



Shepherd Street Precinct Masterplan, Liverpool

19-33 Shepherd Street,
Liverpool, 2170

SJB Architects



Project

Shepherd Street Precinct Masterplan
19-33 Shepherd Street,
Liverpool, 2170

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1	Introduction	4	5	Recommendations	51
1.1	Introduction	5			
1.2	Urban Context	6			
1.3	Site Context	7			
1.4	Liverpool LEP 2008	9			
1.5	Liverpool DCP 2008	11			
1.6	FSR Bonus Identified in the Liverpool City Centre LEP 2008	15			
2	Site Analysis	16			
2.1	Local Open Space	17			
2.2	Local Amenity & Services	18			
2.3	Local Proposed Development	19			
2.4	Local Movement	20			
2.5	Site Movement	21			
2.6	Site Landform	22			
2.7	Constraints	23			
2.8	Opportunities	24			
3	Urban Design Principles	25			
3.1	Urban Design Principles	26			
3.1.1	Urban Design Principles	27			
3.2	Urban Design Response	28			
3.2.1	Urban Design Response	29			
3.2.2	Urban Design Response	30			
3.2.3	Urban Design Response	31			
3.3	Urban Design Response	32			
3.4	Pedestrian Boardwalk Strategy	33			
3.4.1	Pedestrian Boardwalk Strategy	34			
3.5	Urban Design Response	35			
4	Design Concept	37			
4.1	Preferred Concept Approach	39			
4.2	Preferred Concept Massing - Concepts	40			
4.3	Preferred Concept - Plan	41			
4.4	Preferred Concept Massing	42			
4.5	Preferred Concept Massing	43			
4.6	Visualisation	44			
4.7	Preferred Concept Solar Access	45			
4.8	Shadow Study - 21st of December	46			
4.9	Shadow Study - 20th of March	47			
4.10	Shadow Study - 21st of June	48			
4.11	Shadow Study - 20th of September	49			
4.12	Preferred Concept Assessment	50			
	Executive Summary				
	SJB have been appointed by Coronation Property Co. to prepare an urban design study and masterplan for the properties located at Shepherd Street, south of Atkinson Street, Liverpool. The purpose of the study is to test the development capacity of the properties within the Shepherd Street precinct in a comprehensive manner, taking into consideration the consolidated impact and ability to achieve the requirements of SEPP65 and the Apartment Design Guide (ADG).				
	The precinct masterplan is based on analysis of the site, its immediate and broader urban contexts, focusing specifically on the site's integration with the surrounding movement network, open spaces and landscape, and built form character. Key site features including the railway corridor, Georges River and existing heritage item have all been identified and used to inform the concept design.				
	Design principles have been prepared that distil the findings of the analysis, key planning objectives, and our knowledge from working on similar projects in Western Sydney and throughout the Sydney Metropolitan Area. These principles provide the basis of the options design and testing, and have directly influenced the structure and scale of the development.				
	A concept for the precinct has been prepared to investigate the appropriate level in development yield and density, and to determine the appropriate up-lift in building heights and floor space ratio for the site. The concept has been tested in regards to built form, scale, orientation, overshadowing and amenity, all to determine an appropriate response to the precinct. The ultimate goal of this study is to inform amendments to the Liverpool LEP 2008, and specifically the height and FSR controls.				

Introduction

Overview of the regional, urban and local context to provide an initial understanding of the site.

Introduction

1

1.1 Introduction

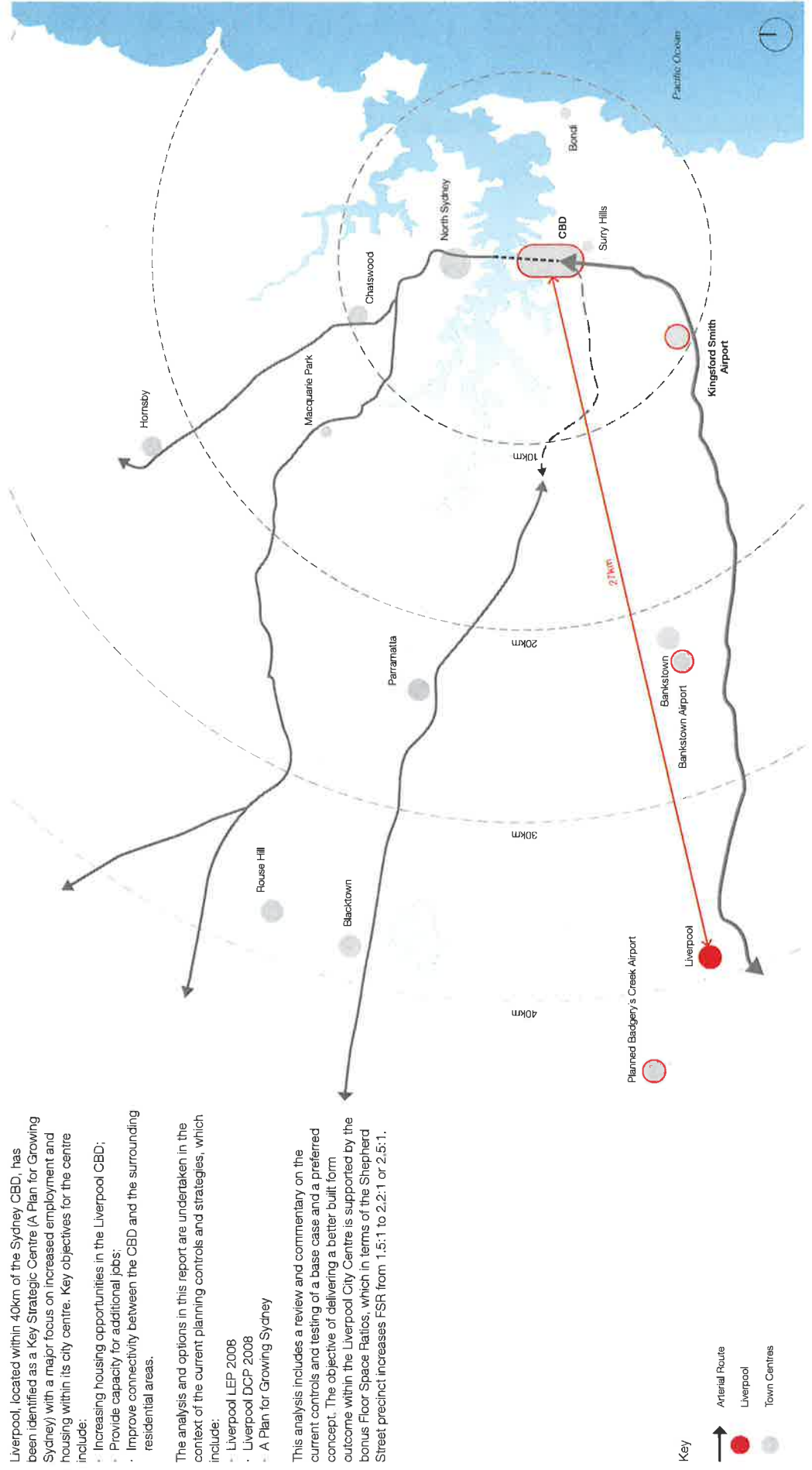
Liverpool, located within 40km of the Sydney CBD, has been identified as a Key Strategic Centre (A Plan for Growing Sydney) with a major focus on increased employment and housing within its city centre. Key objectives for the centre include:

- Increasing housing opportunities in the Liverpool CBD;
- Provide capacity for additional jobs;
- Improve connectivity between the CBD and the surrounding residential areas.

The analysis and options in this report are undertaken in the context of the current planning controls and strategies, which include:

- Liverpool LEP 2008
- Liverpool DCP 2008
- A Plan for Growing Sydney

This analysis includes a review and commentary on the current controls and testing of a base case and a preferred concept. The objective of delivering a better built form outcome within the Liverpool City Centre is supported by the bonus Floor Space Ratios, which in terms of the Shepherd Street precinct increases FSR from 1.5:1 to 2.2:1 or 2.5:1.



Introduction

1.2 Urban Context

The site is positioned at the south of the Liverpool City Centre and is located within Liverpool's urban renewal precinct, which is made up of industrial properties zoned for high-density residential uses.

It is located within a 10-15 minute walk from the Liverpool train station and the Macquarie Street retail area, and is in close proximity to regional facilities such as Liverpool Hospital, Liverpool TAFE and the Casula Powerhouse Arts Centre.

The precinct's broader urban context features a number of public parks, including Mill Park, Haigh Park, and various green spaces along the Georges River foreshore, which also connect the site to Lighthouse Park.



Introduction

1.3 Site Context

The precinct is located in an urban renewal area made up of industrial properties zoned for high density residential.

To the west of the precinct is a railway corridor that serves the T2 Inner West & South, T3 Bankstown and T5 Cumberland Lines. Vegetation along the foreshore of the Georges River defines the eastern boundary of the precinct and extends to the southern boundary and beyond to the Casula Powerhouse. Immediately to the north of the site is a medium density residential precinct, and single light-industrial property.

The existing residential development to the north of the precinct predominantly consists of 3-storey walk-up apartment buildings, and 1-2 storey detached houses and terraces to the west of the railway line.

The existing road and footpath infrastructure requires extensive maintenance and realignment. Access to the Casula Powerhouse Arts Centre, between Shepherd Street and Powerhouse Road is poorly defined.

The precinct currently features a range of 1 and 2 storey buildings and varying land uses, including light industrial, manufacturing and logistics. A single heritage building (LLEP2008 Item 104), referred to as the Paper Mill, is located at the north-eastern boundary of the precinct, and serves as a visually prominent characteristic. A number of large mature trees are positioned along the edge of the street reserves and property boundaries.



Key

— Site Boundary

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Introduction

1.3 Site Features



Atkinson Street and Shepherd Street intersection



Paper Mill heritage building positioned along Atkinson Street



Existing industrial buildings along Shepherd Street



Casula Powerhouse Arts Centre



Street character of Shepherd Street



View looking south towards the Georges River



Powerhouse Road looking towards Shepherd Street



Neighbouring housing typologies located north of the site



Existing industrial buildings along Shepherd Street



Pedestrian link and cycleway adjacent to Powerhouse Road

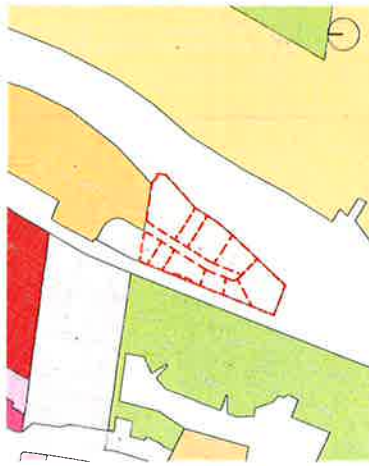


Residential apartment buildings to the north of Atkinson Street



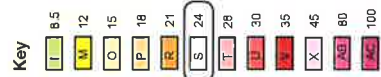
Paper Mill heritage building along Shepherd Street frontage

1.4 Liverpool LEP 2008

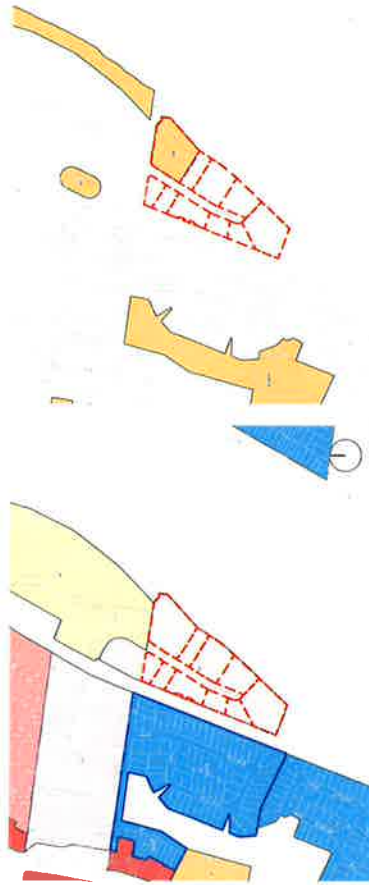


01 Height of Buildings Map

The precinct features a 24m height control, as outlined in the Liverpool LEP 2008. Areas to the east are designated at 8.5m in height, whilst the properties to the north have an allowable height limit of 18m.

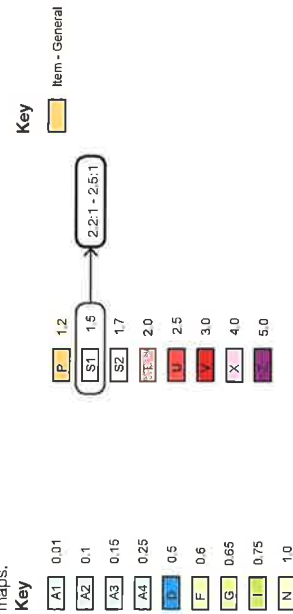


Source: Liverpool Local Environmental Plan 2008 - Height of Buildings Map - Sheet HOB - 012

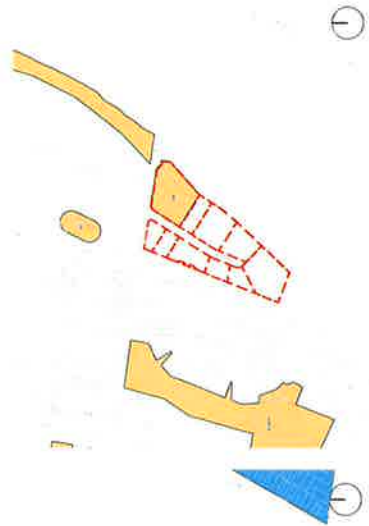


02 Floor Space Ratio Map

The LEP 2008 applies an FSR control of 1:1.5 across the precinct. Properties to the north have an FSR of 1:1, whereas lots to the east have an FSR of 0.5:1. The precinct is however eligible for an increase in the allowable FSR due to large lot sizes. This permits sites to have an FSR of 2:2.1 - 2.5:1 instead of the permissible 1.5:1 as stipulated on the LEP maps.



Source: Liverpool Local Environmental Plan 2008 - Floor Space Ratio Map - Sheet FSR - 012

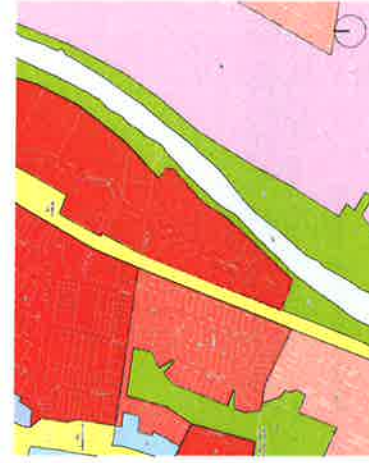


03 Heritage Map

The lot positioned at the north-eastern boundary of the site is dedicated as Heritage 'General' as specified by the LEP 2008 (Item 104).

Key

Item - General



04 Land Zoning Map

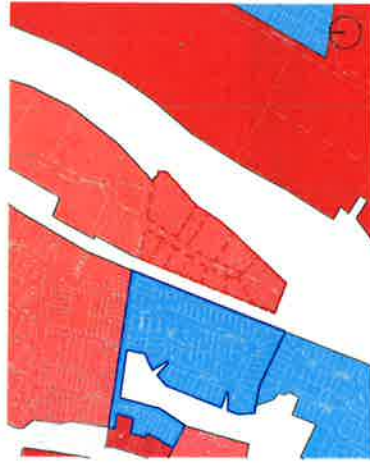
The LEP 2008 applies a High Density Residential (R4) zoning across the precinct. Areas to the north are also zoned R4, whilst the lots to west are zoned R3 Medium Density Residential, to the south RE1 Public Recreation, and IN1 General Industrial to the east of the W1 Natural Waterways.

Key

B1	Neighbourhood Centre
B2	Local Centre
B3	Commercial Core
B4	Mixed Use
B5	Business Development
B6	Enterprise Corridor
B7	National Parks and Nature Reserves
B8	Environmental Conservation
B9	Environmental Management
IN1	General Industrial
IN2	Light Industrial
IN3	Heavy Industrial
R1	General Residential
R2	Low Density Residential
R3	Medium Density Residential
R4	High Density Residential
R5	Large Lot Residential
RE1	Public Recreation
RE2	Private Recreation
RU1	Primary Production
RU2	Rural Landscape
RU3	Rural Small Holdings
SP1	Special Activities
SP2	Infrastructure
W1	Natural Waterways
WSP	SEPP Western Sydney Parklands

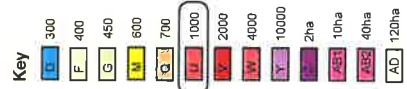
Source: Liverpool Local Environmental Plan 2008 - Land Zoning Map - Sheet LZN - 012

1.4 Liverpool LEP 2008

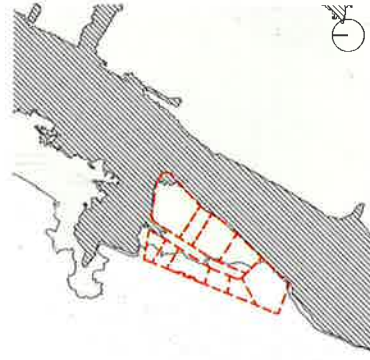


05 Lot Size Map

The LEP 2008 applies a minimum lot size control of 1,000m² on the lots within the precinct, which this is consistent with lots to the north. The medium density residential area to the west of the precinct has a minimum 300m² lot size, where as those located across the Georges River to the east have a minimum 2,000m² lot size.



Source: Liverpool Local Environmental Plan 2008 - Lot Size Map - Sheet LS2 - 012



06 Flood Planning Map

Lots along the eastern boundary of the subject site are identified as being flood prone land (as are areas to the north, south and east of the site) within the LEP 2008.



Source: Liverpool Local Environmental Plan 2008 - Flood Planning Map - Sheet FLD - 012

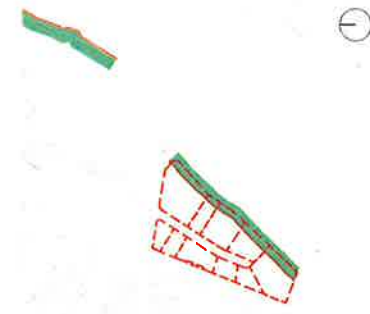


07 Environmentally Significant Land Map

The eastern boundary of the site is designated Environmentally Significant Land within the LEP 2008, as it fronts onto the Georges River Riparian Corridor.

