AIRPORT LINK

URBAN DESIGN, LANDSCAPE & VISUAL

EXISTING ENVIRONMENT POTENTIAL IMPACTS & MITIGATION MEASURES

27-07-2006

Airport Link

Vital Places

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URBAN LANDSCAPE ARCHITECTURE

PLACE
PLANNING & DESIGN

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Introduction

This report responds to the Airport Links Terms of Reference (ToR) in regard to the themes of Urban Design, Landscape and Visual. Firstly, the report describes the existing environment of the preferred Study Corridor using an analysis structure that relates to the above themes. Secondly, the same structure was used to set a number of Principles, Goals and Objectives which focus the investigation around key locations within the Study Corridor. Finally, guided by the Principles, Goals and Objectives, the existing environment within each Key Location is explored, followed by a description of impacts of the proposed Airport Link infrastructure and the mitigation measures devised to minimise such impacts.

The Airport Link project is closely associated with the Northern Busway project and as such an assessment of the cumulative impacts of the Northern Busway on the Airport Link is discussed briefly.

Study Corridor Existing Environment Assessment Approach

Principles for the urban design, landscape and visual components of the EIS have been established by reviewing the BBC City Plan, BCC's Living in Brisbane 2010 and current literature and practice in the context of the particular requirements of the Airport Link Project. Resulting from this evaluation, five key urban design, landscape and visual principles have been identified. The issues contained in these key themes were applied to the Study Corridor to explore the existing environment relevant to the ToR. The assessment of the existing urban design, landscape and visual context has been structured under the following sustainable design principles of Urban Centres, Connections, Urban Character, Visual Values and Landscape Elements.

- Urban Centres provide critical social and economic activity nodes of a city.
- Connections provide movement networks that deliver transport choices to and from Urban Centres.
- Urban Character provides built form and open space patterns that underpin a city's sense of place.
- Visual Values provide the framework for a city's visual experience and meaning.
- Landscape Elements identify the unique natural attributes of places within a city.

Study Corridor Existing Environment Assessment Outcomes

The following is a summary of the existing environment of the Study Corridor:

Urban Centres

The Study Corridor contains seven distinct 'urban' centres reflecting a range of hierarchies following the north-south direction of Lutwyche, Gympie and Sandgate Roads. The centres offer community services, access to public transport and employment to differing degrees. The pedestrian catchments around these urban centres mainly contain areas classified for Low to Medium Density dwellings with the exception being Wooloowin with its predominantly Low Density Residential catchment.

Connections

The movement patterns of major roads and rail lines provide a strong North – South connection within the Study Corridor. There are much weaker connections running East – West within the Study Corridor. The opposite is

true for pedestrian and cyclist movement through the corridor, the East – West connections along the creeks lines are strong and safe, whereas there is a lack of direct and safe North- South connections.

Urban Character

The pattern of urban development across the Study Corridor reflects the constraints of dominant waterway systems creating residential areas that are fragmented in their street pattern. The North – South ridgeline has provided a critical transportation link for the city. The existing urban character is of a dual nature with intense urban commercial strips immediately adjacent to areas of low to medium density residential development.

Visual Values

The open space areas provide high visual values supported by clusters of culturally significant locations. The lower visual values are generated by areas of transition where the original residential fabric borders existing centres and transportation corridors.

Landscape Elements

Ridgelines and waterways provide the landscape structure and dictate the resulting pattern of development which occurs in the Study Corridor. The waterway systems of Kedron Brook and Enoggera Creek combined with a strong north-south ridgeline influence the type of landscape elements with high and low value found in locations throughout the Study Corridor.

Development of Principles, Goals and Objectives

After assessing the existing environment of the Study Corridor under the five key themes of Urban Centres, Connections, Urban Character, Visual Values and Landscape Elements, a set of principles, goals and objectives were devised to frame the investigation of key locations within the study area. These deal with issues of commercial activity, access, landscape and visual amenity, local character, integrated movement networks, protection and enhancement of natural and cultural features, increased public access and improved neighbourhood character.
They are:

Urban Centres

Principle: Urban Centres provide critical social and economic activity nodes of a city.
Goal: Provide compact centres with well integrated pedestrian and vehicle movement networks
Objectives:

- Minimise Centre fragmentation by encouraging centre regeneration i.e. (SCIPS)
- Strengthen links to local vehicle and pedestrian catchments;
- Provide inclusive public spaces supporting neighbourhood identity through design.

Connections

Principle: Connections provide movement networks that deliver transport choices to and from Urban Centres.
Goal: Provide well connected pedestrian, cycle and vehicle networks
Objectives:

- Improve and extend existing pedestrian and cycle networks;
- Provide safe and accessible new pedestrian and cycle networks;

- Integrate transport nodes and community facilities into movement networks.

Urban Character

Principle: Urban Character provides built form and open space patterns that underpin a city's sense of place.
Goal: Ensure built form and private and public open space is well integrated into neighbourhood
Objectives:

- Provide active edges to public spaces;
- Provide a well connected and high amenity streetscape;
- Provide good quality public spaces for relaxation and recreation;
- Promote water wise subtropical urban design and landscape treatments.

Visual Values

Principle: Visual Values provide the framework for a city's visual experience and meaning
Goal: Protect and enhance positive visual qualities
Objectives:

- Protect critical views and vistas;
- Minimise visual impacts of project;
- Ensure project infrastructure (i.e. transition structures, flyovers, portal, ventilation outlets and sound barriers) integrates into the existing environment in a consistent manner through urban design and landscape treatments.

Landscape Elements

Principle: Landscape Values identify the unique natural attributes of a place within a city.
Goal: Protect and enhance areas of significant natural value
Objectives:

- Strengthen natural corridors and rehabilitate degraded areas;
- Protect and ensure existing Landscape Elements are well integrated into project;
- Ensure new open space areas include environmental treatments.

Objectives Common to All:

- Apply Crime Prevention Through Design (CPTD) principles through the design process
- Apply Sustainable Design principles through the design process.

Key Location Introduction

The following key locations are primarily areas of the project's surface works where direct impacts on the built urban, landscape and visual context will be most apparent. The above Principles, Goals and Objectives have driven the investigation into the existing environments of each location. Where appropriate they have also been tailored to each key location in response to proposed project impacts and to arrive at mitigation measures. The five key locations identified are:

A: Bowen Hills
B: Memorial Park

C: Gympie Road
D: Wooloowin
E: Sandgate Road

The areas surrounding the Memorial Park on Lutwyche Road, and the Wooloowin residential area are not expected to be affected by direct surface works. They have been identified due to their unique qualities as discreet localities within the Study Corridor.

Key Location Assessment Structure and Methods

The following structure and methods for key location assessment is in line with the TOR requirements to assess and describe the following:

1. The existing environment of each key location;
2. Potential impacts and mitigation in each key location (if any).

Existing Environment

Visual Elements and Values

Each of the five key locations have been reviewed with regard to visual elements and values of the built, landscape and visual form, including access and amenity, considerations for residents, pedestrians, cyclist and public transport users. Photographs were taken in locations around potential impact areas or where an area displays a character typical of the key location. (Refer Appendix 10.1)

Landscape Elements

Each of the five key locations has been reviewed with regard to landscape amenity and those elements protected by local planning orders or similar laws.
The landscape elements that contribute to landscape amenity of each key location are significant trees, open space, access to water, scenic amenity (refer visual values).
(Refer Appendix 10.1)

Landscape Amenity in this report refers to the type and combination of natural landscape elements that provide physical comfort and contributes to the attractiveness of an area by providing a benefit to the local community.

Potential Impacts and Mitigation Measures

Once the existing environment has been described using the above methodology, the report must respond to the ToR to describe the potential impacts and mitigation measures. The following explains how this report answers the ToR.

This part of the report was completed using three inter-related communication modes. Firstly, a written table was devised stating each key location's Principles, Goals and Objectives, relating them to potential impacts on Land Use, Public Amenity and Public Access and proposed mitigation measures of specific project infrastructure. (Refer Appendix 10.2). Secondly, Urban Design and Landscape concepts were developed which illustrate

potential mitigation measures at a contextual level. The following six strategies are proposed to guide the urban design and landscape concepts;

Provide Australian best practice urban design and landscape standards, codes and practices for the provision of:

1. Revegetation / Waterway rehabilitation – Protect existing significant vegetation. Revegetate areas damaged during construction and rehabilitate damage to waterways where appropriate.
2. Urban Forest Treatment – Create well connected and safe landscapes of diverse and high quality where the project creates open space, incorporating existing parks and open space, where possible.
3. Activity Zones – Create well connected and safe community areas for active or passive recreation within discrete areas of open space.
4. Boulevard Treatment – Provide significant tree planting, street furniture, public art and accessible pathways to major roads.
5. Suburban Centre Improvement Schemes – Create well connected and safe new opportunities or strengthen existing viability of centres through urban design and landscape treatments.
6. Design Intervention in Response to Engineering Proposals – Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers and integrate these with the existing environment of the each key location.

Finally, a visual analysis table was devised to illustrate and rate the above treatments in terms of the landscape and viewer perceptions of changes to the landscape.

KEY LOCATIONS

Overall Summary of Bowen Hills (Southern Connection)

Existing Environment Summary

Visual Elements and Values

This location is viewed from local high points external to the Study Corridor i.e. Windsor and Albion. There are no ridge lines or hilltops in this area, although there is a ridge line to the north (external to this key location at Newmarket-Lutwyche Road) that provides elevated views to the south in this location.

Landscape Elements

The landscape elements of this key location are centred on Enoggera Creek, Bowen Park and the south west the tip of Victoria Park. The study identified two groups of significant trees and one park within this key location of high landscape value.

- Bowen Park and its significant trees contain landscape amenity of high quality. Direct impact on this park is unlikely, and adjacent impacts need to be mindful of the users of this park, i.e. weddings.
- The mangroves fringing Enoggera Creek provide high landscape amenity for creek users, which is a rarity in such an urban environment.

Impacts and Mitigation Summary

Impacts

The impacts of the proposed works for Airport Link on the Southern Connection will be;

- The Urban Centre Bowen Hill Suburban centre in this key location (near Bowen Hills train station) will not be directly affected by the project footprint; however access to this centre from the RBH is compromised due to the introduction of ramps at Campbell Street East connecting to the AL.
- Connectivity will be made more difficult for pedestrians and cyclists where all proposed roads and ramps impact on existing road and open space networks. This will be relevant to the eastern end of Campbell Street and the northern reach of Enoggera Creek.
- The Urban Character of the area will change from commercial office parks to road infrastructure and left over void spaces.
- Visually the project will impact on broad views looking north from O'Connell Terrace and views south from Windsor East and Lutwyche Road. Fleeting views to mangroves from Bowen Bridge Road will be impacted.

  At a local viewing scale there will be viewing impacts caused by ramps and overpasses at Campbell Street east and west, the additional flyovers on top of the NSBT connections and the additional bridge structure over Enoggera Creek.
- The Landscape Elements likely to be impacted are the mangroves on the Southern and Northern Banks of Enoggera Creek.

Mitigation Measures

The mitigation measures propose urban design and landscape concepts to offset project impacts. All measures will be required to apply Australian best practice urban design and landscape standards, codes and practices. The following six strategies are proposed to deal with project impacts;

1. Revegetation / Waterway rehabilitation –
    - Protect existing significant vegetation.
    - Revegetate open space areas damaged during construction and rehabilitate damage to Enoggera Creek mangroves and banks due to construction of the bridge to the AL.
2. Urban Forest Treatment –
    - Create water wise subtropical landscapes with mature trees over the majority of left over open space incorporating the north bank of Enoggera Creek.
    - Ensure connection to and from open space connecting the North and South banks of Enoggera Creek and the pedestrian/cycle bridge provided by the NSBT.
    - Plant groves of large trees and create new recreation open space to the Northern side of Enoggera Creek.
3. Activity Zones –
    - Opportunities exist to create areas of high quality landscape amenity to open space created by the infrastructure.
    - Repair damage to NSBT planting.
    - Provide facilities such as Picnic / Barbecues; play space for all ages and; access creek for canoeists on the northern side of the creek.

4. Boulevard Treatment –
    - Provide boulevard street trees; accessible pathways; street furniture; art work to sections of Lutwyche Road, and the whole of O'Connell Terrace,
    - Provide tree plantings to Hamilton Place, Tufton Street and Wren Street.
5. Suburban Centre Improvement Schemes (SCIPS) –
    - Investigate opportunities to provide SCIPS to sections of Lutwyche Road; Bowen Hills Centre and at O'Connell Terrace.
    - Provide pedestrian/cyclist connection from existing Bowen Hills Centre west (Bowen Hill train station) to Lutwyche Road and RBH.
6. Design Intervention in Response to Engineering Proposals –
    - Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers and integrate these with the existing environment of the Bowen Hills key location.
    - There is an opportunity to incorporate visually pleasing ventilation outlets within the open space of the northern bank of Enoggera Creek. The ventilation outlet could form part of a city gateway to or from the airport.

Overall Summary of Memorial Park

Existing Environment

Visual Elements and Values

Due to the intersection of the north-south ridge along Lutwyche Road and the east-west ridge in the vicinity of Chalk Street, this key location contains the strongest ridge line grouping in the Study Corridor. These ridges also provide peaks at Memorial Park and at the top of the cliff at Windsor Town Quarry Park. These topographical attributes make this key location a significant viewing location as well as highly visible from the lower areas of the Enoggera Creek and Kedron Brook catchments.

Landscape Elements

This location contains a north-south ridgeline along Lutwyche Road and an east-west ridge line in the vicinity of Chalk Street. There are a number of significant landscape features and trees in this area, such the Old Town Quarry Park cliffs, Pops Fig, and the trees around the war memorial at Memorial Park. These features make this an area with high landscape values.

Impacts and Mitigation

The area of the Memorial Park on Lutwyche Road is not expected to be affected by surface works and there are no impacts to mitigate.

Overall Summary of Gympie Road

Existing Environment

Visual Elements and Values

This key location is framed by ridge lines with high points to its north and south. Kedron Brook creates a central valley running east-west between these ridge lines. This topographical structure creates a central viewing area that is moderately exposed when entering this key location from the north, or south along Lutwyche/Gympie Road. The dominant movement pattern is created by Gympie/Lutwyche Road (north-south) with the connector of Stafford Road and Junction Road (east-west). This road pattern reduces the opportunities for convenient pedestrian and cyclist movements. The strong west-east flow of the Kedron Brook waterway has created a significant alternate movement system for the pedestrian and cyclist. This circulation network is highly patronised by locals and visitors. (Refer Appendix 10.1)

Landscape Elements

Kedron Brook dominates the landscape amenity provided in this key location. The area does not directly contain documented significant trees; however to the south there are a number of mature figs which fringe Norman Avenue, Lutwyche and Kedron Park Road. The open space corridor of Kedron Brook runs through the centre of this key location. An engineered open drain acts as the water conduit and in high flows the area floods over the grassy banks containing pedestrian and cyclist paths. Fragmented groups of trees line the outer edges of this corridor. The variety of landscape features in this area is minimal, i.e. grass and few trees, therefore the quality of this significant open space are of low landscape value at present. (Refer Appendix 10.1)

Impacts and Mitigation

Impacts

The impacts of the proposed works for Airport Link on Gympie Road are;

- The Urban Centres of Stafford Road and Gympie Road Suburban Centres will be impacted by the proposed infrastructure. Road widening will result in property resumptions on both sides of the road. The centres are already weak because of commercial activity fragmentation due to existing traffic levels. The proposed ramps dissecting Gympie Road will exacerbate this.
- The proposed infrastructure will not interfere with the Connectivity of the east–west connection through Kedron Brook.
    - The north-south pedestrian/cycle movement will become difficult at grade with the road due to proposed two stage crossing points at Lutwyche and Kedron Park Road.
    - To the north of Kedron Brook, Lassiter Street is closed to vehicles.
    - To the south of Kedron Brook, Colton and Windsor Avenues are now connected to Lutwyche Road through Norman Avenue at a signalised crossing.
- The Urban Character of this key location will change from open space, commercial, special uses and residential to that of a location dominated by road infrastructure. Road widening and project infrastructure will result in road terminations and property resumptions of residential, commercial and special use buildings i.e. the Emergency Services complex.
- Visually the project will impact on views looking into this key location due to constructions of ramps and flyovers to the north and south of Kedron Brook. At a local scale there will be visual impacts affecting all adjacent property owners.

- The Landscape Elements of this key location will remain relatively intact however the footprint of the bridge and flyover structures will increase the covered area over Kedron Brook. The two large figs at Norman Avenue will be impacted due to the service road connecting to Brook, Colton and Windsor Avenues and cut and cover works.

Mitigation Measures

The mitigation measures propose urban design and landscape concepts to offset project impacts. All measures will be required to apply Australian best practice urban design and landscape standards, codes and practices. The following six strategies are proposed to deal with project impacts;

1. Open Space Revegetation / Waterway rehabilitation –
    - Protect existing significant vegetation.
    - Revegetate areas damaged during construction and rehabilitate damage to Kedron Brook (if any) with naturalised reconstruction of waterway.
    - Provide high amenity planting to screen the sound barriers, ramp and transition structures impacting on the local residential precinct at Colton and Windsor Avenues;
    - Provide high amenity planting to screen the sound barriers, ramp and transition structures impacting on the local residential precinct at of Erskine Street, Lassetter Streets and Park Terrace where possible.

2. Urban Forest Treatment –
    - Create water wise subtropical landscapes with mature trees over the majority of new spaces caused by the transition structures into the tunnel.
    - Connect the north-south crossing of Kedron Brook with new pedestrian/cycle footbridge over the creek.
3. Activity Zones –
    - There is an opportunity to create areas of high quality landscape and recreation amenity to the south western side of the bridge over Kedron Brook at Lutwyche Road. Opportunities include play spaces for all ages, bicycle storage facilities, and typical park amenities.
4. Boulevard Treatment –
    - To sections of Lutwyche Road, Kedron Park Road, Gympie Road and Stafford Roads with improved accessible pathways and streetscape amenities.
5. Suburban Centre Improvement Schemes (SCIPS) –
    - Investigate opportunities to provide a SCIP to Stafford and Gympie Road Suburban Centres.
6. Design Intervention in Response to Engineering Proposals –
    - Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers and integrate these with the existing environment of the Gympie Road key location.
    - There is an opportunity to incorporate a visually pleasing ventilation outlet within a special use building similar to the existing Emergency Services building.

Overall Summary of Wooloowin

Existing Environment

Visual Elements and Values

This key location contains no ridgelines or hilltops, due to its position between the Lutwyche Road ridge line and the Sandgate Road ridge line. Because this key location it is in a valley it is the most highly visible location within the Study Corridor. This key location also provides the most intact and consistent visual character of suburban low density housing and domestic landscaping within the Study Corridor. The north-south rail line defines its eastern edge. The residential street pattern provides an efficient framework for pedestrian and cyclist movement and access to the Kedron Brook open space system.

Landscape Elements

Although this key location is predominantly above flood inundation lines, it is one of the lower lying areas within the Study Corridor. Melrose Park its vegetation and water ways are the dominant natural features in this key location. A degraded and fragmented minor creek corridor begins where piped stormwater exits into Melrose Park. This creek would have previously connected to Shultz canal. There is also a mature grouping of Eucalypts of sufficient scale to provide native habitat at the southern end of Melrose Park, as well as established vegetation surrounding this residential precinct.

Impacts and Mitigation

The area of the Wooloowin is not expected to be affected by direct surface works and there are no impacts to mitigate. An indirect impact of the AL will see a decrease in traffic travelling along Junction Road, creating improved amenity for local residents than currently exists.

Overall Summary of Sandgate Road (Sandgate Road Connection)

Existing Environment

Visual Elements and Values

This location is framed by ridge lines to the north and south with Shultz's Canal (part of Kedron Brook Open Space) creating a waterway valley running east-west. The most visible areas are to the east of the Sandgate Road ridgeline looking toward Toombul shopping centre. The area to the west of Sandgate Road has moderate to low visibility. Looking west from Sandgate Road Bridge, area central to this key location becomes highly visible. Pedestrian and cycle paths of low amenity are provided along the edges of the Shultz Canal waterway system and some adjacent open space areas.

Landscape Elements

The waterway and flooding impact of Shultz's Canal provide dominant natural features and constraints in this key location. There is a distinct change in landscape features either side of the Sandgate Road Bridge crossing Shultz Canal. To the west there are significant groupings of Araucaria species, Eucalypts species, other cultural plantings and weed species. There is also a degraded and fragmented minor creek corridor originating in Melrose Park which would have previously connected to Shultz Canal. To the east of Sandgate Road the landscape changes dramatically to an asphalt car park next to a degraded creek bed with some emerging

mangrove species. The landscape quality of this area is fragmented and degraded therefore the landscape quality of this key location is low to moderate at present.

Impacts and Mitigation

Impacts

The Impacts of the proposed works for Airport Link on Sandgate Road will be;

- The Urban Centre of Toombul Shopping Centre will be impacted by the removal of the existing bridge crossing Shultz Canal removing access to car parking on the southern edge of Shultz Canal. The excavation of this area is required to offset flooding impacts.
- Connectivity will be impacted in this key location due to the removal of the pedestrian and cycle pathway along southern edge of Shultz's Canal between Sandgate Road and Melton Road due to the reshaping of the waterway for hydraulic requirements. The existing pedestrian and cycle network at the northern ends of Stuckey Road & Alma Road are to be removed by transition structures.
  If signalised, the new intersection layout of Sandgate Road and east west arterial can increase road crossing opportunities for pedestrians.
- The project impacts further fragment Urban Character & Visual Values by removing mature trees on the western side of the T intersection of Sandgate Road and the East West Arterial. The transformation of the existing intersection into a four way intersection will increase the surface footprint and reduce existing visual amenity. The existing amenity of the eastern end of Lewis Street and the northern end of Jackson Street will be reduced by cut and cover works during construction.
- The project will impact on Landscape Elements in this key location. The project works will cause the removal of significant mature vegetation at the northern end of Stuckey and Alma Streets as well as the existing vegetation in the open space corridor from Lewis Street to Sandgate Road. The project will impact on the existing creek line from Jackson Street. The flood mitigation measures at Shultz Canal (Melton Road to the eastern side of the north-south rail line) will require the excavation of material which will remove the majority of vegetation in this area. The project works will also cause the removal of the existing playground and barbecues at Kalinga Park due to cut and cover work.

Mitigation Measures

The mitigation measures propose urban design and landscape concepts to offset project impacts. All measures will be required to apply Australian best practice urban design and landscape standards, codes and practices. The following six strategies are proposed to deal with project impacts;

1. Open Space Revegetation / Waterway rehabilitation –
   - Protect existing significant vegetation.
   - Revegetate areas damaged during construction and rehabilitate damage to Shultz Canal with construction of wetland environment with board walks and viewing platforms.
   - Reinstate natural creek from end of Jackson Street to Shultz Canal.
   - Provide defined informal recreation space adjacent to Diggers Drive in Kalinga Park.
2. Urban Forest Treatment –
   - Create water wise subtropical landscapes with mature trees over the majority of the spaces caused by the transition structures into the tunnel.

- Connect north-south crossing of Stuckey and Alma Streets across Shultz Canal through to Ross Park.

3. Activity Zones –
   - Create areas of high quality landscape amenity and recreation, including the reinstatement of the play ground lost to cut and cover works. Opportunities include play spaces for all ages, viewing platforms, interpretive trails and typical park amenities.
4. Boulevard Treatment –
   - Provide north, south, east and west pedestrian and cycle movement along Sandgate Road, with improved accessible pathways and streetscape amenity.
5. Suburban Centre Improvement Schemes –
   - The opportunity exists to activate the external environment of Toombul Shopping Centre by creating a landscape setting of high quality looking to the south bank of Shultz Canal. This centre has the opportunity to take advantage of this improved amenity by introducing bakeries, eateries to activate its southern edge to shops, eateries etc. This Strategy supports the BCC Living in Brisbane 2010 policy, its possible implementation is encouraged but does not form a part of the AL project.
6. Design Intervention in Response to Engineering Proposals –
   - Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers and integrate these with the existing environment of the Sandgate Road key location.
   - There is an opportunity to incorporate visually pleasing ventilation outlets within the existing Toombul shopping centre or in the open space between the transition structures near Shultz Canal. The ventilation outlets could form part of a city gateway feature at this major entrance to the city from the airport.

Summary of Cumulative Impact

The Airport Link project is closely associated with the Northern Bus way project and as such an assessment of the cumulative impacts of the Northern Busway on the Airport Link is discussed.
The main impacts area are at the 'Gympie Road' and the 'Bowen Hills = Southern Connection' Key Locations.

Gympie Road

The Northern Busway project proposes a bus stations at the south west side of Kedron Brook at Lutwyche Road. This bus station impacts on the Airport Link proposed mitigation measures for this area by removing the intended recreation use for this edge (Activity Zone – see summary of Gympie Road). The Northern Busway uses the existing bridge structure over Kedron Brook; the Airport Link will require addition bridges across the brook, lessening its landscape amenity. The position of the bus station exacerbates the poor road connections for pedestrian and cyclist around this area.

Bowen Hills (Southern Connection)

The Northern Busway project proposes a bus station at Federation Street at the junction of the Lutwyche Road Portal. The station has the potential contribute positively to the proposed mitigation measures by adding to the viability of this developable portion. The station will enhance the active street edge required for healthy urban centres. It will connect the surrounding neighbourhood to other areas and has the potential to create a vibrant urban character in the area through the recognised branding of the busway.

1. Introduction

1.1 Purpose and Scope

This report forms part of the Environmental Impact Statement (EIS) being prepared by the Sinclair Knight Merz/Connell Wagner Joint Venture (SKM/ CW JV) on behalf of the Brisbane City Council (BCC).

Firstly this report provides an investigation and analysis of the existing urban design, landscape and visual context of the Airport Link Study Corridor and key locations. Secondly, it describes and illustrates the impacts of the Airport Link Project (AL) on the existing environment and proposes mitigation measures for project elements at key locations within the Study Corridor.

This report has been prepared as part of an iterative process between the Urban Design and Landscape team and other members of the EIS team.

The Airport Link Project includes a corridor which extends from O'Connell Terrace north to the intersection of Stafford and Gympie Roads as well as east to the intersection of Sandgate Road and the East West Arterial at Toombul Shopping Centre. Within this corridor are five key locations, determined by the urban design and landscape team, which may or may not be impacted by Airport Link they are:

A: Bowen Hills: known as the Southern Connection
B: Memorial Park Precinct
C: Gympie Road: known as the Gympie Road Connection
D: Wooloowin Precinct
E: Sandgate Road: known as the Sandgate Road Connection

The following are the Terms of Reference (ToR) for the urban design, landscape and visual component of the EIS, and guides the structure of the report.

1.2 Terms of Reference for Existing Environment

In accordance with the Terms of Reference (ToR) this report provides:

- *An assessment of the existing urban design, landscape and visual **context** of the Study Corridor and associated issues;*
- *Descriptions of the overall visual elements and values of the built, landscape and street form in **key locations**, including access and amenity considerations for residents, pedestrians, cyclists and public transport users;*
- *An Identification of **landscape elements** that contribute to the landscape amenity of the local community including those elements protected by local planning orders or similar laws;*
- *A development of urban design, landscape and visual assessment **principles** for the Project as a whole and for key locations.*

- *A development of urban design, landscape and visual goals and objectives for the Project as a whole and in terms of key locations;*

1.3 Terms of Reference for Potential Impacts and Mitigation Measures

In accordance with the Terms of Reference (ToR) this report provides:

- *Developed urban design, landscape and visual concepts and guidelines for key locations reflecting predicted changes to land use, public amenity and public access and sustainable design principles;*

- *Assessment of likely visual impacts of the proposed works on the landscape and viewer perceptions of changes to the landscape;*

The mitigation measures relate to the urban design, landscape and visual goals and objectives of the project.

These measures have considered a range of treatments on visual elements and urban design opportunities, including surface landscaping, portal design, ramp design, and siting and design of surface structures, including noise mitigation structures.

Mitigation for any perceived visual impacts have been provided.

1.4 Chapter Outline

Both ToR are answered by the following report structure;

- Chapter 2 explains the methodology used to assess the existing environment of the study corridor.
- Chapter 3 defines the methodology for reviewing the key locations and the AL potential impacts and mitigation measures.
- Chapters 4 through 8 review and assess each key location answering each of the ToR for the existing environment and the potential impacts and mitigation measures.

Chapter 2 reviews the BCC City Plan and Living in Brisbane 2010 and describes the method of assessing the existing environment of the study corridor. Chapter 2.5 describes and illustrates the existing environment of the study corridor under five key principles headings: Urban Centres, Connections, Urban Character, Landscape Values and Visual Values. The chapter ends with the development of sustainable design principles, goals and objectives for the study corridor as a whole.

Chapter 3 introduces the key locations of the study corridor and describes the method used to address the ToR for;

1. The existing environment;
2. Potential impacts and mitigation.

Chapter sections 3.3 to 3.5 describe the Landscape Elements and Visual Values methodology to assess the existing landscape amenity and visual values for each key location respectively. Sections 3.6 to 3.8 explain how the potential impacts and mitigation measures will be presented to develop urban design landscape and visual concepts and guidelines for key locations and assessment methods for potential visual impacts.

Chapters 4 through 8 explore each of the five key locations describing and illustrating;

1. existing environment and;
2. Potential impacts and mitigation measures.

This has been done so that when applying AL potential impacts and mitigation measures, the existing environment of that key location is readily recalled and accessible within the same chapter.

The following plan Figure 1-1: Study Context provides an overview of key locations, within the Study Corridor as a quick reference guide to localities covered by the urban design, landscape and visual existing environment report.

2. Approach to Study Corridor

2.1 Conceptual Framework

The key urban design, landscape and visual aim for the Airport Link Project is to assist with the integration of tunnel and surface infrastructure with the existing environment and where possible provide increased cultural, economic and environmental benefits to the local community and the city as a whole.

The integration of the AL project and urban planning and infrastructure initiatives of Brisbane City Council is considered important in assessing and addressing issues associated with the project. The current BCC 'City Plan' and the BCC Living in Brisbane 2010 projects have been reviewed and acknowledged in Chapter sections 2.2 and 2.3. These BCC initiatives are summarised and their relevance to the Urban Design, Landscape and Visual components of the AL are described. Chapter 2.4 outlines a review of current literature and practice in the context of the particular requirements of the Airport Link Project.

2.2 City Plan

Brisbane City Council's "City Plan" (200) has been prepared under the Integrated Planning Act 1997 (the Act). This Act sets out the requirements for integrated planning and integrated development assessment in Queensland. The purpose of the Act is to achieve ecological sustainability.

City Plan has a vision for Brisbane's:

- Business and Retail Centres
- Green Space Areas
- Heritage Areas
- Industrial Areas
- Suburbs
- Transport Systems

The Urban Design, Landscape and Visual elements of the Airport Link Project incorporate ecologically sustainable principles that support the six key areas of the City Plan vision.

Business and Retail Centres

City Plan aims to encourage local employment and business opportunities by:

- Consulting with the community, through Suburban Centre Improvement Projects and Local Plans, to improve suburban centres
- Ensuring public transport is easy to use and lets us access places where we work and shop
- Providing for innovative housing choices in our commercial centres

The Urban Design, Landscape and Visual components of the Airport Link Project support these aims by:

- Encouraging Centre regeneration
- Creating pedestrian friendly access to public transport
- Providing quality urban spaces that support mixed use Centres

Green Space Areas

City Plan aims to preserve and protect Brisbane's green spaces and natural habitats by:

- Preventing waterways contamination through improved requirements for effluent disposal
- Placing conditions on new developments
- Creating new green spaces through Council land acquisitions
- Protecting our parks so that all Brisbane residents can enjoy them

The Urban Design, Landscape and Visual components of the Airport Link Project support these aims by:

- Encouraging the rehabilitation of connecting waterways
- Improving the environmental quality of public open space
- Ensuring new open space areas include environmental treatments

Heritage Areas

City Plan aims to protect Brisbane's unique qualities by:

- Introducing a heritage register that will protect our historic, cultural, social, architectural and Indigenous places of significance
- Having guidelines to protect areas with significant character values from demolition
- Introducing new regulations to discourage the demolition of our traditional houses

The Urban Design, Landscape and Visual components of the Airport Link Project support these aims and are acknowledged in the cultural values component of the EIS:

- Acknowledging local heritage values
- Integrating existing heritage places into improvements

Industrial Areas

City Plan aims to improve the living conditions of people who live near factories by:

- Introducing and maintaining buffers between major industrial areas and residential neighbourhoods.
- Assessing industries according to whether they are likely to have an impact on our local community and the environment
- Applying tougher development standards near residential areas
- Requiring industries located near houses to meet a high standard of performance in areas such as air quality and noise levels

The Urban Design, Landscape and Visual components of the Airport Link Project support these aims by:

- Including landscape buffers areas to existing industrial sites within the project area

Suburbs

City Plan aims to develop vibrant communities and protect our suburb's character and heritage by:

- Ensuring developers take a range of community needs into account, such as parks, schools and child care centres, when they build new residential estates
- Protecting character houses from demolition
- Providing new ‘work from home' guidelines to give us more flexibility in our working lives

The Urban Design, Landscape and Visual components of the Airport Link Project support these aims by:

- Improving the pedestrian and cycle links of centres to neighbouring residential communities
- Promoting local suburban character through public space design

Transport Systems

City Plan aims to provide efficient road networks and public transport infrastructure that everyone can access easily by:

- Making sure areas where we shop and work are linked to fast and efficient public transport
- Extending our network of walkways, bikeways and riverfront promenades to provide practical and enjoyable alternatives to using cars

The Urban Design, Landscape and Visual components of the Airport Link Project support these aims by:

- Improving multi-modal access to public transport
- Improving and extending pedestrian and cycle networks

2.3 Living in Brisbane 2010

Living in Brisbane 2010

The Living in Brisbane 2010 vision aims to make sure that Brisbane is a great city to live in, now and in the future. This vision is promoted as a partnership between Brisbane City Council and the Community of Brisbane.

The eight themes of the 2010 vision are:

- Accessible City
- Active And Healthy City
- City Designed For Subtropical Living
- City Of Inclusive Communities
- Clean And Green City
- Creative City
- Regional And World City
- Smart And Prosperous City

The Urban Design, Landscape and Visual components of the Airport Link Project support the “Living in Brisbane 2010” themes as follows:

Accessible City

- By improving access to public transport i.e. bus and rail
- By encouraging multi-modal transport along corridors and across city
- By improving walking and cycling networks in neighbourhoods
- By improving access to waterways, bikeways and walking paths
- Regenerating Centres and increasing residential densities around centres

Active and Healthy City

- By improving choices to be active through improved public spaces
- By providing pedestrian friendly access to public transport
- By supporting well connected bikeways for work and recreation

- By encouraging good quality public spaces for relaxation and recreation
- By improving connections to active social spaces in centres and corridors
- By improving access to recreational spaces with fitness equipment
- By encouraging increased fitness through more walkable neighbourhoods and centres

City Designed For Subtropical Living

- By acknowledging sub tropical buildings and landscape treatments
- By encouraging Brisbane's unique subtropical look and feel
- By enhancing green open space and increases green shady zones
- By integrating open air spaces within centres and along corridor
- By increasing shade from additional trees and structures
- By encouraging gateway features at major entry points
- By supporting centre regeneration

City of Inclusive Communities

- By acknowledging Brisbane's multi layered community
- By providing inclusive public spaces
- By encouraging local centre regeneration
- By supporting Place making and Animation within public spaces
- By improving lighting for public safety
- By encouraging the integration of existing community facilities
- By applying Crime Prevention Through Design (CPTD) principles in design process

Clean and Green City

- By facilitating the rehabilitation of local creeks and waterways
- By Improving green corridor links by filling the gaps
- By encouraging walking and cycling
- By Improving access to public transport
- By providing increased tree planting
- By acknowledging the ecological values of the waterways
- By minimising erosion and sediment impacts
- By promoting bio-diversity in landscape treatments

Creative City

- By reinforcing local identity
- By strengthening neighbourhood distinctiveness
- By celebrating diversity through increased Place making opportunities
- By valuing local heritage and natural environment
- By Improving community connections and capacity

Regional and World City

- By contributing to regional benefits
- By providing opportunity to share knowledge

- By strengthening Brisbane's regional identity
- By promoting innovation and best practice thinking
- By applying sustainable design principles
- By responding to projected population growth
- By supporting local events as part of regional program

Smart and Prosperous City

- By applying current design technology
- By providing increased access to Australia Trade Coast
- By encouraging private sector partnerships in centre regeneration
- By supporting access to local schools and educational facilities
- By providing public spaces and facilities that support new business
- By supporting the role of small business in centre regeneration

2.4 Existing Environment: Conceptual Framework

In conjunction with the above BCC initiatives, a series of principles have been established by reviewing current literature and practice in the context of the particular requirements of the Airport Link Project.

To assist the evaluation of project's preliminary design, five key urban design, landscape and visual principles have been identified. These will be referred to as Sustainable Design Principles.

- Urban Centres provide critical social and economic activity nodes of a city.
- Connections provide movement networks that deliver transport choices to and from Urban Centres.
- Urban Character provides built form and open space patterns that underpin a city's sense of place.
- Visual Values provide the framework for a city's visual experience and meaning.
- Landscape Elements identify the unique natural attributes of places within a city.

The five key Urban Design, Landscape and Visual principles were developed with reference to:

- "Place Making: Developing Town Centres, Main Streets and Urban Villages" (Urban Land Institute)
- "Developing Around Transit: Strategies and solutions that work" (Urban Land Institute)
- "Creating a Vibrant City Centre: Urban Design and Regeneration Principles" (Urban Land Institute)
- "Urban Design Compendium" (English Partnerships)
- "People, Places and Spaces: A design guide for urban New Zealand" (Ministry for the Environment, New Zealand)
- "Good Urban Places" (Australian Institute of Urban Studies inc – Queensland Division)
- "Centre Concept Plans Planning Scheme Policy" (Brisbane City Plan 2000)

2.5 Existing Environment: Study Corridor

The following is a description of the existing environment of the study corridor under the five sustainable design principles, Urban Character, Connections, Urban Character, Visual Values and Landscape Elements.

Urban Centres

Urban Centres are important nodes in the existing urban structure. The location, shape and catchments of Urban Centres reflect the local dynamic of economic and social activity within urban areas.

Urban Centres help define the unique character of the urban environment by reflecting the existing hierarchy of service needs. Their location and function provide insights to the level of activity within the study site area. In order to develop a sustainable and liveable city, compact urban centres should provide access to employment, housing, transportation and lifestyle needs for the broadest cross section of the local community

Urban Centres for the Airport Link Study Corridor were identified and mapped using the Multi-purpose Centre Classifications from Brisbane City Council's City Plan. Brisbane City Council's City Plan identifies the following four types of Multi-purpose Centres:
City Centre (MP1) which is the political, administrative, economic and social heart of Brisbane.
Major Centres (MP2) which are the major concentrations of Centre Activities outside the City Centre.
Suburban Centres (MP3) provide a variety of services. They may be characterised by small tenancies over a broader area. They generally contain more than 6,000 m^2 of gross floor area.
Convenience Centres (MP4) which are smaller centres providing local services within walking distance of residents. They generally contain less than 6,000 m^2 of gross floor area.
After identifying and mapping the existing multi-purpose centres, a 400m pedestrian catchment was applied to each Centre to indicate supporting areas within walking distance of the centre. Low Density Residential (LR) which identifies the areas of traditional suburban detached dwellings was also mapped as a base line indicator of potential pedestrian densities within a Centre's walkable catchment. Because LR represents the lowest density form of housing it offers the least likelihood of contributing to a Centres activity within the 400 m catchment. Areas outside LR area classification represent locations that have a potential to be developed as higher density attached housing forms and are more likely to provide the pedestrian densities that can contribute to Centre activity within the catchment. The extent of LR and Non LR area classifications within the 400m pedestrian catchment provides an insight to a centre's potential pedestrian catchment capacity and where improved pedestrian connection may benefit Centre activity.

The combinations of these characteristics are illustrated in Figure 2-1: Urban Centres. The Study Corridor contains seven areas of distinct centres. These seven Centres consist of three Convenience Centres (MP4), three Suburban Centres (MP3) and one Major Centre (MP2). These centres are:

- Toombul Major Centre – MP2
- Lutwyche Suburban Centre – MP3
- Gympie and Stafford Road Suburban Centre – MP3
- Bowen Hills Suburban Centre (partial area) – MP3
- Gympie Rd convenience Centre – MP4
- Albion – Lutwyche Road Convenience Centre – MP4
- Newmarket Road Convenience Centre – MP4

Also, a significant portion of the pedestrian catchment of the Eagle Junction Convenience Centre is contained within the Wooloowin suburb in Study Corridor. This catchment is also the most low density catchment due to the dominance of the LR classification.

The mapping of the Urban Centres criteria has revealed the individual characteristics of each Centre.

Toombul Major Centre

The Toombul Shopping Centre displays the typical attributes of a 'big box' shopping centre where activity is predominantly internalised and disconnected from the public realm. This internal activity focus is supported by extensive customer parking at ground (and street) level which typically surrounds the shopping centre building and creates further barriers to easy pedestrian connections from the adjacent residential areas. Toombul's pedestrian catchment contains a small proportion of LR areas. This potentially higher density of pedestrians tends to indicate that areas within the pedestrian catchment would benefit from safe and accessible pedestrian connections to the Centre.

Lutwyche Suburban Centre

This centre provides a more traditional active street frontage and connections to the public realm typical of a suburban strip centre. The core of this strip centre is located on the eastern side of Lutwyche Road. Lutwyche's pedestrian catchment contains a small proportion of LR areas which tends to indicate that areas within the pedestrian catchment would benefit from safe and accessible pedestrian connections to the Centre.

Gympie and Stafford Road Suburban Centre

The Suburban Centre at the intersection of Stafford Road and Gympie Road provides a more traditional active street frontage and connections to the public realm typical of a suburban strip centre. This centre is evenly distributed east and west of Gympie Road but these sides alternate rather than align with each other. This Centre's pedestrian catchment contains a small proportion of LR areas but also contains the significant open space corridor of the Kedron Brook waterway. Although there is a tendency towards increased activity through improved pedestrian connections, the physical barrier of the waterway restricts access by reducing the number of potential crossing points in the pathway network

Bowen Hills Suburban Centre (partial area)

The Study Corridor incorporates the western edge of this Suburban Centre. The activity of this centre is limited by adjacent activities to the west such as the Inner City Bypass (ICB) and Queensland Rail yards. Bowen Hill's pedestrian catchment contains predominantly LMR and higher residential densities to its east with more extensive commercial areas to its south and south west along O'Connell Terrace. Outside the major road and rail infrastructure to its north, this centre would benefit from safe and accessible pedestrian connections within the remaining areas of the catchment.

Gympie Rd convenience Centre

The Gympie Road convenience Centre provides an active street frontage mainly to the eastern side of Gympie Road. The outer edges of this Centre's pedestrian catchment contain significant LR areas to

the east and west of Gympie Road. The current area classifications provide the central area of the pedestrian catchment with the potential for higher density housing. This tends to indicate that there would be a lesser demand on pedestrian connections at the periphery of the pedestrian catchment as compared to the potential pedestrian activity requirements for connections to on the eastern side of Gympie Road.

Albion – Lutwyche Road Convenience Centre

The Convenience Centre at the intersection of Albion and Lutwyche Road consists of active street frontages with shopfront customer parking at the intersection corners typical of small convenience centres. This Centre's pedestrian catchment contains a small proportion of LR areas which tends to indicate that areas within the pedestrian catchment would benefit from safe and accessible pedestrian connections to the Centre. The corner nature of this Centre combined with the heavy traffic impacts of Lutwyche Road on the western side of the Centre tend to favour its north-eastern and south-eastern quadrants of its pedestrian catchment with the best opportunities for increased pedestrian connections.

Newmarket Road Convenience Centre

This centre provides a more traditional active street frontage and connections to the public realm typical of a suburban strip centre. The majority of this centre is located on the western side of Lutwyche Road. Newmarket's pedestrian catchment contains a small proportion of LR areas which tends to indicate that areas within the pedestrian catchment would benefit from safe and accessible pedestrian connections to the Centre.

