

WESTERN SYDNEY INTERNATIONAL AIRPORT

LINKING WESTERN SYDNEY TO OPPORTUNITY



Executive Summary

The federal government's green light for Badgerys Creek to be the location for Sydney's new airport opens a flood gate of opportunity for greater Western Sydney. This report outlines a community centred approach to airport design encouraging distributed regional growth around a mass transport hub.

an airport for the people of Western Sydney

The report recognises that the success of the Western Sydney Airport - and its ability to become an equal of Kingsford-Smith - will be linked to the growth of the Western Sydney region. The report proposes a long term planning approach that integrates the needs of the airport, the Western Sydney community and the Western Sydney economy to promote mutually supportive growth.

Our design presents a concept focused on the user experience, the needs of the community and the growth of the region. Better transport, more amenities, more parklands, more opportunity.

lean design

The terminal design presented follows a Lean Airport Model to reduce airport capital and operating costs while providing an exceptional user experience. The user experience is optimised by offering streamlined check-in and security, minimising dwell time. In the long term, passenger processing will be carried out off site.

The user experience is enhanced by the availability of a detached 'snail zone'. A separate slow area available to all passengers, but designed to provide transit passengers with a relaxing café, bar, dining experience with some light retail.

'runway in the rough'

A minimal impact approach is adopted for the airport layout and construction with the aim of creating a 'runway in the rough' feeling. The reduced terminal footprint achievable with the Lean Airport Model is complemented by adherence to sustainable design principles throughout.

distributed Aerotropolis

The proposed layout and zoning references a recent urban design a strategy of placing airports at population centres with the intent of connecting workers, suppliers, executives, and goods to the global marketplace. We have expanded this concept by defining the airport as a regional transit hub, central to a number of population centres, encouraging decentralised growth in line with State strategy. This approach is referred in our report to as a Distributed Aerotropolis.

A Distributed Aerotropolis design allows the area around the airport to be zoned in a more balanced manner, providing for the immediate commercial and industrial needs of the airport whilst creating a more extensive rural and parkland zoning to maintain the area's natural feel and allow for potential future expansion.

transport hub

Linking the airport to the Western Sydney Population Centres is a key element to the Distributed Aerotropolis model. The airport will form a central transport hub for an interconnected Fast Transport System with design criteria of 10-15 minutes to each of the six Western Sydney Population Centres. New freeways will be introduced to achieve a

maximum 30 minutes by vehicle.

The current Transport for NSW strategies for rail access to the Western Sydney growth centres will be extended and augmented. The Fast Transport System will include a Fast Rail Service between the Western Sydney airport and Kingsford-Smith airport, then through to the CBD. The transfer time between airports will initially be 20 minutes reducing to 15 minutes when demand allows a dedicated service, offering transit times currently only observed between co-located terminals.

To minimise local congestion and pollution, vehicle travel to the airport will be discouraged by tolling the airport access road and high prices for parking.

facilitating commercial success

The Lean Airport Model reduces traditional airport capital expenditure and operating costs. When coupled with the Fast Transport System it assists the integration of the airport with the Western Sydney Region, allowing passengers to access amenity within the population centres before travel, after travel or during transit.

The reduction in dwell time encourages passengers to spend more time in the Population Centres reducing the revenue and time spent available to the airport through the traditional airport commercial models, which rely on retail for up to 28% of their revenue.

In our proposed Lean Airport Model, land side passenger processing and most air side processes, will be common use and run by the airport. This will eliminate the traditional fixed land based costs for airlines, leaving minimal variable costs. The airport will be able to manage the land based airport processes more

efficiently than the traditional multiple airline model. This reduces the combined operating costs of all parties. Savings realised by airlines will then be claimed by the airport as a revenue stream through a usage charge, without the net cost to the airline changing.

It is proposed that despite the loss of retail revenue, the reduction in capex and opex associated with the Lean Airport Model, combined with progressive airport revenue structures will deliver a return on investment equivalent to traditional airport commercial models .

One approach examined for additional revenue streams is the creation of an entity tasked with facilitating strategic alliances between community groups, the government, the airport, financiers and other private enterprise that present the opportunity to promote growth and produce revenue for the airport and in the population centres.

sustainability through community

An airport for the people must have that people's input. A thorough revision of the EIS is proposed to complement and inform our design concept. The new EIS will include a fresh beginning on the community engagement work focused on defining what the community needs and early identification of potential for alliances.

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Introduction

The Federal Government's recent announcement that Badgerys Creek will be the location for Sydney's new airport has created considerable debate. Consult Australia's Futurenet Business Leaders Course has chosen this topic for its annual course project.

The following report offers a design concept for this new regular public transport airport. The concept was developed in response to a hypothetical request from the Western Sydney Airport Alliance (WSAA) to a consulting and project management group DFNP Consultants. DFNP is a team of professional consultants formed exclusively to respond to this brief as part of the Futurenet course.

Our approach to designing Western Sydney airport was to closely follow the WSAA brief with a focus on the needs of Badgerys Creek residents and those of the broader Western Sydney community. Our intent is to offer a holistic airport design concept that is immediately commercially viable and whose long term success is interrelated with the growth of the Western Sydney region.

Western Sydney has been identified as the largest NSW growth centre. Forecasts suggest the Greater Western Sydney population will outnumber the rest of Sydney by 2026. Development of an airport at the Badgerys Creek location will complement and encourage growth in the region by providing jobs to local residents - both directly and through related business around the airport - and by bringing people to the area. Symbiotically, growth of the Western Sydney region will support the success of the airport.

The DFNP Concept is a practical framework for the creation of Facilitated Alliances, within which a focus on the needs of the community will promote both the success of the airport and sustainable growth in the region.

Part 1. The Vision

‘Western Sydney International Airport, linking Western Sydney to opportunity.’

01

01 The Vision The Community

A Story about the future of Western Sydney

The DFNP Concept is founded on the belief that a new airport at the Badgerys Creek location should be an airport for the people of Western Sydney. The intent of our approach is to prioritise the needs of Western Sydney residents leading to an increased quality of life and organic sustainable growth.

The DFNP Concept is a development model that drives integrated growth in the region by identifying groups with complementary objectives, then facilitating alliances between them. We believe that focusing on the needs of local people and finding the synergies between their needs, the needs of the airport and the needs of the wider Sydney community, will optimise the commercial success of the airport in the long term and promote truly integrated and sustainable growth in the Western Sydney region. This report describes an approach to airport design where the project requirements are based on the needs and desires of the community and the airport users. This provides a focus point, allowing these needs and desires to be

considered at all stages of project development.

Addressing Community Concern

The consultation process carried out as part of the 1997 Environmental Impact Statement identified a number of key community concerns, which can be summarised as follows:

- _Air quality impacts on community health
- _Water quality impacts on community health
- _Noise impacts on community health
- _Loss of lifestyle and amenity - communities nearby identify with an outdoor lifestyle - noise and air pollution plus extra traffic would impact this lifestyle

The DFNP Concept seeks to address the community concerns through a combination of continued community engagement, environmentally sustainable airport design and sensitive urban planning. Summarised here and explained in detail later DFNP proposes:

Air quality

- _Continued engagement and education regarding air pollution

- _Minimised taxi and aircraft dwell time
- _Air filtering vegetation retained or planted in the airport and it's surrounds
- _Discouraged vehicle traffic by providing an efficient Western Sydney Transport Network

Water quality

- _Continued engagement and education regarding water pollution
- _The majority of airport area will be undisturbed
- _All runoff from airstrips and taxiways will be captured and filtered

Noise impacts

- _Careful airport zoning and flight planning
- _Continued community consultation regarding flight times and curfews

Loss of lifestyle and amenity

- _Maintain the rural feel by zoning and implementing buffer zones
- _Minimise traffic to the area by providing an efficient Western Sydney Transport Network
- _Create more parkland areas
- _Increase amenity through the Distributed Aerotropolis approach
- _Increase amenity by providing an

efficient Western Sydney Transport Network linking to all Population Centres and the to CBD

Connecting the past and the future

DFNP believe that a story about the future of Western Sydney should acknowledge the region's past. The 'runway in the rough' approach is based on minimal impact to the local environment. Thorough heritage surveys of all proposed construction sites will be carried out in consultation with the land's traditional owners and the plans will be changed if culturally significant sites are identified. The approach to zoning, which includes a significant buffer zone around the proposed airport site will allow layout rearrangement as required.

DFNP acknowledge that consultation with the Dharug people as part of the original EIS was poor. The DFNP Concept recommends renewed consultation with the area's traditional owners including the agreement of a name that is appropriate to the facility's past and future.

Improving quality of life

In contrast to 'standard of living' which is generally defined in terms of income, 'quality of life' is a measure of general well being. Apart from financial stability, quality of life includes many intangibles such as access to amenities, access to transport and the quality of the surrounding environment. DFNP has used quality of life to guide decision making in the development of the DFNP Concept. Assessment on how development options impact the quality of life of the Western Sydney community have influenced the sustainable design, decisions on zoning, our approach to developing transport infrastructure and was a key driver in the creation of the Distributed Aerotropolis concept.

01 The Vision The Airport Precinct

Minimalist approach

DFNP have adopted a Lean Airport Model. The DFNP Concept provides an optimal user experience by minimising airport dwell time. Passengers will arrive under the terminal via a purpose build Fast Transport System and will move seamlessly to their aeroplane seat with a few taps of their mobile phone, airport card or boarding pass. A relaxed cafe style Slow Space will be available for transit passengers or those who are just looking for some quiet time in their busy day.

The user experience described above is supported by modern passenger management systems and a unique drive through airport strategy. All of which promote an exceptional user experience, achieve high flight throughput and reduce airport capital and operating costs.

Environmentally Sustainable Design principles

From not so far away the airport will look like undeveloped park land or a rural area. One low profile terminal building will stand in the middle of the rough, the terminal's graceful curves and long contoured boarding arms surrounded by low natural shrubs. Built with sustainable materials and low energy building services, the terminal building and surrounding infrastructure are designed for minimal visual and environmental impact.

The area immediately surrounding the airport and within the sound level contours unsuitable for residential the zoning will be zoned rural or bush land. An exception being the area immediately to the east of the airport site, which will be dedicated to airport related industry. The industrial zone will be surrounded circumferentially by a commercial zone.

All new infrastructure will be low profile design and surrounded by bush land buffer zones.

Ease of access

The most obvious factor to success of the Western Sydney Airport is how many people use it. All else being equal the level of take up will be dependant on access. Even the subjective user experience will be largely based on the passenger's perception of convenience.

The DFNP Concept proposes the development of a Fast Transport System, an extension of the State Government's current infrastructure planning for Western Sydney, to ensure that transport between the Population Centres and to the airport is convenient. We propose that infrastructure upgrades should focus on rail to limit the increase in vehicle traffic in Western Sydney in general and to the Badgerys Creek location in particular.

