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**WEST MELBOURNE WATERFRONT
DRAFT DEVELOPMENT PLAN
11TH MARCH 2016**



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1.0 INTRODUCTION

The West Melbourne Waterfront site is approximately 2.8 hectares, with a frontage to Maribyrnong River of approximately 230 meters. It is approximately 3.5 kilometers west of Melbourne’s Central Business District.

The draft Development Plan includes a mix of commercial office floor space, retail/hospitality floor space and a mix of new residential activity. A vibrant public realm experience on the Maribyrnong River is central to the proposal.

In summary, the key planning outcomes delivered by the proposal are:

- Regeneration of a large section of the Maribyrnong River frontage consistent with the City of Melbourne Open Space Strategy (2012) and the Maribyrnong River Valley Design Guidelines (2010) in order to create an exemplar urban waterfront urban design outcome.
- Transfer of at least 7.06% of the overall site area as public open space to the City of Melbourne, which will increase the riparian zone and the diversity of recreational opportunities.
- A mix of land uses including employment and a diversity of housing typologies.
- A development outcome that incorporates opportunities for innovative precinct scale sustainability initiatives.
- Significant support for existing infrastructure, and contributions to new and improved local infrastructure.

The proposal is consistent with State and local planning policies given it is within the Dynon Urban Renewal Area in the Central Sub-Region of Plan Melbourne, and Kensington Road, West Melbourne is identified as a potential Urban Renewal Area in the Municipal Strategic Statement in the Melbourne Planning Scheme.

The draft Development Plan has been informed by specialist consultant input. The consultant reports do not form part of the Development Plan.

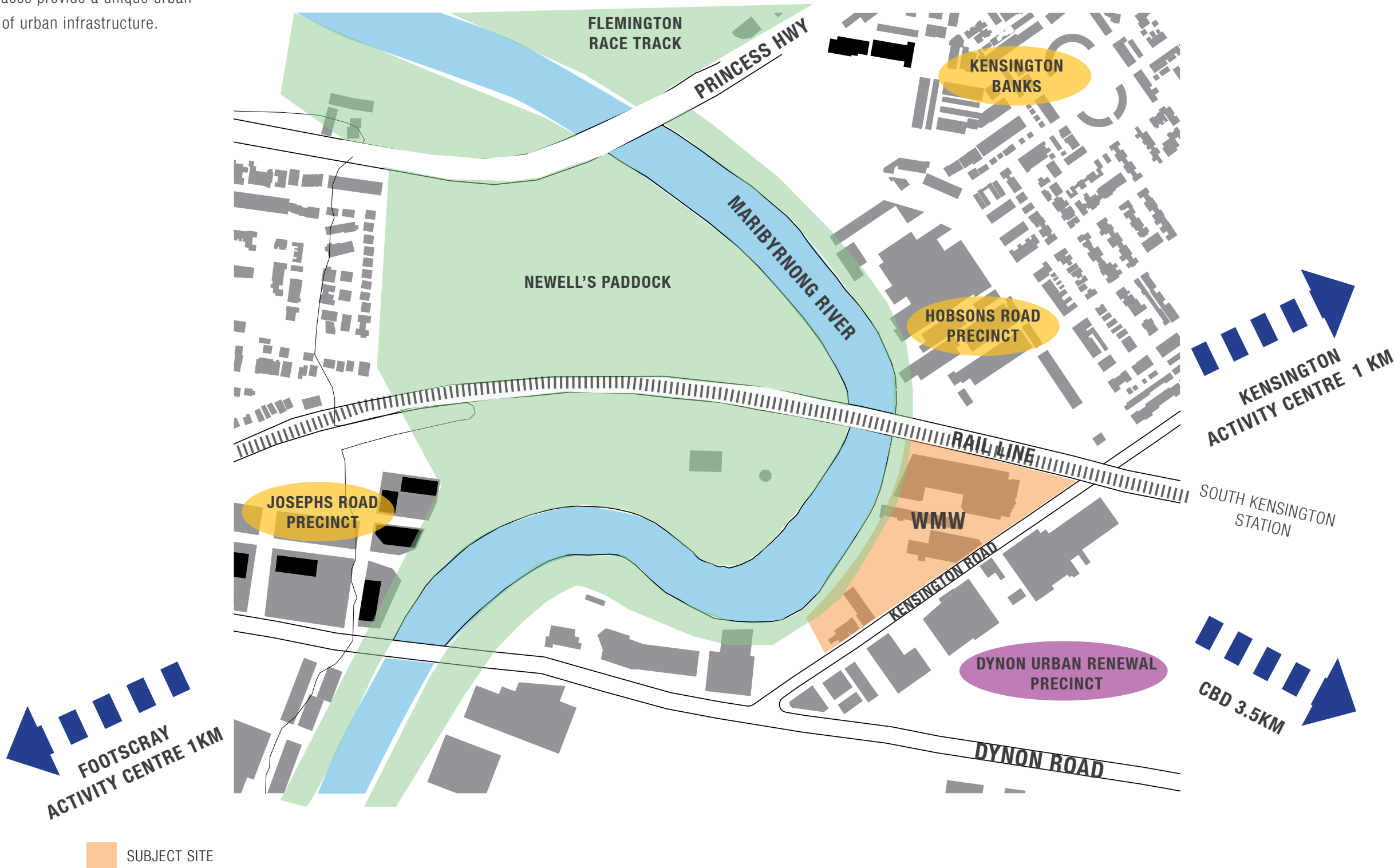
- Urban Design and Town Planning – Woods Bagot, Oculus, Contour Consultants and NH Architecture
- Architecture - Woods Bagot and NH Architecture
- Landscape Architecture and Public Realm – Oculus
- Stormwater and Flood Management – GHD
- Acoustic and Vibration Analysis - ARUP
- Integrated Transport– GTA Consultants
- Service Infrastructure Analysis – GHD
- Wind Engineering - Windtech
- Odour Assessment - GHD
- Heritage Assessment - Anthemion Group
- Environmental Sustainability Assessment - Cundall
- Economic and Market Analysis – KPMG and Resolution Research Strategists

2.0 URBAN CONTEXT AND EXISTING CONDITIONS ANALYSIS

2.1 URBAN CONTEXT PLAN

The subject land is within an urban renewal corridor that extends between the city and Footscray.

The Maribyrnong River and surrounding open spaces provide a unique urban setting and the area is well serviced by a range of urban infrastructure.

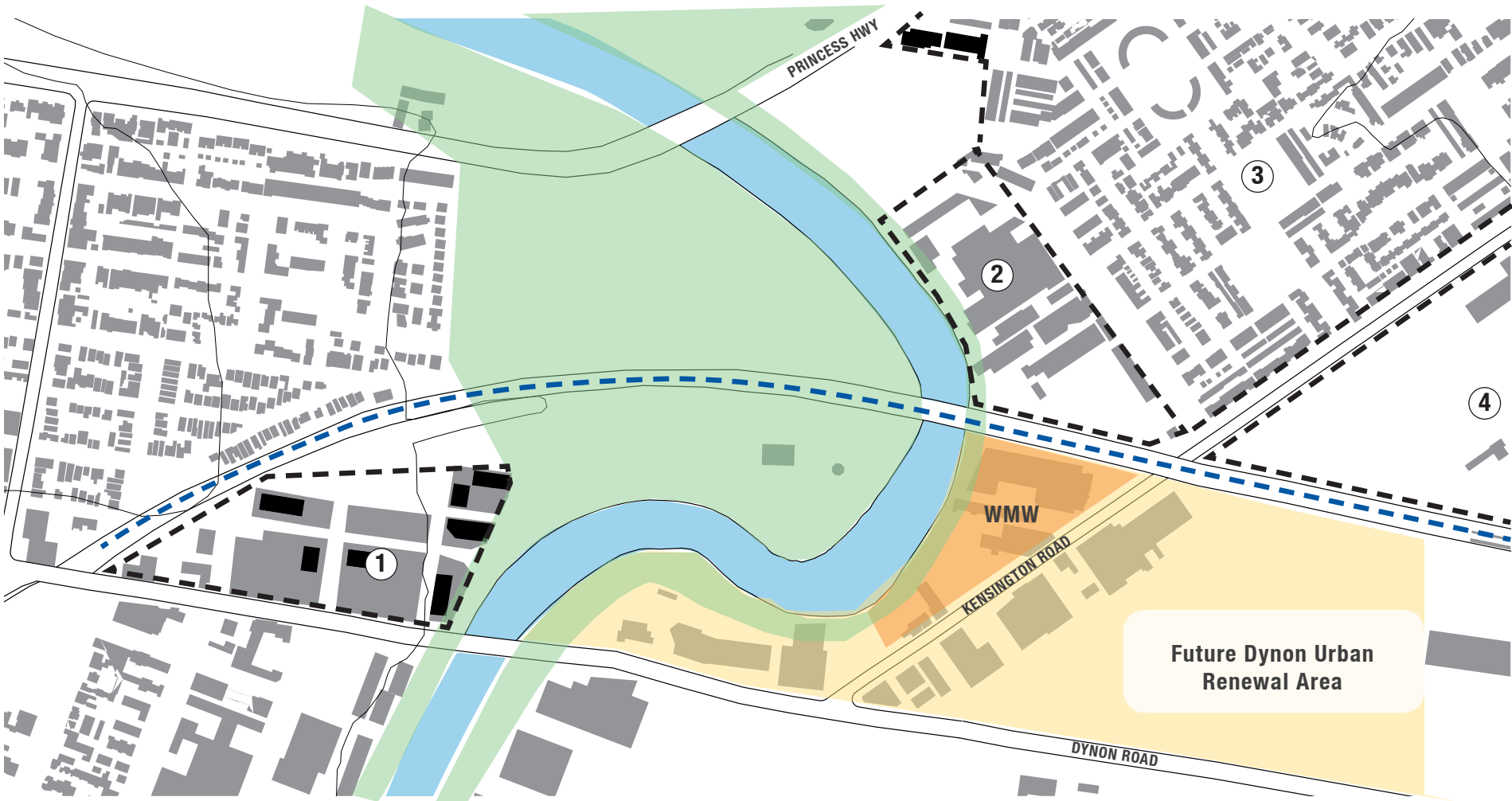


2.2 BUILT FORM CONTEXT

The built form character of the area is mixed.

Nearby existing and proposed urban infill projects include Joseph Road Footscray, Hobsons Road Kensington, Kensington Banks Kensington and the Department of Housing complex in Altona Street Kensington.