Much of the Study Corridor is framed by LR with the exception of the Wooloowin residential area which provides the only large scale LR neighbourhood within the Study Corridor.

To support and promote the growth of Urban Centres and their surrounds, urban design solutions ensure the centres are not fragmented and that the movement needs of pedestrians and vehicles are well supported.

Connections

Connections identify the unique movement patterns that support the existing Centres and other land uses within and outside the Study Corridor. None of these movement patterns exist in isolation. Connections are an integral part of the urban fabric. They provide linkages, movement choices, local context, safety, traffic management and parking opportunities.

Connections were identified and mapped using major roads, street patterns, rail lines, bus routes and bikeways as shown on Figure 2-2: Connections.

Sustainable communities are serviced with many forms of transport choices for the pedestrian, cyclist, transit passenger, disabled, commercial and commuter motorist. In this context, the success of new developments often depends on how well their connections work. Accessibility to movement choices must be easy and meet the needs of everyone. This often requires balancing past design decisions that were only concerned with the geometry of road design with today's more diverse connection needs of public transport users, pedestrians and cyclists.

The Study Corridor contains a very strong north-south movement system. There is a much weaker system of movement patterns providing an east - west link. The existing pattern of development follows this strong north south conduit, with urban centres situated along its spine. Residential development has clustered along this spine.

The highest amenity networks for cyclists and pedestrians have developed within the public open space along the waterway systems within the Study Corridor. These networks provide safe and enjoyable recreational and commuter travel opportunities. However, the north – south link along Lutwyche/Gympie Road is less safe with lower amenity due to pedestrians and cyclists having to negotiate the heavy traffic flows of a major arterial road.

Urban Character

Urban Character identifies the particular mix of built form and open spaces within the Study Corridor that provide a "Sense of Place". Urban Character was identified and mapped analysing a combination of City Plan area classifications, open space areas and street patterns as shown on Figure 2-3: Urban Character.

The factors which make up a Sense of Place include:

- Identity - Identity provides distinction, a sense that one is in a place that is like no other place
- Legibility - Legibility provides the ability to easily understand and navigate a place.
- Scale - Scale contributes to the degree of comfort one feels in a place, whether one feels alienated by physical size of a building or welcomed at a human scale.
- Permeability - Permeability provides choices of moving through a place which in turn creates interesting and stimulating places.
- Variety - Variety provides the choice of activity or the possibility of experiences and interactions in a place.

The identity of the Study Corridor can be described by its unique mix of open space, commercial and residential areas connected by a street network which is often shaped by local topography. This mix of uses and open spaces provides a strong suburban character to the Study Corridor. The only exception to this suburban identity is the southern portion of the Study Corridor which projects a more inner city urban character due to the land use and scale of road and rail transport systems.

The legibility of the Study Corridor's urban character has been strengthened by the local topography of waterways and ridge lines. These elements have driven transport and development patterns to create a strong and predicable north – south corridor fringed by adjacent residential areas in various stages of transition.

The scale of the corridor is dominated by the one and two storey detached dwellings of adjacent suburbs that are separated by the open space of the major waterways of Enoggera Creek and Kedron Brook. The dominant single storey residential building form and open space system reinforce a suburban scale to the study corridor.

The permeability of the corridor is dominated by the north-south movement of Lutwyche Gympie Road. The adjacent suburban areas connect to the north-south corridor via a regular series of east west local road

connections. The convenience and accessibility of these east west connections is reduced due to impacts of steep topography and major water courses.

The variety of the Study Corridor's character is rich in choice of potential activity. The Study Corridor provides open space experiences from tidal water ways to creek side walking and cycling trails. There are areas of significant remnant vegetation as well as informal recreation opportunities. The Study Corridor contains urban experiences that range from the suburban character of Wooloowin to busy strip centre such as Lutwyche Suburban Centre as well as the more inner urban experience of Bowen Hills, RNA and RBH at the southern end of the Study Corridor.

The existing urban character has resulted from changing land use, built form and open space and the relationship between these elements. This pattern has set the framework for the quality of the Study Corridors Sense of Place as described by its identity, legibility, scale, permeability and variety.

Generally, the Study Corridors Urban Character could be described as one that is derived from a predominantly low scale suburban landscape bisected by a strong, dynamic transport corridor regularly punctuated by activity nodes and east-west connections. Although the permeability and connectivity to some areas are restricted by topographic and natural barriers, this corridor offers a wide variety of experience afforded by different land uses and landform.

To support the Study Corridors Urban Character, urban design and landscape solutions should seek to improve the locations "Sense of Place" by enhancing the identity, legibility, scale, permeability and variety through built form and open space treatments.

Visual Values

Visual Values reveal the Study Corridor's level of visual exposure and include view locations and vistas that help provide points of reference within the city fabric. These view locations and vistas assist with the legibility of an area. Views provide a sweeping snapshot of a location that helps define an area's broad visual character.

Broad views, ridge lines and hilltops were identified and mapped using available contour information as shown on Figure 2-4: Visual Values. Only views from ridgelines into the Study Corridor were illustrated. Views from 5 ridgelines were mapped and layered over each other. This process enabled the identification of the most viewed areas of the Study Corridor. The most viewed areas are illustrated by the most intense colour on the map.

Visual catchments are sensitive to change and this is directly proportional to the scale and type of change. In order to preserve and enhance the existing visual values and successfully manage change it is important that urban design and landscape solutions provide a number of tailored interventions to suit individual locations, being both at the macro scale of the cityscape and at the micro scale of the neighbourhood.

The north-south component of the Study Corridor runs along undulating ridge lines that define the local water catchments. Within the Study Corridor the two catchments of Kedron Brook Creek and Enoggera Creek direct watercourses that cross west to east through the Study Corridor requiring bridge structures at both creeks. These crossing points open out views to the east and west, which is in contrast to the undulating north-south flow of built form within the Lutwyche Gympie Road and Sandgate Road arterial connectors.

The shallow waterway depression of Kedron Brook creates an area of moderate to high visual exposure due to the framing high points north and south of the creek line. Whereas the waterway depression of Enoggera Creek is generally less visible than Kedron Brook Creek due to the lack of framing high point within the Study Corridor. The exception to this is the taller commercial buildings around the RBH and O'Connell Terrace that provide north east vantage points into the waterway.

The Lutwyche Road ridge in the vicinity of the Lutwyche Suburban Centre provides a broad east and west vantage point from the ridge as well as a skyline to views from the lower eastern suburban areas. This ridge provides the western edge to the visual catchment within the Study Corridor. Most of the Study Corridor east of Lutwyche Road is regarded as highly visible.

Wooloowin dominates the east-west area of the Study Corridor and due to its lower topographic position it contains the most highly visible residential areas. This area is characteristic of Brisbane's older residential suburbs with the light weight "timber and tin" dotted over the slopes of the study area.

Landscape Elements

The landscape elements at the broad study corridor scale were identified and mapped using available information about topography, ridgelines, peaks, low lying areas (flooding sensitivity) and open space Figure 2-5: Landscape Elements. This information was supplemented by the inclusion of significant tree locations as identified by BCC and shown on Figure 2-6: Landscape Elements with trees.

Conclusions about these landscape elements and their contribution to landscape amenity are not appropriate at this scale because landscape amenity deals with the combination of landscape elements at a local level. Landscape amenity is discussed further in this report.

At a broad level within the Study Corridor, the pattern of urban development has dictated the location and health of ecological corridors and patches of open space. Land development has been shaped by the local topography. This has meant that areas above flood levels were developed for residential housing and commercial uses. These areas sought to maximise access to views and breezes whilst land within the floodable creek corridors has remained predominately in its natural state.

The Study Corridor contains a strong north-south ridge line with significant waterways to its northern and southern boundaries. As is the case with most highly urbanised areas, open space corridors are aligned with creek corridors whose environments are sensitive to water flow and management regimes within the greater creek catchment. Two creek catchments exist within the Study Corridor the first at the southern end which is Enoggera Creek and the second is Kedron Brook at the northern end.

The consequences of adjacent urban development have significantly degraded the landscape quality of Kedron Brook. This has primarily occurred due to the loss of natural vegetation and its reshaping as a drainage channel to accommodate the increased stormwater flows of urban development. This degradation is particularly significant at the Gympie Road end of the study corridor. The bottom reaches of Kedron Brook at the Sandgate Road portion of the Study Corridor is less degraded with more significant trees within the watercourse.

Enoggera Creek also provides other significant natural values to the Study Corridor. It is a tidal system with colonising mangroves flanking its banks as it travels through the southern end of the Study Corridor. As with Kedron Brook, Enoggera Creek also supports a lineal system of open space providing residents and visitors with visual and physical access to the modified natural environment.

At the finer grain of urban development, smaller more discrete natural features can also exist due to topographical impediments i.e. cliffs, rock outcrops, and as a result of purpose built parks or 'left over' spaces following the development of land and movement corridors. The cliff face and adjoining open space at Windsor Town Quarry Park is an example of old development activities that contribute natural values within the Study Corridor.

Special natural features are also present on private development parcels and in community use areas, often as individual specimen trees or distinctive landforms. This has resulted in a number of significant trees and groups of trees and open space within the Study Corridor. The large fig trees at Office Works on Lutwyche Road are an example of the high natural values outside the public realm that contribute to the landscape quality of the Study Corridor.
The ridge line that separates the two creek catchments contains several high points within the Study Corridor. There is a natural high just north of the Stafford Road and Gympie Road intersection. The next high point closely aligns with the Lutwyche Suburban Centre. The top of the exposed face to the old quarry top above the Windsor Town Quarry Park provides the highest peak within the Study Corridor. The most southerly peak occurs at Memorial Park. All of these peaks contribute to the character of the landscape within the Study Corridor by providing visual expression to the changing landform.

Natural features are sensitive to change and urban design and landscape treatments should seek to retain such features, enhance their health and integrity, and if necessary replace their loss.

2.6 Principles, Goals and Objectives for Reference Project

This chapter began with a review of current BCC policy, followed by the formulation of sustainable design principles which were used to focus the assessment of the existing environment of the study corridor. The insight gained from this review and following assessment of what exists, permits the development of urban design, landscape and visual principles, goals and objectives to assist in the evaluation of project concepts at key locations.

The five sustainable design principles are as follows:

- Urban Centres
- Connections
- Urban Character
- Visual Values
- Landscape Elements

The following goals and objectives were developed to provide the basis for impact assessment. They were developed from the guiding principles to ensure a comprehensive assessment of urban design, landscape and visual issues relevant to the Airport Link Project.

Urban Centres

Principle: Urban Centres provide critical social and economic activity nodes of a city.

Goal: Provide compact centres with well integrated pedestrian and vehicle movement networks

Objectives:

- Minimise Centre fragmentation by encouraging centre regeneration i.e. (SCIPS)
- Strengthen links to local vehicle and pedestrian catchments;
- Provide inclusive public spaces supporting neighbourhood identity through design.

Connections

Principle: Connections provide movement networks that deliver transport choices to and from Urban Centres.

Goal: Provide well connected pedestrian, cycle and vehicle networks

Objectives:

- Improve and extend existing pedestrian and cycle networks;
- Provide safe and accessible new pedestrian and cycle networks;
- Integrate transport nodes and community facilities into movement networks.

Urban Character

Principle: Urban Character provides built form and open space patterns that underpin a city's sense of place.

Goal: Ensure built form and private and public open space is well integrated into neighbourhood

Objectives:

- Provide active edges to public spaces;
- Provide a well connected and high amenity streetscape;
- Provide good quality public spaces for relaxation and recreation;
- Promote water wise subtropical urban design and landscape treatments.

Visual Values

Principle: Visual Values provide the framework for a city's visual experience and meaning

Goal: Protect and enhance positive visual qualities

Objectives:

- Protect critical views and vistas;
- Minimise visual impacts of project;
- Ensure project infrastructure (i.e. transition structures, flyovers, portal, ventilation outlets and sound barriers) integrates into the existing environment in a consistent manner through urban design and landscape treatments.

Landscape Elements

Principle: Landscape Values identify the unique natural attributes of a place within a city.

Goal: Protect and enhance areas of significant natural value

Objectives:

- Strengthen natural corridors and rehabilitate degraded areas;
- Protect and Ensure existing Landscape Elements are well integrated into project;
- Ensure new open space areas include environmental treatments.

Objectives Common to All

Apply Crime Prevention Through Design (CPTD) principles through the design process

- Apply Sustainable Design principles through the design process.

3. Approach to Key Locations

3.1 Introduction

This Chapter introduces the key locations of the study corridor and describes the method used to address the ToR for;

1. The existing environment;
2. Potential impacts and mitigation.

Secondly, it describes the Landscape Elements and Visual Values methodology for the exploration of the existing landscape amenity and visual values of the built, landscape and street form for each key location respectively. Finally, it explains how the potential impacts and mitigation measures will be presented to develop urban design landscape and visual concepts and guidelines for key locations and assessment methods for potential visual impacts.

3.2 Introduction of Key Locations

After assessing the broad context of the Study Corridor, five localities within the Study Corridor were identified. The key locations are primarily areas of project surface works where direct impacts on the built urban, landscape and visual context will be most apparent.

The five key locations include Bowen Hills to East Windsor including Enoggera Creek; Gympie Road crossing of Kedron Brook; Kalinga Park and the Toombul Shopping Complex on Sandgate Road. The area of the War Memorial Park on Lutwyche Road and the Wooloowin residential area are not expected to be affected by direct surface works, but have been identified due to their unique qualities as discreet localities within the Study Corridor. See Figure 3.1: Key Locations

A: Bowen Hills (Southern Connection)

- The first surface impact is around the North South Bypass Tunnel (NSBT) northern portal connection to Lutwyche Road and the Inner City Bypass (ICB) embracing Bowen Hills, East Windsor and Enoggera Creek. This connection is referred to as the Southern Connection.

B: Memorial Park Precinct

- (no surface impact)

C: Gympie Road (Gympie Road Connection)

- The second impact area commences before the Lutwyche Road and Kedron Park Road intersection and continues north past the Stafford Road intersection to Leckie Road. This connection is referred to as the Gympie Road Connection.

D: Wooloowin Precinct

- (no surface impact)

E: Sandgate Road (Sandgate Road)

- The third surface impact area commences at parkland just east of Kalinga Street and connects with Sandgate Road at the intersection with the East West Arterial Road adjacent to Toombul Shopping Centre and continues east approximately 100 metres past Melton Street. This connection is referred to as Sandgate Road Connection.

3.3 Existing Environment: Landscape Elements Methodology

In response to the ToR which requires the reporting of:

- *An Identification of landscape elements that contribute to the landscape amenity of the local community including those elements protected by local planning orders or similar laws;*

The landscape amenity of the study area has been addressed through a more local assessment at the key location scale. Each of the five key locations has been reviewed with regard to landscape amenity and those elements protected by local planning orders or similar laws. This has been achieved by a more detailed review of the key locations Landscape Elements mapping (refer Figure 2-5 : Landscape Elements), and the collation of significant tree locations as identified by Brisbane City Council's Natural Environment and Sustainability Branch.

Landscape Amenity in this report refers to the type and combination of natural landscape elements which provide physical comfort and contributes to the attractiveness of an area which provides a benefit to the local community. The landscape elements that contribute to landscape amenity of each key location are significant trees, open space, access to water, scenic amenity (refer visual values). (Refer Appendix 10.1). It is important to note that landscape amenity also incorporates the values of cultural heritage, environmental, and recreational opportunities however, other reports deal with these contributions to landscape amenity.

The following is an inventory landscape elements including significant trees, parks and open space, access to water, scenic amenity (refer Visual Values), (Refer Appendix 10.1) which in combination with visual values, cultural heritage, and ecology make up an areas landscape amenity.

The following landscape elements were mapped, noted or photographed.

1. Significant Trees
2. Parks and Open Space
3. Access to water

They were located in the study area in the following key locations;

A Bowen Hills
B Memorial Park
C Gympie Road
D Wooloowin
E Sandgate Road

The landscape elements of significant trees were identified on a field visit with BCC on Wednesday the 14th of December 2005 with Keith Foster "Senior Program Officer – Landscape".

*Why are **significant trees** relevant to landscape amenity?* The significant trees identified are trees which:

- are mature specimens of their particular species and provide shade and therefore microclimate benefits,
- they provide visual relief in an otherwise built environment and;
- They are trees which are typical to the cultural and indigenous vegetation of Brisbane and therefore contribute to Brisbane's identity and sense of place.
  (Wild Plants of Greater Brisbane p.323)

Other landscape elements such as open space, access to water were identified and mapped on a composite map of each key location.

Why are parks, open space and access to water relevant to landscape amenity? What makes these Parks or Open Spaces special if anything? What makes access to these water bodies special if anything?

- Parks and Open Space generally consist of a variety of vegetation types, they provide visual and microclimate relief from surrounding built elements and roads.

- Qualities within the open space such as significant trees, changes in terrain, water, and landscape frame i.e. surrounded by vegetation, orchestration of spaces, from large to small spaces, provide places of interest and use for the local community.

- Water bodies of which are of good quality, i.e. no water weeds, rubbish or stagnation, open water bodies with flowing water, differing edge types and varying alignment provide visual and microclimate relief and are preferred by the community;

3.4 Existing Environment: Attributes and Qualities assessed in Landscape Elements

In response to the ToR the following definitions are useful when reviewing (refer Appendix 10.1) the landscape elements of each key location:

Definition of Landscape Amenity:

- Landscape Amenity in this report refers to the type and combination of natural landscape elements which provide physical comfort and contributes to the attractiveness of an area which provides a benefit to the local community.

Definition of Landscape Elements:

- The landscape elements are parts of the natural landscape, in combination or by themselves they contribute to landscape amenity of an area. In this report the landscape elements which are part of the natural landscape of each key location are:
  - significant trees;
  - open space;
  - access to water;
  - Scenic amenity (refer visual values) (Refer Appendix 10.1).

3.5 Existing Environment: Attributes and Qualities assessed in Visual Elements and Values

In response to the ToR which requires the reporting of:

- *Descriptions of the overall visual elements and values of the built, landscape and street form in key locations, including access and amenity considerations for residents, pedestrians, cyclists and public transport users;*

To assist the descriptions of the visual elements and values a detailed photographic inventory of the site was undertaken at the key location scale. A robust scoring process rated the built, landscape and street form, as well as, access and amenity considerations for residents, pedestrians, cyclists and public transport users, against selected site images. Refer figure 3.2 for Example of Assessment Table of Visual Elements and Values Existing Environment

The following definitions are useful when reviewing the Visual Elements and Values (refer Appendix 10.1) of each key location:

Definition of Form:

Built Form

Appearance – presentation of buildings / facades.
External Shape – massing and articulation
Configuration – setback and footprint
Spatial Attributes – scale, contrast / consistency

Street Form

Appearance – legibility, mental mapping
External Shape – containment and enclosure
Configuration – alignment
Spatial Attributes – streetscape and detail

Landscape Form

Appearance – quality and aesthetics
External Shape – massing, volume and density
Configuration – layout, constructed / natural
Spatial Attributes – scale, coverage and axial dimension

Definition of Access:

Entering or leaving a space / property

Pedestrian Access – ability to enter / leave a space / property
Cycle Access – ability to enter / leave a space / property
Public Transport Access – ability to locate and use available service

Definition of Amenity:

Attributes and qualities of that enhance the desirability of an object, place or property which is seen as positive, adding value and contributing to the overall character.

Pedestrian Amenity – quality and value of space / property

Cycle Amenity – quality and value of space / property

Public Transport Amenity – quality and value of available service

3.6 Potential Impact and Mitigation Measures: Introduction

The key urban design, landscape and visual task for the Airport Link Project is to assist with the integration of tunnel surface infrastructure with the existing environment and where possible provide increased cultural, economic and environmental benefits to the local community and the city as a whole. Once the existing environment has been described using the above methodology, the report must respond to the ToR to describe the potential impacts and mitigation measures. The following explains how this report answers the ToR.

This part of the report was completed using three inter related communication modes. Firstly, a written table was devised stating each key location's Principles, Goals and Objectives relating them to potential impacts on Land Use, Public Amenity and Public Access. Within this table are descriptions of the proposed mitigation measures relating to specific project infrastructure. (Refer Appendix 10.2). Secondly, a series illustrated concepts, plans and sections were developed to guide potential mitigation measures at a contextual level. Finally, a visual analysis table was devised to illustrate and rate the above treatments in terms of the landscape and viewer perceptions of changes to the landscape. Refer Figure 3.3 for Example of Visual Assessment Table

3.7 Potential Impact and Mitigation Measures: Concepts

Urban Design and Landscape concepts where developed for each key location affected by surface impacts. The concepts refer to the impact and mitigation measure tables and graphically illustrate the mitigation measures in plan, sketches and sections. These measures have considered a range of treatments for visual elements and urban design opportunities, including surface landscaping, portal design, ramp design and design of surface structures, including noise mitigation structures.

The project surface impacts affect areas of open space and built up urban areas, it is important that a set of action strategies be developed to address the mitigation of impacts over these two different land types. The following six strategies are derived from the principles, goals and objectives for each key location and are proposed to guide the urban design and landscape concepts;

Provide Australian best practice urban design and landscape standards, codes and practices for the provision of:

1. Revegetation / Waterway rehabilitation – Protect existing significant vegetation. Revegetate areas damaged during construction and rehabilitate damage to waterways where appropriate.
2. Urban Forest Treatment – Create well connected and safe landscapes of diverse and high quality where the project creates open space, incorporating existing parks and open space, where possible.
3. Activity Zones – Create well connected and safe community areas for active or passive recreation within discrete areas of open space.

4. Boulevard Treatment – Provide significant tree planting, street furniture, public art and accessible pathways to major roads.
5. Suburban Centre Improvement Schemes – Create well connected and safe new opportunities or strengthen existing viability of centres through urban design and landscape treatments.
6. Design Intervention in Response to Engineering Proposals – Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers and integrate these with the existing environment of the each key location.

3.8 Potential Impact and Mitigation Measures: Visual Values Methodology

In response to the ToR which requires the reporting of:

- *Assessment of likely visual impacts of the proposed works on the landscape and viewer perceptions of changes to the landscape;*

The following explains how this report answers the ToR.

Methodology

In the evolving landscapes that people create and live within, visual effects are the evidence of development and progression. The fabric, quality and character of the landscape, views and changing perspectives of the landscape, are experienced by people in many ways.

This form of assessment has been based on a select number of resourced and referenced assessment documents; however the methodology is generally based on 'The Guidelines for Landscape and Visual Impact Assessment' (LI and IEMA, 2002).

Evaluations are therefore made with reference to the above guidelines and site specific observations of landscape character and spatial form.

Assessment Criteria

Effects are assessed by describing the composition of the existing landscape. This is performed with certain detail taking into consideration the topography, land use, built form, infrastructure and the natural environment, among other components.

The importance of sensitivity to and impact upon the components are assessed by accounting for proposed and foreseeable changes.

The scope to which a landscape can take up proposed change is variable to a number of factors:

- existing land use
- pattern of the landscape
- scale of the landscape
- visual enclosure
- visual receptors

- scope for mitigation
- value of landscape

Potential impacts and proposed changes in the landscape can relate to elements, features and characteristics. This can occur in existing features and to the addition of new features. The Visual Assessment therefore considers how the landscape will take on and interact with changes to the landscape character. The process and described criteria below provide a scope of measurement to carry out the Visual Assessment process.

View Sensitivity

In order to identify the extent and nature of views, a series of representative Vantage Points were selected. The characteristics of the visual amenity and potentially sensitive receptors are accounted with the selected vantage points. Using the sensitivity guide below, mitigation measures can be determined and presented conceptually. (Based on LI and IEMA, 2002)
View sensitivity is ***high*** when viewed from private dwellings by residents. Viewers are familiar and knowledgeable with the character of their area. Recurrent and static views are experienced in this viewing situation.

Landscapes of a ***significant*** sensitivity are generally viewed from open spaces and informal recreational facilities where a quality view is important. Views are observed at various low speeds of passage.

Sensitivity is ***moderate*** when viewed from public facilities and commercial / employment / education populous for example. The viewer is familiar with the landscape but with a reduced value as it is of a secondary nature.
Views from surrounding road and rail infrastructure networks are of ***limited*** sensitivity. Viewers gain transient views where speed of passage is of a somewhat greater velocity than pedestrian movement. Therefore sensitivity is encountered through momentary glimpses.

Low view sensitivity applies to travel routes and road corridors or recreation areas, not included above, where visual quality is of less concern to typical users. These may include non-recreational open space areas and watercourse environments.

5. High View Sensitivity
4. Significant View Sensitivity
3. Moderate View Sensitivity
2. Limited View Sensitivity
1. Low View Sensitivity

Visual Impact

After the view sensitivity of a particular view is rated, the visual effect and its significance can then be gauged to appraise the mode of mitigation measures to enhance or minimize the effect. Visual effects

are not always found to be detrimental and are in fact welcomed as beneficial impacts to support mitigation measures. The following scale can be used to consider the mitigation approach.

Substantial Adverse:	Significant deterioration of view
Adverse:	Noticeable deterioration of view
Neutral:	No discernable deterioration or improvement of view
Beneficial:	Noticeable improvement of view
Substantial Beneficial:	Significant improvement of view

Mitigation Process

Mitigation for any perceived visual impacts are shown in conceptual colour-sketch form. The mitigation measures relate to the urban design, landscape and visual goals and objectives for the project. Consideration for a range of treatments on visual elements and urban design opportunities are paramount. Measures include surface landscaping, portal design, ramp design and siting and design of surface structures, including noise mitigation structures.

Assessment and Evaluation

After applying the potential impact and mitigations, the scope and the objective schema for Visual Assessment of the selected Vantage Points can then be developed graphically and tabulated. The Vantage Point series presents the existing landscape and predict the potential impacts and demonstrate a viable mitigation concept. The format is a combination of a Graphic Sequence and Description Table. (refer Figure 3-3 Example of Visual Assessment Table)

Graphic Sequence

Image View:	Shows the existing landscape and character to date.
Integrated View:	Shows the existing landscape with superimposed modelling of the intended changes.
Visual Perception:	Shows the foreseeable landscape effect with future mitigation and character.

Description Table

Vantage Point:	Location, connections, proximity and reference.
Visual Distance:	Establishes approximate distance in metres, and description of image content.
View Period:	Categorizes the images on a basic time scale. Low – Moderate – High.
View Sensitivity:	Evaluates the visual amenity and potentially sensitive receptors.
View Impact:	Gauges the visual effect and its significance to the existing landscape.
Mitigation:	Comparative statement surmising sensitivity and impact with the mitigation intent.

Base Mapping

The Visual Assessment documentation is further expressed with prepared Base maps to draw out the key location and study corridor. Vantage Points are marked in context and supported with character images and notation to provide a plan view perspective of scale and landscape value and interest.

Outcomes

The methodology and assessment process, as outlined above, describes the prospective changes to the landscape and interpretations of mitigation as seen from selected Vantage Points. The illustrative photo-montage series evaluates the foreseeable visual effects and character of the evolving landscape that is experienced by the people who create it and live within it. The visual impacts for Airport Link show the findings for each key location at the end of each key location chapter, i.e. for:

- Chapter 4.5 Visual Impacts for Airport Link for Bowen Hills;
- Chapter 5.5 Visual Impacts for Airport Link for Memorial Park;
- Chapter 6.5 Visual Impacts for Airport Link for Gympie Road;
- Chapter 7.3 Visual Impacts for Airport Link for Wooloowin;
- Chapter 8.4 Visual Impacts for Airport Link for Sandgate Road.

4. A: Bowen Hills Key Location

4.1 Existing Environment

The key location area of Bowen Hills, East Windsor, and Enoggera Creek has been assessed at the local level by the application of the five urban design components refer Figure 4.1 Bowen Hills Key Location Existing Environment for location.

Urban Centres

The western edge of the Bowen Hills Suburban Centre (near the Bowen Hills train station) is the only Centre within this key location. This centre provides an activity node to the eastern edge. The western pedestrian catchment of the Bowen Hills Suburban Centre within this key location is highly fragmented by areas classified for railways activities and office park.

Connections

This key location is dominated by the north-south connector of Lutwyche Road with sub arterial connection providing an east - west links at O'Connell Terrace. The ICB creates a strong diagonal connector. The mangroves edges of Enoggera Creek combined with rail line activities and the arterial activity of Lutwyche Road have created barriers to completing the extensions of existing pedestrian and cycle networks.

Urban Character

This key location is dominated by large scale special uses such as the RBH, RNA Showgrounds, Rail Yards and Office Park developments. With the least amount of residential built form in the Study Corridor this key location has the built form character of inner city commercial precincts. Enoggera Creek provides open space character albeit difficult to access. Predominantly this area is influenced by the presence of the RBH and RNA precincts and some left over open space between road infrastructures. The lack of the smaller scale street pattern and supporting built form creates a fragmented urban character in this key location

Visual Values

There are no ridge lines or hilltops in this area, although there is a ridge line to the north (external to this key location at Newmarket Lutwyche Road) that provides elevated views to the south in this location. This location is viewed upon from local high points external to the Study Corridor i.e. Windsor and Albion. (Refer Appendix 10.1 for Visual Values tables)

Landscape Elements

This northern edge of this key location is dominated by the Enoggera Creek waterway with its mangroves and flood inundation impacts. Enoggera Creek is a permanent tidal water body which flows into Breakfast Creek and the Brisbane River. Due to the surrounding built form and bridging treatment it is not a prominent landscape feature nor is it easily accessible. To the west of this key location raises a low hill leading to the eastern portion of Victoria Park. There is also a grouping of significant trees located at Bowen Park. (Refer Appendix 10.1 for Landscape Elements section)

4.2 Potential Impacts for Airport Link

The impacts of the proposed works for Airport Link on the Southern Connection are (refer Figure 4.2);
;

- The Urban Centre Bowen Hill Suburban centre in this key location (near Bowen Hills train station) is not directly affected by the project footprint; however access to this centre from the RBH is compromised due to the introduction of ramps at Campbell Street East connecting to the AL.
- Connectivity is made more difficult for pedestrians and cyclists where all proposed roads and ramps impact on existing road and open space networks; this is relevant to the eastern end of Campbell St, and the northern reach of Enoggera Creek.
- The Urban Character of the area will change from commercial office parks to road infrastructure and left over void spaces.
- Visually the project impacts on broad views looking north from O'Connell Terrace, and also looking south from Windsor East and Lutwyche Road. Fleeting views to mangroves from Bowen Bridge Road will be impacted.
  At a local viewing scale there are viewing impacts from ramps and overpasses at Campbell Street east and west, the additional flyovers on top of the NSBT connections and the additional bridge structure over Enoggera Creek.
- The Landscape Elements likely to be impacted are the mangroves on the Southern and Northern Banks of Enoggera Creek.

Refer to Appendix 10.2 for the five tables which relate to the five sustainable design principles and their corresponding goals and objectives for this key location. The tables explains the project impacts on Land Use, Public Amenity and Public Access and provides mitigation measures for surface and elevated structures, surface landscaping, ramp design, and portal design.

4.3 Mitigation Measures for Airport Link: Urban Design and Landscape Concepts

The mitigation measures propose urban design and landscape concepts to offset project impacts, refer Figure 4.3. All measures will be required to apply Australian best practice urban design and landscape standards, codes and practices. The following six strategies are proposed to address the project impacts;

1. Revegetation / Waterway Rehabilitation

The landscape design solutions for protection and/or damage to the existing natural environment at the Bowen Hills key location will seek to mitigate the impacts of the tunnel infrastructure and associated works by revegetating areas which are damaged during construction and rehabilitating damage to waterways. This will include planting designs, tree protection methods, creek rehabilitation and associated works such as mulching and establishment. Other measures include:

- Protect existing significant vegetation.
- Revegetate open space areas damaged during construction and rehabilitate damage to Enoggera Creek mangroves and banks due to construction of the bridge to the AL.

2. Urban Forest

The landscape design solutions will seek to create water wise subtropical landscapes over the majority of open space created as a result of tunnel infrastructure and associated works. This landscape will

include earthworks, passive recreation spaces (i.e. grassed open space); seating; pedestrian and cycle paths; lighting for pedestrians and cyclist; boardwalks; viewing platforms; and pedestrians and cycle bridges over Enoggera Creek. These elements will be unified through landscape planting of large mature trees (which in time will match the scale of the proposed infrastructure) and associated under planting, creating an 'urban forest'. Refer Figure 4.3a Urban Forest. Other measures include:

- Ensure connection to and from open space connecting the North and South banks of Enoggera Creek and the pedestrian/cycle bridge provided by the NSBT.

3. Activity zones

The landscape and urban design solutions for a small portion of open space created by the tunnel infrastructure will seek to provide community benefits associated with active and passive recreation. These spaces will be connected to the surrounding neighbourhood, transportation nodes and commercial centres by existing or improved movement networks.

These landscapes will include earthworks, earth sculptures, and interpretive landscapes (such as a healing garden for RBH precinct) on the southern bank of Enoggera Creek, Picnic/BBQ Facilities and play spaces for all ages to the north bank of Enoggera Creek. Other Measures include:

- Repair damage to NSBT planting.

4. Boulevard Treatment

The urban and landscape design solutions will seek to improve the environment surrounding the road corridors affected by the tunnel infrastructure. This will include a subtropical theme of mature street trees, mature median trees, and planting to medians and build outs, high quality pavements to cross overs, and character elements such as vertical sculptures within medians. These schemes would need service investigation and possible relocation where conflicts may exist. These measures may include:

- Provide boulevard street trees; accessible pathways; street furniture; art work to sections of Lutwyche Road, and the whole of O'Connell Terrace, Refer Figure 4.3b Lutwyche Road Boulevarde.
- Provide tree plantings to Hamilton Place, Tufton Street and Wren Street.

5. Suburban Centre Improvement Schemes

The urban and landscape design solutions will seek to improve the viability of existing centres, or the creation of new centres of commerce, due to the changed traffic conditions and road configurations. This will include sub tropical themes using mature street trees, Centre Character elements such as street furniture; pavements; centre signatures and 'Art'. Other measures include:

- Design Intervention in Investigate opportunities to provide SCIPS to sections of Lutwyche Road; Bowen Hills Centre and at O'Connell Terrace.
- Provide pedestrian/cyclist connection from existing Bowen Hills Centre west (Bowen Hills train station) to Lutwyche Road and RBH.

6. Response to Engineering Proposals

The urban design and landscape treatments are proposed to be developed in a themed manner to integrate the impacts of tunnel infrastructure into the existing environment, Refer Figure 4.3c. The tunnel infrastructure and proposed treatments are;

- Retaining structures such as ramps, and transition structures :- Implement textured and coloured pre caste concrete panels with relief patterning as a facing to retaining structures;
- Flyovers: - Design flyover carriage ways as sculptural elements i.e.; in cross section, longitudinally and the pillar form and modulation.
- Portals: - Design portals which engage the motorist in a memorable driving experience and contribute positively to urban character i.e. Structures made of glass, steel, lighting design.
- Sound Barriers: - Ensure sound barriers are of a high visual quality using acoustic material (which may be translucent) in interesting patterns and textures.
- Ventilation Outlets: Incorporate a visually pleasing ventilation outlet within open space on the northern bank of Enoggera Creek. The ventilation outlet could form part of a city gateway from/to the airport. Refer Figure 4.3d.

4.4 Potential Impacts and Mitigation Measures for Airport Link and Interim Northern Busway 2010 and Full Northern Busway 2026

The Airport Link project is closely associated with the Northern Busway project and as such an assessment of the impacts of the Northern Busway on the Airport Link in this key location is discussed. The following is a list of potential benefits and/or conflicts between Airport Link and the Northern Busway;

- The Northern Busway project proposes a bus station at Federation Street at the junction of the Lutwyche Road Portal.
- The station has the potential to add to the proposed mitigation measures in a positive way by adding to the viability of this developable portion.
- The station enhances the active street edge required for healthy urban centres, it connects surrounding neighbourhood to other areas, has the potential to create a vibrant urban character in the area through its recognised branding.

4.5 Visual Impacts for Airport Link for Bowen Hills

The following images describe the prospective changes to the landscape and interpretations of mitigation as seen from selected Vantage Points. The illustrative photo-montage series evaluates the foreseeable visual effects and character of the evolving landscape that is experienced by the people who create it and live within it.

5. B: Memorial Park Key Location

5.1 Existing Environment

The key location area of Memorial Park and Lutwyche Road has been assessed at the local level by the application of the five urban design components refer Figure 5.1 Key Location Memorial Park for location.

Urban Centres

The Convenience Centre and most of its supporting pedestrian catchment at the intersection of Albion Road and Lutwyche Road provides a local activity node in the central area of this key location. The southern half of the larger Suburban Centre at Lutwyche defines the location's northern boundary. Due to the spacing of the Convenience Centre and the Lutwyche Suburban Centre their supporting pedestrian catchments nearly fully contain this key location. The evolution of these centres has provided this key location with high levels of activity and movement.

Connections

This key location is dominated by the north-south arterial connector of Lutwyche Road supported by east-west sub arterial connections at Albion Road and Days Road. The topography of this area and traffic management has shaped Memorial Park into an island surrounded by heavy traffic flow. Pedestrian and cyclist connections through this park exist but are minimal. The limited existing pedestrian and cycle access into park results in the underutilisation of this significant open space.

Urban Character

This key location contains a strong spine of community uses and open space within the Lutwyche Road corridor. The existing Centres provide one and two storey commercial buildings with regular connecting side streets to adjacent residential areas. The southern end of the Lutwyche Suburban Centre provides an active streetscape frontage typical of strip centres while the Convenience Centre at the Albion Road intersection provides small scale commercial buildings within in this predominately LMR location. The parks contained within this area have a strong sense of place provided by the War Memorial monument, the old Council Chambers, substantial stone retaining walls to the park edges and mature trees. This cluster of character elements forms a prominent and memorable city gateway for motorists travelling to and from the city.

Visual Values

Due to the intersection of the north-south ridge along Lutwyche Road and the east-west ridge in the vicinity of Chalk Street, this key location contains the strongest ridge line grouping in the Study Corridor. These ridges also provide peaks at Memorial Park and at the top of the cliff at Windsor Town Quarry Park. These topographical attributes make this key location a significant viewing location as well as highly visible from the lower areas of the Enoggera Creek and Kedron Brook catchments. Combined with views from eastern ridgelines the eastern side of Lutwyche Road is a moderately to high visually exposed area with this key location. (Refer Appendix 10.1 for Visual Values tables)

Landscape Elements

This location contains a north – south ridgeline along Lutwyche Road and an east – west ridge line in the vicinity of Chalk Street. There are a number of significant landscape features and trees in this area, such the old Quarry cliffs, Pops Fig, and the surrounds of the war memorial at Windsor Park, making this an area of high landscape values. (Refer Appendix 10.1 for Landscape Elements section)

5.2 Potential Impacts and Mitigation Measures for Airport Link

This key location is not expected to be affected by direct surface works of the AL project and therefore has no impacts or mitigation measures proposed.

5.3 Potential Impacts and Mitigation Measures for Airport Link and Staged Northern Busway

This key location is not expected to be affected by direct surface works for Airport Link and therefore have no impacts or mitigation measures relating to Airport Link.

5.4 Potential Impacts and Mitigation Measures for Airport Link and Full Northern Busway

This key location is not expected to be affected by direct surface works for Airport Link and therefore have no impacts or mitigation measures relating to Airport Link.

5.5 Visual Impacts for Airport Link for Memorial Park

This key location is not expected to be affected by direct surface works and therefore have no visual impacts to assess.

6. C: Gympie Road Key Location

6.1 Existing Environment

The key location area of Gympie Road has been assessed at the local level by the application of the five urban design components refer to Figure 6.1 Key Location Gympie Road (Gympie Road Connection) for location.

Urban Centres

The Stafford Road and Gympie Road Suburban Centres provide the activity in the centre of this key location. The northern extent of activity is defined by a smaller Convenience centre (refer figure 2-1). Both centres in this key location suffer from activity fragmentation caused by the increasing traffic levels on Gympie Road and Stafford Road. The pedestrian catchments of both centres overlap; however, due to the road system, topography and the spatial impacts of Kedron Brook, the catchment connections to these centres are difficult. This has tended to reduce their activity levels and ability to consolidate their commercial cores.

Connections

The north-south alignment of Gympie/Lutwyche Road with the east-west connector of Stafford and Junction Roads create the dominant movement pattern in this key location. This road pattern reduces the opportunities for convenient pedestrian and cyclist movements. The strong west–east flow of the Kedron Brook waterway has created a significant alternate movement system for pedestrian and cyclist, which is highly patronised by locals and visitors

Urban Character

Open space, special uses, suburban centres and residential built form dominate this key location. Commercial buildings fringe Gympie Road at the fragmented Suburban Centre and Convenience Centre within this key location. The pedestrian and cycle movement network along the Kedron Brook water way contributes to this key locations character within the corridor. This location frames the shallow water way of Kedron Brook. Its topographic impacts on urban development have lead to poor street connections and limited pedestrian and vehicle connectivity within the local area.

Visual Values

This key location is framed by ridge lines with high points to its north and south. Kedron Brook creates a central valley running east–west between these ridge lines. This topographical structure creates a central viewing area that is moderately exposed when entering this key location from the north, or south along Lutwyche/Gympie Road. (Refer Appendix 10.1 for Visual Values tables).

Landscape Elements

Kedron Brook dominates the Landscape Values of this key location (as it is framed by ridge lines to the north and south). The area does not directly contain documented significant trees; however to the south of this area, are a number of mature figs which fringe Norman Avenue, and Lutwyche and Park Roads. The open space corridor of Kedron Brook runs through the centre of this key location. A concrete drain acts as the water conduit and in high flows the area floods over the grassy banks where pedestrian and cyclist paths are located. Fragmented groups

of trees line the outer edges of this corridor. The variety of landscape features in this area minimal, i.e. grass, a few trees, therefore the quality of this significant open space is of low landscape value at present. (Refer Appendix 10.1 for Landscape Elements section).

6.2 Potential Impacts for Airport Link

The impacts of the proposed works for Airport Link on Gympie Road are, (refer Figure 6.2 Gympie Road Impact Assessment) ;

- The Urban Centres of Stafford Road and Gympie Road Suburban Centres will be impacted by the proposed infrastructure. Road widening will result in property resumptions on both sides of the road. The centres are already weak because of commercial activity fragmentation due to existing traffic levels. The proposed ramps dissecting Gympie Road will exacerbate this.
- The proposed infrastructure will not interfere with the Connectivity of the east–west connection through Kedron Brook.
    - The north-south pedestrian/cycle movement will become difficult at grade with the road due to proposed two stage crossing points at Lutwyche and Kedron Park Road.
    - To the north of Kedron Brook, Lassiter Street is closed to vehicles.
    - To the south of Kedron Brook, Colton and Windsor Avenues are now connected to Lutwyche Road through Norman Avenue at a signalised crossing.
- The Urban Character of this key location will change from open space, commercial, special uses and residential to that of a location dominated by road infrastructure. Road widening and project infrastructure will result in road terminations and property resumptions of residential, commercial and special use buildings i.e. the Emergency Services complex.
- Visually the project will impact on views looking into this key location due to constructions of ramps and flyovers to the north and south of Kedron Brook. At a local scale there will be visual impacts affecting all adjacent property owners.
- The Landscape Elements of this key location will remain relatively intact however the footprint of the bridge and flyover structures will increase the covered area over Kedron Brook. The two large figs at Norman Avenue will be impacted due to the service road connecting to Brook, Colton and Windsor Avenues and cut and cover works.

Refer to Appendix 10.2 for the five tables which relate to the five sustainable design principles and their corresponding goals and objectives for this key location. The tables provides the project impacts on Land Use, Public Amenity and Public Access and provides mitigation measures for surface and elevated structures, surface landscaping, ramp design, and portal design.