The Western Sydney Airport will become a major transport hub for the region and will be linked to Kingsford Smith airport and the Sydney CBD by a Fast Rail Service.

This two armed approach simultaneously links the new and

existing population centres in Western Sydney to each other and to the airport, and provides a fast transit link to the CBD.

The DFNP Concept for transport will:

- _Make it feasible for weekday commuters to travel via Western Sydney Airport.
- _Make it feasible for international travellers to transit to an international or domestic flight at Kingsford-Smith.
- _Reduce congestion on Sydney's most congested public transport route.
- _Promote residential growth through improved quality of life.
- _Promote commercial growth through better access to and between the Western Sydney Population centres.
- _Encourage airport utilisation through regional residential and commercial growth.
- _Promote airport use by travellers in Greater Sydney due to convenience of access.

01 The Vision The Region

'The airport and the region in partnership to promote interdependent growth'

Economic Development

Development of an airport in any location will increase the economic activity in its immediate location. The DFNP Concept seeks to extend this effect outwards from the airport to an interconnected network of recognised population centres in the region. This will be achieved by a two pillar approach:

- _ Facilitating strategic alliances between the community, the airport, the private sector and the government that specifically promote a symbiotic growth of the airport and commercial development in the population centres.
- _ Establishing a comprehensive transport network between the airport and the Population Centres.

Airport supporting the Population Centres

The Kasarda Aerotropolis Master planning approach to structuring community and commercial growth around an airport is applied and the principles are adapted. We adopt the Aerotropolis concept of interlinking airport and community growth and apply it to the distributed community of Western Sydney. In the DFNP Concept the airport still feeds community and commercial growth as a central transport hub, but rather than feeding one community from a location central to that single community, the airport feeds multiple population centres.

To successfully implement a Distributed Aerotropolis Model and allow the airport to benefit reciprocally from the growth in the distributed population centres an effective transport network is required. The DFNP Concept leverages Transport for NSW plans for expanding the road and rail network within Western Sydney and proposes extensions to this infrastructure to effectively service the two new population growth centres and the employment lands.

Population Centres supporting the airport

At the core of the DFNP Concept is the formation of Facilitated Alliances to tackle novel opportunity for development.

DFNP propose that as part of the airport development, consultation is carried out between the airport and potential alliance partners including community groups, private enterprise, schools, hospitals and all levels of government to identify potential synergies on which to base an alliance.

As an example, in its most mature stage, the Lean Airport Model moves its check in facilities off site and into custom check in areas located in each of the Population Centres. Check in will be done at the remote site and the passenger will be free to shop, eat and relax before boarding a Fast Transport Service train to the terminal before walking directly onto the plane. To achieve this a mature and integrated relationship is required between the airport, the transport operator, a services company and the leaseholder in the Population Centre.

Part 2. The Concept

'Extending beyond the airport fence, Western Sydney Airport provides an integrated transport system centred on an airport hub, fostering growth in the recognised Sydney population centres and improving the quality of life for Western Sydney residents.'

02

02 The Concept Terminal Design

'A lean transport hub, functional in its planning, facilitating efficient, seamless connection to the world and beyond'

Key Design Drivers

- _ Lean, efficient, transport Hub
- _ Interconnected, seamless end-to-end experience
- _ Sustainability across all facets.

Lean Terminal Design

The airport proposal adopts a radical aircraft processing strategy devised by Buro fur MEHR .

This drive-through concept provides numerous benefits that align with DFNP's overall strategy. Efficient innovative aircraft processing, compact terminal space requirements and efficient land use are fundamental to minimising the impact on the local environment.

It's level of infancy is a key point of difference that the Western Sydney Airport would benefit from stamping its mark as Sydney's major airport of international standard, not just Sydney's second, subsidiary to Kingsford Smith.

The 'common facilities' front of house model promotes harmonised passenger processing systems, and the 'production line' gate configuration reduces the required

number of gates by two-thirds.

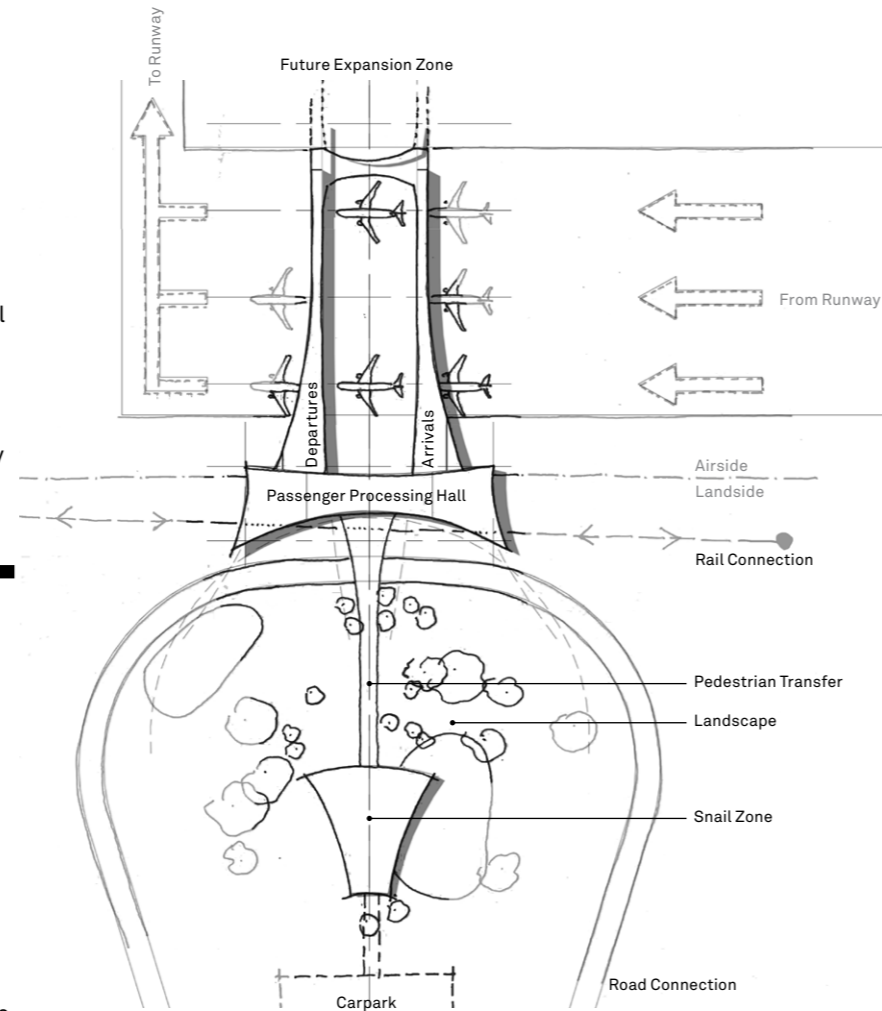
Challenges associated with the model are present, but thorough planning, engineering and development can overcome such challenges.

Safety with direct aircraft/terminal building cross-over present potential insurance issues, and precise scheduling systems, and reliability are crucial to success. Redundancy will also be necessary should one production line be disabled.

Passenger Experience

Passenger Experience is fundamental to the success of the airport and its Lean Airport model.

At an operational level this is the responsibility of the airline, the airport operational staff and their day-to-day execution of tasks required to deliver passenger and freight movement services. However planners, designers, architects and engineers hold a fundamental responsibility to create functional, enjoyable spaces, with a strong sense of place that promote heightened levels of passenger experiential satisfaction.



It has been identified by many experts that "the entire end to end airport experience needs a major overhaul". This experience no longer starts from the check-in gates, but instead at the ticket purchasing stage – weeks or months before travel.

Other key considerations include:

- _ Passengers like to have more control over their experience.
- _ Passengers expect to be better informed. This means being fed live, relevant, up to date interactive information.
- _ Passengers expect a seamless airport experience.
- _ Passengers want to feel empowered
- _ Passengers expect a more personalized experience.

The key is to make the airport an enjoyable part of the journey, not an obstacle between the passenger and their final destination.

Common Use Facilities

Land-side passenger processing functions, such as check-In points, baggage drops and assistance points will be provided as unbranded, common use facilities that will allow the airport to assign these facilities as required depending on crowd load, specific airline requirements and

flight scheduling.

This increased flexibility provides a more efficient use of terminal space, and ultimately contributes to a more sustainable solution avoiding vast unutilised proprietary airline passenger processing areas.

Adopting this strategy does require the harmonization of operational processes, and requires the willingness of those airlines involved not to standardize, but to streamline and align processes such that common use facilities can be utilized.

With the airport operating all land based activities, the airlines are relieved of all of the traditional costs associated with leasing and operating land side processes. The airport is now responsible for these costs, but is able to share resources across flights and airlines and carry out the same volume of operations more efficiently. The airline costs decrease and the airports costs increase by a lesser amount, with the difference being recovered by the airport as a usage charge.

Once the usage charge is applied, the airline's total costs to use Western Sydney airport will be similar to the traditional model. Because there are no fixed costs associated with the Lean Airport, the airlines will have

greater flexibility in flight scheduling, leading to a more competitive marketplace (including a drastically reduced barrier to entry) and higher usage for the airport.

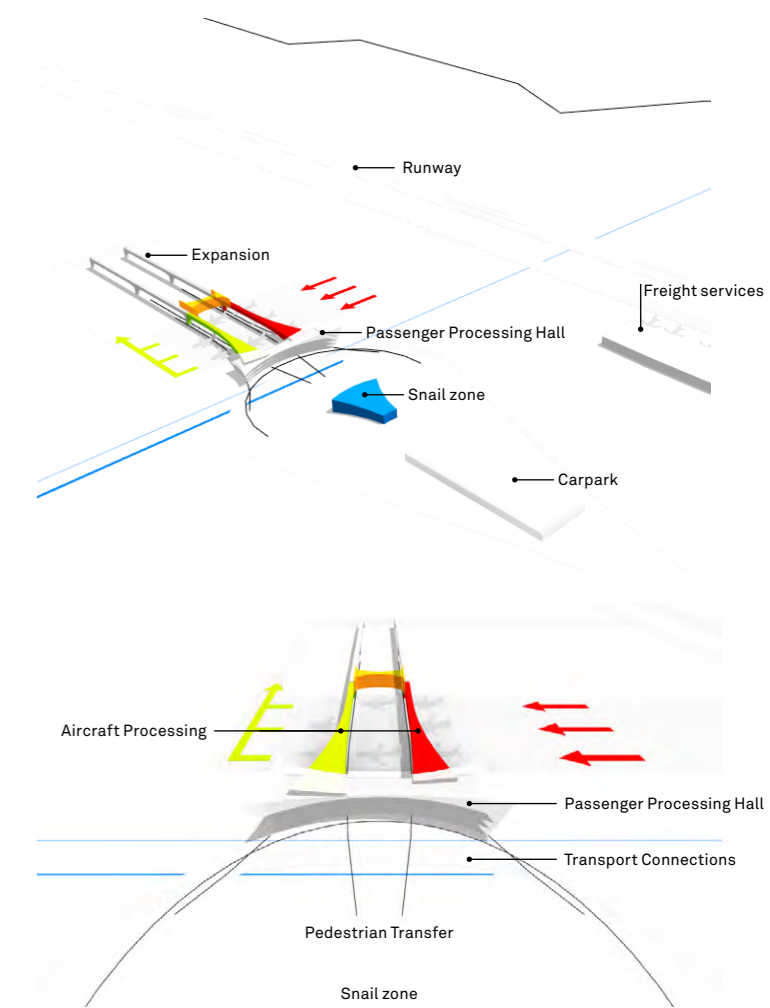
It is proposed that despite the loss of retail revenue, the reduction in capex and opex associated with the Lean Airport Model, combined with progressive airport revenue structures will deliver a return on investment equivalent to traditional airport commercial models.