Within these precincts, building heights range from single storey (parts of Kensington Banks) up to 32 storey apartment and mixed use developments (evident within Joseph Road Footscray). The immediate built form context is represented in the Built Form Context Diagram.



APPROVED DEVELOPMENT
AT HOPKINS ST, JOSEPH RD PRECINCT
JOSEPH ROAD PRECINCT
15-32 storeys (average 22 storeys)

SOURCE:
"Information Memorandum - 2 Hopkins St Footscray",
Savills, 2014, p. 11.



APPROVED DEVELOPMENT
AT HOBSONS ROAD
HOBSONS ROAD PRECINCT
Up to 6 storeys

SOURCE:
<http://www.kensingtonriverwalk.com.au>



EXISTING DEVELOPMENT IN WESTERN
KENSINGTON BANKS
KENSINGTON BANKS
single storey dwellings up to 11 storeys



EXISTING "KENSINGTON ESTATE" DEVELOPMENT
KENSINGTON ESTATE
Single Storey dwellings up to 13 storeys

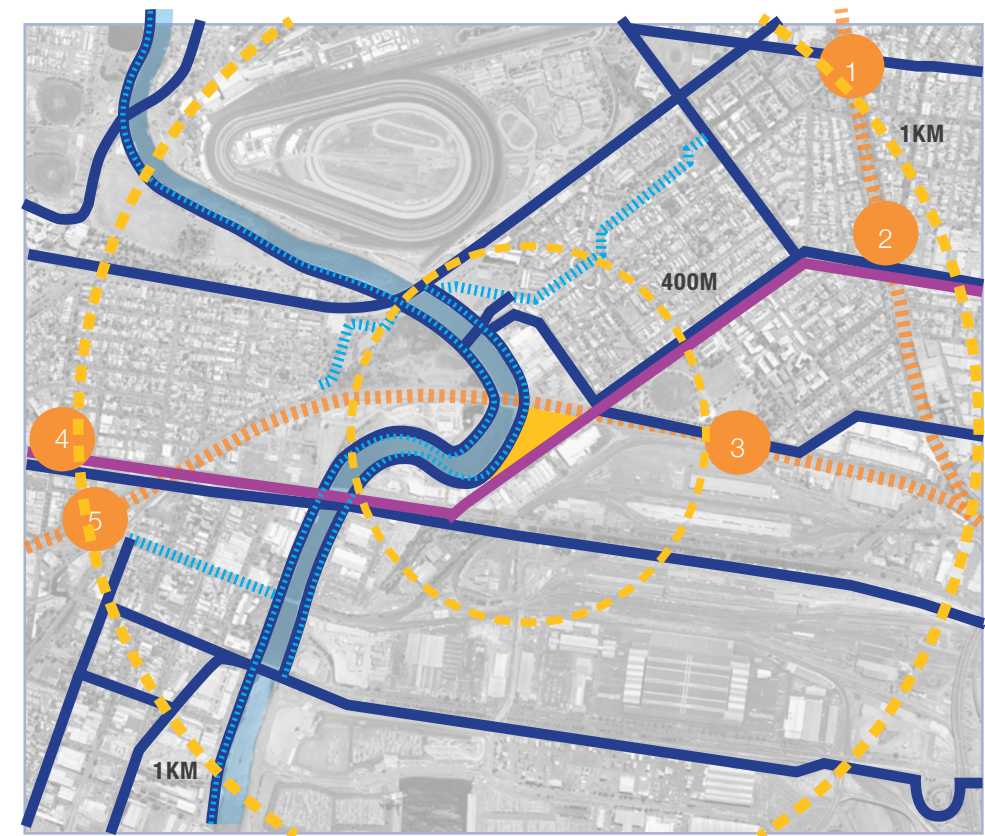
2.3 CONNECTIVITY AND SERVICES

An overview of the surrounding urban infrastructure, the general connectivity to services and the network of nearby urban spaces is illustrated in the following diagrams.



PUBLIC TRANSPORT, PEDESTRIAN & CYCLE LINKS
< 20 MINUTES (WALKING):

- 1 Newmarket Train Station
 - 2 Kensington Train Station
 - 3 South Kensington Train Station
 - 4 Hopkins/Leed Tram Stop
 - 5 Footscray Train Station
- Legend:
- Cycle & Pedestrian Link (Blue dashed line)
 - Rail Line (Orange dashed line)
 - Principle Bicycle Network (Blue solid line)
 - Bus Route (Purple solid line)



PUBLIC OPEN SPACE
< 20 MINUTES (WALKING):

- 1 Henry Turner Memorial Reserve
 - 2 Lynch's Bridge
 - 3 Newell's Paddock
 - 4 J J Holland Park
- Existing Public Open Space (Green area)



2.4 SITE SURVEY PLAN

The subject land is described as 160 – 232 Kensington Road, West Melbourne and it comprises five lots formally known as:

- Lot 1 on Title Plan 568898 M (*part 156-174 Kensington Road.*)
- Lot 1 on Title Plan 582035 S
- Lot 1 on Title Plan 842004 H
- Lot 1 and Lot 2 on Plan of Subdivision 724275 W

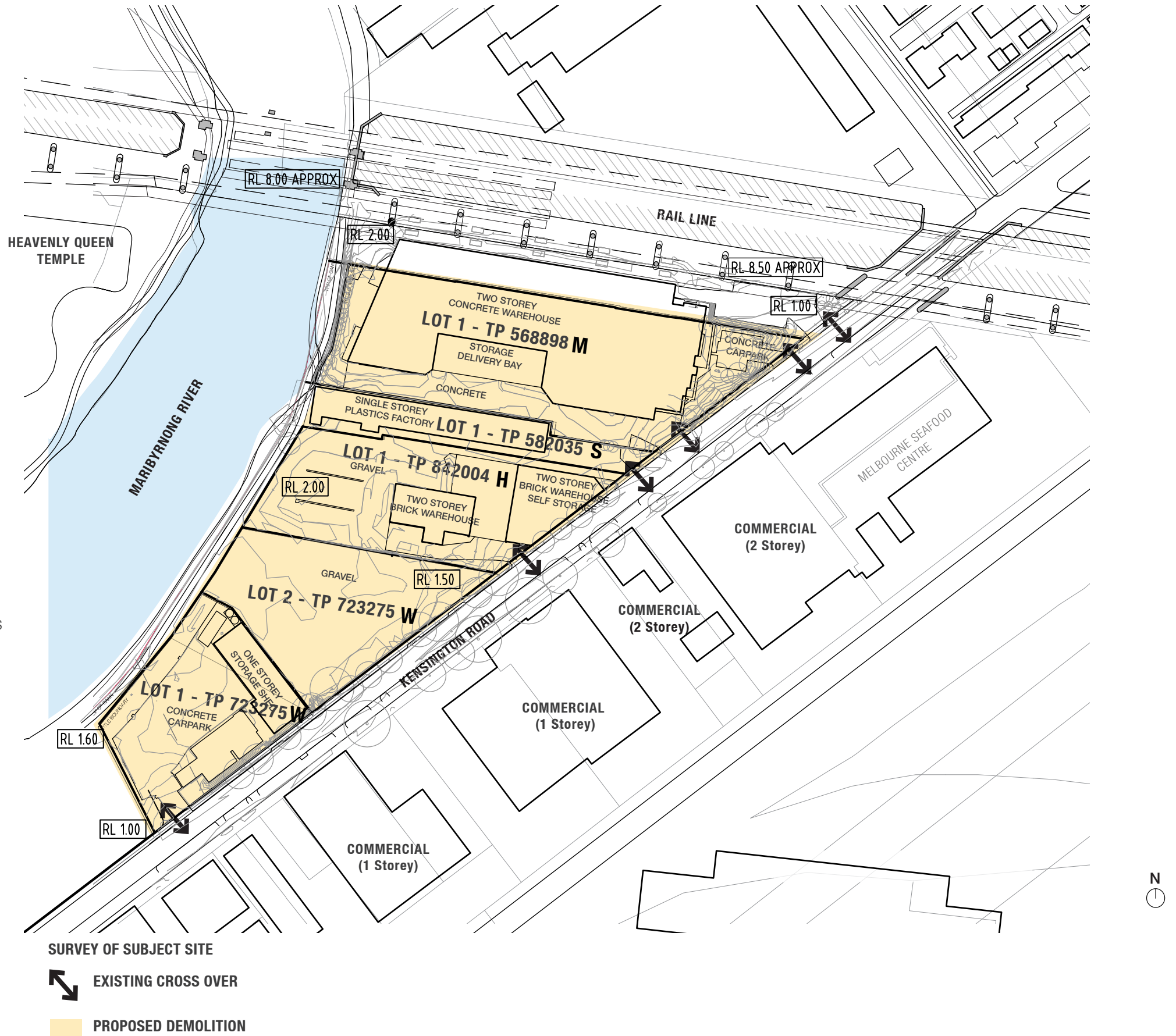
The subject land is irregular in shape, it is partly vacant, partly occupied by commercial buildings and it has a total area of approximately 2.8 hectares.

