

WIANAMATTA: WESTERN SYDNEY AEROTROPOLIS



Responding to Country with a landscape-led design approach to establishing Sydney's new major urban centre

View from Northern Road, Luddenham
Image: Studio Hollenstein.

Quick facts

Project type:
Precinct-scale master plan

Location:
Western Sydney, NSW

Aboriginal language landscape group:
Wianamatta /
Wianamattagal, Dharug

Client:
Western Sydney Planning Partnership

Project team:
Aerotropolis Core,
Badgerys Creek and
Wianamatta
Hassell, Djinjama,
Elton Consulting

Agribusiness
Studio Hollenstein, Taylor
Brammer, Ethos Urban

Northern Gateway
Hill Thalys Architecture +
Urban Projects, JMD design,
Bennett and Trimble,
Perkins&Will

Community engagement
Zion Engagement and
Planning, GHD



The Aerotropolis at Wianamatta is a new type of city for Western Sydney's growing community. Due its huge area (around 11 km²), and acknowledging the time it takes for urban centres to develop, a new approach to city-making is being implemented. This approach puts Country first, with complementary objectives of sustainability, liveability and resilience. The focus is fundamentally on establishing a 100-year vision.

Key outcomes

Healthy Country

The whole landscape system, including its interconnected natural systems and broader cultural heritage values, is embedded as a key structuring element for the Aerotropolis urban design framework.

Water systems have been recognised as being essential to the environment and its biodiversity, as well as social and economic functions, and they will help to keep the city cool.

The ecological function of the Wianamatta South Creek system will be enhanced through a connected network of open space designed to retain existing important vegetation.

Protecting Aboriginal cultural heritage

A reading of Country by Aboriginal designers has informed the design response across the whole project area. This includes understanding the story of Wianamatta and its cultural meaning as a women's place, respecting sacred waters, responding to the gentle undulating layering of place, and understanding that culture is the cure for sick Country.

Important sites of Aboriginal heritage significance have been retained, protected and connected in open space. Complementary to Aboriginal heritage, a broader consideration of Aboriginal cultural values has influenced the spatial form and structure of neighbourhoods, relationships to open space, retention of watery places, and considerations of topography.

Embedded in the urban design framework, the broader concept of the cultural landscape will influence future design processes and technical assessments.

Better places

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

This understanding is the foundation for a well-connected, walkable and liveable city supported by healthy, interconnected blue-green infrastructure and soil systems. Starting with Country is the key to the ongoing resilience, balance and health of this whole urban system.

Spatial implications / tips for designers

Landscape led: the broader landscape needs to be understood as a whole system, and this understanding embedded in the planning and design.

Shaped by water: water systems are vital to the environment and its biodiversity, and the liveability and resilience of the city.

Connecting land, water and sky: the Wianamatta South Creek system is an ecological corridor; the design needs to respond to key landmarks and the natural topography and landform.

Streets connecting with the landscape: visual and physical connections are important; streets can provide direct views to areas of open space, creeks or landforms.



**Aerotropolis Core and
Wianamatta South Creek
visualisation**

Image: Hassell / Arterra.

While the scale of the Aerotropolis is massive, as a system the project extends beyond its boundary. This place is part of Country, the interconnected and complex system of water, landscape, sky, topography, geology, soil, heritage and culture extending from the Blue Mountains across the plains of Western Sydney to the rolling hills and sea beyond. The urban design and landscape structure of the Aerotropolis plan is underpinned by Country.

A series of Aerotropolis precinct plans establish an urban design framework for each of the initial precincts – Aerotropolis Core, Badgerys Creek, Northern Gateway and Agribusiness, along with adjacent parts of Wianamatta South Creek.

The precinct plans build on the Western Sydney Aerotropolis Plan. Together, these plans align with NSW Government planning policy, including the Western City District Plan, the Western Sydney City Deal and the Greater Sydney Region Plan. A key objective of this planning framework is to ensure the Aerotropolis design is informed by Country-centred design processes and practices, as advocated by the GANSW Connecting with Country Framework.

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

— Danièle Hromek, Djinjama

Understanding Country through culture

The name Wianamatta tells us this is the place of the mother creek, a place of fertility and related to the cycles of life. Female voices should help guide the decision-making for this place.

Women have strong enduring relationships with water, from creating watery spaces within their bodies that allow for new 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.

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 Western Sydney's basin, from small creeklets up to larger pools and rivers, to the massive regular floods.

Water and geology are connected and have long established a relationship with this land through use of ochres and associated trade. 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. This Country tells us we must respect the dynamic movement of water; its geology means water will find the path of least resistance. If there is a block, a new path will be found. Designing for water and for flooding is important.