6.3 Mitigation Measures for Airport Link: Urban Design and Landscape Concepts

The mitigation measures propose urban design and landscape concepts to offset project impacts, refer Figure 6.3 Gympie Road Mitigation Measures. All measures will be required to apply Australian best practice urban design and landscape standards, codes and practices. The following six strategies are proposed to deal with project impacts;

1. Revegetation / Waterway Rehabilitation

The landscape design solutions for protection of the existing natural environment at the Gympie Road location will seek to mitigate the impacts of the tunnel and associated works by revegetating areas damaged during construction and rehabilitate damage to waterways. This will include planting designs, tree protection methods, creek reconstruction and associated works such as mulching and establishment. Other measures include:

- Protect existing significant vegetation;
- Provide high amenity planting to screen the sound barriers, ramp and transition structures impacting on the local residential precinct at Perry Street, Colton and Windsor Avenues; Refer Figure 6.3a and 6.3b Sections
- Provide high amenity planting to screen the sound barriers, ramp and transition structures impacting on the local residential precinct at of Erskine Street, Lassetter Streets and Park Terrace where possible.

2. Urban Forest

The landscape design solutions will seek to create water wise subtropical landscapes of diverse and high quality over the majority of open spaces created as a result of tunnel infrastructure and associated works. The landscape treatment will include earthworks; passive recreation spaces (i.e. grassed open space); seating; pedestrian and cycle paths; lighting for pedestrians and cyclist; boardwalks; viewing platforms; and pedestrian and cycle bridge over Kedron Brook.

These elements will be tied together through landscape planting of mature trees (which in time will match the scale of the proposed infrastructure) and associated under planting, creating an 'urban forest'. Refer Figure 6.3c Urban Forest

3. Activity zones

The landscape and urban design solutions for a small portion of the open space created by the tunnel infrastructure will seek to provide community benefits associated with active and passive recreation and lifestyle. These spaces will be connected to the surrounding neighbourhood, transportation nodes and commercial centres by existing or improved movement networks.

These landscapes will include earthworks, earth sculptures, interpretive landscape, Picnic and BBQ structures and structures for large community gatherings.
This location also has the potential to incorporate a propagation nursery for the Airport Link project (providing employment and training opportunities in urban ecology), after the life of the project the facility could be turned into a 'city farm' type community infrastructure, providing an opportunity for urban dwellers to grow their own produce.

4. Boulevarde Treatment

The urban and landscape design solutions will seek to improve the environment surrounding the road corridors affected by the tunnel infrastructure, in particular sections of Lutwyche Road, Kedron Park Road, Gympie Road and Stafford Roads. This will include a subtropical theme of mature street trees,

mature median trees, and planting to medians and build outs, pavements to cross overs, character elements such as steel sculptures within medians. These schemes would need service investigation and possible relocation where conflicts may exist.

5. Suburban Centre Improvement Schemes

The urban and landscape design solutions will seek to improve the viability of existing centres, or create new centres of commerce, in response to impacts or opportunities arising from changed traffic conditions and road configurations. These initiatives will include the introduction of subtropical themes using mature street trees, Centre Character elements such as street furniture; high quality pavements; centre signatures and; 'Art'. Investigate opportunities to provide a SCIP to Stafford and Gympie Road Suburban Centres.

6. Design Intervention in Response to Engineering Proposals

The urban design and landscape treatments are proposed to be developed in a themed manner to integrate the impacts of tunnel infrastructure into the existing environment, refer Figure 6.3d. The tunnel infrastructure and proposed treatments are;

- Retaining structures such as ramps, and transition structures :- implement textured and coloured pre caste concrete panels with relief patterning as a facing to retaining structures;
- Flyovers: - Design flyover carriage ways as sculptural elements i.e.; in cross section, longitudinally and the pillar form and modulation.
- Portals: - Design portals which engage the motorist in a memorable driving experience and contribute positively to urban character i.e. Structures made of glass, steel, lighting design.
- Sound Barriers: - Ensure sound barriers are of a high visual quality using acoustic material (which may be translucent) in interesting patterns and textures.
- Ventilation Outlets: Incorporate visually pleasing ventilation outlets within a special use building similar to the existing Emergency Services building. The ventilation outlet could form part of a city gateway from/to the airport. Refer Figure 6.3e.

6.4 Potential Impacts and Mitigation Measures for Airport Link and Full Northern Busway 2026

The Airport Link project is closely associated with the Northern Bus way project and as such an assessment of the impacts of the Northern Busway on the Airport Link in this key location is discussed.

Gympie Road

The Northern Busway project proposes a bus station and road alignments at Gympie Road on the south west side of Kedron Brook at Lutwyche Road. The following is a list of potential conflicts between Airport Link and the Northern Busway;

- This Station impacts on the Airport Link proposed mitigation measures for this area by removing the intended recreation use for this edge (Activity Zone – see summary of Gympie Road).

- The position of the bus station exacerbates the poor road connections for pedestrian and cyclist around this area.
- The Northern Busway uses the existing bridge structure over Kedron Brook; the Airport Link will require addition bridges across the brook, lessening its landscape amenity.
- The Northern Busway transition structures and portals take space available for planting and reducing the impact of Airport Link in this residential precinct.

6.5 Visual Impacts for Airport Link for Gympie Road

The following images describe the prospective changes to the landscape and interpretations of mitigation as seen from selected Vantage Points. The illustrative photo-montage series evaluates the foreseeable visual effects and character of the evolving landscape that is experienced by the people who create it and live within it.

7. D: Wooloowin Key Location

7.1 Existing Environment

The key location area of Wooloowin has been assessed at the local level by the application of the five urban design components. Refer to Figure 7.1 Key Location Wooloowin Precinct for location.

Urban Centres

This key location contains no defined centres but a portion of this area is inside the walking catchment of the Eagle Junction Convenience Centre. The eastern and western edges of this key location provide a low density residential frame to the key locations of Sandgate Road and Gympie Road. The dominance of this built form has provided this key location with a small scale and well connected suburban catchment to support the activity of the adjacent Eagle Junction Convenience Centre.

Connections

This key location contains a portion of the east-west arterial connector of Junction Road supported by the north-south connections of Dawson Road and Shaw Road in this predominantly low density residential area. The north-south rail line defines its eastern edge. The residential street pattern provides a good framework for pedestrian and cyclist movement, and access to the Kedron Brook open space system and is within the 400m pedestrian catchment of Eagle Junction Train Station.

Urban Character

The dominant low density residential character creates a predictable and highly legible character within this key location. Kedron Brook and Shultz's Canal provide natural environment and recreational variety to the northern edge of this key location. The south eastern edge is defined by a rail line that significantly reduces pedestrian, cycle and vehicle permeability. Residential built form and street patterns edged by open space are the dominant characteristics of this key location.

Visual Values

This key location contains no ridgelines or hilltops to act as vantage points or landmark skylines. Due to its position in the valley between the Lutwyche Road and Sandgate Road ridge lines this key location is the most highly visible location within the Study Corridor. This key location also provides the most intact and consistent visual character of suburban style low density housing and domestic landscaping within the Study Corridor. (Refer Appendix 10.1 for Visual Values tables)

Landscape Elements

Although this key location is predominantly above flood inundation lines, it is one of the lower lying areas within the Study Corridor. Water ways are the dominant natural feature in this key location. A degraded and fragmented minor creek corridor begins where piped stormwater exits into Melrose Park. This creek would have previously connected to Shultz canal. There is also a mature grouping of Eucalypts of sufficient scale to provide native habitat at the southern end of Melrose Park, as well as established vegetation in and around this residential precinct. (Refer Appendix 10.1 for Landscape Elements section)

7.2 Potential Impacts and Mitigation Measures for Airport Link

This key location is not expected to be affected by direct surface works for Airport Link and therefore have no impacts or mitigation measures relating to Airport Link.

7.3 Visual Impacts for Airport Link for Wooloowin

This key location is not expected to be affected by direct surface works for Airport Link and therefore have no impacts or mitigation measures relating to Airport Link.

8. E: Sandgate Road Key Location

8.1 Existing Environment

The key location area of Sandgate Road has been assessed at the local level by the application of the five urban design components. Refer to Figure 8.1: Key Location Sandgate Road (Sandgate Road Connection) for location.

Urban Centres

The activity of Major Centre of Toombul anchors this key location. The scale of this activity is typical of its "big box" typology where the large commercial floor space necessitates large areas of supporting customer parking. The surrounding car parking which is mostly at surface grade reduces its capacity to link into supporting pedestrian catchments. This centre is the only one along the corridor which is clearly removed from the property boundary and is “introverted” in nature.

This key location also contains the northern pedestrian catchment of the Convenience Centre located at Clayfield. Most of the residential areas contained within both Centres’ catchment are classified as LMR and accordingly provide access to higher levels of potential pedestrians such as the LR catchment contained within the Wooloowin key location.

Connections

This key location contains the north-south rail line to its western edge with the Sandgate Road arterial and the sub arterial of Melton Road providing north-south links and the east-west Arterial Road providing the dominant east-west.
Pedestrian and cycle paths of low amenity are provided along the edges of the Shultz Canal waterway system and some adjacent open space areas.

Urban Character

The waterway of Shultz’s Canal and the north-south rail line has also led to a fragmented street network. Toombul Shopping Centre and the pylons of Airtrain provide a larger scale than normally found in these suburban areas. The fragmented nature of this key location provides a mix of spaces, ranging from significant waterway vegetation to highly degraded areas underneath the Sandgate Road Bridge and along the water way to Melton Road. The upper and lower reaches of Shultz’s Canal are very well utilised and provide the local community recreation infrastructure. The upper reach has a strong sense of place, whilst the lower reach has a very weak sense of place. The range of built form associated with transport infrastructure and buildings of the major shopping centre, and residential areas predominantly classified as LMR dissected by a tidal waterway, has created a location of fragmented character.

Visual Values

This location is framed by ridge lines to the north and south with Shultz’s Canal creating a waterway valley running east-west. The most visible areas are to the west of the Sandgate Road ridgeline with areas to the east characterised by moderate to low visibility. Shultz’s Canal and the vantage points from the Sandgate Road

Bridge provide greater visual exposure to the Eastern side of Sandgate Road. This landform and structure creates a highly visible central area. (Refer Appendix 10.1 for Visual Values tables)

Landscape Elements

The waterway and flooding impact of Shultz's Canal provide the dominant natural features in this key location. There is a distinct change in landscape features noticeable from the Sandgate Road Bridge crossing of Shultz Canal. To the west there are significant groupings of Araucaria species, Eucalypts species, other cultural planting and weed species. Due to the nature of this area the landscape values are high at present. To the East of the crossing the landscape changes dramatically to an open asphalt car park next to a degraded creek bed, with some emerging mangrove species. Due to the fragmented nature of this area the landscape values are low to moderate at present. (Refer Appendix 10.1 for Landscape Elements section)

8.2 Potential Impacts for Airport Link

The Impacts of the proposed works for Airport Link on Sandgate Road will be (refer Figure 8.2 Sandgate Road Impact Assessment);

- The Urban Centre of Toombul Shopping Centre will be impacted by the removal of the existing bridge crossing Shultz Canal removing access to car parking on the southern edge of Shultz Canal. The excavation of this area is required to offset flooding impacts.
- Connectivity will be impacted in this key location due to the removal of the pedestrian and cycle pathway along southern edge of Shultz's Canal between Sandgate Road and Melton Road due to the reshaping of the waterway for hydraulic requirements. The existing pedestrian and cycle network at the northern ends of Stuckey Road & Alma Road are to be removed by transition structures.
  If signalised, the new intersection layout of Sandgate Road and east west arterial can increase road crossing opportunities for pedestrians.
- The project impacts further fragment Urban Character & Visual Values by removing mature trees on the western side of the T intersection of Sandgate Road and the East West Arterial. The transformation of the existing intersection into a four way intersection will increase the surface footprint and reduce existing visual amenity. The existing amenity of the eastern end of Lewis Street and the northern end of Jackson Street will be reduced by cut and cover works during construction.
- The project will impact on Landscape Elements in this key location. The project works will cause the removal of significant mature vegetation at the northern end of Stuckey and Alma Streets as well as the existing vegetation in the open space corridor from Lewis Street to Sandgate Road. The project will impact on the existing creek line from Jackson Street. The flood mitigation measures at Shultz Canal (Melton Road to the eastern side of the north-south rail line) will require the excavation of material which will remove the majority of vegetation in this area. The project works will also cause the removal of the existing playground and barbecues at Kalinga Park due to cut and cover work.

Refer to Appendix 10.2 for the five tables which relate to the five sustainable design principles and their corresponding goals and objectives for this key location. The tables provides the project impacts on Land Use, Public Amenity and Public Access and provides mitigation measures for surface and elevated structures, surface landscaping, ramp design, and portal design.

8.3 Mitigation Measures for Airport Link: Urban Design and Landscape Concepts

The mitigation measures propose urban design and landscape concepts to offset project impacts, all measure are required to apply Australian best practice urban design and landscape standards, codes and practices, refer Figure 8.3 Sandgate Road Mitigation Measures. The following six strategies are proposed to deal with project impacts;

1. Revegetation / Waterway Rehabilitation

The landscape design solutions for protection and/or damage to the existing natural environment will seek to mitigate the impacts of the tunnel and associated works by revegetating areas damaged during construction and rehabilitate damage to waterways. This would include planting designs, tree protection methods, creek and wetland reconstruction and associated works such as mulching and establishment. These measures include:

- Protect existing significant vegetation;
- Revegetate areas damaged during construction and rehabilitate damage to Shultz Canal with construction of wetland environment with board walks and viewing platforms;
- Reinstate natural creek from end of Jackson Street to Shultz Canal;
- Provide defined informal recreation space adjacent to Diggers Drive in Kalinga Park.

2. Urban Forest

The landscape design solutions will seek to create subtropical landscapes of diverse and high quality over the majority of open space created as a result of tunnel infrastructure and associated works. This landscape will include earthworks, passive recreation spaces (i.e. grassed open space), seating, pedestrian and cycle paths, lighting for pedestrians and cyclist, boardwalks, viewing platforms, and ped and cycle bridges over Kedron Brook.

These elements would create an “urban forest” through the planting of mature trees and associated under planting (which in time will match the scale of the proposed infrastructure). Refer Figure 8-3a Urban Forest

A specific measure includes:

- Connect north-south crossing of Stuckey and Alma Streets across Shultz Canal through to Ross Park.
- High amenity screen planting to the northern ends of Elliot Street, Stuckey and Alma Roads

  Refer Figure 8-3b and Figure 8-3c

3. Activity zones

The landscape and urban design solutions for a portion of the open space created by the tunnel infrastructure will seek to provide community benefits associated with active and passive recreation and lifestyle. These landscapes would include earthworks, earth sculptures, bird hides, constructed wetlands, interpretive trails, Picnic and BBQ structures and structures for large community gatherings.

This location also has the potential to incorporate an environmental centre based around the reconstructed wetland; the centre will provide opportunities for training in urban water and waterway management.

These spaces will be connected to the surrounding neighbourhood, transportation nodes and commercial centres by existing or improved movement networks.

4. Boulevard Treatment

The urban and landscape design solutions will seek to improve the environment surrounding the road corridors affected by the tunnel infrastructure. This will include a subtropical theme of mature street trees, mature median trees, and planting to medians and build outs, pavements to cross overs, character elements such as steel sculptures within medians. These schemes would need service investigation and possible relocation.

5. Suburban Centre Improvement Schemes

The urban and landscape design solutions will seek to improve the viability of existing centres, or create new centres of commerce, in response to impacts or opportunities arising from changed traffic conditions and road configurations. This will include subtropical themes using mature street trees, Centre Character elements such as street furniture, pavements and centre signatures and 'Art'. The opportunity exists to activate the external environment of Toombul Shopping Centre by creating a landscape setting of high quality looking to the south bank of Shultz Canal. This centre has the opportunity to take advantage of this improved amenity by introducing bakeries, eateries to activate its southern edge to shops, eateries etc. This Strategy supports the BCC Living in Brisbane 2010 policy, its possible implementation is encouraged but does not form a part of the AL project.

6. Design Intervention in Response to Engineering Proposals

The urban design and landscape treatments are proposed to be developed in a themed manner to integrate the impacts of tunnel infrastructure into the existing environment, refer Figure 8.3c. The tunnel infrastructure and proposed treatments are;

- Retaining structures such as ramps, and transition structures :- implement textured and coloured pre caste concrete panels with relief patterning as a facing to retaining structures;
- Flyovers: - Design flyover carriage ways as sculptural elements i.e.; in cross section, longitudinally and the pillar form and modulation.
- Portals: - Design portals which engage the motorist in a memorable driving experience and contribute positively to urban character i.e. Structures made of glass, steel, lighting design.
- Sound Barriers: - Ensure sound barriers are of a high visual quality using acoustic material (which may be translucent) in interesting patterns and textures.
- Ventilation Outlets: Incorporate visually pleasing ventilation outlets within the existing Toombul shopping centre or in the open space between the transition structures near Shultz Canal. The ventilation outlets could form part of a city entrance gateway from the airport. Refer Figure 8.3d

8.4 Visual Impacts for Airport Link for Sandgate Road

The following assessment images describe the prospective changes to the landscape and interpretations of mitigation as seen from selected Vantage Points. The illustrative photo-montage series evaluates the foreseeable visual effects and character of the evolving landscape that is experienced by the people who create it and live within it.

9. Conclusion

The key urban design, landscape and visual aim for the Airport Link Project is to assist with the integration of tunnel and surface infrastructure with the existing environment and where possible provide increased cultural, economic and environmental benefits to the local community and the city as a whole.

This report has answered the ToR for the existing environment and potential impacts and mitigation measures through observation and reference of current best practice initiatives and literature. This has resulted in the preparation of urban design and landscape concepts to achieve a high quality urban outcome to ensure the integration of:

- the tunnel infrastructure;
- tunnel operation infrastructure;
- surface works into existing surface movement networks;
- surface works into existing commercial centres and;
- new urban spaces as a result of project works;
- new open spaces as a result of project works.

The concepts have achieved this by following the sustainable design principles, goals and objectives relating to urban design, landscape and visual values set out Chapter section 2.6 in the report.

To offset project impacts, six urban design and landscape strategies were devised as part of the mitigation measures for this report. The following strategies provide a theme for the urban design and landscape concepts for the reference project, these strategies have come from the principles, goals and objectives set out in the report.

1. Revegetation / Waterway rehabilitation – Protect existing significant vegetation. Revegetate areas damaged during construction and rehabilitate damage to waterways where appropriate.
2. Urban Forest Treatment (Open Space) – Create well connected and safe landscapes of diverse and high quality where project creates open space, incorporating existing parks and open space, where possible.
3. Activity Zones – Create well connected and safe community areas for active or passive recreation within discrete areas of open space.
4. Boulevard Treatment – Provide significant tree planting, street furniture, public art and accessible pathways to major roads.
5. Suburban Centre Improvement Schemes – Create well connected and safe new opportunities or strengthen existing viability of centres through urban design and landscape treatments.
6. Design Intervention in Response to Engineering Proposals – Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers and integrate these with the existing environment of the each key location.

These strategies convey an urban design and landscape theme for the project. Tenderers will apply their own urban design and landscape themes, however they must adopt the project principles, goals and objectives set out in this report.

In accordance with the ToR, the concepts relate to the key locations affected by the tunnel surface works at Bowen Hills, Gympie Road and Sandgate Road.

Bowen Hills (Southern Connection)

The following urban design and landscape strategies for the key location of Bowen Hills have come from the principles, goals and objectives set out in the report.

- Protect existing significant vegetation.
- Revegetate open space areas damaged during construction and rehabilitate damage to Enoggera Creek mangroves and banks due to construction of the bridge for the AL.
- Create water wise subtropical landscapes with mature trees over the majority of left over open space incorporating the north bank of Enoggera Creek.
- Ensure connection to and from open space connecting the North and South banks of Enoggera Creek and the pedestrian/cycle bridge provided by the NSBT.
- Plant groves of large trees and create new recreation open space to the Northern side of Enoggera Creek.
- Opportunities exist to create areas of high quality landscape amenity to open space created by the infrastructure.
- Repair damage to NSBT planting.
- Provide facilities such as Picnic / Barbecues; play space for all ages and; access to creek for canoeists on the northern side of the creek.
- Provide boulevard street trees; accessible pathways; street furniture; art work to sections of Lutwyche Road, and all of O'Connell Terrace.
- Provide tree plantings to Hamilton Place, Tufton Street and Wren Street.
- There is an opportunity to provide a Suburban Centre Improvement Scheme to a section of Lutwyche Road; Bowen Hills Centre and O'Connell Terrace.
- Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers which integrate into the Bowen Hills environment.
- There is an opportunity to incorporate a visually pleasing ventilation outlet within open space on the Northern bank of Enoggera Creek. The ventilation outlet could form part of a city gateway from/to the airport.

Gympie Road

The following urban design and landscape strategies for the key location of Gympie Road have come from the principles, goals and objectives set out in the report.

- Protect existing significant vegetation.
- Revegetate areas damaged during construction and rehabilitate damage to Kedron Brook (if any) with naturalised reconstruction of waterway.

- Provide high amenity planting to screen the sound barriers, ramp and transition structures impacting on the local residential precinct at Colton and Windsor Avenues;
- Provide high amenity planting to screen the sound barriers, ramp and transition structures impacting on the local residential precinct at of Erskine Street, Lassetter Streets and Park Terrace where possible.
- Create water wise subtropical landscapes with mature trees over the majority of new spaces caused by the transition structures into the tunnel.
- Connect the north-south crossing of Kedron Brook with new pedestrian/cycle footbridge over the creek.
- Provide areas of high quality landscape and recreation amenity to the south western side of the bridge at Lutwyche Road. Opportunities include play spaces for all ages, bicycle storage facilities, and typical park amenities.
- Provide boulevard street trees; accessible pathways; street furniture; art work to sections of to sections of Lutwyche Road, Kedron Park Road, Gympie Road and Stafford.
- Scope opportunities for providing a Suburban Centre Improvement Schemes (SCIPS) to Stafford and Gympie Road Suburban Centres.
- Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers which integrate into the existing environment of Gympie Road.
- There is an opportunity to incorporate visually pleasing ventilation outlets within a special use building similar to the existing Emergency Services building. The ventilation outlet could form part of a city gateway from/to the airport.

Sandgate Road

- Protect existing significant vegetation.
- Revegetate areas damaged during construction and rehabilitate damage to Shultz Canal with construction of wetland environment with board walks and viewing platforms.
- Reinstate natural creek from end of Jackson Street to Shultz Canal.
- Provide defined informal recreation space adjacent to Diggers Drive in Kalinga Park.
- Create water wise subtropical landscapes with mature trees over the majority of the spaces caused by the transition structures into the tunnel.
- Re-connect Ross Park and Stuckey and Alma Streets across Shultz Canal by a pedestrian/cycle bridge.
- Create areas of high quality landscape amenity and recreation, including the reinstatement of the play ground lost to cut and cover works. Opportunities include play spaces for all ages, viewing platforms, interpretive trails and typical park amenities.
- Provide north, south, east and west pedestrian and cycle movement along Sandgate Road, with improved accessible pathways and streetscape amenity.
- The opportunity exists to activate the external environment of Toombul Shopping Centre by creating a landscape setting of high quality looking to the south bank of Shultz Canal. This centre has the opportunity to take advantage of this improved amenity by introducing bakeries, eateries to activate its southern edge to shops, eateries etc. This Strategy supports the BCC Living in Brisbane 2010 policy, its possible implementation is encouraged but does not form a part of the AL project.

- Create themed urban design and landscape treatments for retaining and transition structures, flyovers, portals, ventilation outlets and sound barriers which integrate with the existing environment of the Sandgate Road key location.
- There is an opportunity to incorporate visually pleasing ventilation outlets within the existing Toombul shopping centre or in the open space between the transition structures near Shultz Canal. The ventilation outlets could form part of a city entrance gateway from the airport.

10. Appendices

10.1 Existing Environment: Visual Values and Landscape Elements

10.2 Tables of Potential Impacts and Mitigation Measures

10.3 Guidelines and Concepts for Constructed Elements

10.4 Guidelines for Planting Elements

10.5 References and Support Material

Chapter Section 2.4

- "Place Making: Developing Town Centres, Main Streets and Urban Villages" (Urban Land Institute)
- "Developing Around Transit: Strategies and solutions that work" (Urban Land Institute)
- "Creating a Vibrant City Centre: Urban Design and Regeneration Principles" (Urban Land Institute)
- "Urban Design Compendium" (English Partnerships)
- "People, Places and Spaces: A design guide for urban New Zealand" (Ministry for the Environment, New Zealand)
- "Good Urban Places" (Australian Institute of Urban Studies inc – Queensland Division)
- "Centre Concept Plans Planning Scheme Policy" (Brisbane City Plan 2000)

Chapter Section 3.3

- Queensland Museum, Wild Plants of Greater Brisbane, 2003, p.323

Chapter Section 3.8

- The Landscape Institute/Institute of Environmental Management and Assessment, Guidelines for Landscape and Visual Impact Assessment, 2002, Second Edition, Spons.

Chapters 4 through 8

The following engineering reference designs were used to support assessment of impacts, creation of sections and urban design and landscape concepts:-

- A112SK100;
- A112SK106;
- A112SK107 and;
- A112SK108.

These designs are for Airport Link and the Northern Busway, as they define both projects and their 'separate connections'.

AIRPORT LINK PROJECT : EXISTING ENVIRONMENTS

July 2006 ISSUE C

SCALE 1:10000 @ A1 1:20000 @ A3

0m 200m 400m 600m 800m 1000m

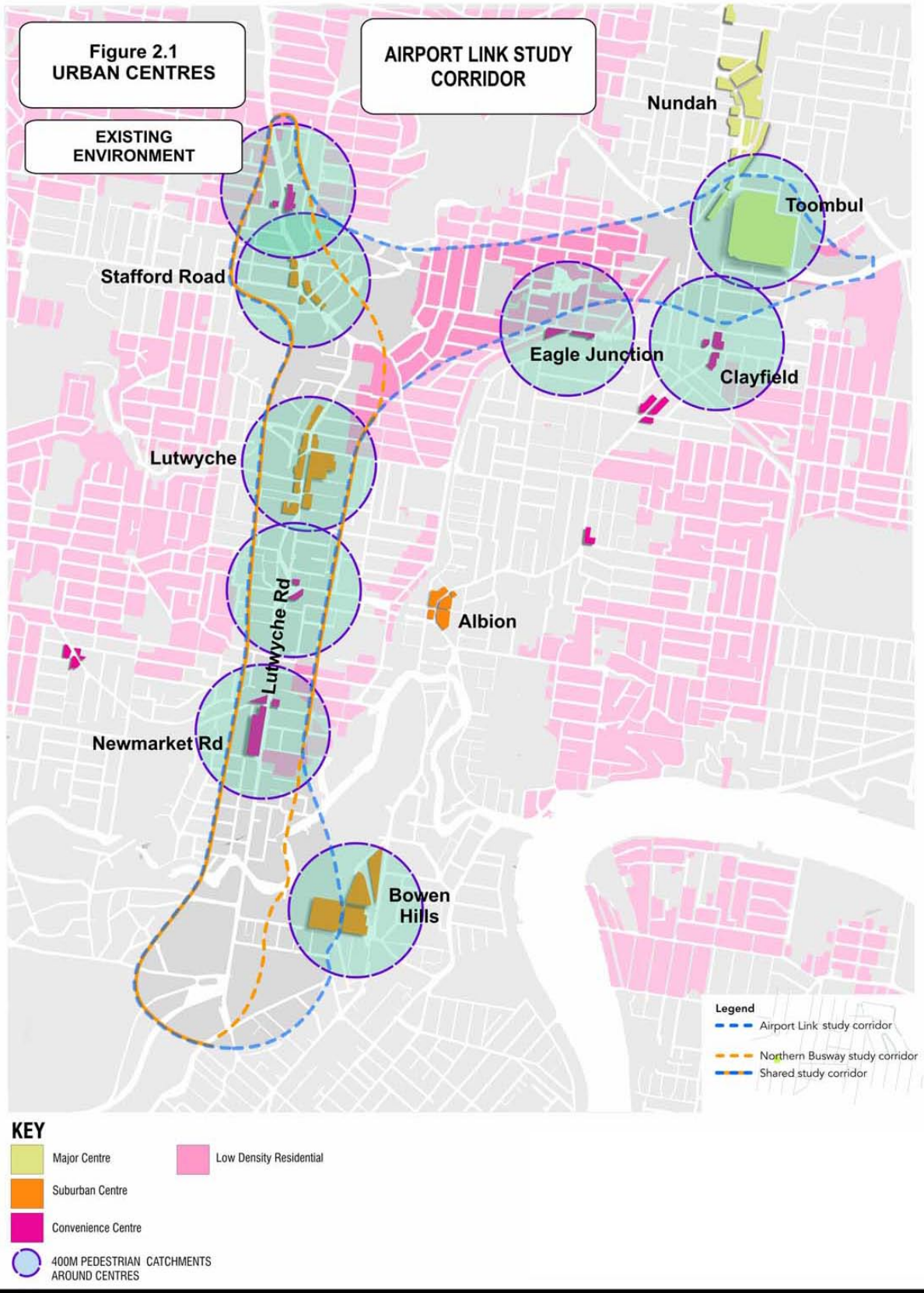
Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places



Airport Link

SKM Connell Wagner JOINT VENTURE
verge URBAN LANDSCAPE ARCHITECTURE
PLACE PLANNING & DESIGN
Vital Places

AIR PORT LINK PROJECT : EXISTING ENVIRONMENT

July 2006 ISSUE D

SCALE 1:10000 @ A1 1:20000 @ A3

0m 200m 400m 600m 800m 1000m

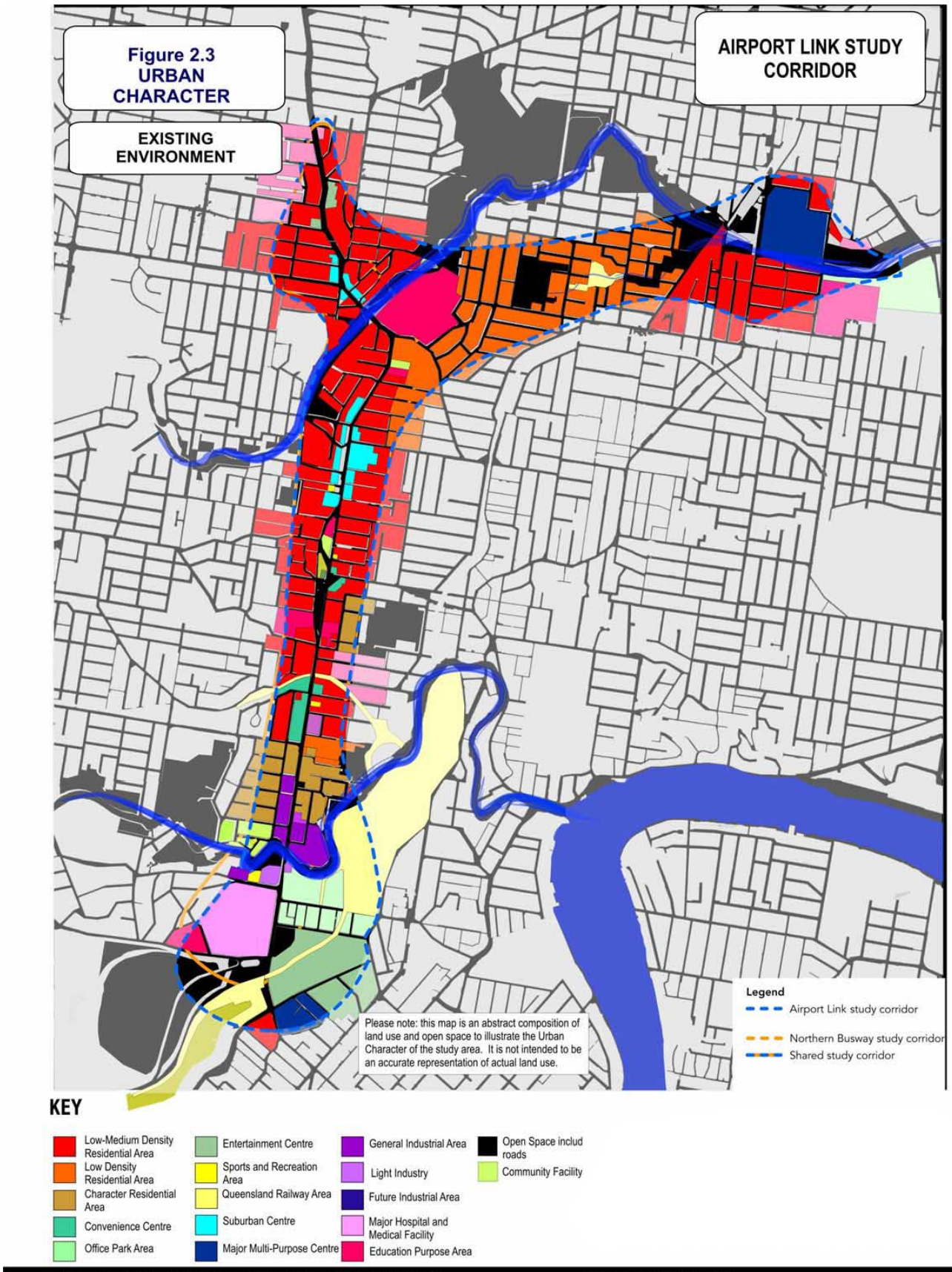
Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places



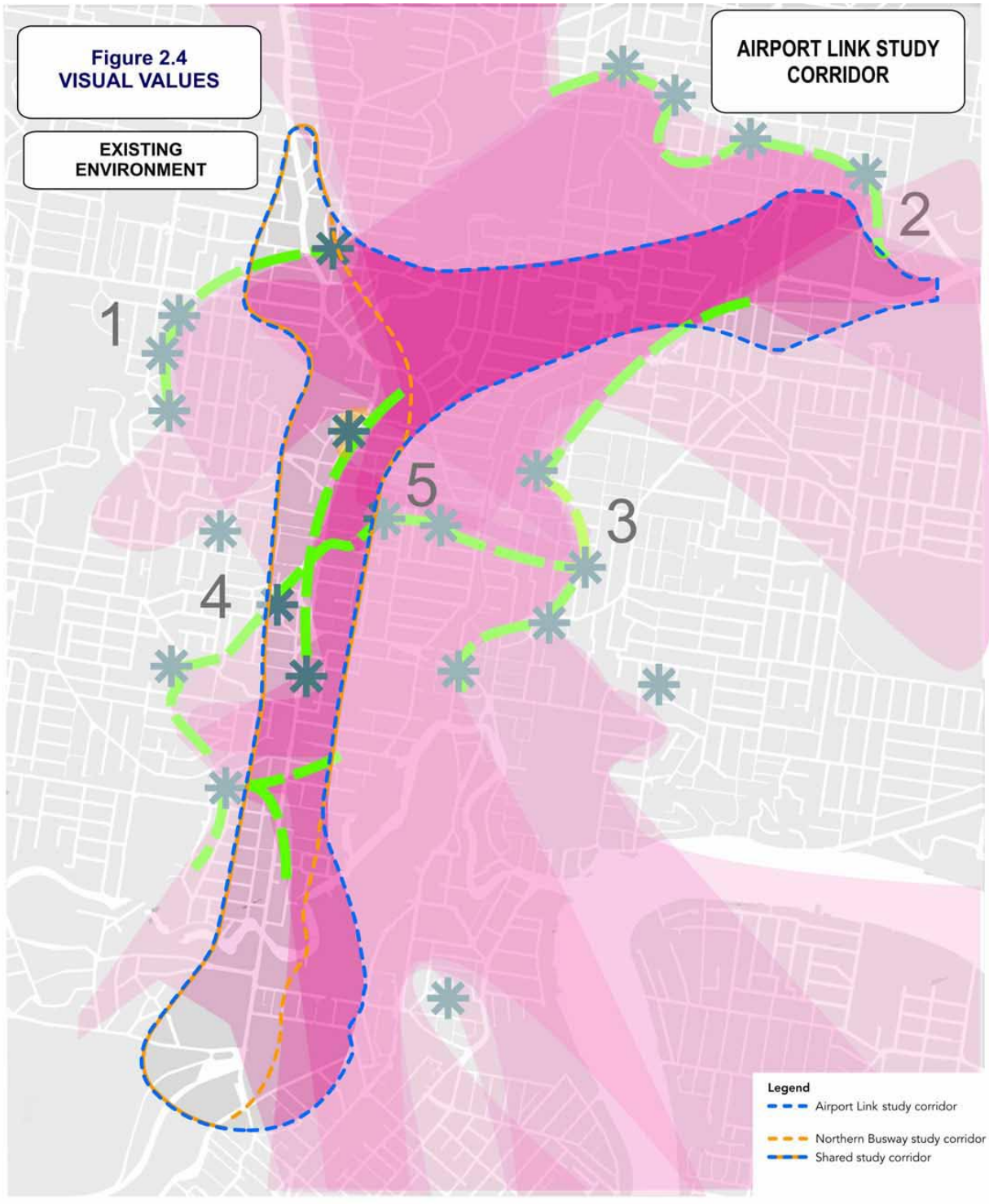
Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places



KEY

VIEWS FROM RIDGES INTO STUDY AREA

1 VIEW FROM RIDGE 1
2 VIEW FROM RIDGE 2
3 VIEW FROM RIDGE 3
4 VIEW FROM RIDGE 4
5 VIEW FROM RIDGE 5

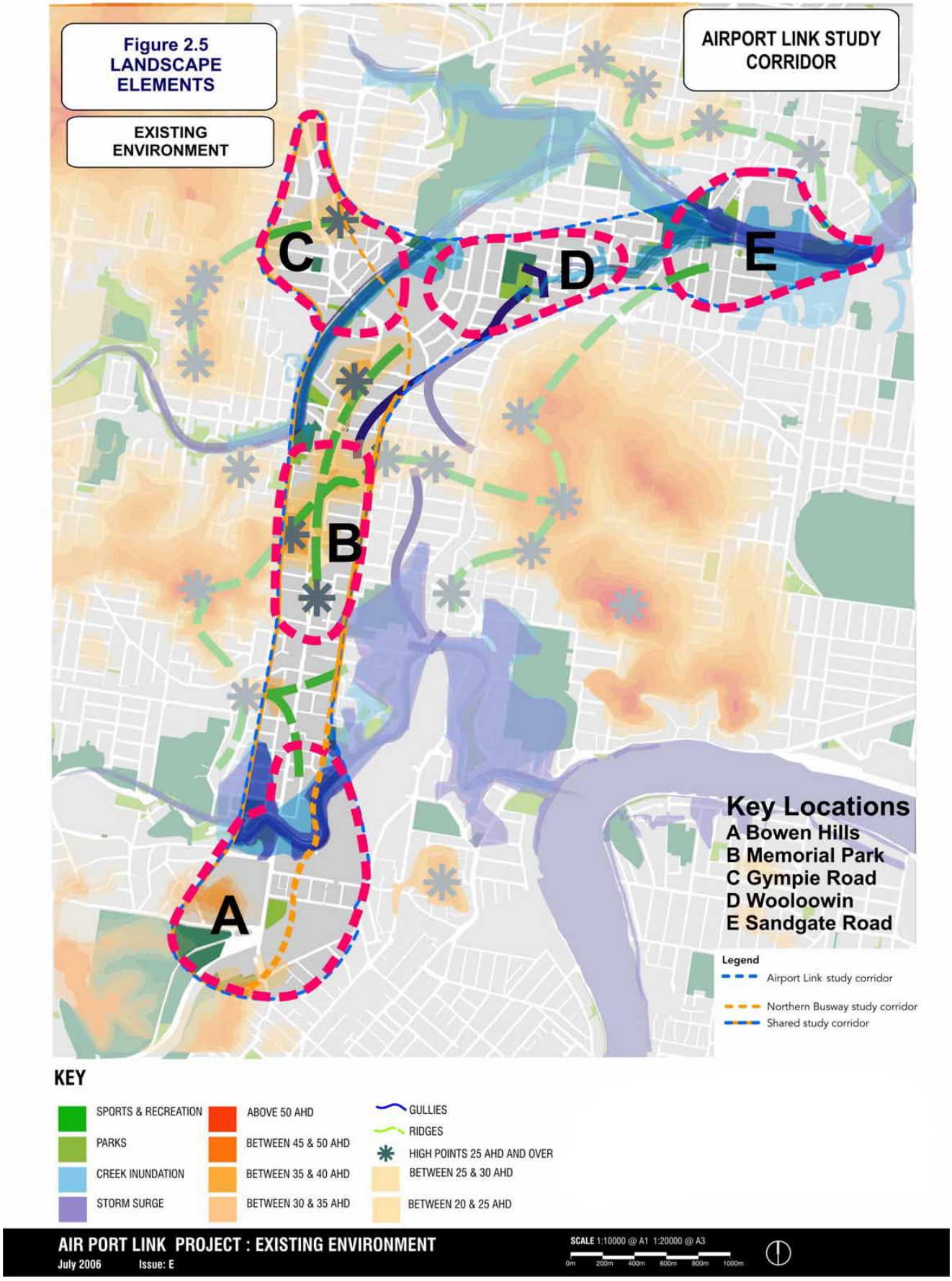
RIDGES
HIGH POINTS 25 AHD AND OVER

AIRPORT LINK PROJECT : EXISTING ENVIRONMENTS
July 2006 ISSUE D

SCALE 1:10000 @ A1 1:20000 @ A3
0m 200m 400m 600m 800m 1000m

Airport Link

SKM Connell Wagner JOINT VENTURE
verge URBAN LANDSCAPE ARCHITECTURE
PLACE PLANNING & DESIGN
Vital Places



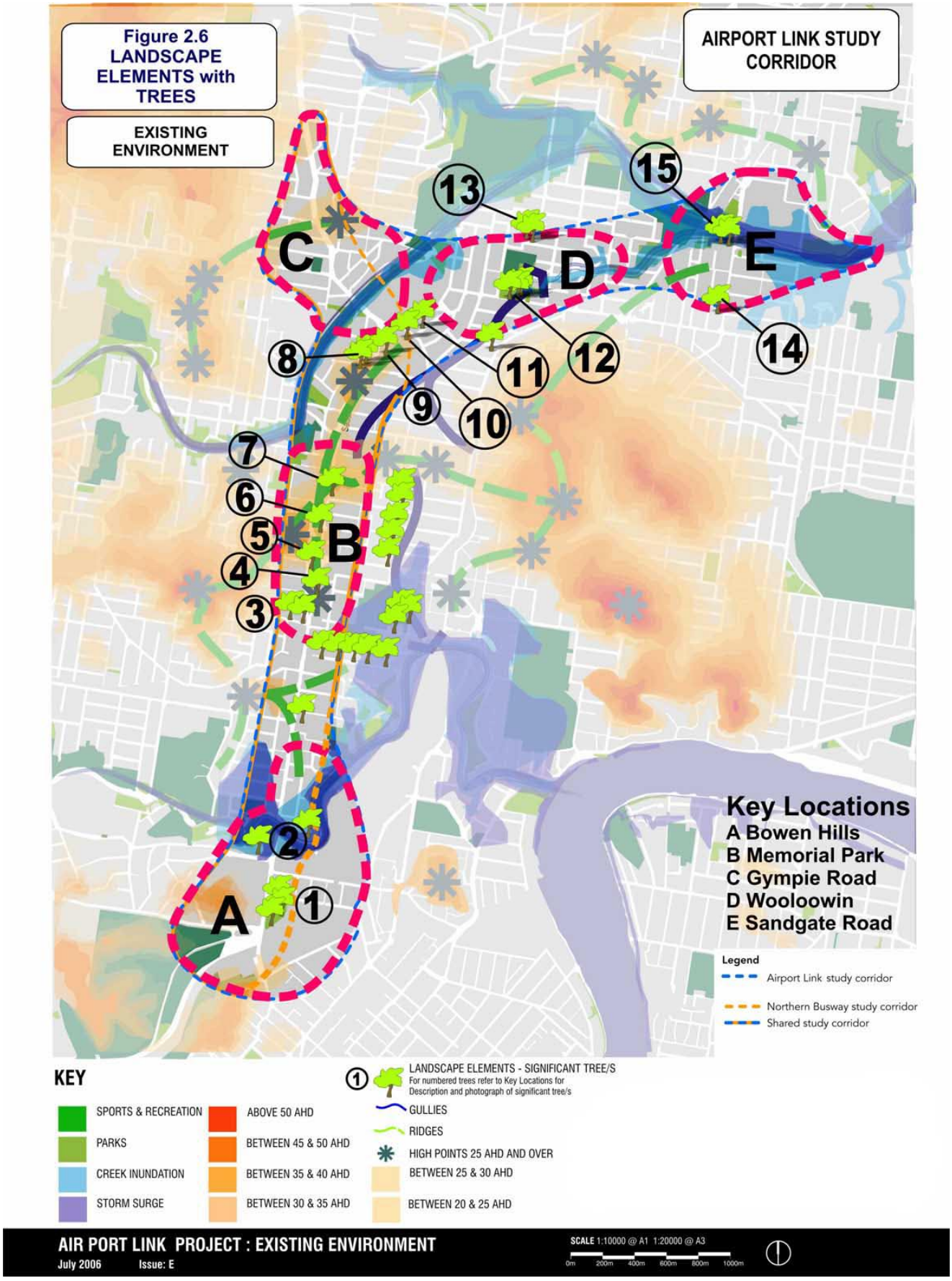
Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