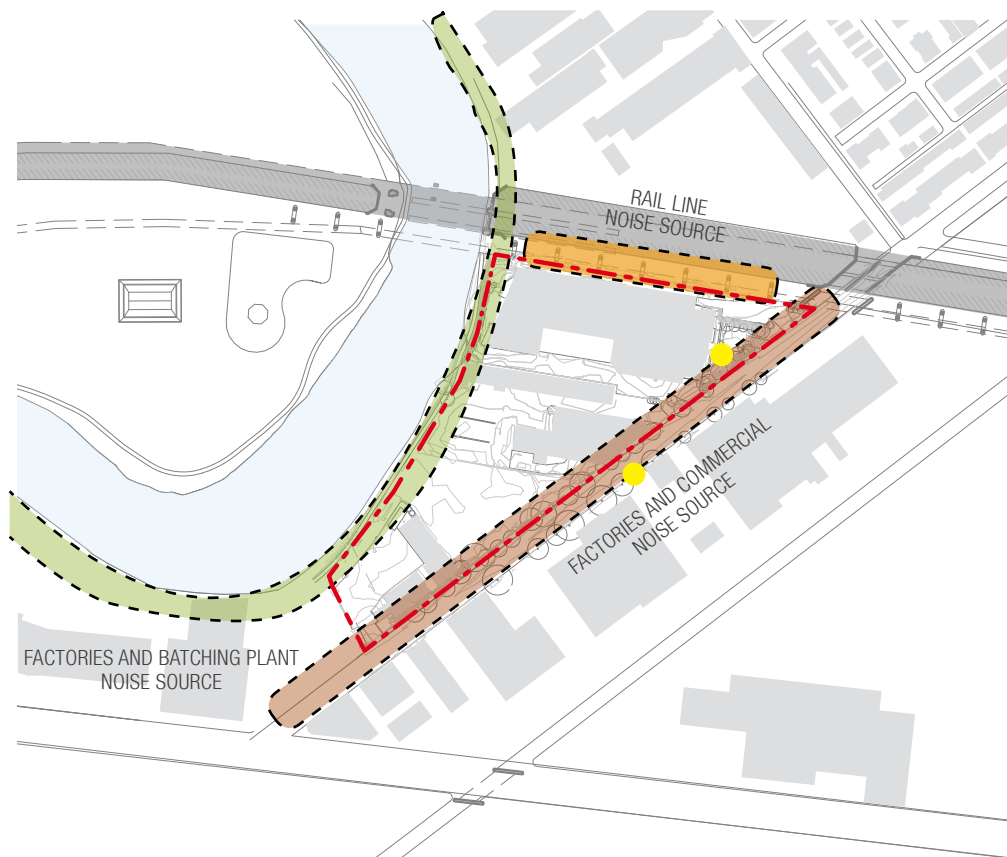
The subject land is generally bound by land managed by VicTrack to the north inclusive of the elevated railway line that services both passenger and freight services, Kensington Road (20 meters wide) to the east, a commercial property to the south and the Maribyrnong River to the west.

The longest edges are Kensington Road and the Maribyrnong River. The land has been variously used for industrial and commercial purposes. It is proposed to demolish all buildings on the land.

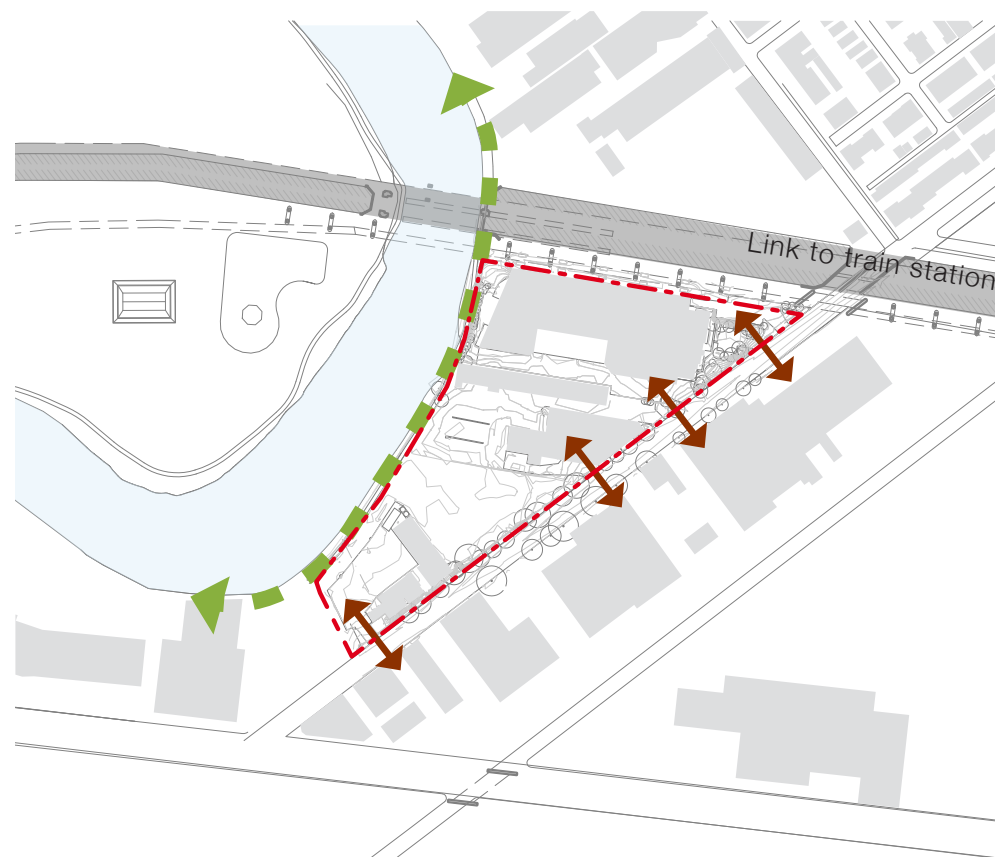
The diagrams on the following page illustrate:

- Site Edges and Interfaces
- Existing Site Access
- Environmental Considerations

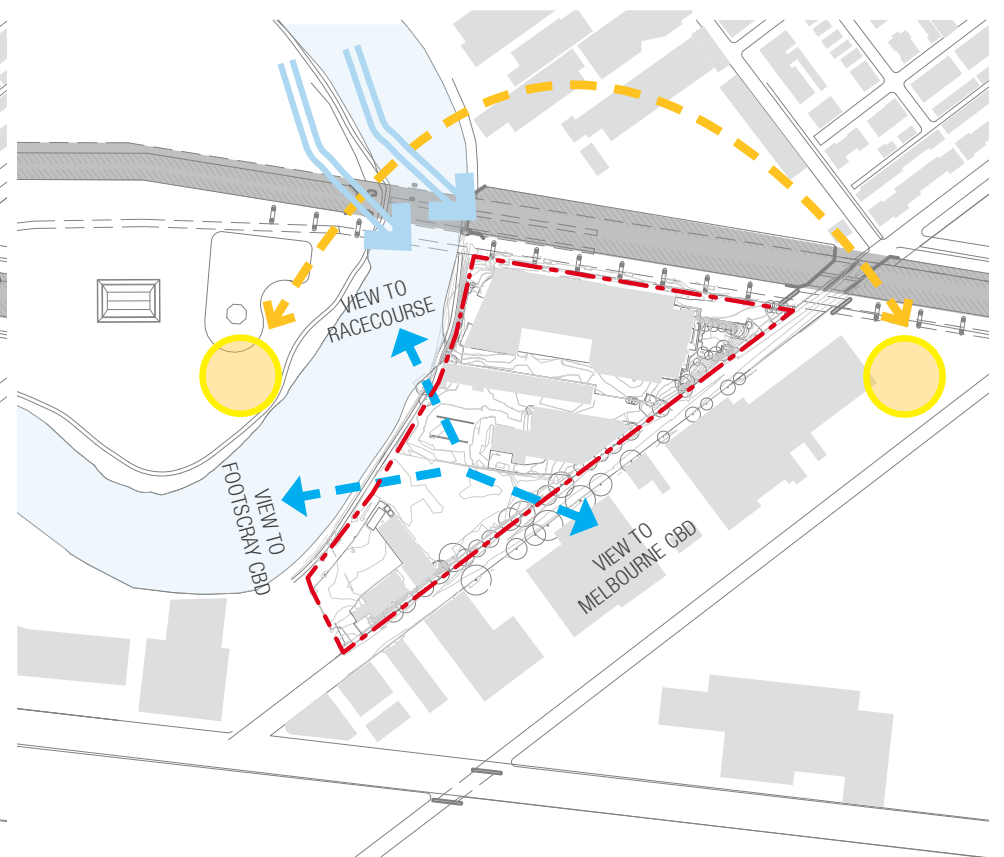




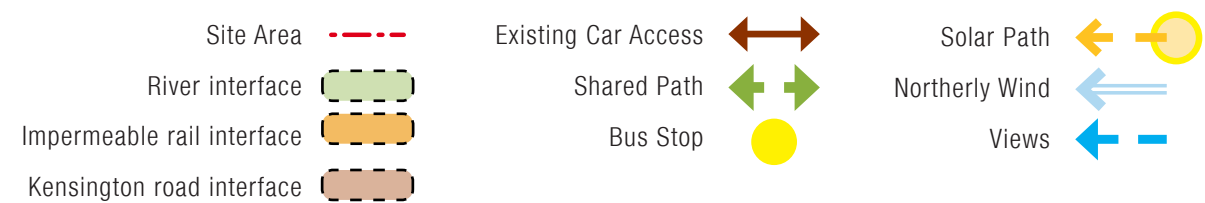
EXISTING CONDITION DIAGRAM - EDGES AND INTERFACES



EXISTING CONDITION DIAGRAM - EXISTING SITE ACCESS



EXISTING CONDITION DIAGRAM - ENVIRONMENTAL CONSIDERATIONS



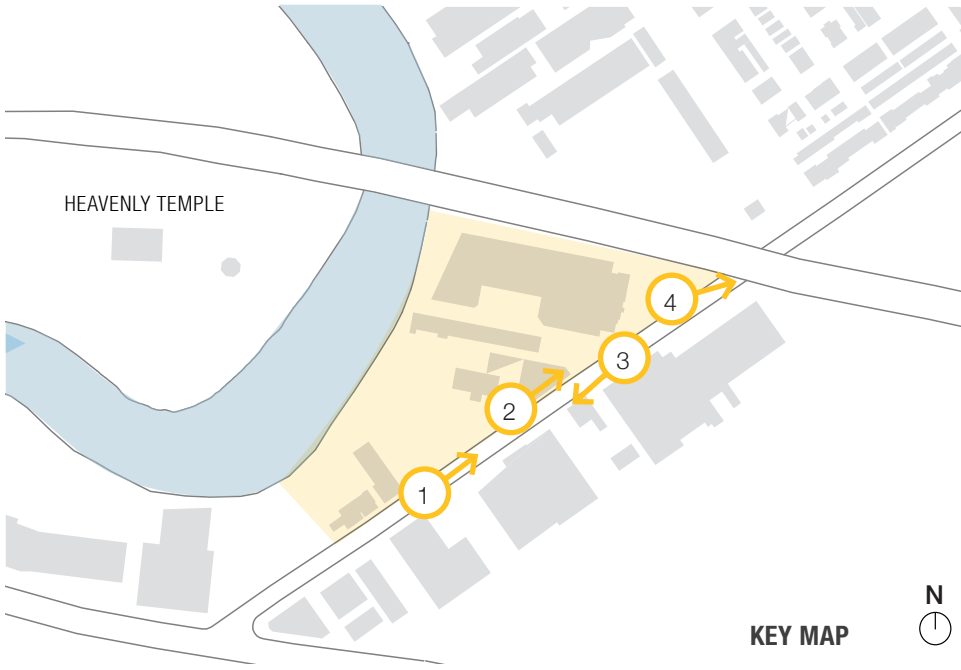
2.5 EXISTING CONDITIONS KENSINGTON ROAD

The subject land has a frontage to Kensington Road of approximately 350 metres inclusive of 5 vehicle crossovers, street trees and footpaths. The Kensington Road reserve is approximately 20 meters wide and currently accommodates a single vehicle carriageway in each direction, bicycle lanes and on-street parking.