Streamlined passenger processes

Passengers arrive at the terminal via below ground rail, or on grade road connections. The large processing hall in which they enter is reserved for passenger processing functions only.

Utilising ever-evolving technology will allow the combination of processes such as check-In and security at a single queue point.

The 'aircraft comes to the passenger' model removes lengthy concourse walks to gates, with passengers boarding from a primary commercial hall. Passengers will be able to move through the terminal much faster, much more efficiently and at a pace that is much more under their control



02 The Concept Lean Airport

Terminal Facilities

The terminal facilities will be lean and focused on the efficient processing of passengers reducing dwell times to an absolute minimum.

Land side Passenger Facilities will include self check-in, self tagging, bag drop, retail stores and restaurants.

Air side Passenger Facilities will include self boarding gates, Premium Airport Lounges, Airport Customs and Baggage Claims

It is intended that any dwell time occur land side, as sophisticated systems, scheduling and processing will remove the need for passengers to spend 'wasted time' when choosing to commute via air.

Initially baggage check in will only be available in the terminal. In the fully developed model the passenger will have the option to bag drop and check in at a remote check in site.

Architectural Response

The design proposal features a large processing hall visually connected via large curtain wall facade systems to the airfield, landscaped public domain to the north, and Badgerys

Creek landscape beyond.

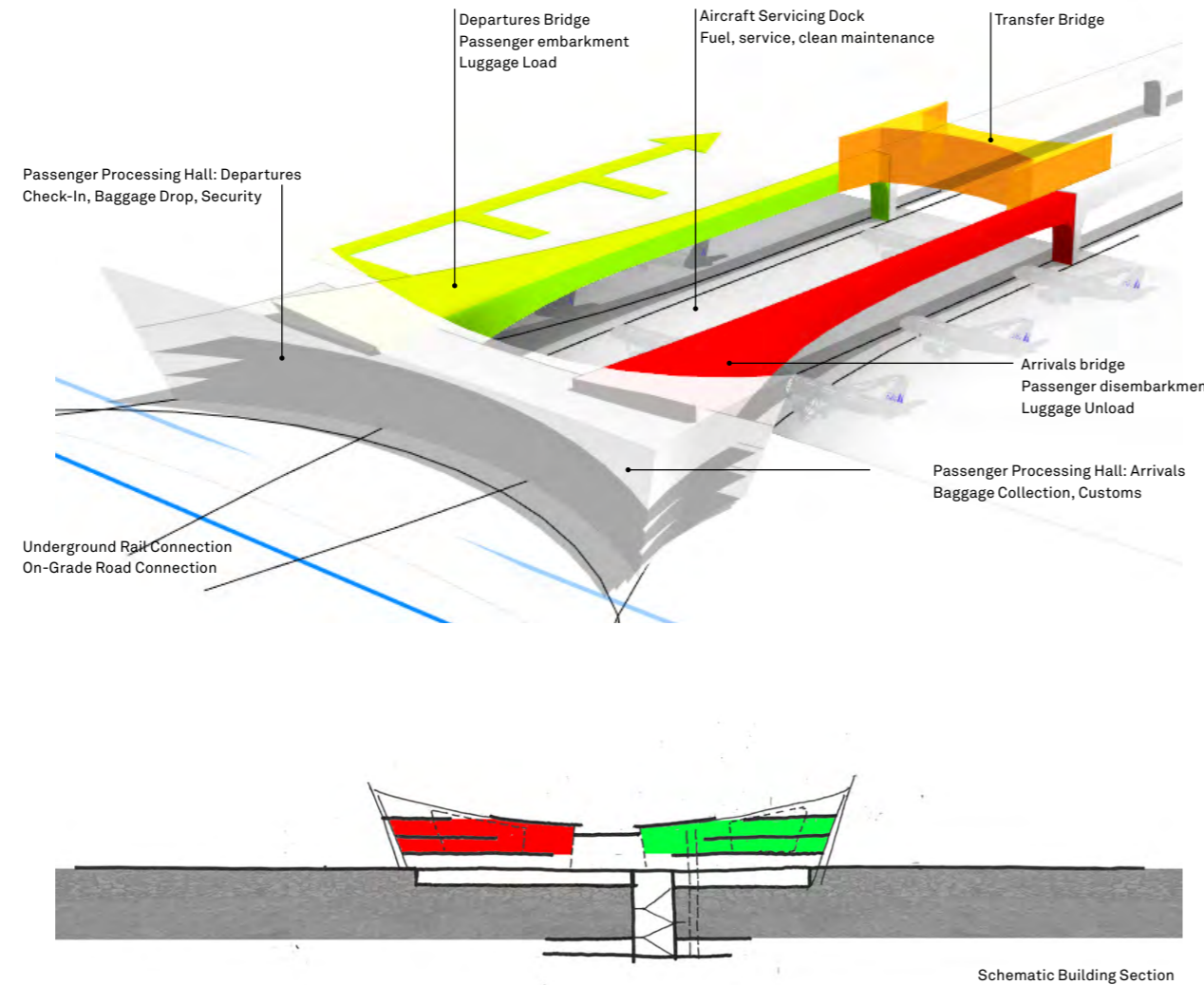
Open light spaces, naturally lit and ventilated (despite acoustic challenges) provide welcoming, pleasant, transitional spaces for travellers and commuters.

Internal vegetation will improve air quality, and the use of natural materials and finishes, including local hardwood timbers, will provide a heightened sensory environment to pass through.

Snail Zone

Any extended dwell time can be spent by passengers at the detached 'snail zone' - located walking distance from the processing hall, amongst natural landscaped surroundings. This building includes small amenity based retail services, relaxation zones, and cafeteria facilities. The move to provide separate dwell facilities from the high-activity transport operations of check-in, security and arrival is to reinforce the 'transport hub' model which is being proposed.

A variety of gathering clusters, seating configurations and layouts will be provided to cater for individuals, couples and large groups.



02 The Concept Airport Layout

'Runway in the rough'

Runway Layout

We have selected the runway orientation in Runway Layout A and Runway Layout B from the EIS. Land acquisition would be based on the boundaries required for a two runway solution (Runway Layout A). The opportunity to expand to a cross runway configuration is retained by zoning the land that would be required for Runway Layout B as rural or bush land.

This maximises future expansion potential whilst minimising initial outlay and noise impact on the local environment.

The new airport facilities will be constructed between the two proposed runways, toward the northern end of the airport site providing immediate connection from Elizabeth Drive, via the Westlink M7 Motorway.

Air side Planning

The proposal seeks to minimise tarmac surfaces to an absolute operational minimum, avoiding the vast expanses of tarmac, runway and taxiway surfaces that are typical of today's airports.

'Runway in the rough' has been coined as the key driving concept with the view to have minimal environmental impact and maintain the natural landscape in its original condition as much as possible.

Passenger Operations

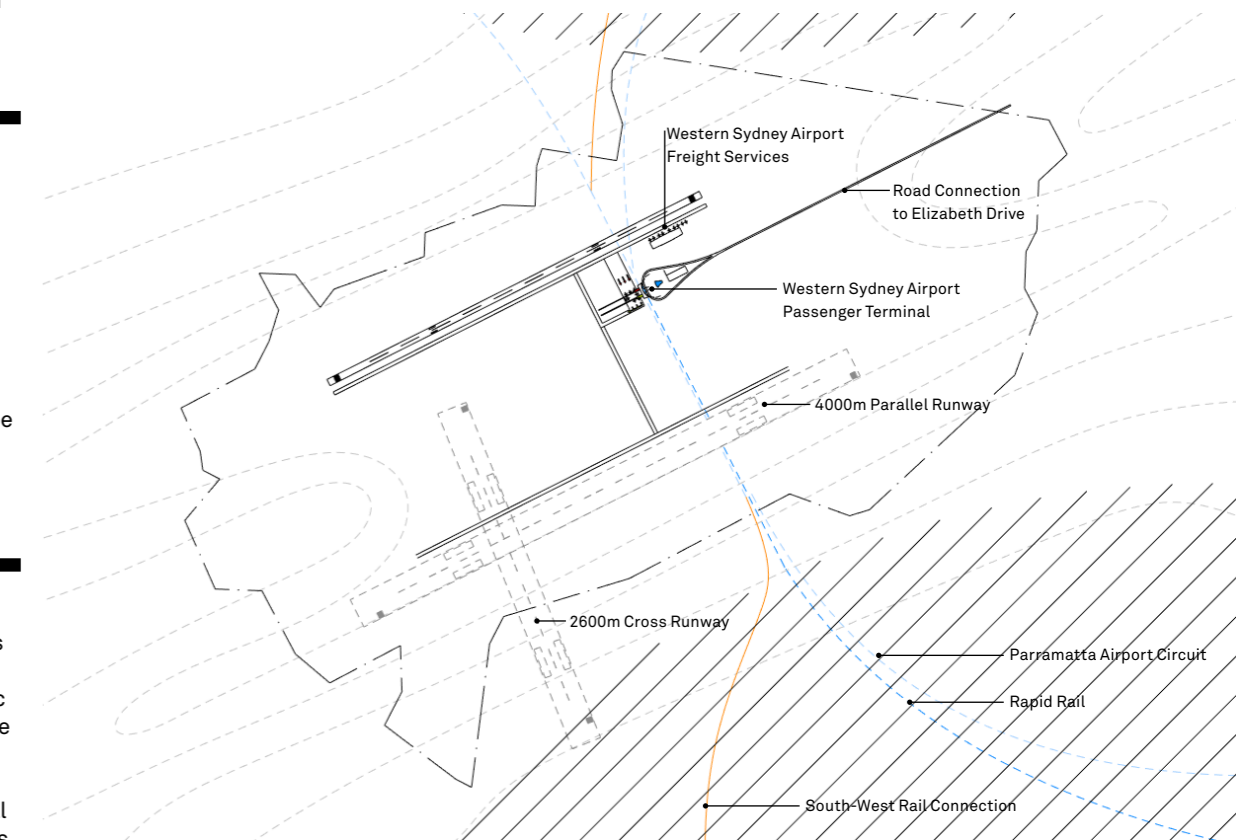
The radical drive-through aircraft processing concept developed by Büro für MEHR has been adopted, allowing a substantial reduction in hard surface treatment.