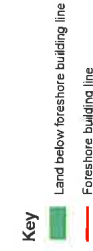


Source: Liverpool Local Environmental Plan 2008 - Environmentally Significant Land Map - Sheet ESL - 012



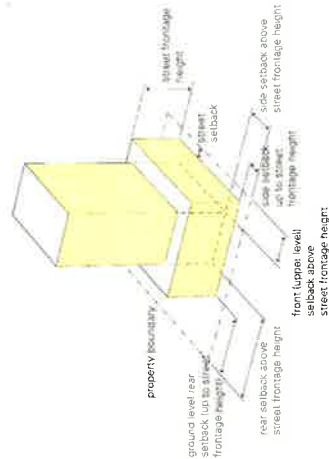
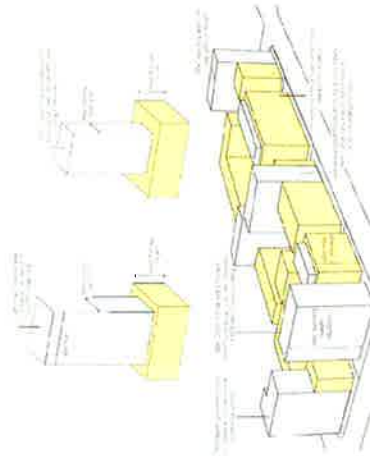
08 Foreshore Building Line Map

The LEP 2008 states that the eastern boundary of the precinct, along the Georges River, must take into account the Environmentally Significant Land restrictions in the form of a Foreshore Building Line setback.



Source: Liverpool Local Environmental Plan 2008 - Foreshore Building Line Map - Sheet FBL - 012

1.5 Liverpool DCP 2008



01 Street Setbacks

The Liverpool DCP 2008 indicates that lots within the precinct must have a street building setback of 4 - 4.5m from Shepherd Street, and along the eastern side of Atkinson Street. Balconies may project up to 1.2m into front building setbacks, with the cumulative length of all balconies at a particular level to account for no more than 50% of the building facade. Shading devices, entry awnings and cornices are permissible.

Key



02 Street Frontage

A street frontage of 15 - 20m is applied to lots facing Shepherd Street and Atkinson Street as indicated above. The two lots positioned in the north-western corner of the precinct are located opposite a lot designated as a heritage item and must be scaled appropriately. 'Fake' building street walls (frames with the building line recessed behind) will not be permitted up to street frontage height level.

Key



03 Building Depth and Bulk

The Liverpool DCP 2008 states that buildings should promote the design and development of sustainable buildings by minimising the need for artificial heating, cooling and lighting whilst maintaining good internal amenity. Bulk and scale of buildings may be articulated via separation, modulation and facade detail. The maximum floor plate of a residential development above 25m in height is 500m² (GFA) and a maximum building depth of 18m.

Residential Condition	Maximum GFA per Floor	Maximum Building Depth
Above 25m in height:		
The GFA permitted above this height is 20% of the total gross floor area of the development, up to the maximum permissible height shown on the Height of Buildings map in the Liverpool LEP 2008.	500m²	18m

04 Building Setbacks

Lots within the subject site must comply with the table below. Lots fronting the railway corridor must have a building setback of 12m, and lots facing the Georges River must comply with the Foreshore Building Line map boundary as indicated by the Liverpool LEP 2008.

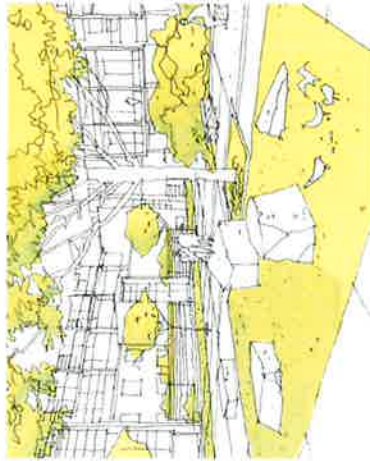
High Density Residential	Front (Upper Level) Setback	Side Setback	Rear Setback
All uses up to 12m height:			
• Non-habitable	Street setback	3m	6m
• Habitable	Street setback	6m	6m
All uses up to 12-25m height:			
• Non-habitable	N/A	4.5m	6m
• Habitable	N/A	9m	9m
All uses up to 25-35m height:			
• Non-habitable	Max. 20% of total site GFA up to max. floorplate of 500sqm	6m	6m
• Habitable	Max. 20% of total site GFA up to max. floorplate of 500sqm	12m	12m
All uses up to 35-45m height:			
• Non-habitable	Max. 20% of total site GFA up to max. floorplate of 500sqm	6m	9m
• Habitable	Max. 20% of total site GFA up to max. floorplate of 500sqm	14m	14m

Source: Part 4 Liverpool City Centre LDCP 2008 - Building to Street Alignment and Street Setbacks pg 13 - 14.

Source: Part 4 Liverpool City Centre LDCP 2008 - Building Depth and Bulk pg 17 - 18.

Source: Part 4 Liverpool City Centre LDCP 2008 - Building Setbacks pg 18 - 21.

1.5 Liverpool DCP 2008



05 Site Cover and Deep Soil Zones

The 12m railway corridor setback applying to lots on the western boundary of the precinct allows deep soil planting to occur within this area to improve the amenity of the developments, allowing for good daylight access, ventilation, improve visual privacy and create areas of passive and active recreation. Structures, works or excavations that may restrict vegetation growth are not permitted within this zone (car parking, hard paving, patios, decks, drying areas etc.).

Source: Part 4 Liverpool City Centre LDCP 2008 - Site Cover and Deep Soil Zones, pg 23 - 24.

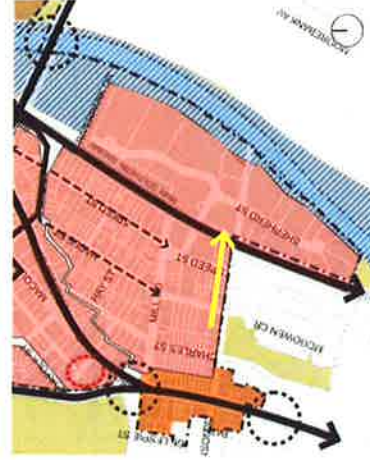
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06 Landscape Design

The Liverpool DCP 2008 states that all landscaped areas must be irrigated with recycled water, and species must be selected from Council's schedule of Preferred Landscape Species. All commercial and retail developments must incorporate planting into accessible outdoor spaces and remnant vegetation must be maintained throughout the site wherever practical. A long-term concept plan must be provided for all landscaped areas, in particular that of deep soil zones, and any new public spaces are to be designed so that at least 50% of the open space provided has 3 hours minimum of sunlight (between 10am and 3pm on 21st June - Winter Solstice).

Source: Part 4 Liverpool City Centre LDCP 2008 - Landscape Design, pg 25 - 26.



07 Pedestrian Permeability

The Liverpool DCP 2008 encourages active street fronts and the enhancement of existing and proposed through site links, both vehicular and pedestrian. Where possible, existing dead end lanes are to be extended through to the next street as redevelopment occurs (ie, Shepherd Street onto Powerhouse Road). Through block connections (Shepherd Street to Georges River foreshore) must be 5m clear of all obstructions, clear and direct for pedestrians using signage, and 'safer-by-design' principles.

Source: Part 4 Liverpool City Centre LDCP 2008 - Pedestrian Permeability, pg 28 - 29.



08 Active Street Frontages and Address

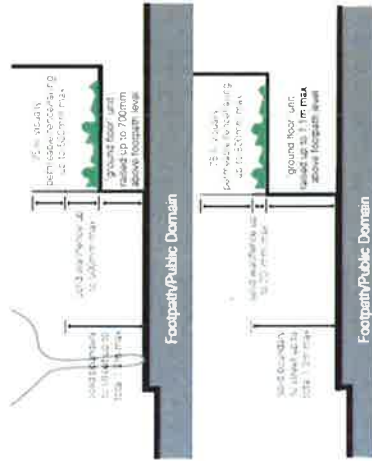
Proposed residential development must contribute positively to the street by providing a clear street address, direct access from the primary street front and allow residents to overlook all surrounding streets. Active ground floor uses are to be at the same general level as the footpath and accessible directly from the street.

Source: Part 4 Liverpool City Centre LDCP 2008 - Active Street Frontages and Address, pg 31 - 33.

Key

- - Site Boundary
- Arterial Route
- Pedestrian links
- Riverfront walk
- Residential Area
- Open Space
- Riverfront

1.5 Liverpool DCP 2008



09 Front Fences

Fences to primary and secondary frontages, and side boundaries, must use varied materials, not be 1.3m above the footpath/public domain, allow for passive surveillance and clearly define the interface between the private and public domain.

10 Safety and Security

The Liverpool DCP 2008 states that 'Safer-by-Design' principles must be implemented within the design so as to allow for passive surveillance of public and communal spaces, access ways, entries and driveways. The number of identifiable 'front door' entries at ground level must be maximised, as is the amount of lighting in all pedestrian access ways, parking areas and building entries. Boundaries must be clearly defined using physical or symbolic features with particular consideration given to the avoidance of blind spots.

11 Awnings

Buildings with an interface to the public domain (lots positioned along streets identified in diagram above) must provide shelter where most pedestrian activity occurs, whilst providing a consistent street frontage as identified within the DCP 2008. Awnings must be horizontal in form, 2.4m in depth, considerate of growth pattern of mature trees and have a clearance of 2.8m. They must match building facades, and at corner sites, the awnings must be wrapped around the corner for a minimum of 6m.

12 Building Extérieurs

According to the Liverpool DCP 2008, facades should be articulated in order to address the street and add visual interest, thus blank walls and single materials in both the public and private realm are discouraged. Balconies and terraces should be provided to overlook public spaces. All roof top structures, such as air conditioning, lift motor rooms etc, should be incorporated into the architectural design of the building. Special consideration should be given to adjoining buildings (in particular heritage buildings) in regards to: appropriate alignment and street frontage heights, setbacks above frontages, appropriate materials and finishes selection, facade proportions and the provision of enclosed corners at street intersections.

Key

- Site Boundary
- Awnings

Introduction

1.5 Liverpool DCP 2008



13 Corner Treatments

New buildings opposite or adjacent to Heritage Items are to respond in terms of height, scale and proportion. New buildings opposite or adjacent to public open space are to comply with the sun access controls.

14 Traffic & Access

The Liverpool DCP 2008 states that parking and servicing provisions be contained within development sites to an amount and rate adequate for the economic and sustainable growth of the city centre. All new developments must provide for safe and secure access, minimise impacts on city amenity, and ensure that access is provided for the disabled and mobility impaired.

Residential Development	Car Spaces Required
Car Parking:	
• Studio Apartment	0.5 or 1 Space per 2 dwellings
• One Bedroom	1
• Two Bedroom	1
• Three Bedroom	1.5
Car Parking Visitor:	1 per 10 dwellings
Accessible:	Min. 1 per dwelling or 2%
Service Vehicles:	1 per 40 dwellings
Motorcycle:	1 per 20 car spaces
Bicycle:	1 per 200sqm GFA

15 Noise

The Liverpool DCP 2008 identifies that all lots affected by Noise Sources (see diagram above), must produce an acoustic report outlining the appropriate noise attenuation and barrier planning strategy. Lots fronting the railway corridor (Noise Source 3) must have a 12m setback.

Key

---	Site Boundary
■	Noise Source 1 (Major Roads)
■	Lots affected by Noise Source 1
■	Noise Source 3 (Railway Corridor)
■	Lots affected by Noise Source 3

16 Heritage

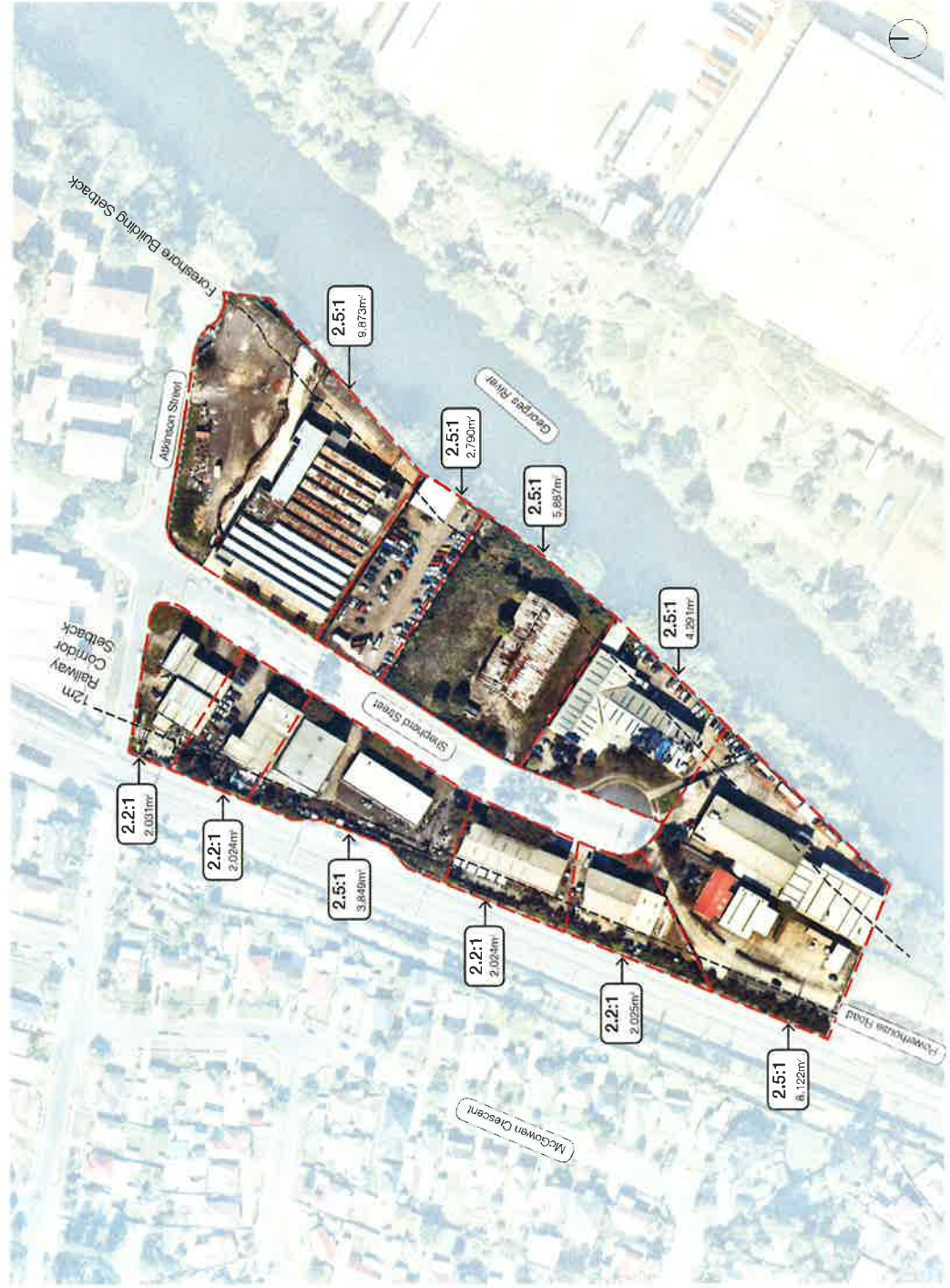
Buildings identified as 'Heritage Items' must comply with the conservation criteria as set out by the Liverpool DCP 2008, in regards to bulk and scale, siting of new buildings, architectural form and detailing, materials and finishes, original fabric and the aging process. All new developments within the vicinity of a heritage item must provide an impact assessment.

1.6 FSR Bonus Identified in the Liverpool City Centre LEP 2008

Large lot sizes within the R4 High Density Residential zoned land, such as those within the Shepherd Street Precinct, are eligible for additional built form. This is achieved by an increase in the allowable Floor Space Ratio, permitting such sites to have an FSR of 2.2:1 - 2.5:1 instead of the permissible 1.5:1 stipulated on the LEP maps.