There are two bus stops located in front of the subject land on the west side of Kensington Road.

On the east side of Kensington Road are commercial properties including warehouses. Built form on the east side of Kensington Road is generally 2 – 3 storeys in height with varied setbacks.

The railway overpass at the north-east corner of the site is a significant feature and constraint.

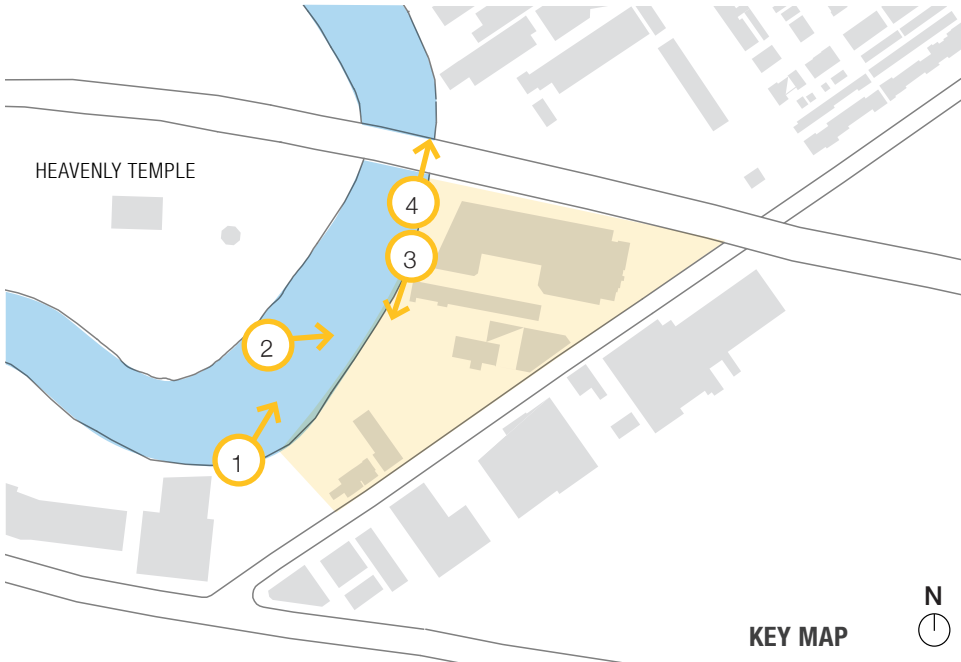


2.6 EXISTING CONDITIONS MARIBYRNONG RIVER

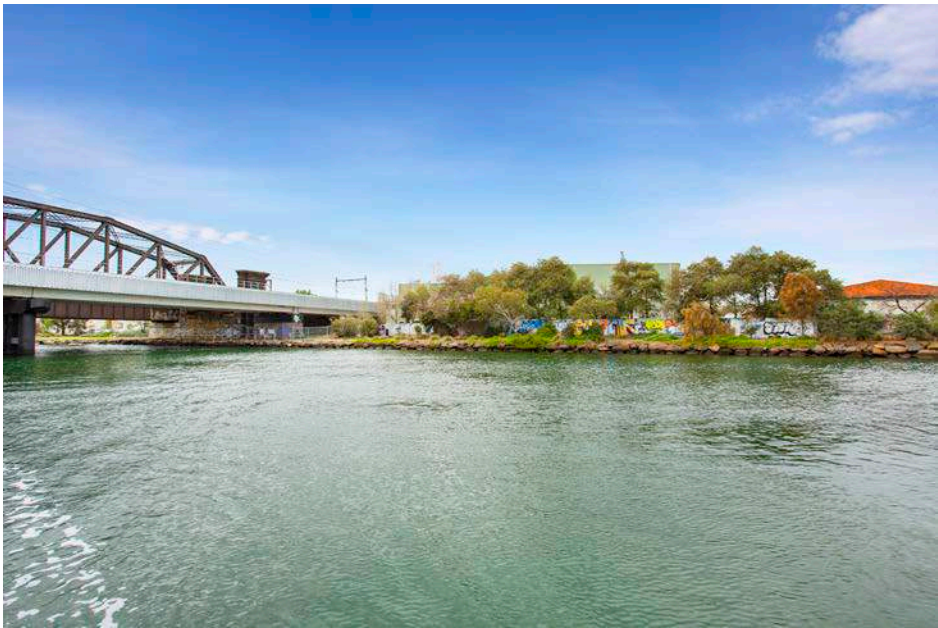
The subject land has a frontage of approximately 230 metres to the Maribyrnong River. This section of the Maribyrnong River includes a shared path that runs north-south along the east bank.

Beyond the river to the west is the Heavenly Queen Temple.

This length of the Maribyrnong River is characterised by a mix of land uses and built form.



1



2



3



4

3.0 OPPORTUNITIES AND CONSTRAINTS ANALYSIS

There are a number of opportunities and constraints that have influenced the site planning strategy and built form response.

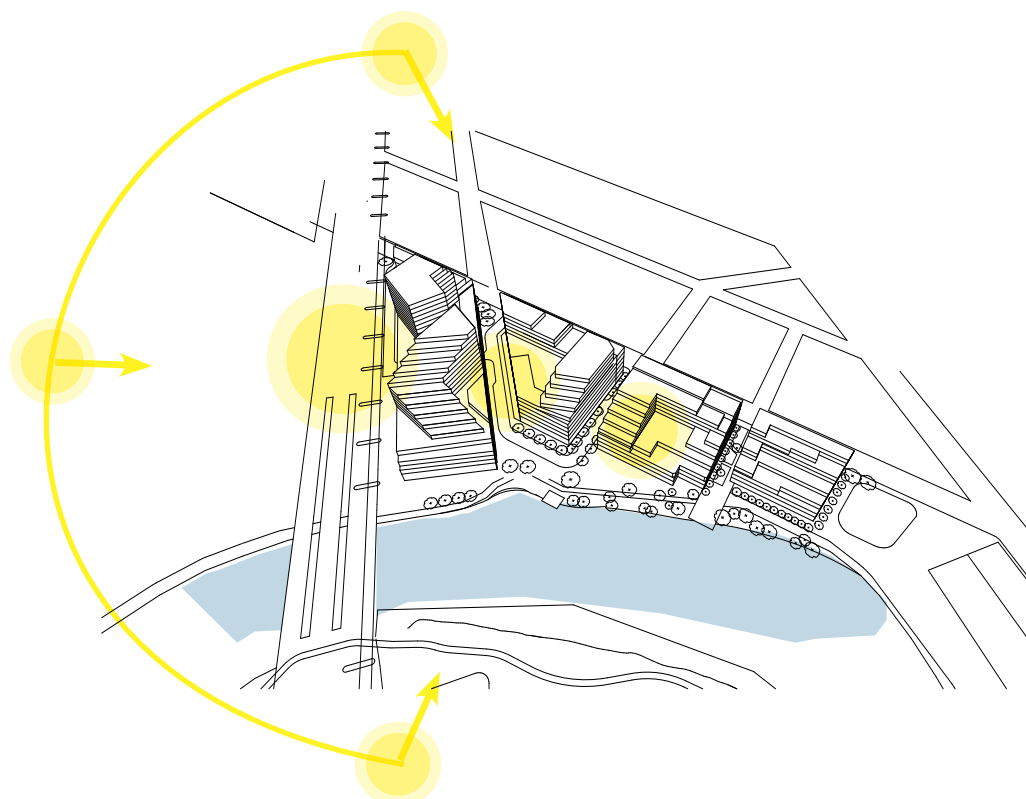
The key opportunities include:

- Respond positively to the Maribyrnong River and contribute additional public open space that enhances accessibility to the river.
- Improve public views to and from the Maribyrnong River.
- Achieve the 'urban waterfront objective' associated with the Maribyrnong River Valley Design Guidelines 2010.
- Creation of a new waterfront civic space that takes advantage of the northerly orientation.
- Deliver innovative and precinct-wide sustainable initiatives.
- Creation of a permeable movement network that has regard to potential future connections to the balance of the Dynon precinct.

In addition to these opportunities, the following constraints are acknowledged:

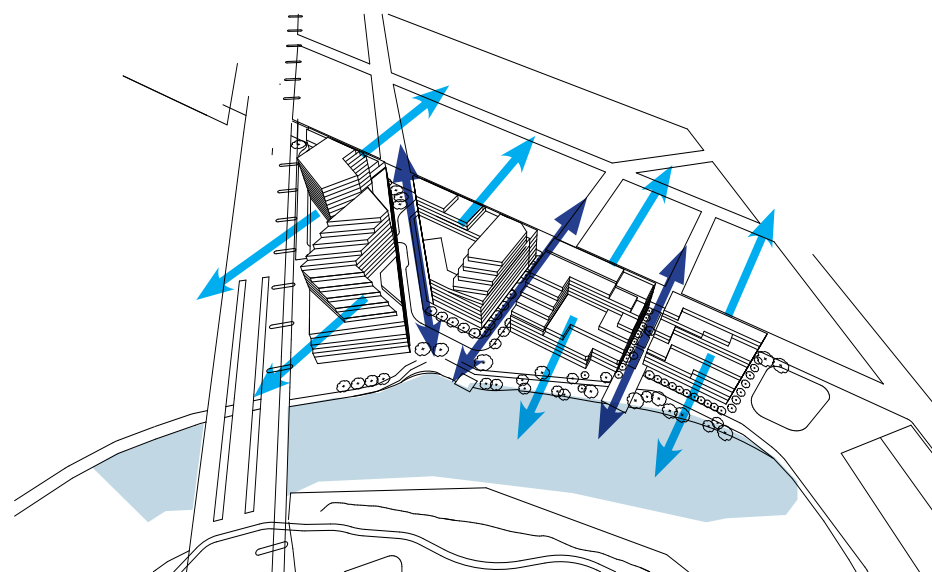
- The need to manage hydrology, including potential inundation associated with storm events.
- The need to manage acoustic and vibration implications of the rail line to the north through the site planning strategy.
- Manage traffic generation in proximity to the Maribyrnong River.
- Management of the staging of the development, and the infrastructure / services delivery for each stage.
- Consideration of established uses on nearby land.

