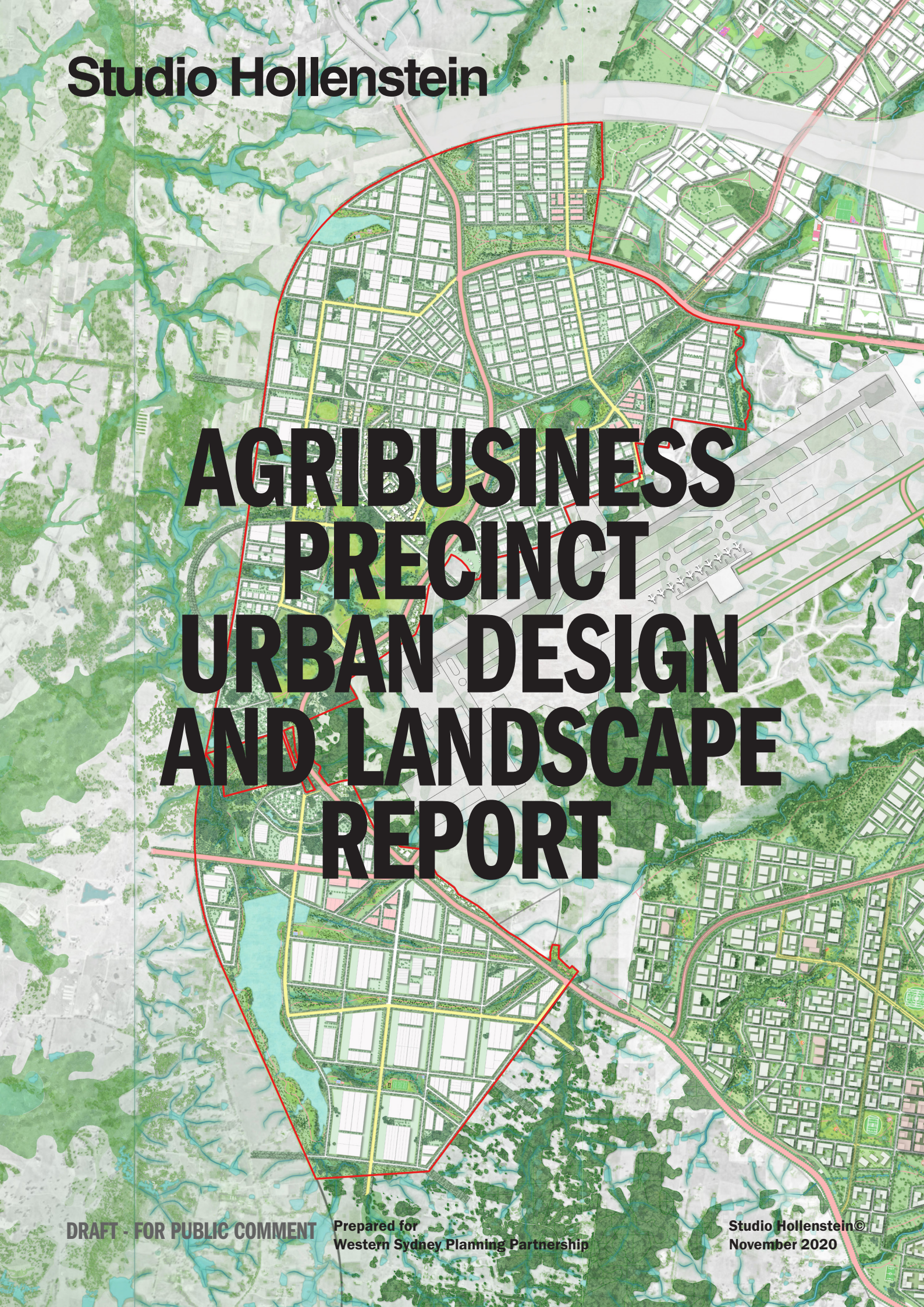
Studio Hollenstein

AGRIBUSINESS PRECINCT URBAN DESIGN AND LANDSCAPE REPORT



DRAFT - FOR PUBLIC COMMENT

Prepared for
Western Sydney Planning Partnership

Studio Hollenstein©
November 2020

Studio Hollenstein

Level 1, 24-26 Botany Road

Alexandria NSW 2015

+61 2 9310 78820

Australia

studiohollenstein.com
@studiohollenstein

Collaborators:

Taylor Brammer (Landscape Architect)

Ethos Urban (Planner)

Levi Nupponen (Agrology)

Sebastian Pfautsch (WSU)

Paul Osmond (UNSW)

Lin Dang (UNSW)

This report has been prepared for:

WESTERN SYDNEY PLANNING PARTNERSHIP

NSW GOVERNMENT

View of climate responsive Agribusiness developments along Adams Road

Contents

PART FIVE: THE AGRIBUSINESS PRECINCT 4

The Urban Design Framework Plan 6

Opportunities and challenges 8

Key principles and structure 10

THE BLUE-GREEN INFRASTRUCTURE FRAMEWORK 14

Public domain plan 16

Open space typology 18

A history of harvesting 22

Undisturbed soil network 26

Cultural landscapes 28

Scenic values, views and vistas 30

Duncans Creek Reservoir 34

Luddenham Agri-Park 40

Cosgrove Creek Parkland 46

Vegetation analysis and outcomes 52

Planting strategy 54

TRANSPORT INFRASTRUCTURE FRAMEWORK 56

Movement and Place 58

Major arterial and sub-arterial roads 60

Primary and secondary streets 61

Public transport network 62

Active transport network 63

Street typologies and sections 66

LAND USE AND URBAN FORM 82

Precinct land uses 84

Built form 86

Luddenham Village local centre 88

Height framework 92

Minimum lot size 94

Social + cultural framework 86

Studio Hollenstein ©

PART 5: THE AGRIBUSINESS URBAN DESIGN FRAMEWORK

The Agribusiness urban design framework will create a world-class agribusiness precinct that will support the production and value-adding of sustainable, high quality fresh produce and pre-prepared consumer foods.

View across Duncans Creek Reservoir parkland with Agribusiness focused warehouses beyond

URBAN DESIGN FRAMEWORK

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

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

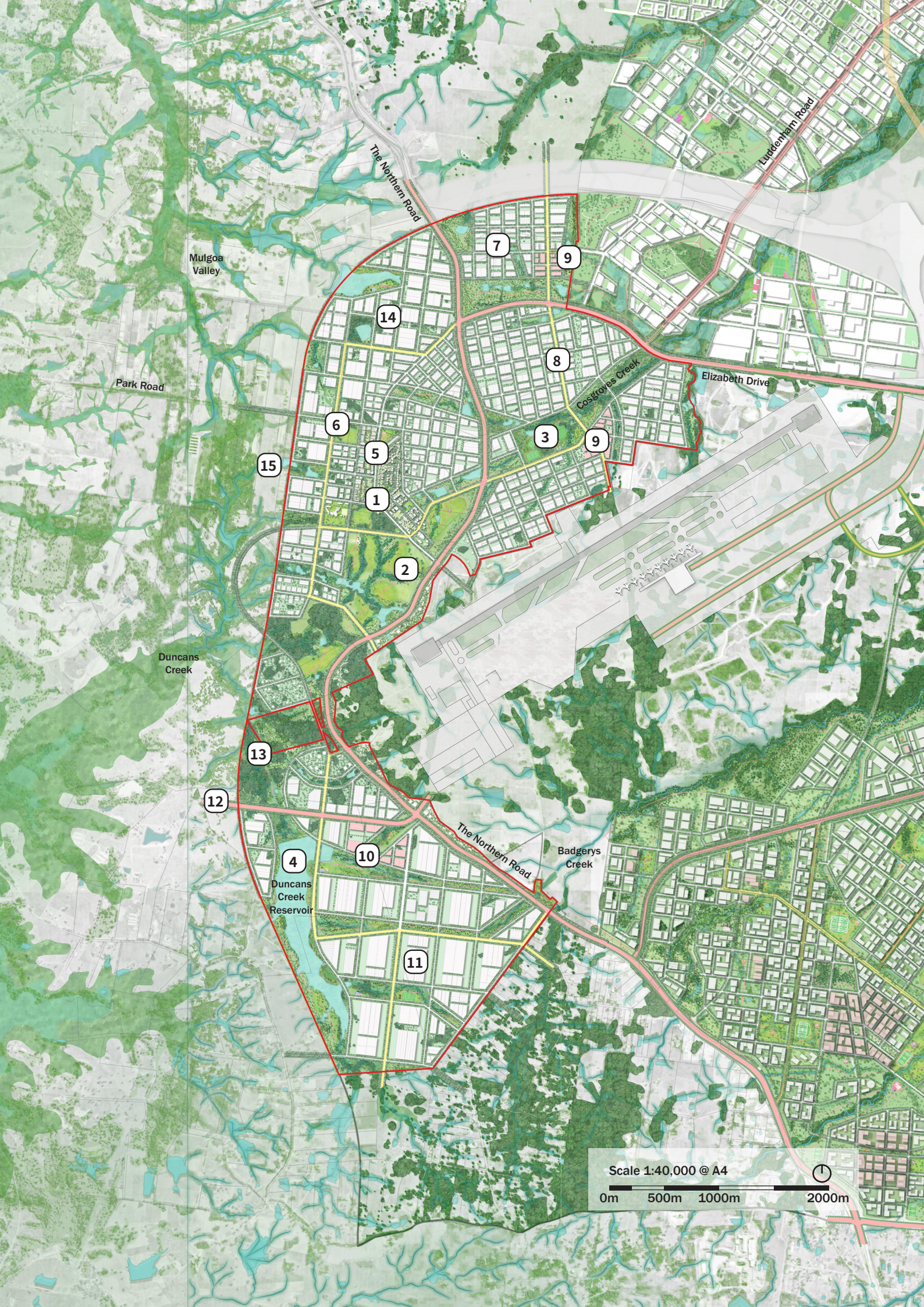
Luddenham Village sits high on the ridgeline, at the core of the Precinct, and acts as an Agribusiness village that is fully connected to local, district and regional centres by transportation and parkland networks.

The Agribusiness Urban Design Framework Plan is structured in response to its unique topography, the predominant north south ridgeline traced by the Old Northern Road and shadowed by the Northern Road with creek-lines originating at the head of the broad valleys.

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

Annotations

1. Growth within and around Luddenham Village is structured to enhance and protect the character and history of the village. As one of the few existing centres within the Aerotropolis, Luddenham village will play a key role in supporting the growth of the broader Aerotropolis as well as the Agribusiness Precinct. The village is identified as a key site within the Urban Design Framework Plan.
2. A new Agribusiness Park (Agri-Park) that merges public access with indigenous land management practices, it will focus on Aboriginal planting themes and indigenous regenerative land management across a landscape that includes the tributaries to Duncans Creek and Cosgroves Creek. The park, as a social and cultural landscaped construct, will celebrate the areas history as a centre for agriculture providing opportunities for research, education and tourism. The park is located to preserve and enhance landscaped view corridors from the songline of the Luddenham Village ridgeline towards the Blue Mountains and along Cosgrove Creek. Luddenham Village and the Agri-Park will form part of a regional tourism network.
3. Cosgroves Creek Park is a parkland network framed along Cosgroves Creek with playing fields, running and cycling tracks that extends from Luddenham Village, across The Northern Road across Elizabeth Drive to the Northern Gateway Precinct.
4. Duncans Creek reservoir is rehabilitated, using waterway rehabilitation techniques, into a generous lake for active and passive recreation for workers, visitors and residents of the broader Aerotropolis. The reservoir will incorporate details to mitigate bird and waterway functionality. A continuous pathway around its perimeter will provide an almost 5km long track similar in nature to the Bay Run in Iron Cove.
5. The Old Northern Road is transformed into a green boulevard through Luddenham Village, celebrating the landscape character of this walk-able scaled local centre. The character of the The Old Northern Road will evolve into a 'main street' lined with retail, hospitality and commercial offerings.
6. Historic elements within Luddenham Village will be revitalised to better suit the needs of the existing and emerging community and visitors. For example, the historic Luddenham Showground continues to support Luddenham Village and the broader Agribusiness Precinct as a centre of community activity. Its sensitive renewal will ensure it can support both the existing and emerging community.
7. A coordinated enterprise development, north of Elizabeth Drive with associated parkland and strong connectivity to the rest of the Agribusiness Precinct, the Northern Gateway and North Luddenham across the M12.
8. A parallel Northern Road connects across the Agribusiness precinct from Anton Road north across Cosgrove Creek and Elizabeth Drive
9. Neighbourhood hubs are located along creek parkland edges and act as a centre for employment activity.
10. A local employment centre develops adjacent to the airport along the Northern Road with amenity and outlook over Duncans Creek reservoir.
11. A large employment precinct develops adjacent to the airport. The street layout is developed to facilitate large format land uses clearly framed by parkland.
12. Potential connection to the future Outer Sydney Orbital will maximise connectivity between the precinct, the airport, greater Sydney and NSW.
13. Areas of sensitive ecology form part of a conservation area.
14. Intensive Food production is supported on the large and relatively flat land holdings in the northern area of the Precinct.
15. The planned OSO corridor will consider critical landscape, active and vehicular crossings along its length. It's vertical alignment and design should be responsive to the need to preserve strategic sight lines from the Agribusiness precinct towards the west and the Blue Mountains.


The Northern Road
Luddenham Road
Mulgoa Valley
Park Road
Elizabeth Drive
Costroves Creek
Duncans Creek
The Northern Road
Badgerys Creek
Duncans Creek Reservoir
7
9
14
8
6
3
9
15
5
1
2
13
12
10
4
11
Scale 1:40,000 @ A4
0m
500m
1000m
2000m

OPPORTUNITIES AND CHALLENGES

The key opportunities and challenges to address in Urban Design Framework Plan

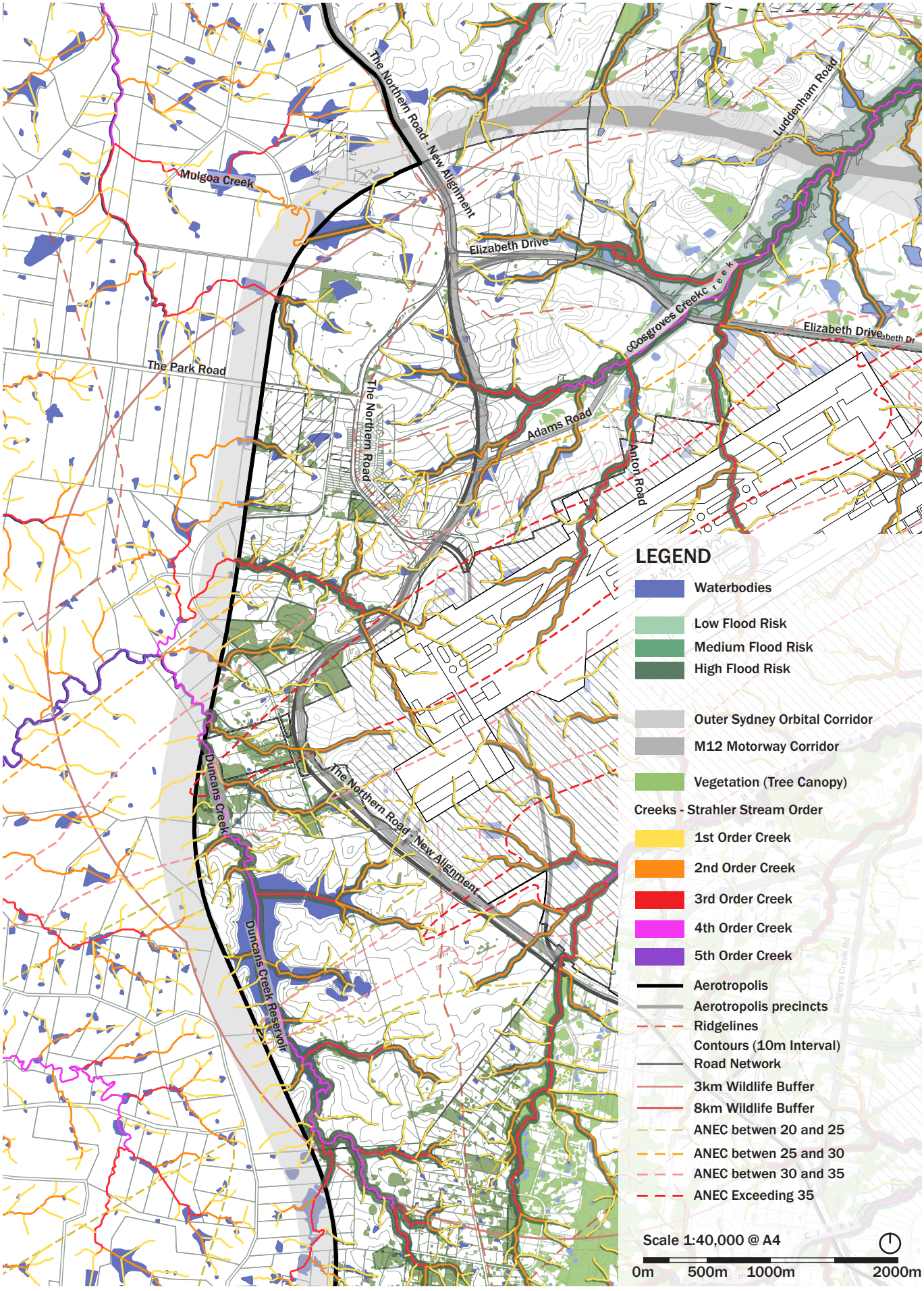
Opportunities

- Recognise and embrace the precincts rich cultural history and honour the enduring spirit of country and ancestral connection to land
- Leverage the accessibility and catalyst opportunities provided by the connections to the airport
- Utilise the prominent ridgelines and creek network to establish the structuring elements of the Urban Design Framework Plan
- Connected public parkland can function as an active transport, recreation, environmental and habitat network
- Retain and enhance existing vegetation that has biodiversity values
- Respect and conserve heritage items, around Luddenham, and greater Agribusiness precinct
- Celebrate the heritage and agricultural history of Luddenham Village
- Retain and enhance key landscaped vistas from ridgelines
- Provide active transport crossings of the creeks
- Reinforce the landscape character of the precinct by utilising landscape and tree canopy to screen built form
- To transform Duncans Creek Reservoir into public recreation asset
- Honour the enduring spirit of Country and ancestral connection to land
- Leverage access opportunities associated with Elizabeth Drive and the broader Sydney context
- Opportunity to use the roofscape for water capture and use
- Utilise large scale the roofscape for precinct scale solar power
- Harness the potential of waste to energy at precinct and Aerotropolis wide scale
- Improve food security by producing food for the Greater Sydney Area
- Integrate sustainable energy, waste and water as well as circular economy design principles into development and operations.
- To utilise green infrastructure throughout the precinct and along arterial roads to buffer the precinct and Aerotropolis from hot prevailing westerly winds
- Potential freight rail access to the Agribusiness Precinct
- To build resilience for communities and place over the long term

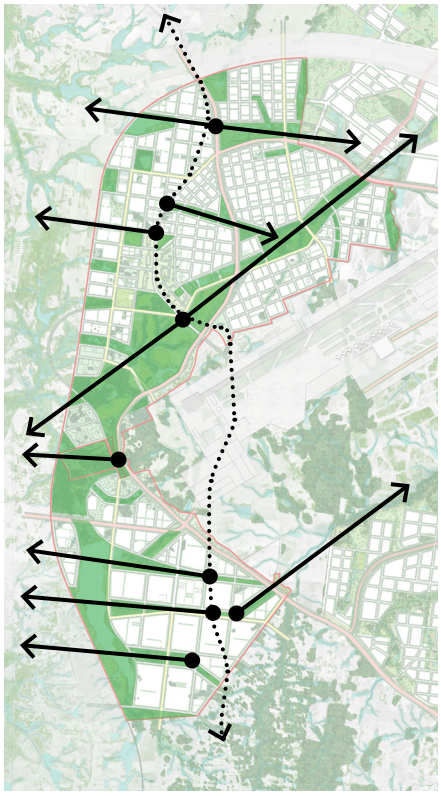
Challenges

- Safeguarding airport operations including limitations on vegetation and open water bodies to limit wildlife attraction.
- Topography limits possible locations of large format land uses
- Land uses will need to be scaled to suit site topography and minimise earthworks.
- Future noise and public safety areas resulting from the airport impose land use limitations
- Building heights will need to conform to OLS limitations
- Limitations on the number of intersections along arterial roads
- Trees pose bushfire connectivity issue unless managed
- Existing ownership and lot arrangements
- Maintaining ecological, physical and visual connections across the potential future alignment of the Outer Sydney Orbital (OSO)
- Development sequencing to ensure appropriate servicing and management of conflicting land uses / adjacencies.
- Existing utility service provision is limited. Large Portions of the precinct are un serviced
- Heat including prevailing winds from the west
- Presence of River-Flat Eucalypt Forest along Cosgrove Creek iand riparian corridors. River-Flat Eucalypt Forest is listed as an Endangered Ecological Community under the *Biodiversity Conservation Act 2016 (NSW)*
- Development that affects riparian corridors must avoid, minimise, mitigate and offset impacts to biodiversity as prescribed in the Draft Cumberland Plain Conservation Plan (CPCP).

The Urban Design Framework Plan

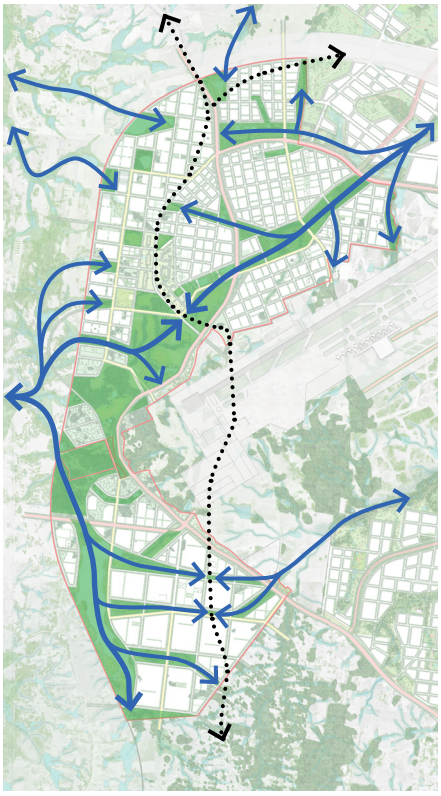


THE KEY PRINCIPLES AND STRUCTURE



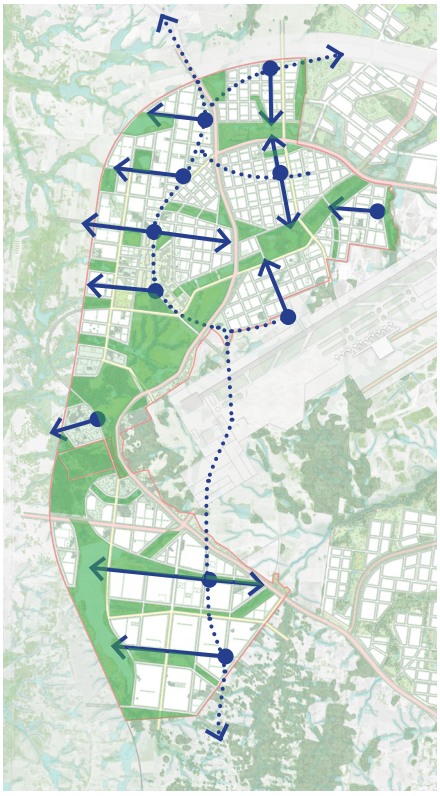
Views across Country

- Establish the prominent north-south ridgeline as the primary structuring element.
- Preserve landscaped views through the precinct to landscape landmarks such as the Cosgroves Creek, Mulgoa Valley, Badgery's Creek and the Blue Mountains beyond.
- Preserve views across Country that span from immediate contextual elements to the broader landscape and wide open sky.



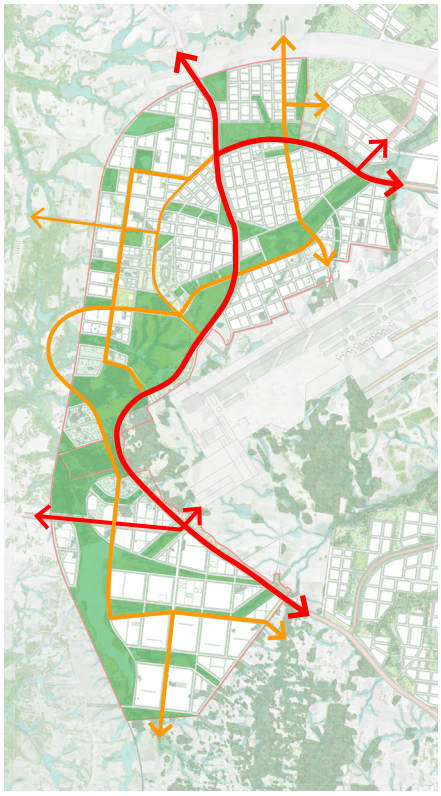
Ridge to Creek / River

- Create a new connected parkland that extends from the precincts prominent ridgeline, which includes Luddenham Village, down to Cosgroves Creek and the Wianamatta to the east, the Nepean River to the west
- The parkland network combines both blue and Green grids.
- The parkland network will connect to existing parkland, such as Sales Park.
- As a structuring element within the Urban Design Framework Plan, the parkland will have a clear and legible form framed and accessed by public streets.



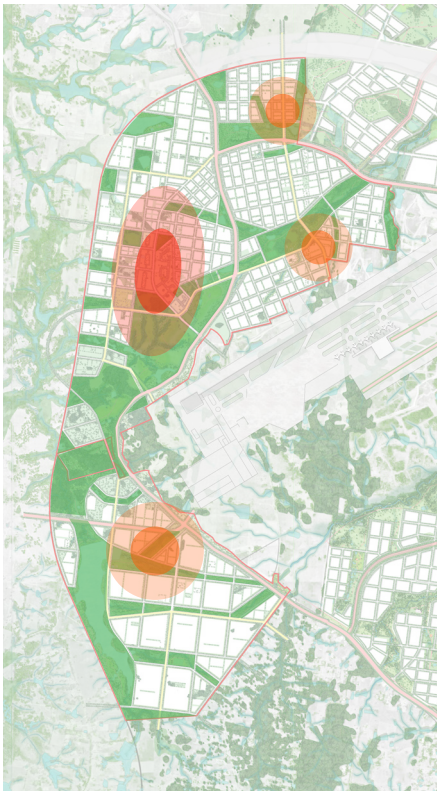
Streets to Creeks

- The connected street network has its pattern aligned with views to landscape. This approach generally means that streets run from ridge liens to creek lines.
- This approach will enhance the visibility of the landscape within the precinct along with ensuring a permeable, connected precinct.
- The street pattern allows for a variety of differently scaled land uses whilst strategically responding to topography, walkability and connectivity.



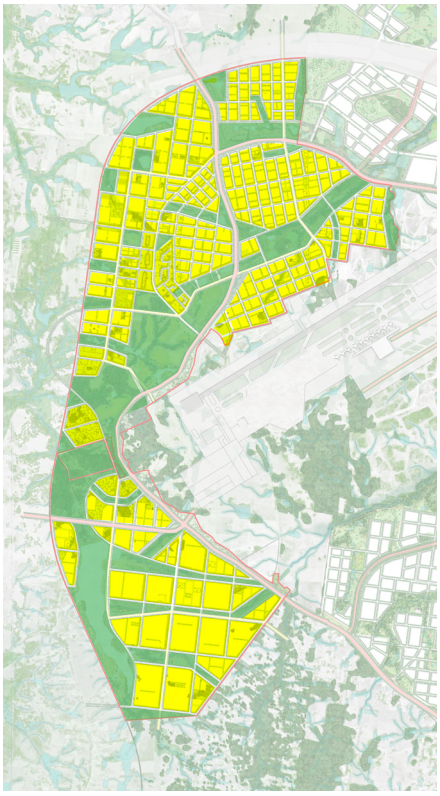
Connectivity

- The realigned Northern Road forms the primary north-south connector and ensures freight connectivity between the precinct, the airport airside cargo terminal and broader Sydney through the M12.
- Connection to the future Outer Sydney Orbital is located in close proximity to the WSIA freight terminal
- Public Transport (bus) equitably distributed throughout the precinct
- Active Transport networks provide connectivity throughout the street and parkland network
- Freight movements are minimised through Luddenham Local Centre.



Luddenham Agri-Village + Employment Centres

- Celebrate the history of Luddenham village as a centre of rural industry by framing it with agricultural industry
- The agricultural history, heritage and character of Luddenham Village will be celebrated and be a destination in its own right close to fresh food markets.
- A new local centre is formed to support the employment area that forms south of the airport cargo terminal alongside Duncans Creek
- Neighbourhood hubs are located adjacent public domain and public transport routes adjacent Cosgroves Creek.



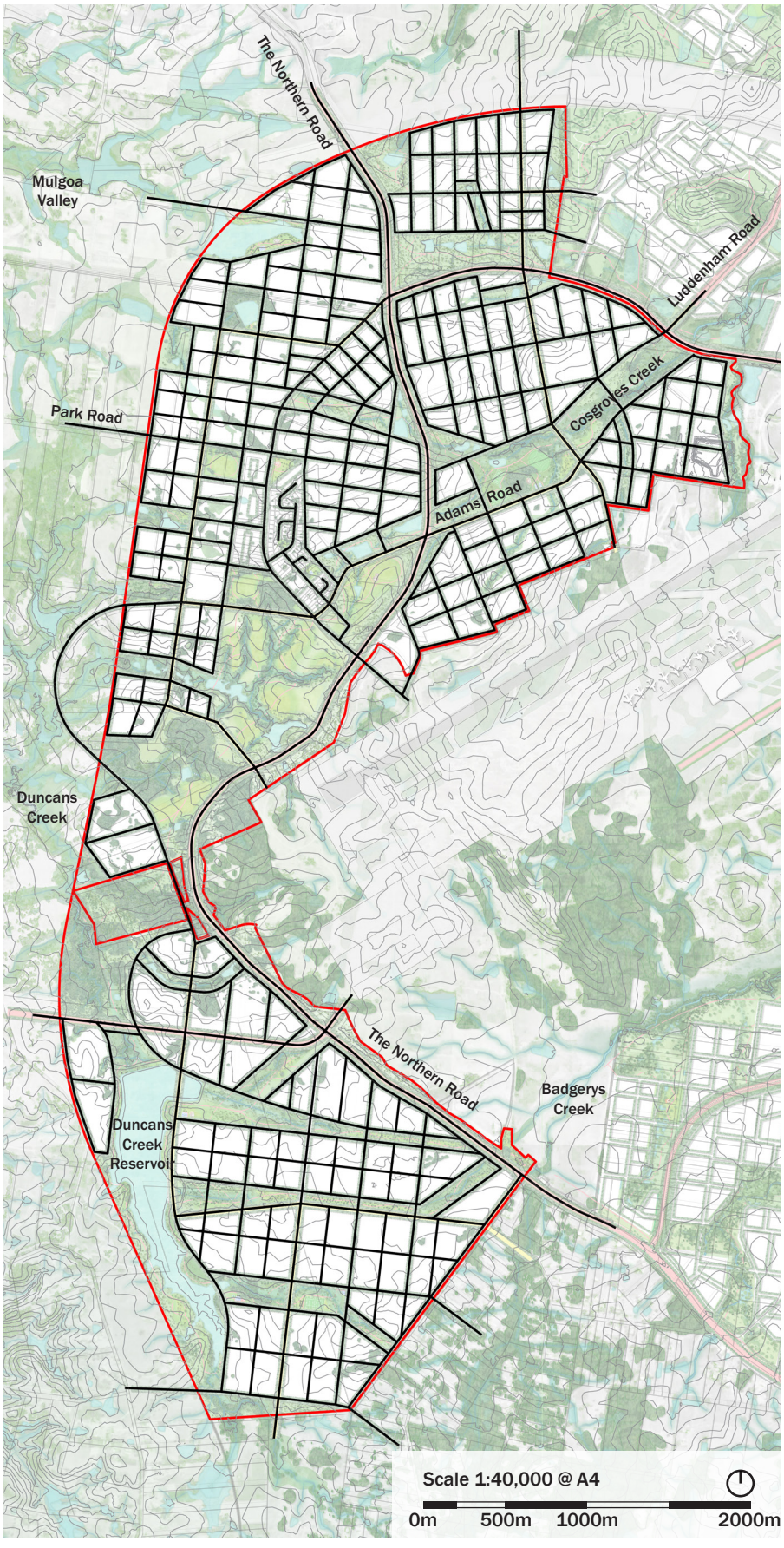
The Roofscape as Resource

- The roofscapes within the Agribusiness precinct should be utilised to harvest rainwater, produce solar power or green roofs.
- Water harvested can be re-used within the agribusiness in a closed or open system depending on scale
- Energy produced can be used on site or linked to the broader energy network to support the Aerotropolis and Greater Sydney.

