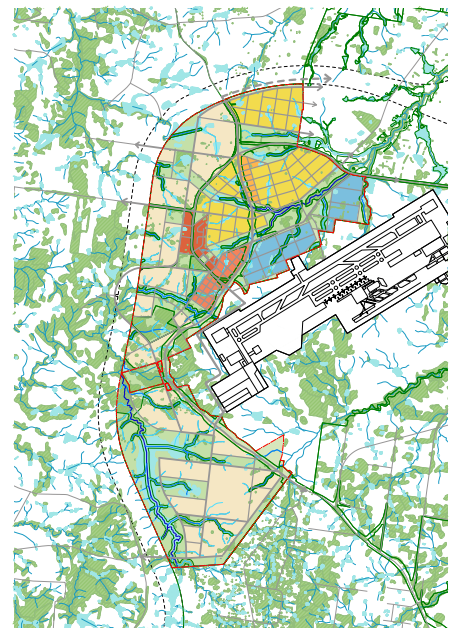
SCENARIO 2 - LANDSCAPE BUFFER

- Land uses distributed to maximise connectivity to the M12
- Two distinct centres at Luddenham village and another associated with the airport freight entry.
- A landscape buffer wraps Luddenham Village separating it from agribusiness land uses.



SCENARIO 3 - FRAGMENTED LANDSCAPE

- Land uses distributed to provide bonded connection to the airport
- Luddenham Village expands south with employment uses adjacent to the airport.
- Street pattern aligned more closely with land ownership
- Green corridors located along significant creek alignments.



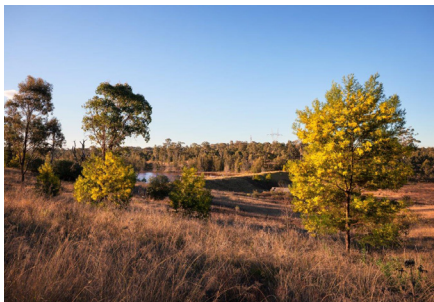
ENQUIRY BY DESIGN SUMMARY

The co-design process for the Aerotropolis allowed the design teams, technical specialists and stakeholders to understand objectives and orders of priorities in order to balance often competing requirements.

To ensure an outcome beyond business as usual, and to reinforce the Parkland City outcomes, key urban design principles were used to pass a high level value judgement against each scenario. To be clear, the scenarios were not intended to represent an intended outcome, but were mechanisms to test issues. In this regard, using the principles as a filter, each urban design team was able to establish a core foundation from which to prepare the urban design frameworks.

In summary, the enquiry-by-design process confirmed:

- Creeks to be retained within open space systems
- Local parks in ridgetops offer good opportunities to connect topography, creeks and landscape with Country
- A gridded street network with a hierarchy of movement corridors is required
- A distribution of centres, open space and amenity in order to allow liveable and 'workable' (jobs) neighbourhoods
- Enable employment density around the Sydney Metro Western Sydney Airport Line stations
- Enable density adjacent to amenity (open space)
- Retain and enhance vegetation with biodiversity values
- Enable amalgamation of smaller land holdings that facilitate a coordinated development outcome



Design with Country

- challenges of time, knowledge, ongoing engagement



A Holistic Approach to Water

- metropolitan scale strategy, cross-agency engagement, ownership and management



Integrated Infrastructure

- social, ecological, movement systems; impacts of planned infrastructure



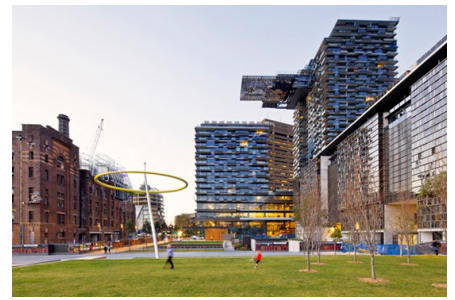
Delivering the Parkland City vision

- within airport operational requirements



Net Zero Neighbourhoods

- delivery mechanisms



Temporal and Spatial Questions

- phasing of development, considering land ownership, what's fixed and flexible



Potential Use and Place Conflicts

- urban typologies and relationship to site conditions



Quality Assurance at All Scales

- from strategy to delivery



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