Zone R4 High Density Residential	Site Area greater than 1,000 sqm less than 2,500 sqm	Site Area equal to or greater than 2,500 sqm
18 m	(1 + X):1	2:1
24 m	(1.5 + X):1	2.5:1
35 m	(2 + X):1	3:1
45 m	(2 + 1.5X):1	3.5:1

X = the number of square metres of the site area





Site Analysis

Exploring the existing urban conditions and contexts, to assist in developing an appropriate urban response

Site Analysis

2

2.1 Local Open Space

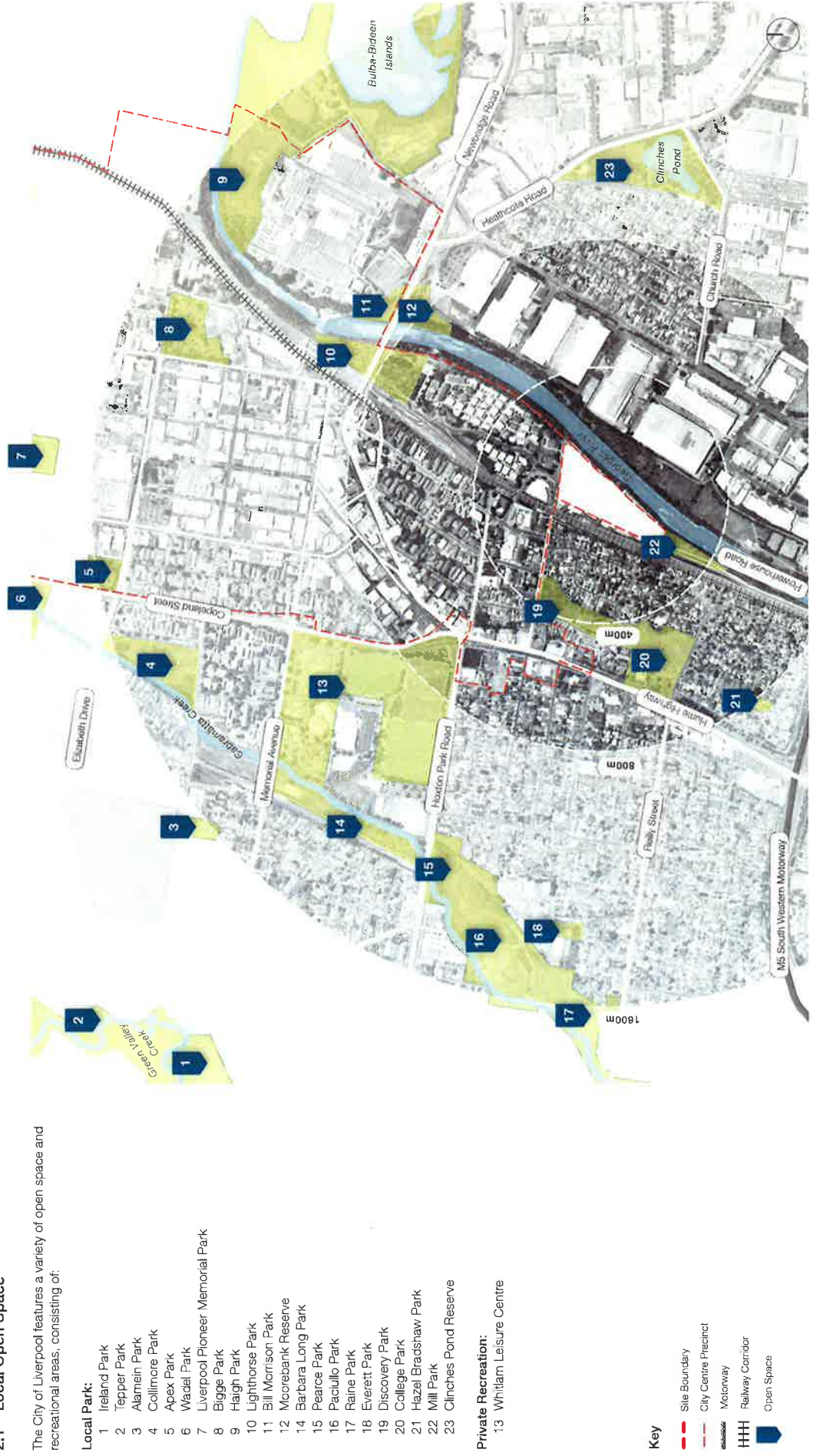
The City of Liverpool features a variety of open space and recreational areas, consisting of:

Local Park:

- 1 Ireland Park
- 2 Tepper Park
- 3 Alamein Park
- 4 Collimore Park
- 5 Apex Park
- 6 Wadel Park
- 7 Liverpool Pioneer Memorial Park
- 8 Bigge Park
- 9 Haigh Park
- 10 Lighthouse Park
- 11 Bill Morrison Park
- 12 Morebank Reserve
- 14 Barbara Long Park
- 15 Pearce Park
- 16 Pachtulo Park
- 17 Raine Park
- 18 Everett Park
- 19 Discovery Park
- 20 College Park
- 21 Hazel Bradshaw Park
- 22 Mill Park
- 23 Clinches Pond Reserve

Private Recreation:

- 13 Whitlam Leisure Centre



Site Analysis

2

2.2 Local Amenity & Services

A number of commercial, community, transport and educational destinations are located within a 2 km radius of the site, with the major arterial and primary routes providing connection to the following services and amenities:

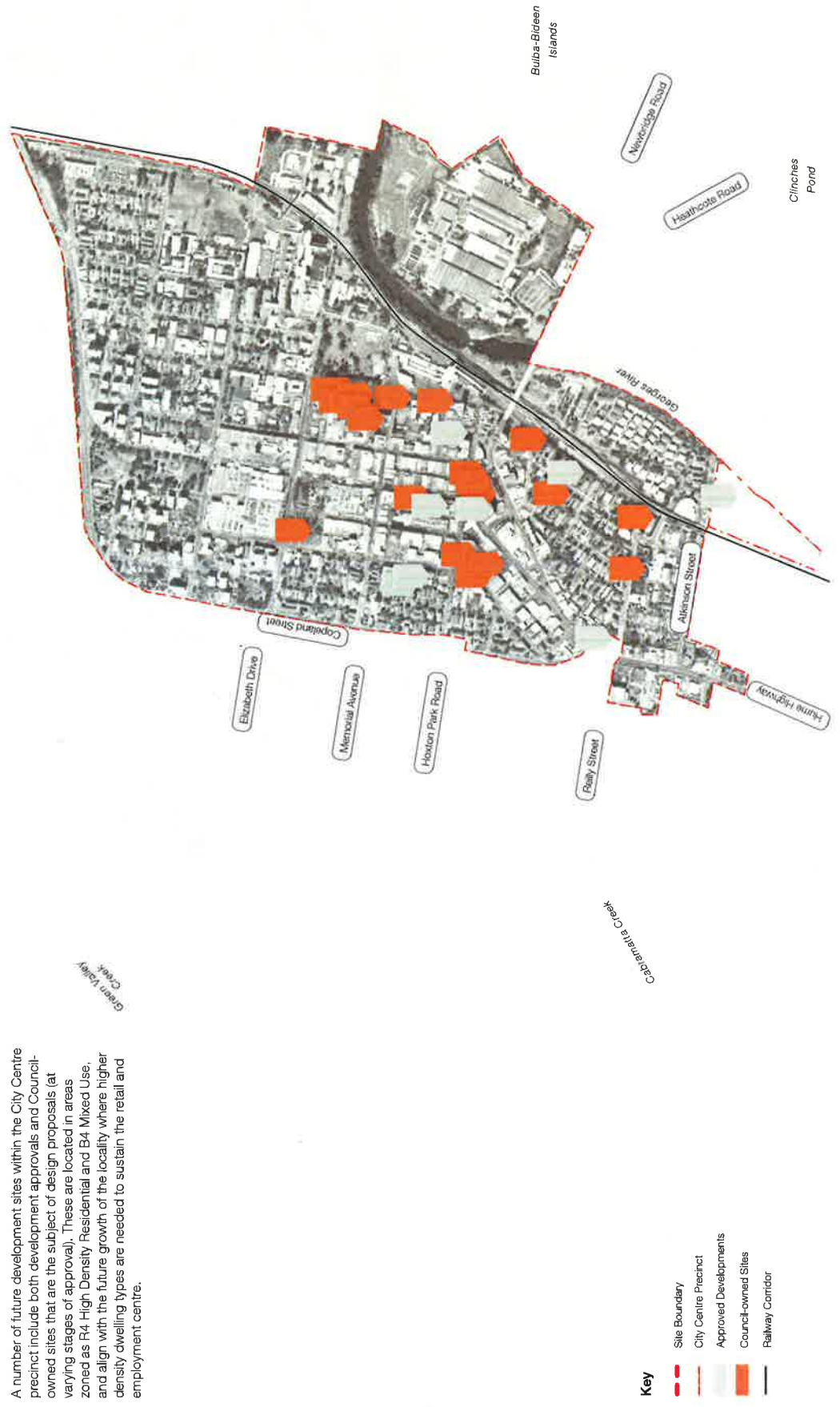
- Liverpool Hospital
- Sydney Southwest Private Hospital
- Liverpool TAFE
- Westfield Liverpool
- Whitlam Leisure Centre
- Liverpool Train Station

Community facilities including the Liverpool Community Centre and Liverpool Library are accessible via the Hume Highway. Areas of sport and recreation are located in close proximity to bodies of water, such as Cabramatta Creek and the Georges River.



2.3 Local Proposed Development

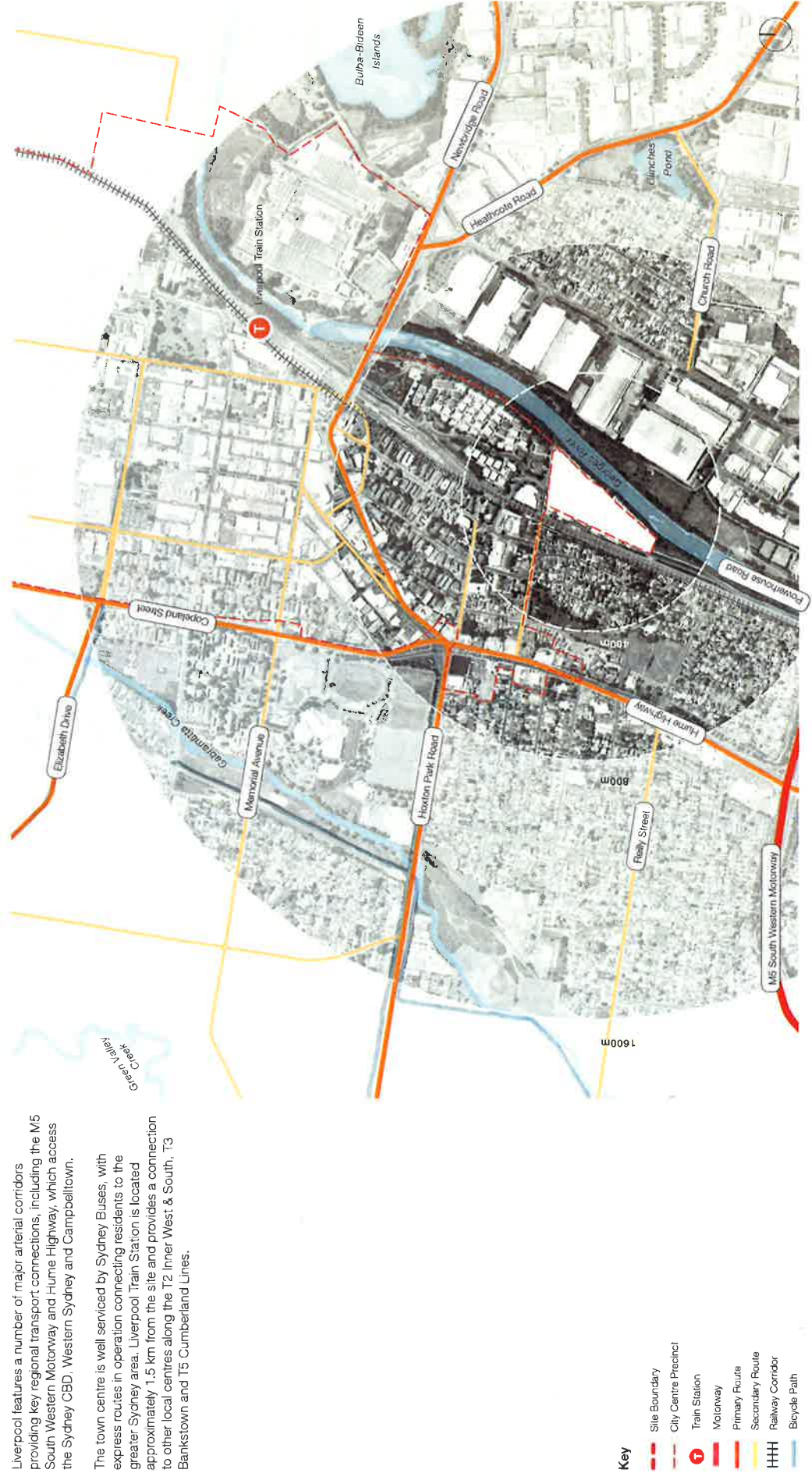
A number of future development sites within the City Centre precinct include both development approvals and Council-owned sites that are the subject of design proposals (at varying stages of approval). These are located in areas zoned as R4 High Density Residential and B4 Mixed Use, and align with the future growth of the locality where higher density dwelling types are needed to sustain the retail and employment centre.



2.4 Local Movement

Liverpool features a number of major arterial corridors providing key regional transport connections, including the M5 South Western Motorway and Hume Highway, which access the Sydney CBD, Western Sydney and Campbelltown.

The town centre is well serviced by Sydney Buses, with express routes in operation connecting residents to the greater Sydney area. Liverpool Train Station is located approximately 1.5 km from the site and provides a connection to other local centres along the T2 Inner West & South, T3 Bankstown and T5 Cumberland Lines.

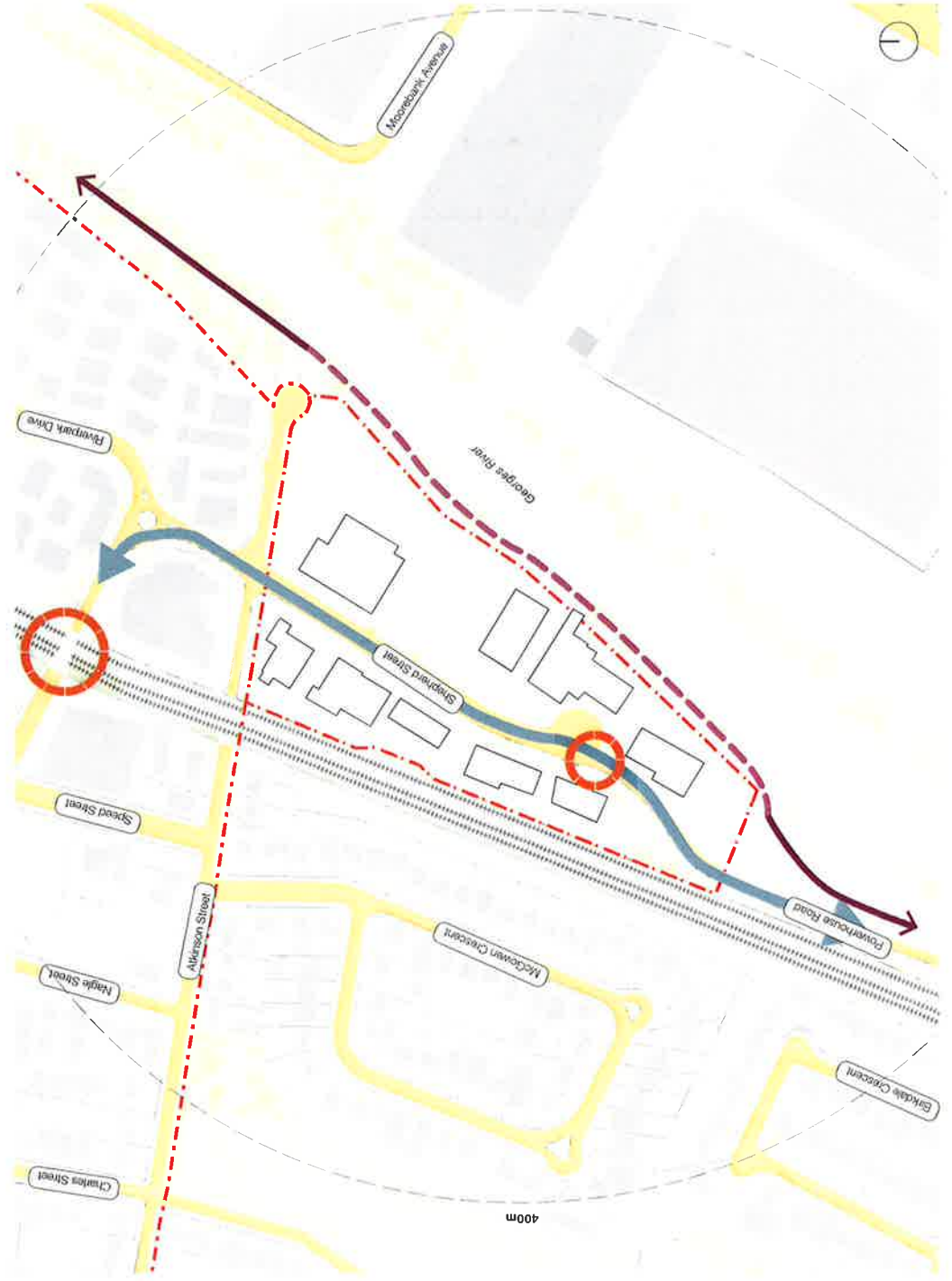


2.5 Site Movement

Vehicular movement into the precinct is gained via Speed Street into Shepherd Street. This is the only vehicular access from the north, and the primary road connection to the Casula Powerhouse Arts Centre.

Currently, pedestrian access along the Georges River from Lighthorse Park ends at Atkinson Street and begins again along Powerhouse Road.

The nearest train station is Liverpool train station and is located approximately 1.5km away from the subject site, with the closest bus stops located along the Hume Highway.



- Key**
- City Centre Precinct
 - Site Boundary
 - Local Street
 - Railway Corridor
 - Foreshore Walk
 - Site Access
 - Pedestrian + Vehicular Access

2.6 Site Landform

The eastern portion of the precinct is currently affected by flooding during peak events, and has been designated as 'Flood Prone'. Flood planning regulations apply to these designated areas, with specific controls defining building setbacks to the Georges River and on site flood storage if necessary.

Existing landscape features in the precinct are limited to the mature trees (eucalypts) along Shepherd Street, with the eucalypts along the Foreshore considered as not worthy for retention.

The precinct's topography falls approximately from RL15.30 at the south-western corner of the site, to RL 9.5 at the north-eastern corner of the site, before dropping steeply to the river.