Street Framework

The street layout of the Agribusiness precinct has been developed to respond to the following requirements:

- → Creeks and ridgelines are the primary structuring element of the street framework.
- → Street framework adjusts orientation and scale to suit local topography within the creek network and ridgelines
- → Street framework is flexible to accommodate very large rectangular footprint buildings without compromsiing connectivity and walkable neighbourhoods
- → Streets are aligned to maximise the visibility of long vistas and local landscape
- → Streets align across arterial and sub-arterial roads to future proof potential future intersections and connectivity
- → Edge streets define and provide access to riparian zones and open space



LEGEND

5m contours

Street layout (all typologies)

Agribusiness Hubs

Development within the Agribusiness Precinct will include uses that will benefit from opportunities for national and international trade. These uses may include:

Integrated Logistics Hub

Will deliver a multi-modal supply chain solution. Its superior land-side to air-side linkages will provide safe, secure and seamless connectivity to domestic and international markets for inbound and outbound freight. With digitally enhanced systems, processes and platforms it will enable rapid distribution of high-value products.

Integrated Intensive Production Hub

Support the production and value-adding of sustainable, high-quality fresh produce and pre-prepared consumer foods, bringing opportunities to existing and new businesses, markets and products. Enabling revolutionary urban agricultural solutions, it will accommodate large scale high-tech glasshouse operations and smaller scale vertical farming operations.

Food and Pharma Hub

Help deliver a major fresh food distribution point and create a collaborative, high value-added and integrated sector that helps meet the growing demand and changing consumer preferences in high growth sectors such as nutraceuticals, complementary medicines, value-added foods and pre-prepared meals.

Australian Centre of Excellence in Food Innovation

An industry-led powerhouse in food science, tech, engineering and math, unifying students, academics, entrepreneurs, industry experts and government. It will foster and accelerate research and production and create rewarding career opportunities

THE BLUE-GREEN INFRASTRUCTURE FRAMEWORK

The Blue-Green Infrastructure Framework is a series of integrated natural networks that penetrate into and through the urban form. The Green and Blue Infrastructure aims to: mitigate the urban heat effect, promote biodiversity, improve waterway health, promote active and passive use of open space, reduce stormwater runoff, endorse tree canopy cover targets, create a more resilient landscape and urban form, improve soil quality, reduce soil salinity and improve amenity for residents, workers and the whole community. The framework will be responsive to the need to safeguard airport operations by limiting wildlife attraction. The framework includes conservation corridors of remnant Cumberland Plain and River-Flat Eucalypt Forest preserved in conditions as close to original as possible.

View along Cosgroves Creek Parkland towards Luddenham Village and beyond

PUBLIC DOMAIN PLAN

The Public Domain within the Agribusiness Precinct will, by creating a range of memorable and high-quality spaces, connect the urban form to Country, in a manner that respects the natural processes and rehabilitates the land. By these processes, it will meet the needs of an evolving and liveable city.

PROVIDE OPPORTUNITY TO CONNECT TO COUNTRY

- The public domain retains and reinforces existing visual and physical connections to the surrounding landscape
- It will reveal the topography, distant views and big sky, providing opportunities to connect to Country

REPAIR AND PROTECT CREEKS AND WATERBODIES

- Preserve and improve creeks, dams, floodplains
- Public space integrated with riparian areas
- Water sensitive urban design principles
- Preserve and enhance creek corridors
- Connect creek corridors to ridges and hilltops
- APZ areas to integrate Aboriginal planting themes and management practices

REPAIR AND PROTECT THE CUMBERLAND PLAIN

- Celebrates and enhances the existing landscape characteristics
- Achieve 40% urban tree canopy
- Provide shade and amenity through tree planting
- Generous public domain to streets, parks, and riparian corridors
- Diffuse reflection of solar radiation

PROTECT AND NURTURE THE SOIL

- Carefully manage cut & fill
- Make contiguous areas of soil & natural ground
- Use permeable surfaces
- Preserves soil and provide maximum opportunity for soil biota and water retention by minimising pavements
- Reduce areas and concentration of salinity

CELEBRATE THE TOPOGRAPHY

- Accentuate the natural topographic features
- Enhance existing topography by careful placement of roads and open space
- Retain the form of the existing characteristic undulating topography by considered cut and fill

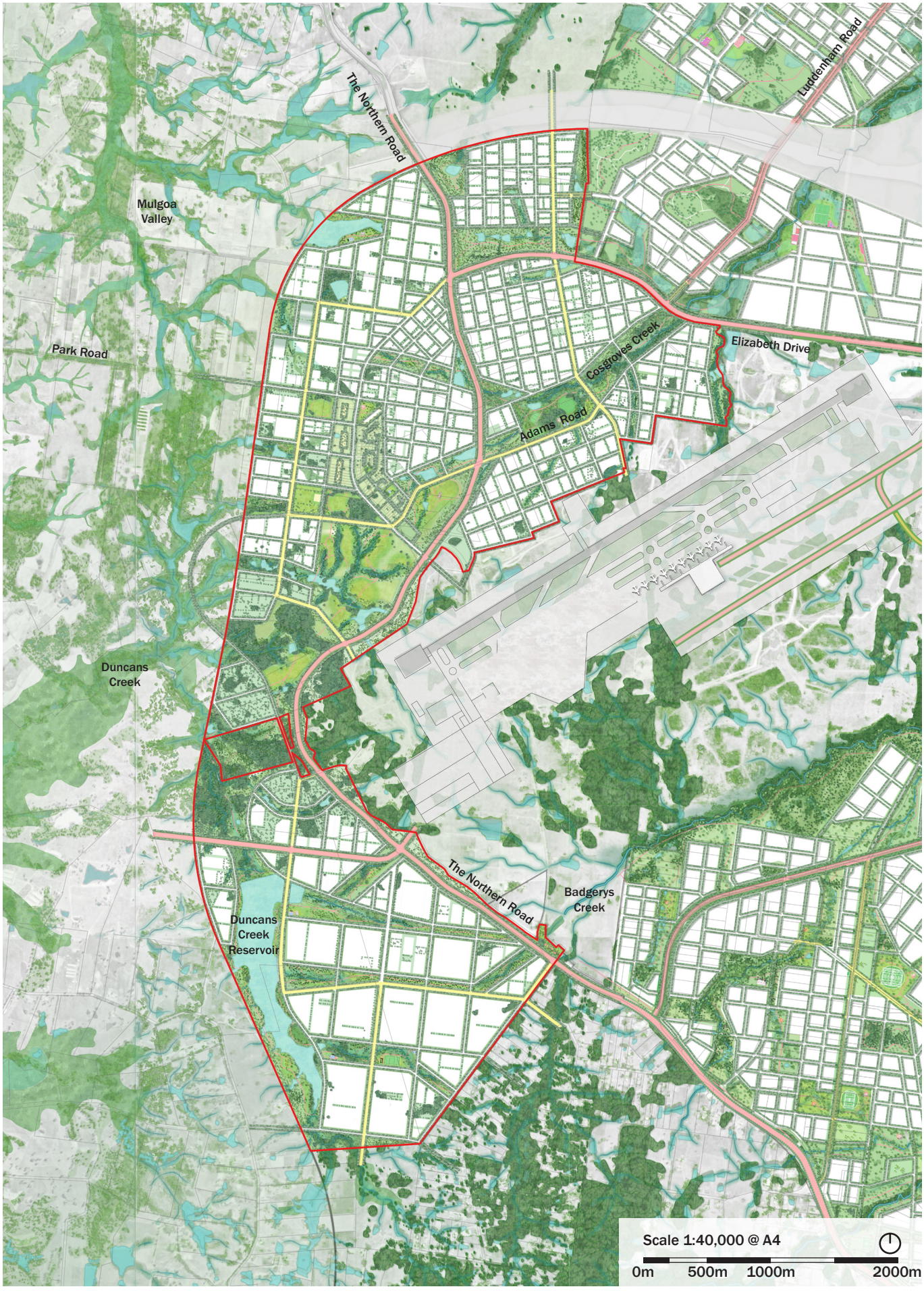
LAYOUT AND STREETS

- Streets should provide orientation, address and a clear and legible hierarchy
- The needs of servicing and practical movement are to be accommodated within the street framework.
- Streets are to provide clear wayfinding through appropriate design for pedestrians, cyclists and vehicles
- Provide shade and mitigate the urban heat effect

LUDDENHAM AGRI-PARK

- Provides opportunities for connection to Country
- Protects views across Country from the ridgeline at Luddenham Village along Cosgroves Creek to the north east and souther west along Duncans Creek tributaries towards the Blue Mountains
- Assists in interpretation of the existing landscape
- Facilitates a further understanding of contemporary land use practices
- Celebrates Aboriginal planting themes and indigenous management of the land
- Provides educational and tourist opportunities

The Urban Design Framework Plan



OPEN SPACE TYPOLOGY

The existing creeklines within the Agribusiness are fine tributaries stringing through the slopes from the ridgelines eventually connecting to form tributaries to the main creeklines in the valleys. The creeklines are used as a spine to form a series of connecting parks that link the landscape through the urban form. These parklands will integrate the Blue and Green Grid maintaining the biodiversity, improving the water quality in the precinct and connecting the urban form with nature.

Riparian Corridor Parkland

- → Provide biodiversity and habitat corridor (Blue, Green and Brown Grid connection)
- → Located in response to Aboriginal heritage sensitivity mapping
- → Preserve soil types and native soil biota
- → Active and passive recreation
- → Active transport links
- → Physical connection of parkland
- → Urban Cooling
- → APZ landscape zone to provide Aboriginal planting themes and managed land. APZ as determined by bushfire report.
- → Pathways and cycleways are aligned with existing streetlights where possible to minimise extra lighting

Linear Parkland

- → Waterways of Strahler Order 2 and higher will be maintained in a natural state, including the maintenance and restoration of riparian area and habitat such as fallen debris. Where a development is associated with or will affect a waterway of Strahler Order 2 or higher, rehabilitation will occur to return that waterway to a natural state to enable natural processes and functionality to be maintained
- → Vegetated riparian corridor
- → Biological and Biodiversity connections and corridors
- → Pockets of passive and active recreation
- → Strong visual connections through urban form and at terminating streets to parkland
- → Active transport links
- → Urban Cooling
- → APZ landscape zone to provide Aboriginal planting themes and managed land. APZ as determined by bushfire report.
- → Pathways and cycleways are aligned with existing streetlights where possible to minimise extra lighting

Urban Parkland

Community amenities, passive and active recreation, playgrounds, fitness nodes

- → Neighbourhood meeting place
- → Urban cooling
- → APZ landscape zone to provide Aboriginal planting themes and managed land. APZ as determined by bushfire report.
- → Pathways are cycleways are aligned with existing streetlights where possible to minimise extra lighting
- → Urban layouts, streets and drainage to achieve efffective perviosness and indicative flow targets

Nature Parks

- → Open space established around or connecting to areas with remnant vegetation and managed with primary focus on environmental protection
- → Open space to accommodate water retention capacity
- → Passive recreation

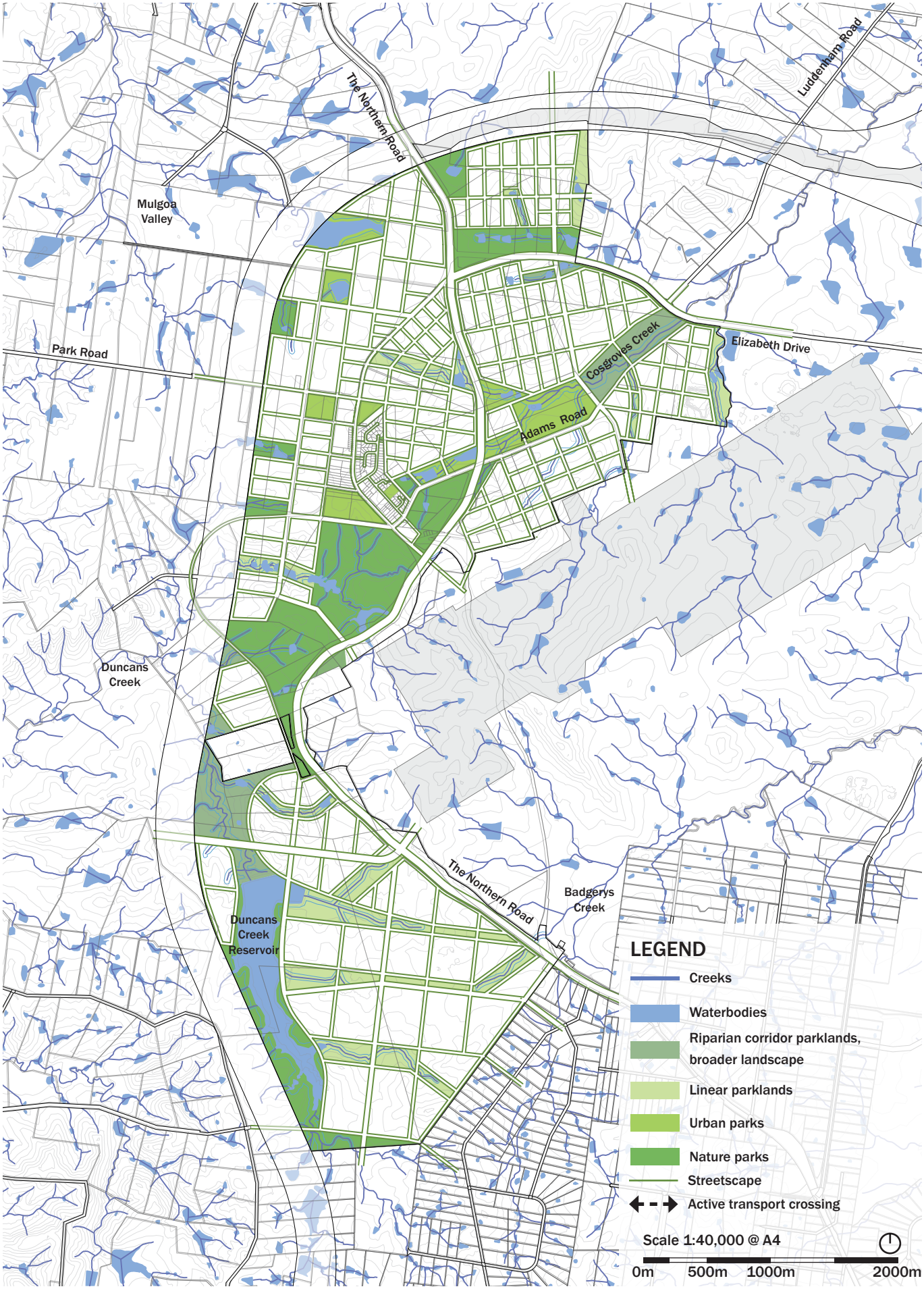
Streetscape

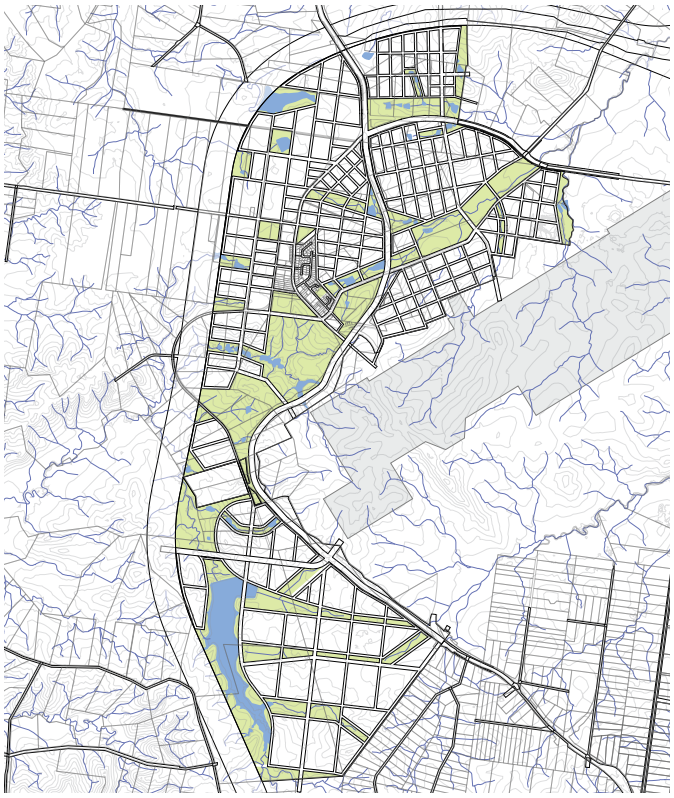
- → Integral component of the overall open space framework
- → Continuous tree and ground cover planting rich in diversity allows for wildlife to migrate through the urban fabric
- → Tree canopy provides shade, cooling and helps mitigate urban heat

Conservation Corridors
(located across other parkland typologies)

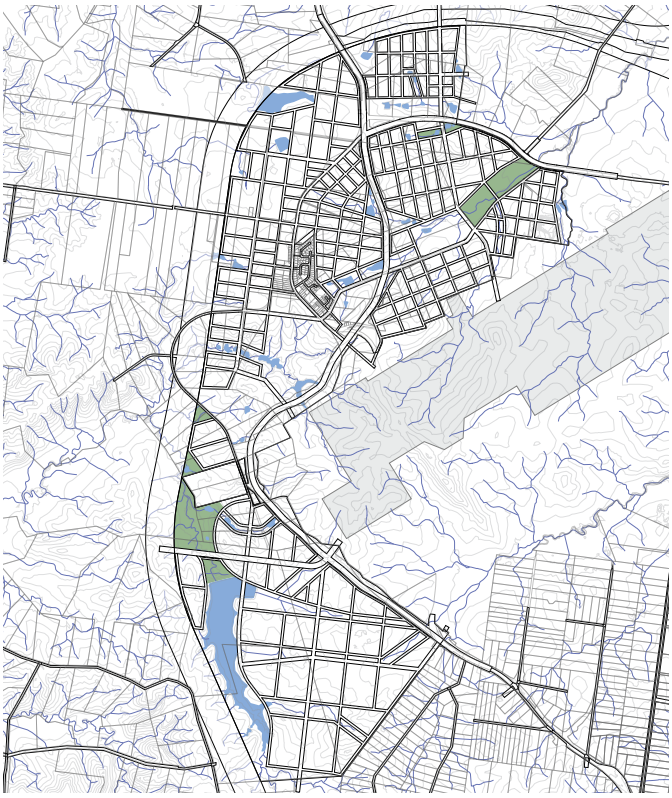
- → Remnant Cumberland Plain retained and conserved in original or unmodified condition
- → Incorporates a range of landforms and environments of the Cumberland Plain with consideration of curtilage, view lines and amenity
- → Provides the experience of what the Cumberland Plain was originally like

The Urban Design Framework Plan

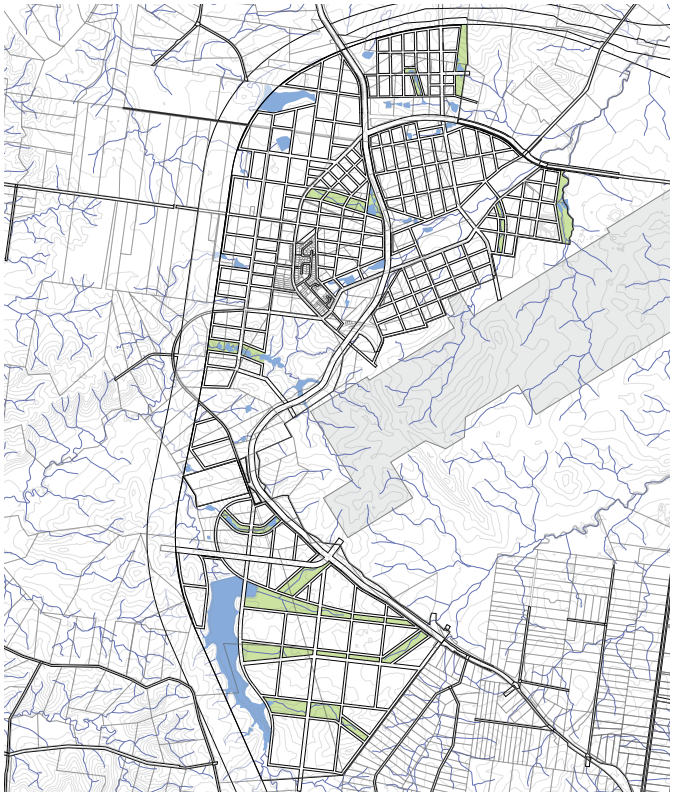




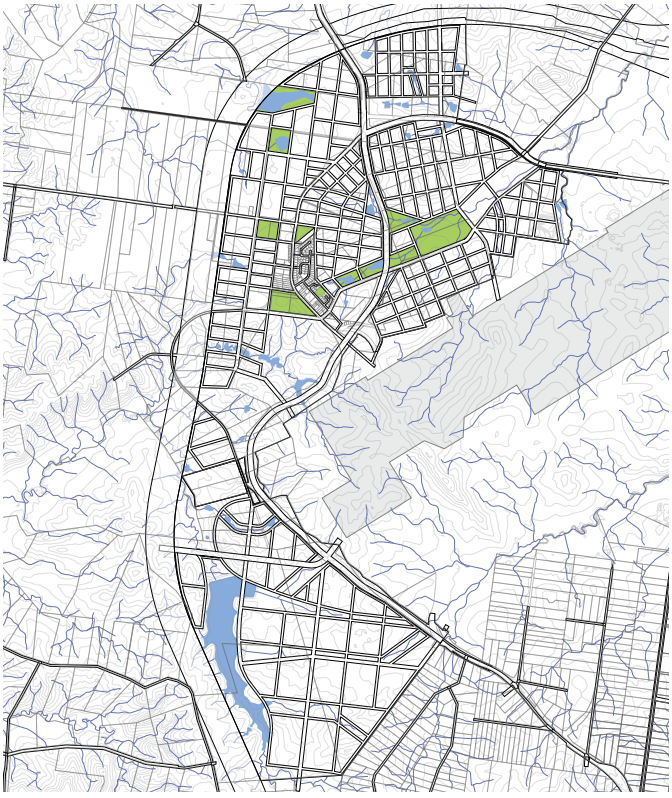
Parkland within the Agribusness Precinct



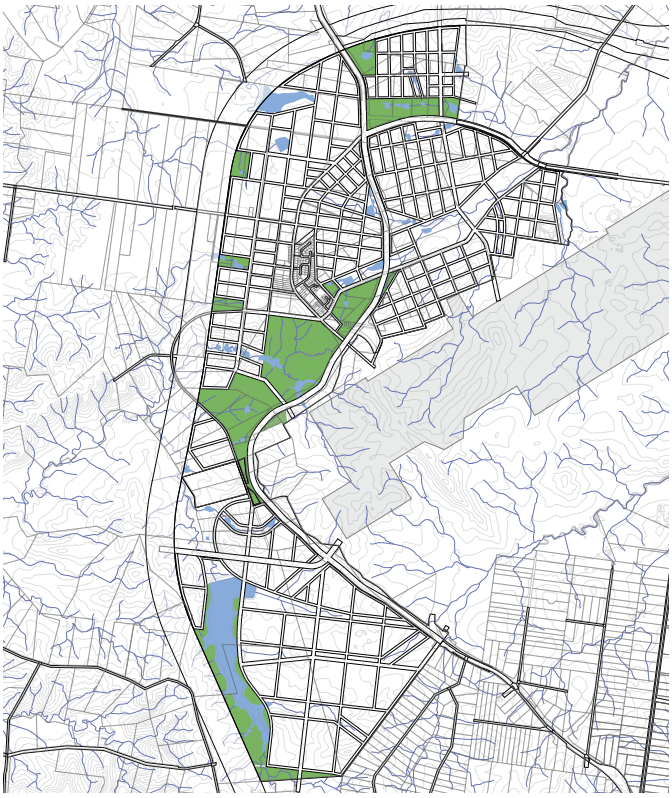
Riparian Corridor Parkland



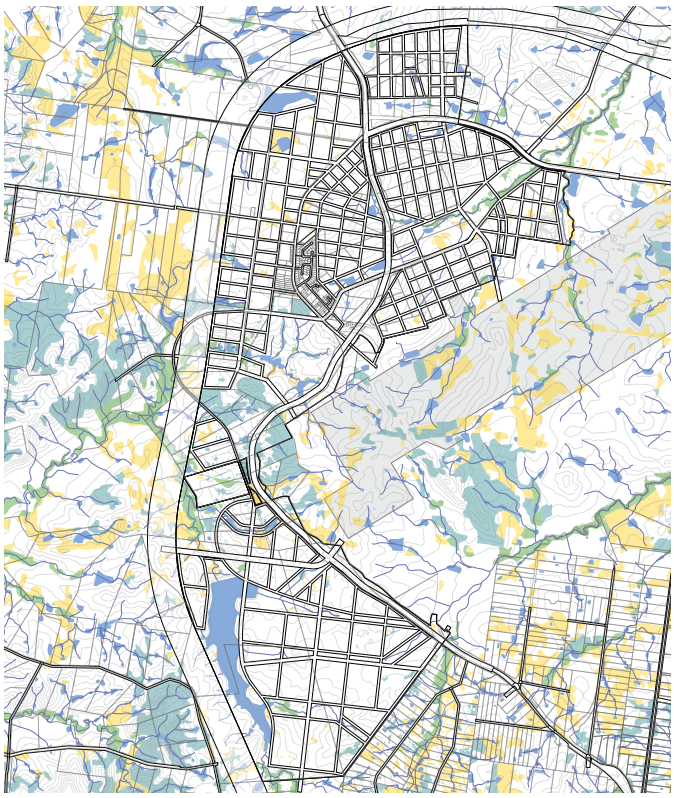
Linear Parkland



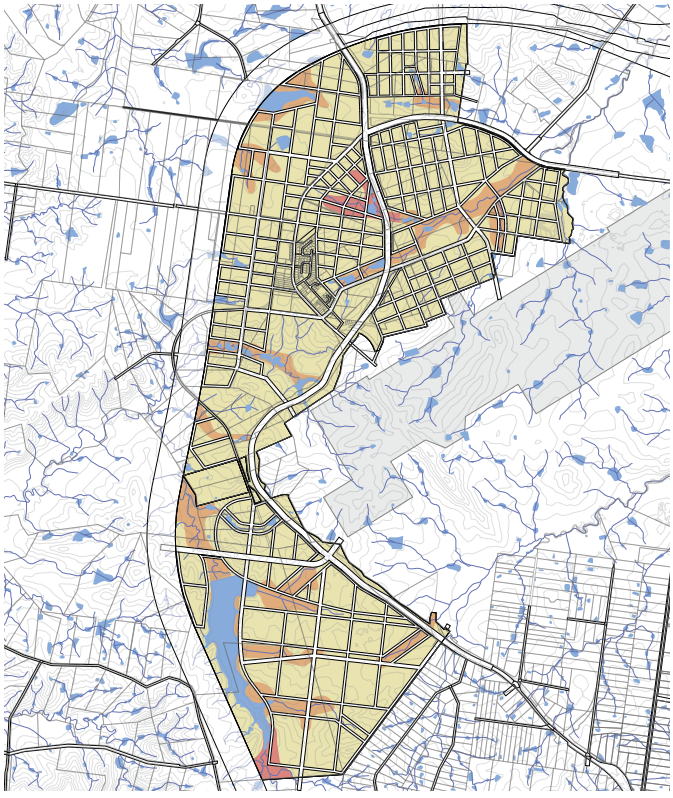
Urban Parks including Ridgeline and Hilltop Parks



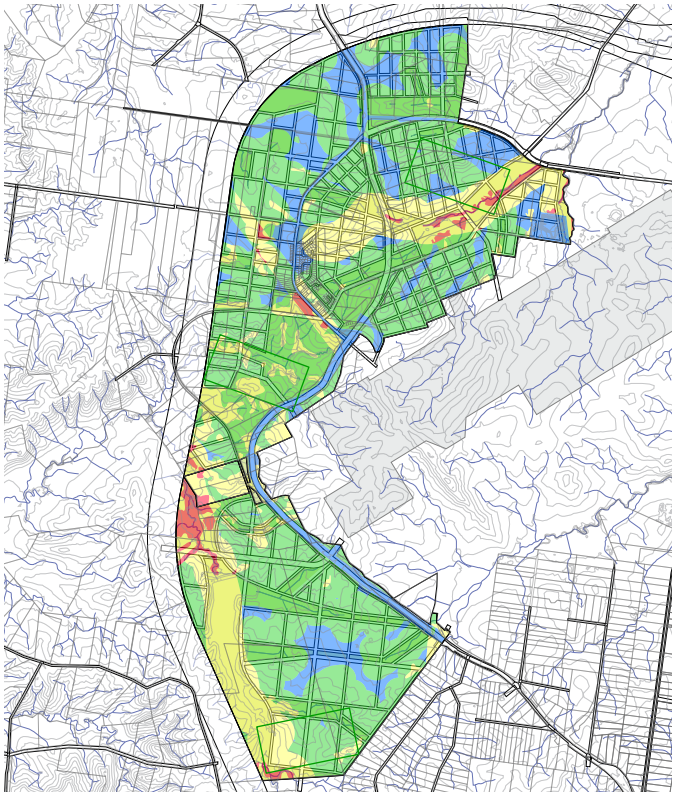
Nature Parks



Existing Vegetation Communities



Salinity Potential



Aboriginal Heritage Sensitivity Mapping

A HISTORY OF HARVESTING

The history of harvesting in the precinct is celebrated within the Agri-Park, through aboriginal planting themes and indigenous land management, and continues within new intensive agriculture enterprises throughout the precinct.

A HISTORY OF HARVESTING

The lands within the Agribusiness precinct have a legacy of agricultural land use. The seasonal and cyclical harvesting of land has supported and nourished the community throughout history, bridging Indigenous and European cultures and connecting the precincts future with its past. The history of harvesting acknowledges the importance of the stewardship of the land over millenia and through this the vision combines Aboriginal land management practices and the evolving use of the land for contemporary uses in a 21st century context.

Acknowledging this history and its relationship to the future of the precinct could provide opportunities to connecting with Country. These could also include cultural, educational, research, tourism and commercial opportunities.