Compact, higher density aircraft processing reduces hardstand aircraft docking, and proximity to the runway reduces aircraft taxiing distances (and therefore fuel consumption).

Maintenance & Freight Operations

Maintenance and freight operations will be located at the mouth of the runway, removing heavy truck traffic from the airport road network before the passenger terminal operations.

Warehouse and hangar facilities will have direct land side/air side access to facilitate the efficient handling of freight transfer from the road & rail network to the air.



02 The Concept Local Area Layout & Zoning

'Western Sydney International Airport... the centre of Western Sydney's interconnected urban form.'

A Western Sydney Urban Strategy is proposed to interface with the Local Environment Plans of the surrounding councils whilst adopting a distributed approach to the principles of Aerotropolis Master planning by Professor John Kasarda - a widely accepted industry model for Airport Master Planning and its contribution to the urban environment.

The Western Sydney Urban Strategy will focus at the Population Centres and the Public Domain and will seek to achieve the following objectives;

- _Consistency with strategic land use planning undertaken by councils and the NSW Government;
- _Adequate supply of land for housing and employment; and
- _Effective management of natural, environmental and cultural resources.

The Public Domain principles will be achieved through the implementation of the respective Local Environment Plan (LEP) and Development Control Plans. The Urban Planning at the Population Centres will be dictated by the principles of a Distributed Aerotropolis Model described later in this report.

Precinct Design

The Public Domain is defined as those locations within a 10km radius of the airport comprising extensive public

parklands and open space with connections, event areas and enhanced gathering and meeting places.

DFNP propose a design that incorporates the urban character of the surrounding locations, whilst maintaining a level of consistency throughout. The locations immediately adjacent are designed with user capacity in mind, including technical requirements, specific local context, and access to prevent congestion. Information and way-finding elements are intended to integrate with the Public Domain consistent with the broader transport network to seamlessly interchange with other transport modes with directional way-finding and co-located bus stops.

The Public Domain will feature a pedestrian zone, bicycles lanes, landscaping, trees, feature lighting, street furniture, seating and way-finding signage that integrates with the stops and local area. The pedestrian zone will have high quality pavement, trees, lighting, public art and street furniture. DFNP aim to work closely with the local council to create a space meeting their needs and the public's expectations for lighting, furniture, signage, and services.

DFNP have considered the following key drivers in our approach to the design and resolution of the Airport, public domain, major structures and the

maintenance and freight facilities;

- _Balance: all components contributing to the system's functional performance and customer satisfaction
- _Efficient Assisted Self-Service: easy to use facilities with assistance available when required
- _Universally Accessible: efficient access for customers, 100% compliant with the Federal Disability Discrimination Act 1992
- _Legible and Consistent: a unified and coherent system integrated with the broader public transport network including way-finding guidelines, ticketing and information systems
- _Responsive: adaptable over time to meet changing needs
- _Sustainable: engineering, urban design and architectural design principles.

Precinct Zoning

The precinct zoning strategy will focus on a combination of General Industrial, Commercial, Environmental Conservation and Medium Density Residential. A rural feel will be maintained by retaining large areas of land zoned for rural and increasing the amount of area zoned as parkland or conservation.

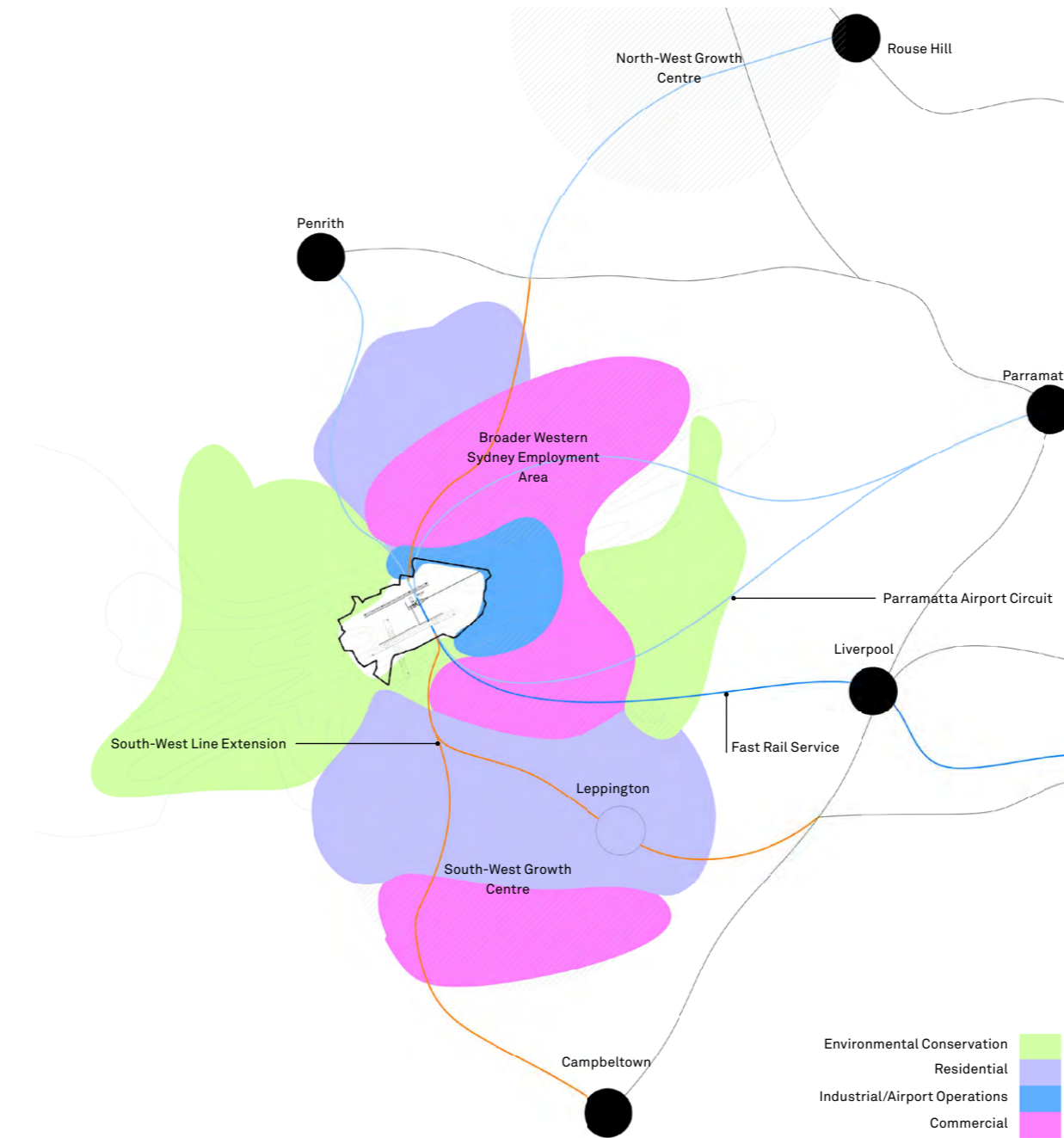
The zone located directly to the South West of the Western Sydney Airport site will be restricted to Environmental

Conservation only, sympathetic to the rural character of the surrounds.

Both the North and South sides of the airport will be zoned rural or parkland, complementing the 'airport in the rough' theme and restricting the land use in those areas to allow for future expansion if required.

Immediately to the North East of the Western Sydney Airport site, land will be allocated to General Industrial. This is intended to promote opportunity in manufacturing, import and export sectors and provide spaces for warehouse, distribution centres, factories and other light industrial facilities directly related to the airport.

Commercial land use will be zoned around the circumference of the industrial site and south east of the airport site. These locations are considered optimal in terms of provision of amenities, proximity and access to the airport and other transport infrastructure with negligible noise disturbance. The zoning described above complements the State Infrastructure Strategy which recognises the area extending North West of the Badgerys Creek site as the Western Sydney Employment Lands and the region extending South East from the airport site as the South West Growth Centre.



01 Proposed Land Zoning Map

Population Centres

The Distributed Aerotropolis will promote productivity and prosperity in the Population Centres by incentivising balanced growth across the Greater Western Sydney including at clusters of aviation-linked businesses and associated residential development. This will be achieved through the pursuit of Facilitated Alliances with the private sector development and service providers discussed further under Part 3 of this report. The key principles are identified in Aerotropolis Master planning by Professor John Kasarda, being the promotion of a new urban form with placing airports in the centre with cities growing around them, connecting workers, suppliers, executives, and goods to the global marketplace. This is achieved by adopting the following;

- _Linkages: dedicated airport expressway links and airport express trains utilised to connect major regional business and airport concentrations
- _Education: introduction to an education precinct to support local business and provide amenities to local residents
- _Expressways: special freight only lanes added to airport expressways

- _Business Incentives: encouraged to locate in proximity to the airport based on their frequency of use, reducing traffic whilst improving time-cost access
- _Environment: noise and emission-sensitive commercial and residential developments sited outside high-intensity flight paths
- _Place-making and way finding: architectural features including public art and iconic structures to enhance the public's interpretation of the space.
- _Communities: mixed-use housing development for airport area workers and frequent air travellers developed with easy commutes providing local services and a sense of neighbourhood.

The Kasarda Aerotropolis model is founded on the airport being the centre of the community. The DFNP Concept extends this model by making the airport the central transport hub of multiple communities. By implementing a Fast Transport System linking the airport with the surrounding population centres, the synergies achieved in the Kasarda model can be realised for multiple population centres simultaneously and is referred to in this report at the Distributed Aerotropolis.

02 The Concept Integration with Western Sydney

‘An all encompassing planning strategy that recognises the importance of the Western Sydney economic corridor.’

The State Infrastructure Strategy recognises the importance of the Western Sydney Economic Corridor by making it a focus for both currently funded and future projects.

It is proposed by DFNP that Growth Centres and State Employment Lands will be promoted by the combination of the distributed Aerotropolis model the introduction of Facilitated Strategic Alliances.

The Keneally Government Western Sydney Employment Area (WSEA), hinges upon sensible planning and a long term investment that builds upon the existing strength of the region. The WSEA will require a re-visit to ensure seamless integration with the proposed Distributed Aerotropolis model and the Facilitated Strategic Alliances as a consequence of Western Sydney Airport’s development.

Initiatives

It is envisaged that the introduction of Western Sydney Airport, The State Infrastructure Strategy and the Facilitated Strategic Alliances will

promote growth of the State Employment Lands adjacent to the Badgerys Creek site for manufacturing, transport and logistics activities whilst introducing employment growth in emerging sectors such as data technologies, sustainable energy and personal care.