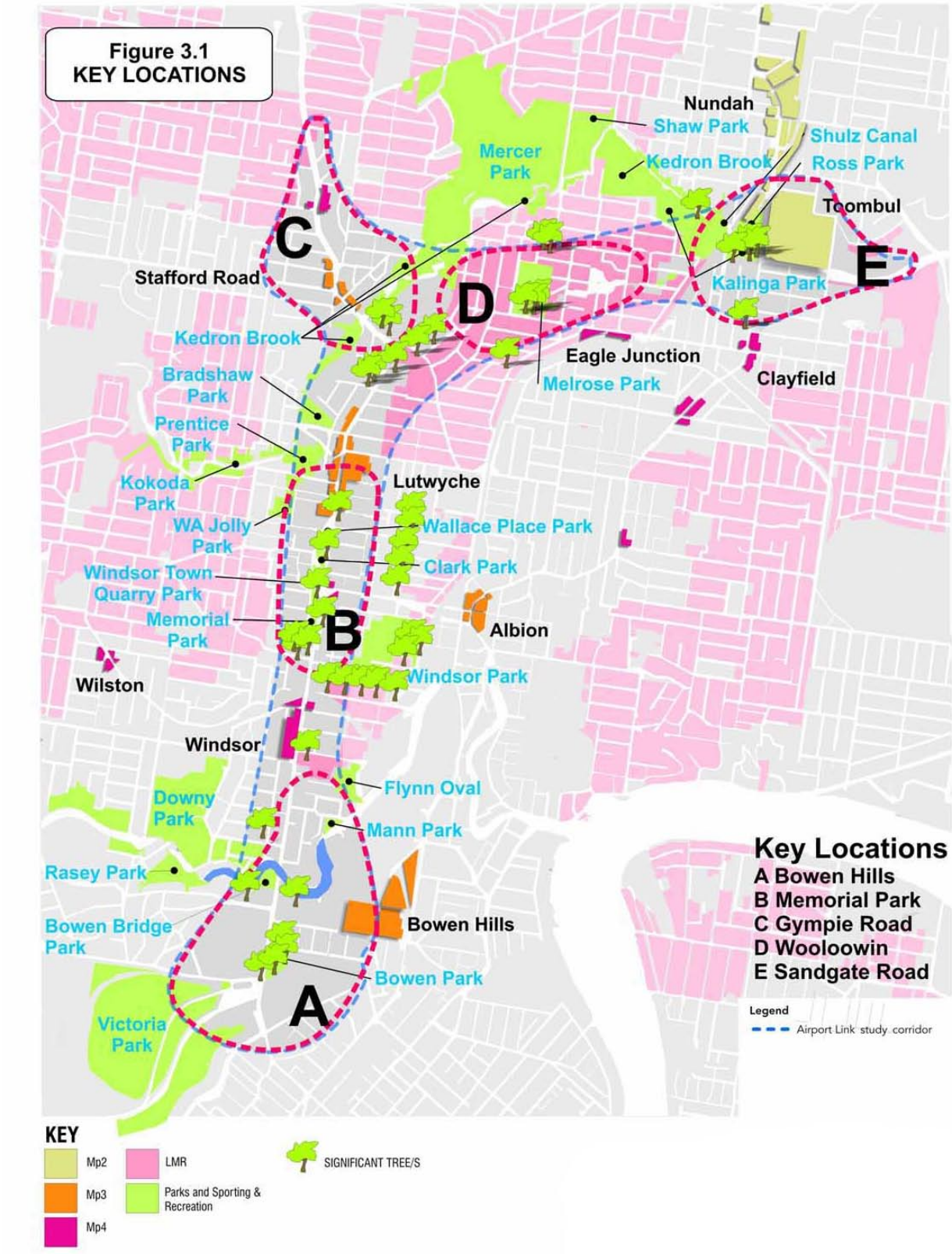
PLACE PLANNING & DESIGN

Vital Places



Airport Link

SKM Connell Wagner JOINT VENTURE
verge URBAN LANDSCAPE ARCHITECTURE
PLACE PLANNING & DESIGN
Vital Places



AIRPORT LINK PROJECT : EXISTING ENVIRONMENTS

July 2006 ISSUE C

SCALE 1:10000 @ A1 1:20000 @ A3

0m 200m 400m 600m 800m 1000m

Airport Link

SKM Connell Wagner JOINT VENTURE

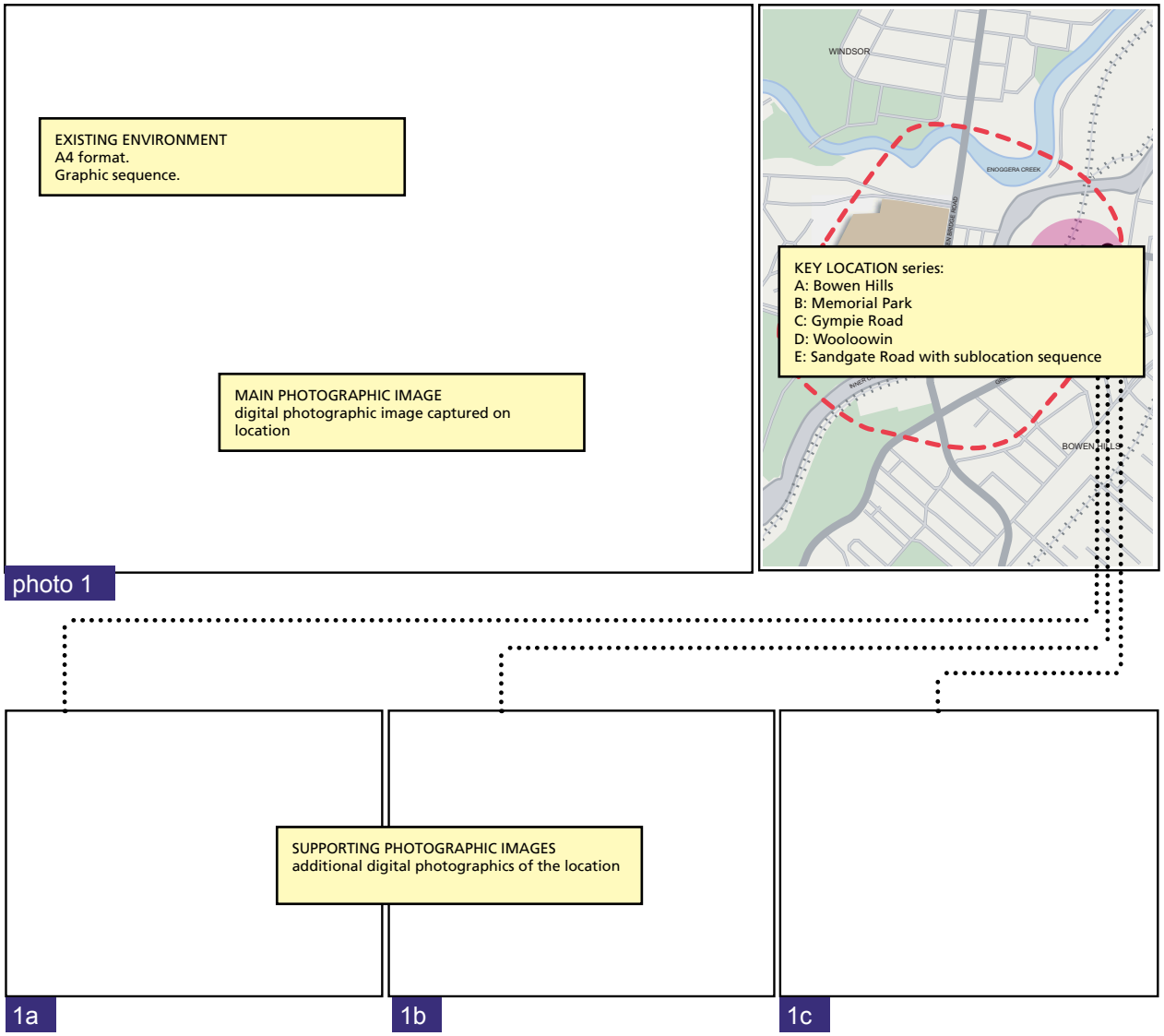
verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

FIGURE 3-2
Example of Visual Elements and Values:
Existing Environment

Key Location A: Bowen Hills sublocation 1



At present this area possesses an eroded street form due to a mixed range of setbacks; built form and landscape form. The existing ICB [illegible] ontaining residential, institutional and commercial character, splashed w[illegible] onfiguration makes pedestrian access difficult. Therefore pedestrian ame[illegible] is poor.

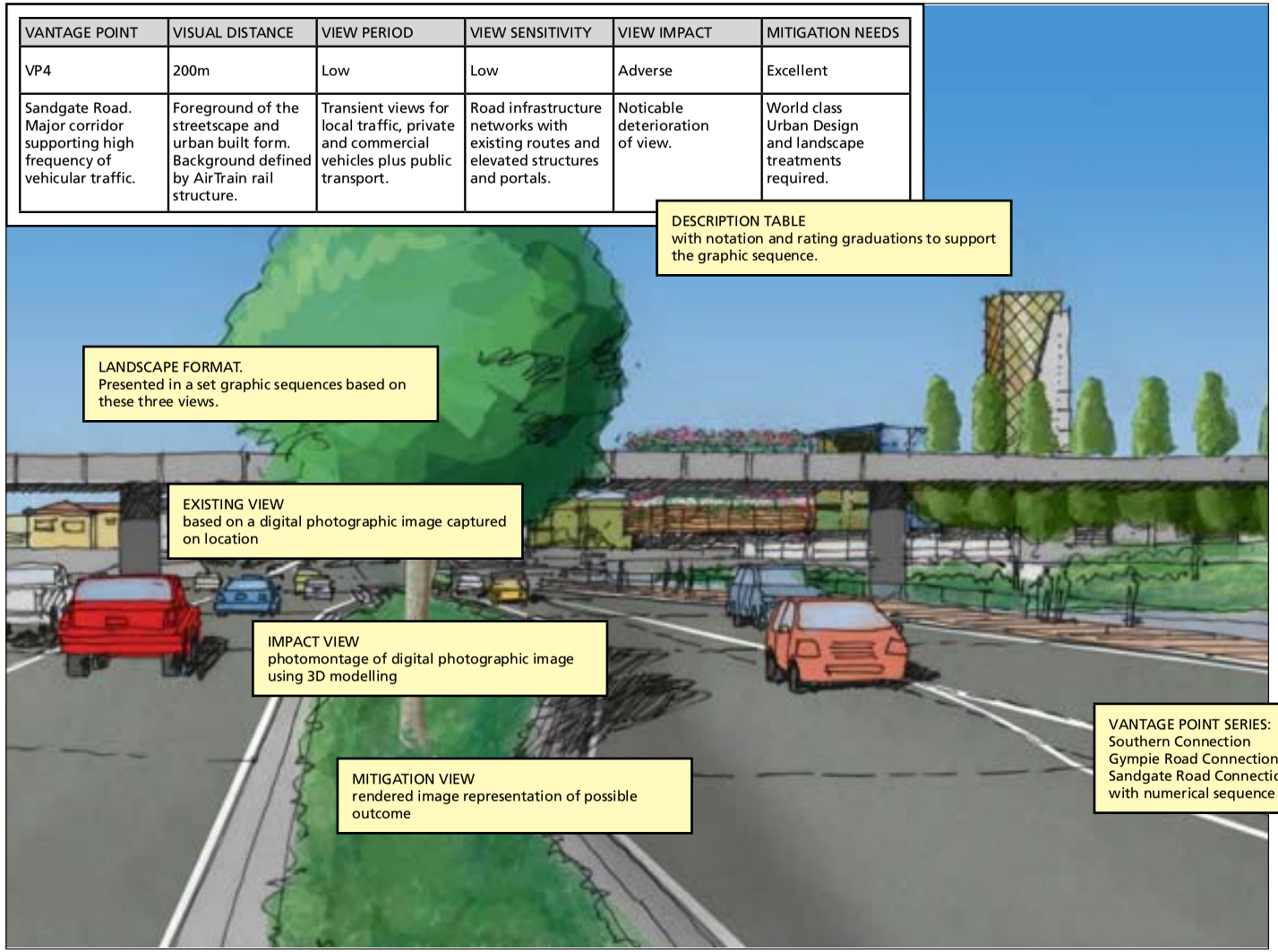
WRITTEN DESCRIPTION
text identifying relevant features and experience

Visual Elements and Values	1 - inadequate	2	3	4 excellent + 5
Built Form				
Street Form				
Landscape Form				
Pedestrian Access				
Cycle Access				
Public Transport Access				
Pedestrian Amenity				
Cycle Amenity				
Public Transport Amenity				
Public Transport Amenity				

VISUAL ELEMENTS AND VALUES
attributes and qualities of the Key Location and sublocations relating to form, access and amenity.

FIGURE 3-3
Example of Visual Elements and Values:
Potential Impacts and Mitigation

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP4	200m	Low	Low	Adverse	Excellent
Sandgate Road. Major corridor supporting high frequency of vehicular traffic.	Foreground of the streetscape and urban built form. Background defined by AirTrain rail structure.	Transient views for local traffic, private and commercial vehicles plus public transport.	Road infrastructure networks with existing routes and elevated structures and portals.	Noticable deterioration of view.	World class Urban Design and landscape treatments required.



Vantage Point 4

Sandgate Road

with Centro

Toombul to the left

Looking South

MITIGATION

IMAGE

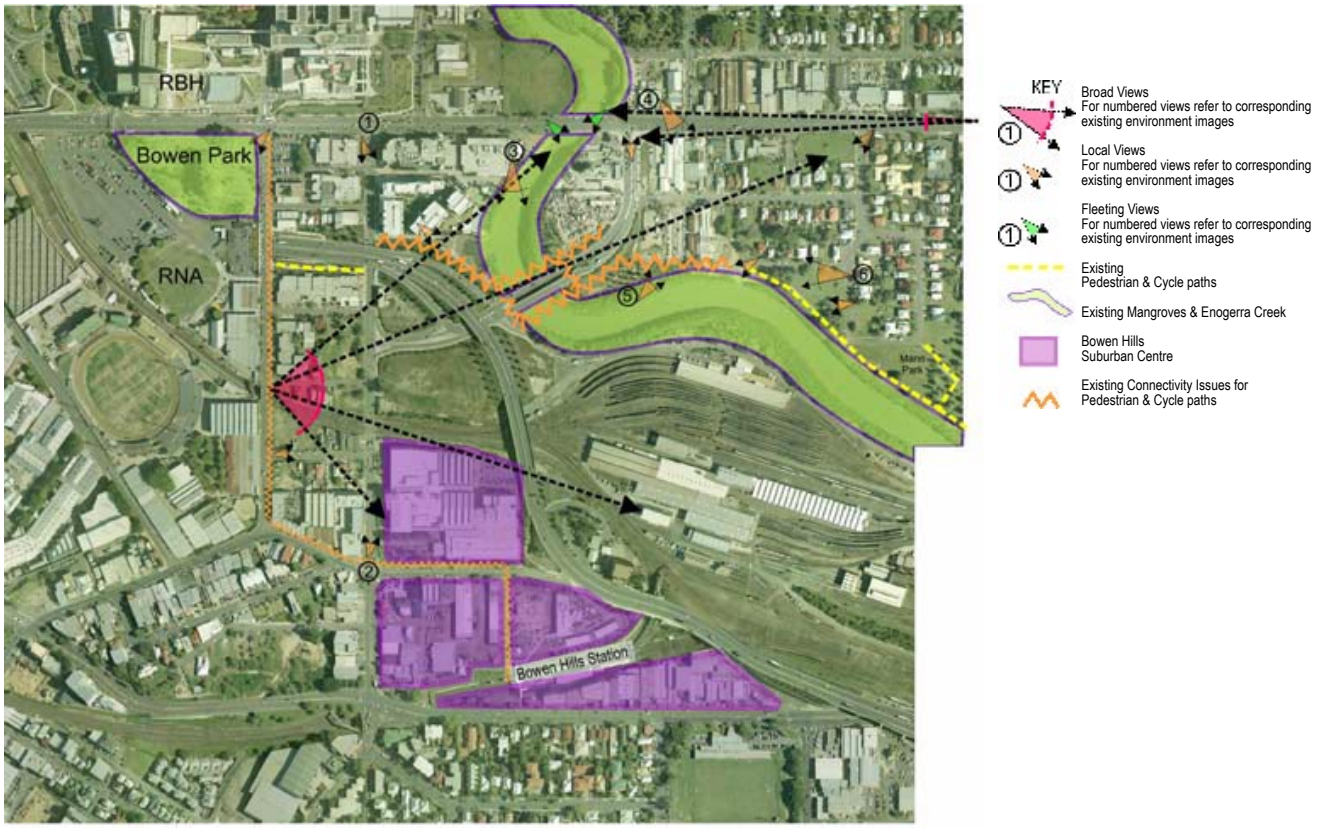


Figure 4.1
Bowen Hills Existing Environment

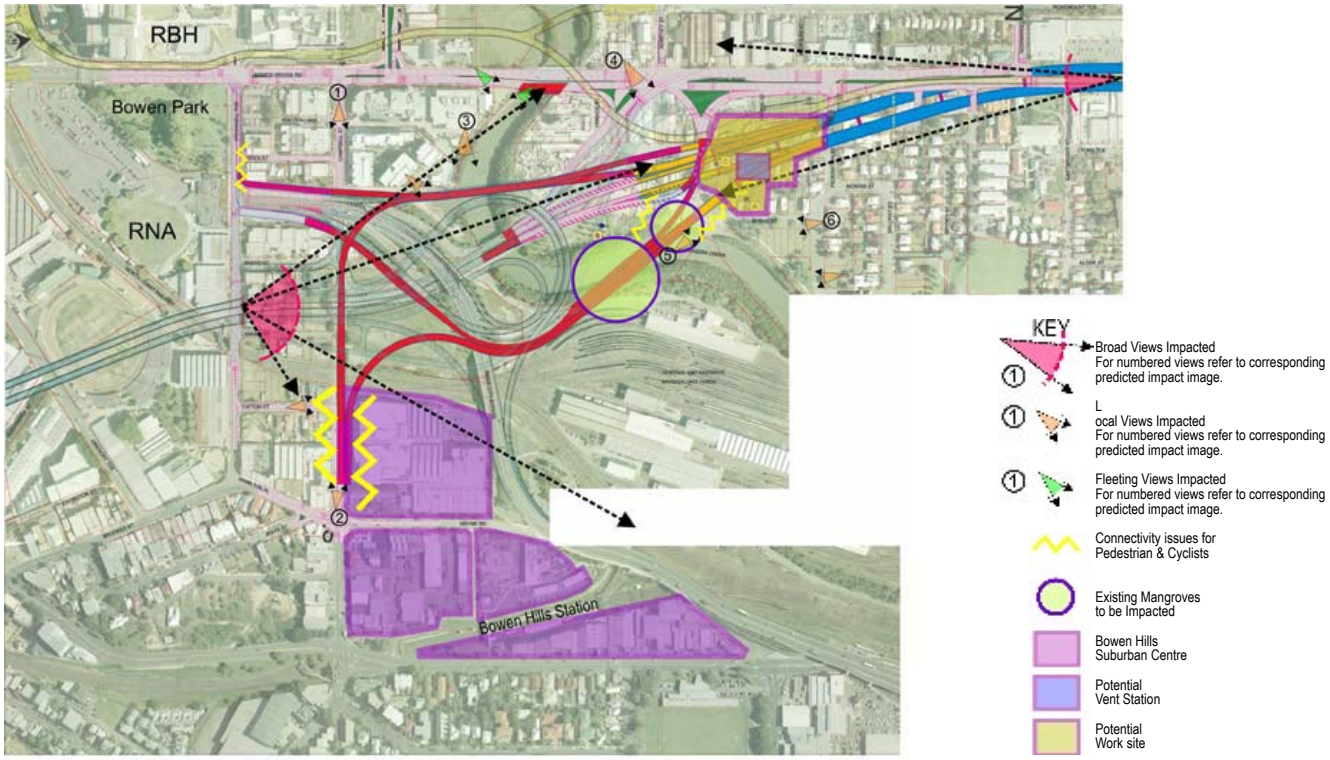


Figure 4.2
Bowen Hills Impact Assessment

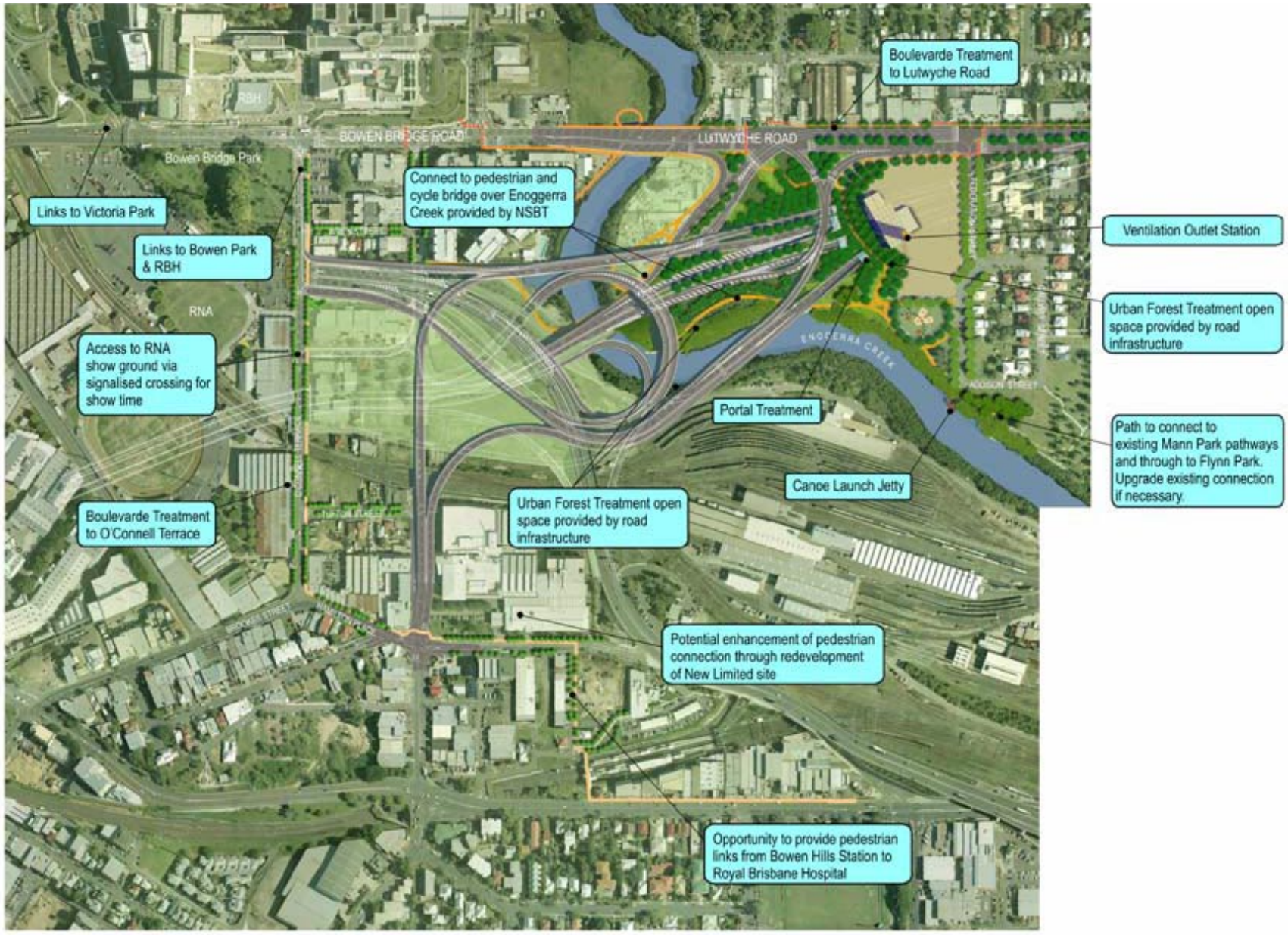
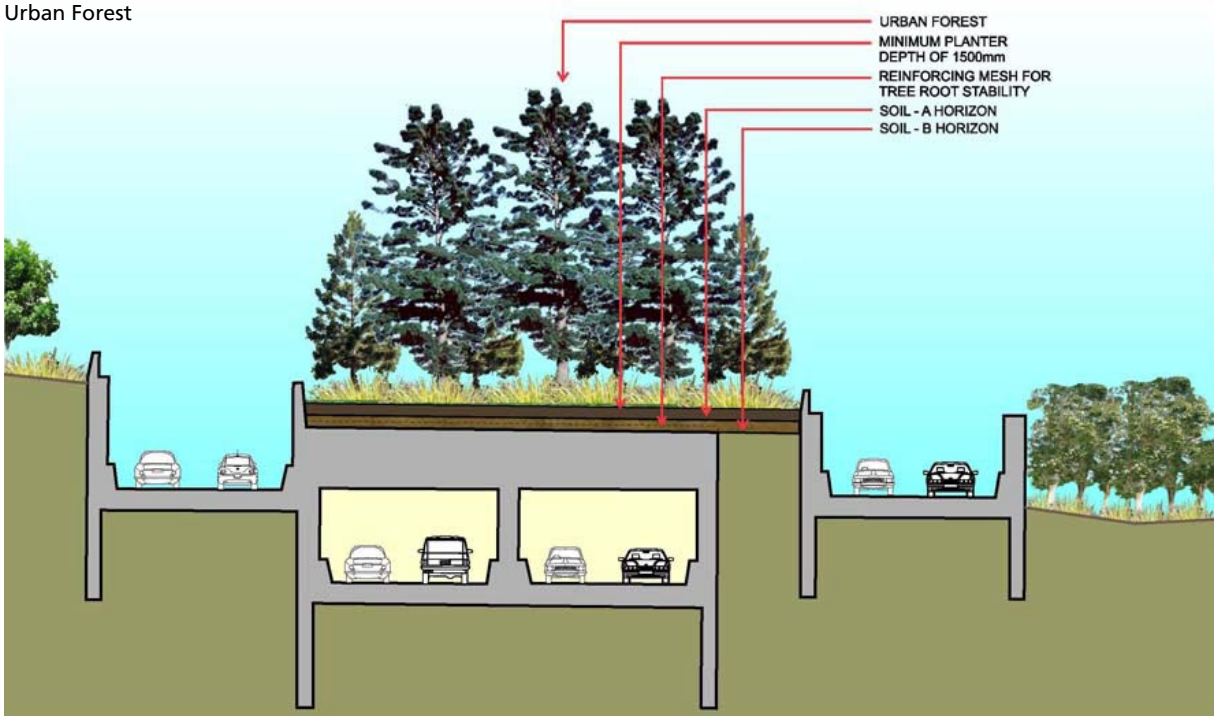


Figure 4.3
Bowen Hills Mitigation Method

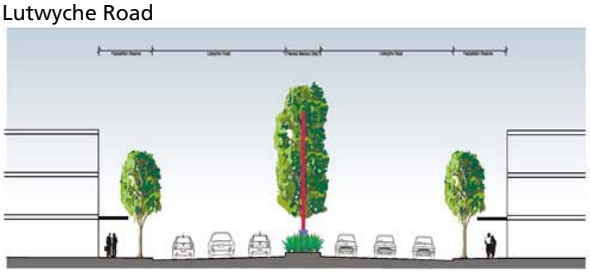
Figure 4.3a
Urban Forest



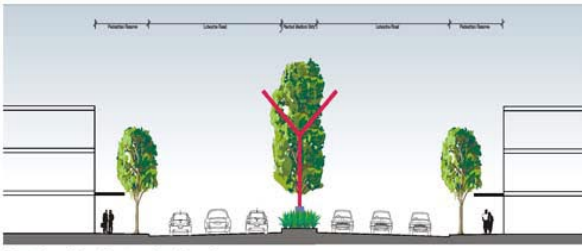
Airport Link Tunnel and Transition Structure - Section
Scale 1 : 200

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

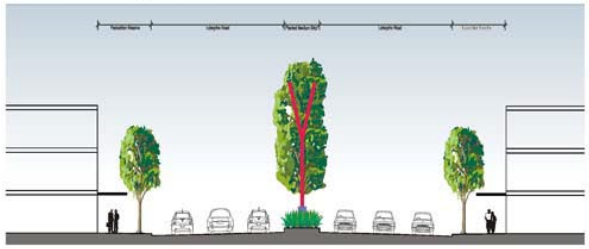
Figure 4.3b
Lutwyche Road



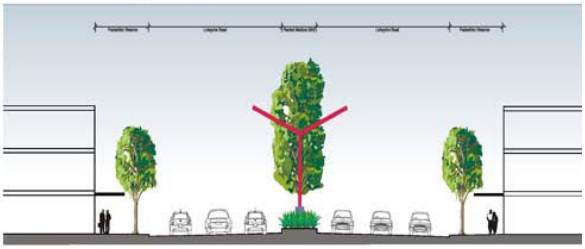
Section AA : Lutwyche Road



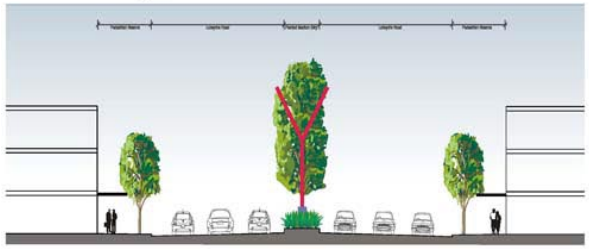
Section DD : Lutwyche Road



Section BB : Lutwyche Road



Section EE : Lutwyche Road



Section CC : Lutwyche Road

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

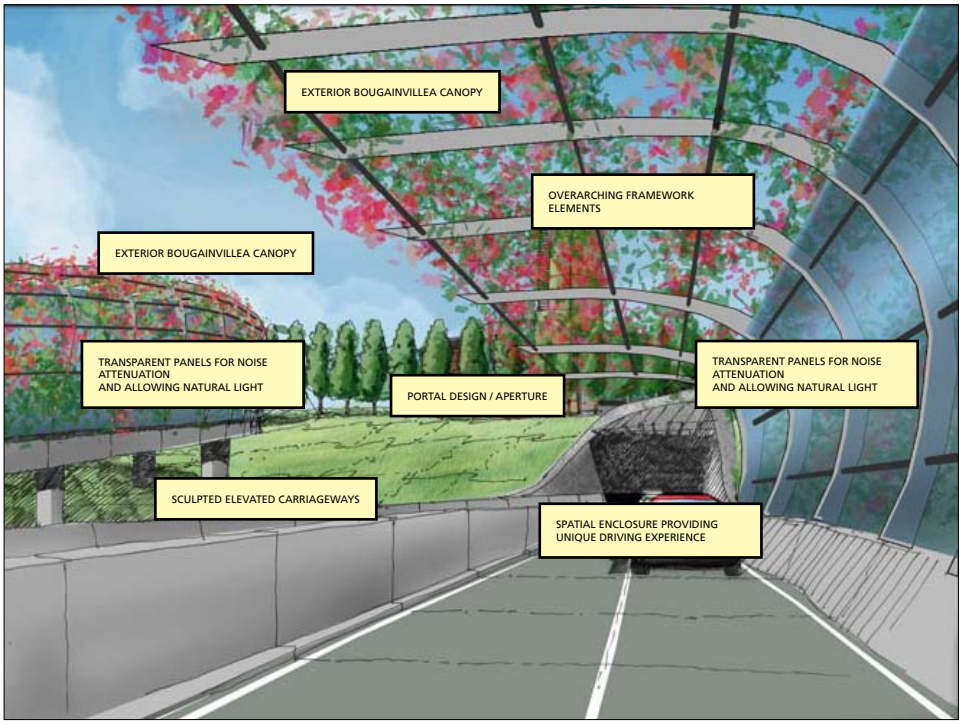


Figure 4.3c

Vantage Point 5
Proposed NSBT
Northbound portal
Looking North
towards
Byrne Street
MITIGATION IMAGE

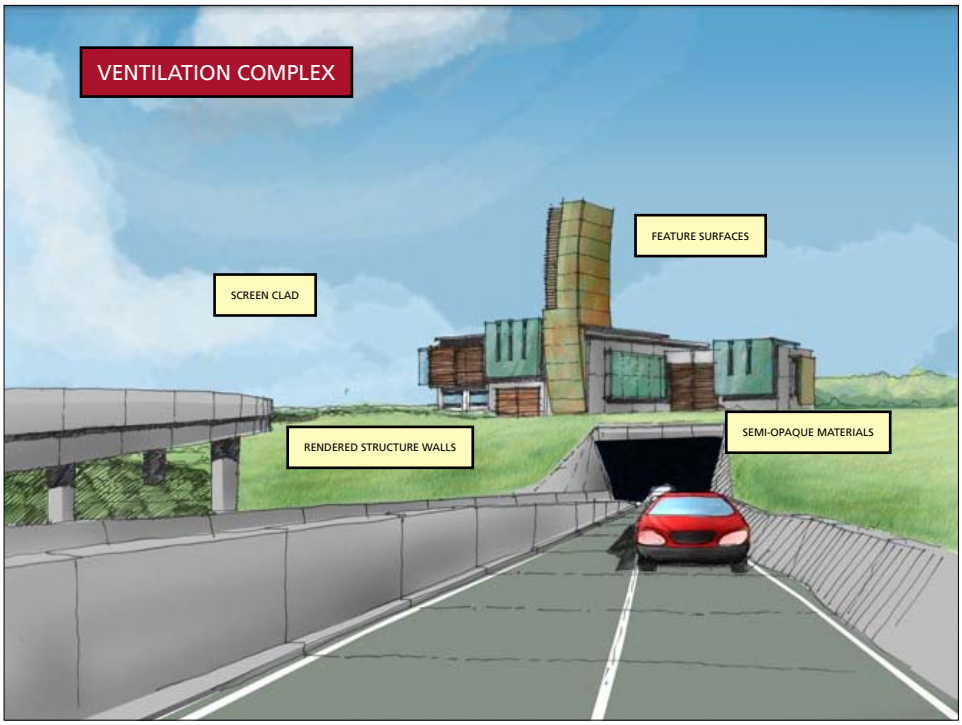


Figure 4.3d

Vantage Point 5
Proposed NSBT
Northbound portal
Looking North
towards
Byrne Street
IMPACT IMAGE

Vantage Point 1

Campbell Street adjacent to The Mews Looking East towards QLD Newspapers

EXISTING IMAGE

Vantage Point 1

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP1	100m	High	High	Substaintial Adverse	High Level
Campbell Street featuring medium density residential and commercial buildings.	Background streetscape broken down by proposed overpass and existing ICB overpass.	Vehicles in motion, pedestrians. Local residents and employment population.	Constant views from residential and commercial establishments.	Elevated carriageway with columns and scale demonstrate a significant view deterioration.	Landscape refurbishment at-grade to regain streetscape character.

Vantage Point 1

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Vantage Point 2

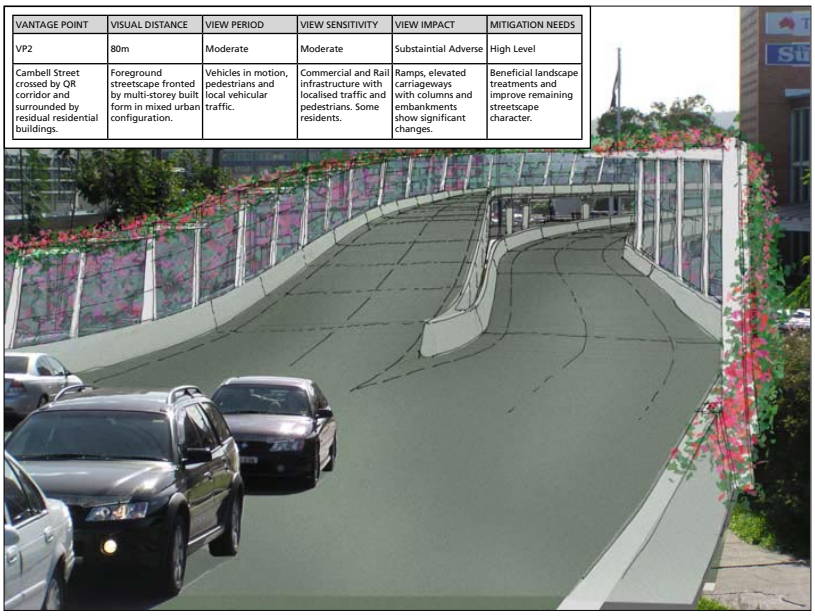
Campbell Street adjacent to QLD Newspapers Looking West towards The Mews

EXISTING IMAGE

Vantage Point 2

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP2	80m	Moderate	Moderate	Substaintial Adverse	High Level
Cambell Street crossed by QR corridor and surrounded by residual residential buildings.	Foreground streetscape fronted by multi-storey built form in mixed urban configuration.	Vehicles in motion, pedestrians and local vehicular traffic.	Commercial and Rail infrastructure with localised traffic and pedestrians. Some residents.	Ramps, elevated carriageways with columns and embankments show significant changes.	Beneficial landscape treatments and improve remaining streetscape character.



Vantage Point 2

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Vantage Point 3

Bowen Bridge Road

across

Enoggera Creek

Looking East

EXISTING

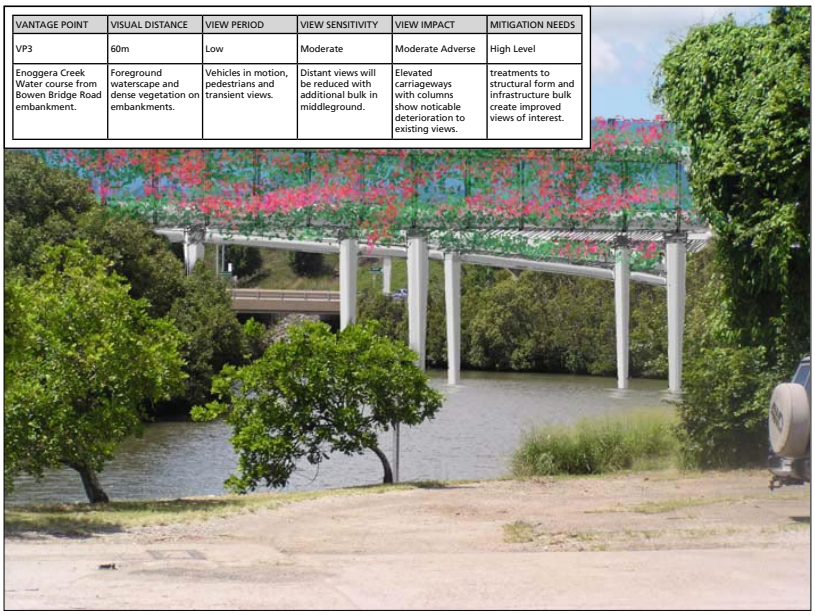
IMAGE

Vantage Point 3

IMPACT

IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP3	60m	Low	Moderate	Moderate Adverse	High Level
Enoggera Creek Water course from Bowen Bridge Road embankment.	Foreground waterscape and dense vegetation on embankments.	Vehicles in motion, pedestrians and transient views.	Distant views will be reduced with additional bulk in middleground.	Elevated carriageways with columns show noticable deterioration to existing views.	treatments to structural form and infrastructure bulk create improved views of interest.



Vantage Point 3

MITIGATION

IMAGE

Vantage Point 4

Lutwyche Road

intersection

with Horace Street

Looking East

EXISTING

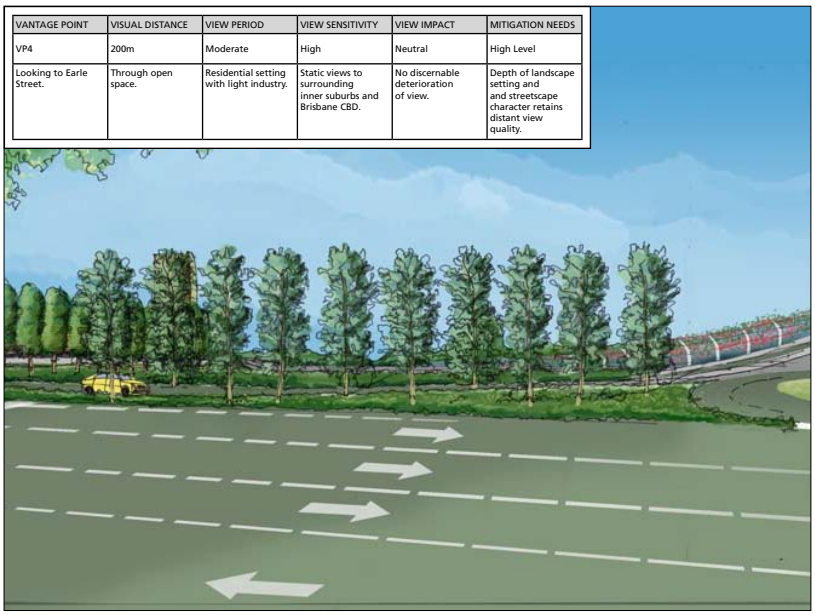
IMAGE

Vantage Point 4

IMPACT

IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP4	200m	Moderate	High	Neutral	High Level
Looking to Earle Street.	Through open space.	Residential setting with light industry.	Static views to surrounding inner suburbs and Brisbane CBD.	No discernable deterioration of view.	Depth of landscape setting and and streetscape character retains distant view quality.