The heritage of the land use and management practices of the Cumberland Plain are reflected in the landscape character of the Agri-business Precinct. At the heart of the precinct is Luddenham Village, with strong visual and social evidence of its connections from colonial times tangibly linking Indigenous use of the land through and celebrating this association through art works, archaeological and physical artefacts.

The parkland within the Agribusiness precinct will reflect a diverse range of landscape and physically connect the Agribusiness precinct to modern and historical land usage. The parkland is to integrate Indigenous planting and management techniques, re-establishing the heritage and history of the place.

An opportunity exists to connect to Country through Aboriginal planting themes that will be consistent with Indigenous use of the land, and include plants that are integral to Aboriginal life and culture. This will be especially evident in planting to the Agripark, APZ riparian corridors and areas of Aboriginal heritage sensitivity.

The areas of Aboriginal planting will be managed in a manner that reinforces the ecological values of the Blue-Green Grid, while preserving and demonstrating the cyclical and seasonal processes and changes of a harvested and maintained landscape There are 3 major connected parkland precincts: Cosgroves Creek, Agri-Park and Duncans Reservoir.

The maintained landscape in the APZ in combination with the riparian corridor revegetation and parkland provides a protective buffer to areas that may potentially have moderate to high Aboriginal heritage sensitivity.

Cosgroves Creek retains the existing landscape character of dense plantings that identify the creek line while tasking the zone as the recipient of contemporary uses that include recreation, Aboriginal land practices and WSUD principles

The Agri-Park is a substantial area of parkland that is a key landscape identity for the precinct. Abuting the Northern Road and incorporating retention of existing native flora, the parkland forms an important junction between the northern and southern portions of the precinct. The Agri-Park provides opportunities for a living, evolving and sustainable cultural exploration of the land for the future. The Agri-Park will preserve landscaped views across Country from the ridgeline at Luddenham Village.

Duncans Creek and reservoir in the south of the precinct form an exciting opportunity to transition the large reservoir, a remnant of significant pastoral activity in the precinct, into a parkland of unique character and contribution within the broader Aerotropolis that will support adjacent employment lands as well as the Aerotropolis. The reservoir is to be rehabilitated through bio-filtration measures which will in turn form part of its landscape character.

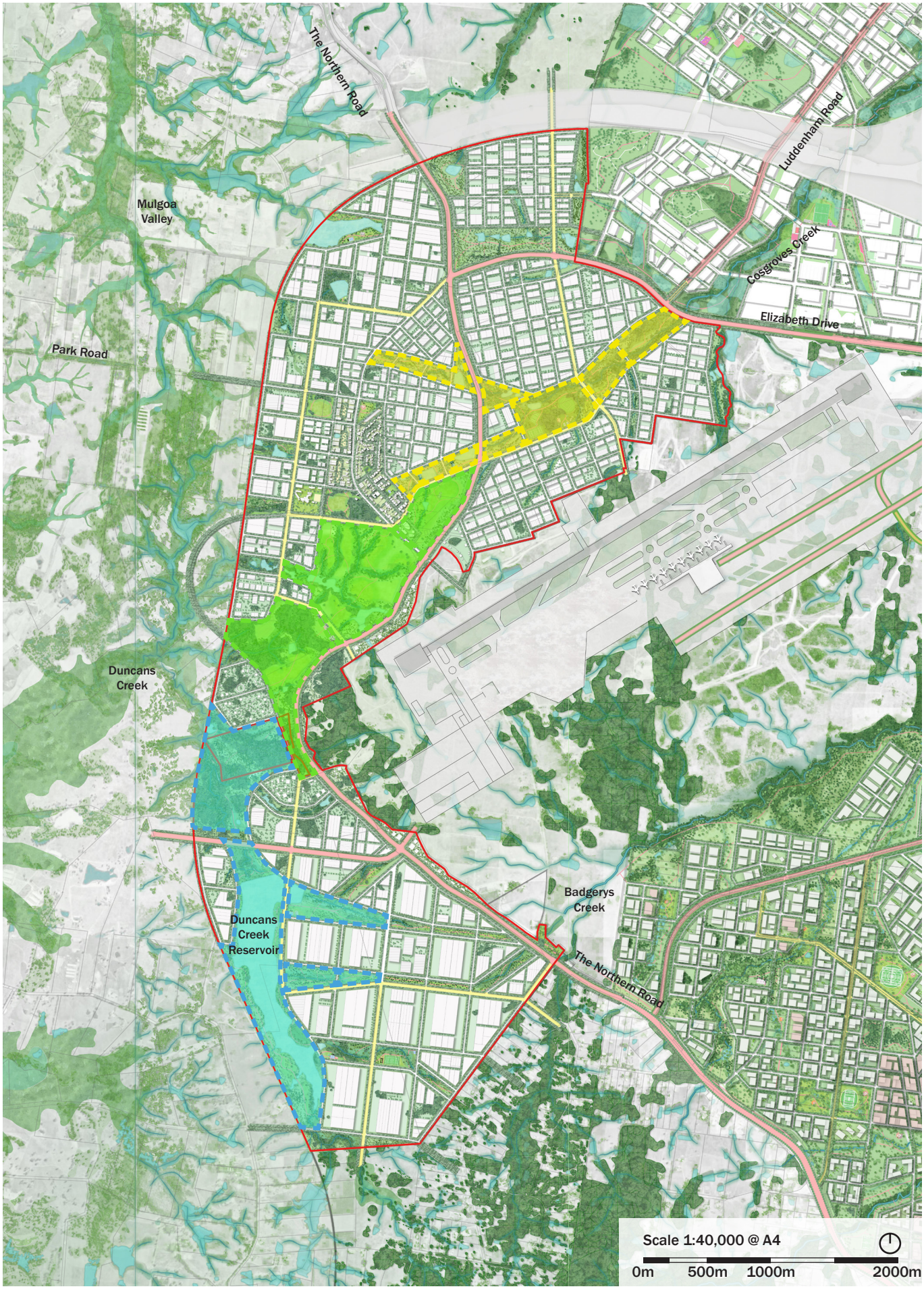
LEGEND

Cosgroves Creek

Agri-Park

Duncans Creek Reservoir

The Urban Design Framework Plan



UNDISTURBED SOIL NETWORK

The USN is a matrix of undisturbed or quality site soil which displays good soil biota and structure that is synonymous with the ecologies of the Cumberland Plain. The USN is to act as a reserve of the soil biodiversity within the precinct so that living soils are retained and can act as source for the re-establishment of soil biota, life and structure, to the often inert, processed & imported soils.

The USN is a network of interconnected and undisturbed or reused site soils, essential to the health of the Green and Blue systems.

The naturally occurring soil system will be retained along the riparian corridors and tributary creeks. These soil corridors will extend into the urban fabric of the Agribusiness precinct, through the urban and linear parks and streets with additional planted strip to reinforce the connections of the Undisturbed Soil Network.

The Undisturbed Soil Network is to be protected to retain the existing soil structure and soil biota, micro-organisms and insects. Topographic and engineering alterations within streets, WSUD and creek rehabilitation areas, sports-fields and parks, should be avoided. However, should it be required, it is to be undertaken in a manner that maintains the soil horizon structure and depths (A, B and where required C), by removing and storing in the separate horizons and when placed back on site, the transition zone between horizons should be blended. Soil should be sourced for reuse from the areas where quality soils currently exist on site. It is anticipated that the soils from the pastoral paddocks and adjacent to dams are likely to be in a degraded, or have high salt content.

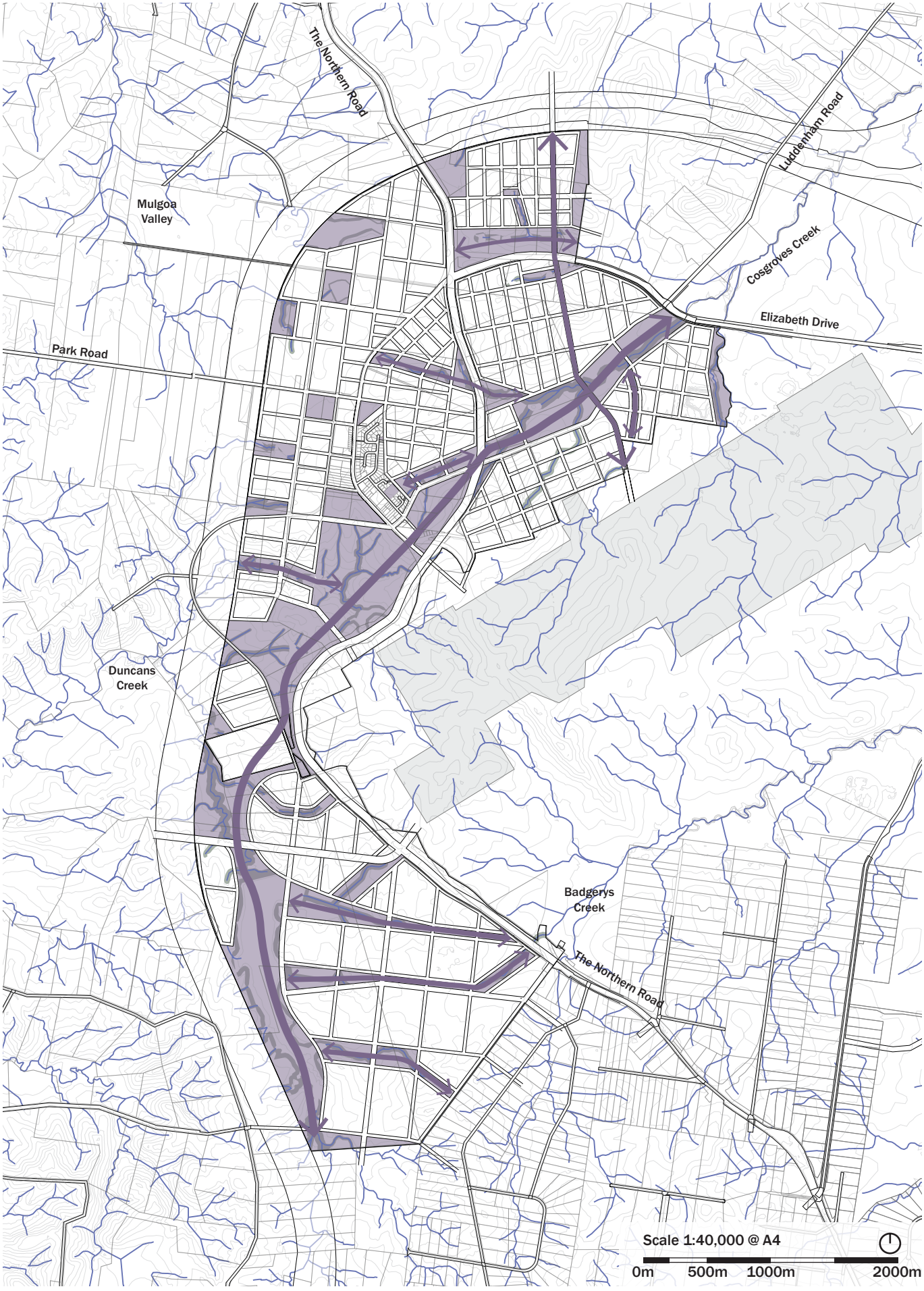
Structures and paths within or crossing the riparian zones and retained soil zones should be of a detail that requires minimal excavation or soil disturbance, while roads should be elevated on piers and conform to the Office of Water Guidelines

LEGEND

Undisturbed soil within creeks riparian corridors and broader landscape parklands

Interconnected soil system within urban fabric

The Urban Design Framework Plan



CULTURAL LANDSCAPES

The existing country remains incredibly significant in Indigenous Culture and heritage significance. Many existing sites bhave been documented across the Agribusiness precinct and Luddenham Village - and it is likely many others are unmapped. Country being core to Culture - water, creeks, ridgetops, existing vegetation and the like are associated with the sites of significance.

The Agribusiness Precinct contains the highest concentration of non-Aboriginal heritage items in the Aerotropolis. Most of the non-Aboriginal heritage items are included in or around Luddenham Village and connected with the early pastoral settlement of the village. Some of these items include Luddenham Progress Hall, St James Anglican Church and Cemetery and the Luddenham Public School amongst others.

There are also significant places of Aboriginal cultural heritage significance with several Aboriginal artefacts and potential archaeological deposits identified, particularly within the north of the precinct and around riparian areas. Similar to other precincts, areas of moderate and high Aboriginal heritage sensitivity have been identified along the creek lines and riparian areas. Furthermore, the Urban Design Framework Plan has identified several potential conservation corridors which contain Aboriginal heritage values. These potential corridors have been incorporated into the broader open space network and encompass landforms of ridgeline, spur, hillslope, creek flats, creekline and views.

St James Anglican Church and cemetary located at the top of the rise on The Northern Road at the southern end of Luddenham Village.

Photography by Extent Heritage, 2020

Photography by Extent Heritage, 2020

LEGEND

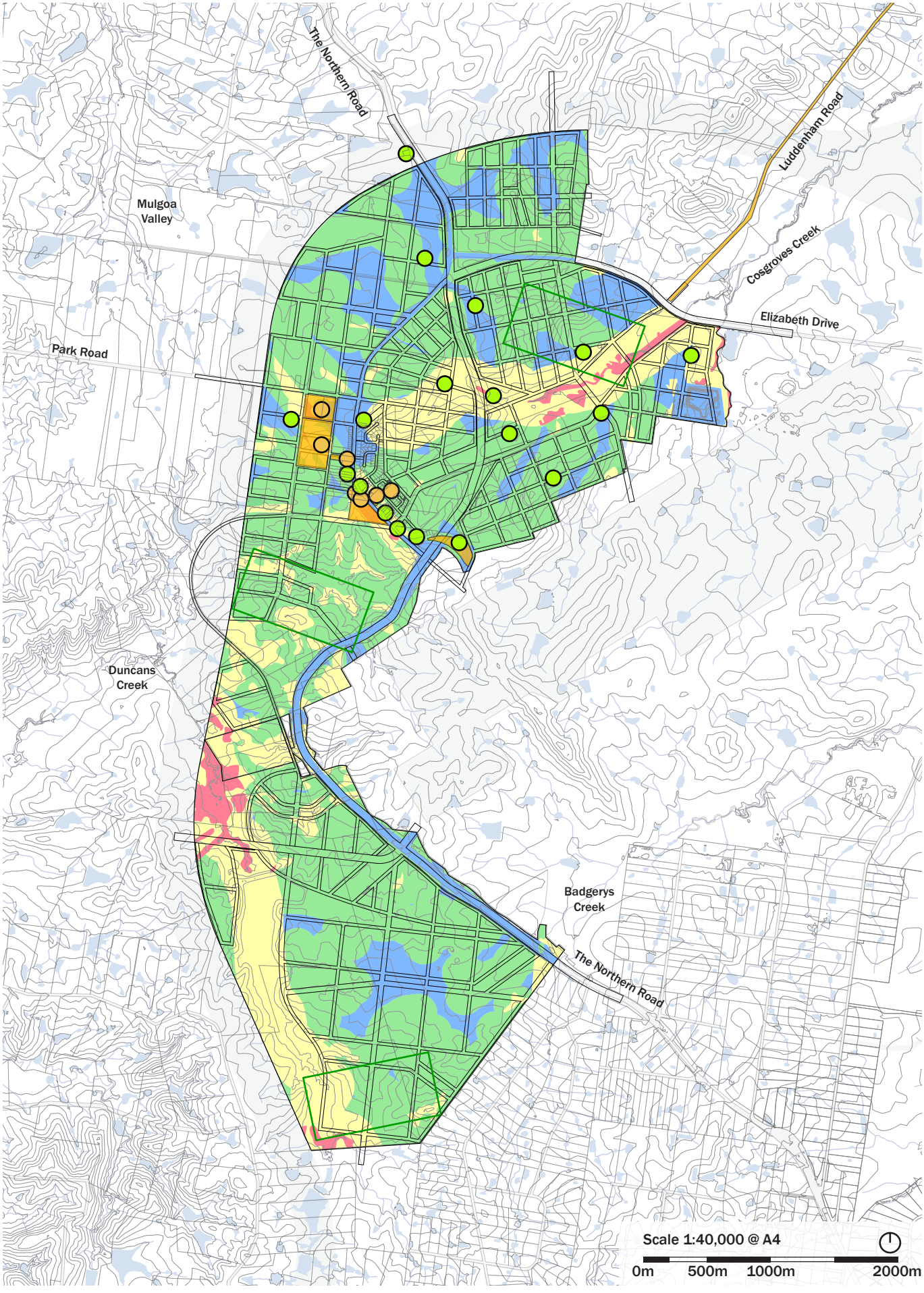
Aboriginal heritage sensitivity

- High
- Moderate
- Low
- Very low
- Potential conservation corridors

Non-Aboriginal heritage

- Listed local significance items
- Unlisted items

The Urban Design Framework Plan



SCENIC VALUES

The following is a record of the existing significant scenic and heritage view corridors and sight lines from within the Agribusiness precinct. Significant Indigenous sightlines have been considered from the cultural and historic studies. Items such as Scarred Trees noted in these documents are not visible from the site and noted gathering places or where artefacts have been found, are not identifiable. A more detailed walking of country with elders who have deep knowledge of the land and the story of country is required to clearly observe and document where these occur. It is likely that the points at which the land can be observed from the ridgelines is similar to that noted in this document.

The scenic values of the Agribusiness Precinct recognise the existing undulating topography that characterises the place and the relationship of the Precinct to its broader setting.

Opportunities are gained from the dominant north-south ridgeline that runs through the centre of the precinct generating opportunities for views over and through the precinct. The views are enhanced by the retention of the creek systems and their immediate surroundings, the open space structure and incorporation of existing features including Duncans Creek Reservoir and the pastoral landscape setting of native trees and grazing land associated with Luddenham Village The retention of these areas and sites facilitate an appreciation of place while incorporating the evolving landuse and urban form that is proposed.

The existing relationship of landscape is reinforced by the identification of these key views that strengthen and underlie the landscape values of precinct.

The scenic values of the precinct are found along the ridgelines, reinforcing the existing values of a fluvial landscape with its characteristic stream systems, undulating landform and remnant woodland. This, combined with views to the broader setting of the Blue Mountains to the west and the undulating form of the Cumberland Plain to the east facilitate opportunities for the appreciation of the overall context and scenic values of the precinct. The following structuring landscape view lines have been identified:

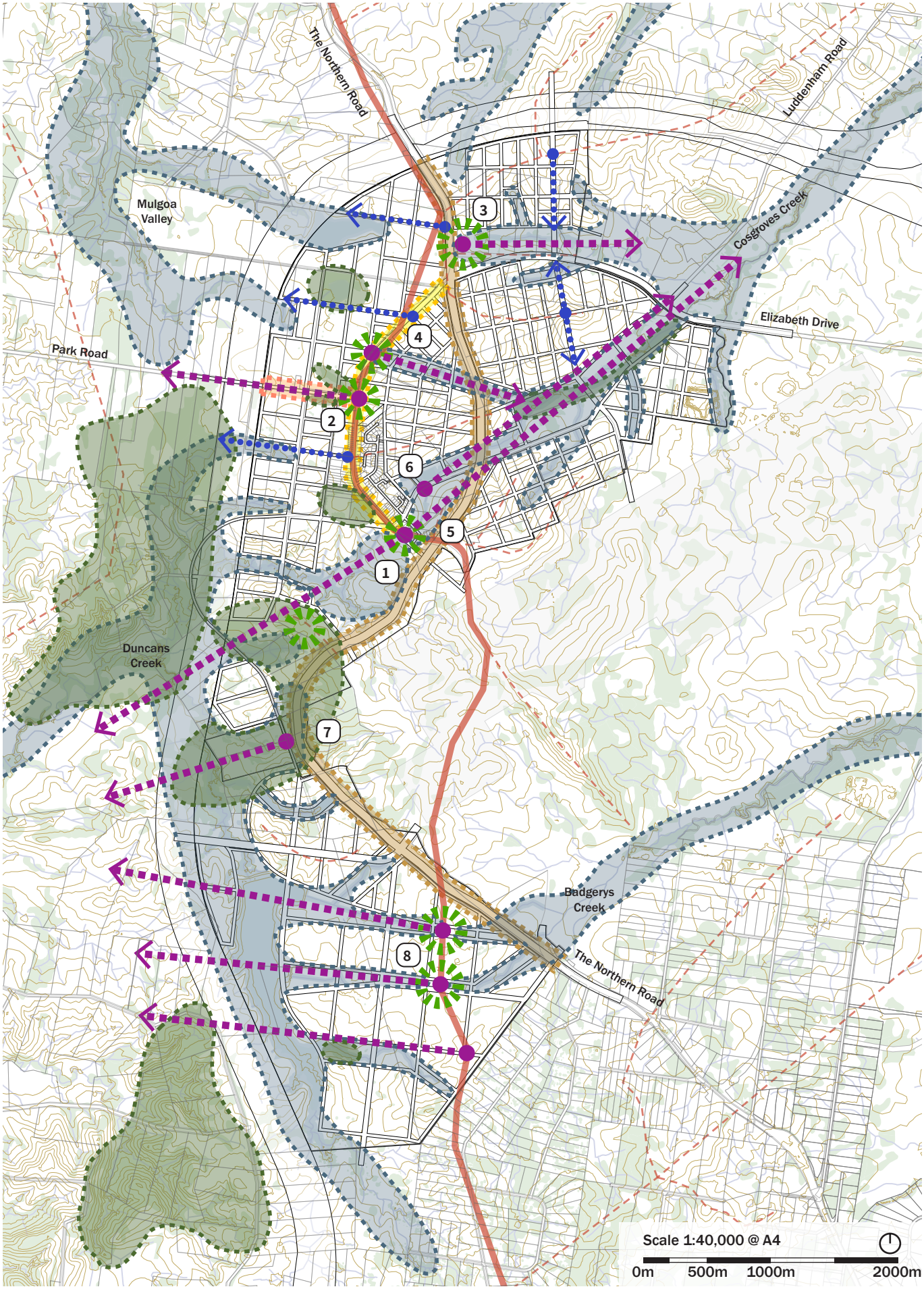
1. **Long views south west from the predominant north south ridgeline along the old Northern Road.**
2. **Park Road west views to Blue Mountains**
3. **View along Cosgroves Creek tributary and towards Cosgrove Creek and Sugarloaf Ridge**
4. **Valley view to east through a branch of Cosgroves Creeks, from the Northern Road**
5. **View from the old Northern Road ridgeline, down the Cosgroves Creek valley**
6. **Valley view adjacent Adams Road to the north east along a southern branch of Cosgroves Creek**
7. **View to west over pastoral and Cumberland Plain Woodland from Willowdene Road**
8. **Set of 3 views from the predominant north-south ridgeline along creek lines towards Duncans Creek with the Blue Mountains beyond**

The above views are described in further detail in the following pages.

LEGEND

- Predominant north-south ridgeline
- Landform - subtly undulating
- Filigree of creeks and dams
- Creek riparian corridor with associated vegetation framing long views
- Existing remnant vegetation - framing long views
- The realigned Northern Road - major arterial road with adjacent planting buffer
- The old Northern Road with 'Green Boulevard' landscape marking the ridgeline
- Gateway landscape along Park Road arrival
- Parkland on ridgetops or local high points
- Views from streets towards the creeks and broader and landscape setting
- Significant structuring views from ridgelines to and along creeklines and valleys.

The Urban Design Framework Plan



Studio Hollenstein ©

1. Long views south west from the predominant north south ridgeline along the old Northern Road.

- Connecting Country - connecting ridgeline to creekline and the Blue Mountains beyond.
- Significant heritage and scenic views
- Sightlines connect Luddenham Heritage buildings with colonial pastoral countryside
- Views across St James Anglican Church Cemetary from the Northern Road (Exisitng Alignment) to south west, across pastoral paddocks and the heritage Lawson's Inn site, to the layered tree lines in creek gulleys. Blue Mountains are visible on the horizon
- Backdrop of native canopy trees behind the church frames the view of the church frontage and directs the eye to more distant view

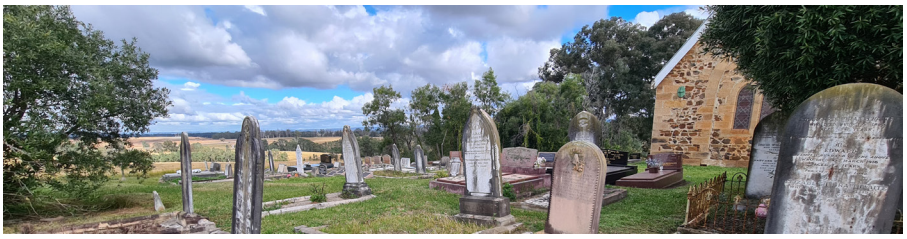


Image sourced from Extent Heritage, 2020

2. Park Rd to West of Luddenham showgrounds to Wallacia

- Siginificant views that define the transition into rural Country west of the ridgeline at Luddenham
- Blue mountains highly visible just above the horizon line.
- Journey through the transition into vast open rural space significant.
- Creekline valley's defined by trees adjacent tracing creeks

3. Valley view to east through north branch of Cosgroves Creeks, North of Elizabeth Drive

- Significant views through to Sugarloaf Ridge across Cosgroves and South Creek valleys
- View through creek valley to broader views.
- View line includes significant Cumberland Plain vegetation
- Ridges of creek valley contain and focus views towards Sugar Loaf Ridge

4. Valley view to east through a branch of Cosgroves Creeks, from the Northern Road

- Long views through to Sugarloaf Ridge over dams with regrowth indigenous trees in foreground
- Long Ridges restrict broader views and scale of Sugarloaf Ridge

5. Valley view to east through southern tributary of Cosgroves Creek,

- Scenic view of chain of dams through creek valley. District valley views beyond
- Realigned Northern Road prominent intersecting longer sightlines to extended valley view and ridges

6. Adams Road - Cosgroves Creek Valley East of Luddenham Village

- Minor scenic views confined to valley
- Rural views through pastoral valley and chain of dams

7. View to west over pastoral and Cumberland Plain Woodland from Willowdene Road near future underpass of Outer Sydney Orbital.

- Enclosed pastoral view to significant stand of Cumberland Plain Woodland along Creekline
- Link of pastoral scene to Cumberland plain woodland

8. Set of 3 views from the predominant north-south ridgeline along creek lines towards Duncans Creek with the Blue Mountains beyond

- Enclosed pastoral view to significant stand of Cumberland Plain Woodland along creekline
- Link of pastoral scene to Cumberland plain woodland

Image sourced from https://www.lpcmilk.com/gallery/

DUNCANS CREEK RESERVOIR

The existing Duncans Creek Reservoir is distinguished by an existing large and substantial waterbody that forms a ready asset for the establishment of an aquatic focused recreation park.

The Duncans Creek Reservoir located in close proximity to the integrated Blue-Green Grid of the business related lands creates opportunities to enhance the parkland values of the precinct.

The design of the Blue-Green Grid incorporates the creeks into the reservoir through the retention and enhancement of the open space between business lands. This strategy facilitates the use of the open space through the provision of walking tracks, bike trails and the like providing vital open space adjacent to the business lands.