How these opportunities and constraints have been managed within the site planning strategy and the built form response is illustrated in the diagrams on the following page.



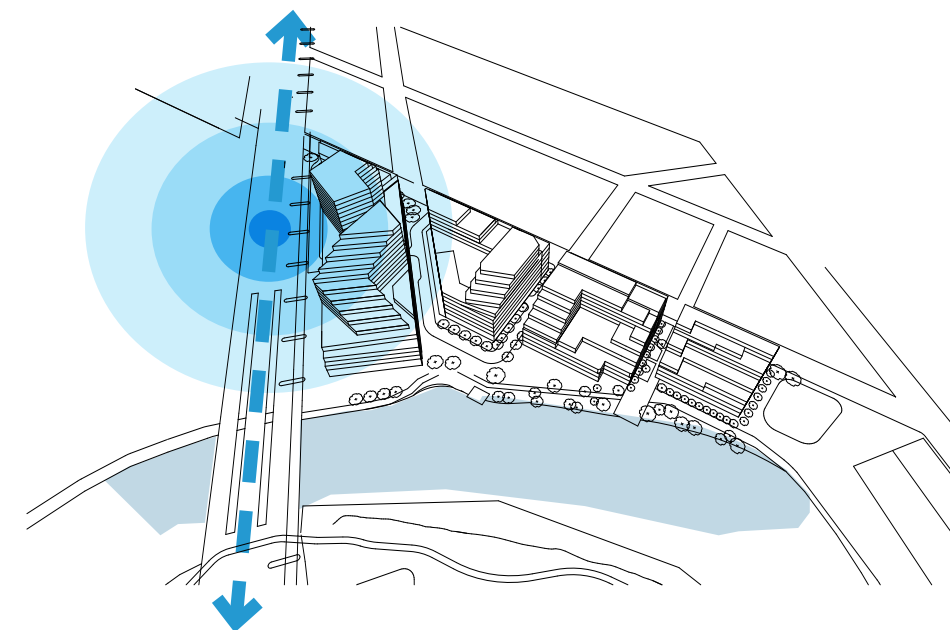
SOLAR ACCESS

Solar access to dwellings has been maximised by the orientation of the built form and by an appropriate building depth for dwellings. By also shaping built edges we have increased separation of internal spaces for improved solar access.



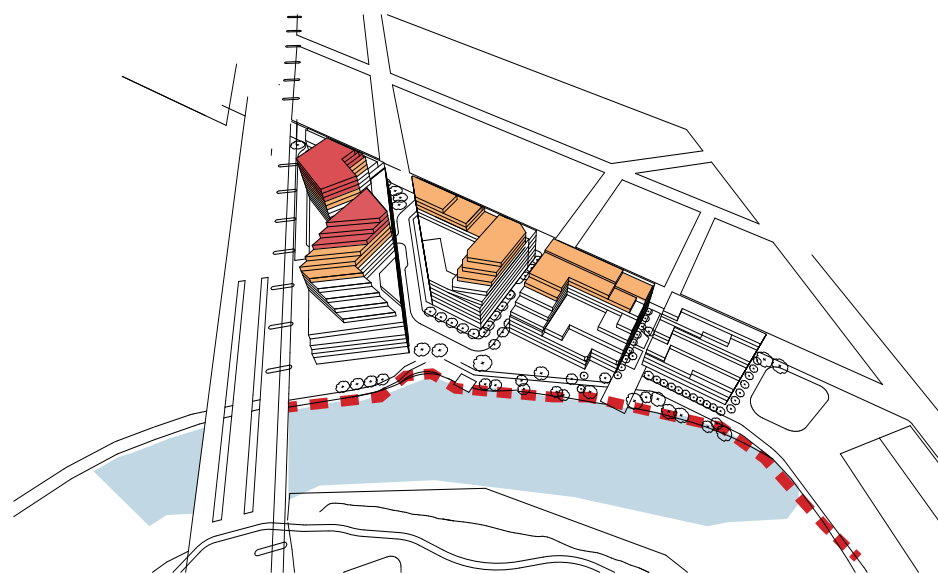
VIEWS

The proposed street network provides views through the site from Kensington Road to the water front. By altering the built shape of the upper levels views out of the site have been maximised. Terracing the built form also provides opportunities for one building to see across another.



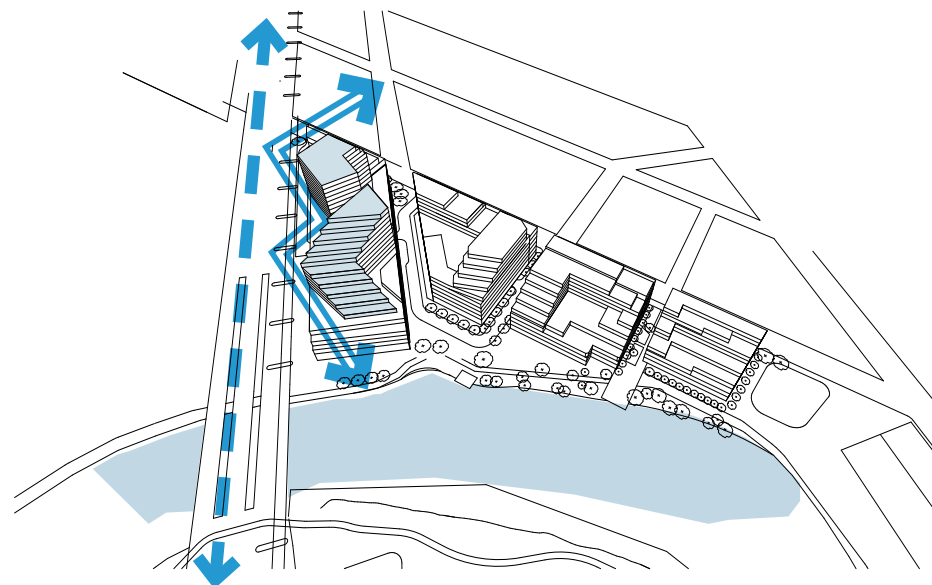
ACOUSTIC MANAGEMENT

Dwellings abutting the rail line edge and those that are exposed to noise sources have been minimised.



HEIGHT & MASSING

The building height has been sensitively located away from the River edge and is focused to the central spine of the site.



RAIL INTERFACE

The built massing along the rail edge is responsive to this edge condition and minimises building that is directly on the rail line for improved acoustic performance.













OPEN SPACE

Public open space along with communal and private green space has been provided through out the development and has also introduced a new residential typology higher up into the development.

4.0 CONCEPT MASTER PLAN

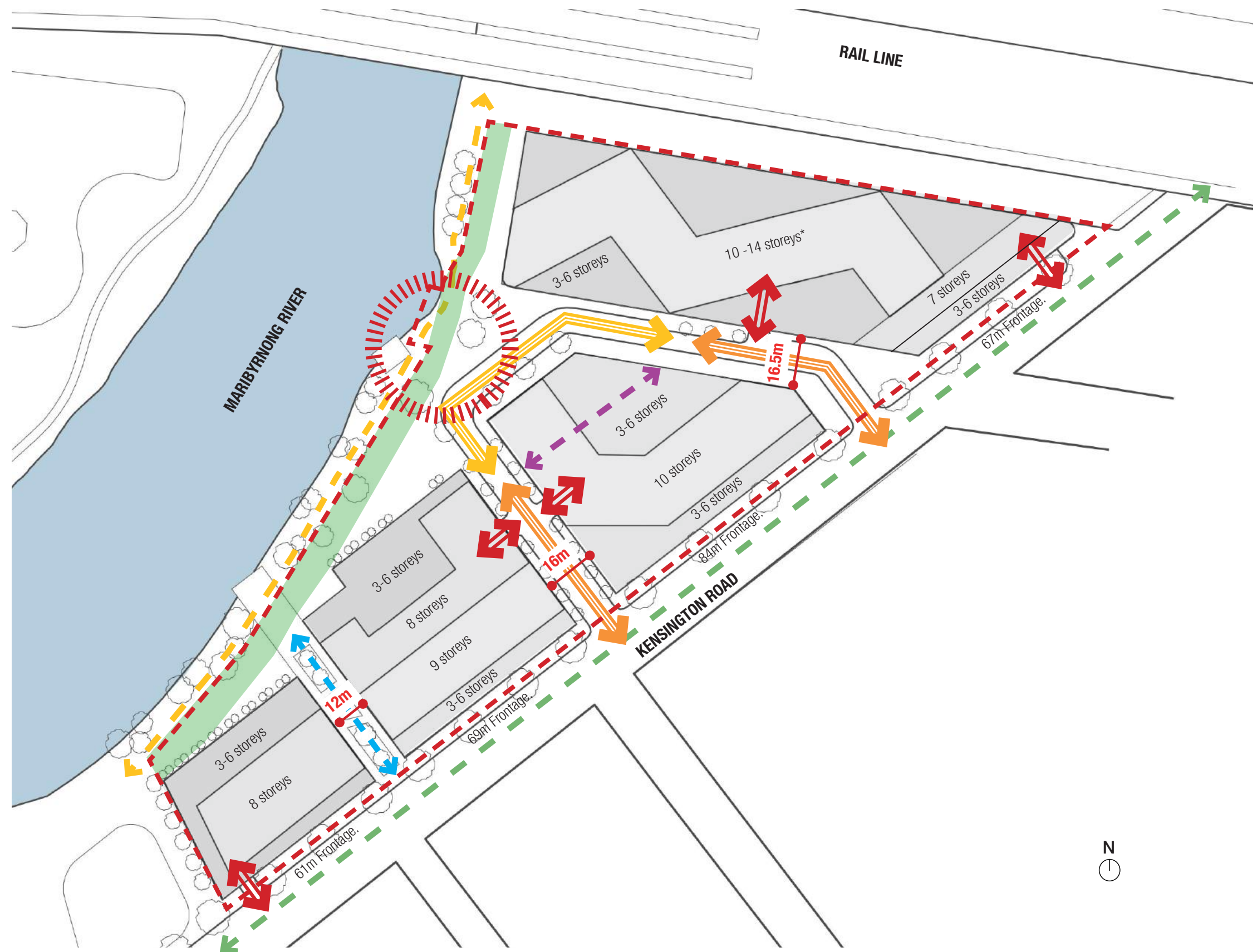
4.1 FRAMEWORK PLAN

-  PUBLIC REALM NODE
-  SUBJECT LAND
-  PUBLIC OPEN SPACE
Subject to Agreement with City of Melbourne
-  PEDESTRIAN LINK
-  BICYCLE LINK
-  PEDESTRIAN LINK
PART COVERED PART OPEN TO THE SKY
-  SHARED PATH ALONG RIVER
Subject to Agreement with City of Melbourne
-  PUBLIC ROAD NETWORK
-  SHARED LOW SPEED
PUBLIC ROAD NETWORK
-  VEHICLE ACCESS TO BUILDINGS

AVERAGE SETBACK
FROM TOP OF BANK **25 meters**

MINIMUM SETBACK
FROM TOP OF BANK **15 meters**

*PREFERRED MAXIMUM 10 STOREYS, UP TO A
MAXIMUM OF 14 STOREYS, SUBJECT TO MEETING THE
REQUIREMENTS OF THE DPO



4.2 MOVEMENT NETWORK

The proposed movement network prioritises pedestrian and cycle movement over vehicle use. It incorporates a shared path along the waterfront and widened Kensington Road reserve.