Vantage Point 4

MITIGATION

IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Vantage Point 5

Proposed NSBT

Northbound portal

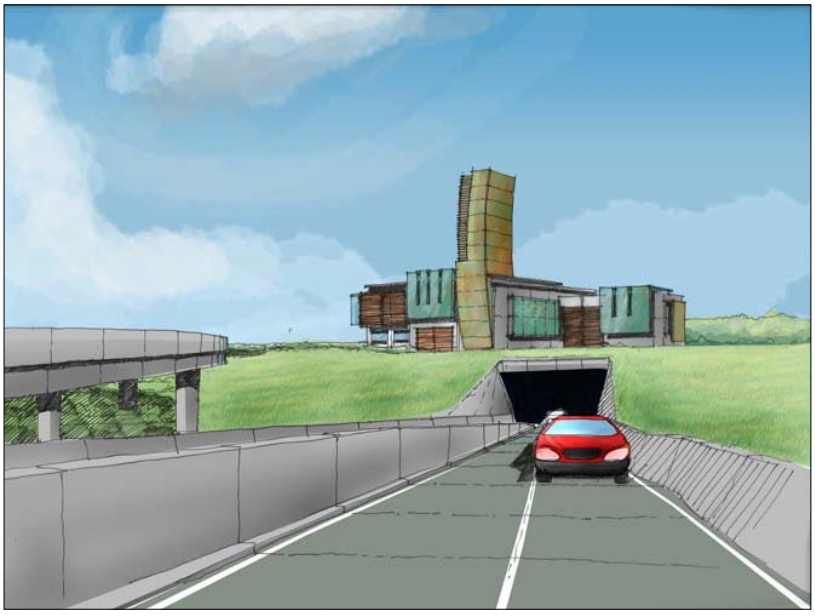
Looking North

towards

Byrne Street

No EXISTING

IMAGE available

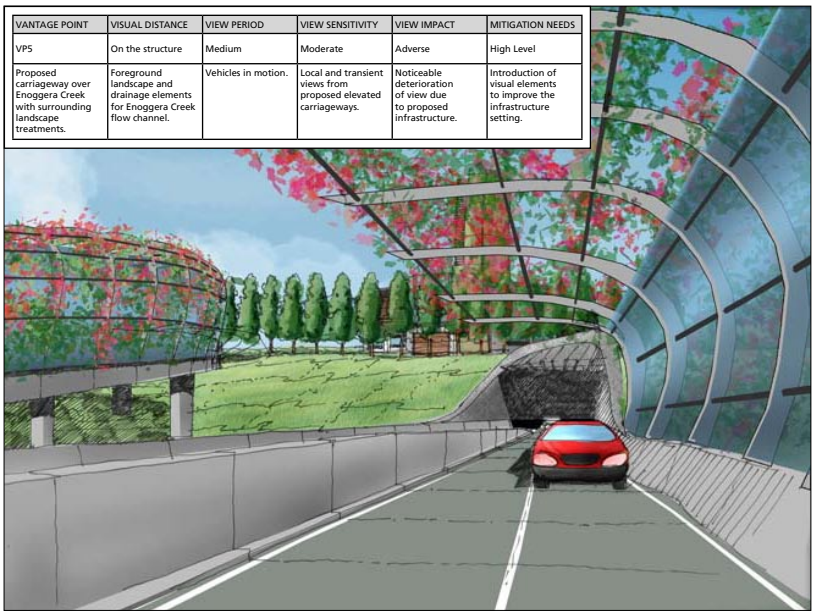


Vantage Point 5

IMPACT

IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP5	On the structure	Medium	Moderate	Adverse	High Level
Proposed carriageway over Enoggera Creek with surrounding landscape treatments.	Foreground landscape and drainage elements for Enoggera Creek flow channel.	Vehicles in motion.	Local and transient views from proposed elevated carriageways.	Noticeable deterioration of view due to proposed infrastructure.	Introduction of visual elements to improve the infrastructure setting.



Vantage Point 5

MITIGATION

IMAGE

Vantage Point 6

Federation Street

Looking South West

towards

Earle Street

EXISTING

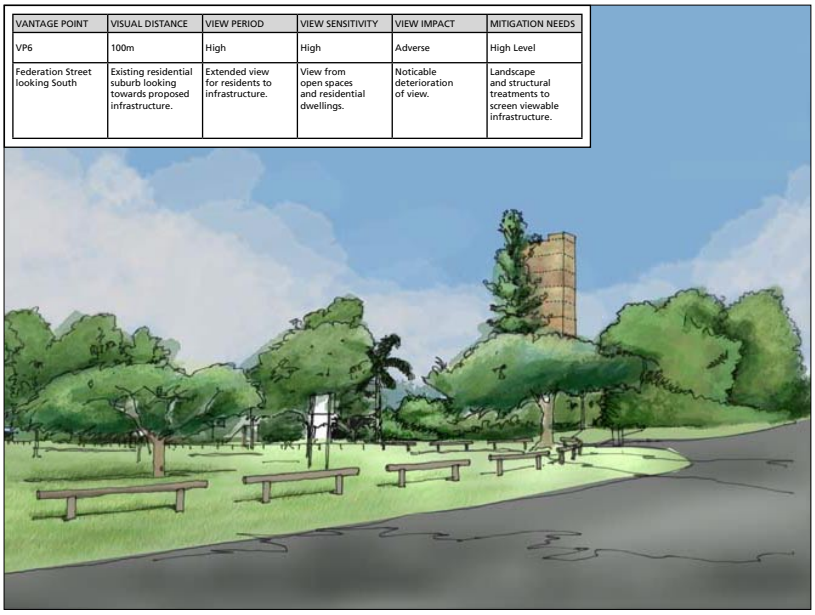
IMAGE

Vantage Point 6

IMPACT

IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP6	100m	High	High	Adverse	High Level
Federation Street looking South	Existing residential suburb looking towards proposed infrastructure.	Extended view for residents to infrastructure.	View from open spaces and residential dwellings.	Noticable deterioration of view.	Landscape and structural treatments to screen viewable infrastructure.



Vantage Point 6

MITIGATION

IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Figure 5.1
Memorial Park Existing Environment

MEMEORIAL PARK KEY LOCATION
URBAN LANDSCAPE AND VISUAL
EXISTING ENVIRONMENT

Figure 6.1
Gympie Road Existing Environment

KEY

Broad Views
For numbered views refer to corresponding existing environment images

Local Views
For numbered views refer to corresponding existing environment images

Fleeting Views
For numbered views refer to corresponding existing environment images

Existing Landscape Elements

Existing
Pedestrian & Cycle paths

Stafford Road Suburban Centre

Gympie Road Convenience Centre

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consutation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

Figure 6.2
Gympie Road Impact Assessment

KEY

Broad Views
For numbered view refer to corresponding predicted impact image

Local Views Impacted
For numbered view refer to corresponding predicted impact image

Fleeting Views Impacted
For numbered view refer to corresponding predicted impact image

Landscape Elements
Impacted

Landscape Elements
1 impacted

Property Acquisitions

Gympie Road
Convenience Centre

Work site

Proposed Vent Station

Closed to vehicles

Connectivity Issues for pedestrian & cyclists

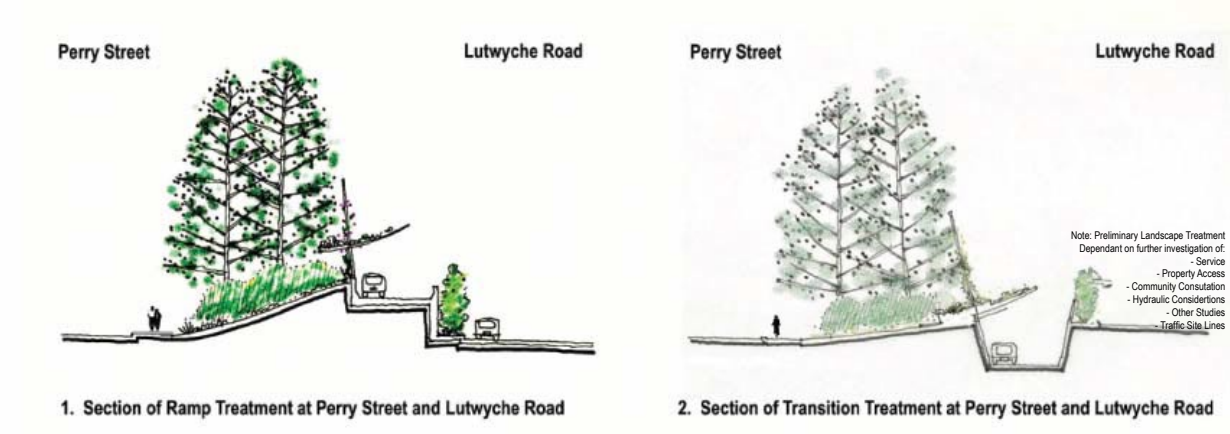
Stafford Road
Suburban Centre

Stafford Road
Suburban Centre
Property Acquisitions

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consutation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

Figure 6.3
Bowen Hills Mitigation Measures

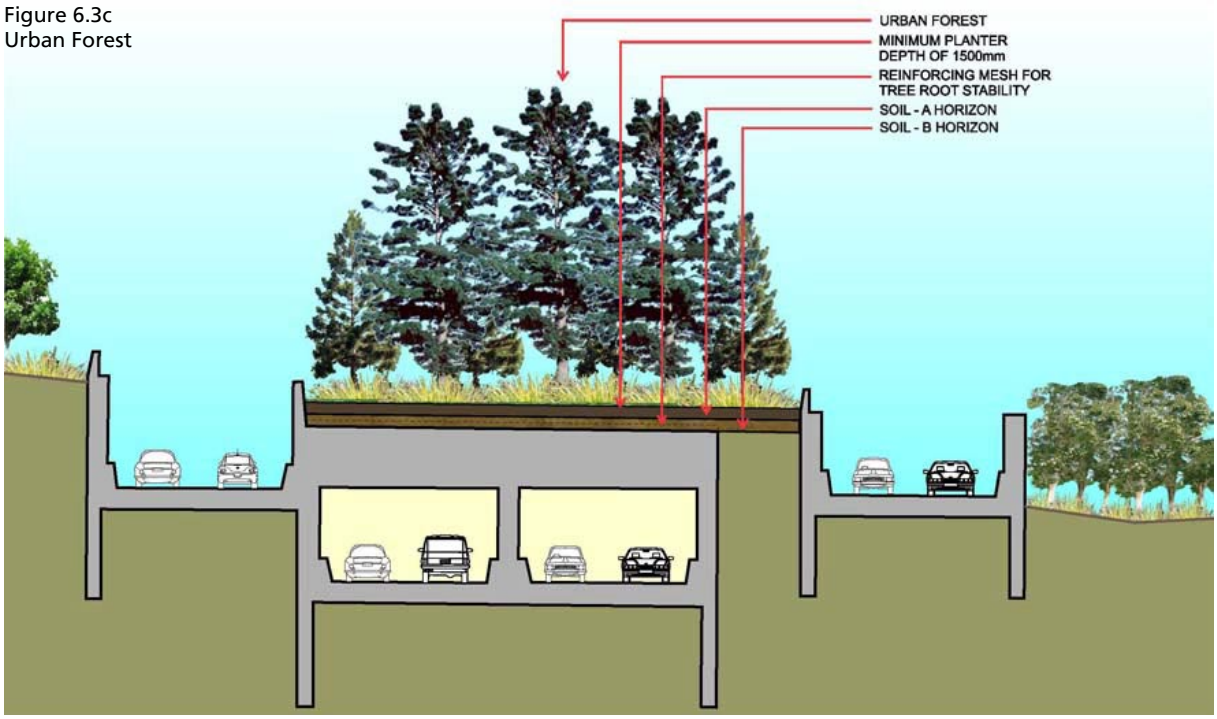
Figure 6.3a and 6.3b
Sections through Perry and Lutwyche Road



1. Section of Ramp Treatment at Perry Street and Lutwyche Road

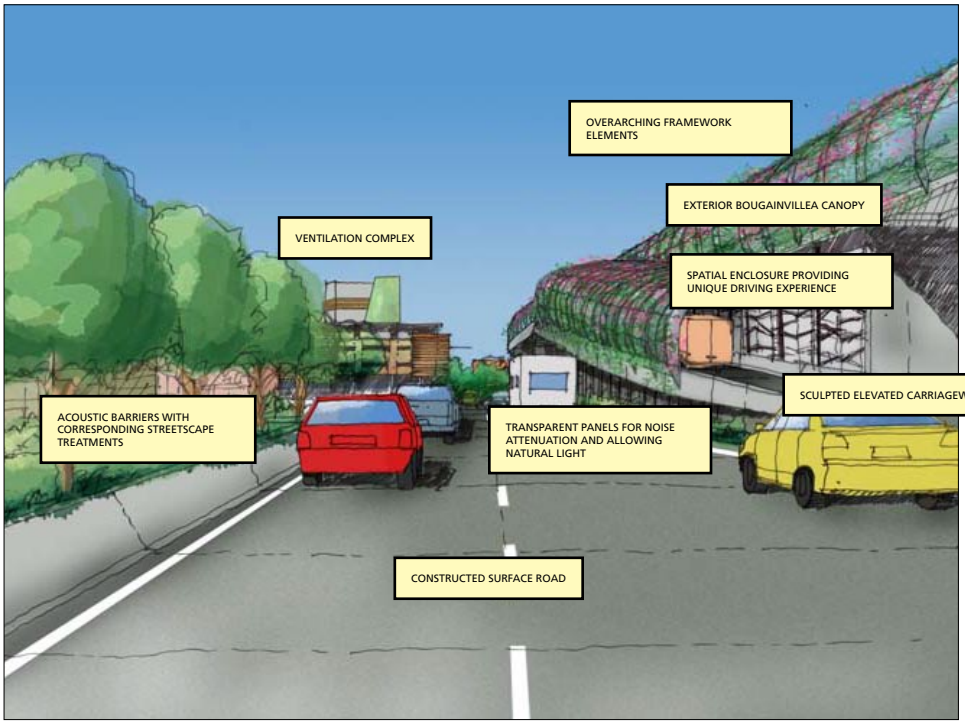
2. Section of Transition Treatment at Perry Street and Lutwyche Road

Figure 6.3c
Urban Forest



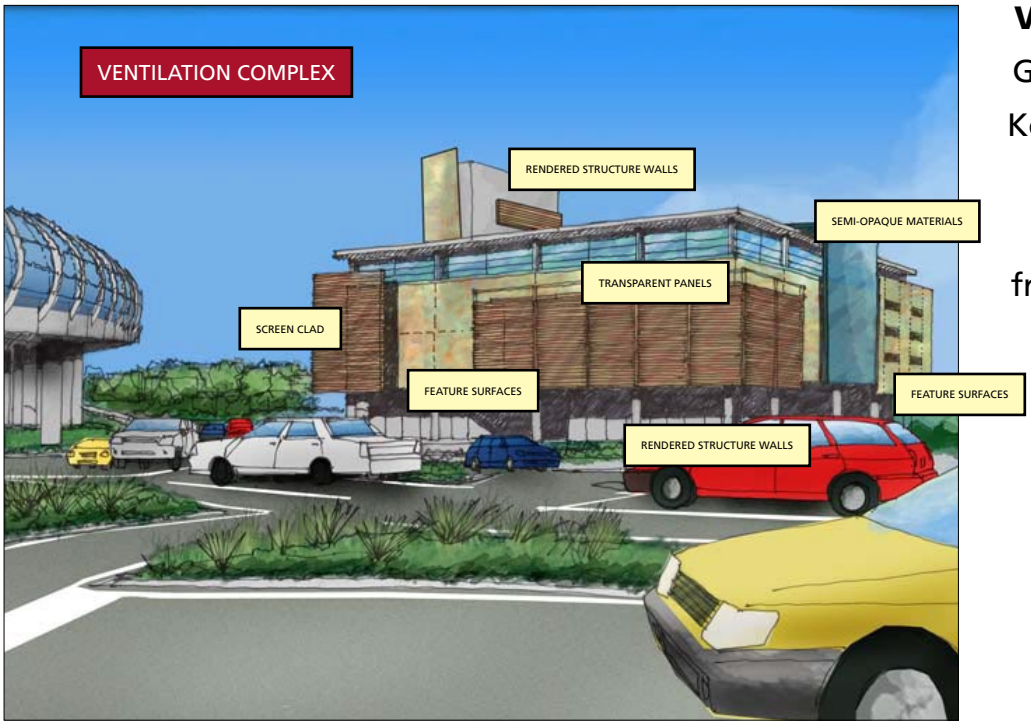
Airport Link Tunnel and Transition Structure - Section
Scale 1 : 200

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines



Vantage Point 3
Proposed NSBT Northbound portal
Looking North towards Byrne Street
MITIGATION IMAGE

Figure 6.3d



Vantage Point 5
Gympie Road and Kedron Park Road intersection
Looking North from Kedron Park Hotel
IMPACT IMAGE

Figure 6.3e

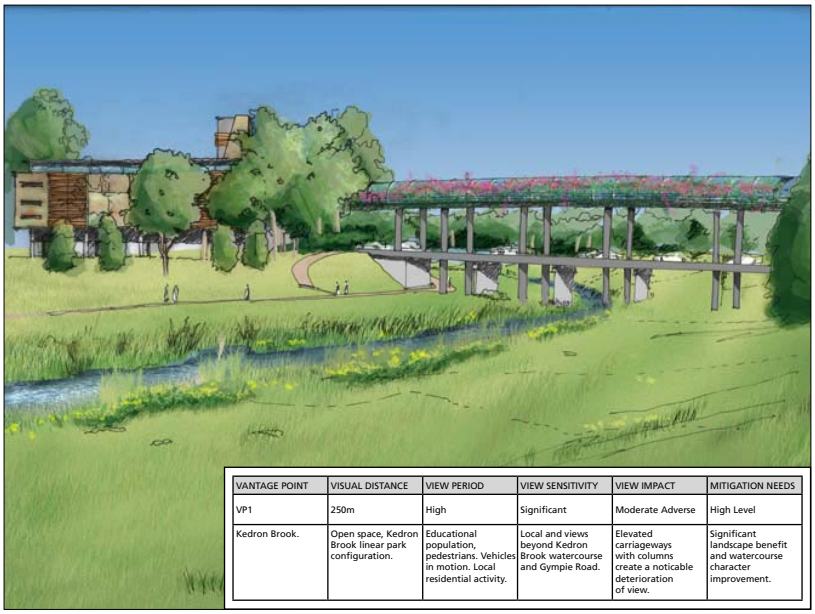
Vantage Point 1

Gympie Road and QLD Emergency Services Complex Looking South West along Kedron Brook

EXISTING IMAGE

Vantage Point 1

IMPACT IMAGE



Vantage Point 1

MITIGATION IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP1	250m	High	Significant	Moderate Adverse	High Level
Kedron Brook.	Open space, Kedron Brook linear park configuration.	Educational population, pedestrians. Vehicles in motion. Local residential activity.	Local and views beyond Kedron Brook watercourse and Gympie Road.	Elevated carriageways with columns create a noticable deterioration of view.	Significant landscape benefit and watercourse character improvement.

Vantage Point 2

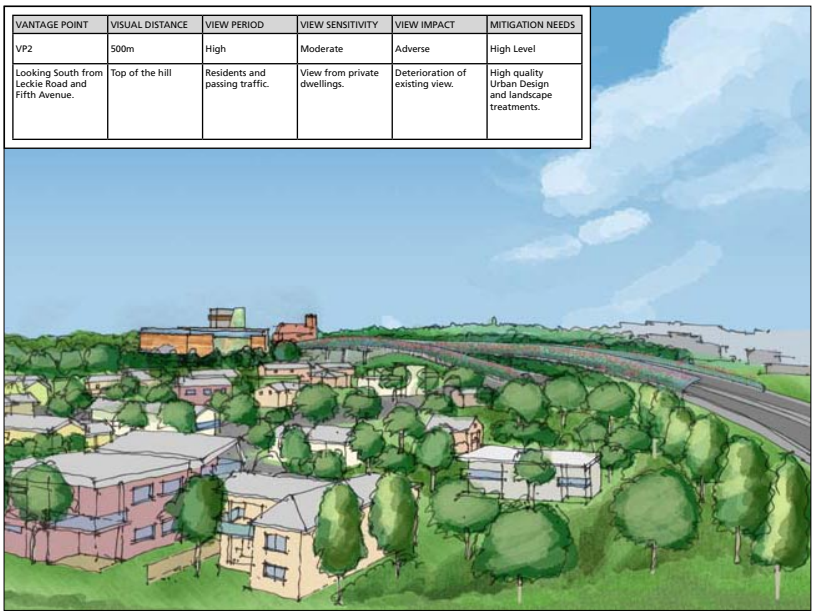
Leckie Road aligned with Fifth Avenue from above Looking South East along Gympie Road

No EXISTING IMAGE available

Vantage Point 2

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP2	500m	High	Moderate	Adverse	High Level
Looking South from Leckie Road and Fifth Avenue.	Top of the hill	Residents and passing traffic.	View from private dwellings.	Deterioration of existing view.	High quality Urban Design and landscape treatments.



Vantage Point 2

MITIGATION IMAGE

Vantage Point 3

Gympie Road

adjacent to

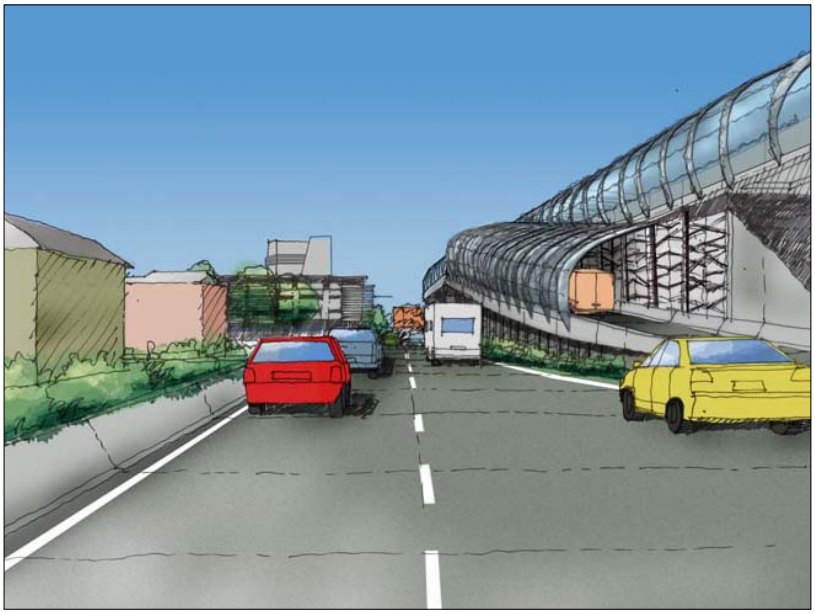
Lasssetter Street

Looking East

along Gympie Road

No EXISTING

IMAGE available

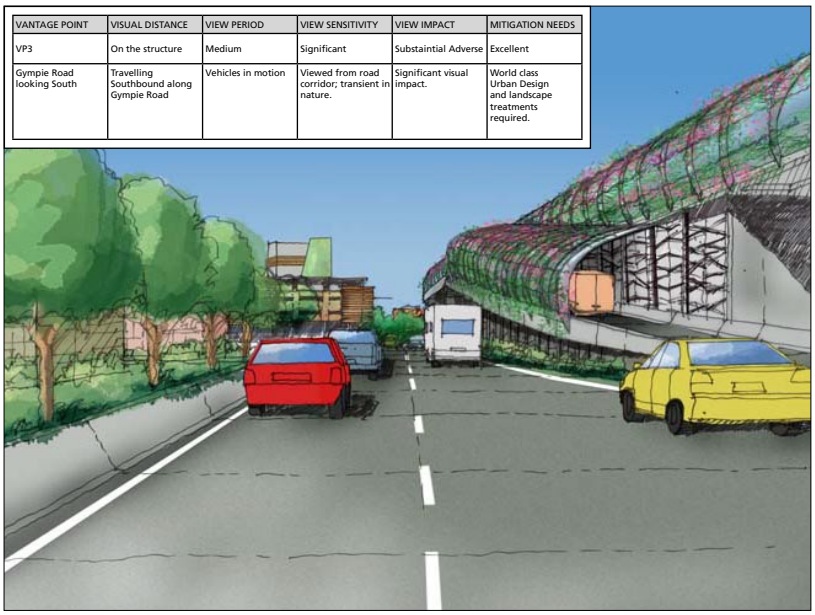


Vantage Point 3

IMPACT

IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP3	On the structure	Medium	Significant	Substaintial Adverse	Excellent
Gympie Road looking South	Travelling Southbound along Gympie Road	Vehicles in motion	Viewed from road corridor; transient in nature.	Significant visual impact.	World class Urban Design and landscape treatments required.



Vantage Point 3

MITIGATION

IMAGE

Vantage Point 4

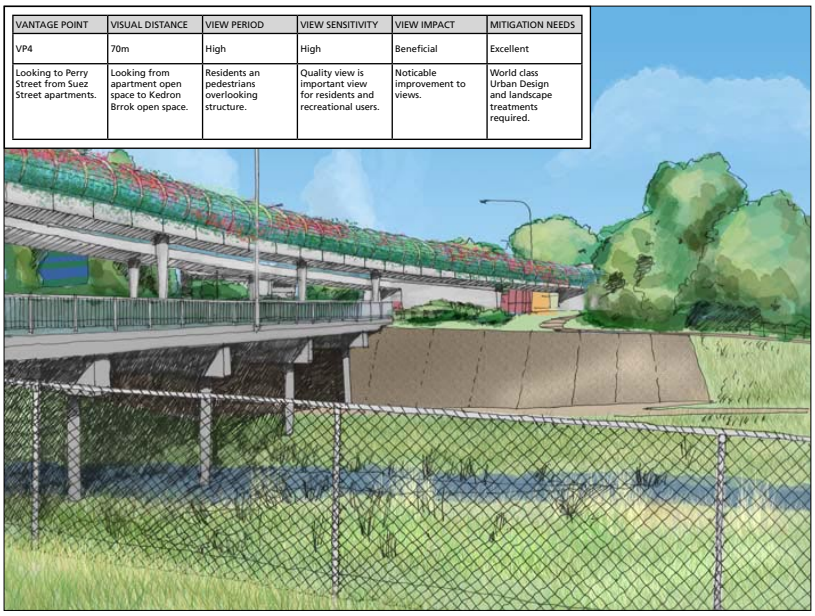
Gympie Road over Kedron Brook Looking East towards Lutwyche Road

EXISTING IMAGE

Vantage Point 4

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP4	70m	High	High	Beneficial	Excellent
Looking to Perry Street from Suez Street apartments.	Looking from apartment open space to Kedron Brrok open space.	Residents an pedestrians overlooking structure.	Quality view is important view for residents and recreational users.	Noticable improvement to views.	World class Urban Design and landscape treatments required.



Vantage Point 4

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Vantage Point 5

Gympie Road and Kedron Park Road intersection

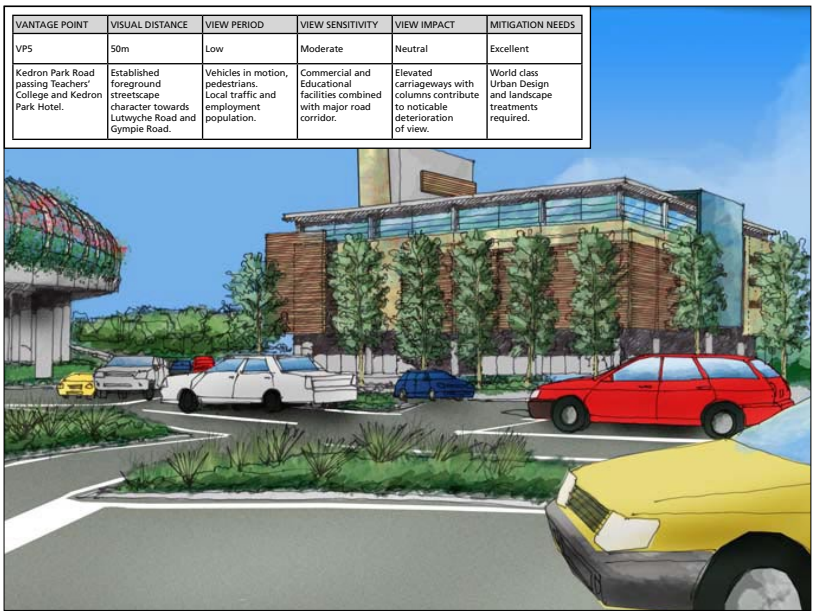
Looking North from Kedron Park Hotel

EXISTING IMAGE

Vantage Point 5

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP5	50m	Low	Moderate	Neutral	Excellent
Kedron Park Road passing Teachers' College and Kedron Park Hotel.	Established foreground streetscape character towards Lutwyche Road and Gympie Road.	Vehicles in motion, pedestrians. Local traffic and employment population.	Commercial and Educational facilities combined with major road corridor.	Elevated carriageways with columns contribute to noticable deterioration of view.	World class Urban Design and landscape treatments required.



Vantage Point 5

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Vantage Point 6

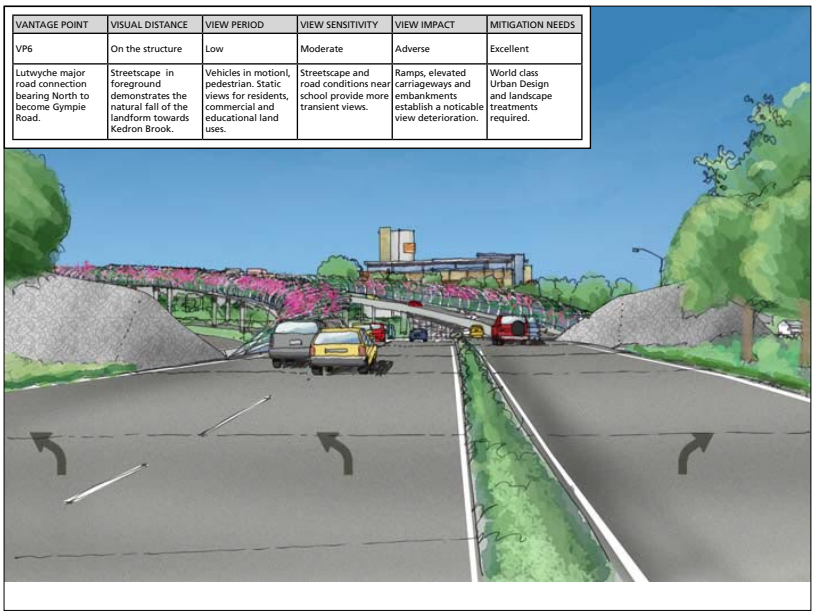
Lutwyche Road adjacent to Wooloowin Primary School Looking North towards QLD Emergency Services Complex

EXISTING IMAGE

Vantage Point 6

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP6	On the structure	Low	Moderate	Adverse	Excellent
Lutwyche major road connection bearing North to become Gympie Road.	Streetscape in foreground demonstrates the natural fall of the landform towards Kedron Brook.	Vehicles in motionl, pedestrian. Static views for residents, commercial and educational land uses.	Streetscape and road conditions near school provide more transient views.	Ramps, elevated carriageways and embankments establish a noticable view deterioration.	World class Urban Design and landscape treatments required.



Vantage Point 6

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Figure 7.1
Wooloowin Existing Environment

KEY
Landscape Elements
Existing Pedestrian & Cycle Pathways

WOOLOOWIN KEY LOCATION
URBAN LANDSCAPE AND VISUAL
EXISTING ENVIRONMENT

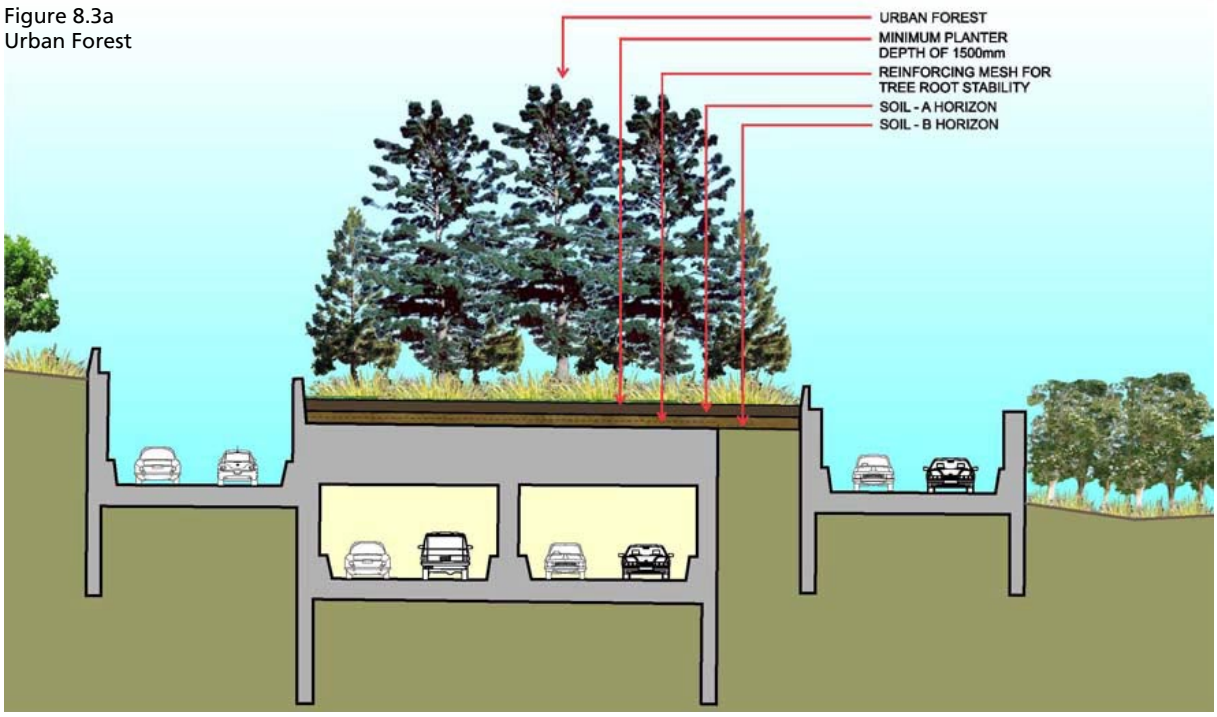
Airport Link
SKM Connell Wagner JOINT VENTURE
verge URBAN LANDSCAPE ARCHITECTURE
PLACE PLANNING & DESIGN
Vital Places

Figure 8.1
Sandgate Road Existing Environment

Figure 8.2
Sandgate Road Impact Assessment

Figure 8.3
Sandgate Road Mitigation Measures

Figure 8.3a
Urban Forest



Airport Link Tunnel and Transition Structure - Section
Scale 1 : 200

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

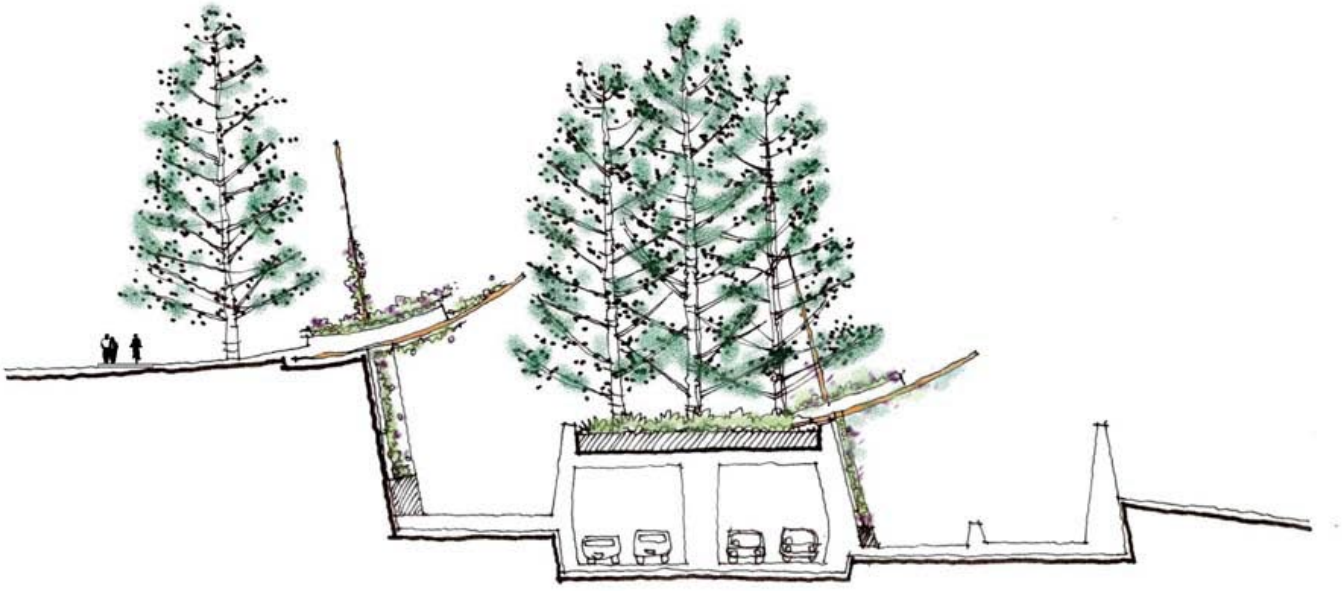


Figure 8.3b
Section across transition structure at Stuckey Road

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

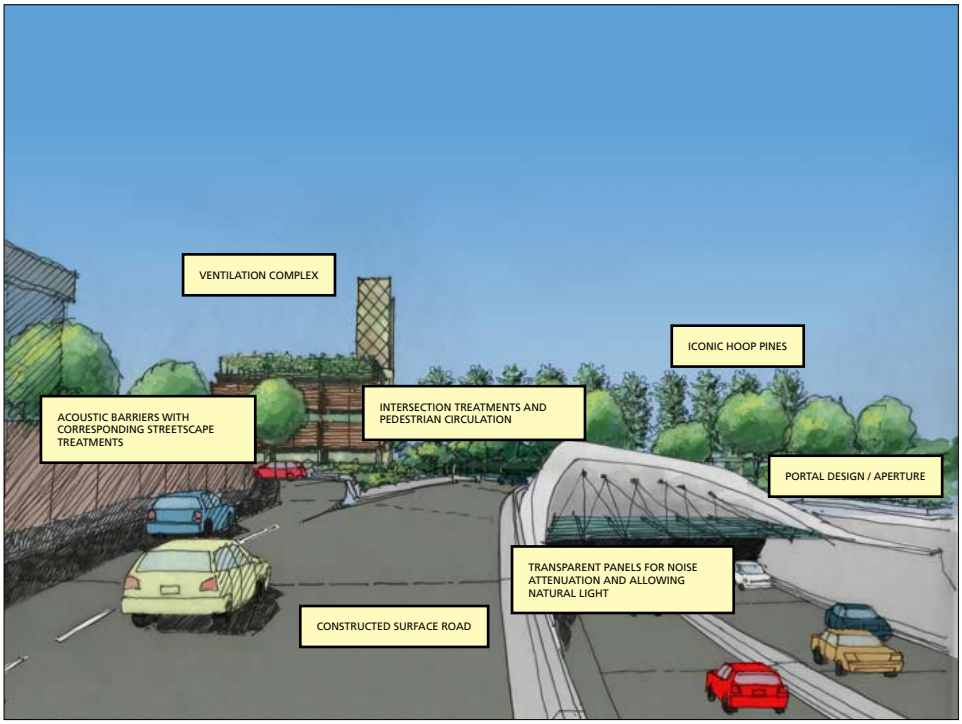


Figure 8.3c

Vantage Point 5
Proposed NSBT
Northbound portal
Looking North
towards
Byrne Street
MITIGATION
IMAGE

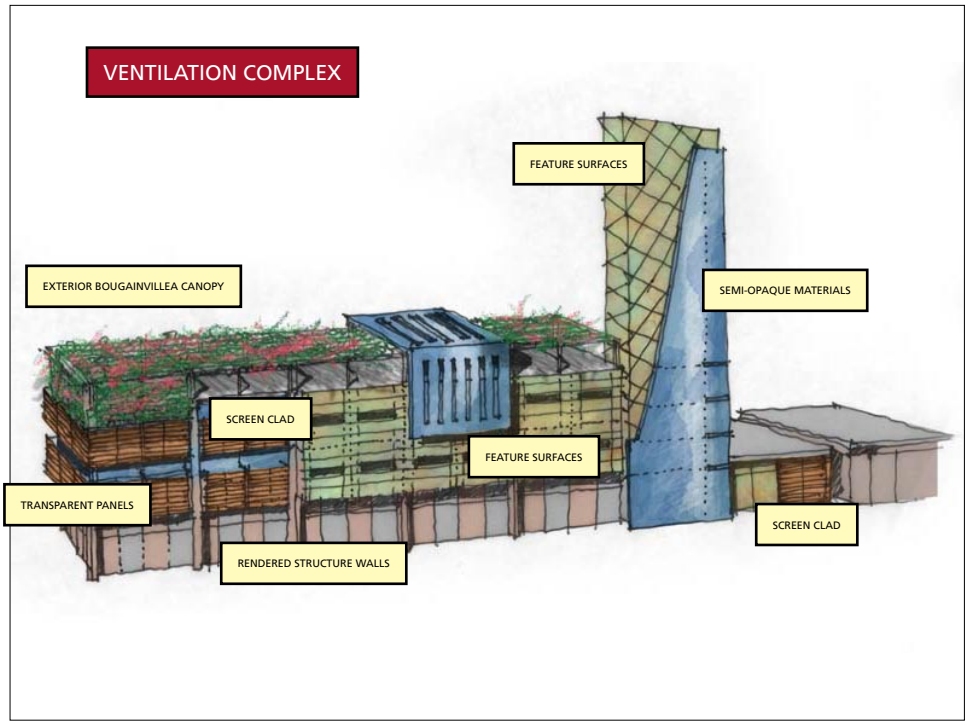


Figure 8.3d

Sandgate Road
Ventilation Complex
Looking south
at Northern face
MITIGATION
FOR ENGINEERING
PROPOSALS

Vantage Point 1

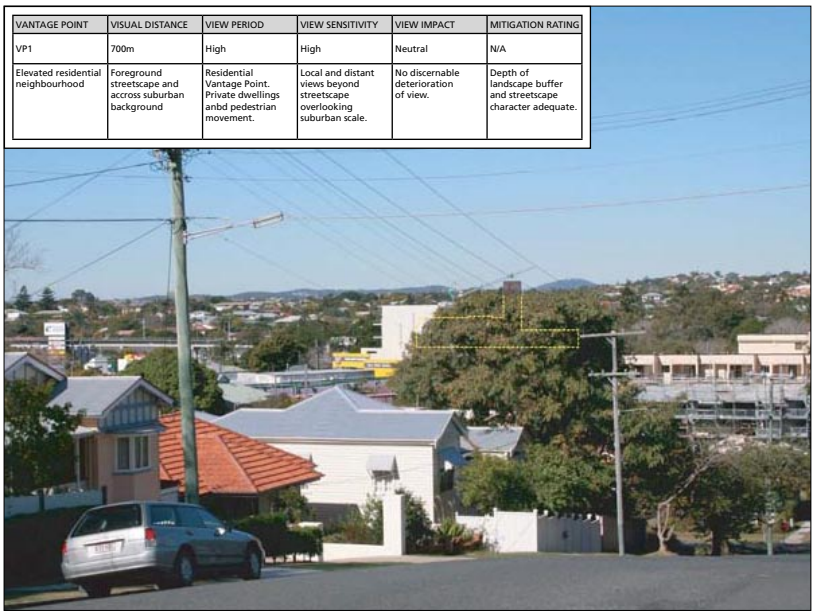
Bage Street and corner of Oxenham Street Looking South

EXISTING IMAGE

Vantage Point 1

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION RATING
VP1	700m	High	High	Neutral	N/A
Elevated residential neighbourhood	Foreground streetscape and accross suburban background	Residential Vantage Point. Private dwellings anbd pedestrian movement.	Local and distant views beyond streetscape overlooking suburban scale.	No discernable deterioration of view.	Depth of landscape buffer and streetscape character adequate.



Vantage Point 1

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

Vantage Point 2

Kalinga Park

adjacent to

Lewis Street

Looking East

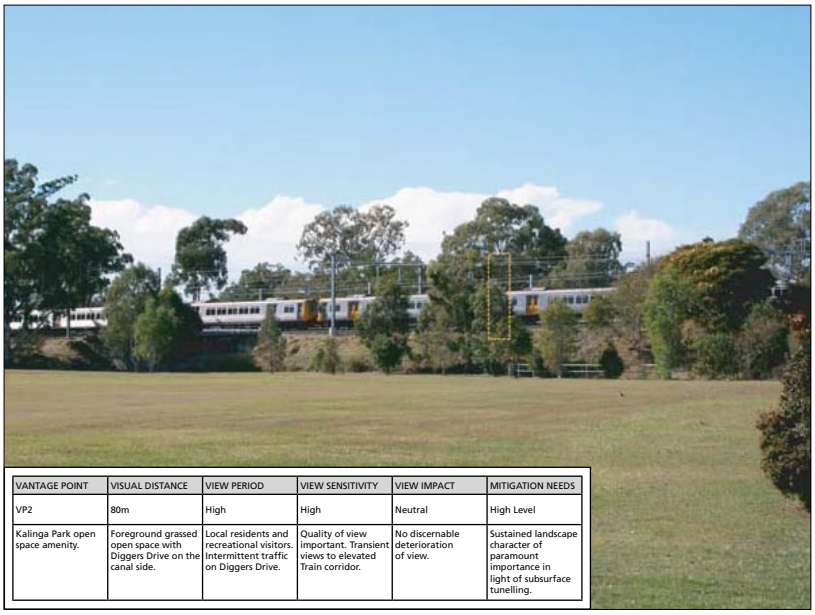
EXISTING

IMAGE

Vantage Point 2

IMPACT

IMAGE



VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP2	80m	High	High	Neutral	High Level
Kalinga Park open space amenity.	Foreground grassed open space with Diggers Drive on the canal side.	Local residents and recreational visitors. Intermittent traffic on Diggers Drive.	Quality of view important. Transient views to elevated Train corridor.	No discernable deterioration of view.	Sustained landscape character of paramount importance in light of subsurface tunelling.