Through the rehabilitation and remediation measures of the Duncans Creek Reservoir, a unique parkland feature is realised facilitating a positive interaction with the reservoir creating the following opportunities:

- → Water activity and access
- → Active sport and recreation
- → Elevated platforms, look outs and boardwalks for walking and cycling.
- → Biofiltration to improve water quality
- → Landscape that is responsive to the wildlife management requirements of the airport

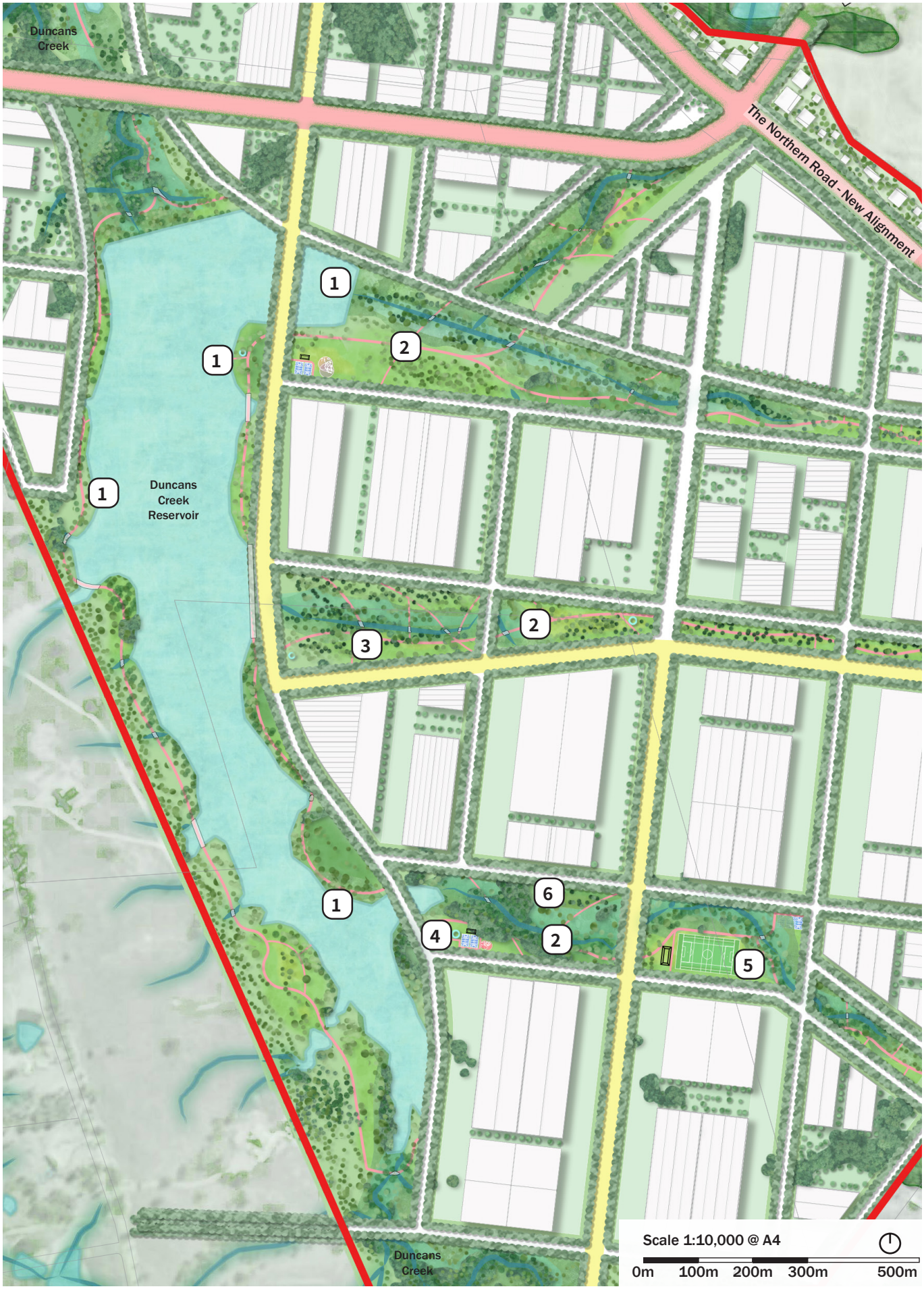
Annotations

1. Water sport launching off points
2. Sharedpaths and cycleways
3. BBQ & sheltered zones
4. Playing courts & children play areas
5. Sports field & open recreational areas
6. Water detention and rehabilitation zones

Legend

- Sportfields
- Active recreation, areas with recreation focus, park amenities
- Water launching-off point
- Cyclepath, walking trails
- Recreation nodes, exercise stations, playgrounds - local
- Creek & associated riparian corridor
- Existing tree vegetation

The Urban Design Framework Plan



View east across Duncans Creek and Reservoir Parkland with agribusiness development beyond

Studio Hollenstein ©

Section through Duncans Creek Reservoir

LOW IMPACT RECREATION

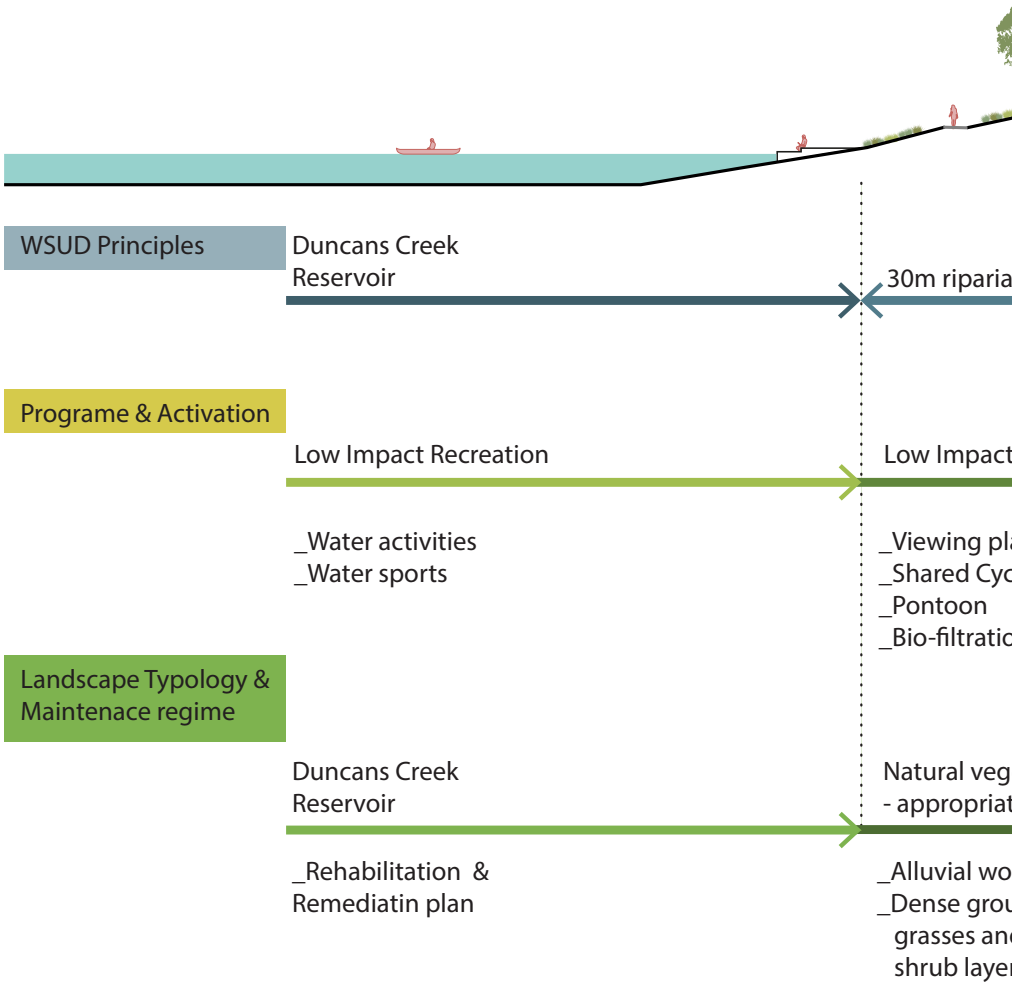
VIEWING PLATFORMS, SHARED CYCLE WAYS, PONTOON

CORE OF RIPARIAN ECOLOGICAL CORRIDOR

HABITAT RESTORATION & PRESERVATION, CREEK CROSSINGS, ALLUVIAL WOODLAND AND DENSE CROUNDCOVER

HIGH IMPACT RECREATION AND LEISURE

SPORTS FIELDS, PLAY SPACES, PICNIC & BBQ SPACES, DOGPARKS, COMMUNITY GARDENS, EVENT SPACE, SHOWGROUND, PARKLAND COMMUNITY AND AMENITIES



Landscape Precedents

n corridor

Raingarden

Recreation

Managed APZ

Sub-Arterial Road

atforms
cle Ways

on Zone

Strip Park
Open Lawn

Aboriginal
Planting
Themes

etated riparian area
te maintenance regime

Streetscape

odland
undcover dominated by
d herbs, and occassional
r

_Caopy within
APZ in sccordance
with PBP

LUDDENHAM AGRI-PARK

The Luddenham Agri-park, located to the south of the village of Luddenham provides opportunities for the creation of a social and cultural framework that includes an Aboriginal and Heritage Centre, passive and some active recreation and incorporating blue and green ecological values within the setting of a pastoral landscape that is characteristic of the Cumberland Plain.

The landscape character of open pasture and remnant native woodland provides a natural setting for therecognition and celebration of the ecological and cultural layering of the place while providing opportunities to preserve and frame landscaped viewsacross Country from and to Luddenham and the Blue Mountains and Cosgroves Creek. The landscape character is distinguished by the open grass lands, canopy native trees and fluvial qualities of the creek systems that flow through the parkland. Clear sight lines and ready pedestrian and vehicular access to these parkland create opportunities for the use and enjoyment of the warmth of nature.

This parkland acts as the cultural tie that links both past and future uses of the land through:

- → Opportunities to connect to Country
- → Food research and food production
- → Indigenous knowledge of land management
- → Indigenous land management
- → Aboriginal planting themes
- → Natural and cultural heritage
- → Opportunities for heritage interpretation and cultural practice
- → Limitations on wildlife attraction

Annotations

1. Creek-line riparian revegetated zone
2. Land dedicated to Aboriginal planting & management
3. Sharedpaths and cycleways
4. Rest and rehabilitation stops
5. Natural play parks
6. Teaching/Gathering plinths

Legend

- Land dedicated to Aboriginal Planting Themes
- Shade facilities and rest stops
- Cyclepaths, walking trails
- Recreation nodes, exercise stations, playgrounds - local
- Creek & associated riparian corridor
- Existing tree vegetation

The Urban Design Framework Plan

View south west across the Agri-Park from the ridgeline at Luddenham Village towards the Blue Mountains

Section through Luddenham Agri-Parkland

The Northern Road
Existing Alignment
Local Collector

HIGH IMPACT LANDSCAPE

ABORIGINAL PLANTING THEMES, INDIGENOUS MANAGEMENT, SHARED CYCLEWAYS

CORE OF RIPARIAN ECOLOGICAL CORRIDOR

HABITAT RESTORATION & PRESERVATION, CREEK CROSSINGS, ALLUVIAL WOODLAND AND DENSE GROUNDCOVER

Programe & Activation

Streetscape

Local Collector

Roadside vegetative Buffer

_Visual Screening of road
_Dense tree planting
_Dense groundcover

High impact Pr

_Aboriginal Pla
_ Shared Cycle

Landscape Typology & Maintenace regime

Streetscape

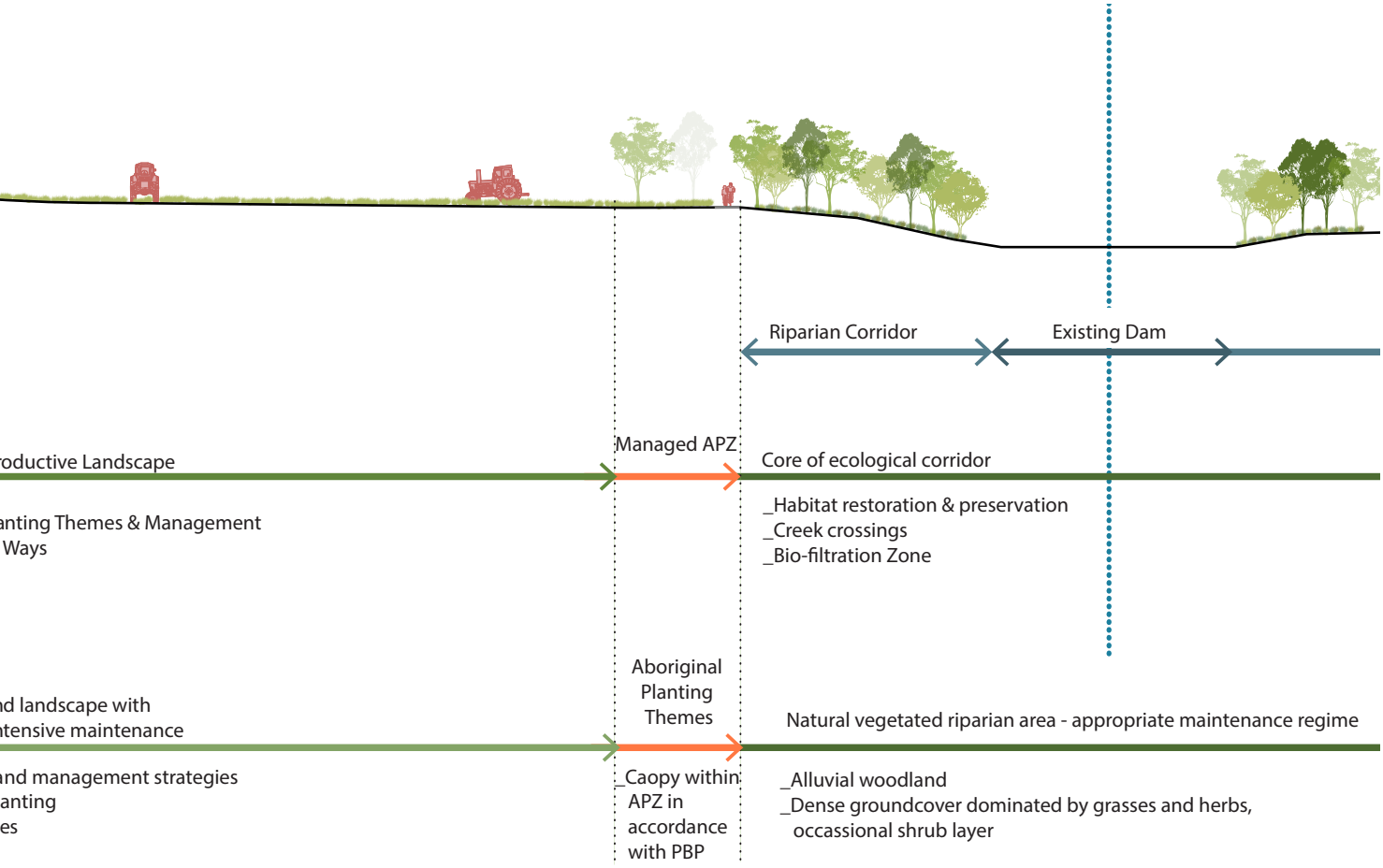
Natural vegetation Zone

_Shale Hills woodland
_Dense groundcover

Broader parklan
areas of more in

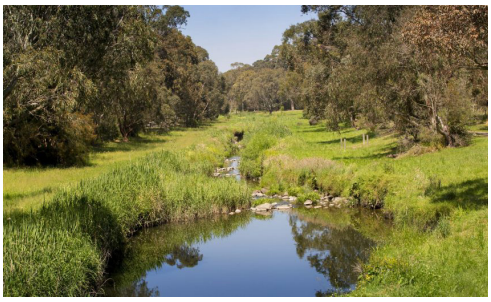
_Indigenous La
_Sparse Tree Pl
_Clear sight lin

Landscape Precedents


Riparian Corridor
Existing Dam
roductive Landscape
Managed APZ
Core of ecological corridor
anting Themes & Management
Ways
_Habitat restoration & preservation
_Creek crossings
_Bio-filtration Zone
Aboriginal
Planting
Themes
d landscape with
tensive maintenance
Natural vegetated riparian area - appropriate maintenance regime
nd management strategies
anting
es
_Caopy within
APZ in
accordance
with PBP
_Alluvial woodland
_Dense groundcover dominated by grasses and herbs,
occassional shrub layer

COSGROVES CREEK PARKLAND

The Cosgroves Creek Parkland is bound by a vibrant working community located to the north and south of the open valley parkland that is centered on Cosgroves Creek. The creek is currently identified by dense stands of She oaks set in open pasture. This landscape forms the foundation of this parkland and as the basis for the extension of the blue and green grid across the precinct and the incorporation of Aboriginal land management practices.



The Cosgroves Creek Park covers a broad topographic range, moving from ridgeline to valley floor through a string of man made water bodies. The creeklines and reshaped/ rehabilitated water-bodies will be revegetated to reinforce the Blue-Green Grid through riparian re-vegetation. Local and linear parks sit adjacent to the riparian park.

Along the linear sections of parkland passive recreation opportunities exist with urban parks that sit adjacent to the riparian parklands. Seating, picnic facilities, children's play and structures that engage with the water, are linked to the larger parkland areas where centralised sports-fields and facilities provide recreational opportunities for the new community and workforce.

Facilities provided in parkland:

- → Picnic shelter and seating incorporating one BBQ
- → Change rooms and Public toilets
- → Shade
- → Drinking fountain
- → Large kick about area
- → Lighting
- → Varied range of play equipment and play themes or all ages, and opportunities for kick around, free running activities and ball game
- → Kiosks
- → Water detention & rehabilitation

Annotations

1. Detention basin within parkland (indicative)
2. BBQ & sheltered zones
3. Playing courts & children play areas
4. Passive open space with provisions for dog parks
5. Employment centre

Legend

- Sportfields - district
- Active recreation, areas with recreation focus, park amenities
- Cyclepath, walking trails
- Recreation nodes, exercise stations, playgrounds - local
- Creek & associated riparian corridor
- Proposed parkland
- Water detention basins (indicative)

The Urban Design Framework Plan

View along Adams Road with Cosgroves Creek parkland on the left

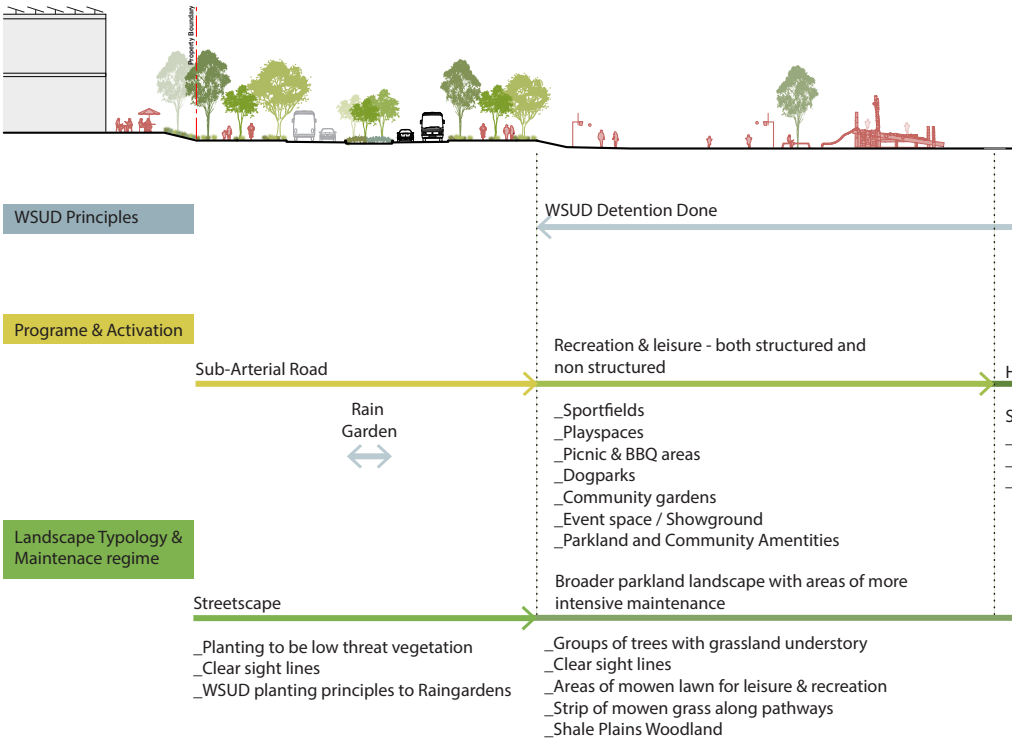
Section through Cosgroves Creek Parkland

HIGH IMPACT RECREATION AND LEISURE, WSUD & OSD DETENTION BASIN

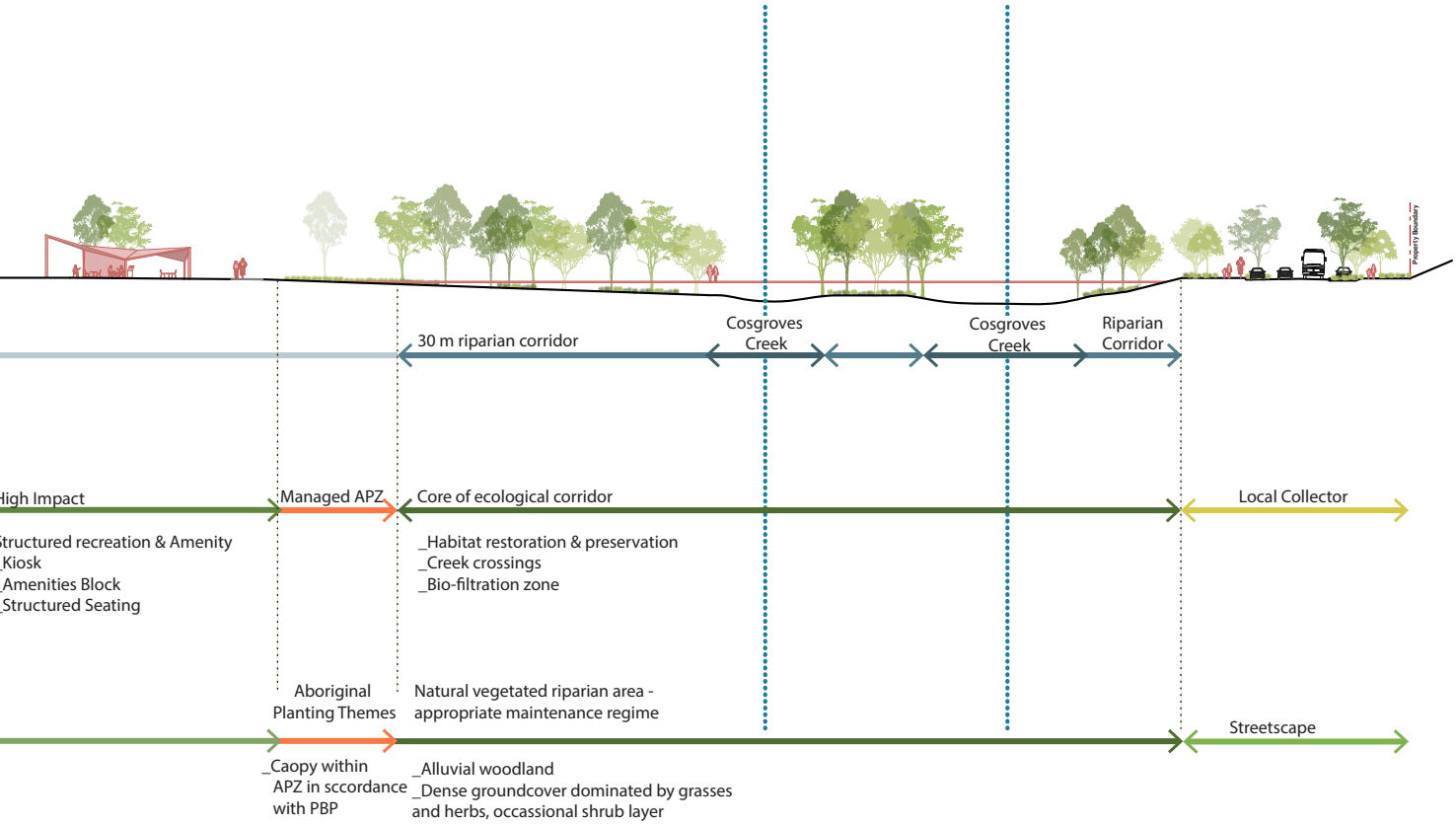
SPORTS FIELDS, PLAY SPACES, PICNIC & BBQ SPACES, DOGPARKS, COMMUNITY GARDENS, EVENT SPACE, SHOWGROUND, PARKLAND COMMUNITY AND AMENITIES

CORE OF RIPARIAN ECOLOGICAL CORRIDOR

HABITAT RESTORATION & PRESERVATION, CREEK CROSSINGS, ALLUVIAL WOODLAND AND DENSE GROUNDCOVER



Landscape Precedents


Property Boundary
30 m riparian corridor
Cosgroves Creek
Cosgroves Creek
Riparian Corridor
High Impact
Managed APZ
Core of ecological corridor
Local Collector
Structured recreation & Amenity
_Kiosk
_Amenities Block
_Structured Seating
_Habitat restoration & preservation
_Creek crossings
_Bio-filtration zone
Aboriginal Planting Themes
Natural vegetated riparian area - appropriate maintenance regime
Streetscape
_Caopy within APZ in sccordance with PBP
_Alluvial woodland
_Dense groundcover dominated by grasses and herbs, occassional shrub layer

VEGETATION ANALYSIS AND OUTCOMES

A consideration of the existing vegetative character of the Agribusiness is integral to delivering a considered and site responsive planting framework. This includes an understating of local ecological communities, soil conditions, and culturally significant zones to deliver a rich planting strategy throughout the precinct that is in-line with the Draft CPCP.

Existing Vegetation Communities

The existing vegetation characteristics of the Aerotropolis consist mainly of three communities. These are:

- → Cumberland Plain - Shale Plains woodland
- → Cumberland Plain - Shale Hills woodland
- → Sydney Coastal River-flat Forest - Alluvial woodland

Planting framework to Parkland and Development Lands

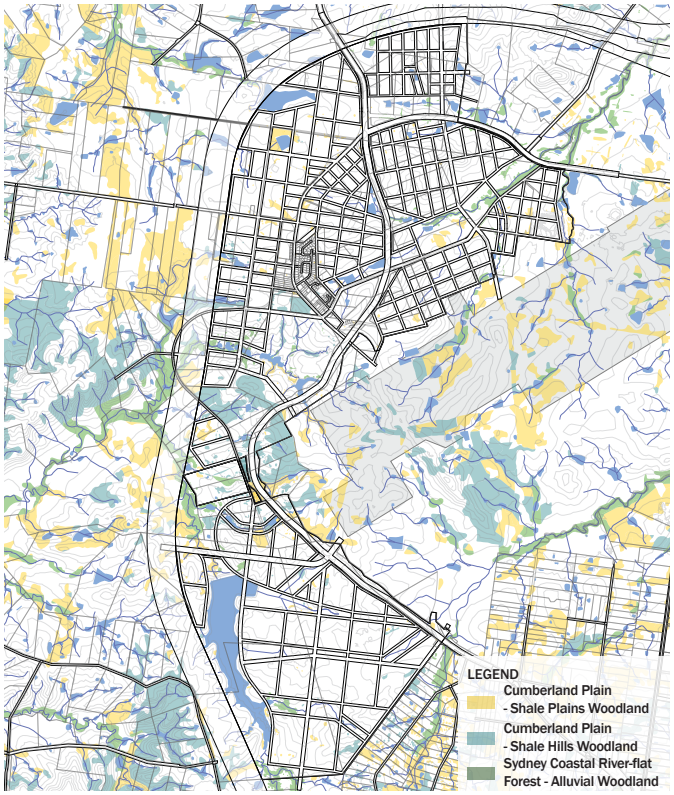
The vegetation of the precinct is inspired by the existing vegetation characteristics. This strategy is outlined in the following:

- → Shale Plains planting to areas with grades less than 10%
- → Shale Hills planting to areas with grades of 10% and higher
- → Riparian planting to areas over alluvial soil and creekline revegetated zones
- → Plantings to managed APZs informed by Aboriginal planting themes
- → Planting framework to be integrated with the stratgied outlined in the CPCP

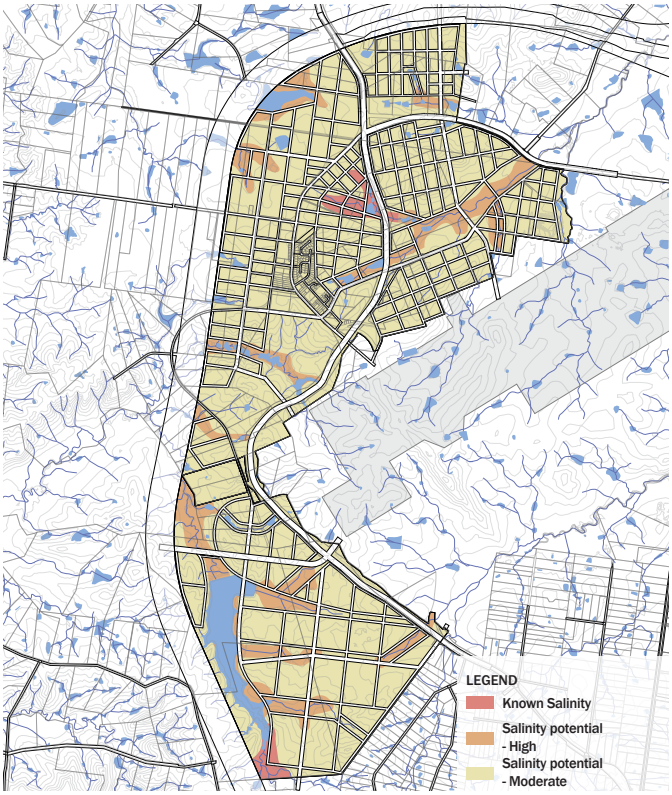
Salinity Potential

The known and potential saline soils within the precinct are centred around creek orders of 2nd and higher. Planting to these areas to consider:

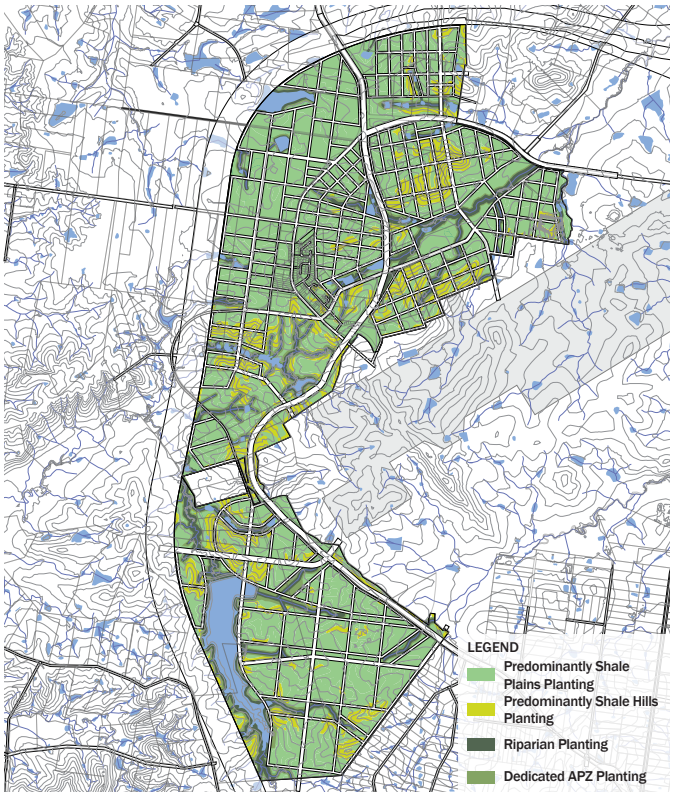
- → Tolerance to saline conditions
- → Saturated soils
- → Poor drainage



Existing Vegetation Communities



Salinity Potential



Planting framework to Parkland and Development Land

PLANTING STRATEGY

Successful delivery of the Agribusiness precinct landscape and planting vision is paramount to the realisation of the Parkland City.

Design Intent

Existing vegetation on site is a remnant of the broader Cumberland Plain vegetation that existed pre-European settlement.

The overarching planting strategy aspiration is to preserve, restore and build upon the Cumberland Plain woodland and grassland character in-line with the strategies outlined in the CPCP.

The landscape planting strategy for the project will draw upon existing remnant vegetation communities, their patterns and characteristics.

The sites topography, hydrology, and geomorphology will guide the proposed planting strategy to minimise bird strike and mitigate against any wildlife management concerns. The Planting strategy is integrated with the recommendations of the bushfire risk assessment report. Tree canopy will provide shade, cooling and mitigate the urban heat island effect.

Remnant vegetation communities inform the planting palette

Planting palette for the riparian zones of the creek corridors and the associated floodplains will be informed by planting found within the Alluvial Woodland communities.

As the floodplains transition to the hillside, the alluvial riparian woodland gently transition to grassy open woodland and grassland (Shale Plains Woodland) and grassy open forest (Shale Transition Forest) and Castlereagh Ironbark Forest; remnants of these vegetation types are found within Badgerys Creek precinct. Closer to the ridgelines, Cumberland Plain Open Woodland is the predominant remnant planting community.

The vegetation character of scattered trees with open canopy, ground cover dominated by grasses and herbs, sometimes with layers of shrubs and/or small trees - this will inform the planting palette for the precinct.

Protecting, enhancing and restoring existing vegetation communities

Existing native vegetation has been incorporated in the open space framework where possible and will be protected, enhanced and further reinforced through the connected landscape system.

Within the framework, native Cumberland plain open woodland and grassland vegetation community will be restored.

Riparian corridors of tributary creeks within the open space will be rehabilitated and revegetated with appropriate riparian species and the APZ adjacent , for bushfire mitigation will have a reduced tree canopy and low shrub layers.

Diversity and planting quantity

Maximising planting palette diversity is a key landscape outcome for the realisation of the Parkland City.

Planting diversity and quantity within alluvial zones of the key creeks will be maximised to restore the health of the creeks, increase biodiversity and strengthen resilience of the Blue Green system.

Aboriginal Planting Themes and Management

Aboriginal plantings are closely linked to cultural and historical uses of the land and its management. Planting to the Agripark, APZ and parkland generally will be consistent with these indigenous values of place.

Streetscape

Streetscape is an integral component of the overall open space framework and significantly contributes to the biodiversity and blue-green system within the urban fabric.

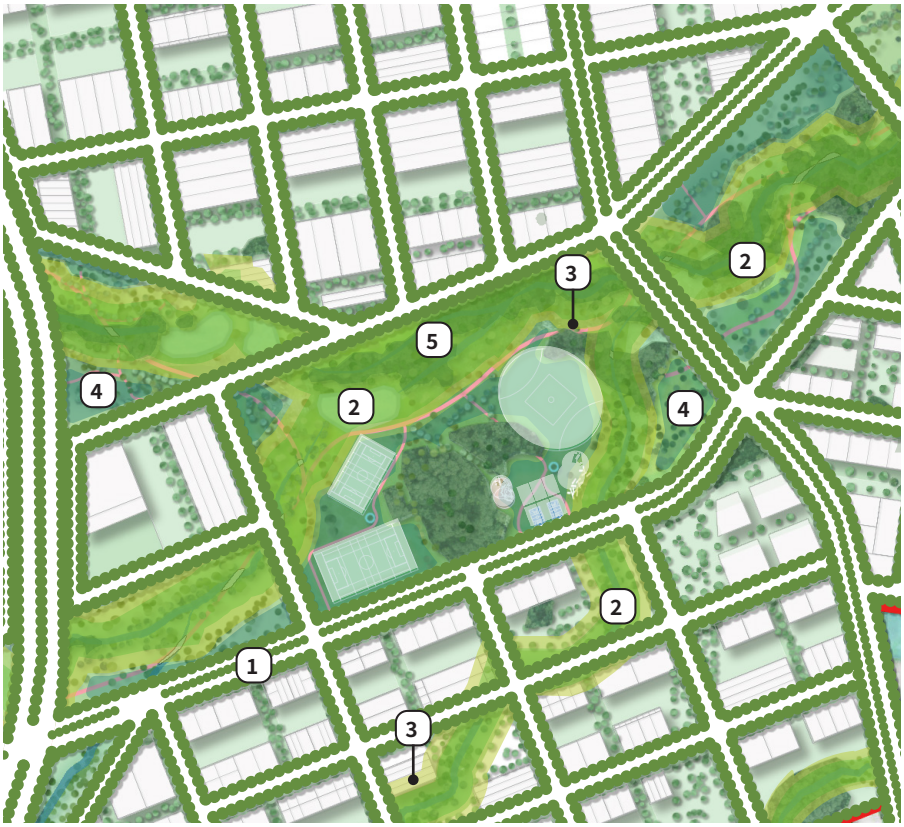
The aspiration is to create a rich, diverse and multi layered streetscape planting, that will draw upon the native Cumberland Plain species, their pattern and characteristics.