The network is of sufficient width to accommodate footpaths, street trees and water sensitive urban design treatments.

Future applications must demonstrate pedestrian links at a minimum width of 4 metres with high quality paving, materials and lighting. A through block pedestrian link is to be provided through site 2. The link will be part covered, and part open to the sky, creating a diversity of pedestrian movements through the site.

The Internal road creates a neighbourhood street network, adding a level of activation to the internal street environments while minimising any traffic impact to Kensington Road.

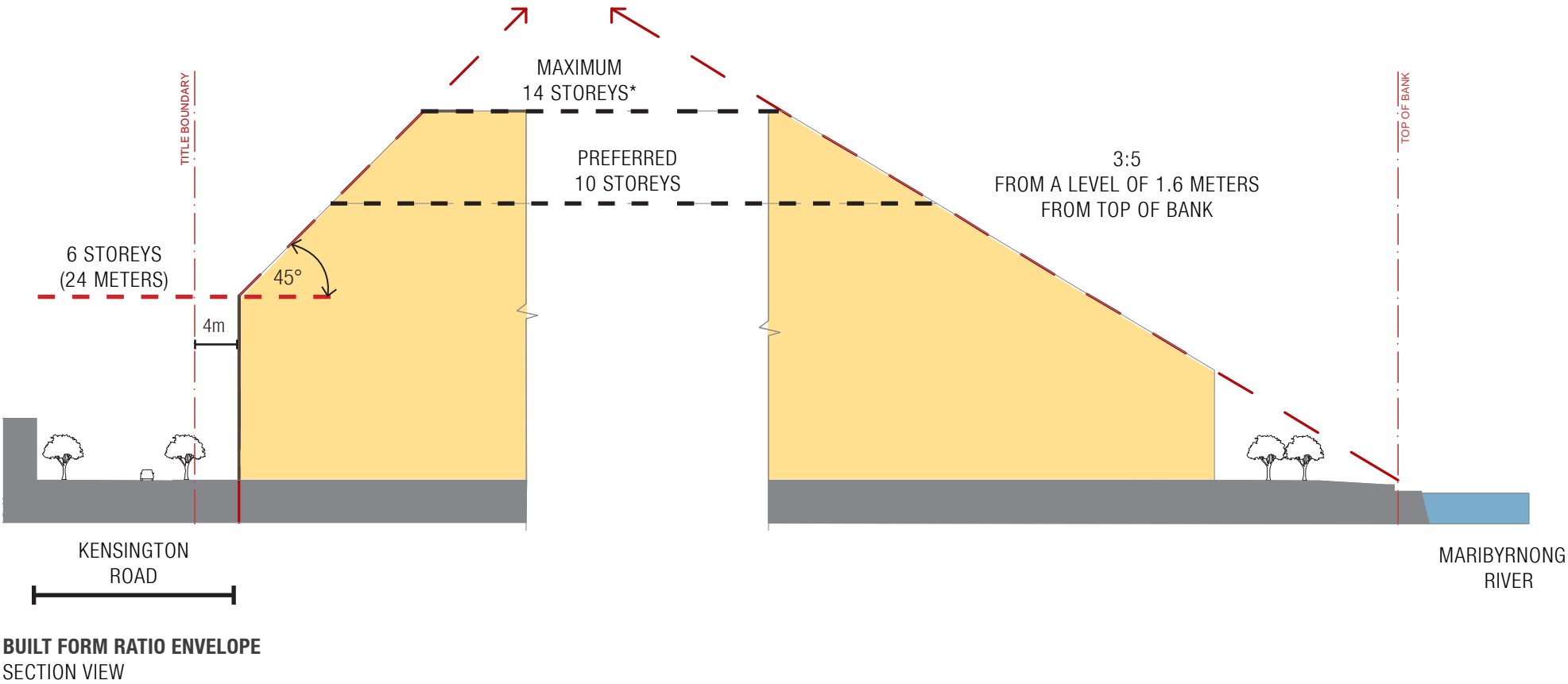
Traffic is diverted away from the neighbourhood street network into internal parking areas before reaching the low speed waterfront environment. This ensures vehicle numbers are minimised giving the internal streets a pedestrian and bicycle focus along the northern boundary of the site.

The low speed public road will utilise a different material to emphasise the low speed shared environment. Loading and unloading access is located away from private/ visitor vehicle entries along the northern boundary of the site.

4.3 BUILT FORM ENVELOPE

The Development Plan Overlay Schedule articulates the following built form outcomes:

- Setback at a ratio of 3:5 from the top of the Maribyrnong River Bank.
- Adopt a street edge of 3-6 storeys from Kensington Road. Above 6 storeys upper floors should be setback within a 45 degree angle.
- The preferred maximum building height on the land is 10 storeys.
- Additional Height, up to a maximum of 14 storeys may be achieved subject to meeting the requirements of the Development Plan Overlay - Schedule 12.



* SUBJECT TO MEETING THE REQUIREMENTS OF DPO - SCHEDULE 12.

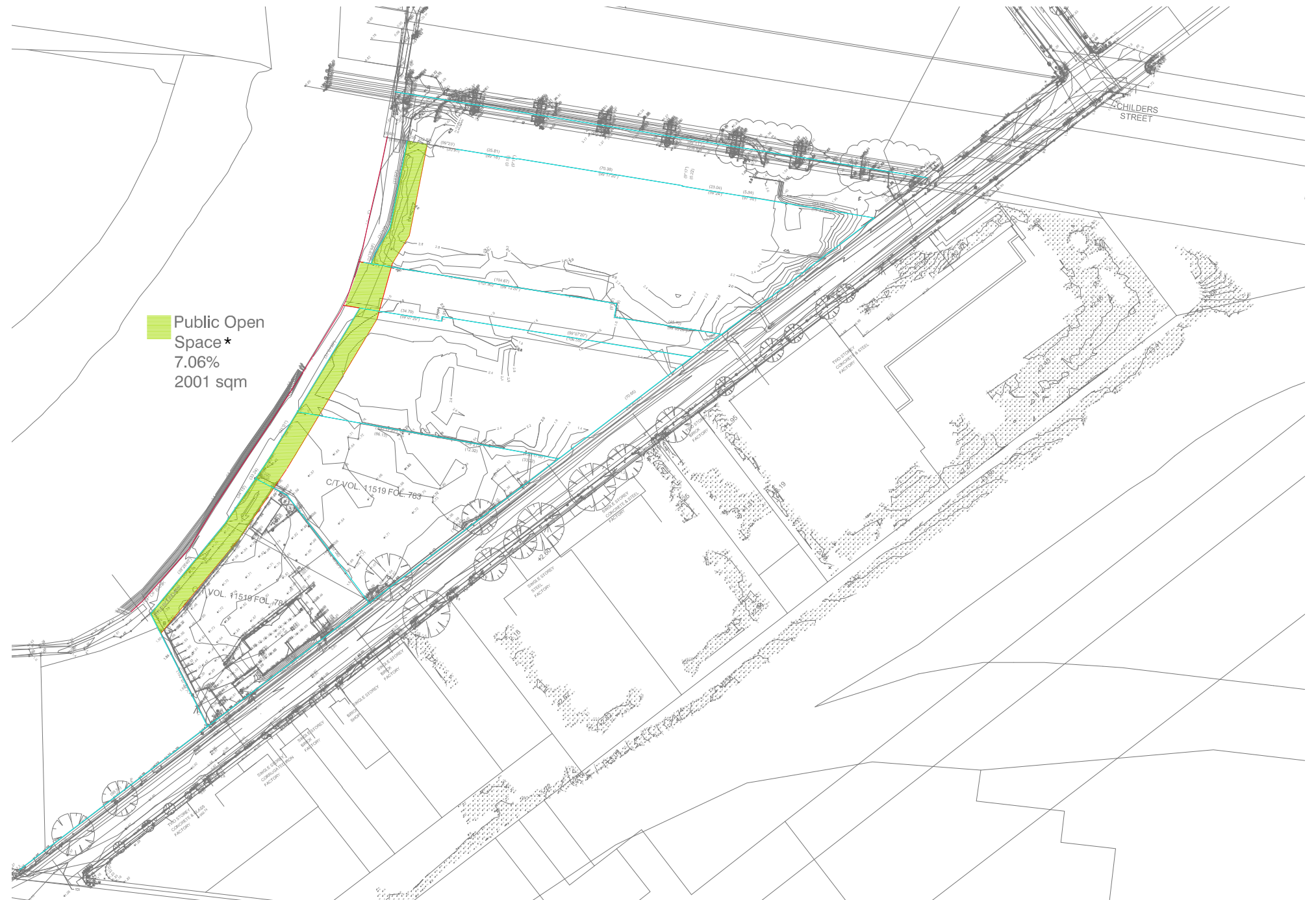
4.4 OPEN SPACE

A key component of the Development Plan is the public realm outcome, including the transfer of at least 7.06% of the site area to public open space.

SITE AREA **28 337 sqm**

REQUIRED
PUBLIC OPEN SPACE 7.06% **2 001 sqm**

*SUBJECT TO AGREEMENT WITH CITY OF MELBOURNE ON
SUITABLE PUBLIC OPEN SPACE.