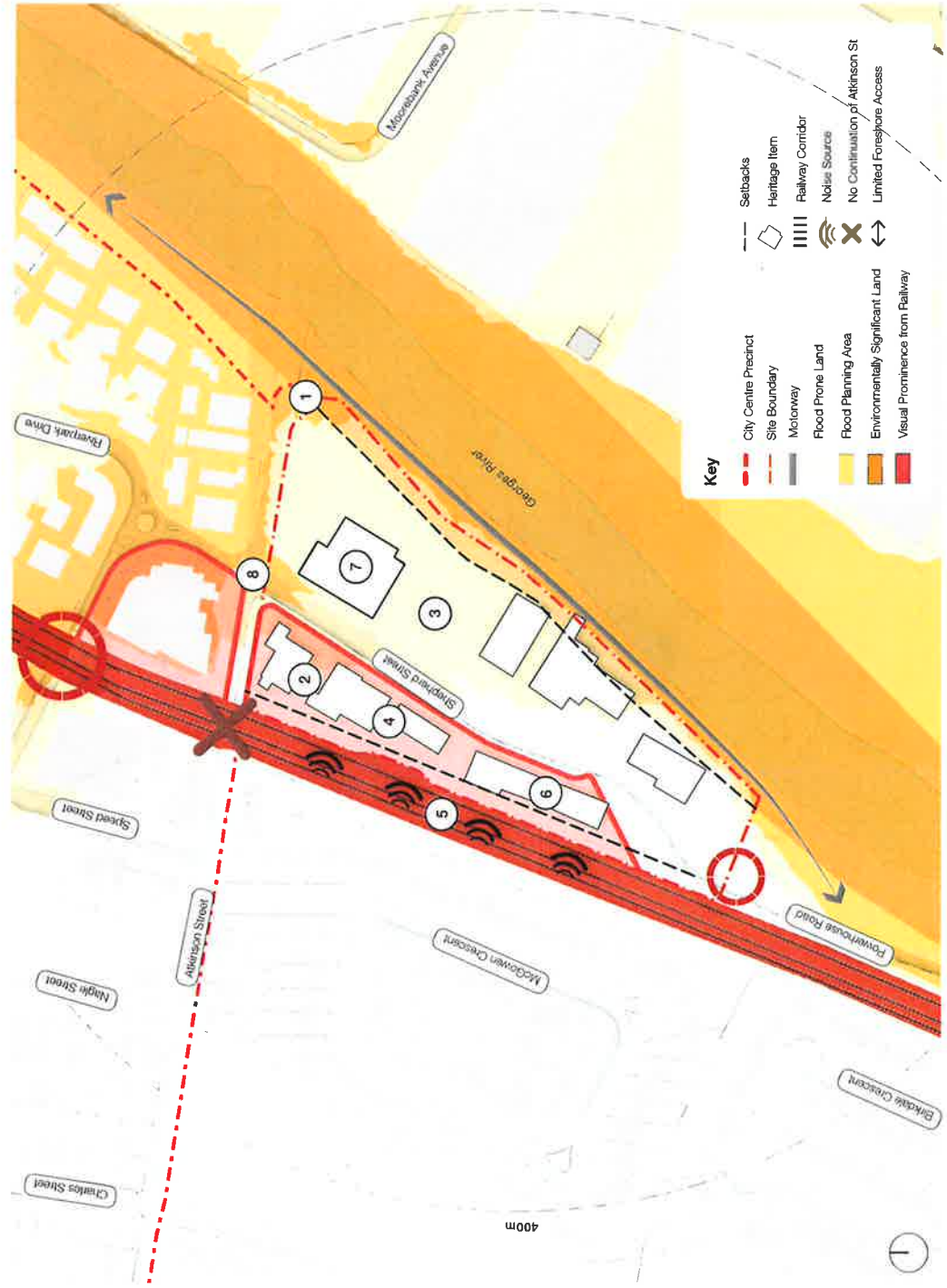


- Key**
- City Centre Precinct
 - Site Boundary
 - Railway Corridor
 - Flood Prone Area
 - Flood Planning Area
 - Environmentally Significant Land
 - Foreshore Building Line Setback
 - Existing Trees
 - Site Contours

2.7 Constraints

Following the urban and context analysis there are several key constraints that have been identified, which will inform the preparation of the urban design response. These include:

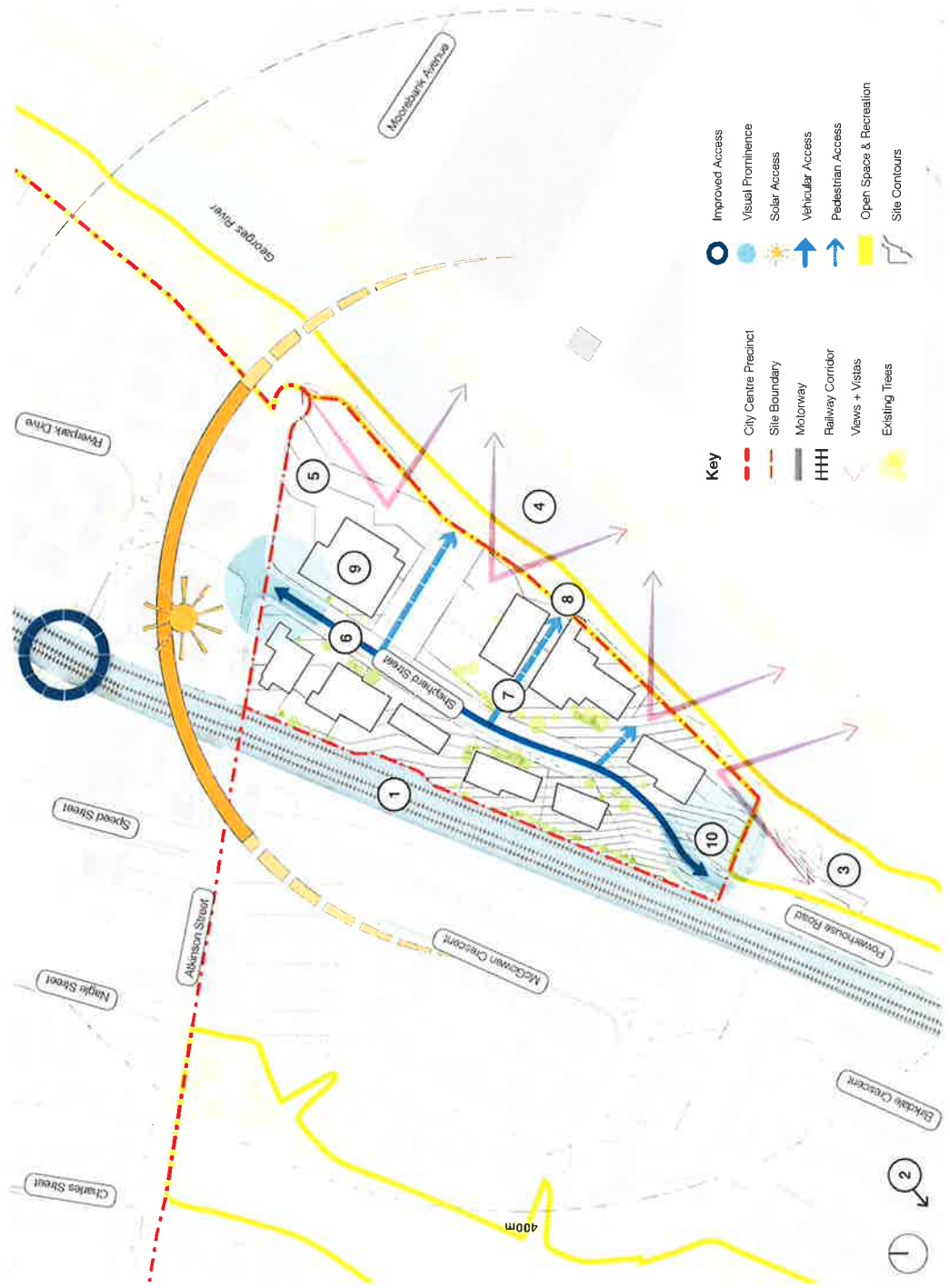
1. **Setbacks:** There are two setbacks that apply to the subject site, the first being the 12m Railway Corridor setback to the west of the site and the second being the Foreshore Building setback to the east, which runs parallel to the Georges River and limits the extent of development;
2. **Amenity:** Development within the precinct adjacent to the railway corridor is likely to be sensitive due to conflicts between orientating buildings in order to achieve adequate solar access, and mitigating the impact from the noise generated by passing trains. Visual and acoustic treatments to the facade need to be considered;
3. **Flooding:** Lots situated within the floor prone area, adjacent to the Georges River, are the subject of specific flood planning and management controls, which need to be considered when designing ground floors, basements and site access;
4. **Solar Access:** Height of development on the west of Shepherd Street may potentially overshadow development on the east of the precinct, as well as existing development west of the railway corridor;
5. **Noise:** The railway corridor located on the western boundary of the site is identified in the Liverpool LEP 2008 as a key noise source and as a result, certain design and environmental considerations must be put in place (i.e. building orientation, 12m setback);
6. **Privacy:** Privacy of residential units adjacent to the railway corridor is compromised by frequent train services and potential for screening devices to manage noise impacts;
7. **Heritage:** The heritage item located at the junction of Atkinson Street, Shepherd Street and the Georges River, places several restrictions on the built form of proposed buildings;

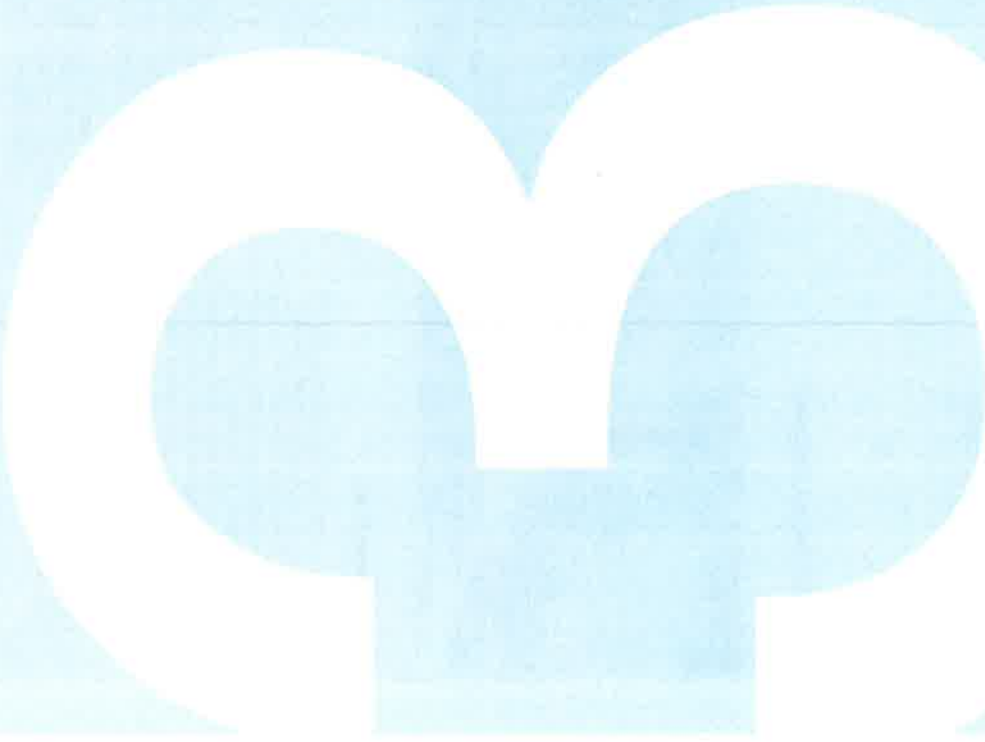


2.8 Opportunities

Furthering the site analysis, several key opportunities have been identified and will also inform the urban design response. These include:

- 1. Railway Corridor:** Liverpool Station is located approximately 1.5 km to the north of the precinct, providing access to the T2 Inner West & South, T3 Bankstown and T5 Cumberland Lines;
- 2. Arterial Connections:** The M5 South Western Motorway and Hume Highway provide access from Liverpool to south-western Sydney and the Sydney CBD;
- 3. Open Space & Recreation:** Mill Park is located along the southern edge of the precinct, with vehicular and pedestrian access along Powerhouse Road. The Georges River and foreshore provides opportunities for future recreational use and landscaping;
- 4. Key Views:** The subject site offers views of the Georges River and also key district views in a northern, eastern and southern direction;
- 5. Site Gradient:** The topography allows for differentiation between the public and private realm, without compromising pedestrian circulation in and around the precinct;
- 6. Access Roads:** Shepherd Street is proposed to be realigned at its southern extent, where it connects with Powerhouse Road, to improve site lines, accessibility and improve the streetscape;
- 7. Site Permeability:** Due to lot configuration and imposed setbacks between buildings there are a number of opportunities for improved pedestrian permeability between Shepherd Street and the Georges River foreshore;
- 8. Landscape Setbacks:** A 12m deep-soil setback is required along the western boundary of the site to the railway line. Along the eastern boundary to the river foreshore a 30m deep soil setback is required. This combination will deliver two contiguous bands of landscaping;
- 9. Character + Heritage:** The area around The Paper Mill and the Georges River present an opportunity to create a unique character for the precinct based around the former Collingwood Paper Mill founded in 1865;
- 10. Urban Markers:** The site is visible from the M5 Motorway and Railway Corridor and can be used as a key marker to help define and establish the gateway for the Liverpool CBD.





Urban Design Principles

Design principles, and responses that respond to
the site's unique characteristics and opportunities.

3.1 Urban Design Principles



Movement + Access

Movement within the Shepherd Street Precinct should be easy to navigate with pleasant and attractive streetscapes. Pedestrian access is a key priority, particularly to open space areas on the eastern and southern boundaries of the site (i.e., Georges River and Mill Park). An inviting foreshore walk that links Lighthouse Park to Mill Park and enhances the character of the Georges River, should be addressed by active residential frontages.

Vehicular access along Shepherd Street should also be considered to maintain an ease of access, which does not disrupt pedestrian activity and traffic moving in/out of the individual sites.



Sustainability

The redevelopment of the precinct will embody sustainability, not only in financial terms, but also through connections to public transport, open spaces, the CBD, and provision of housing types.

It is important that the precinct becomes part of Liverpool's 'walkable suburbs', where attractive public open spaces and streetscapes along Shepherd Street, Atkinson Street and Powerhouse Road encourage pedestrian movement.

In addition, the use of public and active transport should be facilitated through the provision of bicycle parking, cycle lanes, and safe and comfortable routes to the station.



Density

The density of development within the Shepherd Street Precinct is an important contributor to activating the local parks and spaces, maximising access to the station and CBD services, and bringing life into a degraded foreshore area.

The housing choice offered by this scale of development, within such close proximity to the CBD, complements the low-density to the west, and mid-rise to the north.

While a higher density brings positive outcomes, it is also important that the proposal responds to its context in terms of traffic, access and overshadowing.



Amenity

A key component of any successful residential precinct is active, quality and accessible public open spaces, where residents can build relationships with neighbours. This is even more important in higher-density communities, where private spaces are limited.

Views towards the Georges River and upgrades to Mill Park are essential. The orientation of buildings should carefully consider passive surveillance, overshadowing of spaces and the solar access and natural ventilation to individual dwellings.

3.1.1 Urban Design Principles



Built Form

It's important to consider the scale and bulk of the built form in relation to pedestrians. Areas of open space should not feel intimidating or closed-off by the heights of adjacent buildings.

The built form should consider its orientation to the primary frontages to create a permeable street wall. Streetscapes should feel welcoming in order to allow for social interaction between residents.

Separation of buildings can be used to break up the bulk of the built form and create opportunities for gathering spaces. The buildings proposed on each of the lots should pursue design excellence.



Diversity

The variation in lot sizes, ownership and the influences of varying urban conditions throughout the precinct should be embraced, as they will ensure a variation in built form, scale and housing typologies. Common urban design principles should not manifest into common architecture. A range of materials, design approaches and styles should be encouraged to create interest in the streetscape and character.

Design responses to particular urban conditions, including the Paper Mill, foreshore edge, and railway line should be encouraged, and allowed to manifest in unique design outcomes.



Character

Development will make a positive contribution to the character of Liverpool and the Georges River corridor, building on and enhancing the local sense of identity. New development within the vicinity of the heritage item should be respectful of the setting and significance of the Paper Mill. All proposed buildings will help to define a new character for a modern Liverpool CBD, responding to the need for density within a future growth centre.

The Georges River ecosystem should be rehabilitated and celebrated with the opportunity to create a linear boardwalk and park along the foreshore.



Safety

'Safer-by-Design' principles will be implemented into the design of the built form, and within both the public and private realms of the development.

Setback of built form, adequate lighting, elimination of blind spots, ground level entries and passive surveillance are strategies that will be taken into consideration throughout the design process.

3.2 Urban Design Response



Movement + Access

Shepherd Street is the primary and sole vehicular access route through the precinct, which links to Powerhouse Road leading down to the Casula Powerhouse Arts Centre. The proposed realignment of Shepherd Street will improve this important north/south movement spine.

There is an opportunity to create a continuous foreshore boardwalk along the eastern edge of the precinct to the Georges River. Pedestrian permeability from Shepherd Street down to the boardwalk will be addressed by residential frontages. Ease of access and respect between vehicular and pedestrian movement can be achieved through upgrading existing streetscapes and landscaping within the precinct.

Key

- Site Boundary
- Vehicular
- Pedestrian links
- Riverfront walk

Frontages

In order to create a vibrant and cohesive precinct it is important for the primary frontage of all development to face Shepherd Street.

Development east of Shepherd Street, should also have a frontage along the Georges River, which encourages an active pedestrian boardwalk connection.

Secondary frontages along the east-west axis should also be considered to provide visual interest to neighbouring buildings.

Key

- Site Boundary
- Primary frontage
- Secondary frontage
- Riverfront frontage

3.2.1 Urban Design Response



Heights

Height of built form across the precinct steps up along a north-south axis to create a transition of height from the lower scale development to the north and west. Height will also be concentrated towards the east of Shepherd Street as it will have minimal overshadowing impact on proposed development, streetscape and context.

Taller built forms at the northern and southern ends of the precinct will create an urban marker visible from the M5 and railway corridor. The result will be an undulating skyline, with variations in visual prominence and also dwelling forms.

Key

- Site Boundary
- Height Transition
- Height Pattern
- Urban Marker
- Western Marker



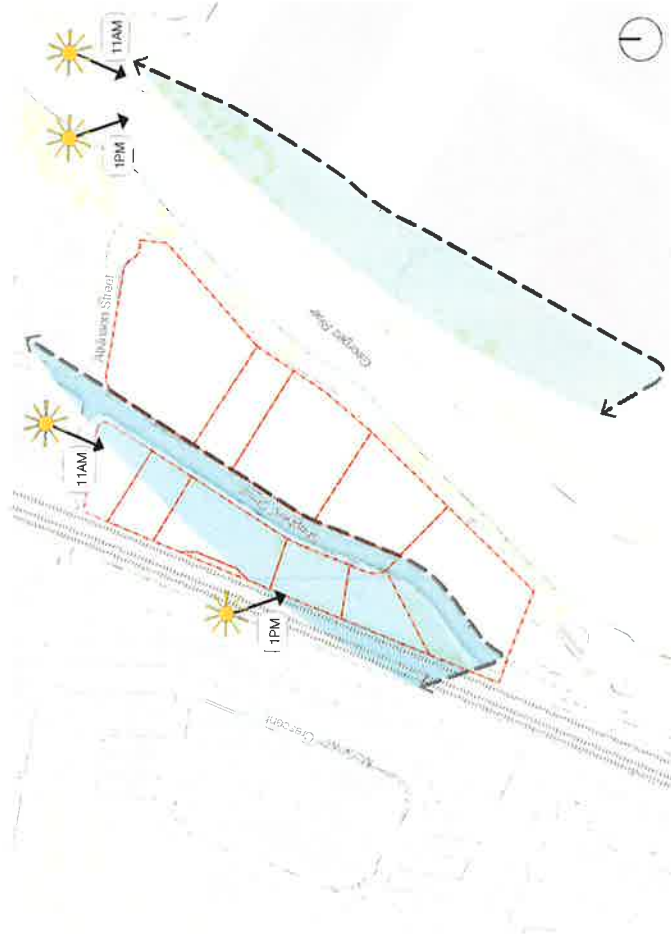
Orientation + Separation

As a result of the 12m Railway Corridor setback and also the Foreshore Building Setback, the orientation and separation of buildings on individual plots are heavily constrained. Further restrictions are placed on buildings fronting onto Shepherd Street with a 3m setback, whilst side setbacks between buildings are in accordance with the requirements set out in the Apartment Design Guide, which vary from 6-12m setbacks from side boundaries.