Vantage Point 2

MITIGATION

IMAGE

Airport Link

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PLACE PLANNING & DESIGN

Vital Places

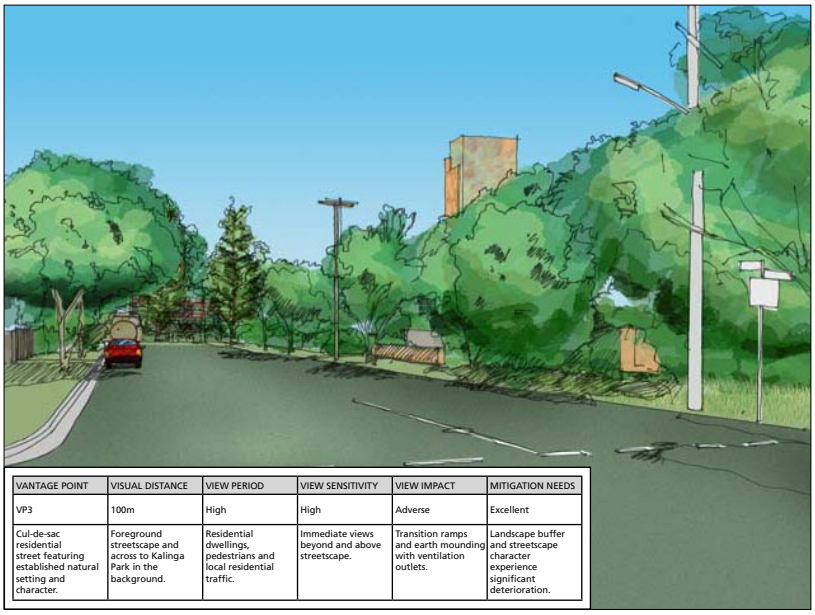
Vantage Point 3

Alma Road and corner of Kedron Street Looking North

EXISTING IMAGE

Vantage Point 3

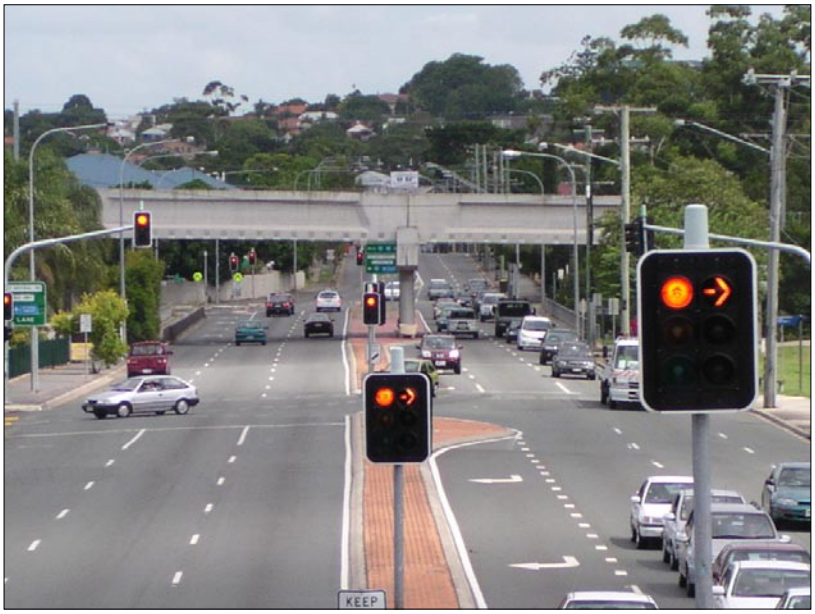
IMPACT IMAGE



VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP3	100m	High	High	Adverse	Excellent
Cul-de-sac residential street featuring established natural setting and character.	Foreground streetscape and across to Kalinga Park in the background.	Residential dwellings, pedestrians and local residential traffic.	Immediate views beyond and above streetscape.	Transition ramps and earth mounding with ventilation outlets.	Landscape buffer and streetscape character experience significant deterioration.

Vantage Point 3

MITIGATION IMAGE



Vantage Point 4

Sandgate Road

with Centro

Toombul to the left

Looking South

EXISTING

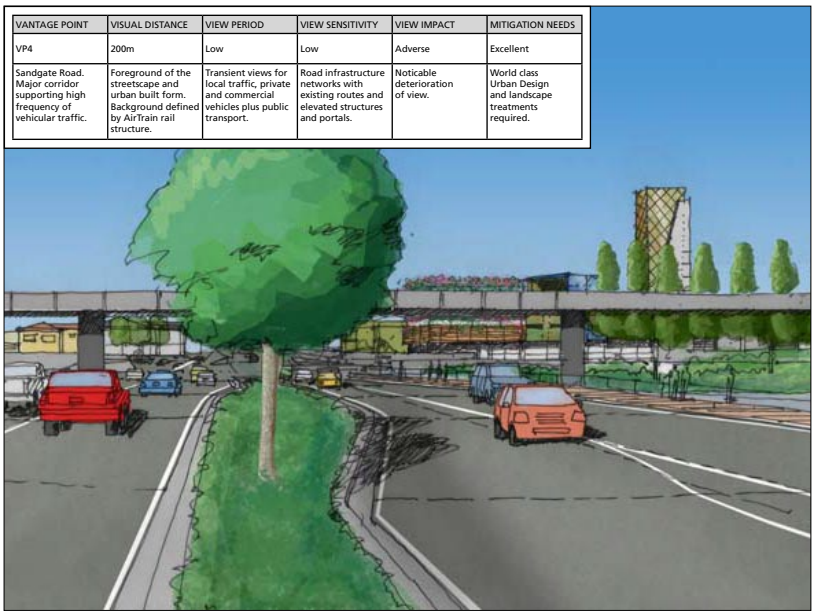
IMAGE

Vantage Point 4

IMPACT

IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP4	200m	Low	Low	Adverse	Excellent
Sandgate Road. Major corridor supporting high frequency of vehicular traffic.	Foreground of the streetscape and urban built form. Background defined by AirTrain rail structure.	Transient views for local traffic, private and commercial vehicles plus public transport.	Road infrastructure networks with existing routes and elevated structures and portals.	Noticable deterioration of view.	World class Urban Design and landscape treatments required.



Vantage Point 4

MITIGATION

IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

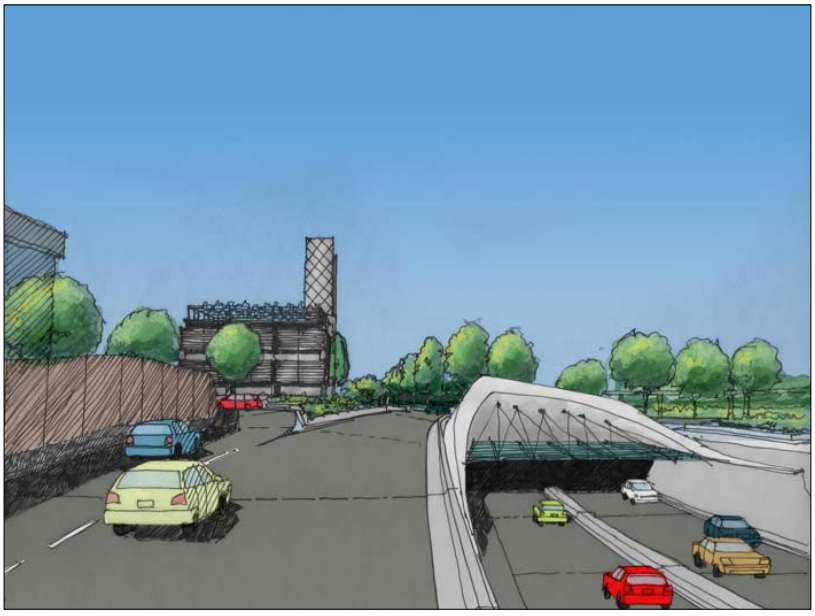
PLACE PLANNING & DESIGN

Vital Places

Vantage Point 5

East-West Arterial intersection with Sandgate Road Looking West

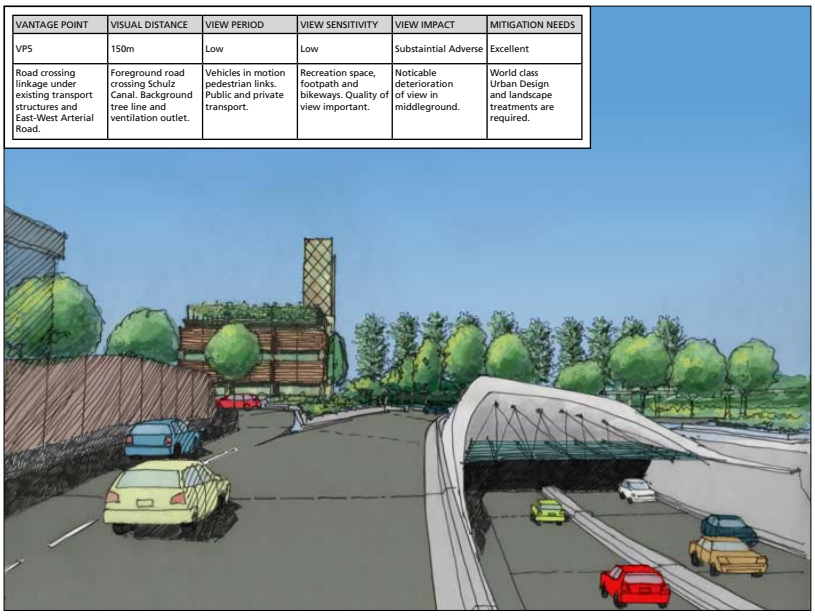
EXISTING IMAGE



Vantage Point 5

IMPACT IMAGE

VANTAGE POINT	VISUAL DISTANCE	VIEW PERIOD	VIEW SENSITIVITY	VIEW IMPACT	MITIGATION NEEDS
VP5	150m	Low	Low	Substaintial Adverse	Excellent
Road crossing linkage under existing transport structures and East-West Arterial Road.	Foreground road crossing Schulz Canal. Background tree line and ventilation outlet.	Vehicles in motion pedestrian links. Public and private transport.	Recreation space, footpath and bikeways. Quality of view important.	Noticable deterioration of view in middleground.	World class Urban Design and landscape treatments are required.



Vantage Point 5

MITIGATION IMAGE

Airport Link

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

Vital Places

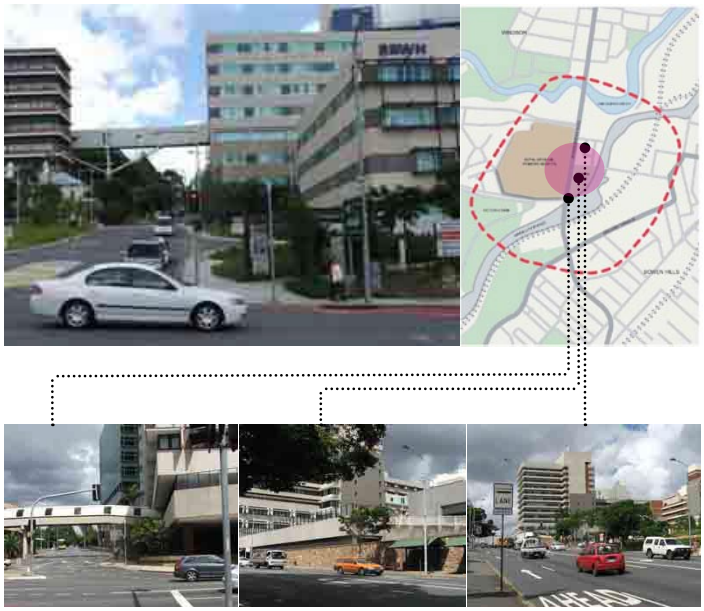
Key Location A: Bowen Hills

At present this area possesses an eroded street form due to a mixed range of setbacks; built form and landscape form. The existing ICB structure travels within this area containing residential, institutional and commercial character, splashed with open, unclaimed space. This configuration makes pedestrian access difficult. Therefore pedestrian amenity for orientation and way finding is poor.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Existing open spaces bordering Enoggera Creek connect the existing residential fabric to the water edge. These spaces provide opportunities for active and passive recreation activities and a valuable pedestrian and cycle access to the creek and its natural features.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form	N/A				
Street Form	N/A				
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					



The Royal Brisbane Hospital and associated activities create a district of significant built form with a number of high rise buildings. These are serviced by Bowen Bridge Road as a wide and busy street form which challenges the amenity of pedestrian and cycle access. This place conveys a sense of destination and landmarking as a major city gateway.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Bowen Park is surrounded by the busy and vibrant precincts of the RNA showgrounds and the RBH. Access to this space constitutes a high quality open landscape form, providing visitors with shading, seclusion and a place for reflection and recreation. Pedestrian access and amenity could be enhanced with better defined connections.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

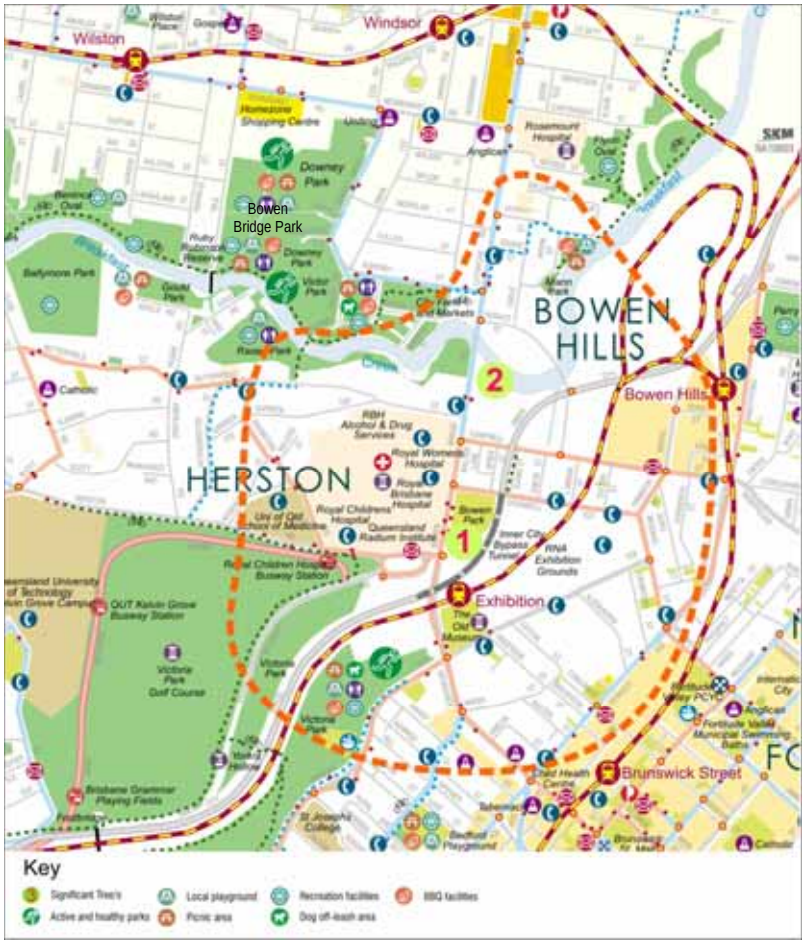
Landscape Elements

A Bowen Hills (Southern Connection)

The following landscape elements were either, mapped, noted or photographed in this key location. For a snap shot of the type of Landscape Elements found in and surrounding Victoria Park refer Landscape Elements Sheets 1, 2 and 3 of 10 at the end of this section.

1 Significant Trees

2 Parks, Open Space and Access to water



1 Significant Trees

- A highly significant group of trees located at Bowen Park. There are 'significant trees and landscape' noted by Council as heritage listed and as a "Park of significance". The park contains a compact mix of cultural plantings of some of Brisbane's most recognised trees, 'commonly seen in Brisbane streets and parks, (Wild Plants of Greater Brisbane P 325 - 333) such as Delonix, Hoop and Bunya Pines. Refer 1 on above map for location. Refer Figures LE1 and LE2.

Fig. LE 1 Bowen Park

Fig. LE 2 Bowen Park

- Mangroves framing Enogerra Creek are generally of good quality from a visual perspective; they frame Enogerra Creek and create a fleeting 'gateway' for motorists travelling over Bowen Bridge on Bowen Bridge Road. Access to these mangroves is highest at Bowen Bridge Park providing an attractive edge to an otherwise bare park. (Refer 2 on above map for location) Refer Figure LE3.

Fig. LE3 Mangroves fringing Enoggera Creek

2 Parks, Open Space and Access to water

- The northern tip of Victoria Park – the terminus point for pathways from and to Victoria Park, open grassed areas with grouping of trees. Flanked by ICB, Bowen Bridge Road and Herston Road, the environment is conducive to active recreation, and the movement of pedestrians and cyclists. Whilst unlikely to be affected directly this Park is part of an important green link to the CBD through the Roma Street Parklands. (For a snap shot of the type of Landscape Elements found in and surrounding Victoria Park refer Sheet 1 of 10.) Refer Figure LE4.

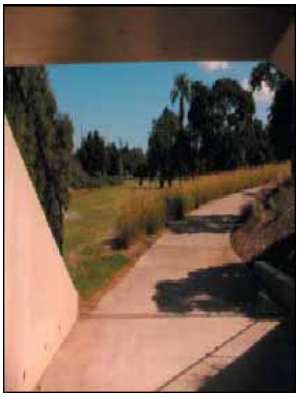


Fig. LE4 –Victoria Park

Fig. LE5 – Bowen Bridge Park

- Bowen Park – This park is noted by BCC as a Park of Significance, it is a heritage park with historic park entrance, cultural plantings and featuring a Rotunda, Canna beds and various annual displays together with other landscape features including rainforest area. The rotunda is used as a setting for weddings. (For a snap shot of the type of Landscape Elements found in and surrounding Bowen Park refer Sheet 2 of 10.) Refer Figure LE1 & LE2.

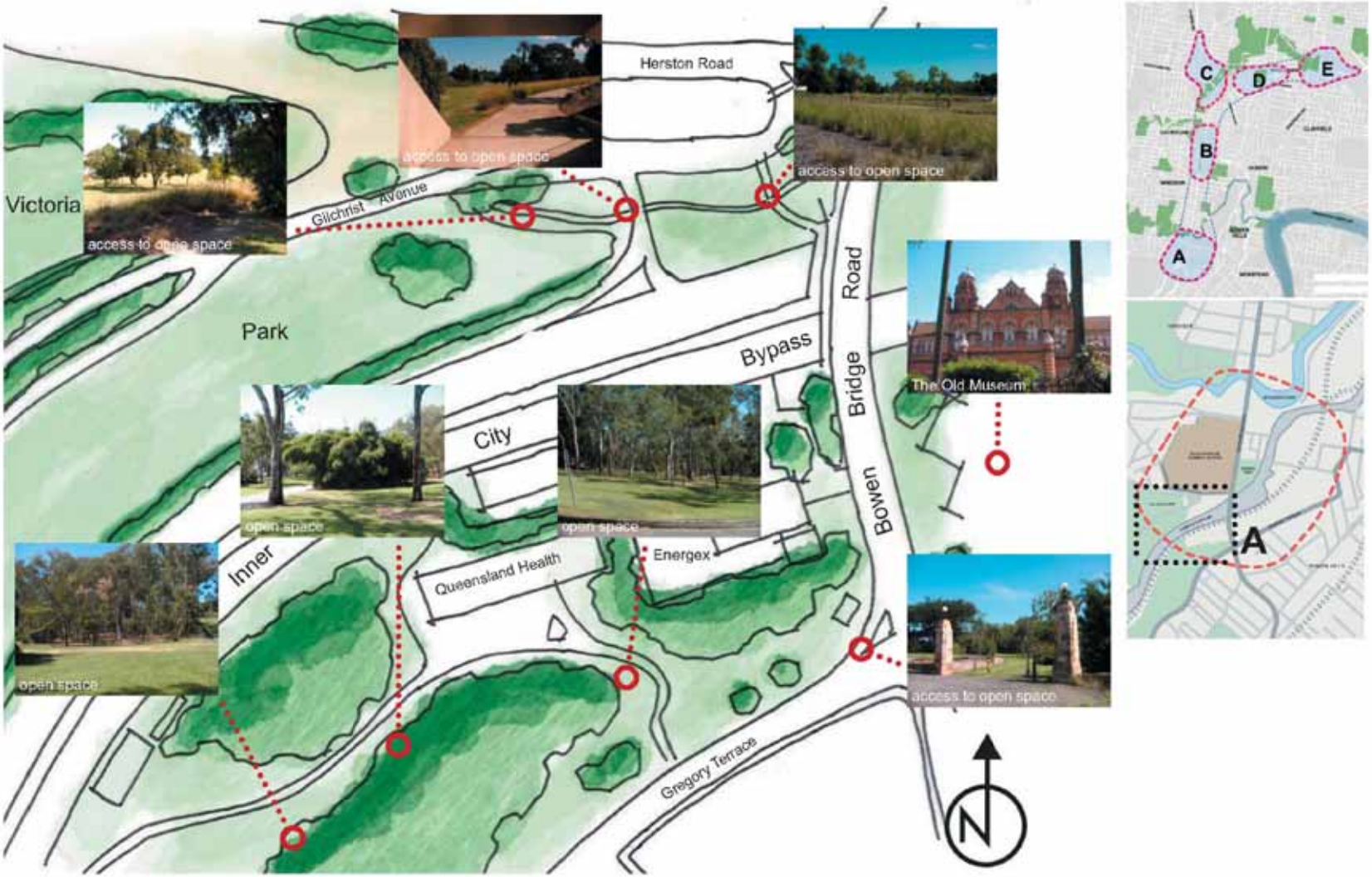
- Bowen Bridge Park – consisting of grass with a mangrove fringe, this park is limited in terms of variety of landscape elements, little access, no shade or facilities for community use. Refer Figure LE5

- Enoggera Creek Corridor – Part of the Enoggera Creek catchment, this section of Creek contains an open water body flanked by mangroves on either side, access is limited at Bowen Bridge Park, no formal recreational opportunities exist, and access to water is not formal. (For a snap shot of the type of Landscape Elements found in and surrounding Enogerra Creek Corridor refer Sheet 3 of 10.). Refer Figure LE6 & LE6a

Fig. LE 6 – Enogerra Creek

Fig. LE 6a –Bowen Bridge

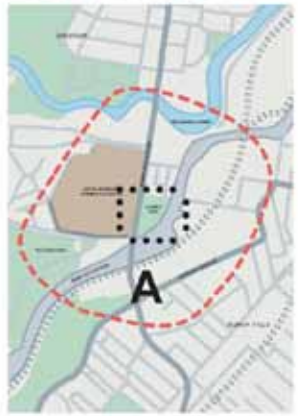
Key Location A: Bowen Hills **Plan Sketch** - Northern tip of Victoria Park **Landscape Elements:** Sheet 1 of 10



Key Location A: Bowen Hills

Plan Sketch - Bowen Park

Landscape Elements: Sheet 2 of 10



O'Connell Terrace

Bowen Bridge Road

RNA Showgrounds

The Old Museum

N

verge URBAN LANDSCAPE ARCHITECTURE

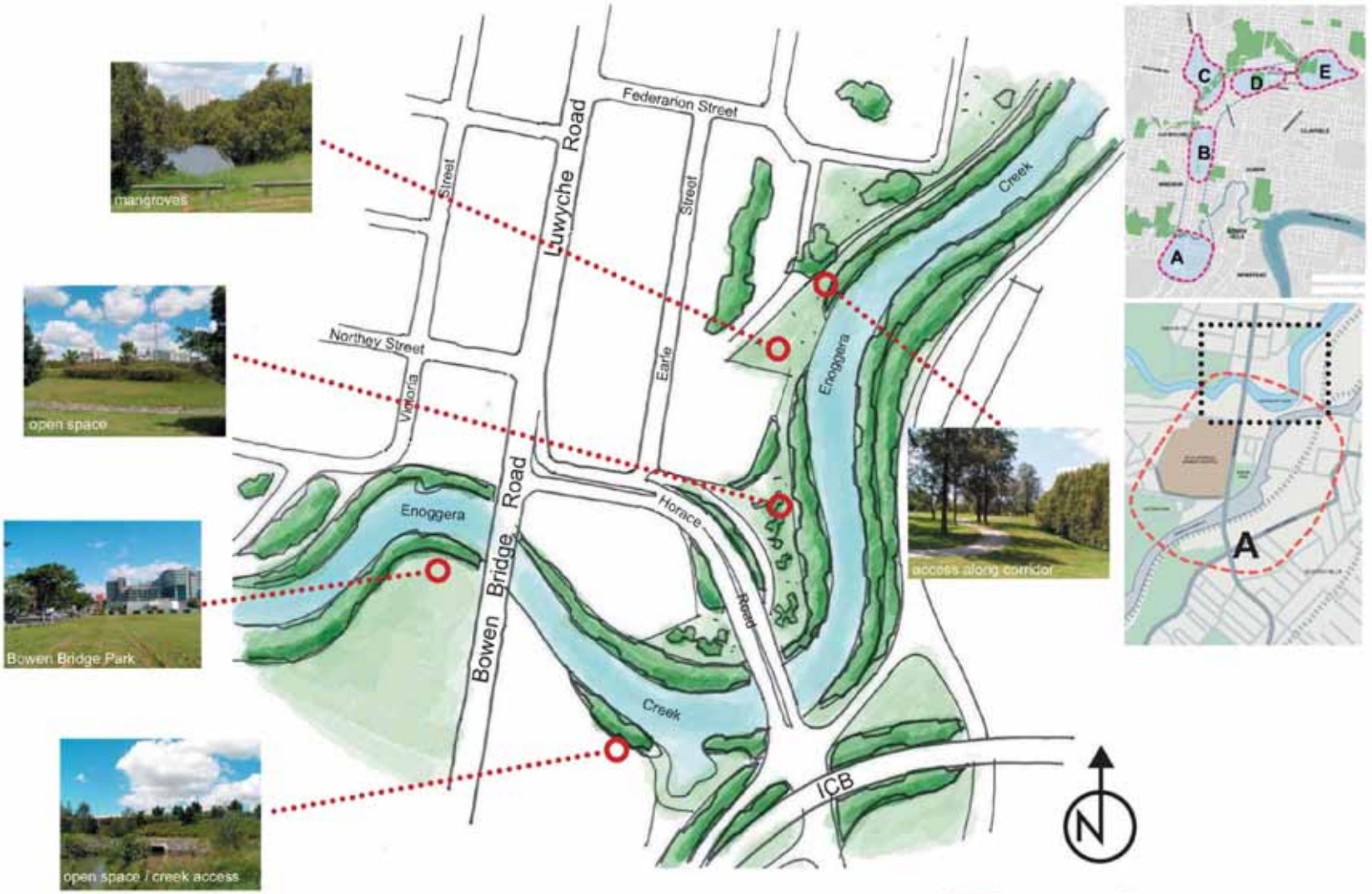
PLACE

SKM Connell Wagner JOINT VENTURE

Airport Link

Queensland Government

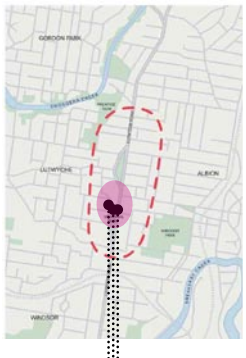
Key Location A: Bowen Hills **Plan Sketch -** Enoggera Creek Corridor **Landscape Elements:** Sheet 3 of 10



Key Location B: Memorial Park

This railway bridge over Lutwyche Road forms a gateway between the Memorial Park/Albion Road precinct and the RBH/Bowen Hills precinct. A clear change in built form occurs in transition under this bridge. Defined by the undulating landscape form, built form and local character, this area is defined as corridor of public transport access and amenity. The Windsor train station is located nearby however it is not visually prominent or apparent for access or amenity.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

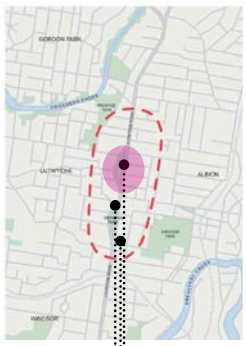


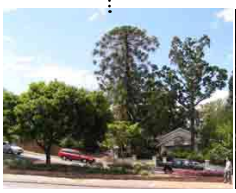
By today's construction standards, Windsor Council Chambers is a rare quality, handcrafted building. It is surrounded by established trees and defines a strong sense of place.
This place could be defined as a landmark within the corridor as it helps people with orientation, mental mapping and way-finding through the urban environment of street form and pedestrian access.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Along the Memorial Park precinct, substantial trees, buildings and monuments with other landscape features such as the historic stone wall form a district with a strong sense of place, which is evocative of Brisbane's past. The elevated position of this landscape form commands distant views to surrounding areas. High amenity is identified with the quality of landscape form.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

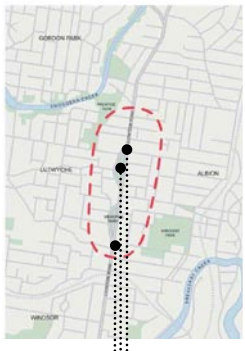




The present residential building stock surrounding the Memorial Park precinct is defined by predominantly low to medium density with good to average quality housing. Established trees and landscape features support and enhance its traditional residential character.

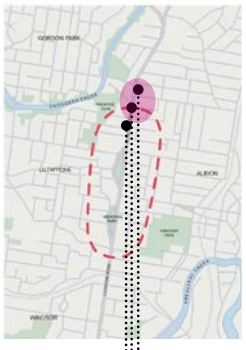
Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Key Location B: Memorial Park



Along the Memorial Park precinct and in these particular locations significant trees enhance the visual experience along the street form and act as visual markers. Interfacing with the Lutwyche Rd built form the presence of landscape elements is highly valued although way finding for pedestrians is poorly connected against the street forms.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form	N/A				
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					



When compared with the Memorial Park precinct, the Lutwyche business centre segment of the street form corridor is perceived as having a higher vehicular and pedestrian movement, visual clutter, and general commercial activity. This is partially due to a more active commercial frontage and a physically reduced road reserve and alignment. Some predestrian acees and amenity is identified however a enhanced character with connection would be beneficial.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Landscape Elements

B Memorial Park

The following landscape elements were either mapped, noted or photographed in this key location. For a snap shot of the type of Landscape Elements found in and surrounding Windsor War Memorial Park refer Sheet 4 & 5 of 10.

1 Significant Trees

2 Parks, Open Space and access to water

1 Significant Trees

- 21 highly significant fig trees growing in the property of Office Works 270 Lutwyche Road, Windsor. 9 trees growing along the property frontage in Lutwyche Road, and 12 trees along the Harris Street frontage. Refer to 3 on the above map (refer Figure LE 7 & 8)

Fig. LE7 Tree Groupings to Lutwyche Rd

Fig. LE8 Looking to Figs

- Windsor Memorial Park Lutwyche Road, Windsor. 1 *Ficus hilli* is to be retained near the war memorial stature northern end of the park. Refer 4 on location plan. Refer Figure LE9

- Outside the Heritage listed Windsor Council Chambers there are 3 significant *Ficus benjamina*. Refer 5 on location plan. Refer figure LE10

Fig. LE9 Ficus hilli

Fig. LE10 Ficus Benjamina

- Clarke Park, between Lutwyche Road and Truro Street, Windsor. A significant stand of *Araucaria cunninghamii* (about 50 trees) is to be retained. This group of trees plays an important role in the landscape character of the local area. (Refer 6 on plan above for location) Refer Figure LE11

Fig. LE11 – Stand of Araucaria cunninghamii

- Wallace Place Park, Lutwyche. There is 1 highly significant *Ficus benjamina (Pops Fig)*. This fig tree plays an important role in the landscape character to the local area. Refer to 7 on location plan. Refer Figure LE12

Fig. LE12 – Ficus benjamina (Pops Fig)

2 Parks, and Open Space

- Windsor War Memorial Park – between Lutwyche Road and Roblane Street. This Park has a combination of highly significant landscape elements. There is a war memorial, significant trees and a strong linear retaining edge to Lutwyche Road consisting of Brisbane Tuff. This stone is no longer quarried in significant volumes but was a building material used in Brisbane's early days of development. Therefore this wall is of particular significance because of its length and excellent condition. (For a snap shot of the type of Landscape Elements found in and surrounding Windsor War Memorial Park refer Sheet 4 of 10.) Refer figures 13, 14 and 15;

Fig. LE13

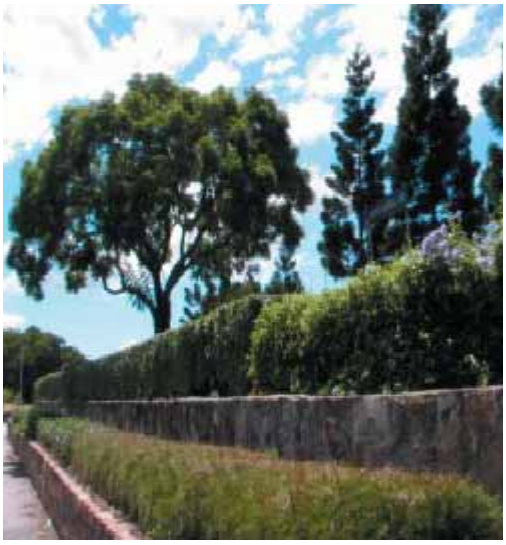


Fig. LE14

Fig. LE15

- Windsor Town Quarry Park – Lutwyche Road;

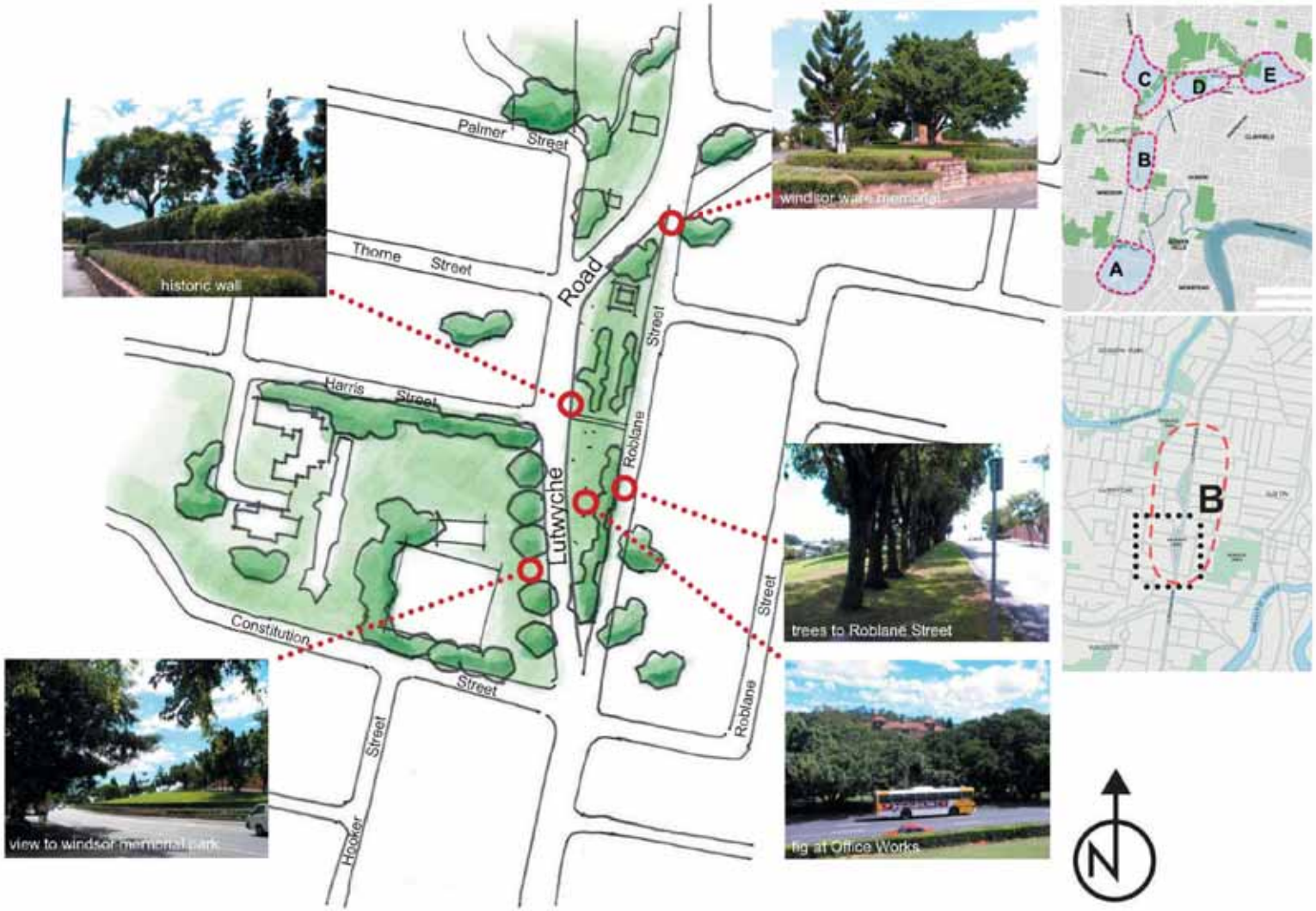
The cliff top above the Windsor Town Quarry Park provides the highest peak within the Study Corridor. The park is provisionally entered in the Queensland Heritage Register. The man made cliffs are of particular significance as they the exposed face of the old quarry from which Brisbane tuff was quarried in the late 19th century. The park is also adjacent to two historic buildings, the Windsor Town Hall and the former BCC tramway substation. It also provides a significant amount of useable flat open space which is rare in this part of the study corridor. This precinct is of a very high landscape value due its history and contribution to good quality open space in this congested part of the study area. (For a snap shot of the type of Landscape Elements found in and surrounding Windsor Town Quarry Park refer Sheet 5 of 10) Refer to figure LE16.

Fig. LE16 – Exposed face of old quarry

- Clark Park - between Lutwyche Road and Truro Street, Windsor
  This is park contains a combination of recreation opportunities (playground), open easterly sloping grassy areas and a significant stand of Araucaria sp. It contributes to the motorist's experience of this area by providing a significant green edge in contrast to the harsher built elements of the majority of Lutwyche Road. (For a snap shot of the type of Landscape Elements found in and surrounding Windsor Town Quarry Park refer Sheet 5 of 10). Refer Figure LE 11

- Wallace Place Park –At the road split at the northern end of Truro Street and Lutwyche Road. This park is very small in size and surrounded by heavy traffic on all sides, its main purpose is the home for the significant tree 'Pops Fig'. (For a snap shot of the type of Landscape Elements found in and surrounding Windsor Town Quarry Park refer Sheet 5 of 10) Refer figure LE12.

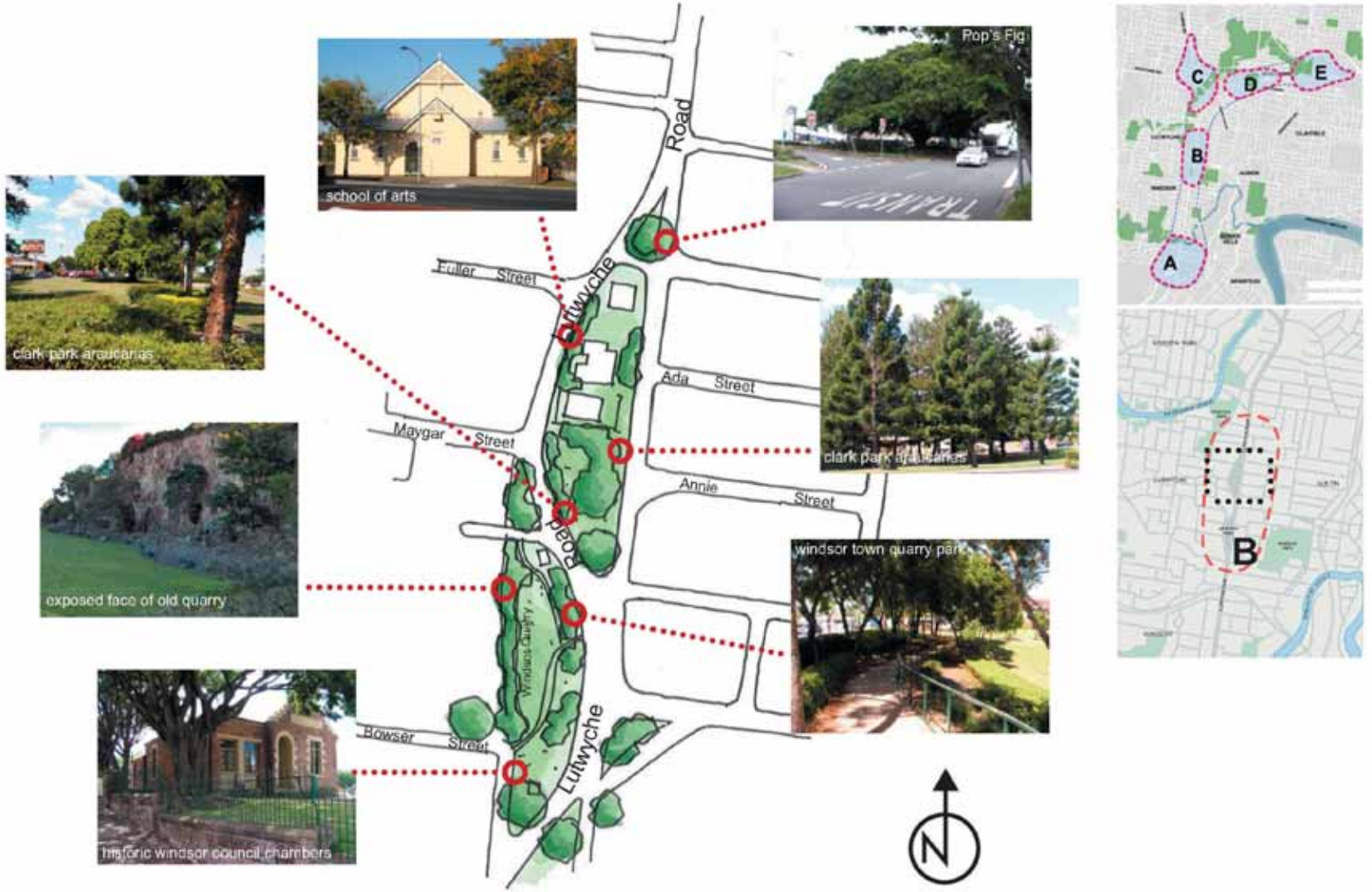
Key Location B: Memorial Park **Plan Sketch -** Windsor War Memorial Park **Landscape Elements:** Sheet 4 of 10



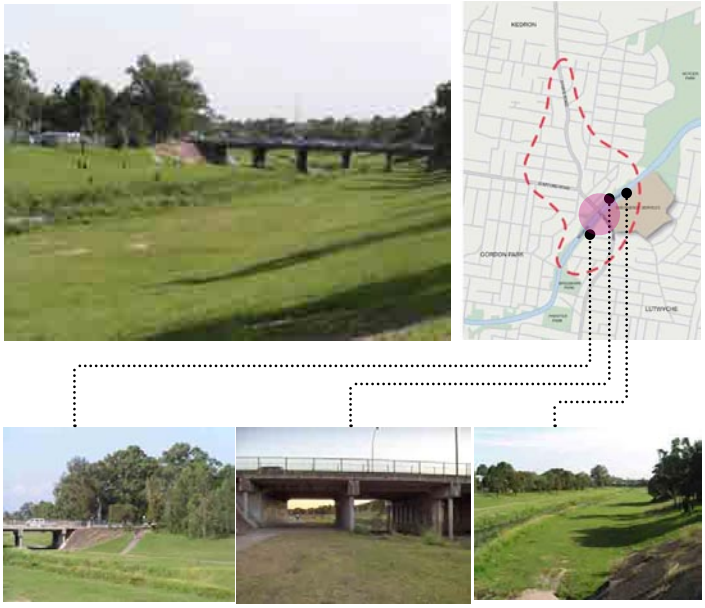
Vital Places
verge URBAN LANDSCAPE ARCHITECTURE
PLACE
SKM Connell Wagner JOINT VENTURE
AirportLink

SKM Connell Wagner JOINT VENTURE verge URBAN LANDSCAPE ARCHITECTURE PLACE Queensland Government AirportLink

Key Location B: Memorial Park **Plan Sketch -** Windsor Town Quarry Park **Landscape Elements:** Sheet 5 of 10



Key Location C: Gympie Road



Kedron Brook travels along a wide and continuous open space. The crossover of Gympie Rd and the Brook is materialized with a substantial bridge. The transition of the recreational space under this bridge becomes unpleasant and increases the perception of poor security.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form	N/A				
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

The Kedron Park Hotel and the Emergency Services complex are highly visible built forms and enjoy great exposure given their relative location within the articulation of Lutwyche and Gympie Rd. With a busy street form, landmarks such as these are instrumental for way finding and journey direction.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Non descriptive and lacking cohesive character in street form, this stretch of Gympie road could be a road anywhere in Australia. Enhancements including enclosure, active frontages, consistent built form, footprint and expression, along with appropriate landscape treatments would greatly increase present streetscape values.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

Landscape Elements

C Gympie Road

The following landscape elements were either mapped, noted or photographed in this key location. For a snap shot of the type of Landscape Elements found in and surrounding Windsor War Memorial Park refer Landscape Elements Sheet 6, 7 & 8 of 10.