4.5 LAND USE

The land use arrangement within the Development Plan seeks to:

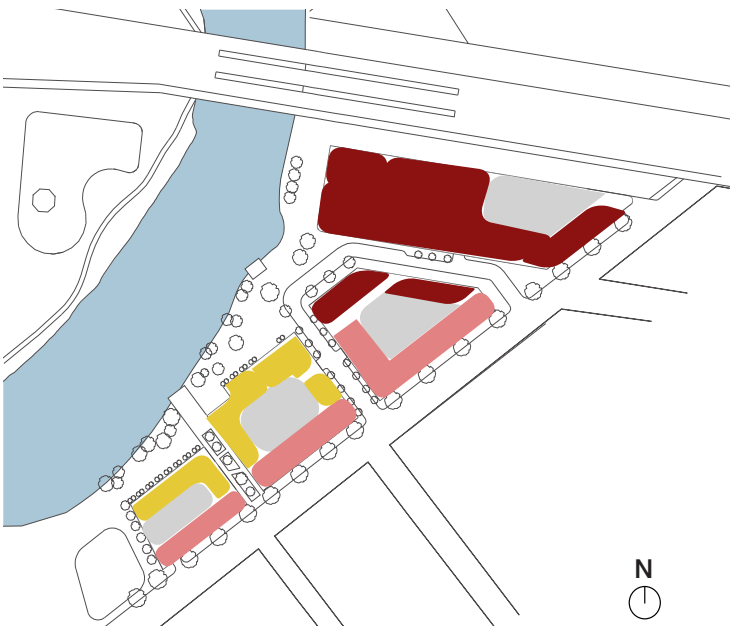
- Increase public and publicly accessible spaces along the Maribyrnong River frontage.
- Provide for recreation uses along the Maribyrnong River frontage.
- Create a new urban plaza fronting the Maribyrnong River.
- Provide a movement network that prioritises walking and cycling as preferred modes of transportation.
- Support a mix of uses at the ground level to activate the street network and enable passive surveillance.
- Activate the first five levels of buildings at the street edge.
- Generally locate employment generating uses fronting Kensington Road at the ground and upper levels. Commercial uses may include opportunities for Small Office/ Home Office (SoHo) dwellings and creative spaces.

- Encourage retail, hospitality, tourism and other commercial uses in the northern end of the site.
- Encourage residential and active land uses to front the Maribyrnong River.
- Buildings and car parking are adaptable to support a range of future uses.
- Provide one signalised intersection on Kensington Road while minimising the number of vehicle crossings to Kensington Road, ensuring safe access to, and egress from the site.
- Ensure any large format retail land uses (eg. Supermarket) are sleeved by smaller tenancies and do not have a direct interface to the Maribyrnong River.
- Provide opportunity for collective artist spaces within the commercial zone of the development or provide other similar community uses.

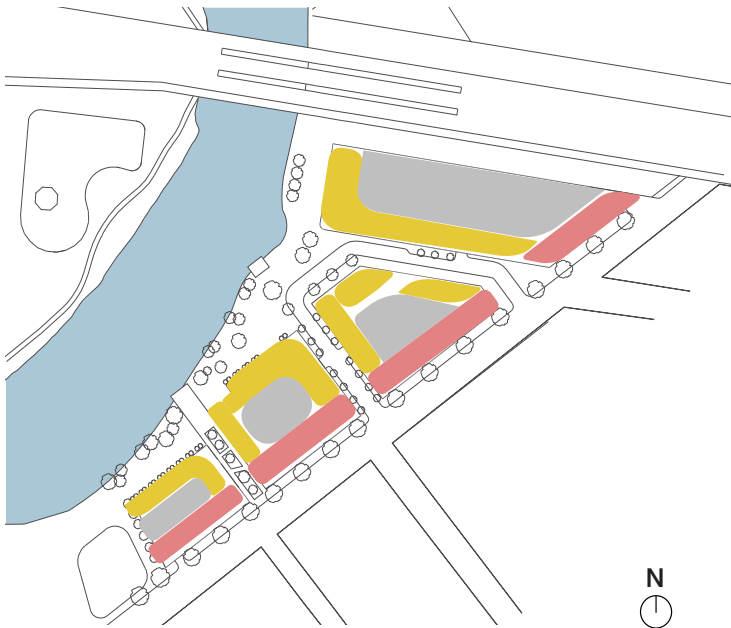
- Provide varied accommodation typologies suitable for a range of household sizes and types, consistent with the goals of ‘City of Melbourne Homes for People: Housing Strategy (2014).

The key land use elements proposed by the Development Plan are summarised in the table below:

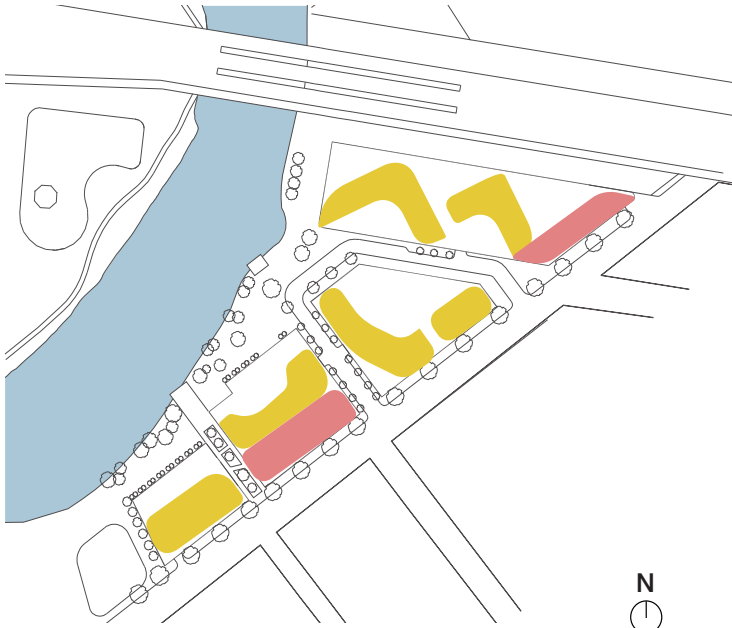
- RESIDENTIAL**
- COMMERCIAL**
- RETAIL**
- CAR PARKING**



GROUND PLAN



LOWER LEVELS



UPPER LEVELS

4.6 BUILT FORM

The proposed built form and building scale for the precinct illustrated within the Development Plan represents the preferred building envelope within which future buildings are to be designed.

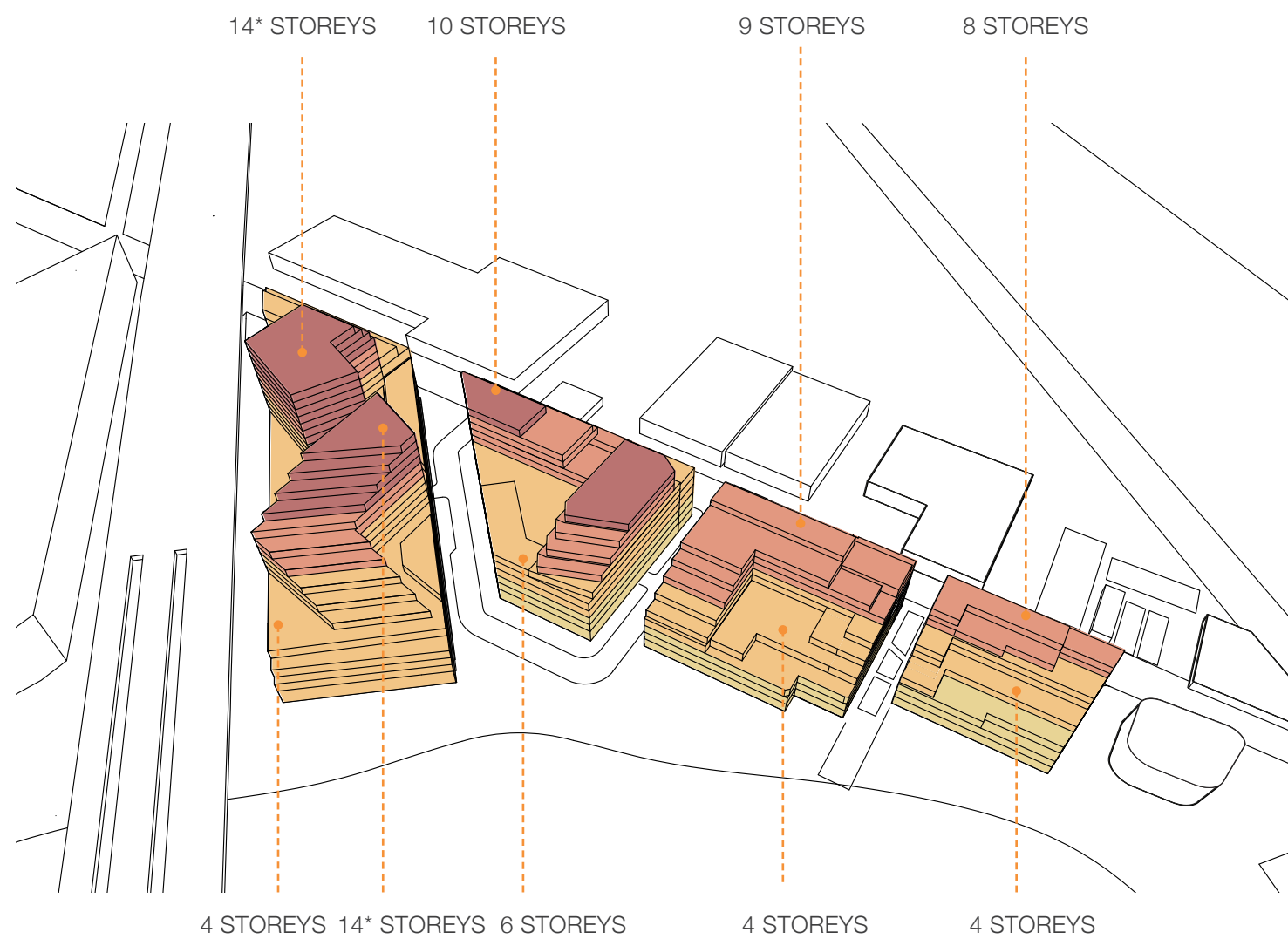
The proposed site levels and building envelopes account for:

- Provision of varied built form typologies.
- Provision of a mix of heights within the overall composition which do not visually dominate the waterfront and provide an appropriate transition to site interfaces.
- Achieve varied and appropriate setbacks to the site edges.
- Management of hydrology considerations.
- Management of acoustic considerations.
- Minimise overshadowing of the public open space, within the site and on adjoining land.
- Ensure spatial relationships between buildings and do not undermine amenity of occupants.
- Ensure internal amenity standards for employees, visitors and residents as appropriate.