The non-Indigenous naming of Emu Plains indicates what was once found in this place. Emus and kangaroos were attracted to these plains because the landscape was designed and managed by Aboriginal peoples. Colonial records and visuals describe spaces between groves of trees, clear of scrub or undergrowth. This landscape was shaped and managed with cultural burning. Cool burns reduced the risk of bushfires, now prevalent in warmer parts of the year. Songs and stories tell the right time for firestick farming. Ongoing opportunities for cultural land management are now being explored through masterplanning projects across the Aerotropolis.

Flora and fauna related to this site are now critically vulnerable due to the impacts of colonisation and are susceptible to invasive species. For this reason, great care and sensitivity is critical for 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. There are many opportunities for cultural maintenance as an antidote to problematic colonial practices, creating space to share culture and knowledge about Country.



Master Plan
Image: Hassell.

Mapping layers of place

The Aerotropolis is in a richly diverse setting of ecological, historical and cultural meaning. This is the home of Dharug Peoples – a place of settlement, sustenance and interaction for millennia. It is a place of creeks, streams and rolling hills at the heart of the Cumberland Plain.

Connecting with Country across the vast area of the Aerotropolis has been helped by mapping and understanding layers of place. The precinct plans seek to protect and enhance important cultural and ecological spaces, to provide for long-term infrastructure needs, and to create a sense of local ownership and meaning.

Blue-green infrastructure

- 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 flood prone area are vital to the hydrological resilience of this place.
- This is 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. Conservation of the Indigenous and native vegetation is vital to the ecological resilience of the area.
- There is opportunity for generous local, district and regional green spaces with outdoor amenity, promoting the biodiversity of this place. Conservation needs to be balanced with access to green spaces for all to enjoy.

Country

- Understanding and caring for Country is expressed through:
 - designing with a Country-centred approach – exploring the idea of ‘Country-led urbanism’
 - understanding the site’s flora, fauna, cultural heritage, and hydrological features.
- Engagement with Aboriginal community needs to continue on an ongoing basis to ensure stakeholders are involved in all phases of decision-making and ongoing operation and maintenance.

Connectivity

- The vision for the Aerotropolis is for a diverse, dynamic and sustainable global city that supports a high order of employment-focused uses, taking advantage of its connection to the airport.
- The Aerotropolis plan provides a connected framework for organisations focused on emerging and future technologies, such as the Advanced Manufacturing Research Facility.
- Sydney Metro Western Sydney Airport Line station and development and transport infrastructure will greatly contribute to the Western Sydney economic corridor.
- Physical connection to Country will persist through careful and purposeful allocation of infrastructure, associated community facilities and open space.

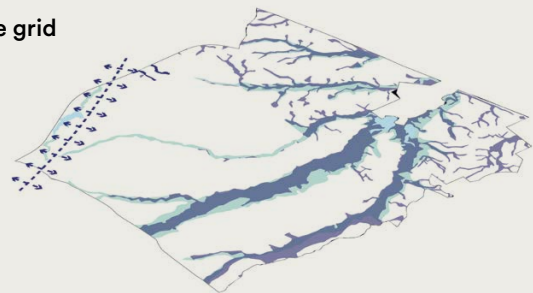
Community and place

- The Aerotropolis is envisaged as a thriving and inclusive urban centre, providing a safe day-to-night economy for workers, residents and visitors.
- Priority will be given to creating a high-quality public realm supported by adaptable infrastructure, site connectivity, and access to green spaces through amenity-oriented design.
- Opportunities will be provided for Dharug Peoples to practise culture on Country.

Layers of place

Image: Hassell.