Commercial growth will be encouraged with the following initiatives;

- _ General Industrial zoning for warehouse and distribution centres, factories and other light industrial facilities, to allow flexibility for businesses.
- _ Subsidies and tax relief for the Development and Service Providers participating in the Facilitated Strategic Alliance;
- _ Relocation and positioning of Government Departments in reasonable proximity; and
- _ Provision of affordable housing to drive population growth in support of business and employment.

At a wider scale, the Facilitated Strategic Alliances will focus greater employment growth at the

Population Centres by Educational Facilities, Government Departments, Residential Development, Private Transportation Infrastructure and Health Care within these localities. The key incentives will comprise government subsidies, taxation relief, accelerated development consent and less stringent planning requirements.

02 The Concept Interlinking Western Sydney

Success of the Western Sydney Airport will be contingent on easy access by users. It is essential that appropriate transport solutions are planned as part of the airport design process and that appropriate stakeholders are engaged to facilitate a successful implementation.

A transport solution for an airport in the Badgerys Creek location must consider the existing transport infrastructure and plan to develop transport solutions to cater for the maximum forecast capacity of the airport.

Our approach has two main aims: Development of an effective and interconnected transport network between the Western Sydney growth centres with the airport as a central hub and linking the Western Sydney Airport with Kingsford Smith and the CBD.

This approach is intended to remove any restrictions to growth of the new airport while promoting growth in the Western Sydney region. In our model, the success of the Western Sydney Airport has a symbiotic relationship to the growth of the Western Sydney growth centres and employment lands.

Limits to airport potential

It is proposed that Western Sydney Airport will be capable of supporting 30 million passenger movements by 2050. It is intended that the airport will cater for a wide range of aircraft movements including regional, domestic, international and freight.

There are numerous examples globally where a major city’s second airport has failed to meet the expected passenger demand or has been forced to specialise in particular types of aircraft movements. In general, this pigeon hole effect has been a result of airport accessibility to different market segments. With the current state of Sydney’s road and rail network, accessibility is a particular issue for an airport located at Badgerys Creek.

It is essential for effective airport growth that the airport is freely accessible by public transport and there is a link between the existing and new airports. As the use of the airport grows the passenger demographic will change, but it is expected that in the early years that a significant proportion of the airport’s passengers will come from

East of Western Sydney making fast and effective transport from the east, and in particular from the Sydney CBD, essential.

Our concept proposes the interconnections of the identified Western Sydney growth centres and the installation of an Fast Rail Service from Western Sydney Airport to the Sydney CBD via Kingsford Smith.

Airport success through decentralised local growth

The Draft Metropolitan Strategy for Sydney describes plans to promote growth in Greater Western Sydney through the development of three major development areas. The North West Growth Centre, the South West Growth Centre and the Western Sydney Employment Area.

Figure 4.1 from the Transport for NSW Long Term Master plan (top right) indicates that the expected population growth in the North West and South West Growth Centres is higher than elsewhere in the State. The section diagram, figure 8.1 shows the lack of transport connectivity in these growth centres.

Figure 4.1 Sydney’s population growth forecast, 2011 to 2031

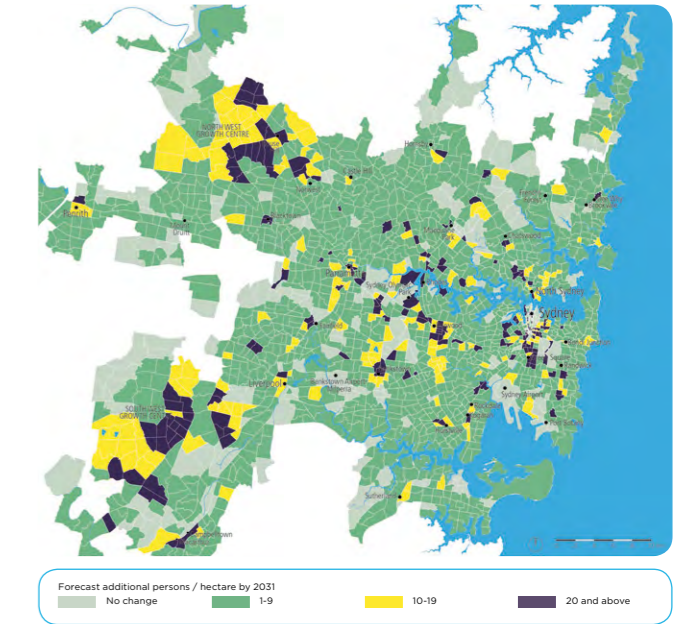
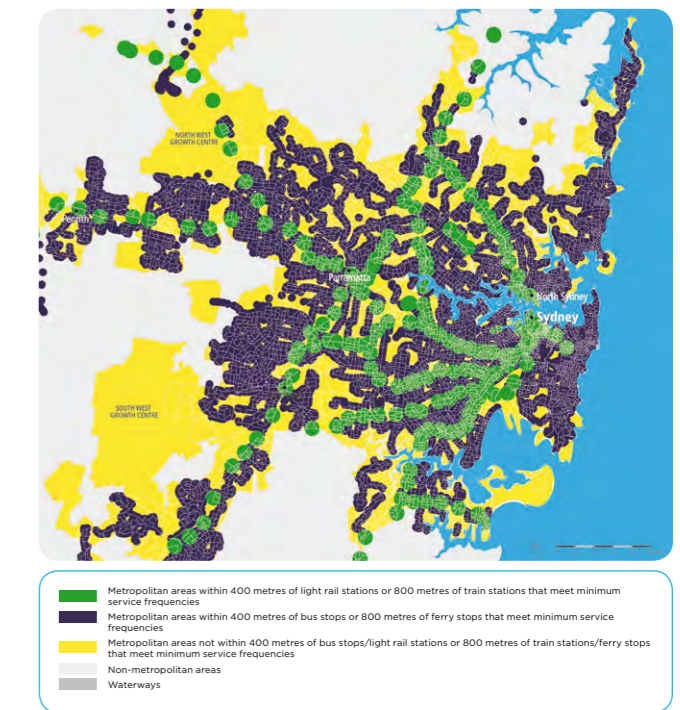


Figure 8.1 The distance and level of access of metropolitan areas in Sydney to public transport station and stops



02 The Concept Interlinking Western Sydney

The Distributed Aerotropolis model was conceived to promote mutually beneficial growth of the Western Sydney Population Centres identified in the State Growth Strategy namely the existing Population Centres at Penrith, Parramatta, Liverpool and Campbelltown, and the future growth centres of Rouse Hill, and Leppington. There is a clear synergy between the Distributed Aerotropolis approach and the servicing the transport needs of this new population. The DFNP Concept includes connection of these Population Centres by a Fast Transport System, interconnecting the Centres by a rail backbone that can then be supported by bus routes.

Minimising congestion

The six Sydney transport corridors already experiencing high constraint are:

- _ Sydney Airport to the CBD
- _ Parramatta to the CBD via Ryde
- _ Parramatta to the CBD via Strathfield
- _ Rouse Hill to Macquarie Park
- _ Mona Vale to the CBD
- _ The Liverpool to Sydney Airport corridor

Congestion on all six of these

corridors would be reduced by the development of a Fast Rail Service from Western Sydney Airport to Kingsford-Smith to the CBD.

Without action by 2031, the six most constrained corridors will be dealing with increased demand and much higher road congestion than at present, leading to increased peak travel times.

Road Development

Three of Sydney's motorways, the M4, the M5 and the M7 are connected to the Fairfield area (the M4 and the M5 are connected via the M7). An outer Sydney Orbital road, the M9 is being planned and the current route will bring is past the West end of the Badgerys Creek location. An upgrade of Elizabeth road would provide a functional connection from Fairfield to the airport. However, even at present there are significant congestion issues on all three of these motorways in peak time. In unveiling the Badgerys Creek proposal the Prime Minister Tony Abbott put the focus on transport infrastructure generally by stating "Because of the time it takes to plan and build an airport, the Government's approach will be roads

first; airport second. The additional roads will be ready long before the airport is fully operational." (Tony Abbott).

Rail Development

No federal funding will be available for rail infrastructure (Transport Sydney). The AFR predicts that there will be pressure on the State government to build an urban rail link service to the airport (Australian Financial Review). The Western Sydney Airport concept requires the interconnection of all of the significant growth centres in Western Sydney to realise the lifestyle and economic benefits of a decentralised Aerotropolis model. It is also proposed that an Express Fast Rail Service between the two Sydney airports will be essential to facilitate connections providing flexibility for users.

This is one area where the project will rely heavily on facilitated strategic alliances. Transport for NSW has already begun work on the South West Link Extension that will connect Leppington to Mt Marys via Badgerys Creek. Western Sydney Airport will require further staged interconnections to be fully effective.

It is unlikely that the NSW government would fund the Fast Rail Service and in this case DFNP would assist to align the Airport authorities, the NSW government and private sector investors to create a synergistic alliance.

The Fast Rail Service upgrade proposed in this report will significantly reduce the current and forecast transport congestion between the CBD and western Sydney. Road congestion Sydney wide is believed to cost the economy around \$5.1 billion through longer travel times (leading to lost time for businesses and individuals) and higher transport costs (driving up the price we pay for goods and services and eroding the competitiveness of Sydney businesses). By 2020, the costs of congestion are expected to rise to \$8.8 billion a year as Sydney's population grows and as travel, particularly car travel, increases. The cost of congestion is expected to grow at 6.8 percent per year over the next decade nearly triple the expected rate of economic growth. (Transport for NSW) The Ernst and Young figure over page represents this graphically (Australian Financial Review, 2014).

Figure 4.24 from the Transport for

NSW Long Term Master plan indicates that the most congested rail route in 2031 will be the East Hill and Airport line. There is a significant synergy in the needs of fast transit between two Sydney airports and the need to reduce congestion on this particular rail corridor. The Fast Rail Service provides an elegant solution that makes practical and economic sense. Providing an essential link between the airports while reducing vehicle and train congestion in this corridor.

DFNP propose that there is a strong business case for state government financial support of the Fast Rail Service and the Fast Transport System development as it can be demonstrated that the government will benefit financially from increased tax revenue from a reduction in congestion due to the expanded rail networks and the increased economic activity associated with the growth of Western Sydney Airport.