1 Significant Trees
2 Parks, Open Space and access to water

1 Significant Trees

- 2 Ficus benjamina at the corner of Norman and Lutwyche Road (Refer to 8 on above plan)
- 1 Ficus benjamina at the Wooloowin Primary School (Refer to 9 on above plan)
- 1 Ficus benjamina in the car park of Kedron High School (Refer to 10 on above plan) Refer figure LE17

Fig. LE17 – Ficus benjamina at Kedron High School

- A number of Ficus benjamina in private property at Kedron Park Road (unable to verify quantity due to lack of access). (Refer to 11 on above plan)
  Refer figure LE18

Fig. LE18 – Ficus benjamina at Kedron Park Road

2 Parks, Open Space and Access to water

- Bradshaw Park – adjoining Kedron Brook and Bradshaw Streets this park contains BBQ, picnic shelter, Playground and recreation facilities. It is also the entering and exiting hub for cyclist and pedestrian travelling along the Kedron Brook corridor. This is well treed park thus providing a positive microclimate. Refer to figures LE20 and LE21. Refer Bradshaw Park Landscape Elements Sheet 6.

LE20 – Picnic shelter Fig.

LE21 – Bradshaw Park

- Kedron Brook Open Space Corridor - Kedron Brook is one of the major creeks in Brisbane. The mouth of the brook enters Moreton Bay at Nudgee Beach, with its headwaters located 25km away, at Ferny Grove.
  This section comprises of a number of landscape elements such as bushland, parkland, waterways and land leased by community groups. The Kalinga Greenspace Masterplan lists this section of the corridor as a greenspace of regional significance. This part of the key location is linear in nature and acts as a conduit for walkers, cyclist and wildlife passing through to other areas which offer user activities ie, playgrounds, organised sports etc. As such this forms a crucial recreation spine for the surrounding residents along the creek corridor, it also caters to other users ie. As a key cycling link to greater Brisbane destinations such as Nudgee Beach and Boondal Wetlands. Refer Figure LE19. The condition of this spine within this key location is of poor landscape quality, the waterway is an engineered drain with little variation in alignment or bank treatment. The area is also devoid of shade trees (due to hydraulic needs) making this stretch of the Brook inhospitable in the hotter months of the year. Refer Kedron Brook Landscape Elements Sheet 7 & 8

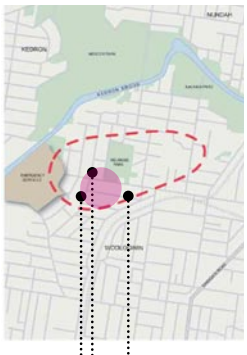
Fig. LE 19 Kedron Brook

Key Location C: Gympie Road **Plan Sketch -** Bradshaw Park **Landscape Elements:** Sheet 6 of 10

Key Location C: Gympie Road **Plan Sketch -** Kedron Brook **Landscape Elements:** Sheet 7 of 10

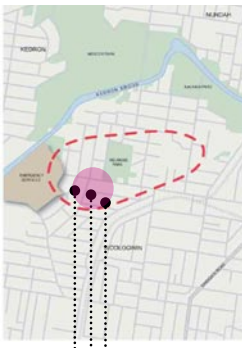
Key Location C: Gympie Road **Plan Sketch -** Kedron Brook Open Space Corridor **Landscape Elements:** Sheet 8 of 10

Key Location D: Wooloowin



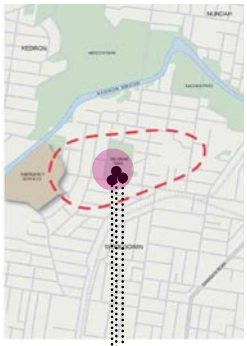
Highly suburban in its character, Wooloowin is defined by good quality residential built form and a recognisable tree-lined street form. Pedestrian access and amenity is defined through a sense of place and way finding in this area. Shaded footpaths in this established residential area are a valuable landscape form.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					



A consistent and uniform residential fabric provides Wooloowin's community a sense of place, unlike other areas along the corridor. Street form and current upgrade works with continuing built form improvements are enhancing Wooloowin's residential character highlighted by new construction and a variety of architectural styles.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					



Melrose Park is a substantial open landscape form servicing the local communities surrounding it. Partially contained within an area of the corridor, Melrose park provides opportunities for greater pedestrian access and amenity for active and passive recreation.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

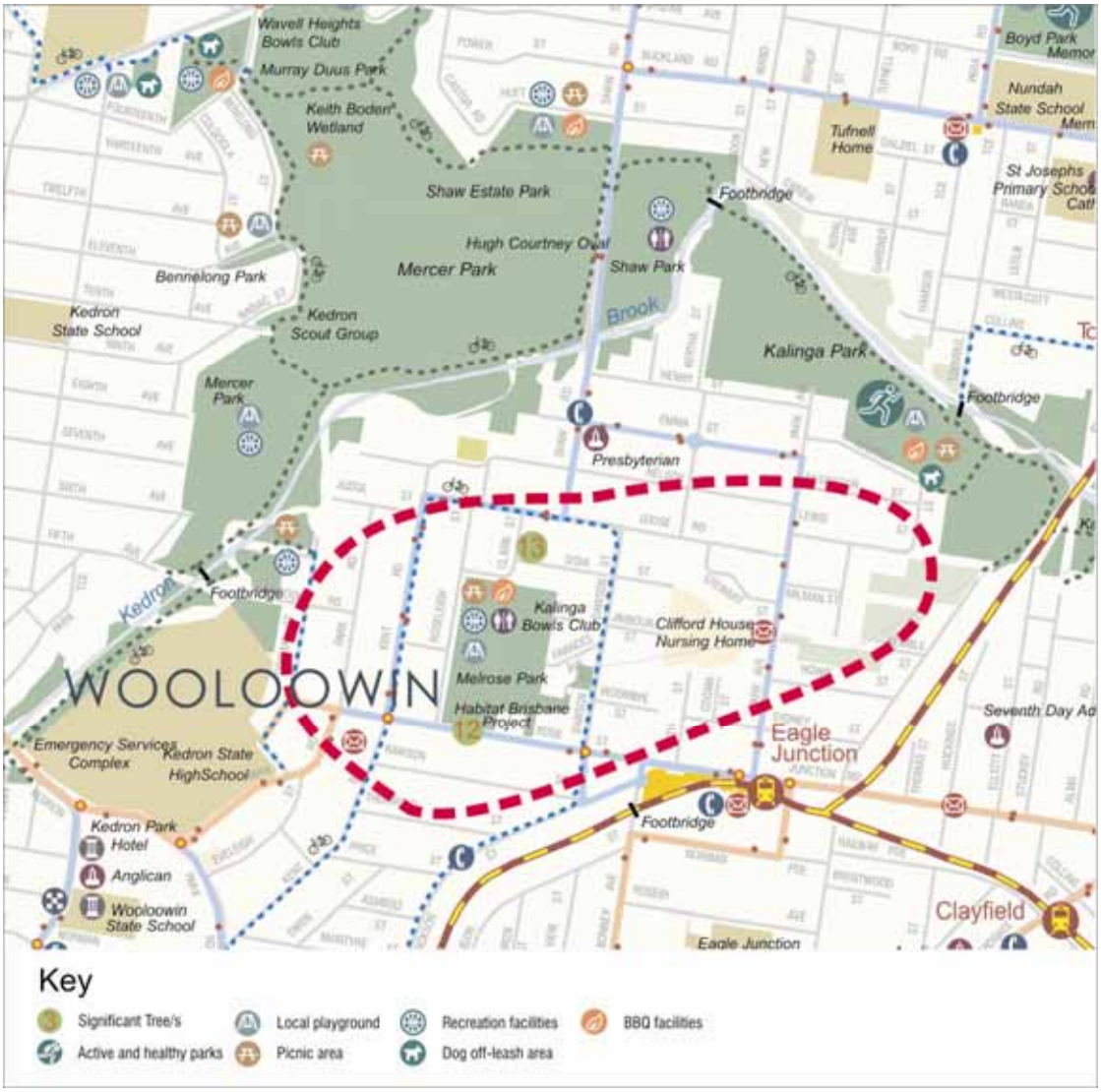
Landscape Elements

D Wooloowin

The following landscape elements were either mapped, noted or photographed in this key location. For a snap shot of the type of Landscape Elements found in and surrounding Windsor War Memorial Park refer Sheet 9 of 10.

1 Significant Trees

2 Parks, Open Space and access to water



1 Significant Trees

- Melrose Park Rose Street, Wooloowin. There is a group of *Eucalyptus* providing habitat. (Refer to13 on plan for location) Refer Figure LE22
- 5 significant *Ficus benjamina* growing in the footpath at 4 Clark & Lydia Street, (No. 12 on plan for location) Refer Figure LE23

Fig. LE22 Eucalypts

Fig. LE23 Ficus benjamina

2 Parks, Open Space and access to water

- Melrose Park - Amenities in Melrose Park include; a children's playground and teenagers' play area, a sculpture walk, toilets, two cricket playing fields, a cricket practice net and the bowls club. As part of a Habitat Brisbane Project the local residents' group is rehabilitating a tributary of Kedron Brook that runs through Melrose Park at Wooloowin. This degraded site is gradually being restored with plantings of local creek species to provide habitat for wildlife. Refer Figure LE24, LE25 and LE26. (For a snap shot of the type of Landscape Elements found in and surrounding Melrose Park refer Sheet 9 of 10.)

Fig. LE24 Creek line at Melrose Park

Fig. LE25 Entrance to Melrose Park

Fig. LE26 Kalinga Bowls Club

Key Location D: Wooloowin **Plan Sketch -** Melrose Park **Landscape Elements:** Sheet 9 of 10

Key Location E: Sandgate Road

Existing bridges and other infrastructure work are found along this area. Highly patronized by locals and visitors who appreciate the pedestrian and cycle amenity, This overall landscape form allowsmovement across and along the park and also access to surrounding communities.

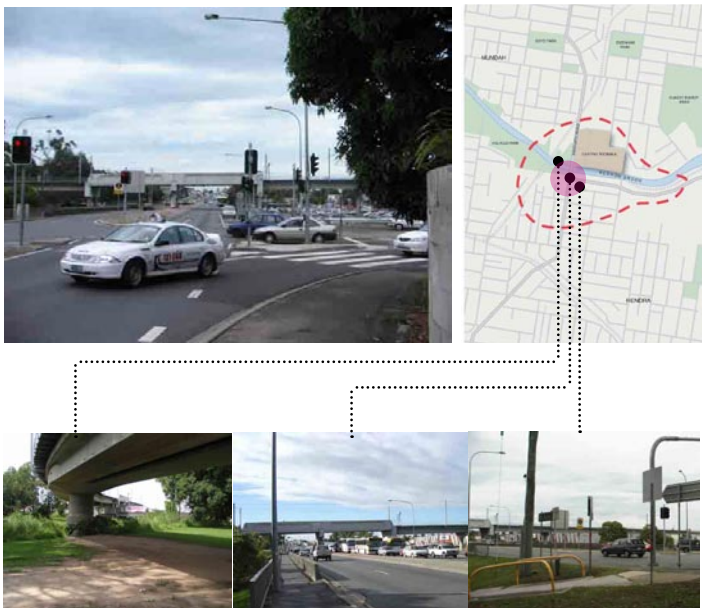
Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form	N/A				
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity	N/A				

A shaded and secluded park behind Kedron St and Stuckey Rd residential areas links to the Sangate Rd.and East West Arterial Rd.intersection. Pedestrian and bike paths connect Kalinga Park and the Toombul retail precinct and Nudgee Beach beyond.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form	N/A				
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity	N/A				

A poorly utilized and frequently desolate car park servicing the existing Toombul shopping centre lies within a floodable area. An extensive concrete slab bordered by a corresponding extensive retaining wall, this place is visually poor in positive attributes, and at the moment does not attract any formal use. Opportunities exist to reinstate a natural landscape such as a wetland, to improve the experience of this place.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form	N/A				
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity	N/A				



The air train bridge crosses Sandgate Rd. defining a gateway for this precinct. Existing footpaths along Sandgate Rd could improve pedestrian comfort with the provision of enclosure, shading and the ability to extend over existing open areas.

Visual Elements and Values	1 - inadequate	2	3	4	excellent + 5
Built Form					
Street Form					
Landscape Form					
Pedestrian Access					
Cycle Access					
Public Transport Access					
Pedestrian Amenity					
Cycle Amenity					
Public Transport Amenity					

AirportLink

SKM Connell Wagner JOINT VENTURE

verge URBAN LANDSCAPE ARCHITECTURE

PLACE PLANNING & DESIGN

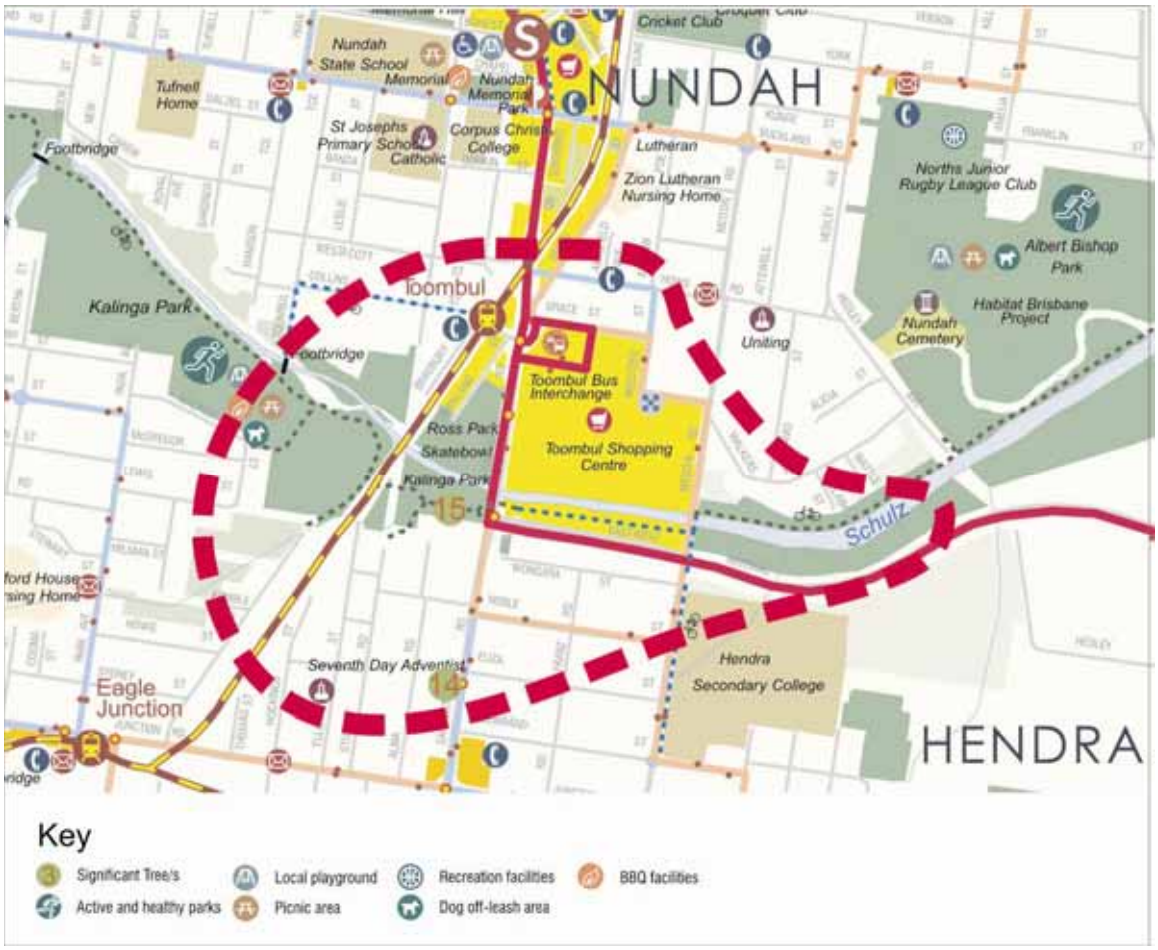
Vital Places

Landscape Elements

E Sandgate Road

The following landscape elements were either mapped, noted or photographed in this key location.

1 Significant Trees
2 Parks, Open Space and access to water



1 Significant Trees

- 2 significant *Ficus benjamina* growing with near 800's Sandgate Road, Clayfield. (Refer to No. 14 on plan for location) Refer Figure LE24

Fig. LE24 Ficus benjamina

- Araucarias, Eucalypts and other cultural tree plantings at the eastern side of the T section of Sandgate and the East West Arterial. There are remnants of Diggers Drive Eucalypts within the key location study area, one of note exists near the Miniature Race Car Club of Queensland. (Refer to No. 15 on plan for location) Refer to Figure LE25

Fig. LE25 Araucarias sp.

- Shultz Canal Mangroves occur in areas under tidal influence from Toombul to Moreton Bay. The water is saline and trees are particularly adapted to these conditions. Refer Figure LE26

Fig. LE26 – mangroves to Toombul Shopping Centre

2 Parks, Open Space and access to water

For a snap shot of the type of Landscape Elements found in and surrounding Kalinga Park / Sandgate Road 10 of 10.

- Kedron Brook Open Space Corridor – Shultz Canal
  This downstream section of the brook has been diverted a number of times since European settlement. Early flood mitigation work was undertaken from where Sandgate Road crosses the brook at Toombul, the channel is known as Schulz Canal. This section of the canal is particularly degraded especially under the bridge which is particularly inhospitable. Refer Figures LE27 & LE28

Fig. LE27 –Shultz Canal & Toombul Shopping Centre

Fig. LE28 –Shultz Canal & under bridge connection

- Ross Park Ross Park is located directly across Sandgate Road from Toombul Shoppingtown. The park is now the home to a purpose built skate park and contains mature trees and grassy open space.

- Kalinga Park
  Kalinga Park has a significant amount of history (refer to cultural heritage report), its landscape values are high, combining a variety of landscape elements and uses. Kedron Brook winds its way through this key location from Shaw Park to its headwaters, the brook changes from natural looking to drain-like appearance.

Fig. LE29 – Drain at end of Jackson Street

Fig. LE30 – Bridge at end of Jackson Street

Diggers Drive exists as memorial to the district soldiers who fell during World War I, returned and unemployed soldiers were given work to construct and plant the drive. Although this area is not in the key location, the planting contributes to views out of the key location. However there are remnants of Diggers Drive Eucalypts within the key location study area, one of note exists near the Miniature Race Car Club of Queensland.

The Miniature Race Car Club of Queensland exists in an inhospitable part of Kalinga Park between the eastern side of the railway and the Air train. Refer figure LE31

Fig. LE31 – View to Miniature Car Club

Fig. LE32 – Open grassed area at Kalinga Park with Eucalypts

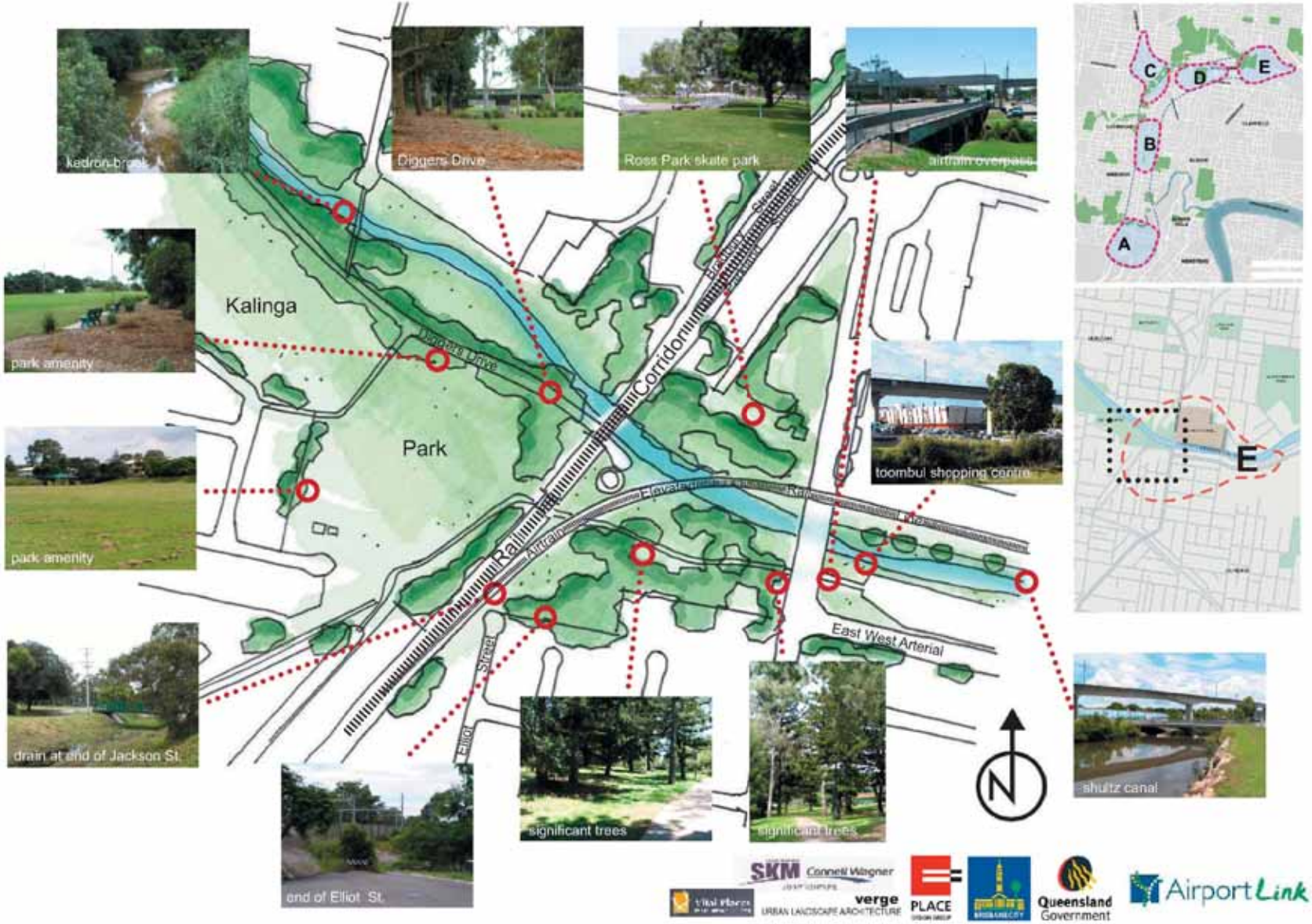
To the west of the rail line is a large informal open space with no defined use; it contains a playground and bbq's. Existing Eucalypts line the eastern edge of this space and are of significant landscape value. Refer figure LE32. The existing old creek/waterway connected to Melrose Park, Wooloowin is culverted under the rail line at this point. It exits to the east of the railway connecting to Shultz Canal. Refer Figure LE31 & LE 34

Fig. LE34 – culvert connection at end of Jackson Street

Key Location E: Sandgate Road

Plan Sketch - Kalinga Park / Sandgate Road

Landscape Elements: Sheet 10 of 10



Sustainable Design Principles: **URBAN CENTRES**	**E: Sandgate Road = Sandgate Road Connection**
Urban Centres Principle:	The Urban Centre at the Sandgate Road Precinct must protect and enhance its functionality as critical social and economic activity node within the transport corridor and the city.
Urban Centres Goal:	Define and promote a compact urban centre, which is safe, accessible and provides for local requirements.
Urban Centres Objectives:	• Integrate transport, pedestrians and land use effectively by reinforcing main linkages within the precinct • Define and develop an accessible, legible, compact and vital centre

URBAN CENTRES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact of the infrastructure on land use amplifies the separation of the existing centre of Toombul Shopping centre and its surrounding residential catchment. The infrastructure causes the removal of the existing car park at Shultz Canal, thus reducing the serviceability of the centre.	The footprint severely affects the natural environment framing the centre. Consequently the external amenity of the centre is greatly devalued.	The footprint precludes access from the southern side of Shultz Canal to Toombul Shopping Centre; reducing the quality of experience of accessing the centre.

URBAN CENTRES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Boulevard to Sandgate Road to enhance pedestrian environments. • Design strategies to define centre domain • Shade structures to provide microclimate comfort • Pedestrian amenity improvement to activate footpath and edges. • Ventilation outlets should provide landmark qualities to recognise centre's location	*Required treatments include:* • Tree planting to enhance and promote visual and spatial qualities of the centre. • Adaptation and build up of existing vegetation to assist with urban centre recognition • Vertical planting to highlight vertical dimension and scale. • Designs which respond to existing landform • Design of open space that corresponds to the scale of this urban centre	*Required treatments include:* • Opportunities for vertical expression on walls and embankments that reflect local identity of the centre. • Integrate the diverse identity of the existing natural environment and the centre	*Required treatments include:* • Strong opportunities to promote gateways to Brisbane in this urban centre.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **CONNECTIONS**	**E: Sandgate Road = Sandgate Road Connection**
Connections Principle:	Sandgate Road Precinct must be a highly serviced and connected by varied modes of public transport to fulfil its role and functions within the transport corridor.
Connections Goal:	Improve connectivity and accessibility between rail station, bus exchange, the commercial centre and surrounding open space.
Connections Objectives:	• Provide enhanced, attractive, safe and secure access to pedestrians, cyclist and all modes of transport to surrounding open space, residential and commercial areas. • Improve local connectivity and create greater choice of routes between local destinations.

CONNECTIONS	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The connection between the composite land uses, as an integral part of the local context is damaged. Pedestrian and cycle linkages to these land uses in a north/south direction are severely impeded by the infrastructure footprint.	The high quality environment connecting this area is destroyed by the footprint and scale of the proposed infrastructure.	The footprint destroys the existing North / South and East / West pedestrian and cyclist connection.

CONNECTIONS	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Boulevards to define and map out linkages in the local fabric • Visual screening to promote orientation and aid passage through the urban environment • Ventilation outlets should act as point of reference for proximity and location • Pedestrian and cycle amenity improvement to activate footpath, edges and cross connections. • Allow for suspended or intermediate circulation areas between surface and elevated structures.	*Required treatments include:* • Tree planting to enhance and define circulation paths • Design to extend and verify pedestrian and cyclist linkages in and out of the area. • Design to improve public amenity and land use connections.	*Required treatments include:* • Embankments and vertical wall design should contribute to the positive experience of movement. • Design of vehicular ramps to include accessibility of pedestrian and cyclists.	*Required treatments include:* • Portal Design to function as pivotal gateway statement. • Portal Design should celebrate the connection to a sub -surface environment.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CHARACTER**	**E: Sandgate Road = Sandgate Road Connection**
Urban Character Principle:	The Sandgate Road Precinct is defined by its unique character resulting from a positive, vital, safe and attractive integration of residential, commercial land uses and beautiful natural landscape features.
Urban Character Goal:	Improve the interface of the centre and surrounding land uses by promoting attractive and safe linkages and also by creating environments conducive to multiple activities on the centre edges.
Urban Character Objectives:	• Improve the activity interface between the centre and the surrounding open space • Improve landscape and urban amenity around the centre and reinforce local movement linkages

URBAN CHARACTER	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact affects the existing residential fabric, its relationship to Toombul Shopping Centre and the surrounding open space. This proposed infrastructure diminishes the integrity of the existing sense of place.	The high quality environment of this area is compromised by the severity of this footprint. The result of this impact dissolves the overall character by destroying its strength.	The proposed infrastructure weakens the community access and affects the lifestyle qualities that define this precinct.

URBAN CHARACTER	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Boulevards to promote identity and character. • Visual screening to highlight the characteristic features of the area. • Shade structures to provide microclimate comfort and landmark recognition. • Structure design to address and encapsulate the sense of place, values and attributes of this precinct. • Ventilation outlets should reinforce the identity of the place	*Required treatments include:* • Tree planting that supports and improves existing character. • Median treatment to build-up character and acknowledge identity. • Vertical planting to introduce new variety and character in the townscape. • Reintroduce species lost to infrastructure footprint. • Enhance existing landscape character.	*Required treatments include:* • Opportunities for embankment designs that reflect local identity and context of the precinct. • Wall designs to integrate the diverse identity of the existing natural environment and the character of the surrounding area .	*Required treatments include:* • The design and detail of the portals accentuate the character of the place by incorporating and articulating materials which represents the identity of the location.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **VISUAL VALUES**	**E: Sandgate Road = Sandgate Road Connection**
Visual Values Principle:	Sandgate Road Precinct must provide a strong legible framework, support orientation and mental mapping
Visual Values Goal:	Create a visually attractive and legible environment which builds up on the existing natural landscape, built forms and their visual attributes
Visual Values Objectives:	• Preserve and enhance existing views and vistas • Minimise and mitigate project's negative visual impacts on this key location by developing structures with high quality design and visual presentation and integrating high quality landscape treatments

VISUAL VALUES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact of this infrastructure decreases the overall visual presentation of these land uses. The visual qualities of the established residential areas south of Shultz canal are severely impacted by the infrastructure footprint.	The visual quality in relation to public amenity is severely decreased due to the impact of the infrastructure footprint, in particular the area south of Shultz Canal.	As a result of proposed infrastructure, the visual qualities of the environment are severely compromised. Therefore, public access is discouraged and perceived as an unpleasant and unsafe environment.

VISUAL VALUES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Boulevards to preserve and enhance visual quality. • Visual screening to allow variable visual experiences. • Shade structures to frame existing vistas and views. • Design of the structures is a positive contribution to the visual environment. • Ventilation outlets should act as visual marker for the area	*Required treatments include:* • Tree planting to screen and promote visual and spatial qualities of the area. • Median spaces contribute to the visual framework. • Vertical planting to complement median spaces and streetscaping. • Reintroduce species lost to infrastructure footprint. • Enhance existing landscape views and vistas.	*Required treatments include:* • Opportunities for embankment designs that incorporate contemporary design themes. • Wall designs to reflect the existing natural environment and the character of the surrounding area .	*Required treatments include:* • Design should promote the prominence of the portal as a distinct visual element in the landscape • Visual presentation should be of a high quality whilst relating to its context.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **LANDSCAPE ELEMENTS**	**E: Sandgate Road = Sandgate Road Connection**
Landscape Elements Principle:	Landscape Elements identify the unique natural attributes of the Sandgate Road Precinct.
Landscape Elements Goal:	Protect and enhance areas of significant natural value in the Sandgate Road Precinct.
Landscape Elements Objectives:	• Strengthen existing landscape elements and rehabilitate degraded areas • Ensure existing Landscape Elements are well integrated into the project • Strengthen access and reinforce public ownership of all areas possessing Landscape Amenity

LANDSCAPE ELEMENTS IMPACTS

Land Use	Public Amenity	Public Access
• Removes existing vegetation in the open space corridor from Lewis Street to Sandgate Road. • Required excavation of Shultz's Cannel from Melton road to north south rail line, affect existing car park at Toombul Shopping Centre	• Removes existing vegetation in the open space corridor from Lewis Street to Sandgate Road. • Removes existing playground at eastern end of Lewis Street • Impacts on existing creek line from Jackson street to Shultz Canal • Removes mature vegetation at northern end of Stuckey and Alma streets.	• Required excavation of Shultz's Cannel from Melton road to north south rail line, impacts on access along southern side of Shultz Canal to Toombul Shopping Centre.

LANDSCAPE ELEMENTS MITIGATION

Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Dense planting of large trees to edges of transition structures to assist reinstatement of original vegetation. • Northern edge of ramp planting contributes to waterway rehabilitation • Refer Ramp Design in Appendix 9.1 • Urban Forest Treatment refer Appendix 9.2 • Refer Landscape Concept Design SR_6	*Required treatments include:* • Wetland reconstruction from Melton road to rail line. This would include island, open water with sedge planting to edges. • Creek line reinstated from eastern end of Jackson Street to Shultz Cannel. • Rehabilitate creek edges between the rail line and Toombul Street. • Reinstate and upgrade existing playground. Reinforce treed edges to open space adjacent to playground. • Refer Landscape Concept Plan SR_6	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CENTRES**	**B: Memorial Park Precinct**
Urban Centres Principle:	Memorial Park Precinct must protect and develop its functionality as critical social and economic activity node within the transport corridor.
Urban Centres Goal:	Achieve a compact and efficient centre with a good functional amenity. Improve and integrate pedestrian and vehicle movement networks
Urban Centres Objectives:	• Guide development to sustain precinct growth • Integrate transport, pedestrians and land use effectively

URBAN CENTRES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

URBAN CENTRES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable

Sustainable Design Principles: CONNECTIONS	**B: Memorial Park Precinct**
Connections Principle:	Memorial Park Precinct requires safe and secure pedestrian and public transport access and connectivity to fulfil its unique role within the corridor.
Connections Goal:	Improve the general connectivity and accessibility to and within this precinct.
Connections Objectives:	• Provide enhanced and safe access to pedestrians, cyclist and all modes of transport along but especially across the precinct and surrounding areas. • Improve local connectivity and opportunities of choice for transport modes

CONNECTIONS	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

CONNECTIONS	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable

Sustainable Design Principles: **URBAN CHARACTER**	**B: Memorial Park Precinct**
Urban Character Principle:	Memorial Park Precinct posses a distinctive urban character and sense of place created by the integration of its topography, meaningful open spaces and monuments and surrounding built form.
Urban Character Goal:	Support and enhance further sense of place by protecting its existing assets
Urban Character Objectives:	• Guide development to contribute with positive additions to existing context • Protect and promote existing identity and sense of place

URBAN CHARACTER IMPACTS

Land Use	Public Amenity	Public Access
Not Applicable	Not Applicable	Not Applicable

URBAN CHARACTER MITIGATION

Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable

Sustainable Design Principles: **VISUAL VALUES**	**B: Memorial Park Precinct**
Visual Values Principle:	Memorial Park Precinct must provide a positive and strong visual experience, support orientation and legibility.
Visual Values Goal:	Protect positive visual attributes of Memorial Park Precinct by taking care of its visual assets and maintaining its strong positive visual references
Visual Values Objectives:	• New developments must build up and enhance existing views and vistas • Decrease and alleviate project's negative visual impacts on this key location by integrating high quality landscape and streetscape treatments

VISUAL VALUES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

VISUAL VALUES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable

Sustainable Design Principles: **LANDSCAPE ELEMENTS**	**B: Memorial Park Precinct**
Landscape Elements Principle:	Landscape Elements identify the unique natural attributes of the Memorial Park Precinct.
Landscape Elements Goal:	Protect and enhance areas of significant natural value in Memorial Park Precinct.
Landscape Elements Objectives:	• Strengthen existing landscape elements and rehabilitate degraded areas • Strengthen access and reinforce public ownership of all areas possessing Landscape Amenity

LANDSCAPE ELEMENTS	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

LANDSCAPE ELEMENTS	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable	• Not Applicable

Sustainable Design Principles: **URBAN CENTRES**	**C: Gympie Road = Gympie Road Connection**
Urban Centres Principle:	Gympie Road Precinct must protect and improve its functionality as a critical social and economic activity node within the transport corridor.
Urban Centres Goal:	Build up a unified and efficient centre with a strong functional amenity. Improve pedestrians, vehicle movement networks and land use by effective integration.
Urban Centres Objectives:	• Guide development to promote precinct cohesion. • Integrate transport, pedestrians and land use effectively by reinforcing cross linkages within the precinct.

URBAN CENTRES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact falls upon existing residential, commercial and institutional uses and additionally on the existing open space of the Kedron Brook catchment. This includes the majority of existing facilities such as State High and Primary Schools and the current Emergency Services Complex.	The existing amenity is diminished due to the substantial footprint affecting pedestrian environment and streetscape qualities.	The proposed infrastructure is affecting the centre by creating potential barriers inhibiting movement within the centre and diminishing cohesive performance.

URBAN CENTRES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to enhance pedestrian environments. • Visual screening to define centre domain • Shade structures to provide microclimate comfort • Pedestrian amenity improvement to activate footpath and edges. • Articulation of column shaft and elevated carriageways to provide a legible framework to the centre.	*Required treatments include:* • Tree planting to screen and promote visual and spatial qualities of the centre. • Median treatment to improve legibility of the centre. • Vertical planting to highlight vertical dimension and scale.	*Required treatments include:* • Opportunities for vertical expression on walls and embankments that reflect local identity of the centre. • Integrate the diverse identity between Stafford Road, Gympie Road and Lutwyche Road components as part of this Centre.	*Required treatments include:* • Opportunities to promote residential, commercial and institutional presence in this urban centre. (north end of Lutwyche Road to south end of Gympie Road and Stafford Road intersection)	As and if required by specialist study and recommendation.

Sustainable Design Principles: CONNECTIONS	**C: Gympie Road = Gympie Road Connection**
Connections Principle:	Gympie Road Precinct must be a fully and highly accessible place. It materialises a strong north-south / east-west connection area at metropolitan scale within the corridor.
Connections Goal:	Improve the general connectivity and accessibility to and within this precinct by enhancing the choice of access, destinations and movement modes within the precinct.
Connections Objectives:	• Provide enhanced, safe and secure access to pedestrians, cyclist and all modes of transport along but essentially across the precinct and surrounding areas. • Improve local connectivity and opportunities of choice and exchange of transport modes

CONNECTIONS	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact generates substantial amounts of idle land that needs to be integrated into the centre for future functionality. This suggests that a new range of connection opportunities needs to be investigated.	The existing amenity is diminished due to the substantial footprint of the proposed infrastructure. This affects the existing pedestrian and cycle experience thus creating a hostile environment. This has a direct effect on Kedron Brook as a recognised movement corridor and it's connectivity to the existing movement network. (below existing Gympie Road bridge)	The effect of road closures affects existing pedestrian and cycle access as a consequence to the proposed infrastructure footprint. The quality of pedestrian crossings and environments are greatly eroded. Movement is perceived to be more difficult.

CONNECTIONS	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to enhance pedestrian and cycle environments. • Visual screening to define connectivity. • Shade structures to provide microclimate comfort. • Pedestrian and cycle amenity improvement to activate footpath, edges and cross connections. • Allow for suspended or intermediate circulation areas between surface and elevated structures. • Ventilation outlets should act as point of reference for proximity and location	*Required treatments include:* • Tree planting to screen and promote visual and spatial qualities of movement network. • Median treatment to improve legibility and promote orientation and way-finding. • Vertical planting to highlight vertical dimension and scale to enhance the experience and value of movement.	*Required treatments include:* • Opportunities for vertical expression on walls and embankments that assist with mental mapping and journey reference. • Facilitate the diversity of connection requirements between Stafford Road, Gympie Road and Lutwyche Road and their linkages.	*Required treatments include:* • Facilitate movement above the infrastructure to support access and connectivity. • The design indicates vehicular connection and discourages pedestrian crossings and favours designated and safer crossing points.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CHARACTER**	**C: Gympie Road = Gympie Road Connection**
Urban Character Principle:	Gympie Road Precinct is recognisable by its unique sense of place created by the integration of its topography, popular open spaces, water bodies and surrounding built form.
Urban Character Goal:	Support and enhance further the existing sense of place by protecting and improving Gympie Road Precinct's open spaces and their accessibility from residential areas.
Urban Character Objectives:	• Provide positive additions to existing environment; improve character by creating a worthwhile destination. • Protect and promote existing identity and sense of place by enhancing existing urban amenity.

URBAN CHARACTER	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact affects existing residential fabric and the relationship to the surrounding open space. This proposed infrastructure diminishes the wholeness of the existing sense of place.	The integrity of the public amenity is compromised by the severity of this footprint. The result of this impact dissolves the overall character by fragmenting its strength.	The proposed infrastructure weakens the community access and affects the lifestyle qualities that define this precinct.

URBAN CHARACTER	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to promote identity and character. • Visual screening to highlight location features. • Shade structures to provide microclimate comfort and landmark recognition. • Structure design addresses and encapsulated the perceived sense of place, values and attributes of this precinct.	*Required treatments include:* • Tree planting that supports and improves existing character. • Median treatment to build-up character and acknowledge identity. • Vertical planting to introduce new variety and character in the townscape.	*Required treatments include:* • Opportunities for embankment designs that reflect local identity and context of the precinct. • Unify the combined identities of Stafford Road, Gympie Road and Lutwyche Road to achieve a holistic sense of place.	*Required treatments include:* • The design and detail of the portals accentuate the character of the place by incorporating and articulating materials which represents the identity of the location.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **VISUAL VALUES**	**C: Gympie Road = Gympie Road Connection**
Visual Values Principle:	Gympie Road Precinct must provide a memorable and distinct visual experience, support orientation and legibility.
Visual Values Goal:	Add visual value to existing open space infrastructure by improving the existing views and vistas to and from the Gympie Road Precinct
Visual Values Objectives:	• Future developments must protect and enhance existing visual access, views and vistas • Minimise and mitigate project's negative visual impacts on this key location by developing structures with high quality design and visual presentation and integrating high quality landscape treatments

VISUAL VALUES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact of this infrastructure decreases the overall visual presentation of this area. This pre-empts a lesser visual quality environment for future development.	Decreased visual quality in relation to public amenity is a well identified impact on this area. Strong mitigation measures will be required to maintain the high existing visual values of this area.	As a result of proposed infrastructure, the visual qualities of the environment are severely compromised. Therefore, public access is discouraged and perceived as an unpleasant and unsafe environment.

VISUAL VALUES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to preserve and enhance visual quality. • Visual screening to allow variable visual experiences. • Shade structures to frame existing vistas and views. • Design of the structures is a positive contribution to the visual environment.	*Required treatments include:* • Tree planting to screen and promote visual and spatial qualities of the precinct. • Median spaces contribute to the visual framework. • Vertical planting to complement median spaces and streetscaping.	*Required treatments include:* • Ramps are formed as high visual asset. • Incorporate visual attributes of Stafford Road, Gympie Road and Lutwyche Road as integral visual landmarks.	*Required treatments include:* • Visual prominence of portals is required to identify purpose and legibility. • Visual presentation is of a high quality and relates to its context.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **LANDSCAPE ELEMENTS**	**C: Gympie Road = Gympie Road Connection**
Landscape Elements Principle:	Landscape Elements identify the unique natural attributes of the Gympie Road Precinct.
Landscape Elements Goal:	Protect and enhance areas of significant natural value in Gympie Road Precinct.
Landscape Elements Objectives:	• Strengthen existing landscape elements and rehabilitate degraded areas • Ensure existing Landscape Elements are well integrated into project • Strengthen access and reinforce public ownership of all areas possessing Landscape Amenity

LANDSCAPE ELEMENTS IMPACTS

Land Use	Public Amenity	Public Access
The transition structures with cut and cover tunnel works from Lutwyche/Gympie Road intersection removes existing vegetation and changes land profiles.	The Kedron Brook Bridge requires an additional approximately 60 lineal metres of Kedron Brook open space. The transition structures and the cut and cover components of the tunnel from Lutwyche/Gympie Road intersection through the Emergency Services removes areas of existing trees and grassland.	The increased carriage ways across Kedron Brook reduces the natural east west corridor connection along this open space corridor.