The planting palette will be a mix of native and non native species, that are appropriate for the climate of Western Sydney and urban streetscape conditions and contribute to the planting palette richness.

Large and tall trees - the key species of Cumberland Plain - set the structure. The spacing and species selection of the street trees planting is inspired by the Cumberland Plain scattered pattern and therefore it is proposed to be alternating, intentionally planted in a non-boulevard manner.

The smaller trees, that form the lower canopy layer, provide the continuous shade for pedestrians. These trees will be a combination of native and exotic species, that are appropriate for the climate and conditions of Western Sydney.

The rich and diverse groundcover planting is built upon native grass species, herbs and low shrub layer. This is complemented by non native species to provide all year interest. Native trees, shrubs and plants from the riparian corridors form the core planting palette for the raingardens and bio-retentions.



Sustainability and Resilience

Planting strategy is developed according to water sensitive urban design (WSUD), passive watering and species with low water requirements are proposed. Utilise passive irrigation to increase evapotranspiration. Provide adequate vegetation and tree canopy around buildings to shade and cooling.

Annotations

1. Water Sensitive Urban Design embedded in the street profile with large street trees
2. Riparian revegetation & rehabilitation along creeklines and water bodies
3. Aboriginal planting themes and indigenous management zone
4. Parkland open space with Feature trees
5. Existing vegetation supplemented

Cinnamon myrtle

Rough-barked apple

Forest Red Gum

Peppermint

Old man bush

Native Rosella

Grasses (Kangaroo Grass)

Rushes (Marsh club rush)

TRANSPORT INFRASTRUCTURE FRAMEWORK

Movement is fundamental to the economy of the Aerotropolis and facilitating its intended jobs growth. An integrated network across all mode types is to be provided, with a focus on sustainable transport options.

View along The Northern Road 'Main Street' within Luddenham Village

MOVEMENT AND PLACE

By AECOM

The objective of Movement and Place is to achieve roads and streets that:

- Contribute to the network of public space within a location, where people can live healthy, productive lives, meet each other, interact, and go about their daily activities.Ensuring buildings and structures do not impede on the Obstacle Limitation Surface (OLS) associated with the airport
- Are enhanced by transport and have the appropriate space allocation to move people and goods safely and efficiently and connect places together. Balancing movement and place recognises that trade-offs may be required to achieve a best fit for the objectives.

Classification into the four street environments provides an understanding of the function and form of a road corridor, where movement and place interact.

An assessment and definition of the roads and streets within the precincts have been undertaken using the Movement and Place framework, based on the proposed transport plan and land use plan for the Aerotropolis Core, Northern Gateway and Agribusiness precincts.

The Government Architect's Practitioner's Guide to Movement and Place has been utilised for this assessment.

For this stage of the project, an initial classification of the roads and streets within the precincts hasbeen undertaken.

This is likely to evolve as key issues and opportunities present for further investigation during the subsequent masterplanning stage.

The assessment focused on the classification of the Main Roads and Main Streets and Local Streets within WSA. Motorways sit within Main Roads, however as they do not have activated land use adjacent to them, they have been denoted by grey lines for the purpose of this analysis.

In addition, Local Streets are not highlighted on the maps as these make up all the streets not otherwise marked.

– Civic Spaces have not been defined as detailed masterplanning of centres is not yet known.

– Local Streets provide for local access both outside of centres and within centres.

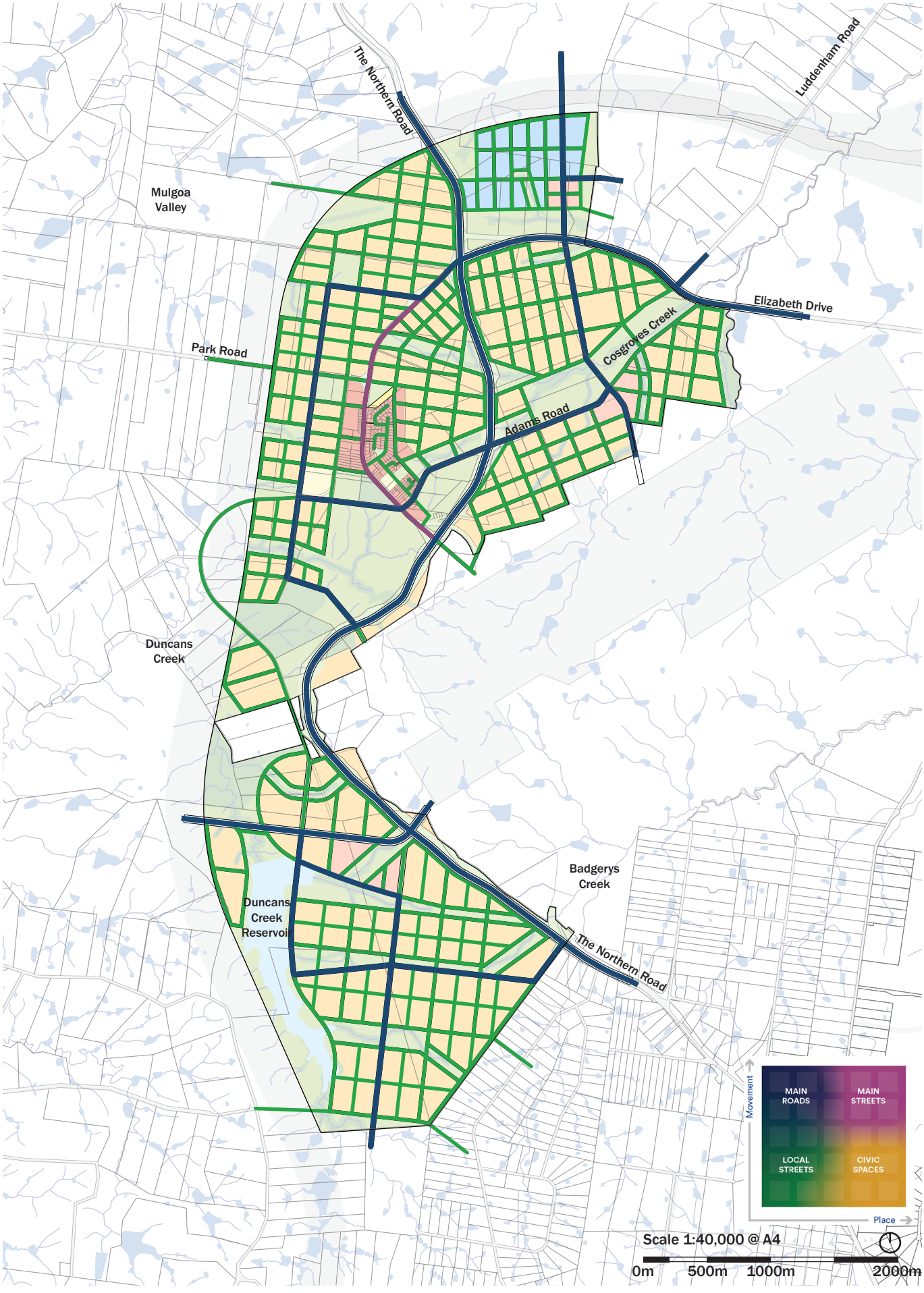
– Main Streets traverse through areas with greater land use intensity, at the core of the centres.

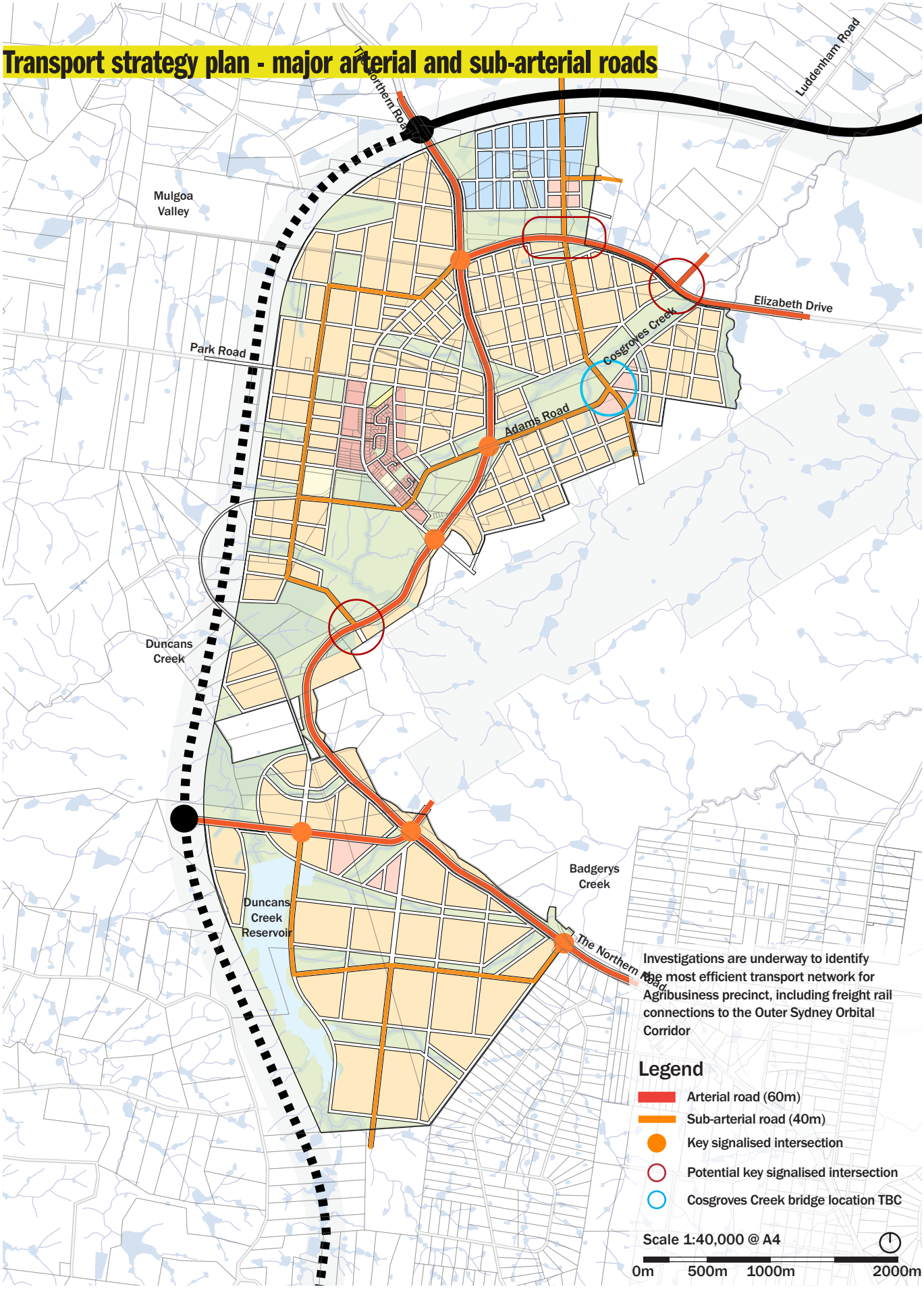
– Main Roads provide for the strategic sub-regional, regional or metropolitan movement of people and freight within, and between, the precincts, and major land uses. These are formed of 40-metre-wide sub-arterial roads, 60-metre-wide arterial roads and motorways.

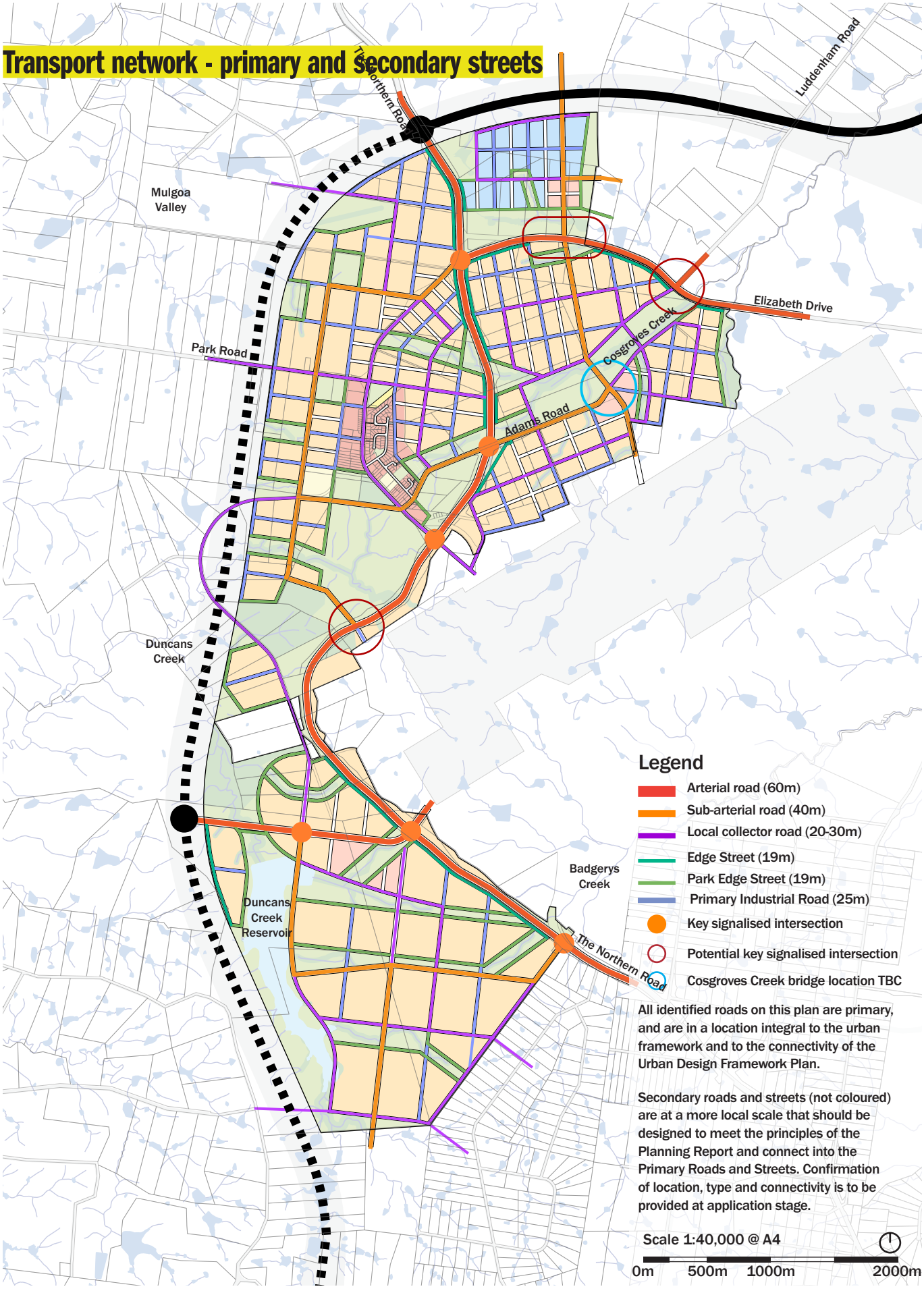
Legend

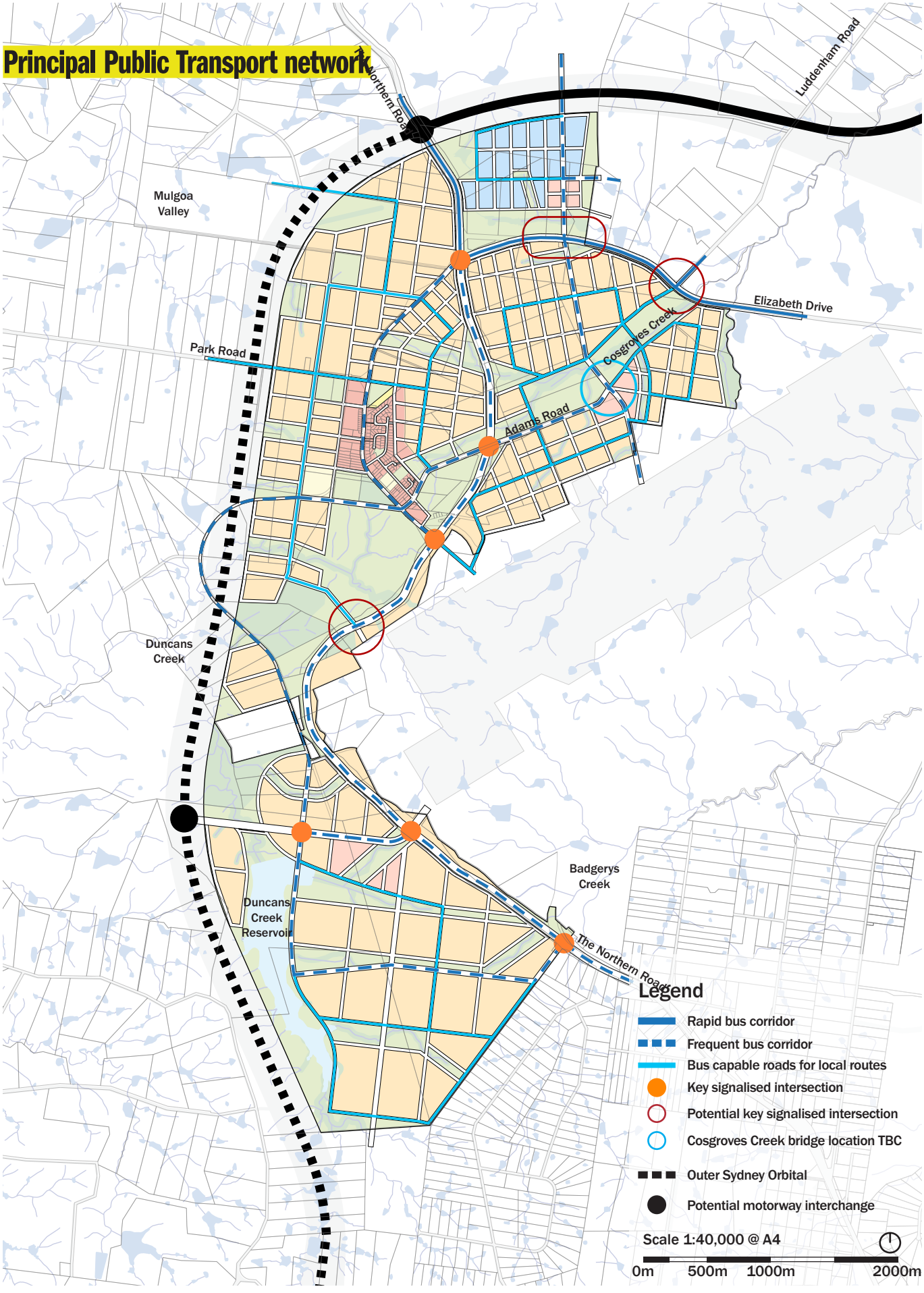
- Main Roads
- Main Streets
- Local Streets

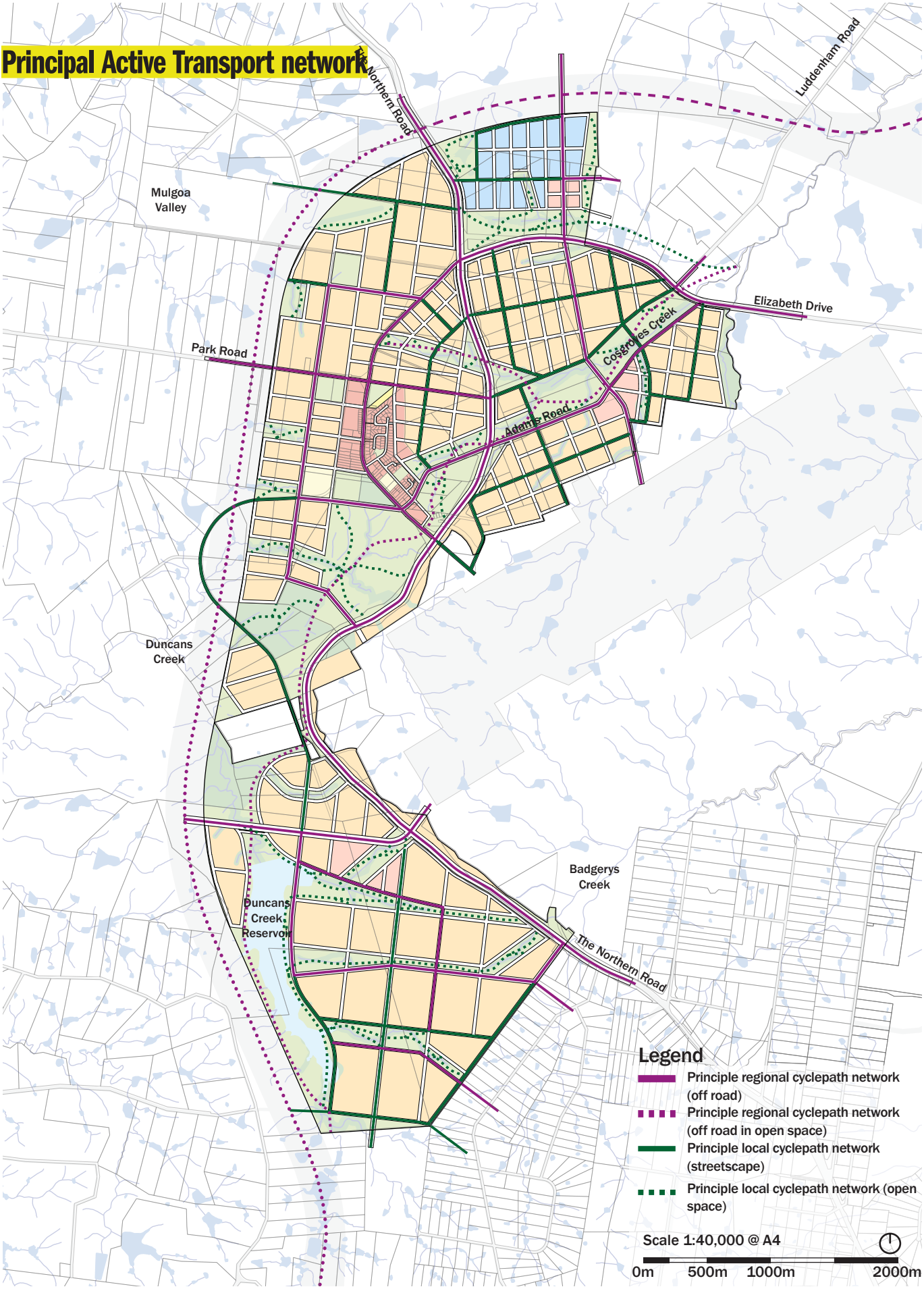
The Urban Design Framework Plan




Transport strategy plan - major arterial and sub-arterial roads
The Northern Road
Luddenham Road
Mulgoa Valley
Park Road
Elizabeth Drive
Cosgroves Creek
Adams Road
Duncans Creek
Duncans Creek Reservoir
Badgerys Creek
The Northern Road
Investigations are underway to identify the most efficient transport network for Agribusiness precinct, including freight rail connections to the Outer Sydney Orbital Corridor
Legend
Arterial road (60m)
Sub-arterial road (40m)
Key signalised intersection
Potential key signalised intersection
Cosgroves Creek bridge location TBC
Scale 1:40,000 @ A4
0m
500m
1000m
2000m

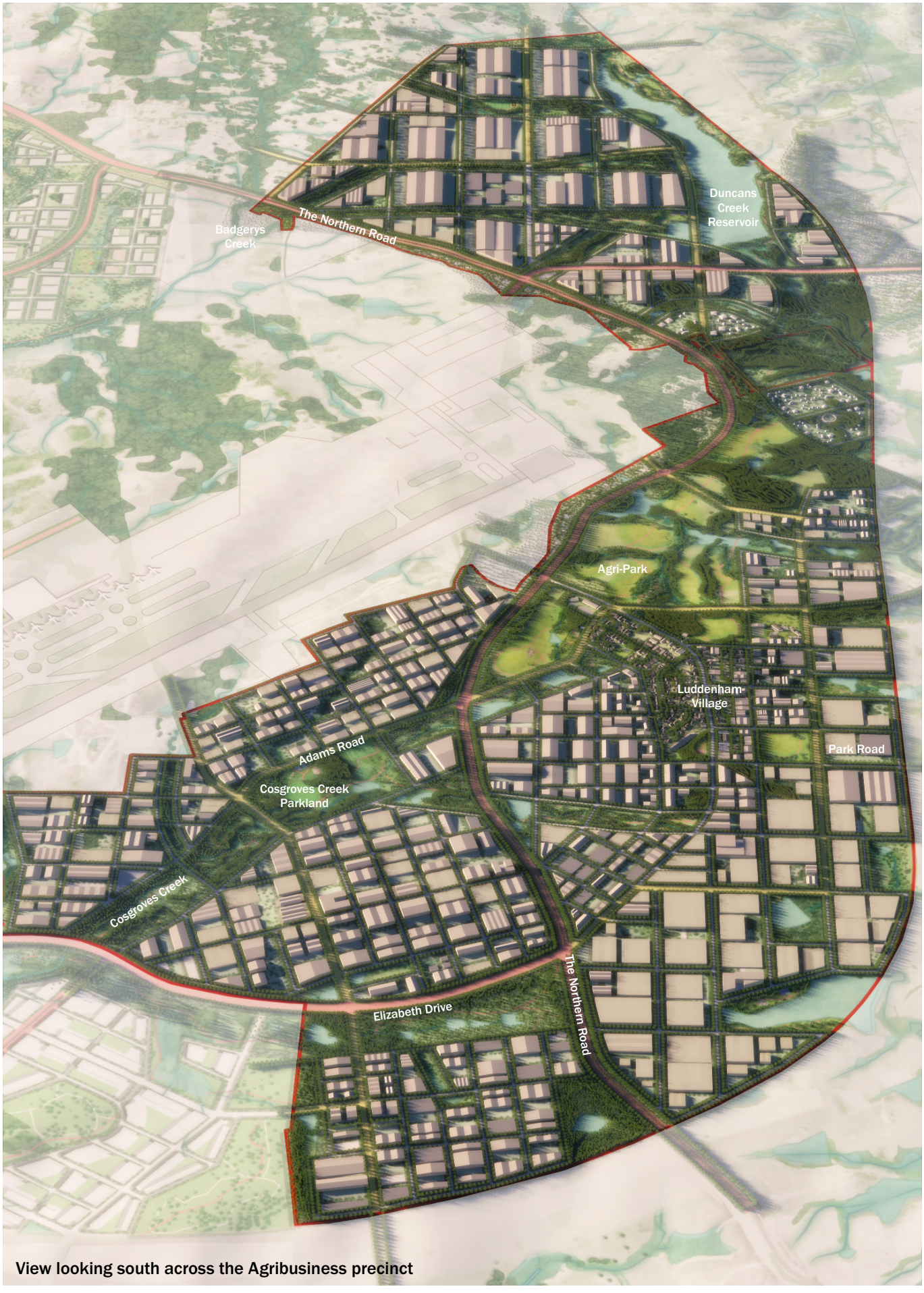

Transport network - primary and secondary streets
The Northern Road
Luddenham Road
Mulgoa Valley
Elizabeth Drive
Cosgroves Creek
Park Road
Adams Road
Duncans Creek
Badgerys Creek
Duncans Creek Reservoir
The Northern Road
Legend
Arterial road (60m)
Sub-arterial road (40m)
Local collector road (20-30m)
Edge Street (19m)
Park Edge Street (19m)
Primary Industrial Road (25m)
Key signalised intersection
Potential key signalised intersection
Cosgroves Creek bridge location TBC
All identified roads on this plan are primary, and are in a location integral to the urban framework and to the connectivity of the Urban Design Framework Plan.
Secondary roads and streets (not coloured) are at a more local scale that should be designed to meet the principles of the Planning Report and connect into the Primary Roads and Streets. Confirmation of location, type and connectivity is to be provided at application stage.
Scale 1:40,000 @ A4
0m
500m
1000m
2000m


Principal Public Transport network
Luddenham Road
Mulgoa Valley
Elizabeth Drive
Park Road
Cosgroves Creek
Adams Road
Duncans Creek
Badgerys Creek
Duncans Creek Reservoir
The Northern Road
Legend
Rapid bus corridor
Frequent bus corridor
Bus capable roads for local routes
Key signalised intersection
Potential key signalised intersection
Cosgroves Creek bridge location TBC
Outer Sydney Orbital
Potential motorway interchange
Scale 1:40,000 @ A4
0m
500m
1000m
2000m