Key

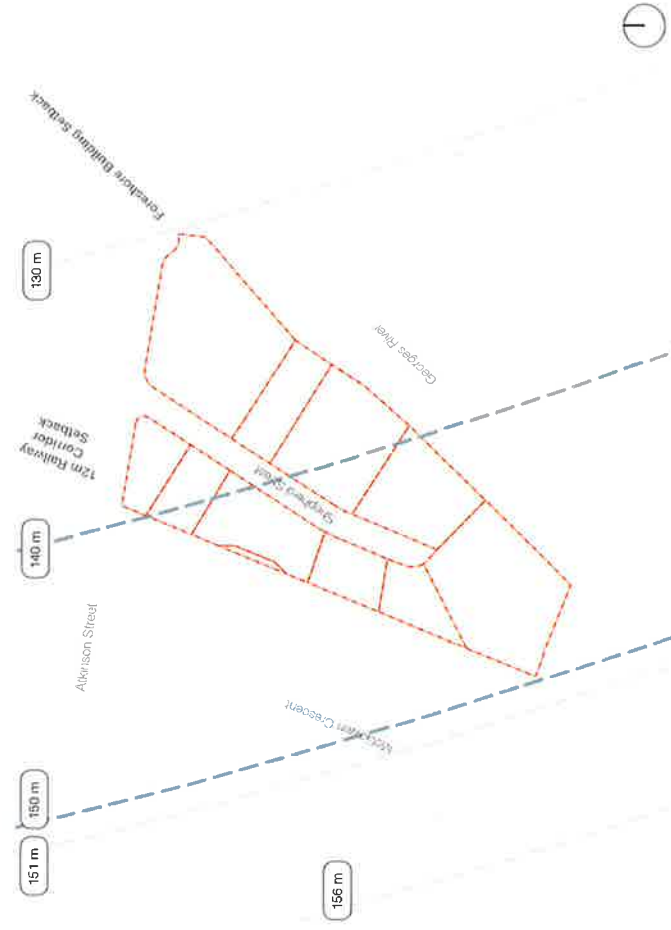
- Site Boundary
- 3m Setback from Atkinson and Shepherd Streets
- 6 - 12m Side Setback
- 6 - 9m Rear Setback
- No Build Zone

3.2.2 Urban Design Response



Shadows

Due to the orientation of the precinct and the Georges River the optimal time for buildings to receive continuous solar access, required in the Apartment Design Guide (ADG) is between 11am and 1pm. Solar access should be maintained at this time to allow buildings to achieve the solar access requirements and address the Shepherd Street.

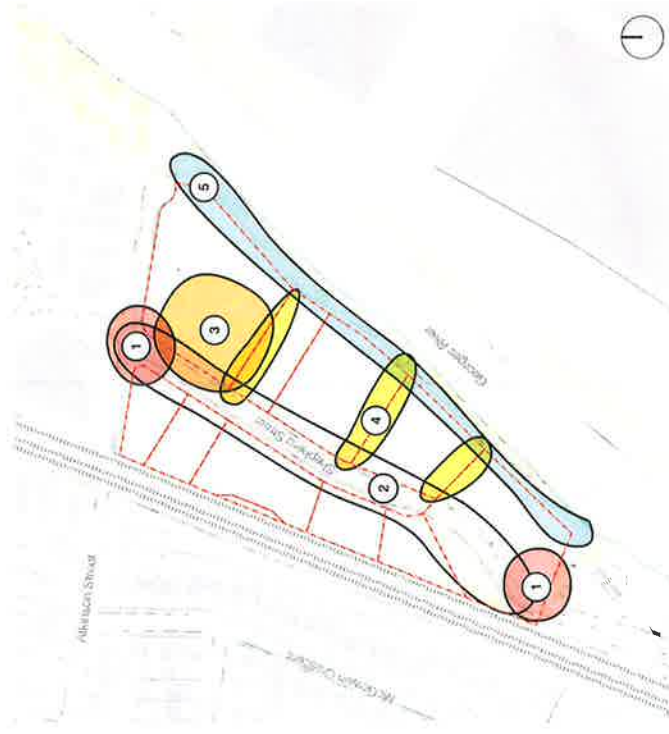


Obstacle Limitation Surface

The Obstacle Limitation Surface (OLS) is used to limit the height of buildings in the surrounding area of airports (Bankstown). The site has two height planes of 140 and 150 AHD, which limit the maximum development on site. This height limit also requires that cranes during construction do not exceed the height limit.



3.2.3 Urban Design Response



Built Form Character

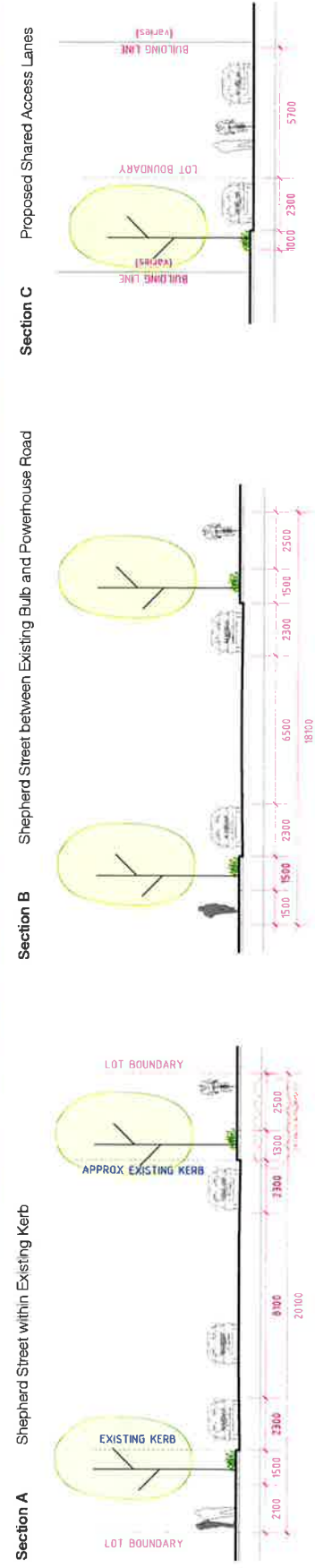
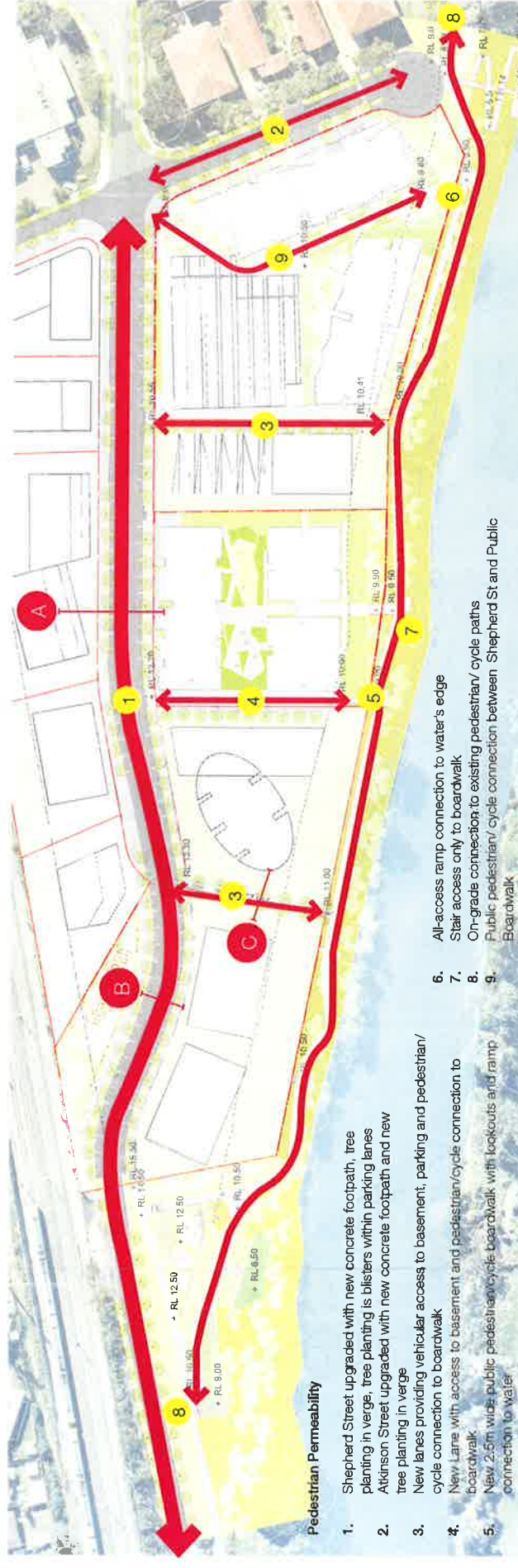
1. **Urban Marker:** Shepherd Street, Atkinson Street and Powerhouse Road intersections
2. **Active Frontage:** Amenity, interaction and circulation along Shepherd Street
3. **Heritage:** Enhancement and adaptive re-use of the Paper Mill
4. **Through Site Link:** Access and engagement along through-site links between Shepherd Street and Georges River
5. **Foresore:** Open space used for recreation and circulation

Key

- Site Boundary
- Urban Marker
- Active Frontage
- Heritage
- Through Site Link
- Foresore



3.3 Urban Design Response



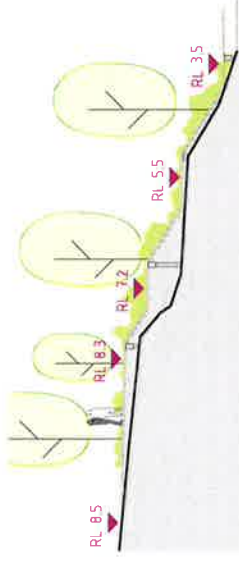
3.4 Pedestrian Boardwalk Strategy



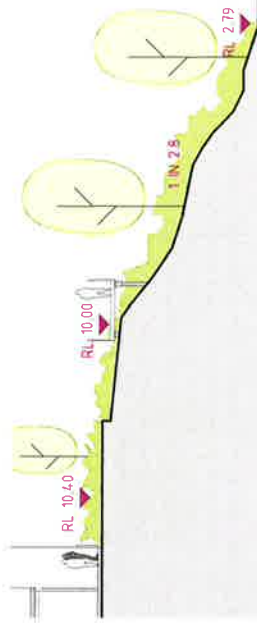
Public Boardwalk

1. 2.5m wide shared public pedestrian/ cycle boardwalk located near top of bank at RL9.0- RL 10.5
2. Lookouts/ seating areas located at key positions along the boardwalk
3. On-grade access points to boardwalk
4. On-grade connection from boardwalk to existing park paths
5. All-access ramp connection to water's edge
6. Stair only access to boardwalk

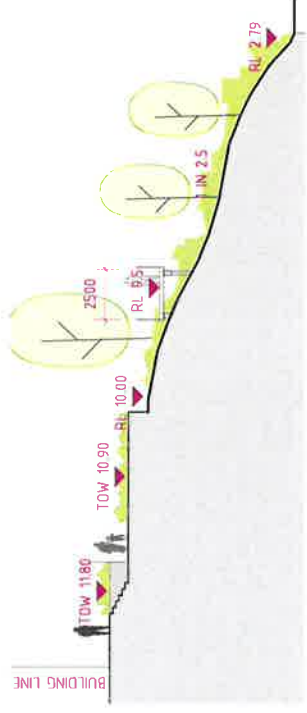
Section A All-Access to Georges River



Section B Private / Public Interface (20)



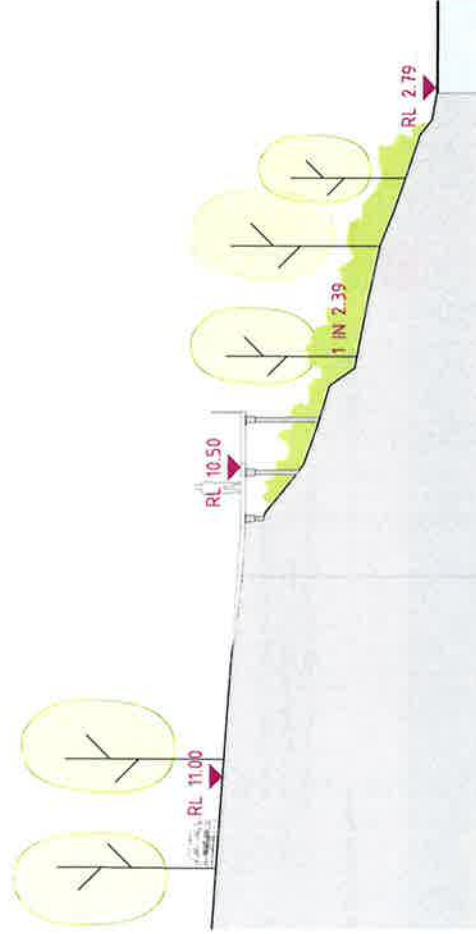
Section C Private / Public Interface (28)



Section D Public Lane + Georges River

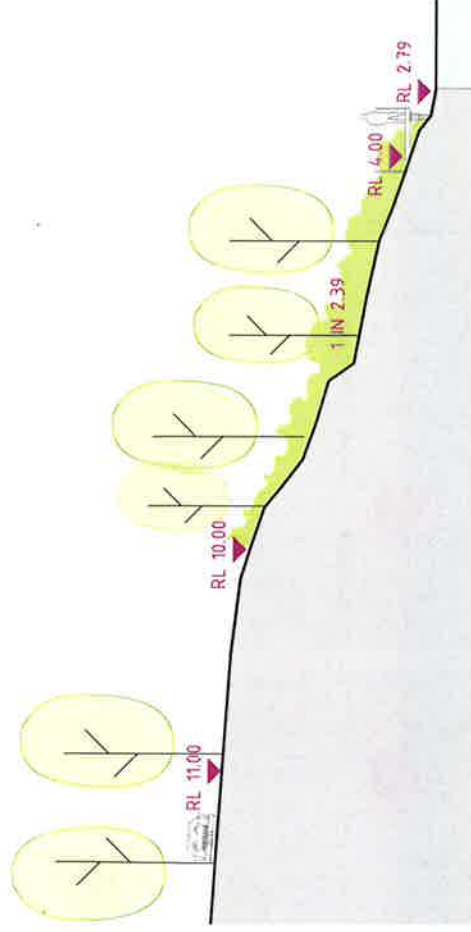


3.4.1 Pedestrian Boardwalk Strategy



Public Boardwalk - Top of Bank (RL 9-10.5)

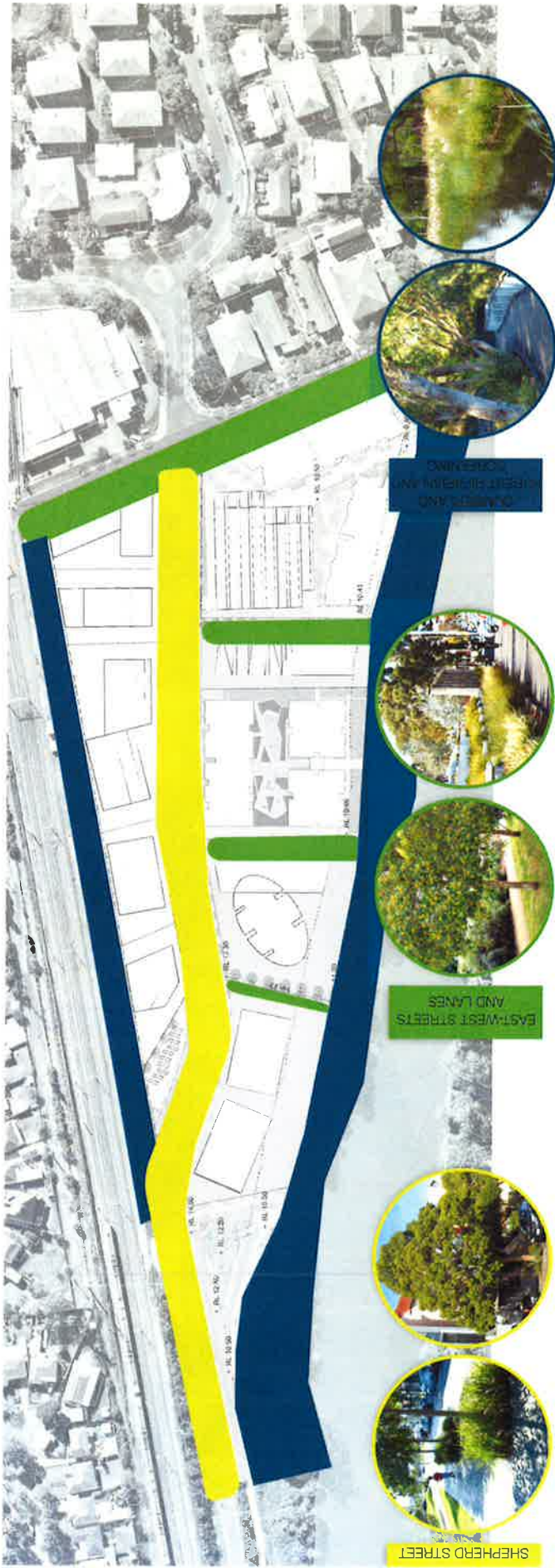
- Good visual connection and surveillance to other external spaces
- Achieves all-access connection to public lanes and links
- Ease of connection to existing paths at northern and southern ends of precinct
- Limited opportunity for access to water's edge, particularly for all-access