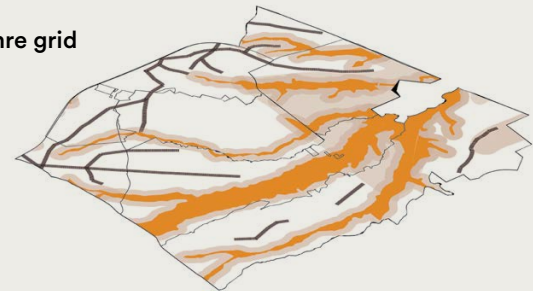
Blue grid



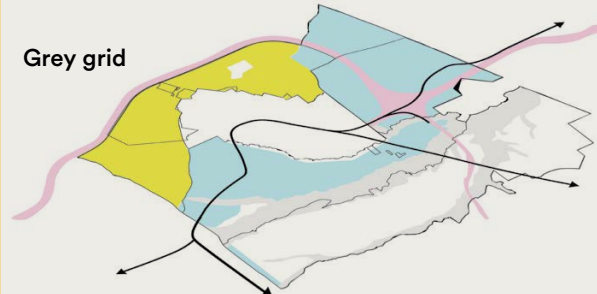
Green grid



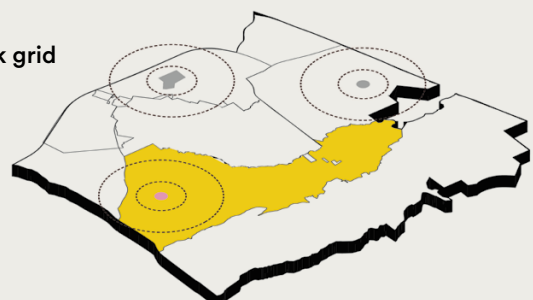
Ochre grid



Grey grid



Pink grid





Regional playing fields visualisation

Image: Hassell / Arterra.

Design with landscape

The landscape elements of hills, ridge lines, alluvial creeks, dams, open parkland and forested areas embody the intangible and the visible: a connection with Country, a Cumberland Plain character, and a unique sense of place: this is Western Sydney – the parkland city.

An interconnected natural system of blue-green infrastructure is the core structuring element of the Aerotropolis urban fabric. The main creeks – Wianamatta (South), Badgerys, Kemps, Cosgroves and Duncans – will be the spine of the parkland city, while smaller tributaries define the public realm and open space framework.

As well as being the foundation for a well-connected, walkable and liveable city, this approach retains and re-establishes the ongoing resilience, balance and health of the whole blue-green system, including its soil networks. The blue-green corridor network will preserve the landscape's capacity to retain water, provide biodiversity corridors for wildlife, and reconnect remnant endemic fauna and flora communities.

A future-focused and restorative vision

The Aerotropolis exemplifies sustainable, resilient and inclusive city making. It will be a place of great opportunity, with the Western Sydney International (Nancy-Bird Walton) Airport offering connections to the globe for a multitude of future-focused businesses.

It will be a place of inclusion, where everyone has access to the best of Western Sydney's amenity. Rapid transit and world-class parkland will provide a launchpad for thousands of new jobs, establishing the Aerotropolis Core as the place to be in Western Sydney.

This is a place for future generations. The city framework for the Aerotropolis focuses on custodianship. What we do now sets in motion a path towards a sustainable city that will nurture people, landscape, culture and Country.

Wianamatta custodianship – A sacred place for Aboriginal people, much of the landscape will be retained as open space and enhanced for its water, ecology and recreation functions. The Wianamatta holds the Aerotropolis. As a place of water, it is the life source for the city, and its conservation is fundamental to Western Sydney's future.

Knowledge rich and socially inclusive – The accessibility, export, amenity and landscape qualities of the Aerotropolis will provide ideal conditions for new business enterprise. Knowledge-intensive, high-quality, export-oriented jobs are expected to form a key tranche of the local economy. The Aerotropolis is for everyone. Easily accessible, its urban and parkland landscapes will also offer abundant opportunities for Western Sydney residents.

Gateway to the globe – The city will open a new front door to Sydney and Australia. Its unique landscape setting will provide a fundamentally Western Sydney arrival experience, encouraging visitor attraction and thriving local businesses.

Clustered precincts offering a connection to place

The Aerotropolis Core will contain a dense, mixed-use city centre, complementing the metropolitan cluster of Penrith, Liverpool and Campbelltown. The city centre will focus on both the new metro station and the Wianamatta South Creek system.

The Badgerys Creek precinct will be employment focused. Flanked by Badgerys Creek and Wianamatta South Creek, these major green corridors will provide amenity for future workers.

The Wianamatta South Creek precinct will accommodate 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 for active recreation.

For the Northern Gateway, the alignment of existing creeks and significant riparian floodplains, the conical hills and natural vegetation have determined the alignment of the street network and the block structure. The Sydney Metro station at Luddenham will form its central hub, with the surrounding neighbourhood integrated into the landscape.

The Agribusiness design framework will support logistics and food production and expand on the agricultural and horticultural history of the area, continuing to provide food security and supplying Sydney and export markets. The plan is structured in response to the unique topography, the predominant north-south ridge line 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 Badgerys Creek to the east, and Duncans Creek and the Mulgoa Valley to the west.

A new approach to blue-green infrastructure

The Aerotropolis will have a compact urban form, where centres and local communities are connected by walking, cycling, interaction and collaboration. A compact urban form minimises the urban footprint and leaves more land for open spaces, waterways and recreation areas. It allows people to access a diversity of uses within walking distance of centres, open space and transport.