02 The Concept Interlinking Western Sydney

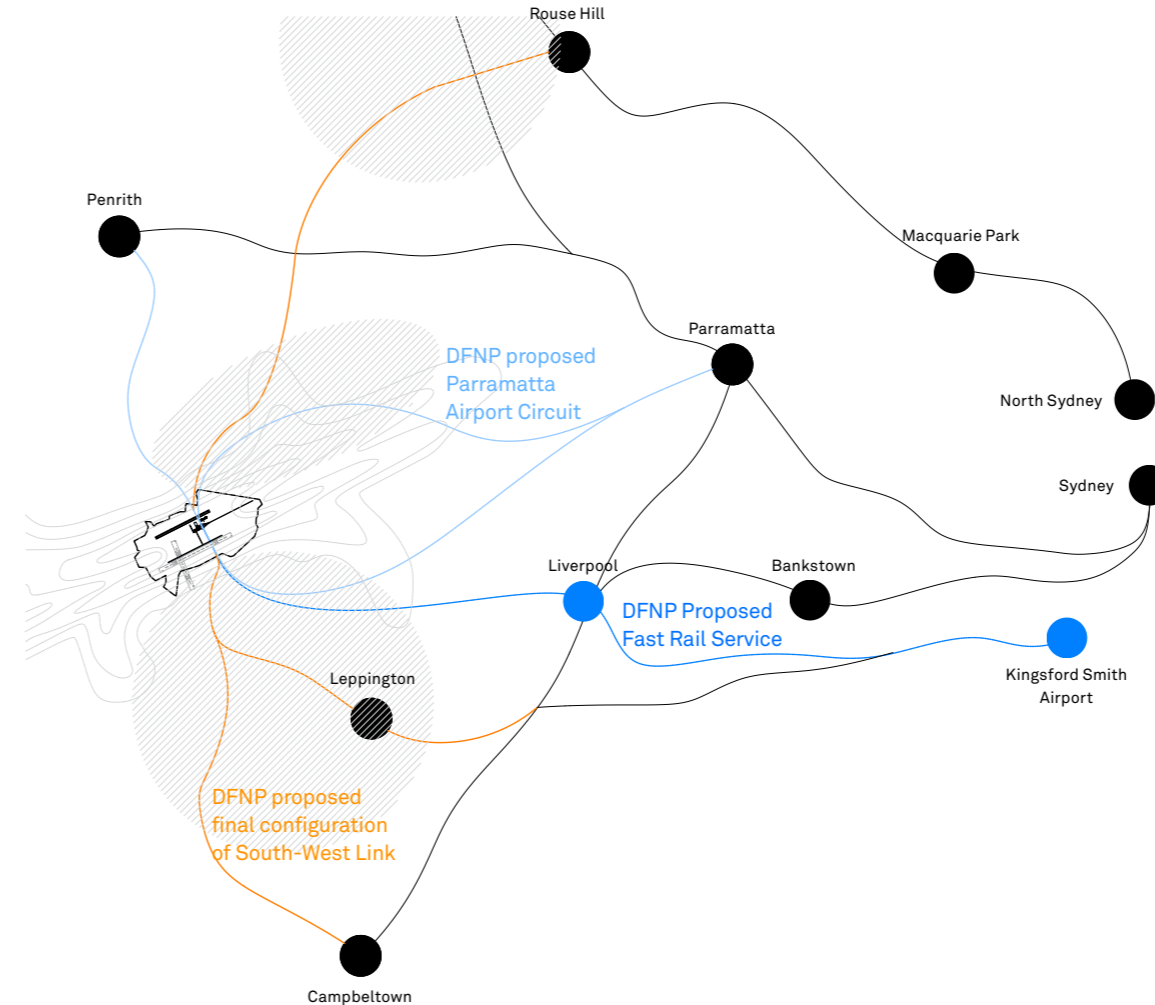
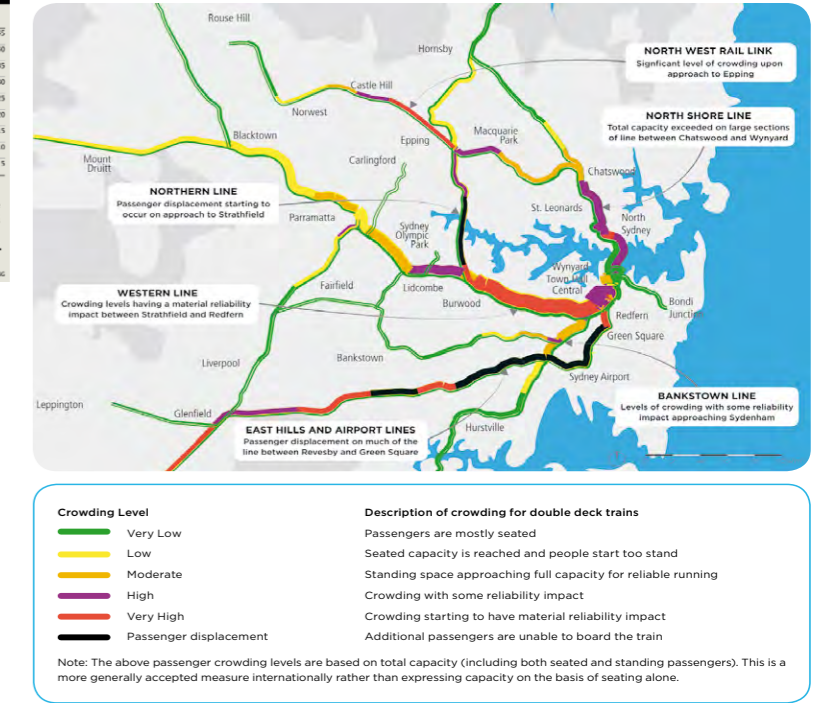


Figure 4.24 Rail network performance (represented by volume-capacity ratio), AM peak, 2031 'do nothing' scenario



The Plan

Transport for NSW is already progressing the development of critical infrastructure that will begin the interconnection of the Western Sydney centres. The South West Link extension is currently under construction to link Liverpool and Leppington. A further extension to this line will take the line to Mt Drutt on the Parramatta line. A new motorway travelling up the West side of the Badgerys Creek site will be known as the M9 or the Outer Sydney Orbital will reduce some of the congestion on the M7 and will provide a motorway for passengers travelling from South, North or West to the Airport's doorway.

A Fast Rail Service will produce transit times of 10 minutes from Western Sydney Airport to Liverpool and 10 minutes from Liverpool to Kingsford Smith. Future extensions of this service will provide an express service from Kingsford Smith to the CBD and when demand is sufficient a 15 minute express service between the airports will be available.

DFNP propose staged expansions for the Western Sydney rail network to:

- _ Connect the Badgerys Creek site directly to Parramatta via a circuit line that will service the Broader Western Sydney Employment Area and the South West Growth Centre.
- _ Extending the Transport for NSW South West Link extension all the way to Rouse Hill.

02 The Concept

Airport Services

ROADS & CARPARKS

Roads will be discrete and lined with landscaped local vegetation to shield them from view. The carpark will be underground to minimise negative aesthetics.

WATER

The terminal and support buildings will be fitted with water saving fittings. Rooftop runoff will be captured and used. All waste water from the buildings will be captured and recycled. Storm water runoff from the airfields will be captured and filtered before release.

POWER

The terminal and support buildings will be fitted with low power lighting and other electrical equipment. The terminal and support building rooftops will be fitted with solar PV to supply some of the daytime load. The remaining supply will be sourced from a new distribution substation

established to supply the airports industrial zone to the North East and supplied by the 33 / 11 kV substation at Bringelly.

FUEL PROVISIONS

Diesel fuel will initially be supplied by truck from Caltex's Kurnell storage facility. As the airport grows and the fuel consumption volumes increase installation of a pipeline becomes feasible. DFNP recommend installation of a pipeline from Kurnell during the construction of the Fast Rail Service along the same corridor.

Part 3. The Approach

‘A progressive approach, focused on win-win strategic alliances to drive development and strengthen the community.’

03

03 The Approach Staged Implementation

'a progressive
response to the
changing population
landscape'



03 The Approach Delivery Model

'a robust mechanism to address the project objectives'

Project Team

DFNP will be the lead consultant in a high calibre design, build, finance and operate (DBFO) alliance, comprising individuals well versed in the delivery of large scale public and private infrastructure projects. DFNP will deliver the Western Sydney Badgerys Creek Airport and Precinct through an integrated project delivery methodology consisting design, construction, operation, maintenance, strategic planning and finance.

Procurement Methodology

An operating company (OpCo) for Western Sydney Airport will be established to enter a Project Deed with the Government (to satisfy the Government as the landholder). This document will set out the terms on which the risks associated with the project are allocated and the contractual terms under which they will;

- _ Source financing for the project
- _ Design, construct, manufacture, install, test and commission the

- project
- _ Operate and maintain the assets

The OpCo will maintain contractual responsibility for the design, construction, operation and maintenance and the Airport, utilising a Design and Construct Joint Venture (D&CJV) and an Operations and Maintenance (O&M) Contractor arrangement.

The Project Deed will provide the mechanism that the Government will use to grant OpCo the rights to lease the Badgerys Creek site and undertake Design, Construction, Operation and Maintenance activities.

The Project Deed will also define the OpCo's obligations with the relevant stakeholders regarding the design, construction, operation and maintenance of the airport system to the D&C JV and the O&M Contractor.

Contract Structure

The organisational structure opposite illustrates the contractual structure that has been put in place to pass through the obligations under the Project Deed for the Construction and Operations phases of the project, moreover for the finance, design, construct, manufacture, install, maintain the airport system.

There is a clear delineation of tasks in both the Construction and Operations Phase Structures of the project. Project risk will be managed through the engagement of the Independent Verifier, the Financiers Certifier and the Sub-Independent Verifier forming a most appropriate structure for delivery.

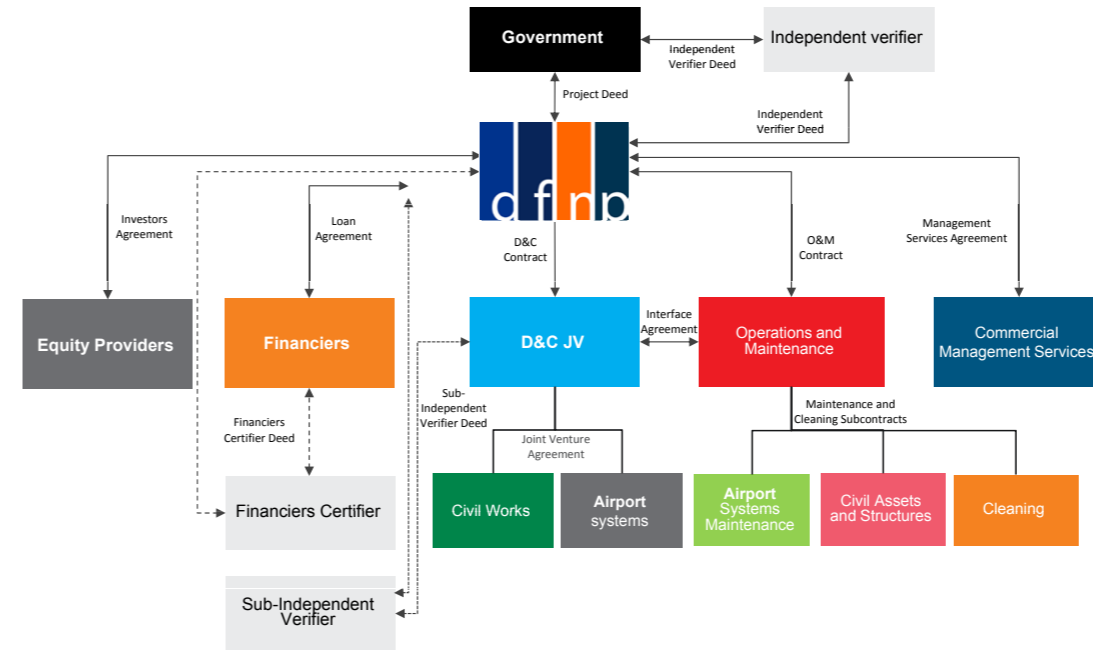
Similarly under the Operations structure, a well delineated approach has been taken, identifying all aspects of the requirements during the operations phase, with various levels of certification and verification to ensure the project is delivered in accordance with the objectives stated within the Project Deed.