Public Boardwalk - Bottom of Bank (RL 3-4.5)

- Poor visual connection to other external spaces and low surveillance makes this location undesirable
- Limited opportunity to join public lanes on-grade; would require extensive ramping/ stairs
- Flooding issues

3.2 Planting Strategy and Indicative Plant list



Street tree planting and mass planted understorey to create a bold avenue entry to the precinct

Botanic Name	Common Name
Lophostemon confertus	Brush Box
Anigozanthos 'Gold Velvet'	Kangaroo Paw
Callistemon 'Little John'	Bottebrush
Dianella caerulea	Blue Flax Lily
Hardenbergia violacea	False Sarsparilla
Lomandra longifolia 'Tanika'	Spiny Headed Mat Rush

Small-scaled, tree-lined, paved laneways make these attractive pedestrian links

Botanic Name	Common Name
Tristanopsis laurina	Water Gum
Dianella caerulea	Blue Flax Lily
Ficinia nodosa	Knotted Clubrush
Hardenbergia violacea	False Sarsparilla
Hibertia scandens	Snake Vine
Lomandra longifolia 'Tanika'	Spiny Headed Mat Rush
Leucophyta brownii	Cushion Bush
Myoporum parvifolium	Creeping Myoporum

Screen and Riparian planting of endemic vegetation to reinstate Cumberland Forest in the precinct

Botanic Name	Common Name
Acacia floribunda	White Sally
Anghora floribunda	Rough Barked Apple
Backhousia myrtifolia	Grey Myrtle
Bursaria spinosa	Blackthorn
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus elata	River Peppermint
Casuarina glauca	Swamp Oak
Juncus usitatus	Common Rush

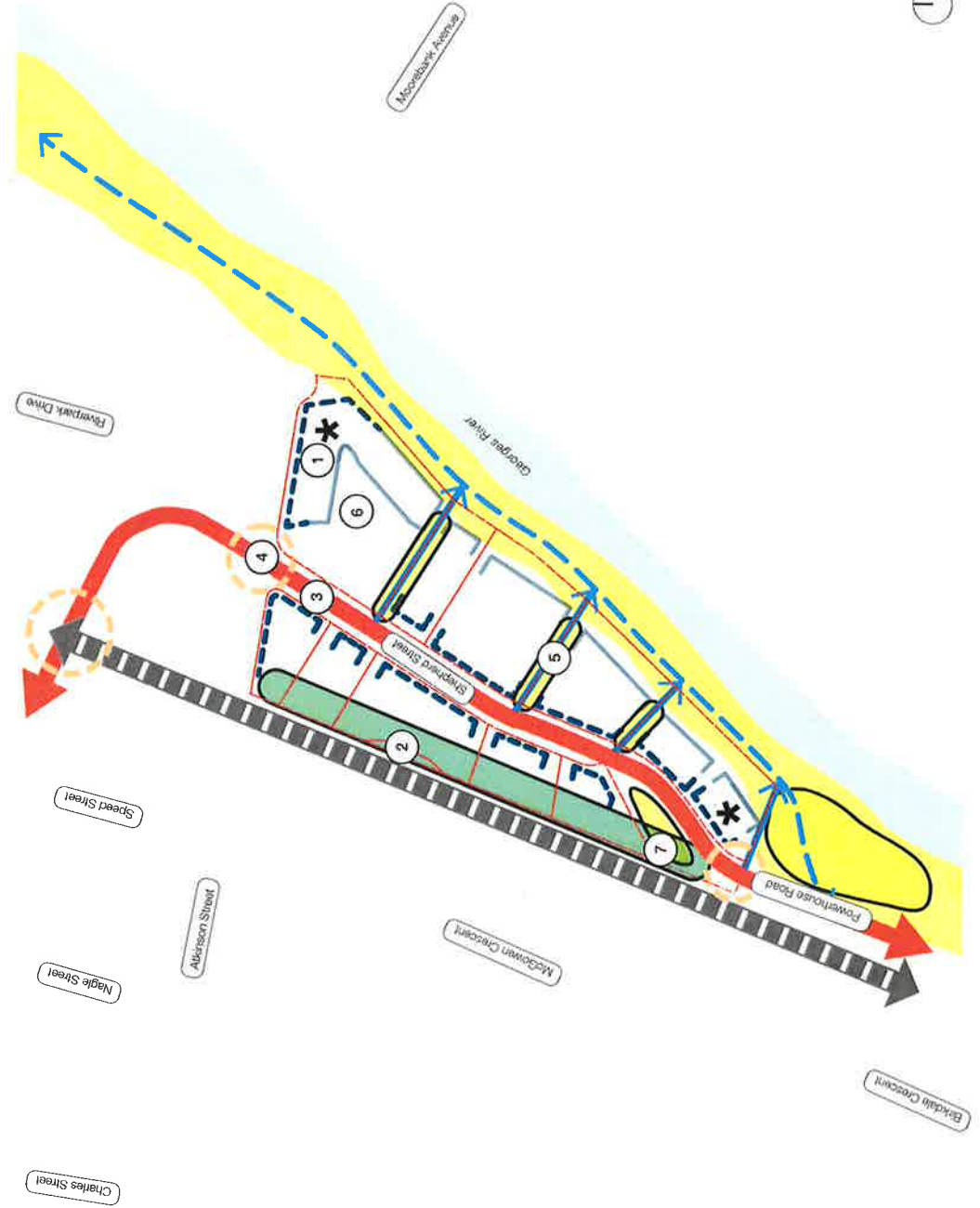
Design Concept

Concept masterplan for the site that respond to the design principles.

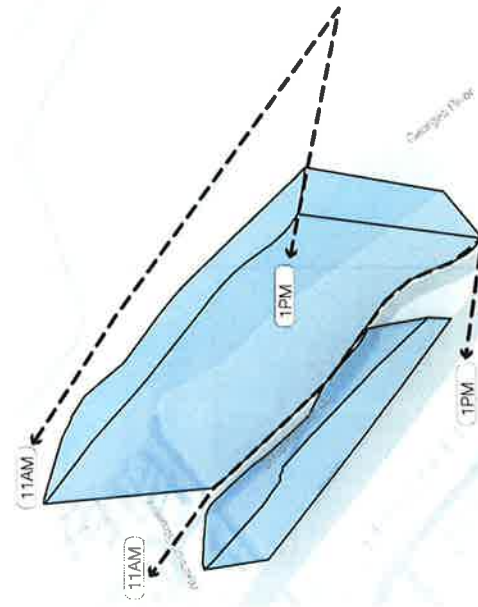
3.3 Urban Design Concept

From the principles and urban design responses above, the key ideas of the scheme are described in the adjacent concept sketch as follows:-

- 1. Heights:** Height is focused on the eastern side of Shepherd Street with taller elements located towards the northern and southern edge of the precinct.
- 2. Orientation + Separation:** Buildings orientated as best as possible on a north-south axis optimising solar access. A 12m Railway Corridor setback, 30m Foreshore Building Setback, as well as side and rear setbacks in line with the ADG define building locations.
- 3. Active Frontage:** Each development should address its primary frontage to Shepherd Street, with residential frontages also fronting the Georges River Foreshore and any through-site links.
- 4. Movement + Access:** Shepherd Street serves as the primary vehicular and pedestrian corridor, and should be enhanced as part of all proposals. Vehicular entrances off Shepherd Street should be rationalised where possible.
- 5. Site Permeability:** Pedestrian permeability down to the boardwalk along the Georges River is important to create.
- 6. Built Form Character:** Enhance the revitalisation of the precinct and introduce a fine grain character which responds to the scale of the Paper Mill. Variation in built forms and architectural styles is also encouraged.
- 7. Planting Strategy:** Deep soil planting should be implemented in the 12m Railway Setback zone, which also creates a visual and acoustic barrier to the rail line. Streetscapes along Shepherd Street and along the rear boundaries fronting the Georges River can be enhanced through landscaping.



4.1 Preferred Concept Approach

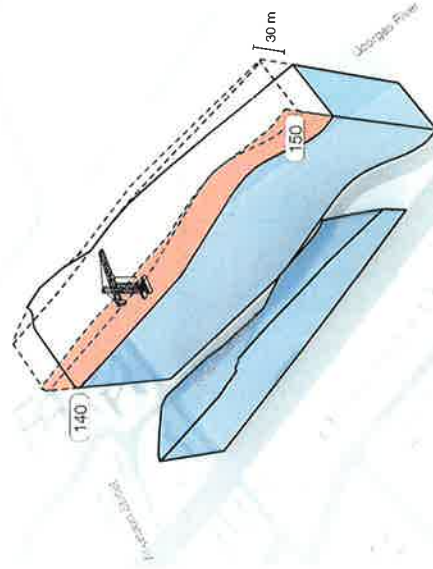


01 Establish maximum envelope volume base on solar clipping plane

Establish the maximum volume based on solar clipping planes determined by 11am-1pm on the winter solstice to residential areas on the eastern side of Shepherd Street and along the western site boundary across the river. This will ensure that any future residential development can achieve 2 hours of continuous solar access. The envelopes defined by the solar clipping planes identify that there is substantial opportunity for height along the eastern side of Shepherd Street.

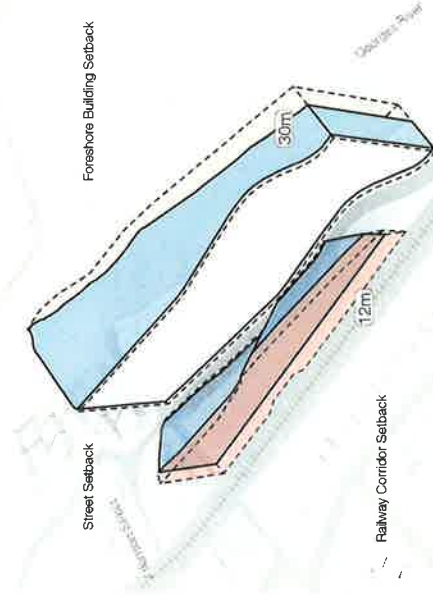
The design approach outlined in the diagrams above and on the following page has been used to establish an appropriate built form envelope that responds to the key urban considerations identified in Section 3 of this report.

Each urban consideration has been used to define an appropriate built form outcome and quantum of development that responds to the constraints of overshadowing, amenity, OLS height limits, setbacks, separation and height variation.



02 Reduce maximum volume to OLS height plane

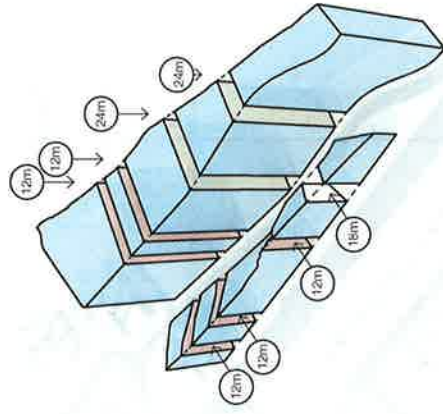
Reduce height of the building envelope to allow for the OLS height restrictions, with a additional reduction to accommodate cranes during construction - we've assumed a maximum 30m height for cranes, however, this can be reduced.



03 Setback development from the river and the rail line

Setback envelopes 12m from the railway line to the west of the precinct, and 30m for the foreshore building line to the east. The envelope will also be setback 3-4.5m from Shepherd Street, in response to Council's DCP and the heritage building

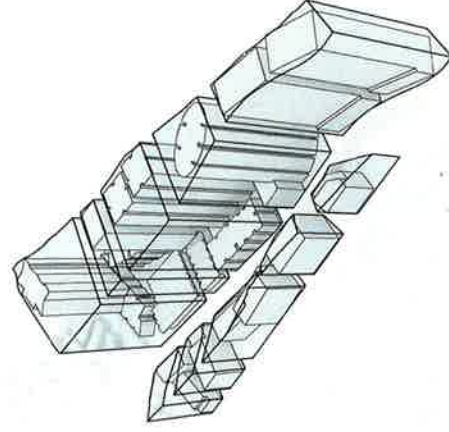
4.2 Preferred Concept Massing - Concepts



04 Apply side separations to conform with the ADG and existing DAs

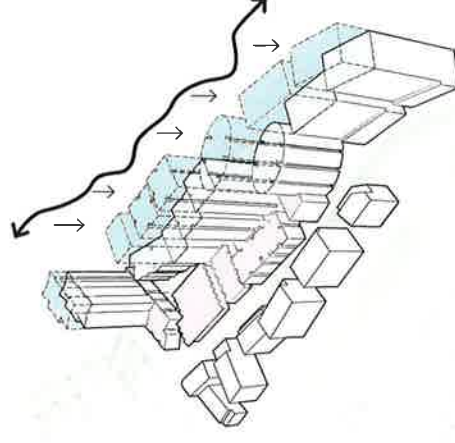
Side setbacks will be applied at each lot boundary to ensure ADG separations are achieved between proposed buildings and approved DAs. On narrow sites that have limited development opportunity, minimum separation distances have been assumed.

Publicly accessible through-site links will be provided between the proposed building separations to provide a connection from Shepherd Street to the Foreshore Walk.



05 Maximise development within the solar envelope

Fill the resulting envelope with built form to maximise development across the precinct. Development within this envelope will not have any solar impact on surrounding developments and will achieve the required separation distances outlined in the ADG.



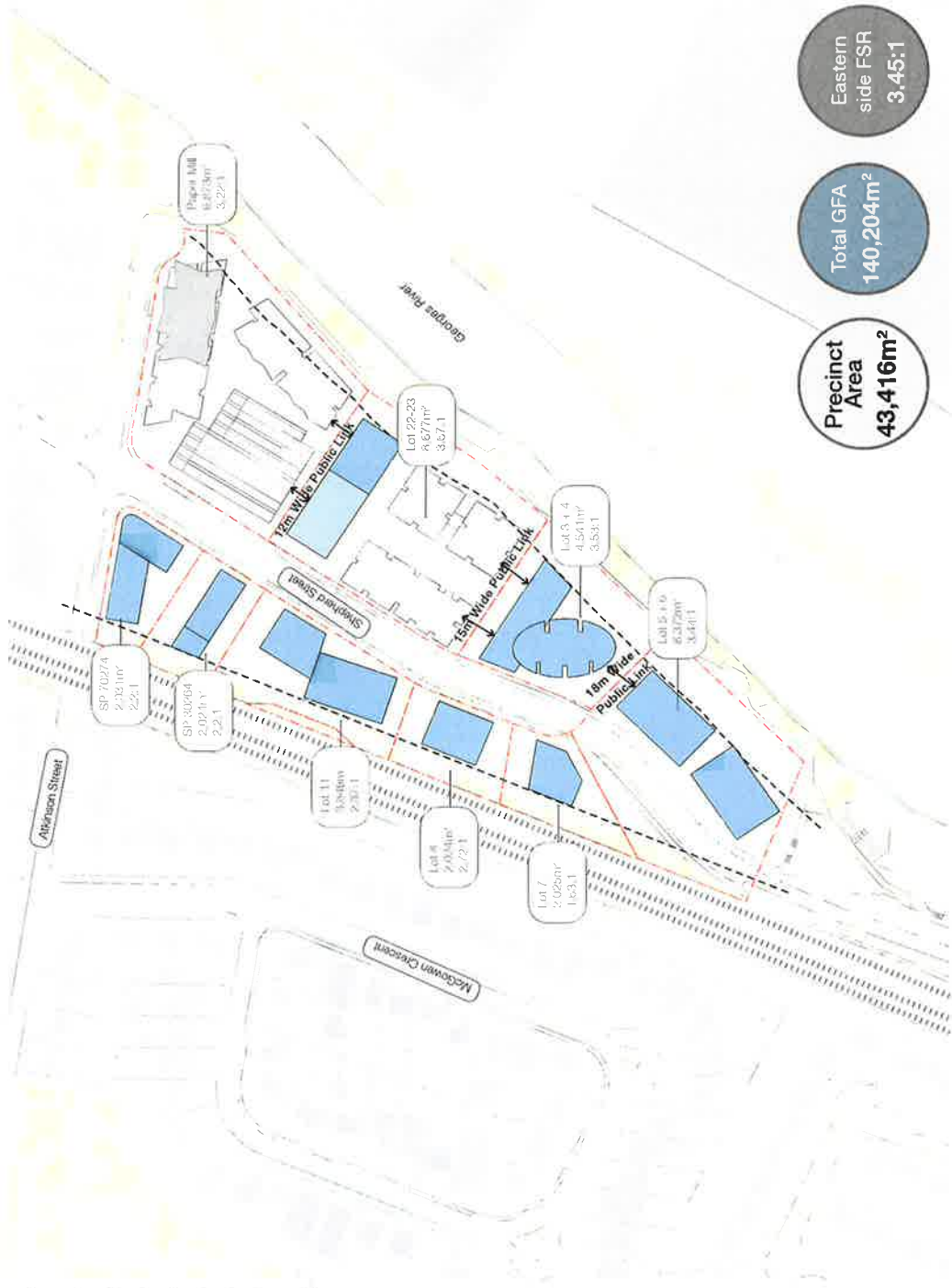
06 Defining the skyline and streetscape

The proposed envelope has been agreed upon in consultation with Liverpool Council and sits within the solar envelope which has been derived from the existing site constraints.

The proposed massing has been reduced along the edge of Shepherd Street to define the street wall and steps in height to respond to the Paper Mill. The proposed tower heights have been varied in order to create visual interest.