Studio Hollenstein ©

View looking north across the Agribusiness precinct

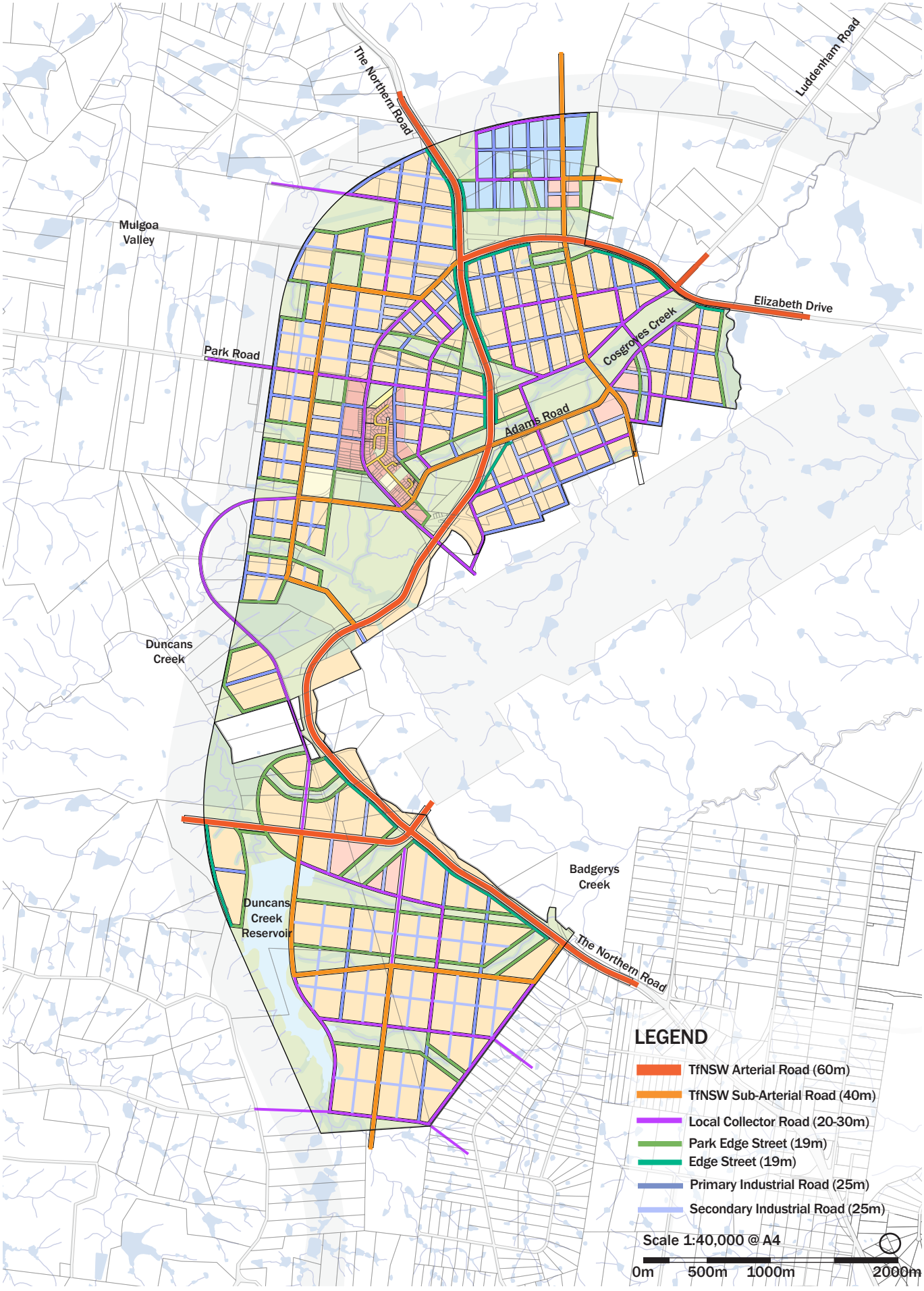


View looking south across the Agribusiness precinct

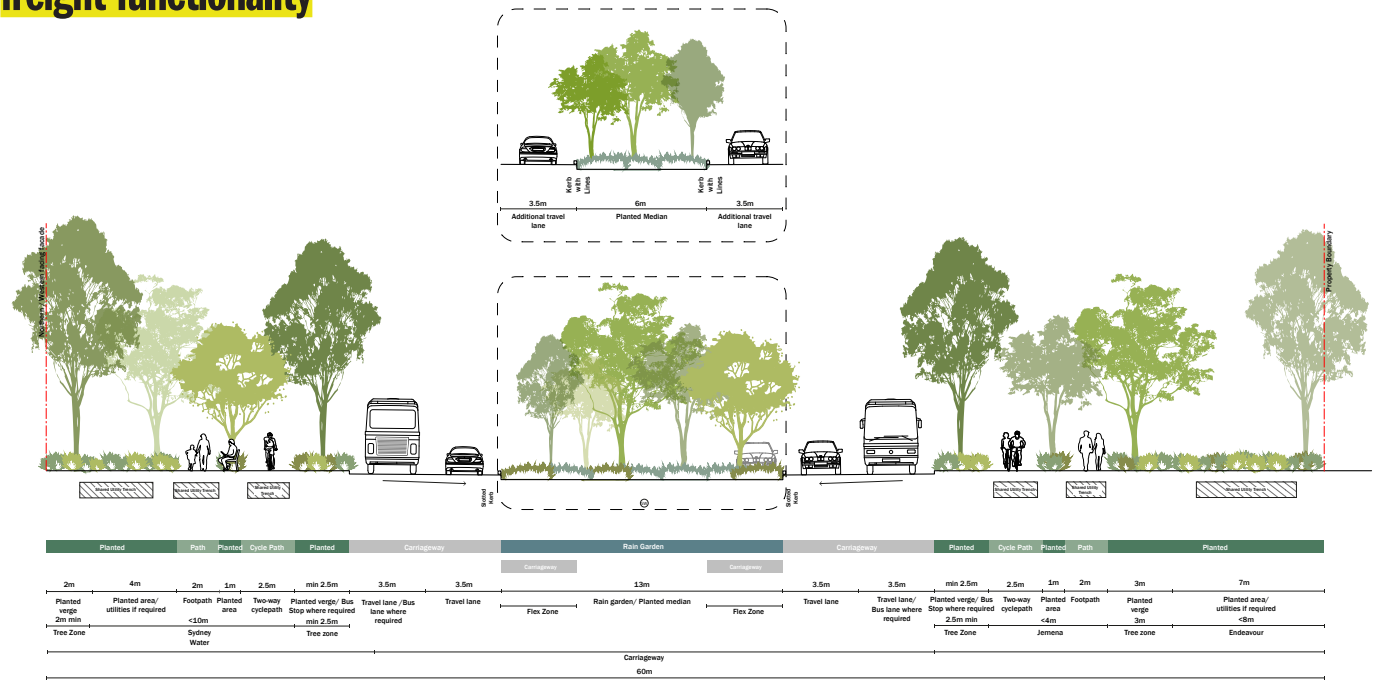
STREET TYPOLOGIES

The street types across the Agribusiness Precinct are founded on the Western Sydney Street Design Guidelines. These have been adapted to suit place based requirements.

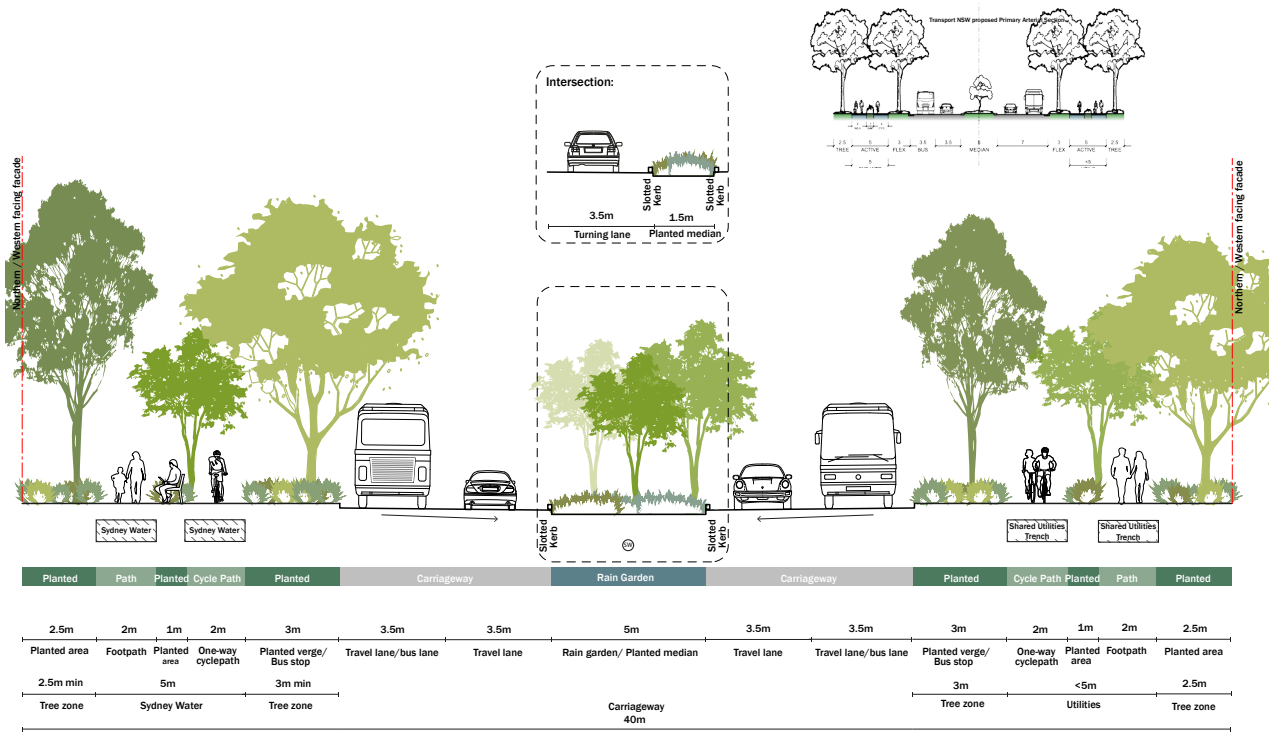
The Urban Design Framework Plan



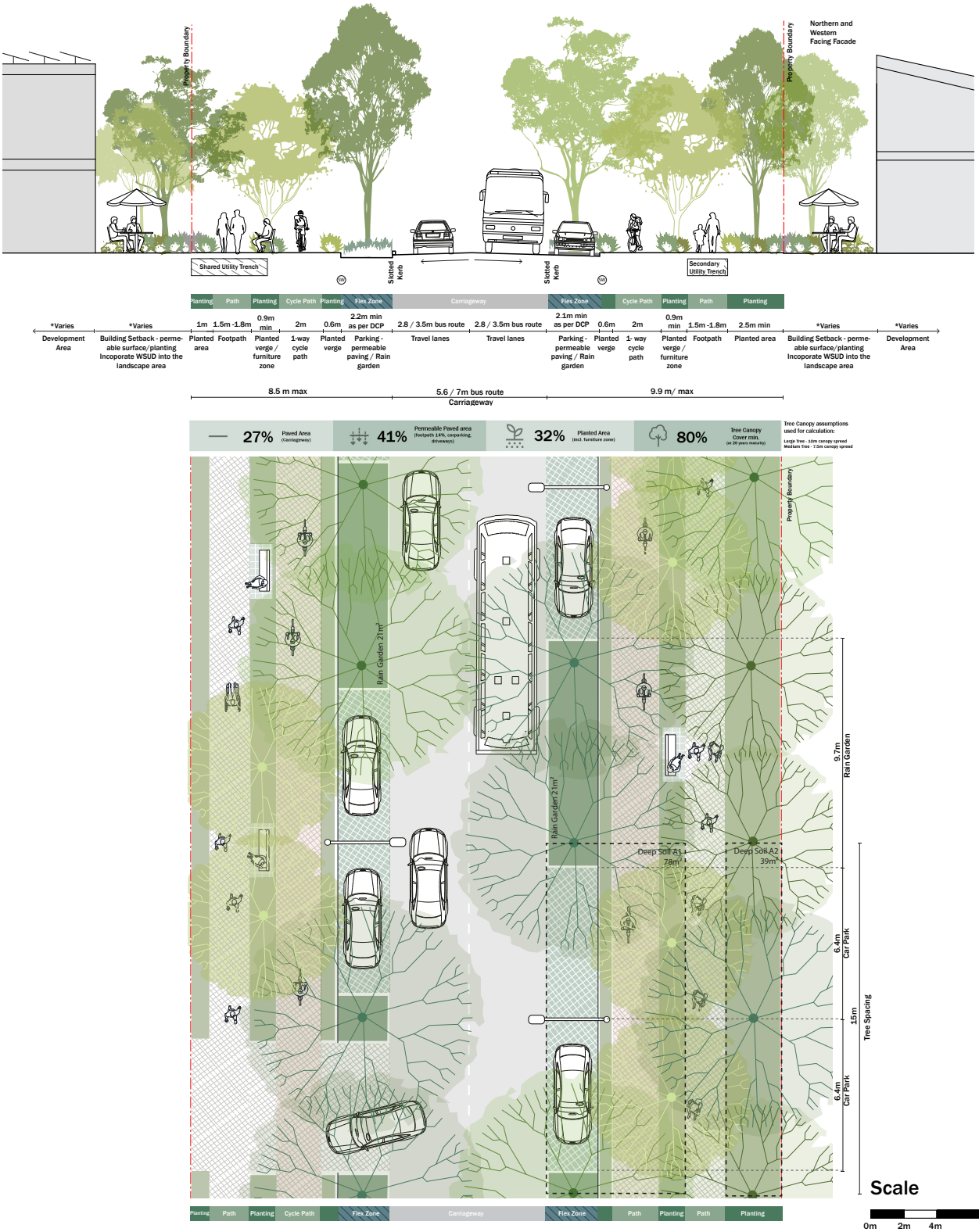
60 metre corridor with freight functionality



40 metre corridor with kerbside bus lane

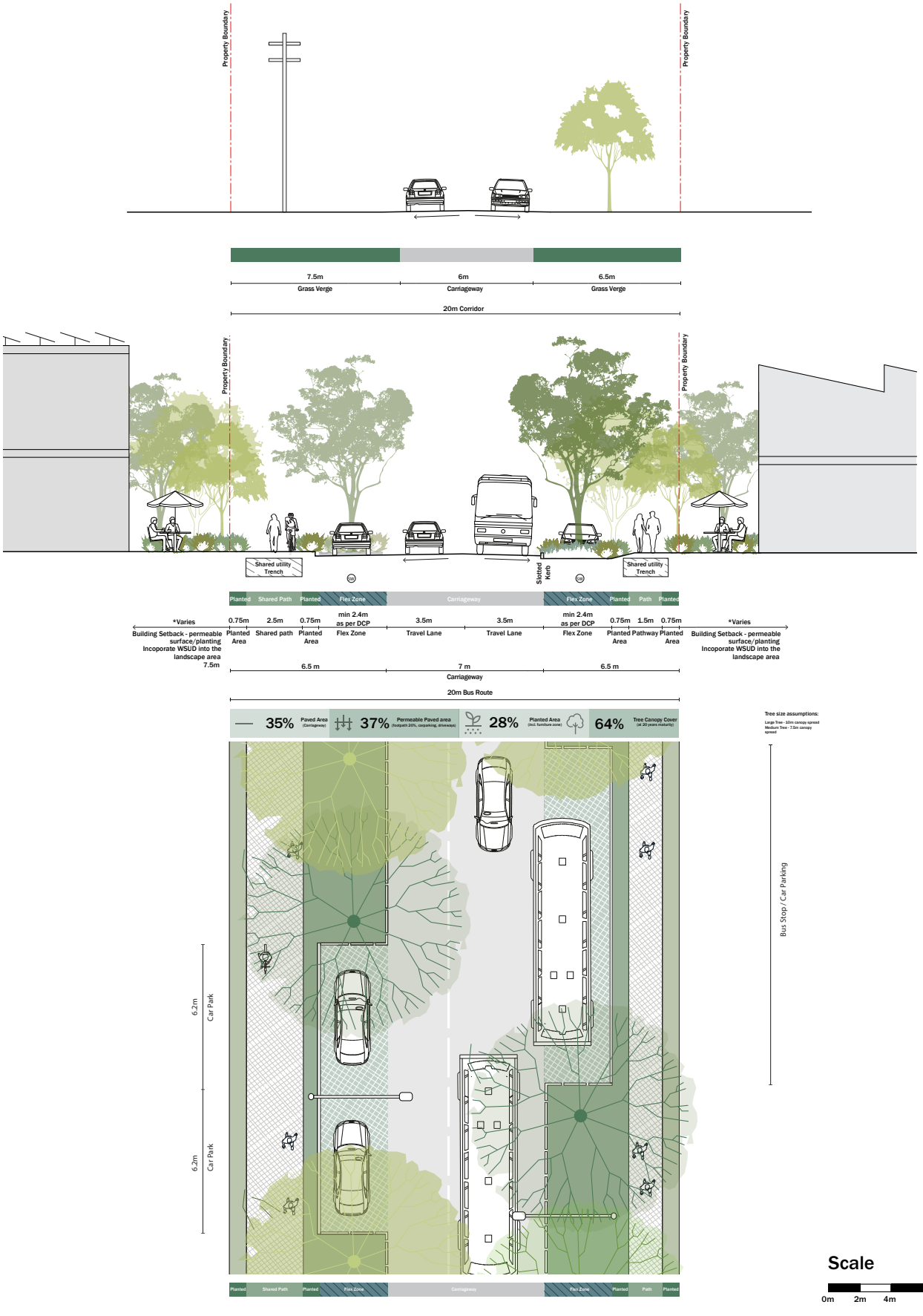


25 metre industrial street with bike lanes



20 metre Road to Campbell Street, Willowdene Avenue,

Existing & Proposed treatment

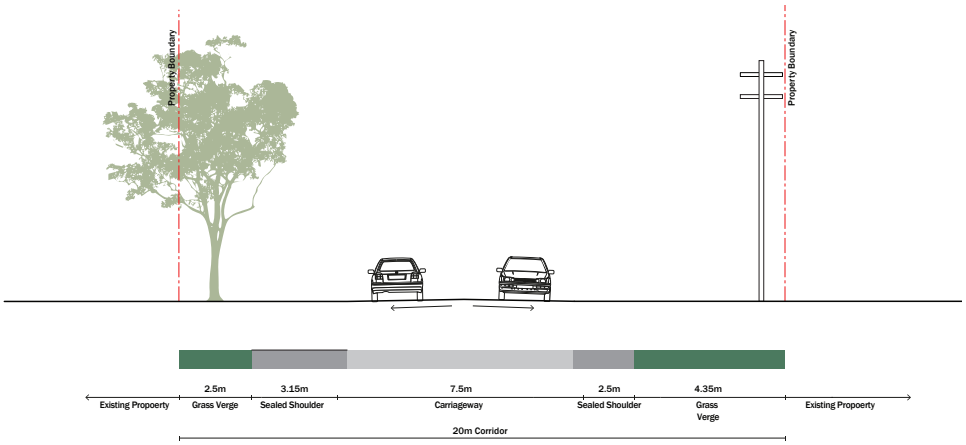


Scale

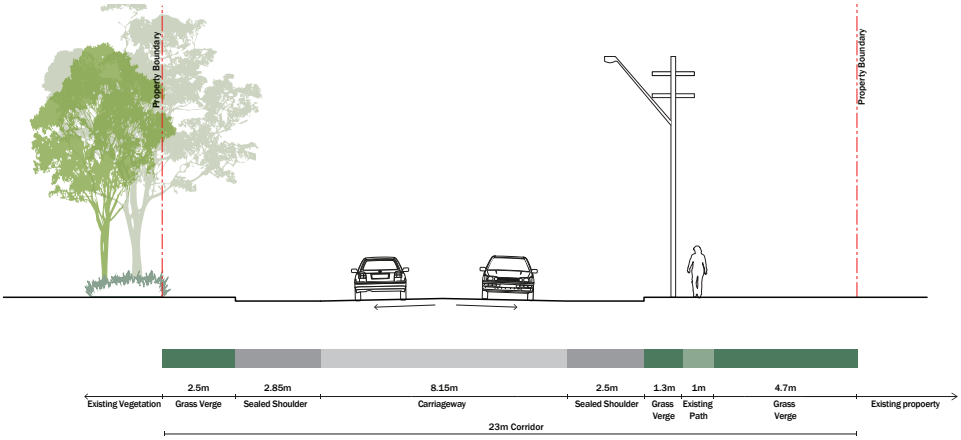
0m 2m 4m 8m

The Northern Road Existing Alignment

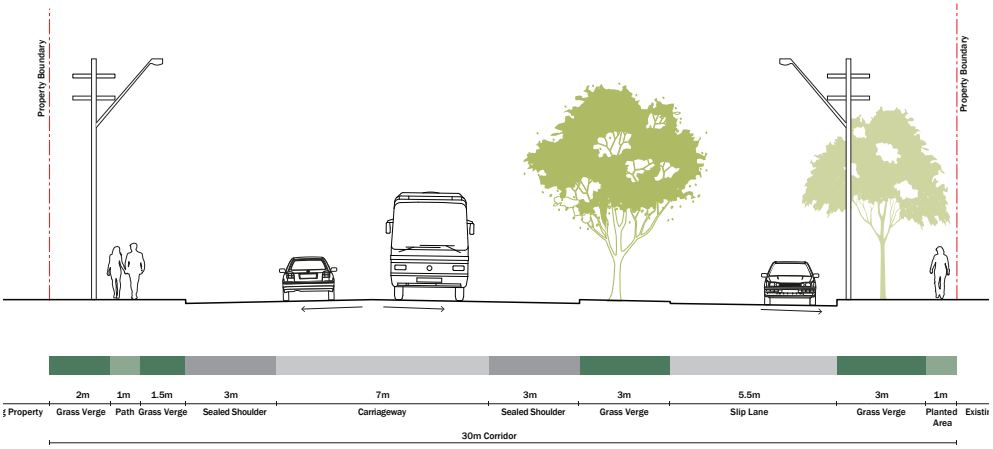
Existing conditions



Existing 20m corridor



Existing 23m corridor



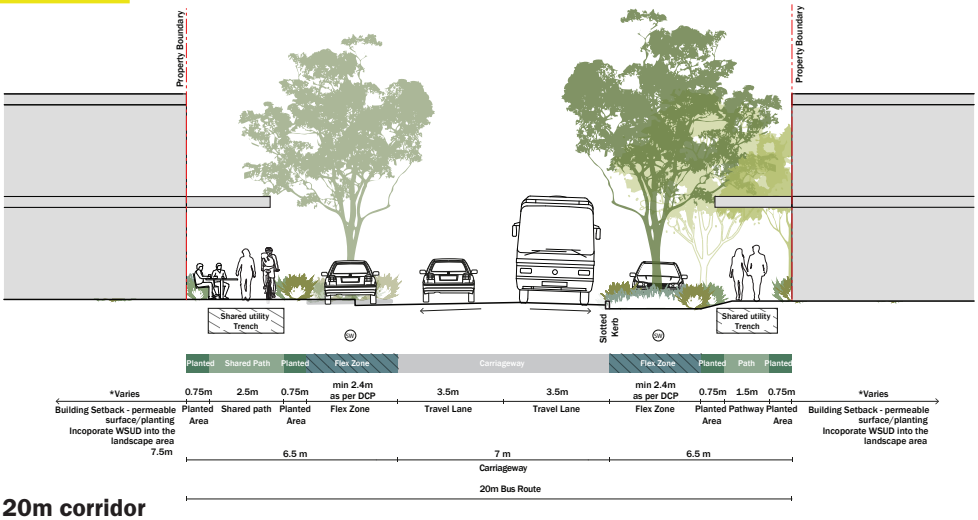
Existing 30m corridor

Scale

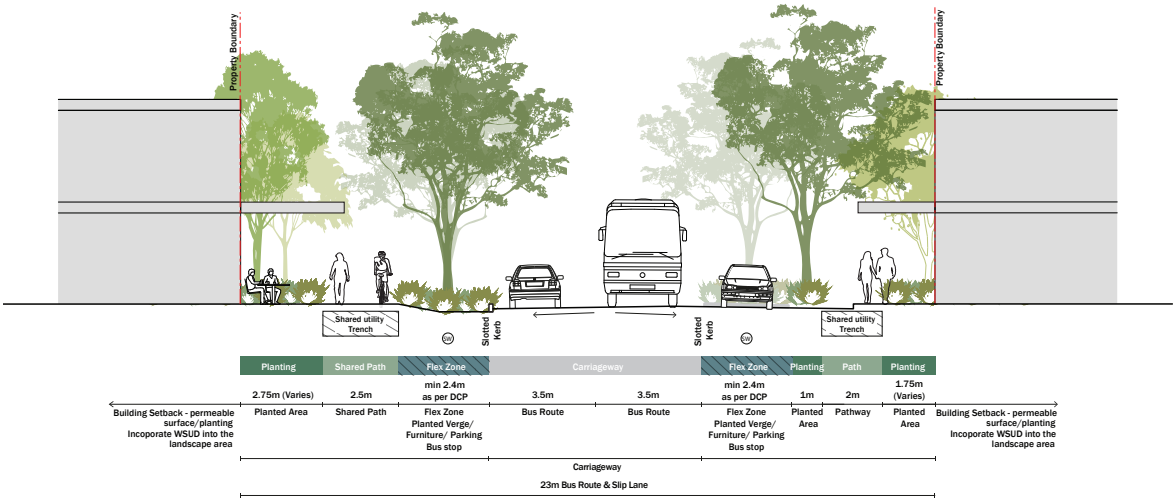
0m 2m 4m 8m

The Northern Road Existing Alignment

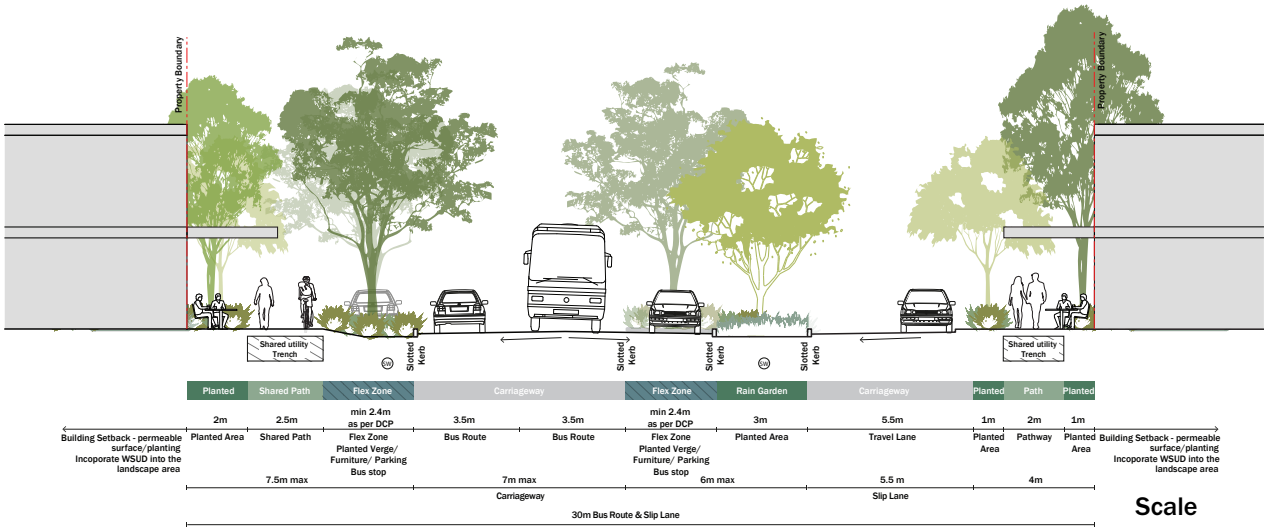
Proposed treatment



Proposed 20m corridor



Proposed 23m corridor



Proposed 30m corridor

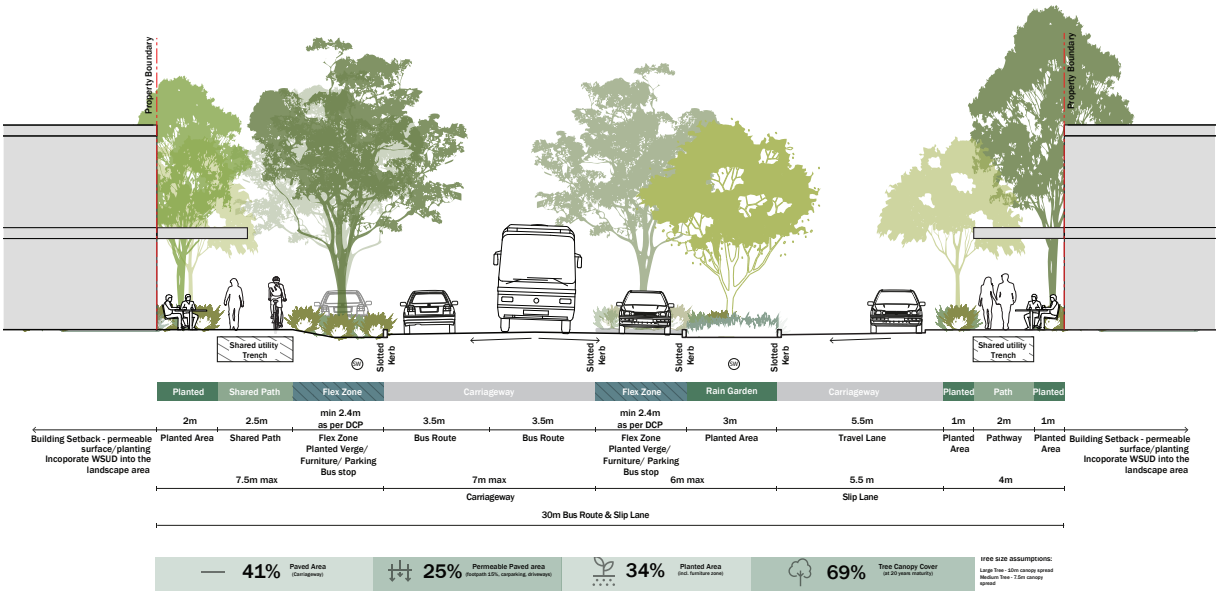
Scale

0m 2m 4m 8m

Studio Hollenstein ©

30 metre The Northern Road Green Boulevard

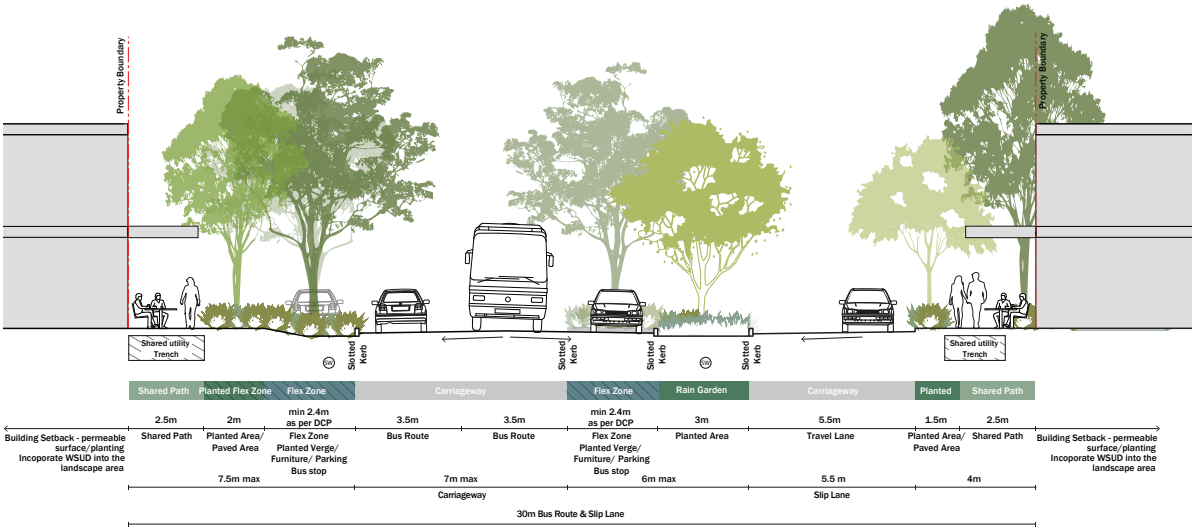
(Existing Alignment)