The Aerotropolis open spaces will accommodate a range of functions beyond active recreation. These include:

- water: stormwater flow paths and detention basins along ephemeral creek corridors to the Wianamatta system
- perviousness: areas of landscape where rainwater can permeate the soil profile, helping minimise stormwater run-off
- urban cooling: areas for tree canopy and green spaces that provide transpiration to cool surrounding areas
- heritage: celebrating culture and promoting access to Country through the cultural landscape – including listed heritage sites
- biodiversity: providing for the conservation and enhancement of important vegetation communities, and including corridors for wildlife migration.

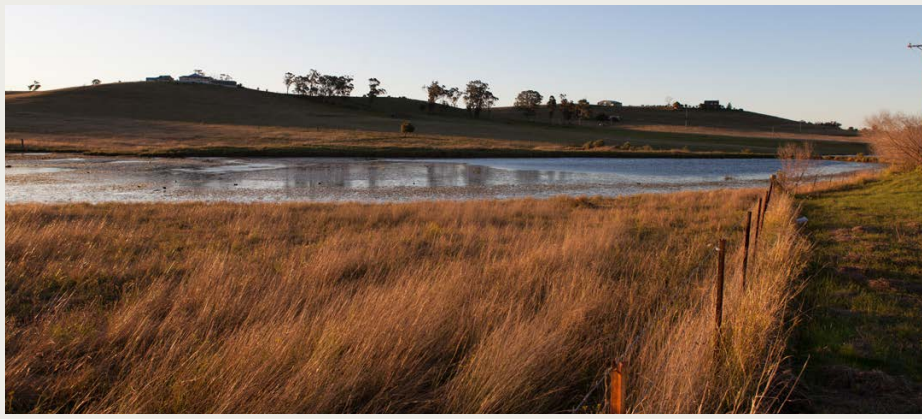
The core blue-green elements of the urban framework are:

- alluvial corridors
- the filigree of creeks and dams
- a rhythm of undulating ridge lines
- remnant vegetation with biodiversity values
- the context of the existing broader landscape
- Cumberland Plain character – grasslands with groups of trees within a gently undulating landscape
- views beyond the precinct to landscape landmarks, for example, to the Blue Mountains
- open views to big sky.

Aerotropolis city centre visualisation

Image: Hassell / Arterra.





Farm dams and ridgelines within the Northern Gateway precinct

Image: Hill Thalix.

Cumberland Plain Woodland

Image: Studio Hollenstein.



Managing water in the landscape

Reducing stormwater run-off volumes requires a shift in stormwater management. The design will incorporate a combination of at-source controls, stormwater harvesting and vegetated water-sensitive urban design elements including biofiltration and wetlands that can mimic the existing hydrological characteristics of the rural catchment.

Stormwater management will incorporate a combination of:

- on-site measures such as increased perviousness and landscaped areas
- on-street measures to maximise the retention and evaporative losses of stormwater through vegetated systems including passive irrigation and biofiltration street trees
- regional stormwater infrastructure that includes naturalised trunk drainage channels and wetlands with a centralised reticulated stormwater harvesting scheme.

Other initiatives to protect and enhance the water system include:

- vegetated riparian zones protected in open space
- no development within areas with highest flood risk
- ensuring streets have generous permeable surface areas for water penetration and to enable the growth of canopy trees in the interests of urban cooling
- providing planting diversity complementary to the Cumberland Plain ecological system.

Designing for a sustainable future

Connecting and designing with Country is a process to truly connect with place and allow the creation of unique and fulfilling neighbourhoods. It's a method to learn from the oldest culture on earth, and to play a small part in redressing our problematic colonial development practices. It's also a method to help us move towards sustainable development. The design of the Aerotropolis precincts seek to support cyclical resource flows and strive for a net positive outcome across ecological, social and economic sectors. By listening to and designing with Country, this early planning phase of the Aerotropolis seeks to set the foundation for future sustainability.

Key learnings

Project teams need to research and establish their connection with Country to inform a careful and considered design proposition. Take time to understand long-standing interrelated systems of environment, water, ecology, soil, landscape, topography, culture and people. To do this, you are likely to need to work in partnership with Aboriginal cultural advisers, local community and design specialists.

What we design and build on a site has impacts far beyond. Sensitive Country-centred design allows us to care for Country.

Further resources

Western Sydney Aerotropolis, Department of Planning and Environment website:

<https://www.planning.nsw.gov.au/plans-for-your-area/priority-growth-areas-and-precincts/western-sydney-aerotropolis>.

Western Sydney Aerotropolis Precinct Plans, NSW Planning Portal website, key technical documents:

<https://www.planningportal.nsw.gov.au/WSAPP>.

Credits

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