4.3 Preferred Concept - Plan

Lot	Storey	GFA	FSR	Dwellings	Height
Paper Mill	24	31,783m ²	3.22	309	75.8m
22-23	6-20	31,870m ²	3.67:1	375	67.3m
3+4	17	16,050m ²	3.53:1	178	55.7m
5+6	18-22	28,820m ²	3.44:1	339	76.9m
7	9	3,299m ²	1.63	37	28.4m
8	10	5,497m ²	2.72	61	31.9m
11	8-10	9,141m ²	2.37	102	31m
SP-30264	8	4,447m ²	2.2	49	25.5m
SP-70274	5-7	4,472m ²	2.2	50	22.4m



- Key**
- Site Boundary
 - Proposed
 - Open Space
 - Approved

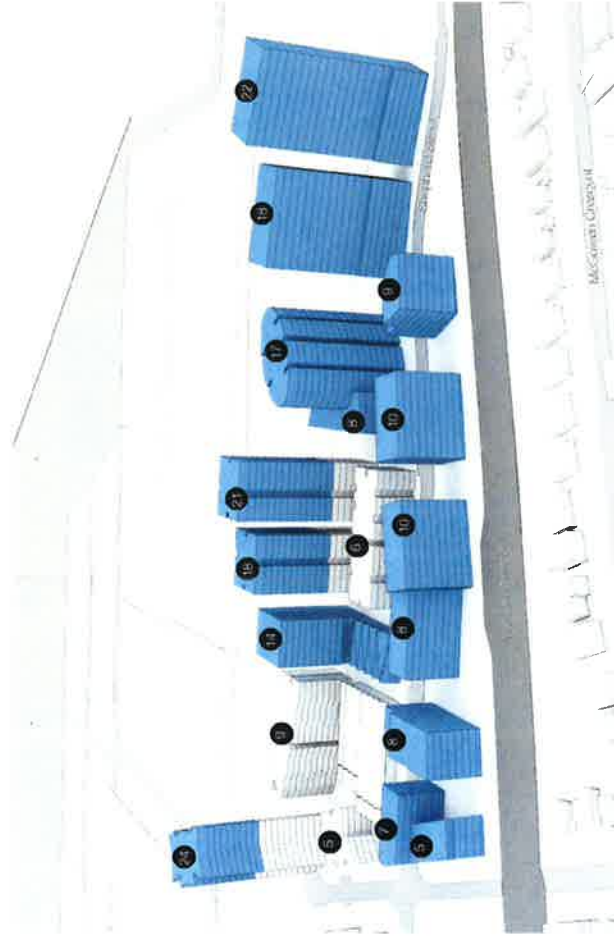
SJB Architects

Precinct Area
43,416m²

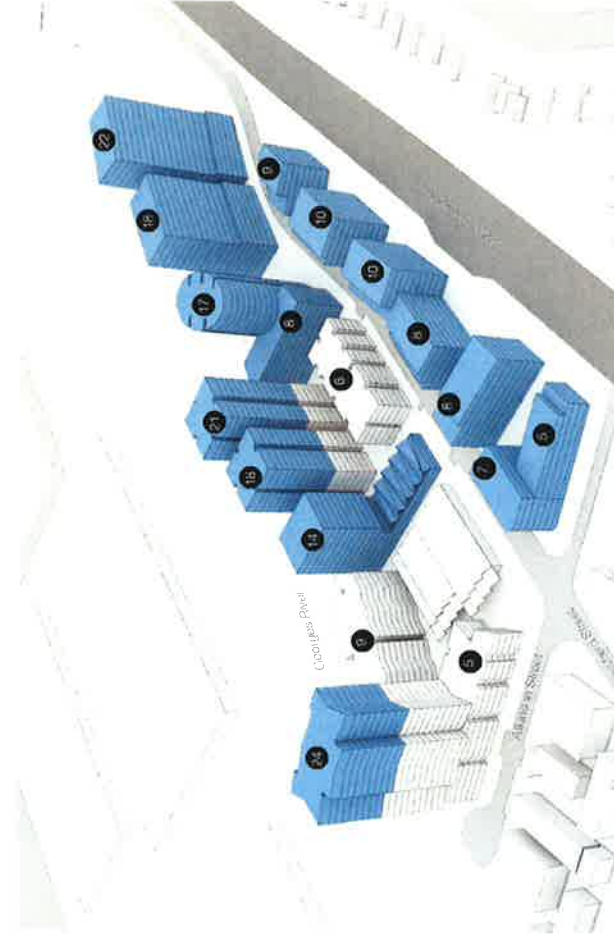
Total GFA
140,204m²

Eastern side FSR
3.45:1

4.4 Preferred Concept Massing



View 01



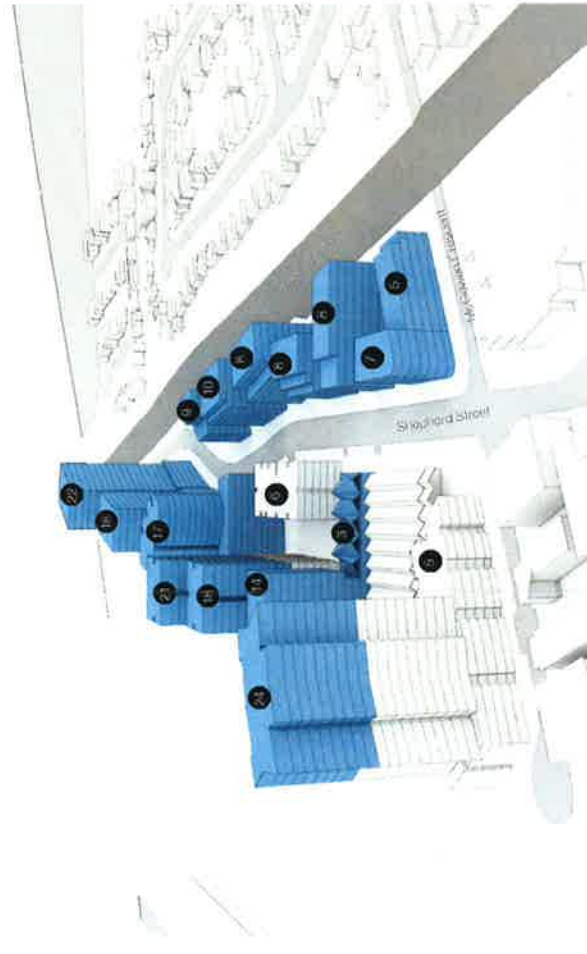
View 02

- Height is located at the north and south ends of Shepherd Street in order to create urban markers at either end of the precinct.
- Height of buildings directly adjacent to the Paper Mill have been reduced in order to respond to the height and scale of the heritage item.
- 3 storey terrace typology is proposed to the south of the Paper Mill along the through-site link leading to the Foreshore Walk.
- A consistent 6-8 storey street wall is proposed along Shepherd Street.

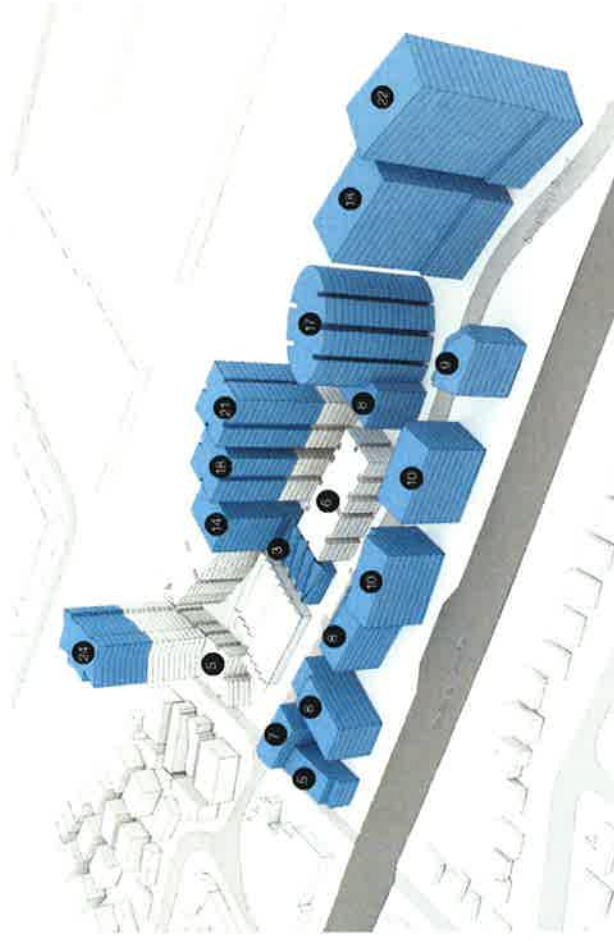
Key

- Site Boundary
- Proposed
- Allowable
- Approved

4.5 Preferred Concept Massing



View 01



View 02

- Key**
- Site Boundary
 - Proposed Allowable
 - Approved

4.6 Visualisation



Ground floor terrace typology to interface with the Paper Mill site.



Residential development interface with public domain

SJB Architects

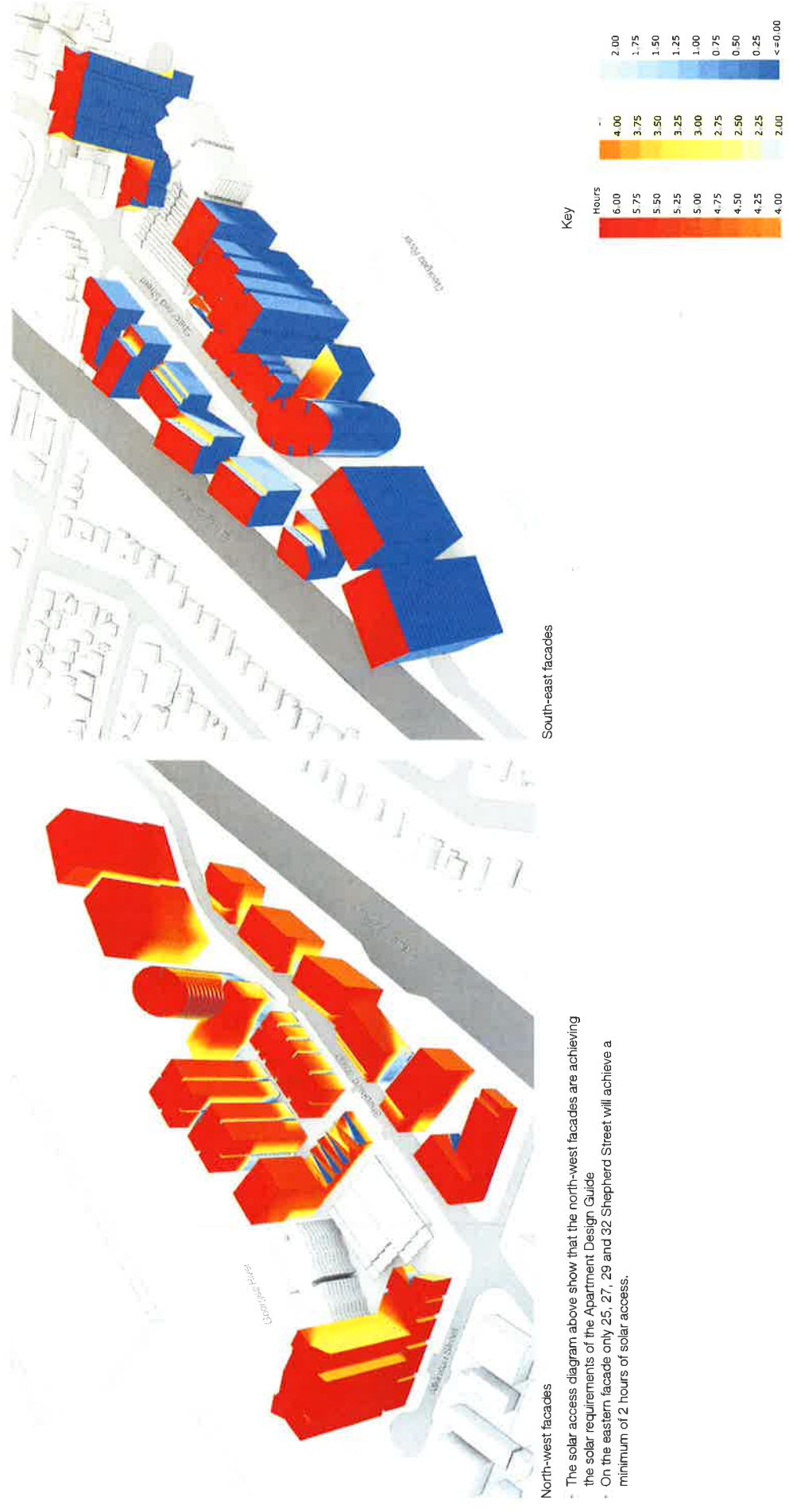


The Bindery (Lat. 22°23' East) across the Georgian River



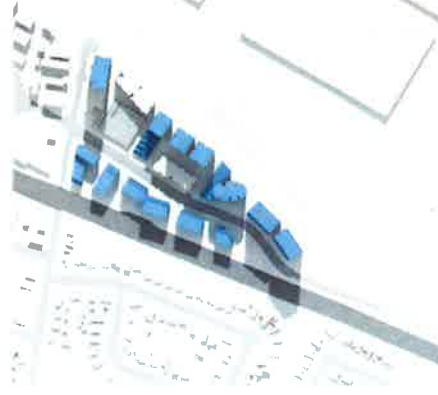
The Paper Mill built across the Georgian River

4.7 Preferred Concept Solar Access

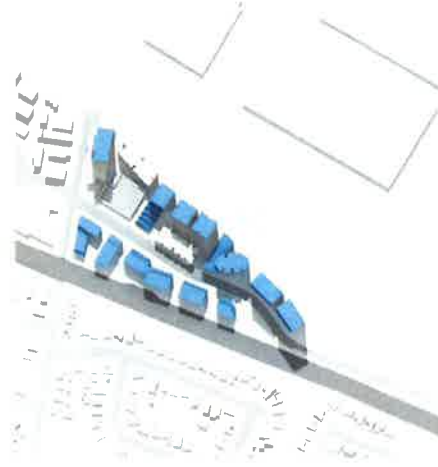


- The solar access diagram above show that the north-west facades are achieving the solar requirements of the Apartment Design Guide
- On the eastern facade only 25, 27, 29 and 32 Shepherd Street will achieve a minimum of 2 hours of solar access.