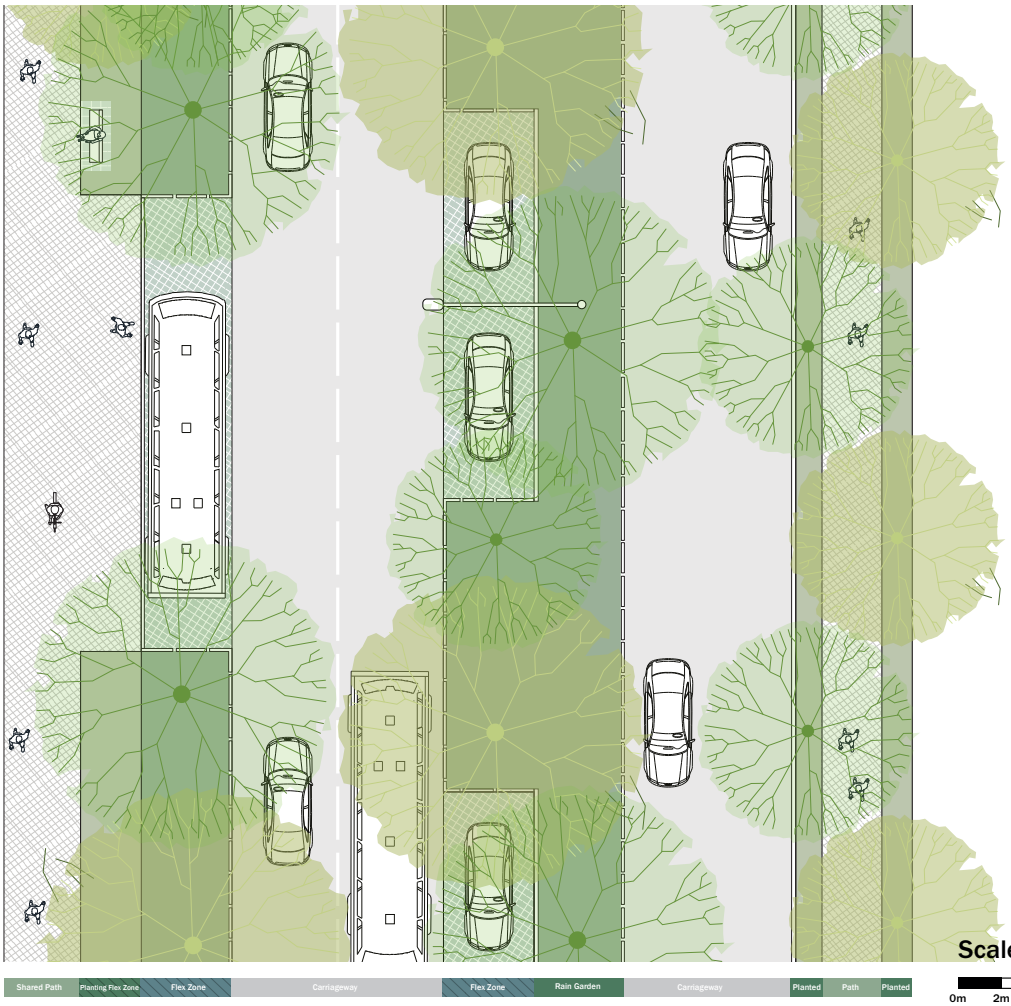


Scale

0m 2m 4m 8m

30 metre The Northern Road (Shop Front Edge) Green Boulevard (Existing Alignment)



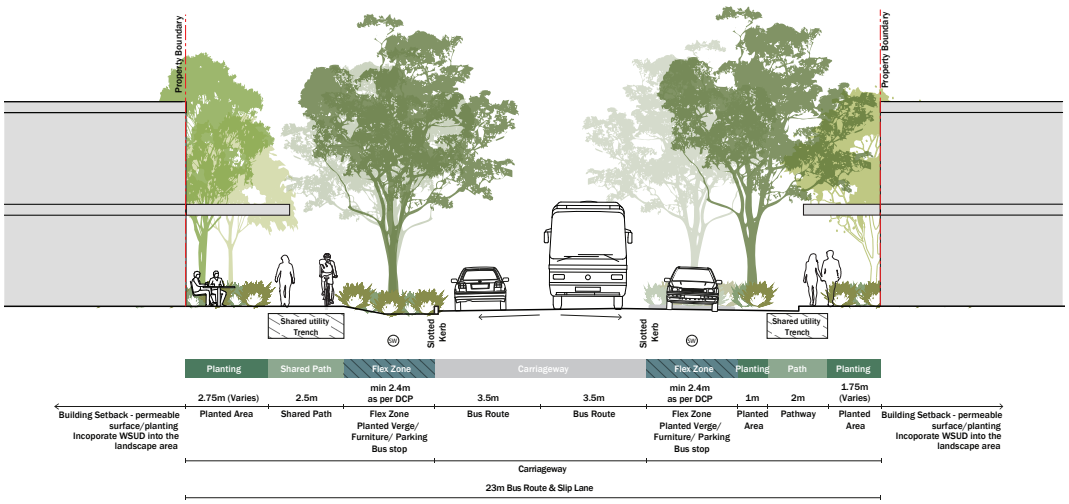


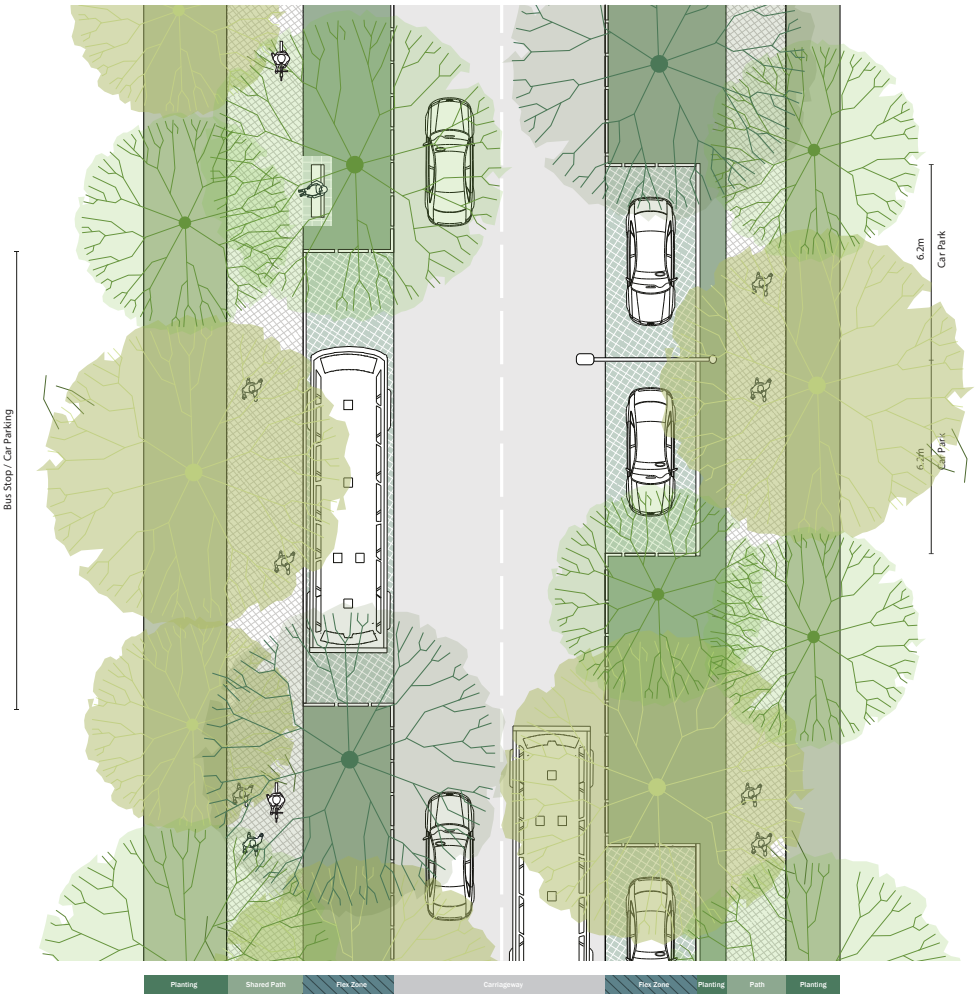
Scale

0m 2m 4m 8m

23 metre The Northern Road

(Existing Alignment) Section & Plan



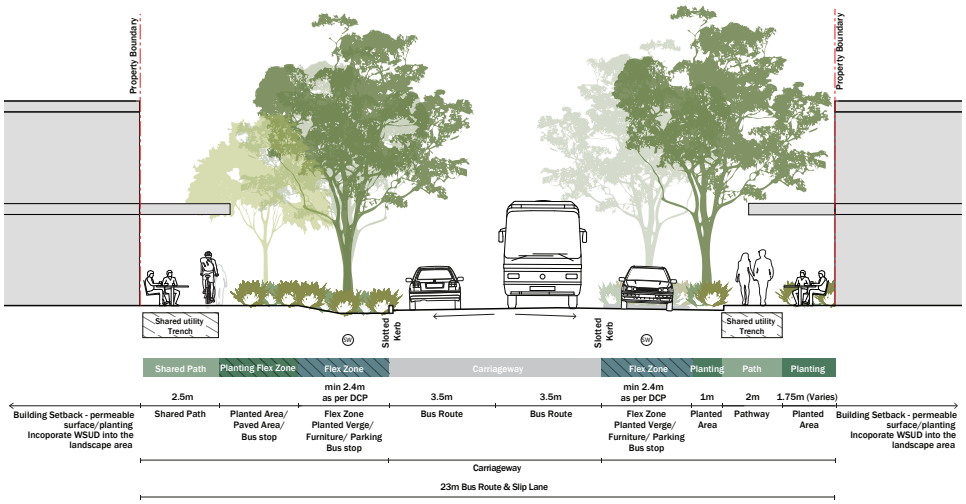


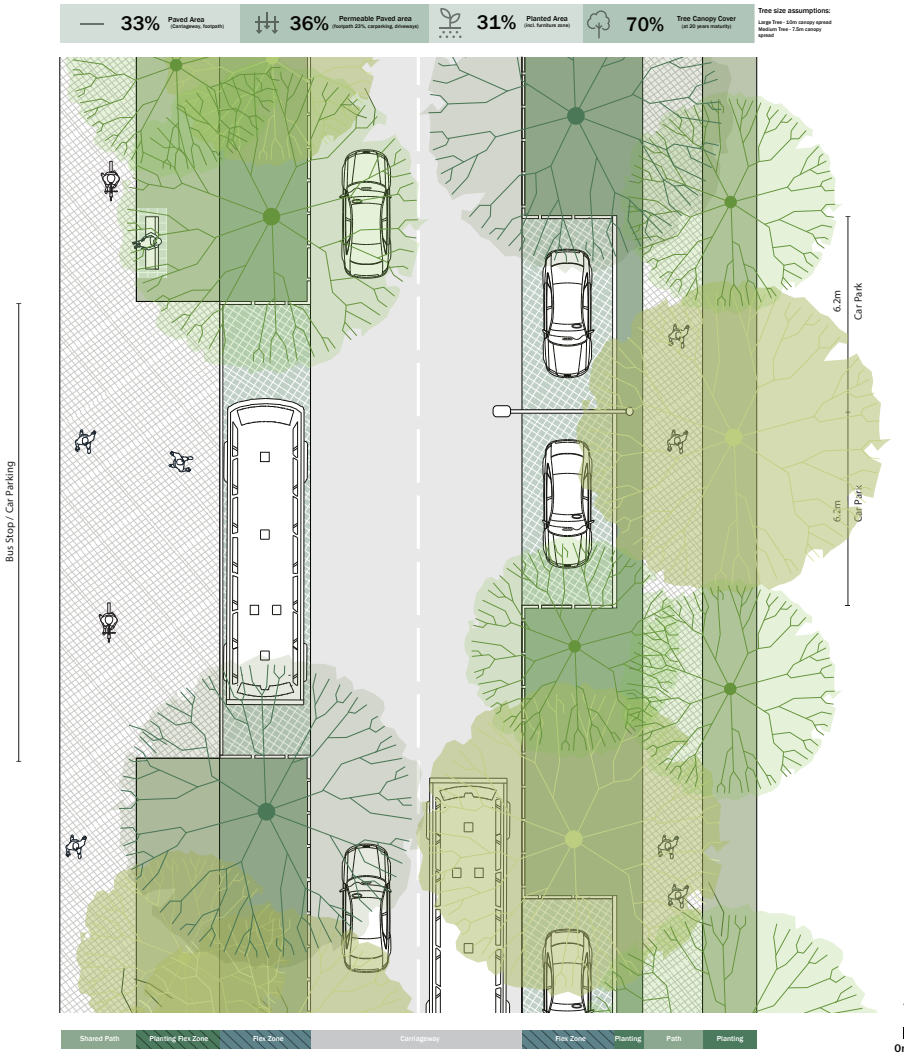
Scale

0m 2m 4m 8m

23 metre The Northern Road (Shop Front Edge)

(Existing Alignment)



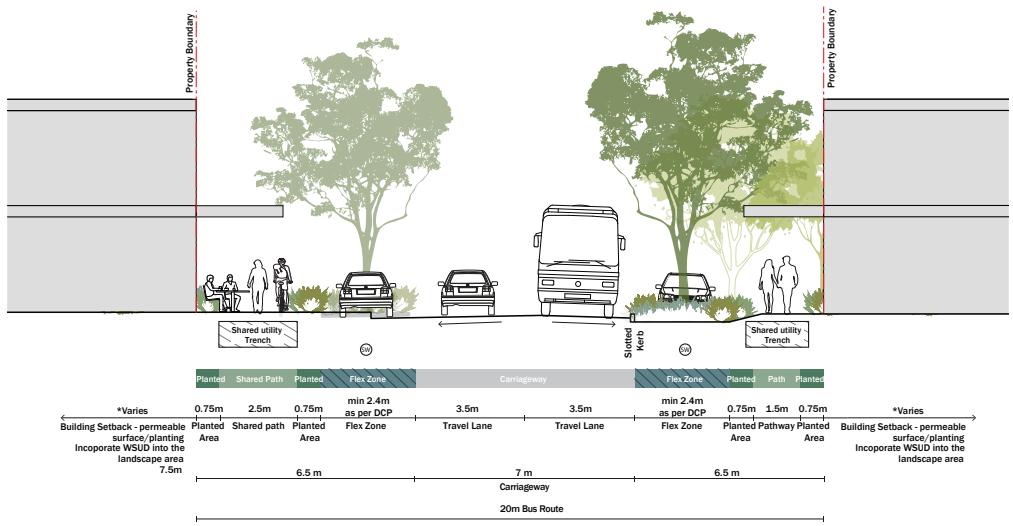


Scale

0m 2m 4m 8m

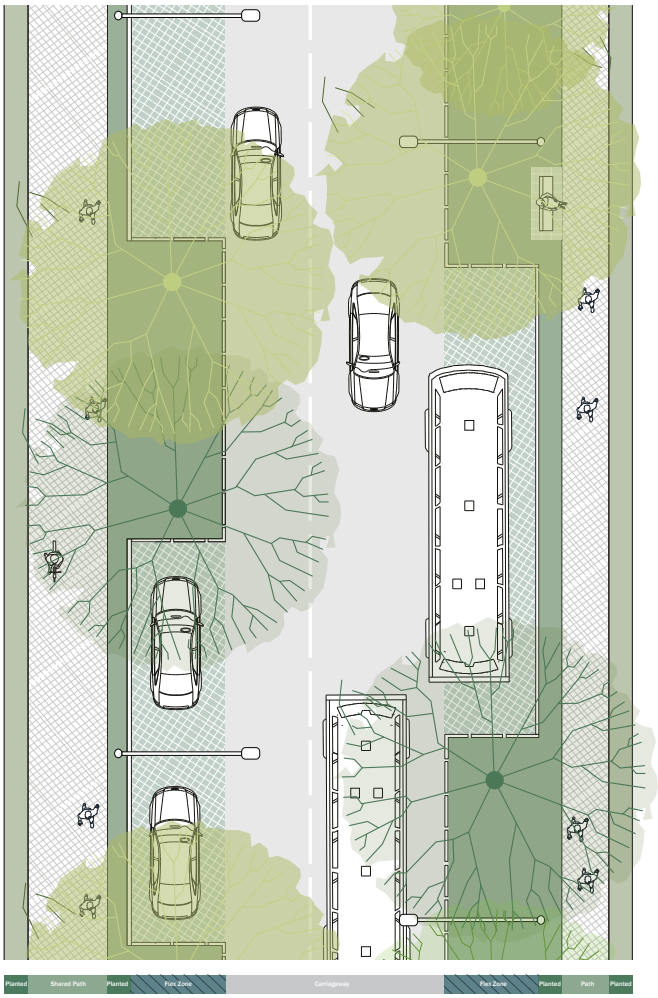
20 metre The Northern Road

(Existing Alignment) Section & Plan



Tree size assumptions:

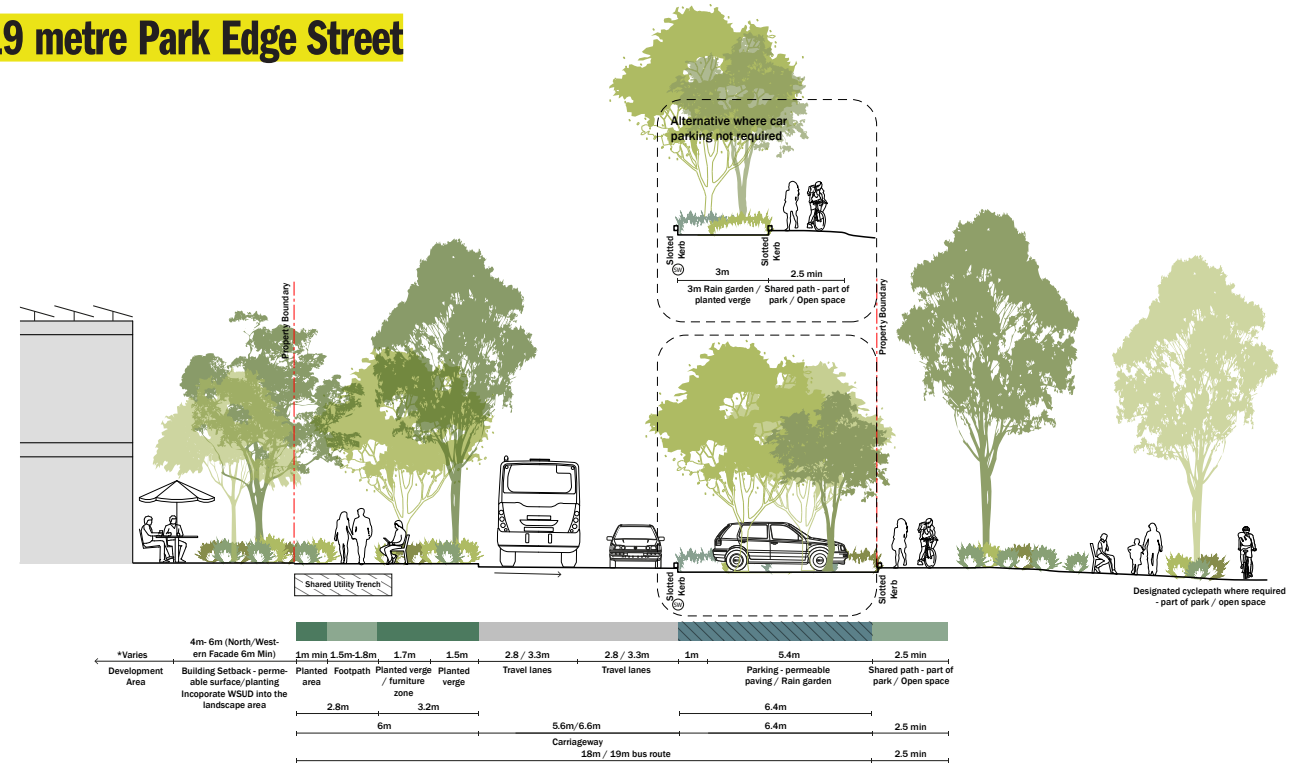
Large Tree - 10m canopy spread
Medium Tree - 7.5m canopy spread

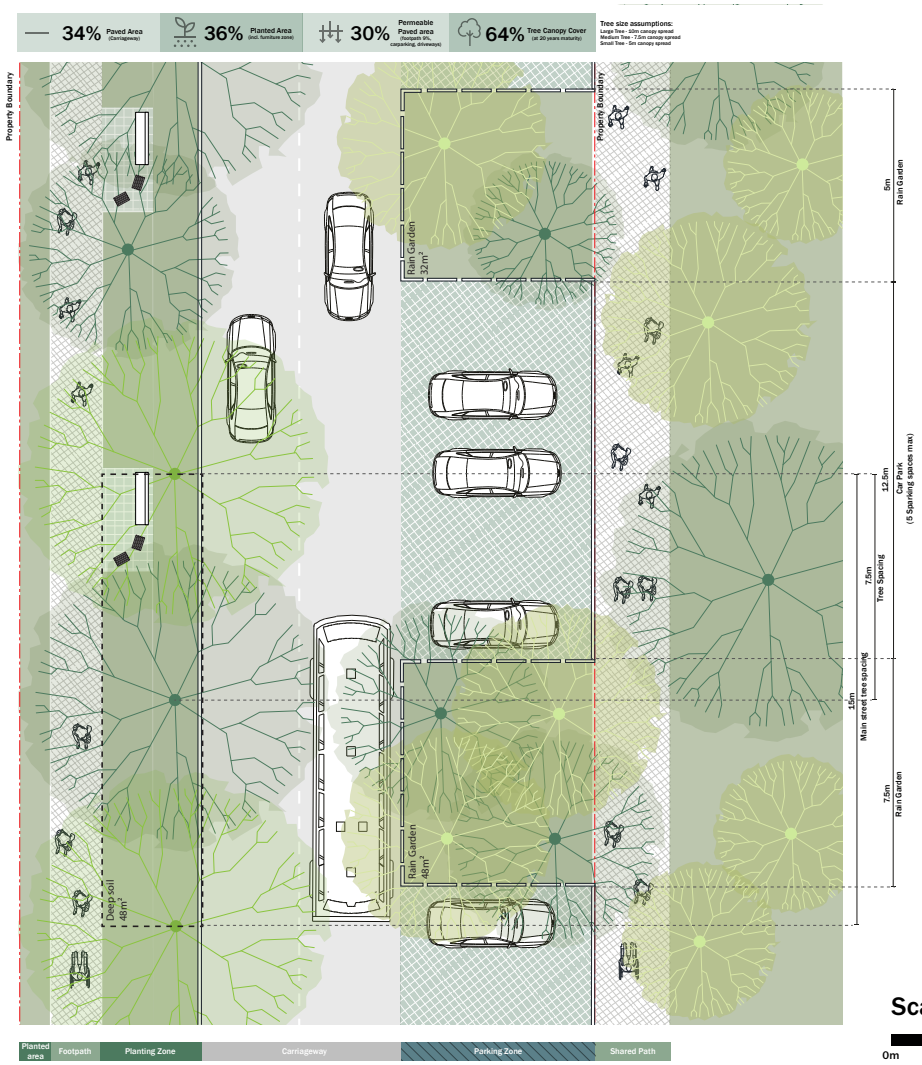


Scale

0m 2m 4m 8m

19 metre Park Edge Street

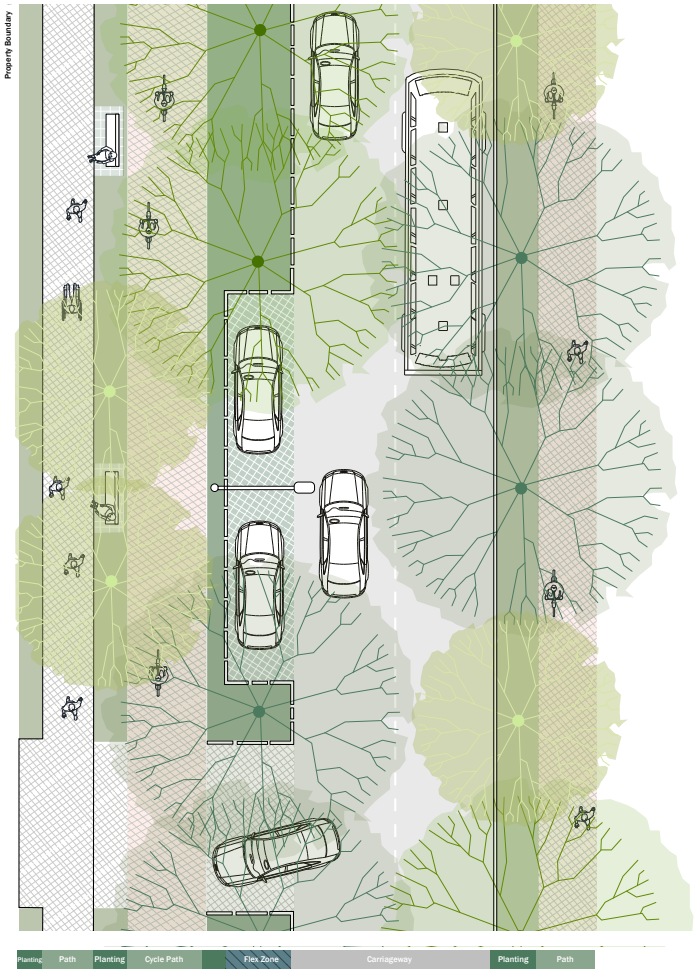




Scale

0m 2m 4m 8m

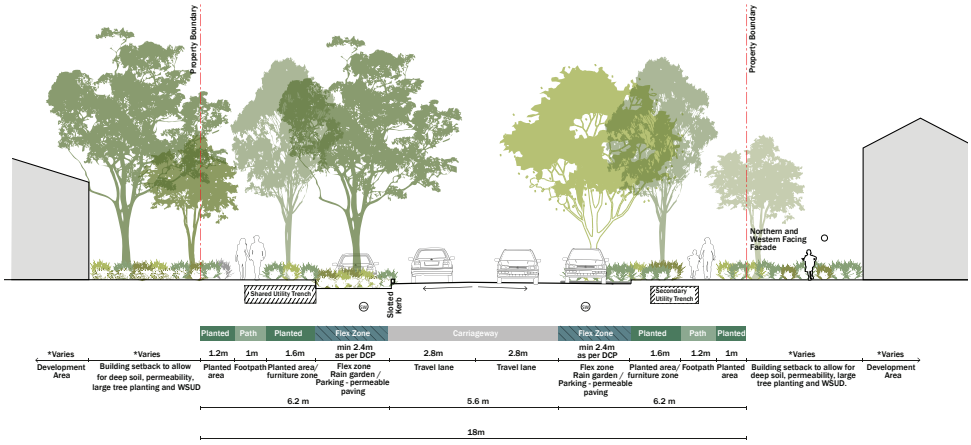
19 metre Edge Street

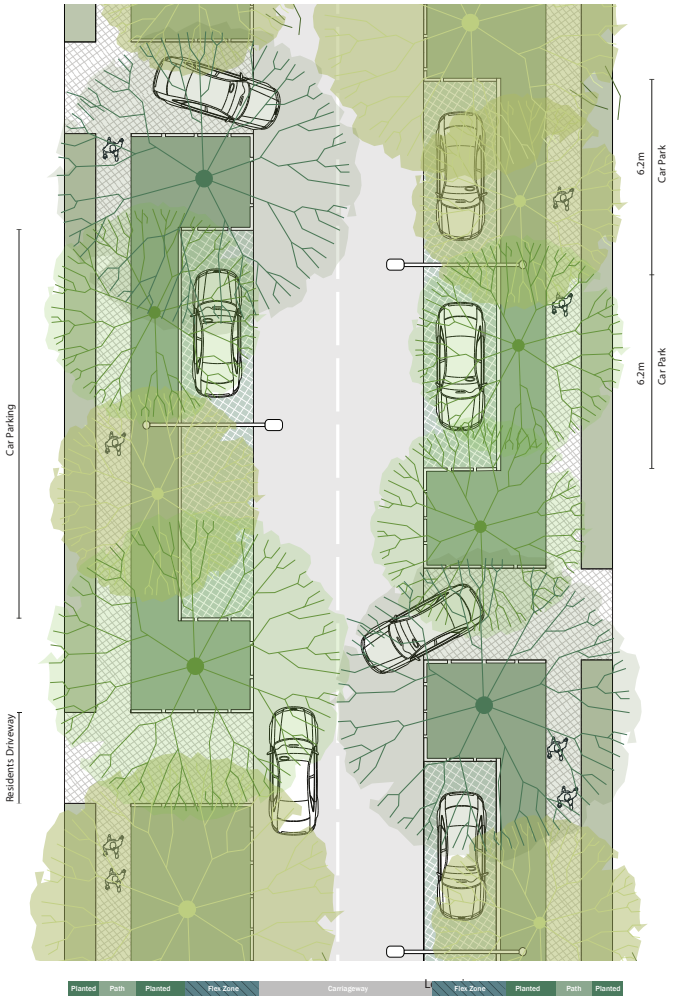


Scale

0m 2m 4m 8m

18 metre Residential Street (Existing within Luddenham Village)





Scale

0m 2m 4m 8m

LAND USE AND URBAN FORM

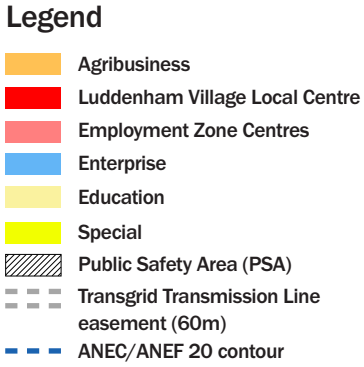
Land use across the Agribusiness Precinct will capitalise on the opportunities provided by the airport and proposed connections to wider Sydney. An integrated parkland city will emerge, with a focus on employment activity.

View of Agribusiness developments along Adams Road

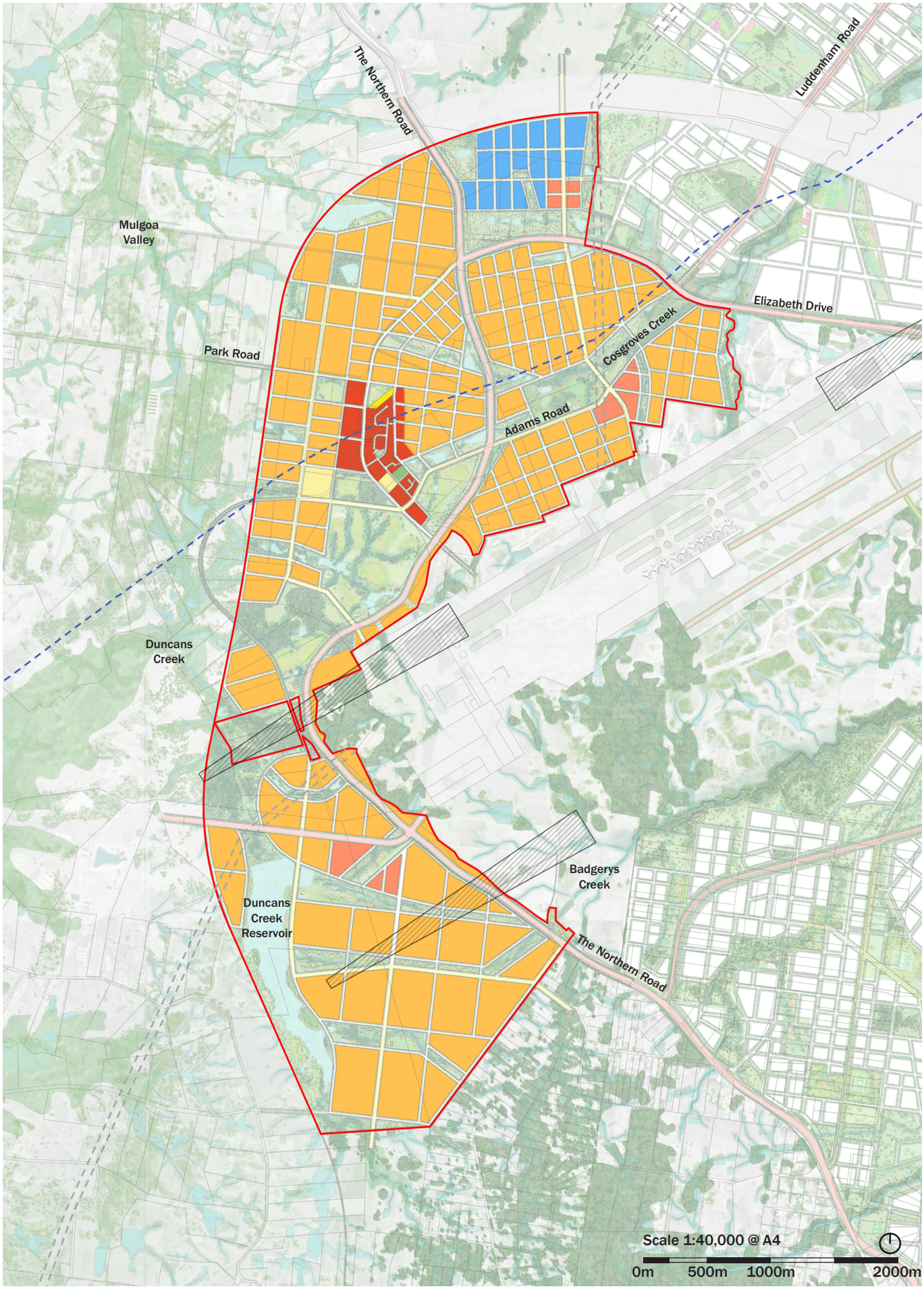
PRECINCT LAND USES

The Agribusiness Precinct will support approximately 5,400 jobs by 2036 with additional employment further into the future. The land use plan has been derived based on these targets and to also support an urban form that provides legibility, amenity and functionality.