LANDSCAPE ELEMENTS MITIGATION

Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Dense planting of large trees to edges of transition structures to assist reinstatement of original vegetation. • Urban Forest Treatment • Refer Landscape Concept Design GR_9	*Required treatments include:* • Tree planting to edges of Kedron Brook between path and property boundary. • Dense planting to East of service road at Lutwyche Road to shield residences and create green edge to Lutwyche Road on ramp to Gympie Road. • Refer Landscape Concept Design GR_9 • Refer Planting Elements in Appendix 9.2	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CENTRES**	**D: Wooloowin Precinct**
Urban Centres Principle:	Gympie Road Precinct must consolidate its role as strong residential node within the transport corridor.
Urban Centres Goal:	Reinforce connections to adjacent Eagle Junction Convenience Centre.
Urban Centres Objectives:	• Strengthen and promote precinct land use integrity • Integrate transport, pedestrians and land use effectively by reinforcing main linkages within the precinct

URBAN CENTRES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

URBAN CENTRES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: CONNECTIONS	**D: Wooloowin Precinct**
Connections Principle:	Wooloowin Precinct requires complete accessibility and ease of movement within the place.
Connections Goal:	Improve connectivity and accessibility to adjacent convenience centre and surrounding higher order precincts by providing good choice of access, and variety of movement modes.
Connections Objectives:	• Provide enhanced, safe and secure access to pedestrians, cyclist and all modes of transport to surrounding open space and commercial areas. • Improve local connectivity and opportunities of choice and exchange of transport modes especially at Eagle Junction.

CONNECTIONS IMPACTS		
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

CONNECTIONS MITIGATION				
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CHARACTER**	**D: Wooloowin Precinct**
Urban Character Principle:	The Wooloowin Precinct is defined by its distinctive character resulting from a consistent residential built form well connected to a network of memorable open spaces.
Urban Character Goal:	Support and enhance further the existing Wooloowin sense of place by protecting and improving the precinct's quality residential areas and good accessibility to surrounding open spaces
Urban Character Objectives:	• Reinforce existing residential character. • Enhance and promote the existing relationship between built form and open public space and urban amenity.

URBAN CHARACTER	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

URBAN CHARACTER	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: **VISUAL VALUES**	**D: Wooloowin Precinct**
Visual Values Principle:	The Wooloowin Precinct must conserve and develop its consistent visual cohesion.
Visual Values Goal:	Preserve and promote the existing residential visual character and attributes given the relative location and its high visibility within the corridor
Visual Values Objectives:	• Proposed developments must protect and enhance existing visual consistency • Preserve and enhance existing views and vistas • Minimise and mitigate project's negative visual impacts on this key location by developing structures with high quality design and visual presentation and integrating high quality landscape treatments
VISUAL VALUES	**IMPACTS**

Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

VISUAL VALUES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: **LANDSCAPE ELEMENTS**	**D: Wooloowin Precinct**
Landscape Elements Principle:	Landscape Elements identify the unique natural attributes of the Wooloowin Precinct.
Landscape Elements Goal:	Protect and enhance areas of significant natural value in the Wooloowin Precinct.
Landscape Elements Objectives:	• Strengthen existing landscape elements and rehabilitate degraded areas • Strengthen access and reinforce public ownership of all areas possessing Landscape Amenity

LANDSCAPE ELEMENTS	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Not Applicable	Not Applicable	Not Applicable

LANDSCAPE ELEMENTS	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Not Applicable	*Required treatments include:* • Boulevard Treatment to Junction Road • Tree planting to Melrose Park	*Required treatments include:* • Not Applicable	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CENTRES**	**A: Bowen Hills = Southern Connection**
Urban Centres Principle:	Bowen Hills Precinct Urban Centre must safeguard and enhance its functionality as a critical social and economic activity node within the city
Urban Centres Goal:	Achieve a compact, well serviced centre with a high functional amenity integrating pedestrian and vehicle movement networks
Urban Centres Objectives:	• Facilitate development to support precinct growth • Integrate transport and land use effectively

URBAN CENTRES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The proposed infrastructure impacts greatly upon the existing land uses. This generates a highly fragmented and disparate environment, therefore the functionality and performance of the centre is considerable diminished.	The proposed structures impose a substantial impact on the available public amenity due to its footprint and overall scale. The result of this intervention renders the public realm illegible and consequently erodes its amenity values, discouraging usage.	The geometric layout of the proposed network is focused on efficient vehicular movements, but it creates poor pedestrian and cycling environments which are not inviting. The centre will retain its current peripheral accessibility but impacted areas towards the existing open spaces and ICB will require greater access negotiation. Decreasing pedestrian movement options compromises functionality.

URBAN CENTRES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Articulation of column shafts and elevated carriageways to provide a legible framework to the centre. • Streetscaping to enhance pedestrian environments. • Visual screening to define centre domain • Shade structures to provide microclimate comfort • Pedestrian amenity improvement to activate footpath and edges. • Ventilation outlets should provide landmark qualities to recognise centre's location	*Required treatments include:* • Tree planting to enhance and promote visual and spatial qualities of the centre. • Adaptation and build up of existing vegetation to assist with urban centre recognition • Vertical planting to highlight vertical dimension and scale. • Designs which respond to existing landform • Design of open space that corresponds to the scale of this urban centre	*Required treatments include:* • Opportunities for vertical expression on walls and embankments that reflect local identity of the centre. • Integrate the diverse identity between the RBH, RNA, QLD Newspapers and Mayne Rail yards precincts.	*Required treatments include:* • Strong opportunities to promote gateways to commercial, medical and industrial precinct presence in this urban centre. •	As and if required by specialist study and recommendations.

Sustainable Design Principles: CONNECTIONS	**A: Bowen Hills = Southern Connection**
Connections Principle:	Effective and efficient connections and accessibility to Bowen Hills Precinct are mandatory to enable its functions.
Connections Goal:	Develop a highly effective network of movement which interfaces and builds up on the existing infrastructure.
Connections Objectives:	• Provide good connectivity and access to transport along and across the precinct • Expand on transport modes to be used to access and navigate the precinct including pedestrians and cycling

CONNECTIONS IMPACTS		
Land Use	**Public Amenity**	**Public Access**
The proposed infrastructure resolves traffic management issues in this urban centre, however isolates existing land use types. The connection between the varied land uses, as an integral part of the local context is damaged. Linkages to these land uses pose difficult movement choices through the proposed infrastructure.	The scale of the proposed infrastructure reduces public amenity and disconnects the urban centre linkages. Orientation and navigation is difficult with less cohesion when moving through the various elements.	While some peripheral connections are maintained to the urban centre, way finding for pedestrians and cyclists is subordinate to the vehicular network. Movement is therefore truncated due to the barriers that proposed infrastructure dictates.

CONNECTIONS MITIGATION				
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to define and map out linkages in the local fabric • Visual screening to promote orientation and aid passage through the urban environment • Ventilation outlets should act as point of reference for proximity and location	*Required treatments include:* • Tree planting to enhance and define circulation paths • Design to extend and verify pedestrian and cyclist linkages in and out of the area. • Design to improve public amenity and land use connections.	*Required treatments include:* • Embankments and vertical wall design to provide sense of purpose and function to the proposed infrastructure. • Ramp alignments show cohesive relationship with the RBH, RNA, QLD Newspapers and Mayne Rail yards precincts.	*Required treatments include:* • Function as pivotal gateway elements to promote entry and exit statements forming connection within and beyond the area. • Orientation and legibility of sub-surface linkages.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **URBAN CHARACTER**	**A: Bowen Hills = Southern Connection**
Urban Character Principle:	Bowen Hills Precinct requires a strong urban character and sense of place to be achieved by the relationship between distinctive built form and quality open space patterns.
Urban Character Goal:	Guide future development to achieve a further enhanced sense of place beyond the existing institutional character in the study site area.
Urban Character Objectives:	• Plan development to generate a balanced emphasis between built form, open spaces and streetscape expression • Increase the variety of local activities and their places being buildings or public spaces to further enhance their contribution to the sense of place by promoting a strong local identity.

URBAN CHARACTER	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
Fragmentation of land use as a result of proposed infrastructure is destructive the overall character of the urban centre. Varying land use types are detached and seem out of place when character is no longer collective and grouped. Built form characteristics are divided.	Public amenity is weakened with the proposed infrastructure because of character separation and mixed identity. Loss of consistent personality in the area is detrimental to the overall value of the urban centre.	Public access is altered with the impact of the proposed infrastructure. Changes in the environment affect residual character along with behaviour of movement within the urban centre.

URBAN CHARACTER	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to define and enhance character in the urban fabric • Use of form and materials that are synonymous with the existing urban centre. • Visual screening to promote character and patterns of the area • Ventilation outlets should be absorbed as functional devices that contribute to the overall character and built form of the centre.	*Required treatments include:* • Tree planting to enhance and define centre character • Design to realise existing characteristics of the centre. • Adaptation and build up of existing vegetation to assist with urban centre recognition and identity.	*Required treatments include:* • Embankments and vertical wall design advertise identity and functional characteristics of the proposed infrastructure • Celebrate ramp alignments as design base to build up a distinctiveness of character with the RBH, RNA, QLD Newspapers and Mayne Rail yards precincts.	*Required treatments include:* • Entry and exit statements forming unique gateways within and beyond the urban centre. • Discrete form and material that is synonymous with the existing urban centre.	As and if required by specialist study and recommendation.

Sustainable Design Principles: **VISUAL VALUES**	**A: Bowen Hills = Southern Connection**
Visual Values Principle:	Bowen Hills Precinct must provide a strong legible framework, support orientation and mental mapping.
Visual Values Goal:	Protect and enhance positive visual qualities of the precinct by supporting legible environments and providing strong positive visual references
Visual Values Objectives:	• Provide development frameworks which maintain and enhance existing views and vistas • Minimise and mitigate project's negative visual impacts on this key location

VISUAL VALUES	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
The impact of the proposed infrastructure weakens the legibility of the existing land use framework. Recognition of existing land uses is obscured by the layers of planned structures.	The public amenity is severely reduced due the overall form and scale of the proposed infrastructure. The proposed structures create an additional layer of visual clutter overlayed over an already contested terrain, significantly reducing the quality of this public environment.	The impact of the proposed infrastructure alters the existing views and vistas. The value of a legible framework for movement is substantially reduced because of scattered and obscured visual references. This hinders efficient pedestrian and cyclist access of the centre.

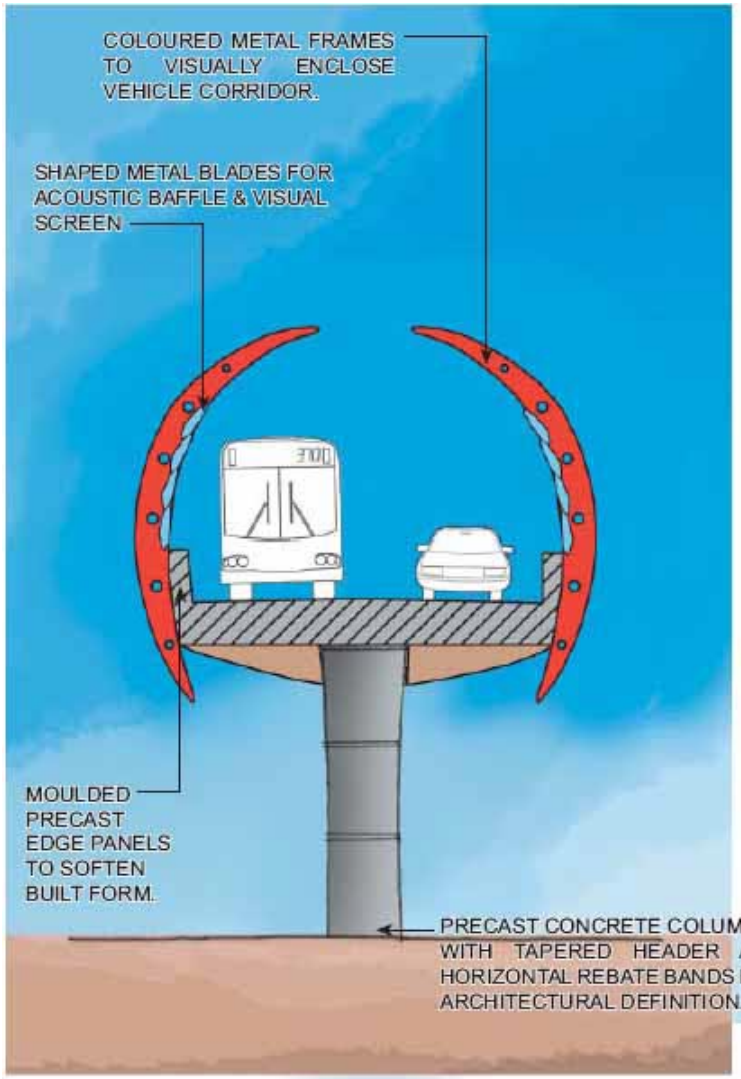
VISUAL VALUES	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Streetscaping to enhance positive visual quality in the urban fabric • Use of form and materials that are supportive of existing visual values. • Visual screening to obscure undesirable views and promote desirable vistas • Ventilation outlets should be designed to highlight positive visual qualities and provide visually iconic statements	*Required treatments include:* • Tree planting to highlight and strengthen vistas • Design to reduce visual impact of structures. • Introduce appropriate trees species to complement the scale of proposed structures • Deploy contemporary planting designs highlighting the hierarchy of this place at city scale.	*Required treatments include:* • Design of embankments and vertical walls reinforce identity and functional characteristics of the proposed infrastructure • Celebrate ramp alignments as design base to build up visual qualities of a high order. • Provide sculptural qualities to the undercroft of carriageways	*Required treatments include:* • Entry and exit statements forming unique gateways within and beyond the urban centre. • Selected form and materials which are expressive of the Bowen Hill / Brisbane landscape context •	As and if required by specialist study and recommendation.

Sustainable Design Principles: **LANDSCAPE ELEMENTS**	**A: Bowen Hills = Southern Connection**
Landscape Elements Principle:	Landscape Elements identify the unique natural attributes of the Bowen Hills Precinct and provide Landscape Amenity to the community.
Landscape Elements Goal:	Protect and enhance areas of significant natural value in Bowen Hills Precinct.
Landscape Elements Objectives:	• Strengthen natural corridors and rehabilitate degraded areas • Ensure existing Landscape Elements are well integrated into project • Strengthen public access and ownership to all significant areas possessing Landscape Amenity

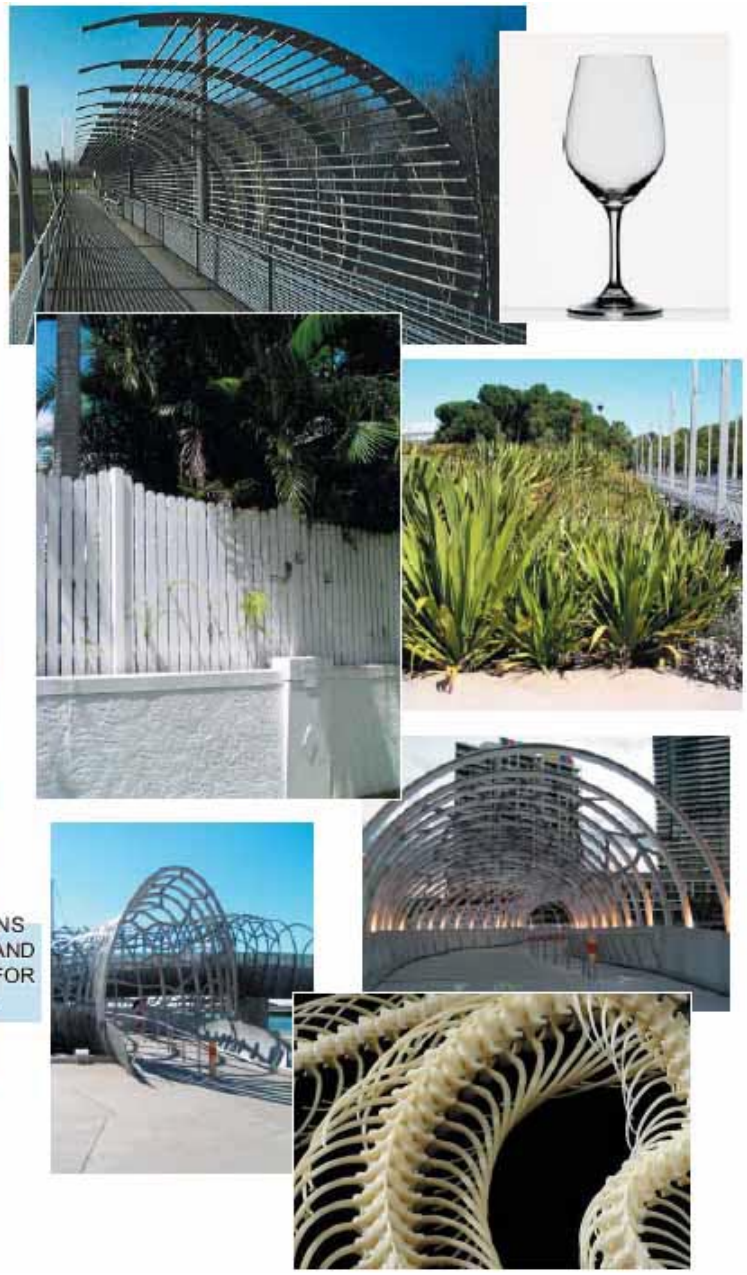
LANDSCAPE ELEMENTS	**IMPACTS**	
Land Use	**Public Amenity**	**Public Access**
• The impact of the proposed infrastructure interferes with the function of the existing open space along the northern banks of Enoggera Creek.	• Transport infrastructure ignores existing landscape elements of Enoggera Creek.	• The impact of the proposed infrastructure creates barriers to existing natural open space corridor along the existing tidal environment of Enoggera Creek.

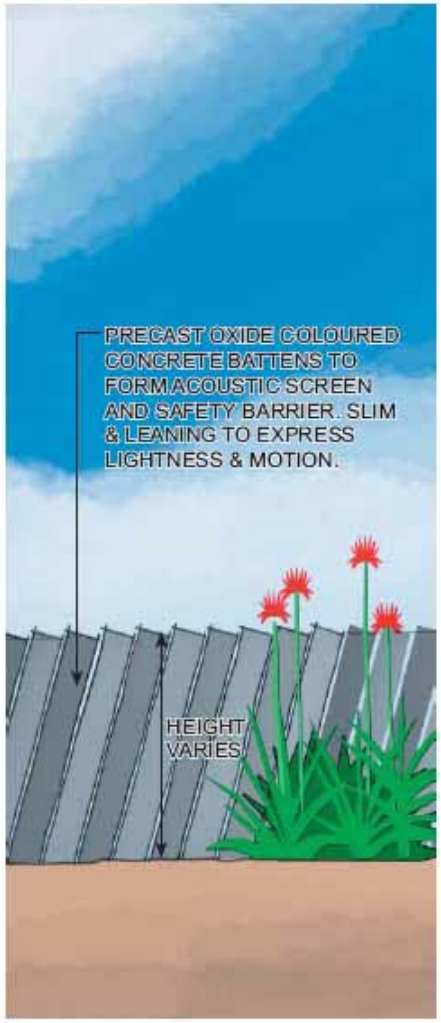
LANDSCAPE ELEMENTS	**MITIGATION**			
Surface and Elevated Structures (including Ventilation Outlets)	**Surface Landscaping**	**Ramp Design**	**Portal Design**	**Noise Mitigation**
Required treatments include: • Covering of transition structures increases areas for natural rehabilitation. • Refer Landscape Concept Plan Option SC_2	*Required treatments include:* • Extending creek vegetation plantings to open space areas will widen the Enoggera Creek vegetation corridor and assist with rehabilitation of degraded and derelict edges. • Refer Landscape Concept Plan Option SC_2 • Extensive use of native plantings and land forming provides increased areas of natural open space. • Refer Planting Elements in Appendix 9.2	*Required treatments include:* • Filling to base of ramps increases areas for natural rehabilitation • Refer Landscape Concept Plan Option SC_2 • Refer Ramp Designs in Appendix 9.1	*Required treatments include:* • Not Applicable	As and if required by specialist study and recommendation.

SOUND BARRIERS



TYPICAL ELEVATED ROADWAY STRUCTURE





ACOUSTIC SCREEN & BARRIER

Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considerations
- Other Studies
- Traffic Site Lines

Airport Link

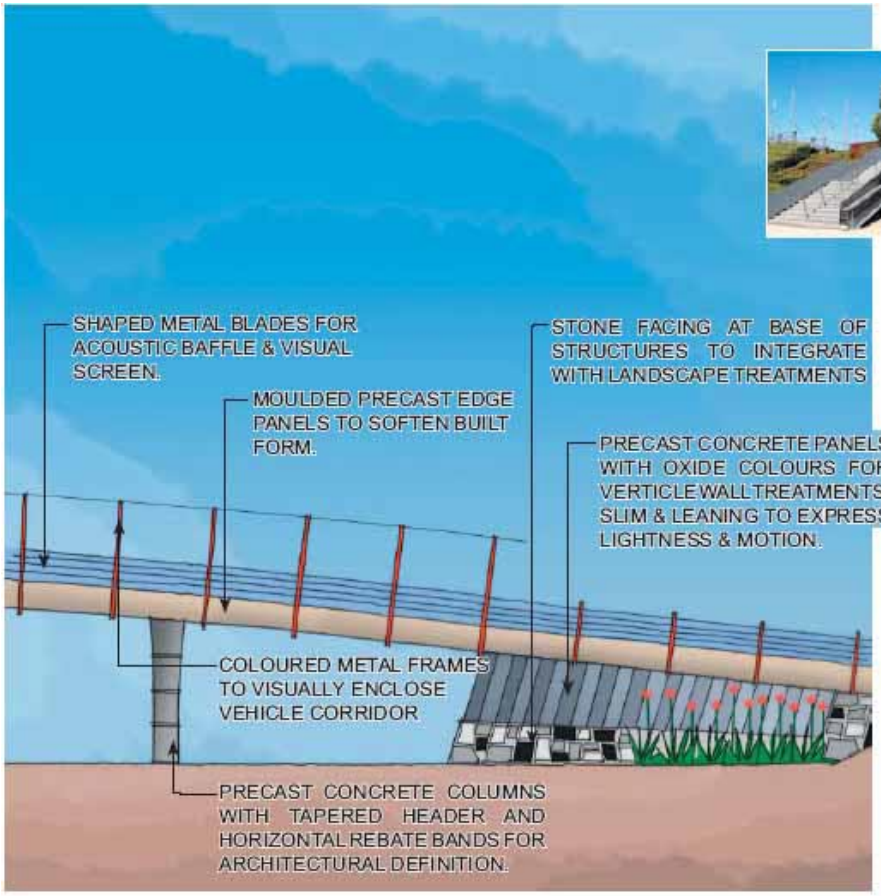
verge URBAN LANDSCAPE ARCHITECTURE

SKM Connell Wagner JOINT VENTURE

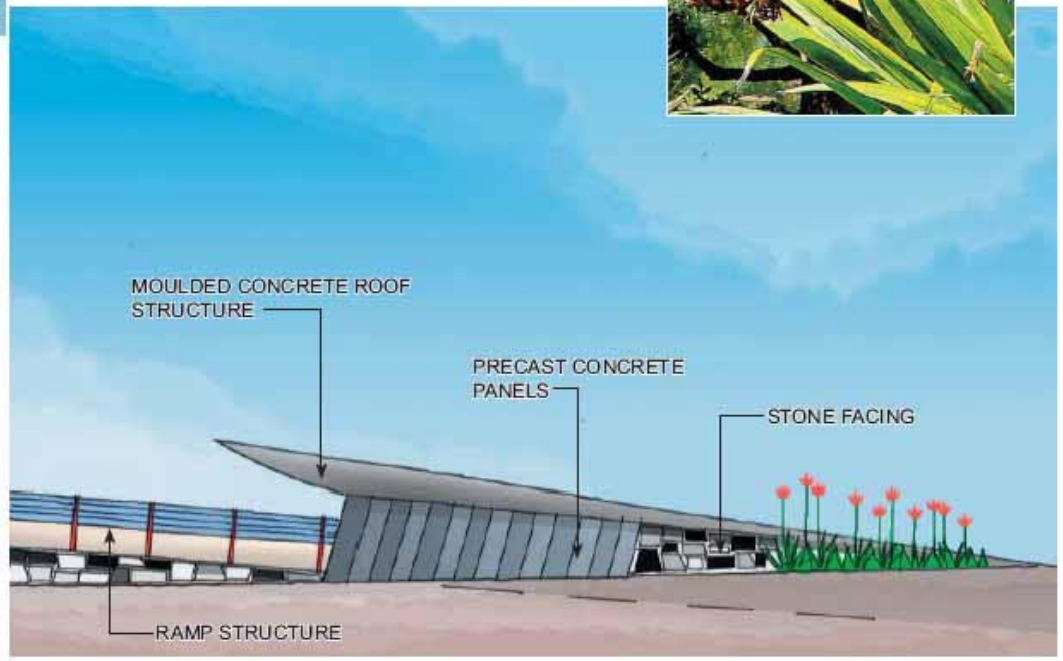
PLACE PLANNING & DESIGN

Vital Places

SOUND BARRIERS

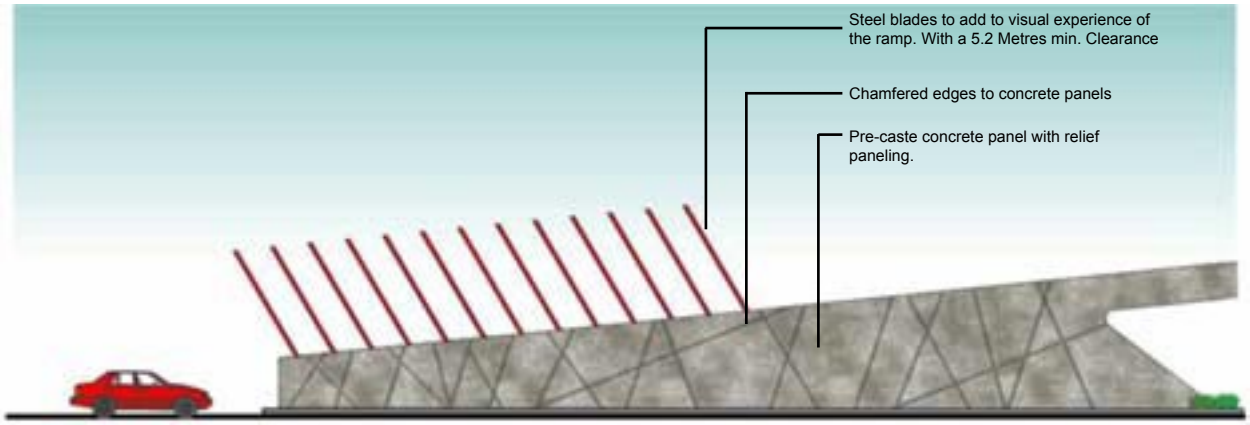


TYPICAL ELEVATED & RAISED ROAD STRUCTURES

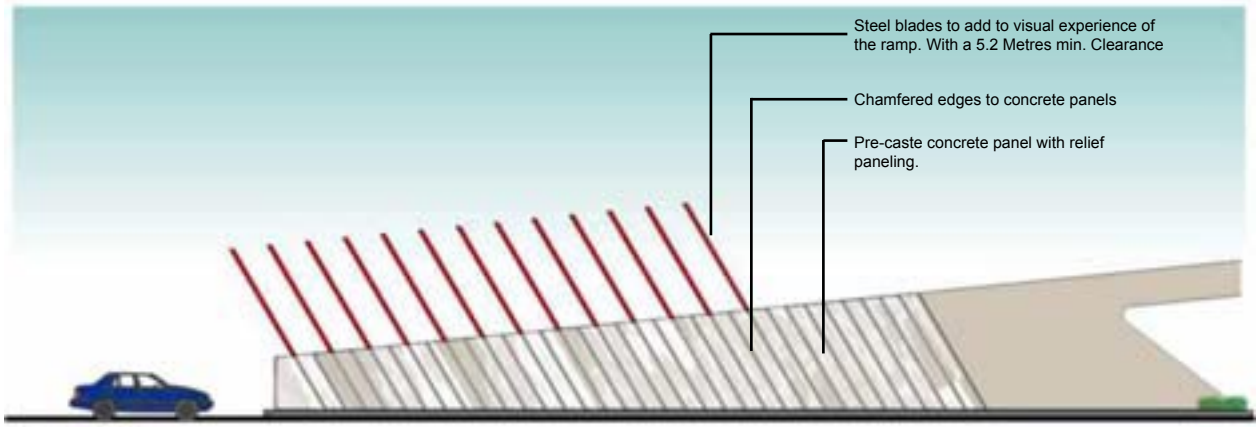


TUNNEL PORTAL

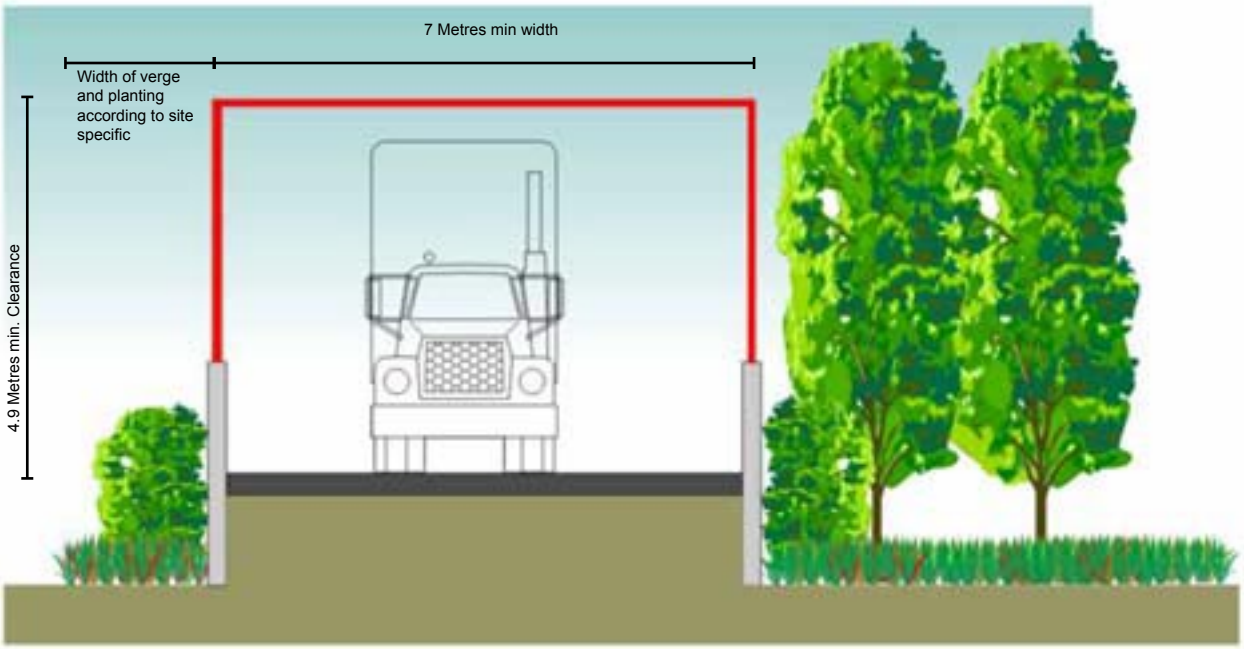
Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consultation
- Hydraulic Considerations
- Other Studies
- Traffic Site Lines



RAMP OPTION ONE



RAMP OPTION TWO

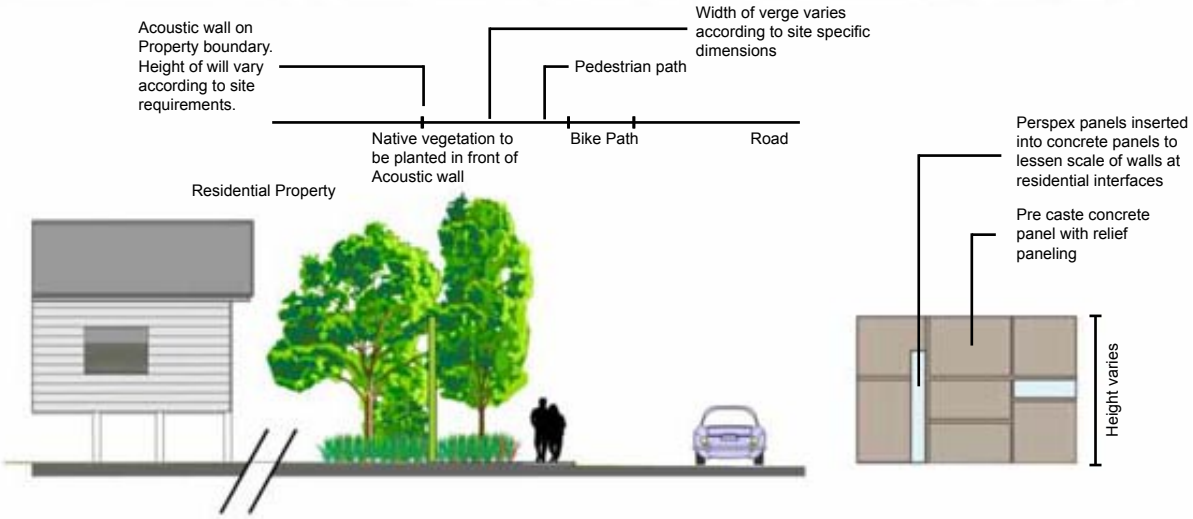


SECTION OF RAMP LANDSCAPE TREATMENT - OPTION ONE

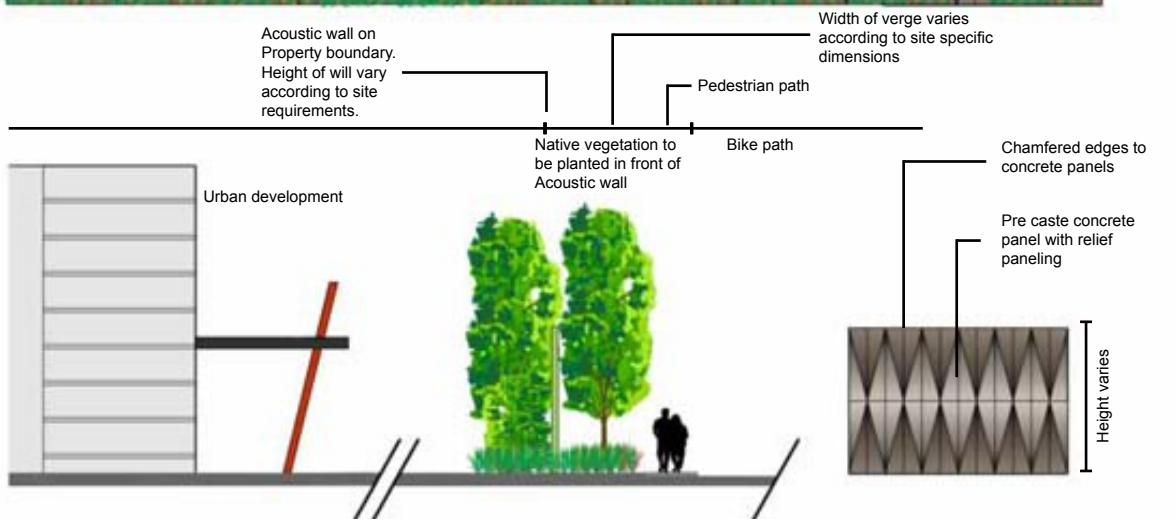
Note: Preliminary Landscape Treatment
Dependant on further investigation of:
- Service
- Property Access
- Community Consutation
- Hydraulic Considertions
- Other Studies
- Traffic Site Lines

SOUND BARRIERS

SUBURBAN INTERFACE



CENTRES/URBAN INTERFACE



Note: Preliminary Landscape Treatment
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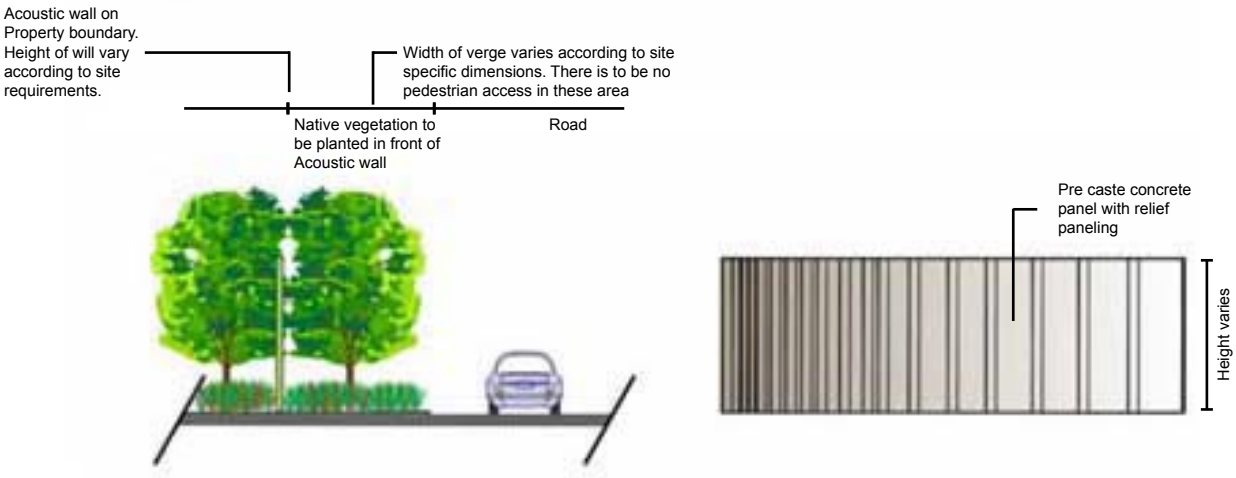
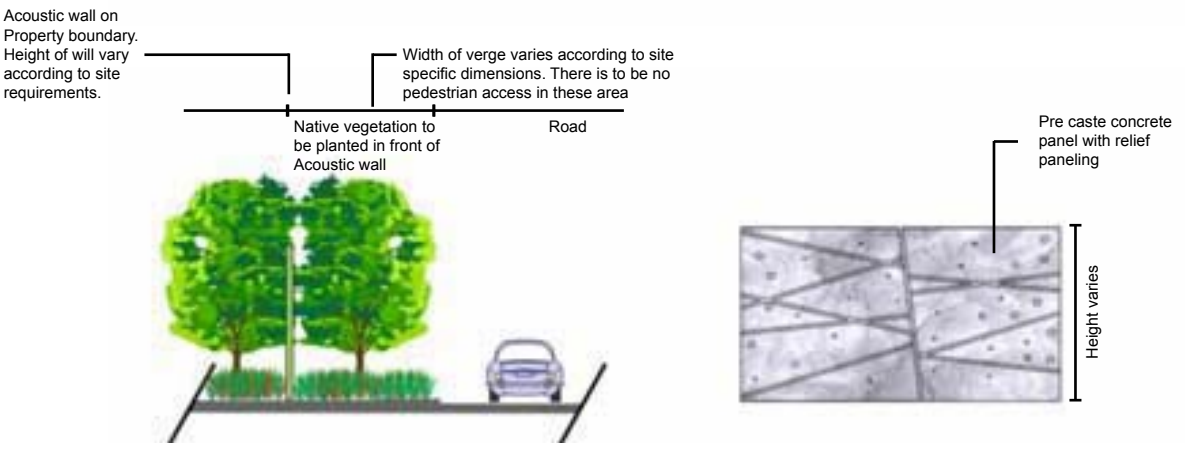
SOUND BARRIERS

MAIN ROADS INTERFACE



MAIN ROADS INTERFACE



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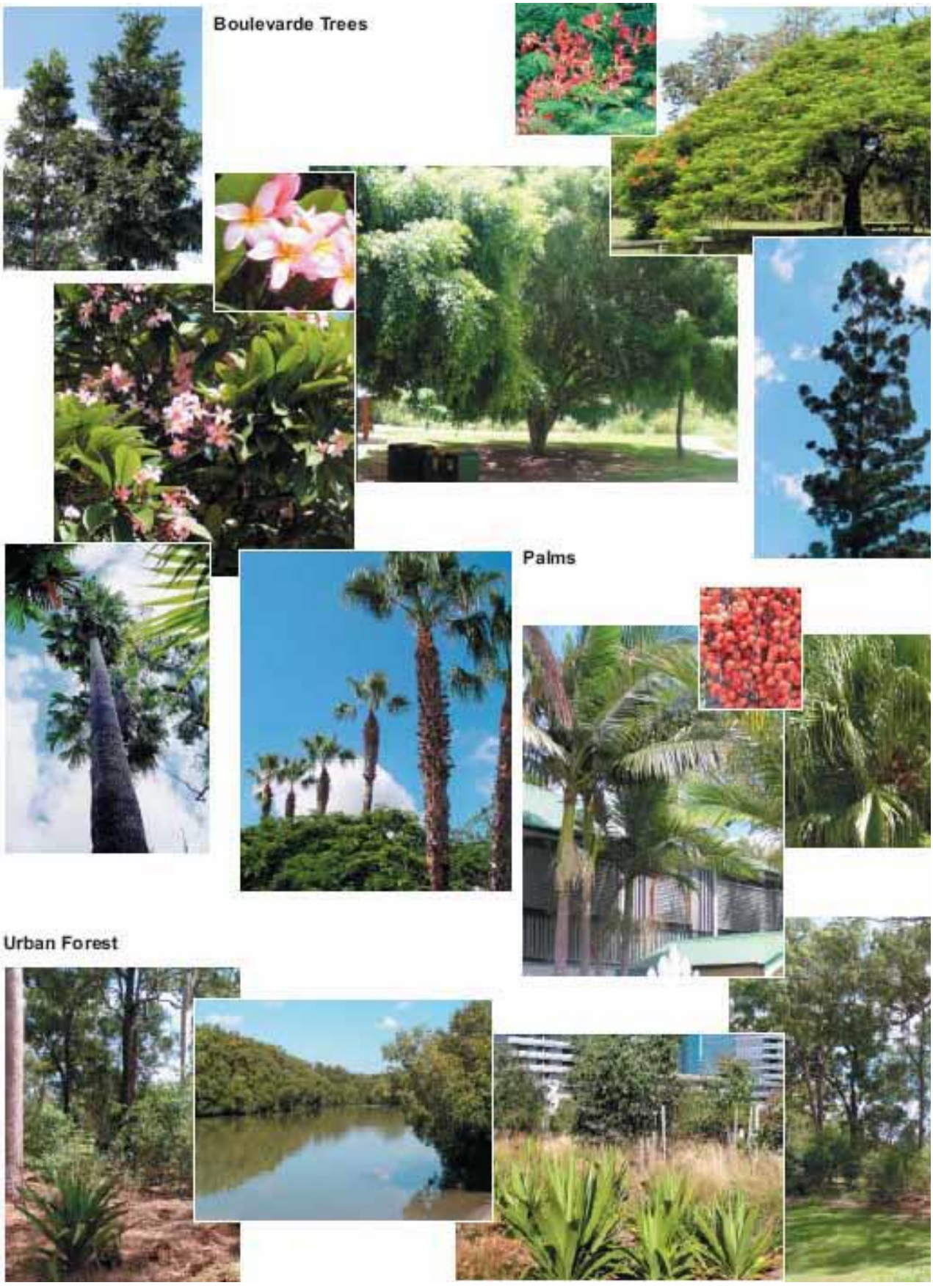
Airport Link

SKM Connell Wagner JOINT VENTURE
verge URBAN LANDSCAPE ARCHITECTURE
PLACE PLANNING & DESIGN
Vital Places

PLANTING ELEMENTS



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