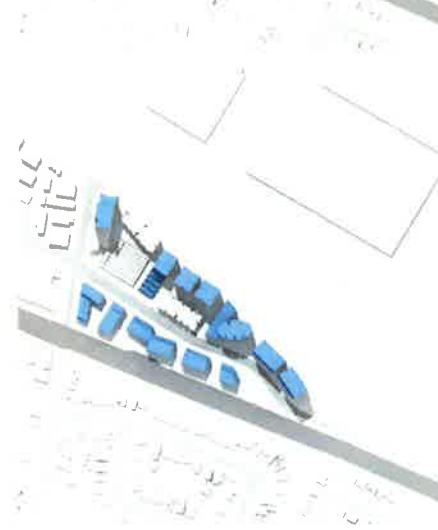
4.8 Shadow Study - 21st of December



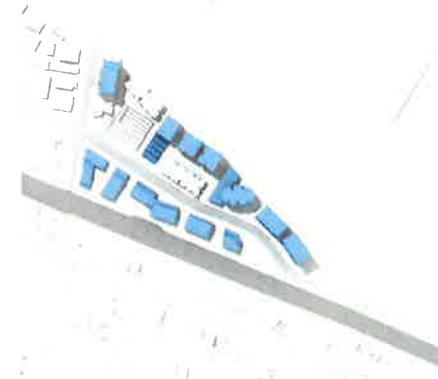
21st December - 9am



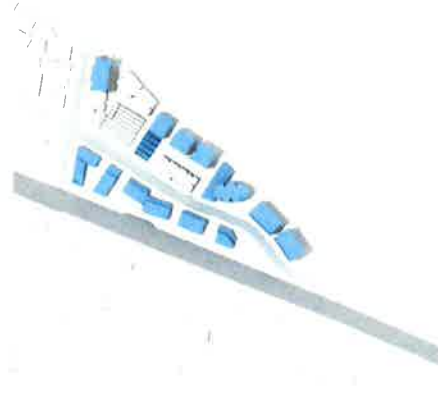
21st December - 10am



21st December - 11am



21st December - 12pm



21st December - 1pm



21st December - 2pm

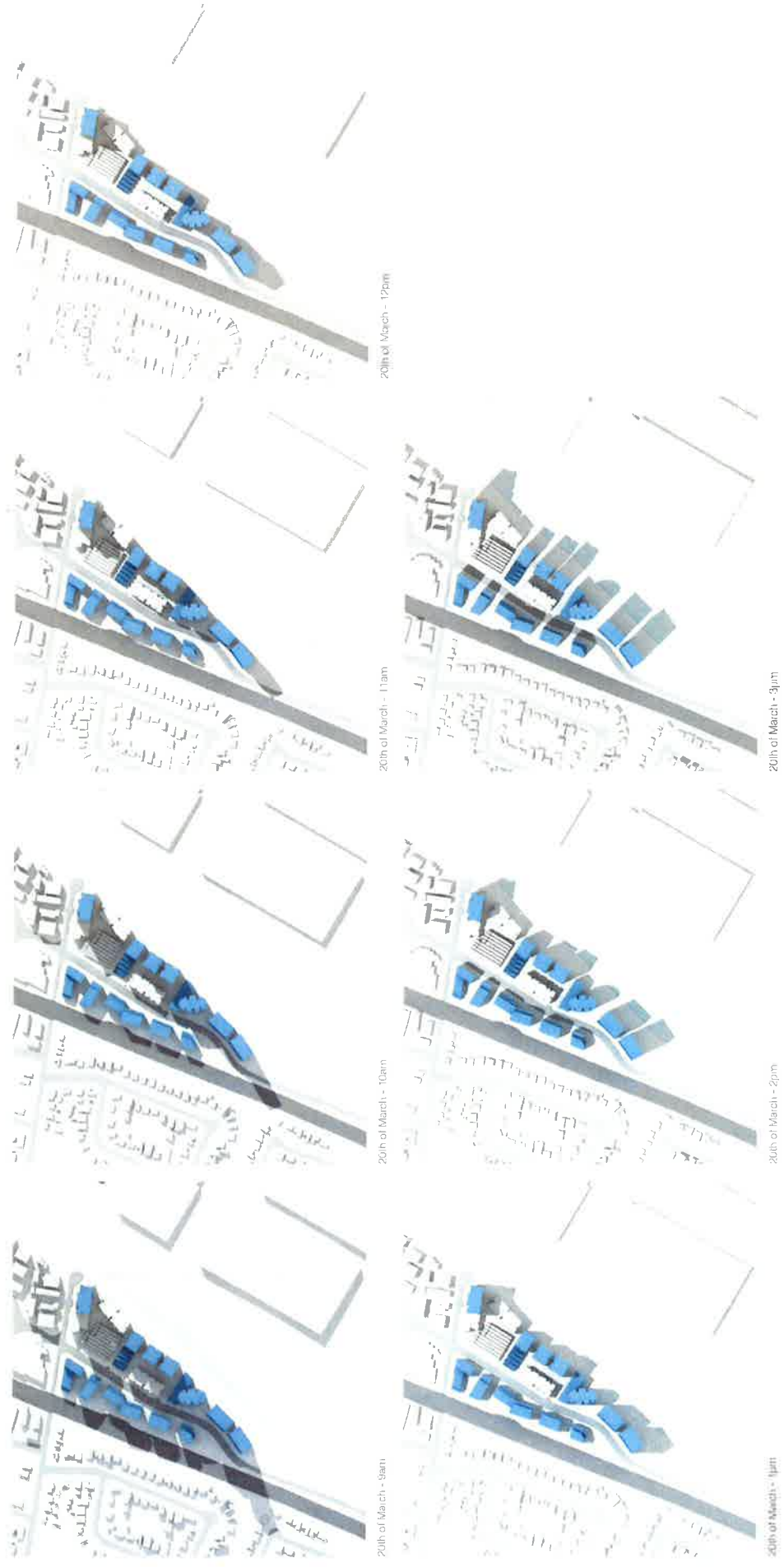


21st December - 3pm



21st December - 4pm

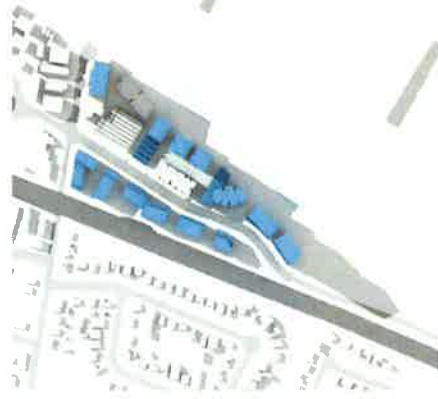
4.9 Shadow Study - 20th of March



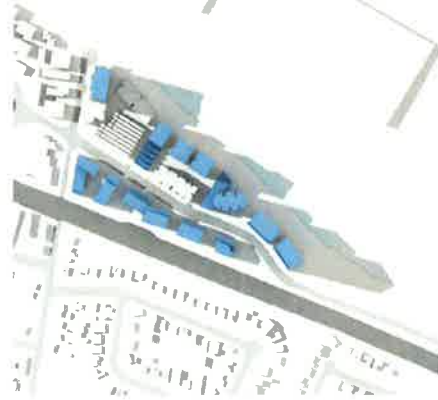
4.10 Shadow Study - 21st of June



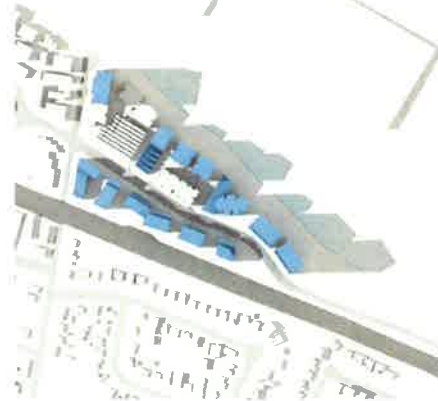
21st of June - 9am



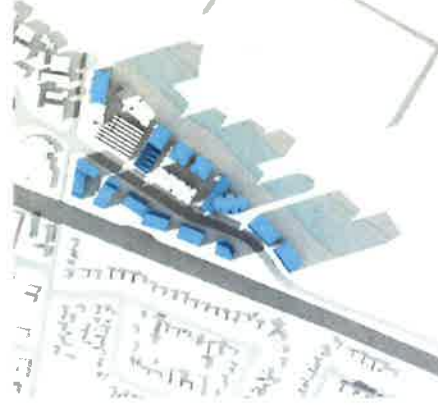
21st of June - 10am



21st of June - 11am



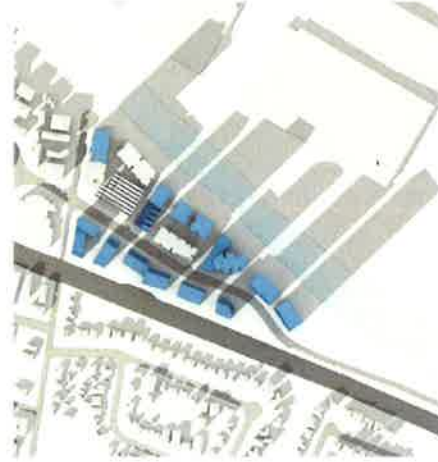
21st of June - 12pm



21st of June - 1pm

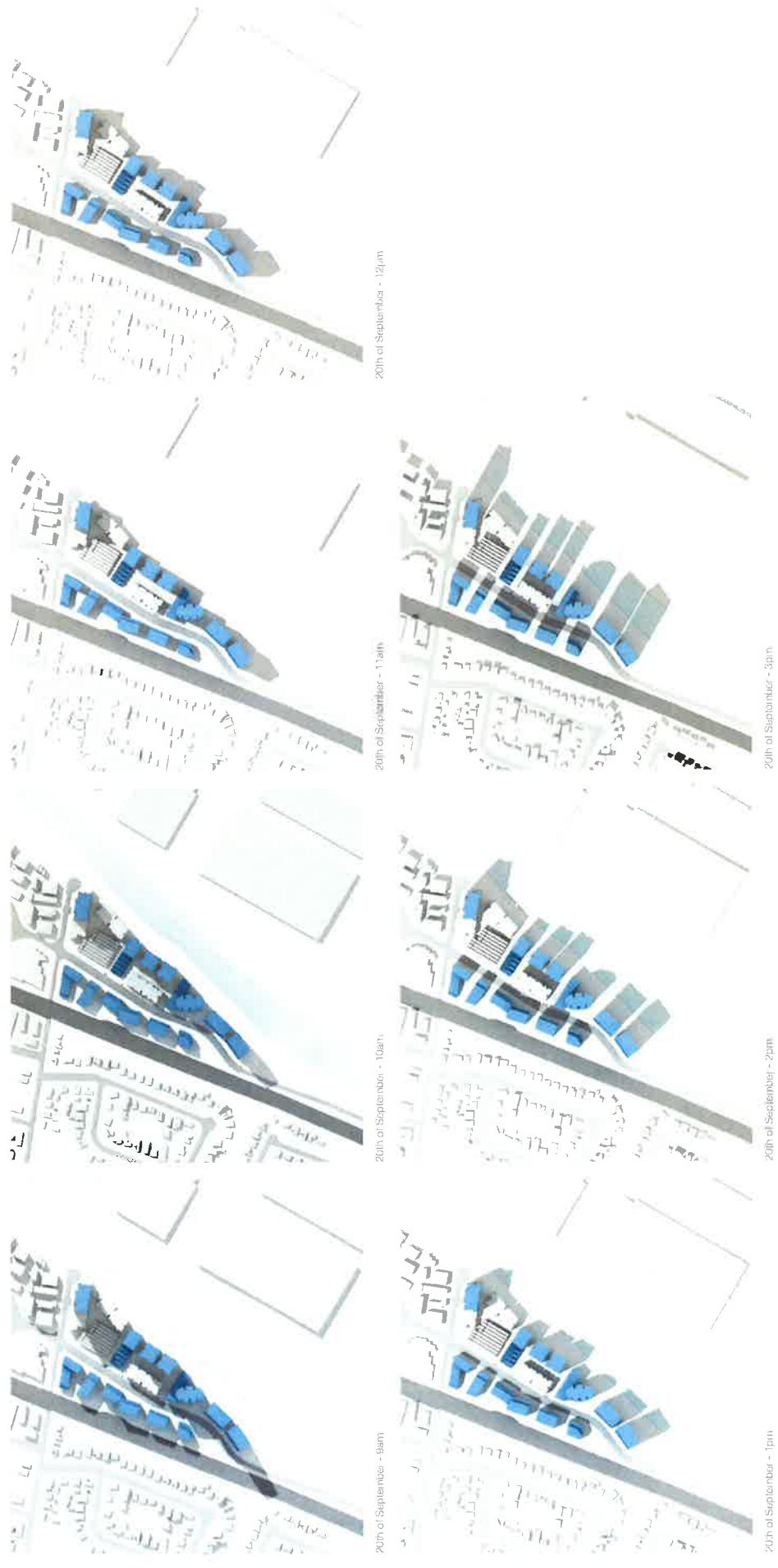


21st of June - 2pm



21st of June - 3pm

4.11 Shadow Study - 20th of September



4.12 Preferred Concept Assessment

The following Pros and Cons have been identified for the base option.

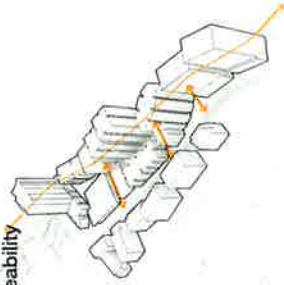
Pros

- Improved permeability and accessibility to the Georges River;
- Clearly defined street wall along Shepherd Street;
- Buildings envelopes ensure solar access is achieved to surrounding development, as well as within the precinct;
- Variation in height along the eastern edge of the site allows for greater separation between the taller buildings and creates visual interest to the skyline;
- Tall towers on 20-24 Shepherd Street and 31-33 Shepherd Street creates an urban marker visible from the CBD and the M5;
- The separation in the skyline between 20-24 Shepherd Street and 26 Shepherd Street acts as a marker to the Paper Mill, whilst the low scale buildings that address the through site links provides a human-scale connection to the river and has a good relationship to the Paper Mill heritage item;
- Orientation of buildings along the through site link, Shepherd Street and through the foreshore walk will allow for passive surveillance of these spaces;
- The proposed built form and density responds to key urban considerations, whilst delivering a uplift in development that supports;
- Uplift in development provides opportunity for substantial improvements to the surrounding public domain including a new connection to the Casula Powerhouse Arts centre and the public foreshore walk.
- The proposed building envelopes be made to achieve the required 2 hour solar access to 70% of each building and no greater than 15% with no solar access (Objective 4-A1 of the ADG) This can be achieved through layout of apartments on each floor.

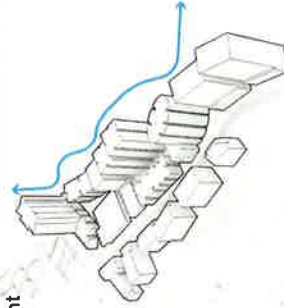
Cons

- Orientation of development to the west of Shepherd Street creates a tension between gaining solar access and screening for noise and visual privacy along the railway corridor.
- The site can only be accessed from the north of Shepherd Street. Traffic management solutions are being investigated as part of this planning proposal.

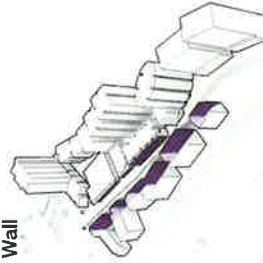
Pro - Permeability



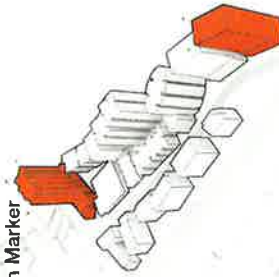
Pro - Height



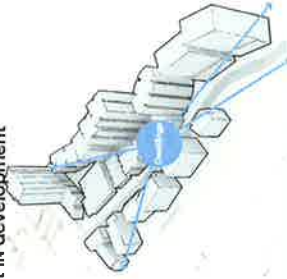
Pro - Street Wall



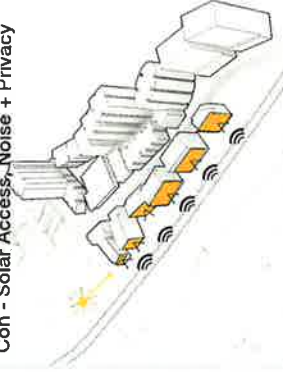
Pro - Urban Marker



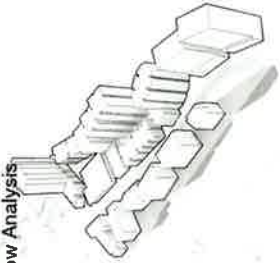
Pro - Uplift in development



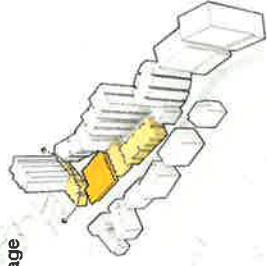
Con - Solar Access, Noise + Privacy



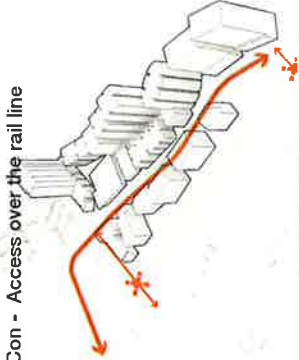
Pro - Shadow Analysis



Pro - Heritage



Con - Access over the rail line

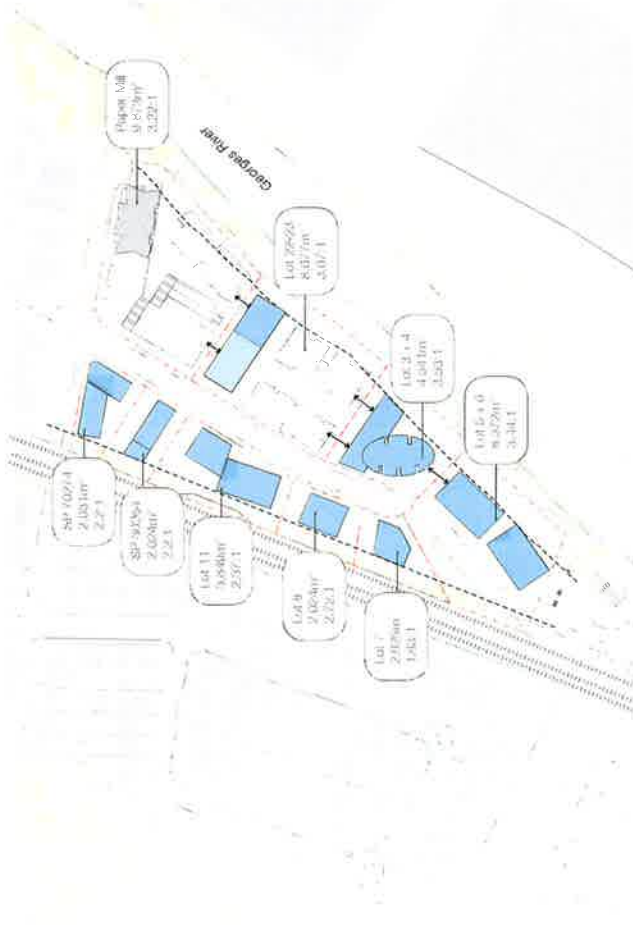


Recommendations

Recommendations

5

5.1 Recommendations



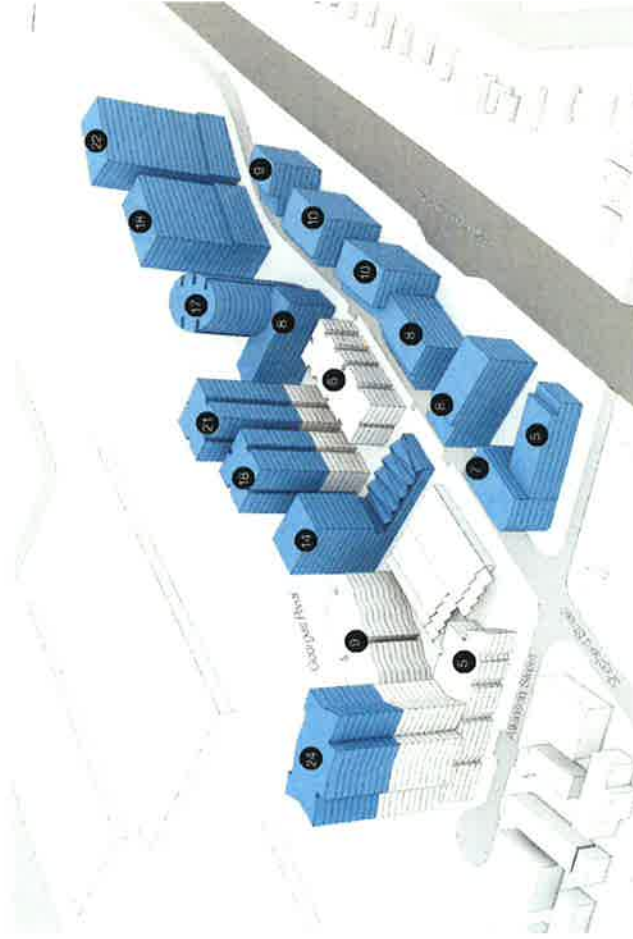
The Urban Design Study for the Shepherd Street Precinct, Liverpool outlines the site's capacity to accommodate additional residential development to a scale that reflects the strategic role of Liverpool CBD whilst retaining and enhancing the site's unique characteristics and features.

The proposed concept enables the rehabilitation of the Georges River, increasing public access to the foreshore and providing creating greater connectivity to the surrounding area.

As demonstrated in the preferred concept, the precinct as a whole has the capacity to increase in height and density whilst delivering built form outcomes that can achieve good amenity.

Sites along the western edge of the precinct are heavily constrained by the size of lots, setback to the rail line, orientation of the urban block, and its potential to overshadow the properties to the east of Shepherd Street. As a result site are only able to achieve within a range of 1.6 to 2.7, which is similar to the existing FSR of the site.

Sites along the eastern edge are larger in size and are able to deliver taller tower forms with greater building separations. FSR range from 3.22:1 to 3.67:1 along this edge of the precinct.



Recommendations:

- Sites along the western edge of the precinct to increase allowable height limit to 32m, to allow sites to achieve FSR in a built form that is appropriate to all the site constraints.
- Solar impact of proposed built forms along the eastern edge of the precinct will need to be taken into consideration during the DA Stage.
- Due to the size of sites along the eastern edge of the precinct, Height (up to 77m) and FSR (as per diagram above) should be increased to allow for an uplift of density across the precinct, as this site will have less impact on surrounding development and has the ability to achieve greater building separations.

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