- → Luddenham Village forms a compact Local Centre at the heart of the precinct, with appropriately scaled land uses that benefit from its walkable scale and heritage character. It's land uses will transition over time from existing residential uses.
- → A number of employment zone centres are provided across the precinct to support community amenity and diversity as it develops over time. Along with Luddenham Village, these will be very well served by buses and connected with the extensive cycleway network.
- → Agribusiness uses are anticipated throughout much of the precinct and will be oriented to benefit from the amenity of the open space and parkland network.
- → Flexible enterprise land uses are provided in the north of the precinct adjacent to the Northern Gateway to act as a transition between the predominant land uses in both precincts.
- → An Integrated Logistics Hub, Food and Pharma Hub, Integrated Intensive production Hub and an Australian Centre of Excellence in Food Innovation may be located within the precinct to benefit from the opportunities for national and international trade.
- → Tourism and cultural uses are anticipated in Luddenham Village as well as areas of ecological value and landscape amenity
- → Educational land use at Luddenham Public School and the Holy Family Catholic School will continue
- → Special uses for community infrastructure, such as a branch library and agile workspace, have been identified in Luddenham Village and located to benefit from adjacent open space
- → Open space is provided to be networked, multifunctional and consistent with the Blue-Green grid
- → Land uses will be responsive to requirements of heritage sites within the precinct.
- → Land uses are limited with regards to managing wildlife attraction (in the interest of safeguarding airport operations).
- → Land uses with noise sensitivities will be limited by ANEC contours.
- → Land uses within the Public Safety area need to be limited to ensure low densities of on site populations
- → Land within the Transgrid transmission line easements will need to conform with the relevant easement requirements.



The Urban Design Framework Plan



BUILT FORM

KEY BUILT FORM PRINCIPLES

1. Height and location of buildings is responsive to the strategic views across Country from the predominant north-south ridgeline through the precinct.
2. Height and scale of buildings responds to the intended function and typology.
3. Buildings are designed to address streets and open space.
4. Building type and scale responds to its intended use and topography.
5. Buildings present to arterial roads or associated service roads through clean built form and minimal visual clutter.
6. Buildings are designed consistent with passive cooling principles, maximising the potential for cross ventilation and minimising solar heat gain.
7. Buildings and associated construction methodologies are designed to maintain adequate clearance for air navigational activity over and around the Aerotropolis.
8. Site design enables setbacks to road edges for landscaping and water permeability to the soil.
9. Within identified centres, buildings present to adjacent roads and open space to create people focused and place based outcomes.
10. Loading docks and service bays are not oriented towards key street frontages and parkland.

Within the Agribusiness and Enterprise Zones:

– Notwithstanding the larger format of building footprints, buildings should address streets through clarity of entries, articulation and siting of active uses to street frontages, with levels consistent with the primary street address.

– Level differences between buildings and any adjacent parkland / street should be minimised. Siting the smaller footprint associated ancillary uses of developments along these edges will minimise instance of level differences.

– Industrial and enterprise architecture will be of high quality and should promote sustainable design by integrating design elements such as solar collectors and battery storage, green roofs, water reuse and the like.

– All buildings and car parks should be carefully integrated with the landscape design.

– Minimise driveway crossings to streets, sharing driveways where possible.

Within Luddenham Village Local Centre:

– Provide positive address and architectural presence to street frontages.

– Provide street wall building types to street frontages with appropriate scale and articulation.

– Permit zero setbacks on major streets to encourage active frontages.

– Allow opportunities away from the major streets for increased setbacks.

– Design all buildings to be of high architectural quality.

- Provide suitable curtilage, setback and built form scale in response to heritage items.

Architectural built form precedents, for the Agribusiness and enterprise zones, that illustrate the following objectives:

- → Sustainable design
- → Active interface between street and facade
- → Sustainable materials
- → Biophillic design approach
- → Green Roofs
- → Passive solar
- → Adaptability in use
- → High canopy cover
- → Built form responds to airport controls and safety regulations

LUDDENHAM LOCAL CENTRE

Luddenham Village will support the growth of the broader Aerotropolis as well as the Agribusiness Precinct. It is already home to several businesses, agricultural land and residences. The Village is to be become a destination for local, regional, national and international visitors to celebrate the merging of the rich history of Western Sydney with its future position on the global stage due to the construction of the Airport.

Luddenham Village is to emerge as a Tourist and Cultural hub for the Aerotropolis celebrating and being anchored by, the rich cultural heritage and elevated visitors of Western Sydney, whilst servicing employees within the Agribusiness precinct.

It is to become a destination for food and arts, providing opportunities for social and cultural engagement. The village is to recognize key sites that anchor movement corridors in a highly pedestrianiszed environment. Cultural wayfinding will guide visitors as they navigate through the village.

The Village is to remain compact but will be a distinctive centre that protects and enhances it heritage sites. New and emerging technologies will be embraced alongside design excellence and appropriate development while maintaining the village's character, amenity and lifestyle.

Annotations

1. Existing residential dwellings
2. Loading docks and hard stand is located away from the village and parkland
3. New development will prioritise active frontages to the Northern Road and adjacent streets
4. Sensitively scaled infill development within existing residential uses
5. New local community centre with branch library and childcare centre
6. New gateway park at the intersection of Park Road and the old Northern Road celebrates one's arrival into Luddenham and provides a buffer between Agribusiness land uses and the residential village.
7. Existing local shops set within the Agri-Park. A potential future site for an Agri-Park cultural centre or museum that would benefit from the strategic view corridors and views across Country.
8. Knowledge workers from research and innovation Agribusinesses benefit from the activity of Luddenham including hospitality offerings
9. Freight movements are limited through Luddenham so as to improve pedestrian amenity and safety. The realigned Northern Road and new sub-arterial roads provide alternative routes.
10. The Northern Road is transformed into a tree lined 'Green Boulevard', providing shade and contributing to the landscape character of place
11. The interior of deep blocks is activated with flexible landscaped shared zones that combine parking with space for local produce markets and events.
12. Luddenham Public School expands within a compact footprint to maximise the amount of green space and provide additional landscape linkages between adjacent parkland.
13. Pedestrian and cycle links improve connectivity between Luddenham Local Centre and surrounds.
14. Heritage items such as Luddenham Showground and the Luddenham Progress Hall are sensitively rejuvinated to accommodate the expanding community around Luddenham Village
15. The Agri-Park forms a landscape arrival Luddenham Village from the south and provides a landscape buffer from the airport.

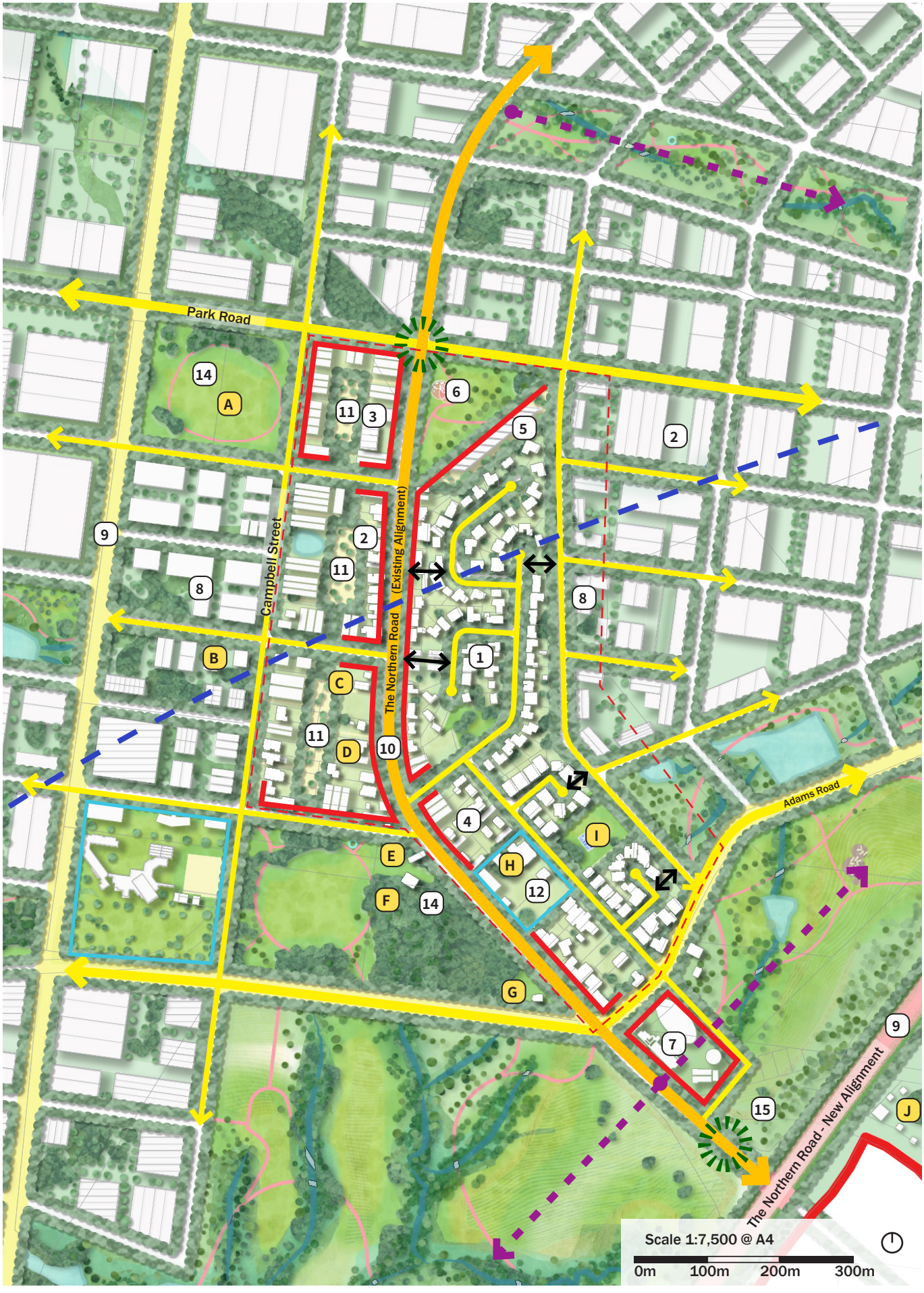
Heritage Listed Items

- A Showground
- B Brick Cottage
- C Weatherboard Cottage
- D Weatherboard Cottage
- E Luddenham Progress Hall
- F Luddenham Uniting Church
- G St. James Anglican Church
- H Luddenham Public School
- I Wilmington Reserve
- J Lawson's Thistle Inn

LEGEND

- Landscape Gateway to Village
- Luddenham Village boundary (WSAP 2020)
- Main Street - The Northern Road
- Streets
- Primary active frontage
- Pedestrian and cycle links
- ANEC20 noise contour
- Existing schools

The Urban Design Framework Plan



View south along The northern Road 'Main Street' with gateway park and community facility on the left and active frontages throughout

Studio Hollenstein ©

HEIGHT FRAMEWORK

The heights across the Agribusiness are controlled cognisant of a range of broad objectives:

- Achieve the density and population targets established by the WSAP
- Ensuring buildings and structures do not impede on the Obstacle Limitation Surface (OLS) associated with the airport
- Maintain landscape vistas and character by limiting heights to within tree canopy heights and locating new development outside key vistas
- Ensure landscape, as opposed to built form, is the predominant view on the horizon
- Providing urban density adjacent to the amenity of the parkland network.

Heights are categorised into the following zones with more detailed objectives:

Luddenham Village Local Centre

- Heights limited to align with existing built form within Luddenham Village, in particular adjacent heritage items

West of Luddenham Village and the predominant north south ridgeline

- Heights limited to preserve views west to the Blue Mountains from Luddenham Village Local Centre
- Heights benefit from the fall of the land to the west of Luddenham Village Local Centre

East of Luddenham Village and the predominant north south ridgeline

- Heights limited to preserve views eest towards Cosgroves Creek from Luddenham Village Local Centre
- Heights benefit from the fall of the land to the east of Luddenham Village Local Centre

General heights

- Align with broad height objectives
- Within these areas heights would lower to respond to adjacent uses and built form (Dwyer Road, North Luddenham, Northern Gateway, Aerotropolis Core, Western Sydney International (Nancy-Bird Walton) Airport)

The height map adjacent describes the height ranges that may be applied to achieve the desired built form and land use outcomes across the Agribusiness precinct.

OLS Constraints

Notwithstanding maximum heights, all buildings and structures, including equipment used during construction (such as cranes) are required to be contained within Obstacle Limitation Surface (OLS) limits established in the Western Sydney Aerotropolis Plan.

Legend

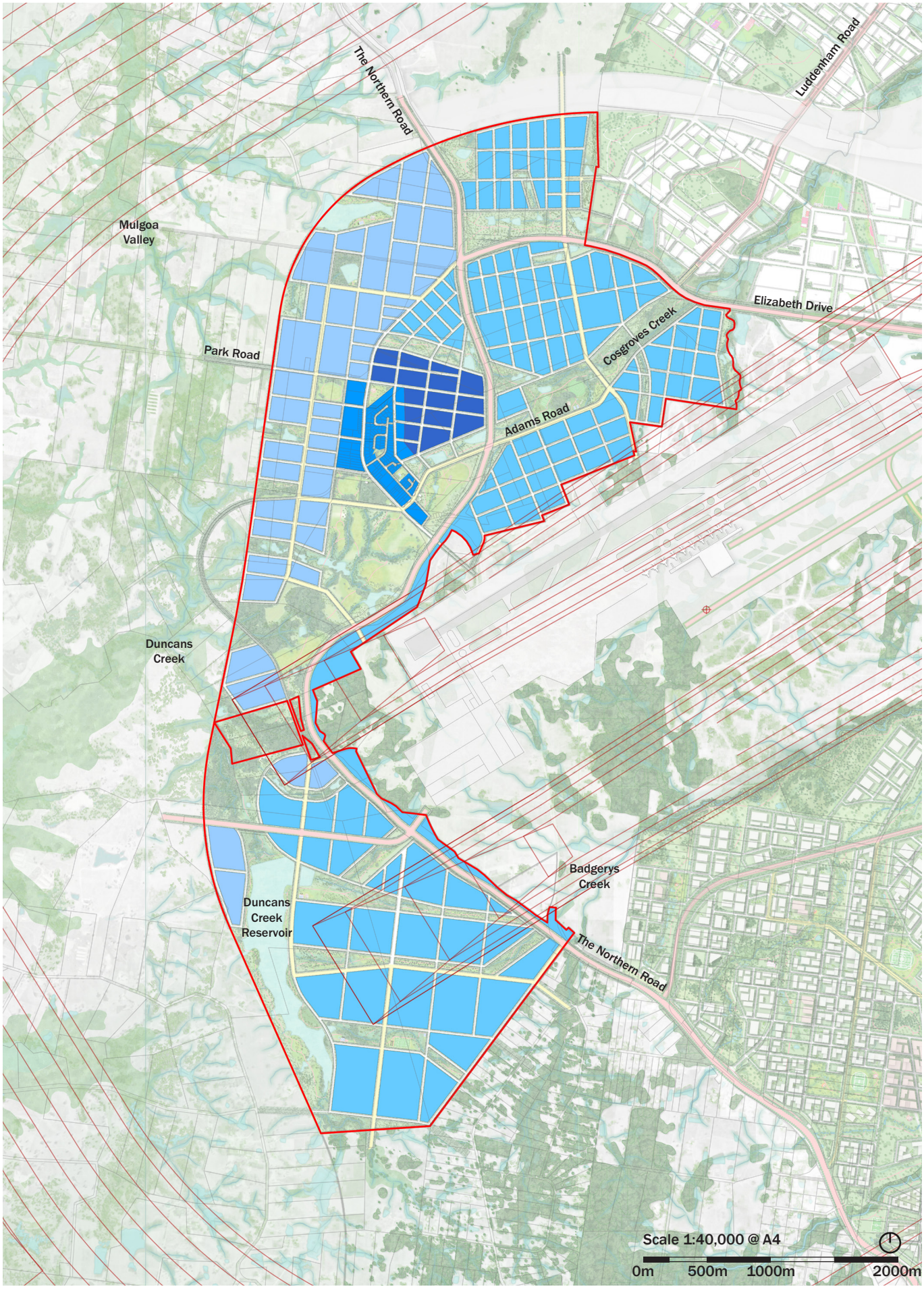
Existing Heights

10-20m

20m

Obstacle Limiting Surface (OLS) Contours

The Urban Design Framework Plan

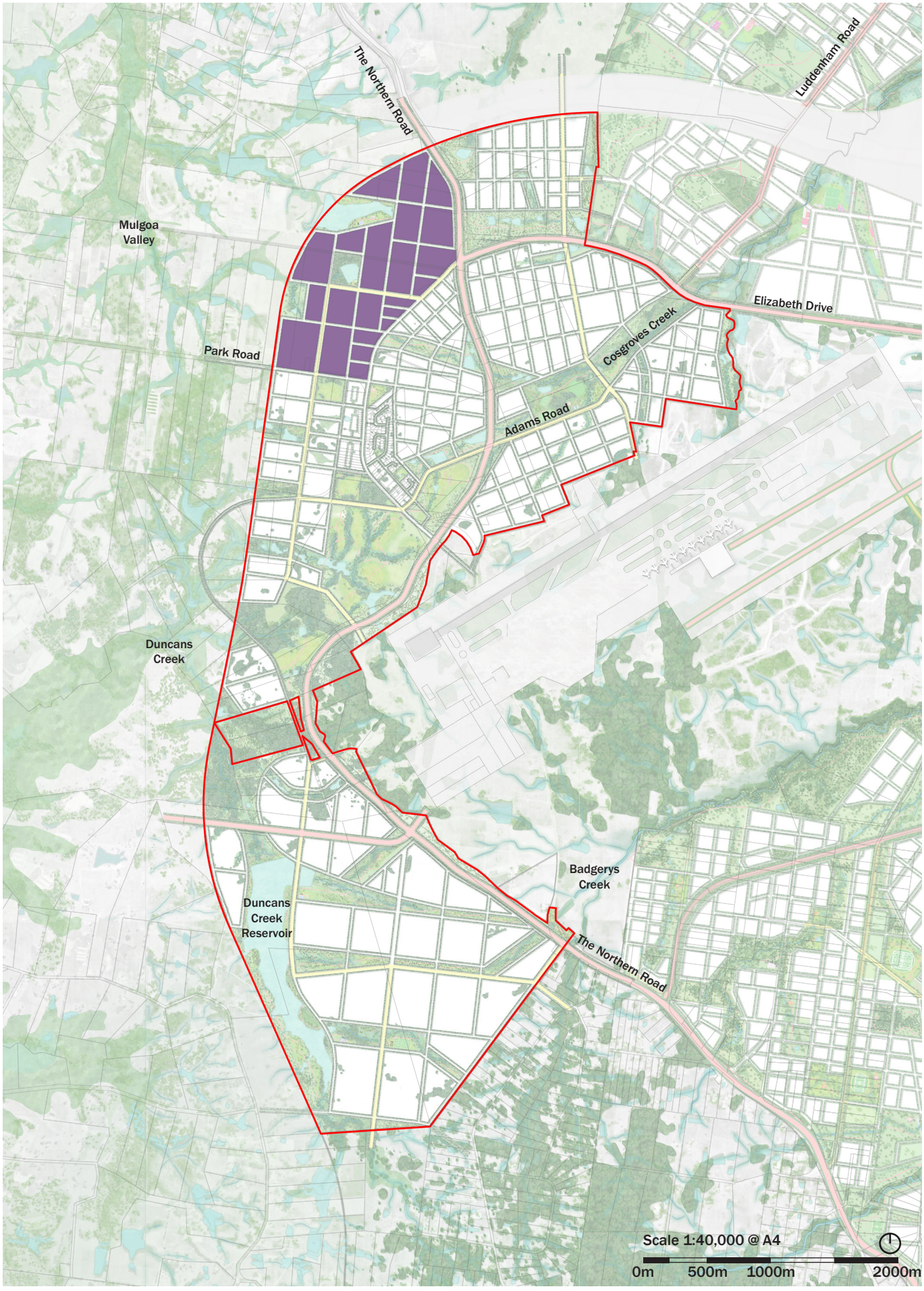


MINIMUM LOT SIZE

The land within the northern area of the Agribusiness Pecinct should be a minimum of 20ha as depicted on the map. This is intended to ensure that the lot sizes are large enough to support intensive sustainable food production.

Legend

Minimum lot size of 20ha


The Northern Road
Luddenham Road
Mulgoa Valley
Elizabeth Drive
Park Road
Cosgroves Creek
Adams Road
Duncans Creek
Badgerys Creek
Duncans Creek Reservoir
The Northern Road
Scale 1:40,000 @ A4
0m
500m
1000m
2000m

SOCIAL + CULTURAL FRAMEWORK

Principles

1. Co-location with open space

→ School - sport & recreation facility - open space
→ Libraries, social & cultural institutions with park frontage

2. Co-location of complementing institutions & services

→ Libraries, social and cultural institutions
→ Libraries & tertiary institutions

3. Location and distribution throughout the precincts to ensure good accessibility to both workers and residents

→ Good public and active transport accessibility
→ Proximity to interconnected open space facilitates and encourages active transport

1. Sport and local recreational facilities

Sports fields and courts are located within parkland adjacent to each of the centres of the Agribusiness precinct.

All sport & recreation local facilities have good accessibility by public and active transport.

2. Educational facilities

Educational facilities are added to Luddenham Public School which sits adjacent existing and expanded parkland across Jamison Street.

3. Social and cultural infrastructure

Libraries are the core of the community life - for residents, workers and visitors alike. A new library is located within Luddenham Village alongside parkland to encourage indoor and outdoor community activity.

An Agile Work Centre is recommended to be located in Luddenham Village and support knowledge workers and the broader community within the precinct. This could be co-located with other community facilities such as the branch library and childcare.

4. Childcare facilities

Childcare centres provide support to families and are located in Luddeenham village and each employment centre.

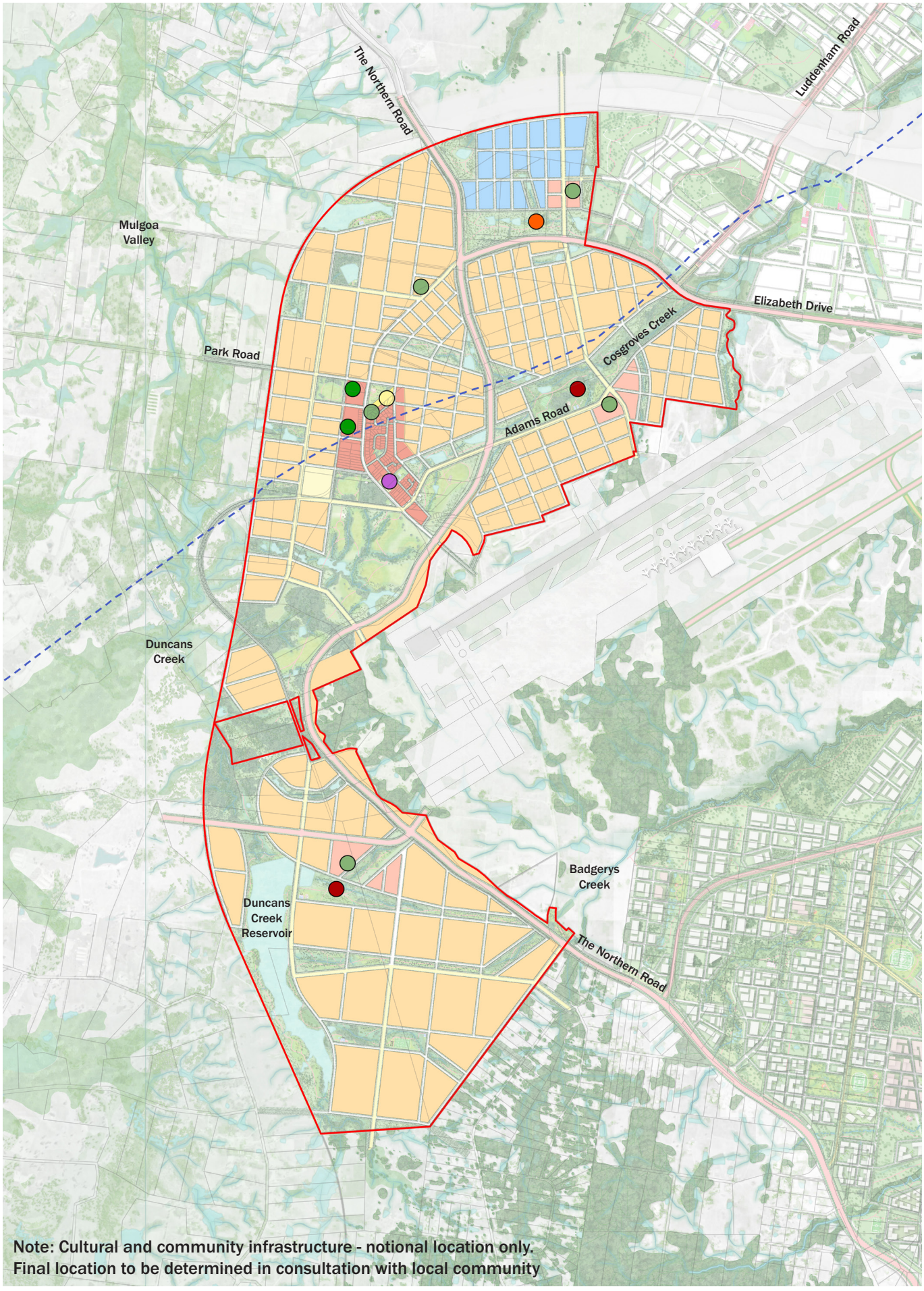
5. Aged Care facilities

Aged care facilities are located within Luddenham Village alongside parks to encourage walking, outdoor activities, engagement with nature and a healthy lifestyle within the heritage rich village.

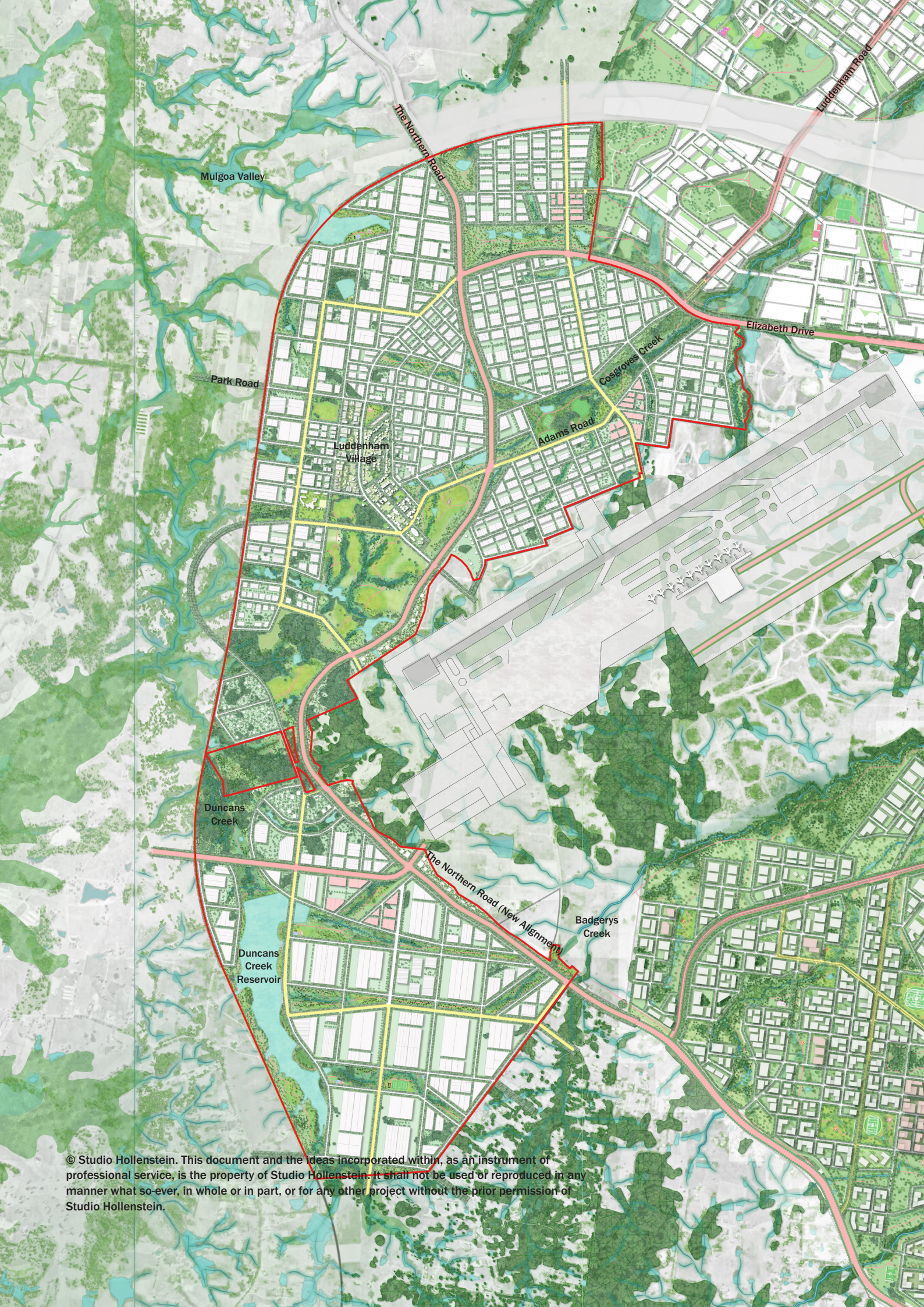
ANEC 20+ noise contours will limit the placement of new noise sensitive social and cultural offerings. Existing facilities that sit within the ANEC 20 contours will need to consider upgrades to alleviate the impact of airport noise.

Legend

- Sports fields (local)
- Outdoor sports courts (local)
- Luddenham Public School (local)
- Branch Library (local) + Agile Work Centre
- Child care
- Aged care



Note: Cultural and community infrastructure - notional location only.
Final location to be determined in consultation with local community



© Studio Hollenstein. This document and the ideas incorporated within, as an instrument of professional service, is the property of Studio Hollenstein. It shall not be used or reproduced in any manner what so-ever, in whole or in part, or for any other project without the prior permission of Studio Hollenstein.