Consultant engagement

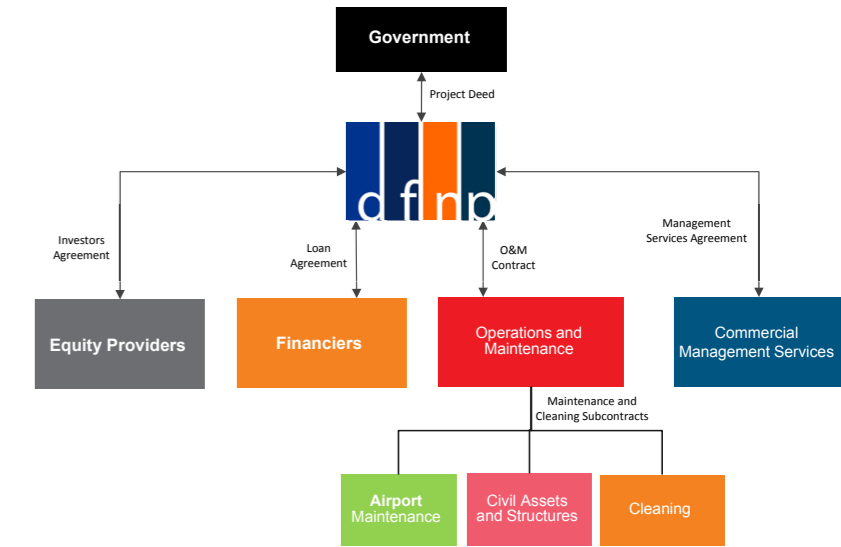
DFNP will engage with various specialist Providers (subcontractors and consultants) to provide additional expertise. The team is one with a substantial background in Australia and knowledge of the Australian market. The design team is led by a Jacobs / Parsons Brinckerhoff / HASSELL joint venture, supported by Rider Levett Bucknall as the Strategic Planner. All have undertaken similar roles in the past.

This team adds great depth to the Western Sydney Airport with specific expertise and on ground presence.

Construction Phase



Operations Phase



03 The Approach Facilitated Alliances

‘Striving for mutual benefit.’

DFNP are proposing a Strategic Alliance between the Western Sydney Airport OpCo and private sector development and service providers located at the various growth centres identified in the Draft Metropolitan Strategy for Sydney.

Participants

The Strategic Alliance is intended to deliver mutual benefit for the Western Sydney Airport OpCo and the Development and Service Providers seeking investment returns for their initiatives at the centres whilst maintaining the objects of the Draft Metropolitan Strategy for Sydney. The Development and Service Providers include;

- _ Co-located Educational Facilities housing the University of Western Sydney.
- _ Government Departments with headquarter located at the centres.
- _ Large scale residential property developers.
- _ Private and Public transportation infrastructure providers.
- _ Health-care service providers located at the centres.

Key Objectives

The key objectives of the Strategic Alliance are noted as follows;

- _ Revenue creation and Cost Reduction for the Western Sydney Airport.
- _ Balanced Growth at the Centres.
- _ The creation of a Livable City.
- _ Productivity and Prosperity at the Centres.
- _ Healthy and Resilient Environment at the Centres.
- _ Accessibility and Connectivity at the Centres.

The strategic relationship will support the project objective to develop an airport precinct as a hub for the entire region. The members of the alliance may achieve synergy from the overlapping of benefits achieved by the Western Sydney Airport OpCo and the Development and Service Providers. This can unlock value the Greater Western Sydney Region as a whole.

With urban development racing in parallel, the introduction of the Western Sydney Airport will draw population to, and provide

substantial amenity for the Greater Western Sydney, thus making the Western Sydney Airport the centre of community and commercial development.



03 The Approach Stakeholder Engagement

‘A natural progression for prosperity and a better future for Western Sydney’

The right approach....

The Prime Minister’s announcement in April 2014 confirmed that Western Sydney’s airport at Badgerys Creek is no longer a possibility but rather a firm milestone in the area’s future. With this in mind the messaging for the project is no longer about ‘optioneering’ but rather the natural progress for Greater Western Sydney’s prosperity.

In the past, messaging has had a difficult task in gaining positive momentum due to the uncertainty of the site and the emotive language of ‘Sydney’s Second Airport’. Referencing the project as ‘second’ creates an impression of being an answer to Kingsford Smith’s capacity issues rather than an integral part of the ongoing growth of Western Sydney. For all supporting stakeholders the project should be referred to as Western Sydney Airport moving forward.

The first steps in the process to create a prosperous future for Western Sydney will lay the foundations for the success of the

entire project. As such, it’s vital that the messaging for the project is considered before moving forward with the planning and development.

Developing the messaging for Western Sydney Airport as a natural economic progression for the region’s prosperity creates a positive frame of reference. It also promotes a wide range of advantages for the region that are difficult to oppose such as employment, improved facilities and infrastructure.

Whilst the project has had strong opposition in the past, the length of time between the release of the EIS, the growth in the region and other economic factors has created an opportunity for a renewed approach to messaging the projects to that of; ‘A natural progression for prosperity and a better future for Western Sydney’,

This message can already be seen in the dialogue used by the Western Sydney Airport Alliance. Consultation will need to acknowledge that the project will move forward due to the unavoidable growth of the region and manage the

expectations of those aggrieved stakeholders whose concerns are real and inevitable. Key to all consultation activities will be identifying and responding to specific interests of stakeholders whilst at the same time promoting the projects positive outcomes.

Getting started

Before breaking ground there are numerous legislative process’ that need to be navigated and it is highly probable that Western Sydney airport will have its own specific legislation created, similar to that enacted for Kingsford Smith and Coolangatta.

DFNP recommends that the Minister for Environment instruct a revised EIS to be conducted on the site per the Environment Protection and Biodiversity Conservation Act 1999. This will then be used as the starting point for the planning of design and construction.

The Airport Act 1996 requires that projects greater than \$20 million be developed in line with a Major Development Plan (MDP). Section 91

of the Act outlines the contents of a Major Development Plan including but not limited to;

- _ A consultation process with airlines that will use the airport, local government
- _ A detailed outline of the development
- _ Noise exposure levels
- _ Traffic flows
- _ Employee levels
- _ Environmental impacts

The cross-over of requirements between a revisited EIS and a MDP is an opportunity to create efficiencies in project approvals. To prepare for these potential synergies, DFNP recommend that contractual arrangements for the EIS should include reliance clauses for future approval process’, within a reasonable time frame.

Contractually, Southern Cross Airports Corporation Holdings (SCACH), has the first right to build another airport within Sydney. A nine month consultation process between the Federal Government and SCACH began in October 2014. Once complete, SCACH have four months to decide whether or not to proceed

03 The Approach Stakeholder Engagement

with ownership of Western Sydney Airport. If SCACH reject the offer the Government can open the proposal to others to build and operate Western Sydney Airport. Should the government change the circumstances of the proposal provided to SCACH the consultation period begins again, SCACH would need to reject it before the government could offer it to other parties.

A transparent approach to the early approval stages of the project will build confidence amongst stakeholders, ensuring they are partnered through the approval stages of the projects life cycle rather than left to be bystanders.

Opportunities for engagement

Western Sydney Airport will service passengers as well as engaging a broad range of stakeholders. Given that, the consultation process will seek to engage communities and individuals; commercial and industry bodies; all levels of government and the media.

The following stakeholder map highlights the stakeholders who Western Sydney Airport will consult during an EIS process and the entire projects life cycle.

The process to revise an EIS will include engaging stakeholders through a two-way exchange of information, facilitated through;

- _ Project fact sheets
- _ Project email address and smartphone application
- _ Interactive project website
- _ Project newsletters
- _ Social media presence
- _ Advertising and public notices in/ on traditional media
- _ Reply paid post address
- _ Community feedback forms
- _ Free call project phone line
- _ Consultation meetings, forums and briefings with industry groups

- _ Permanent project hub
- _ Manned and static displays in councils, shopping centres & large workplaces (Flemington Markets)
- _ Letter box drops
- _ Door knocking &
- _ Releasing information in 25 languages

With the airport layout having boundaries for development - ie, runway positioning and best entry and exit points with current and future planned roads - there exists an opportunity to create a permanent project 'hub' on-site before construction begins.

A permanent project 'hub' will create a physical place to seek information and will be supported by a virtual hub. The Hub creates a collaborative space for the EIS to be conducted, whilst also allowing stakeholders to interact and engage. The Hub should remain in perpetuity for continued engagement and be a venue for Universities, TAFE's and schools to take advantage of for educational purposes.

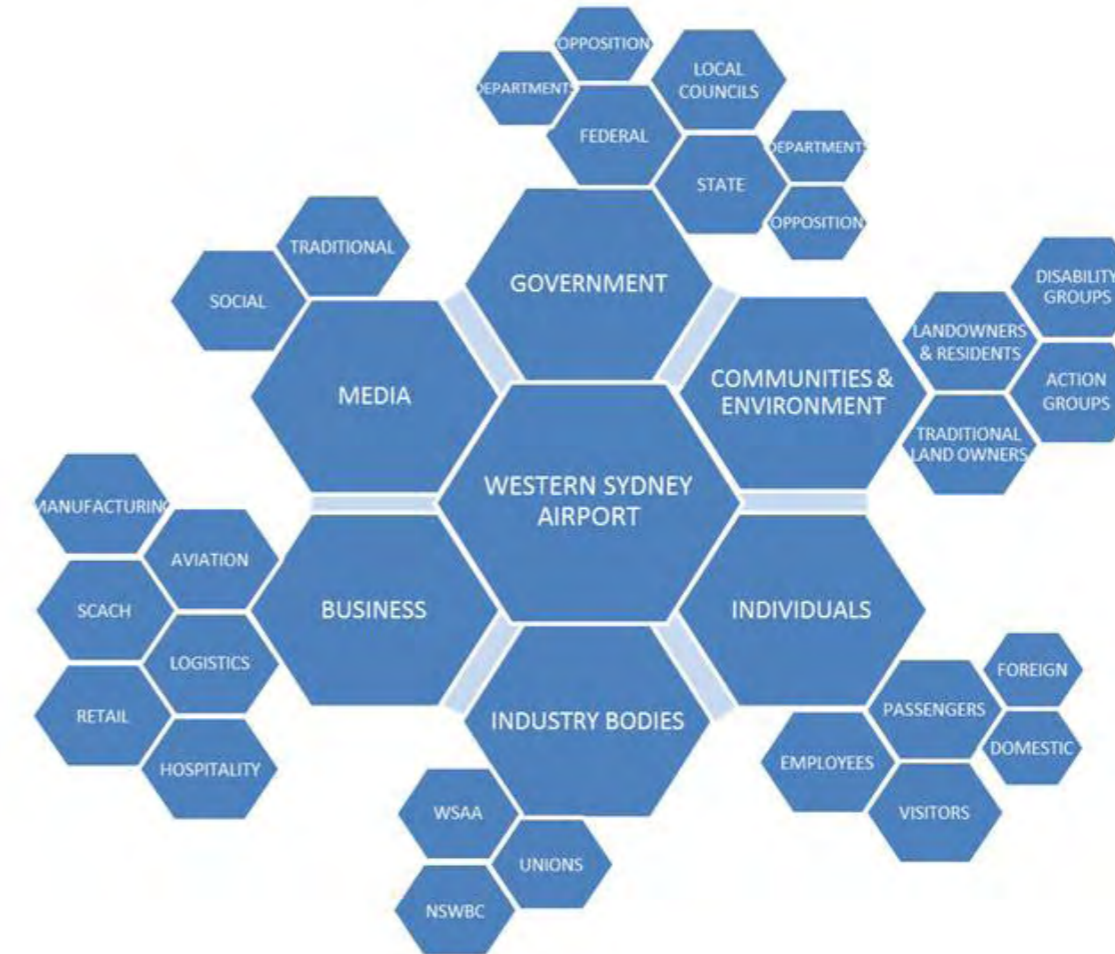
Supporting the physical hub should be an interactive website with live site view during construction, walk through design highlights, links to

employment opportunities during phases and an easily navigated feedback process.

Documents related to the 1997 Draft EIS were published in 16 languages. Forty seven languages are spoken by over 700,000 residents in Greater Western Sydney. DFNP recommends that for consistency with the 90's consultation process and where possible, that communications are disseminated in 25 languages. This includes all languages that were within the late 90's EIS related documents and proposes that an additional eight languages be added (Chinese now being broken into the dialects of Cantonese and Mandarin).

The 25 languages proposed will help with engaging over 620,000 people in the Greater Western Sydney area. The addition of the eight languages to the 16 that were leveraged in the 90's adds an additional 140,000 people who are being partnered through the project life cycle in a language used in their homes.

03 The Approach Stakeholder Engagement



Cooperation and collaboration with the future

DFNP proposes a collaborative relationship between Western Sydney Airport and the University of Western Sydney that will drive the social media campaign for the project.

The University of Western Sydney (UWS) has satellite campuses that circle Badgerys Creek. A keen supporter of Western Sydney Airport, UWS's influence with the generation that will grow alongside the project is an important gateway for support.

Collaboration with UWS acknowledges the rapidly evolving social media front and its generational drivers, whilst giving UWS students and faculty exposure and experience to a high profile public campaign.

Western Sydney Airport will positively influence prosperity in the region. Whilst opportunities exist for most stakeholders to grow alongside it, future university students will face upward pressure on housing costs until they can move into the next

stage of their lives.

Western Sydney Airport has an opportunity to promote an alliance between LandCom and UWS to accommodate students affordably. This alliance should leverage the proposed improved connectivity of Greater Western Sydney through the distributed aerotropolis model.

LandCom's relationships with developers and its goal to deliver quality housing that also delivers social and economic benefits, makes it an ideal lead for driving an equitable mix of housing in Greater Western Sydney.

Partnering UWS's design and construction students with Landcom and private sector developers creates a fresh approach to collaboration for a public, private partnership that meets Landcom's goals.

03 The Approach EIS Update

It is expected that most sections of the EIS need revision. The adjacent table summarises DFNP's assessment of the sections to be reviewed.

EIS Section	Requires Revision	Example of reason for revision
Decision Making Process & Consultation	✓	Further community engagement in the process of finalising airport planning; Inadequate consultation of the indigenous community in the first EIS; Changes in local resident demographics
Need For Second Major Airport For Sydney	✓	Revised for reliance on passenger numbers
Alternative Sites	✗	Location finalised
Definition Of The Proposal	✓	Refinement of message of Second Sydney airport
Planning & Land Use	✓	Updated for 2008 State Environment Planning Policy & the distributed aerotropolis model
Aircraft Overflight Noise	✓	Revised for advances in noise reduction in new aircraft
Other Noise Impacts	✓	As immediately above, as well as changed construction techniques, impacts of proposed lean terminal design & links to the six Western Sydney population centres in the distributed aerotropolis model
Meteorology	✓	1997 prepared on data from other sites. Site specific data required for revision
Air Quality	✓	Advancements in sewage treatment, revised assessment on increased population
Geology, Soils & Mineral Resources	✓	Revise in accordance with auditors recommendations for further analysis on the effects of major earthworks
Water	✓	Revised for improved monitoring
Flora & Fauna	✓	Update site assessment, providing current benchmark for threatened species; Pultenaea parviflora & Cumberland Plain Large Snail
Agriculture	✓	Revised for the impact of proposed connections in distributed aerotropolis model on agricultural lands
Hazards & Risks	✓	New societal risks (new schools, hospitals & child care centres in the area) from population growth
Aboriginal Culture & Heritage	✓	Review for robust engagement with traditional landowners
Non-Aboriginal Culture & Heritage	✗	Auditor found methodology at time best practice - no revision required
Land Transport	✓	Revised for assumptions of links to the six Western Sydney population centres in distributed aerotropolis model
Aviation	✓	Revised for changes in popularity of recreational aviation & the impacts of closure of aerodromes
Visual & Landscape Impacts	✓	Updated for advances in lighting
Economic Issues	✓	Updated for current estimates of construction costs
Health	✓	EIS supplement contains additional information sort by auditor & continued community engagement as a key area for stakeholders
Social & Cumulative Impacts	✓	Revised for the proposed links to the six Western Sydney population centres in the distributed aerotropolis model
Environmental Management	✓	Updated for changes in legislation, monitoring & advances in technology



03 The Approach Sustainability

Delivery Phase Sustainability

An initial Delivery Phase Sustainability Plan (DPSP) must implement and maintain an effective Integrated Management System, to seamlessly integrate all systems and processes, including those related to Air Travel safety and accreditation quality, environmental, sustainability, health, and safety; and will be required to be updated regularly. DFNP have developed the proposed targets as outlined in the table adjacent. Sustainability Objectives & Targets

As part of the DPSP, DFNP have reviewed these objectives and developed a list of proposed targets to meet the goals.

DFNP has committed to delivering a design and as-built rating of at least 65 using the ISCA Infrastructure Sustainability (IS) Rating tool. The IS Rating Tool is a rating system for evaluating sustainability on design, construction and operation of Australian Infrastructure projects. DFNP have developed a

strategy to achieve a minimum rating of 65.

Two projects have been certified under the ISCA rating system. Whitsundays STP (design) commenced in May 2012, was certified on the 5th of April 2013 and is expected to complete May 2014. They received an Excellent rating. Great Eastern Highway Upgrade commenced the ISCA application in July 2011, and was certified on the 23 May 2013. The project was completed in March 2013.

The following indicates the rating score card and also the process to be followed during design development and through to delivery, to achieve the required rating. Whilst there are a number of criteria and reports, one of the key areas is stakeholder management. In this instance we are of the opinion that the stakeholder management process are sound therefore by tying back these deliverables through the sustainability tool.

	Sustainability Objective	Goal	Proposed Targets
1	Sustainability Management and Governance	Promote Leadership within the air travel and land use sectors	Sustainability in all activities Achieve excellent design against IS tool Achieve Gold rating using TfNSW Sustainable Design Guidelines
2	Sustainable Procurement	Influence environmental and social improvement in the supply chain through procurement	Implement sustainable procurement that improve environment & social conditions Engage Australian & New Zealand SMEs in the supply chain during Delivery Phase
3	Claim Change Adaption	Manage infrastructure vulnerability and design for climate change resilience	Conduct a climate change risk assessment for project lifetime during design Implement adaptation measures to address climate risks
4	Energy and Greenhouse Gases (Construction and Operations)	Reduce operational, construction and embodied carbon emissions Identify low carbon energy generation and procurement options	Offset 25% of delivery phase electricity demand Reduction of greenhouse gas emissions from ref design Provide a nominated % of Operations Phase traction demand through regenerative breaking Reduction in greenhouse gas emissions against National Construction Code Target zero halons in fire suspension Target zero ozone depleting potential and low global warming potential
5	Water Efficiency	Minimise demand for, and use of potable water, as well as maximise opportunities for water re-use from captured storm water, wastewater and groundwater	Source 50% of non-potable water for concrete mix & minimise potable water use in the delivery phase Source 80% of non-potable water during Operations Phase Source 85% of aircraft wash waste from non-potable resources
6	Materials	Reduce materials use through the project life-cycle. Identify materials with lower environmental footprint	Reuse 95% of clean spoil on site Recycle 95% of construction and demolition recyclable waste Achieve min. one point under the Green Star Mat-4 concrete credit Source 60% of structural steel from organisations accredited by Environmental Safety Charter of Australia Obtain 60% reinforcing bar & mesh from sources using reduced energy processes Source 100% of timber products from re-used timber
7	Emissions, pollution and waste	Optimise land take, minimise discharge to air, land and water. Minimise waste generation through design, planning, methods, recycling and resource recovery	Target zero major pollution incidents Ensure a min. of 95% of inert and non-hazardous waste is recycled or appropriately reused A reduction in the temporary project footprint against bid design
8	Ecology	Protect and create biodiversity through appropriate planning, management and financial controls	No net change in ecological value of site based on the Ecology Calculator
9	People and Place	Actively manage community, health, wellbeing, safety, heritage, urban and landscape design	Engage local stakeholders during project development Engage place managers to cover all areas for the project during planning and construction Identify opportunities to enhance heritage values Implement Urban Design strategies that facilitate sustainability Provision for secure cycle parking
10	Skills and Employment Development	Implement initiatives to create sustainable jobs and legacy skills and employment from the project.	Greater Sydney to make up 20% workforce Apprentices/trainees to make up 10% of trade workforce 5% skills from graduates & cadets Women to make up 10% Employment of disadvantaged workers 20% workforce to participate in national accredited training Ensure environmental and sustainability performance criteria is passed on to all suppliers