Future applications must demonstrate:

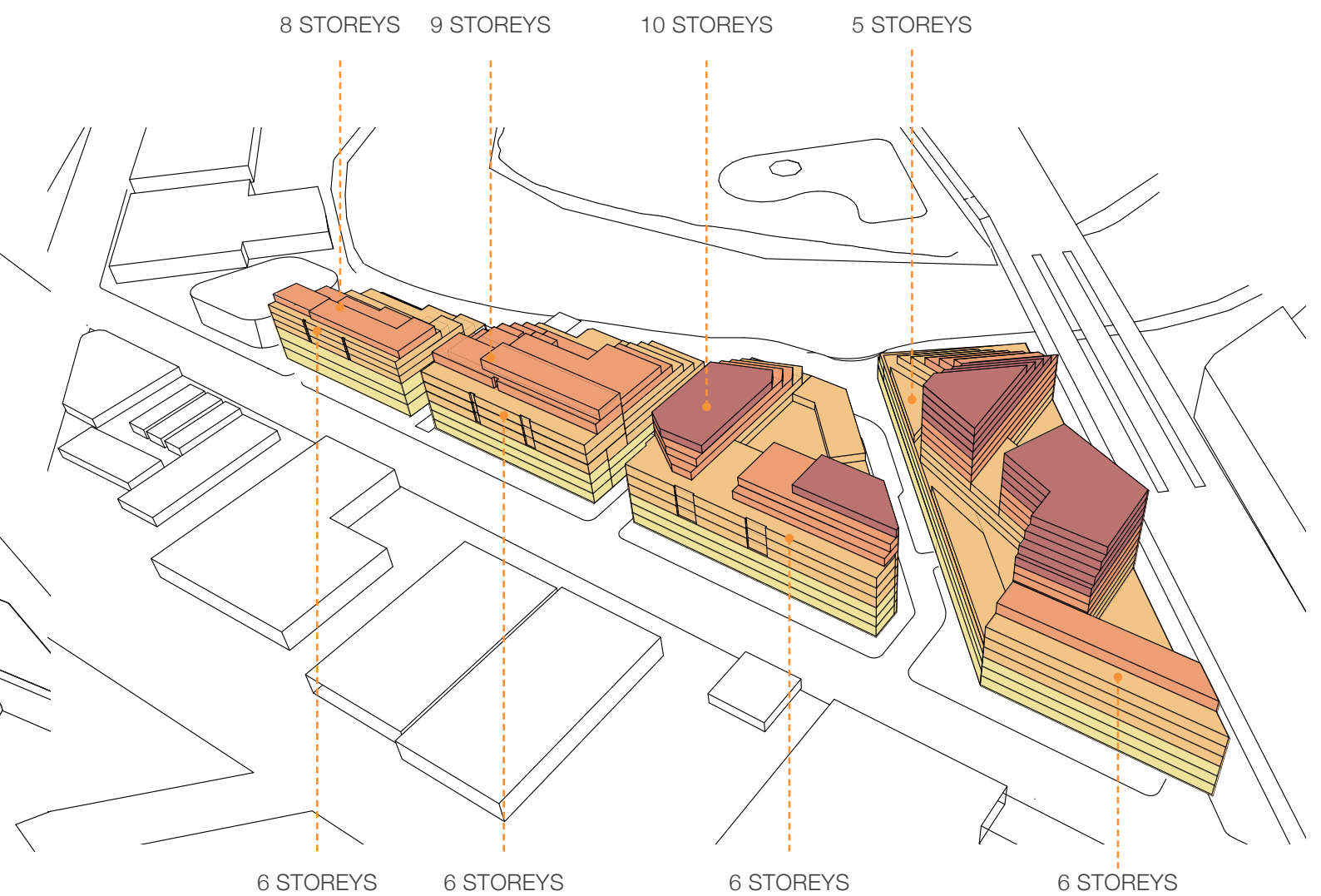
- No direct access to private dwellings along the river front.
- Ground floor residential uses a maximum of 1.2metres above the finished level of the street (where they abut the street).
- A high level of amenity for occupants by:
 - Including windows to all bedrooms, which are visible from all points in the bedroom.
 - Providing a minimum size of 50 square metres for one bedroom dwellings and 65 square metres for two bedroom dwellings.
 - All habitable rooms receiving good natural light.





MASSING DIAGRAM: FROM MARIBYRNONG RIVER

*PREFERRED MAXIMUM 10 STOREYS, UP TO A MAXIMUM OF 14 STOREYS,
SUBJECT TO MEETING THE REQUIREMENTS OF THE DPO



MASSING DIAGRAM: FROM KENSINGTON ROAD

4.7 BUILT FORM SECTIONS

The height of each street edge condition will be varied to create unique and diverse spaces within the precinct.

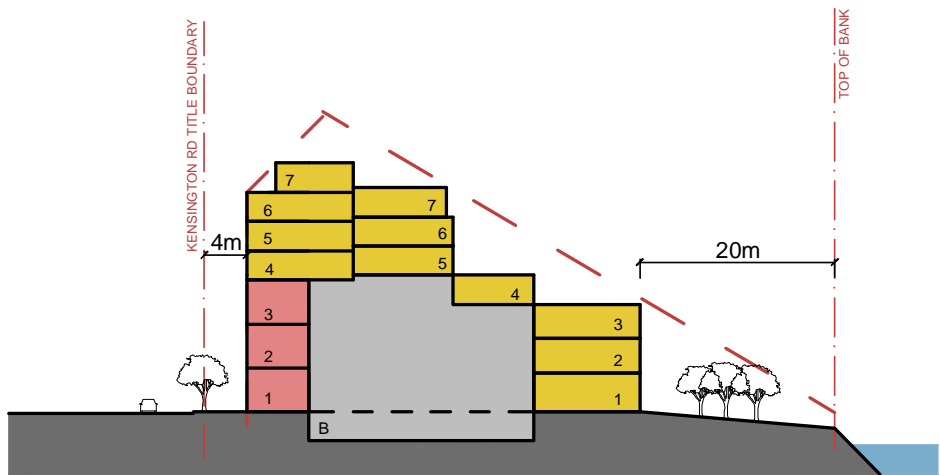
By varying the street wall datum opportunities are created for varying conditions at street level (to support a range of retail and also at higher levels which will influence the residential or commercial tenancy types.

Car parking has been concealed within the core of each site (with carparking occupying no more than 20% of the length of frontages at ground level and the first five levels) and veneered with the various building uses. To ensure that the building uses which surround the car parks have appropriate levels of amenity the depth of habitable space to dwellings has been set to optimise light penetration.

NOTE: SECTIONS SHOW AN EXAMPLE OF POTENTIAL BUILT FORM AND ARE INDICATIVE ONLY.

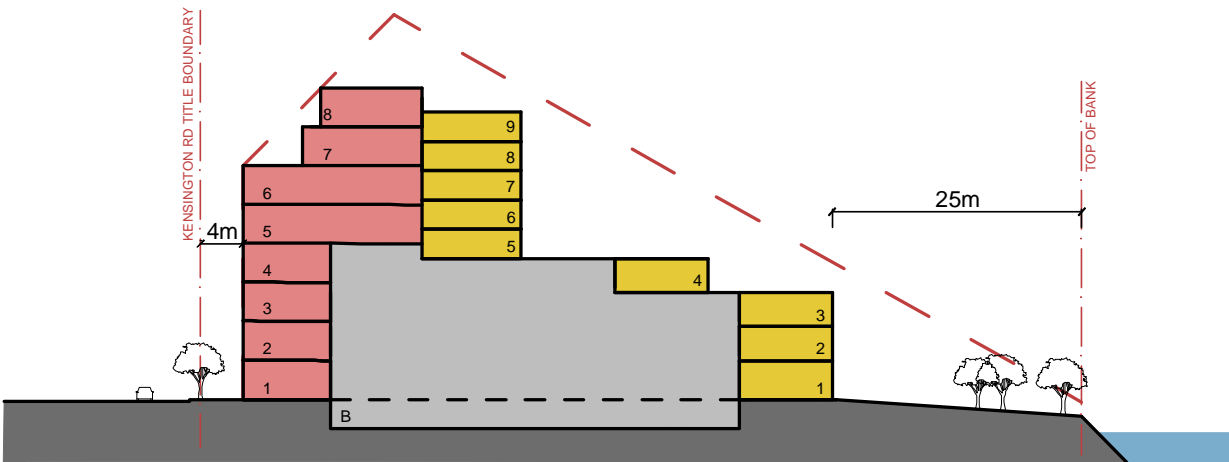


KEY MAP N



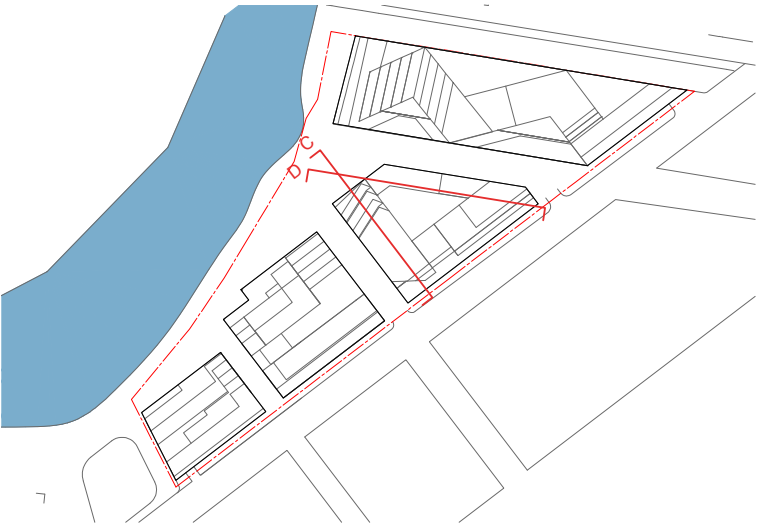
SECTION A

- RESIDENTIAL
- COMMERCIAL
- RETAIL
- CAR PARKING

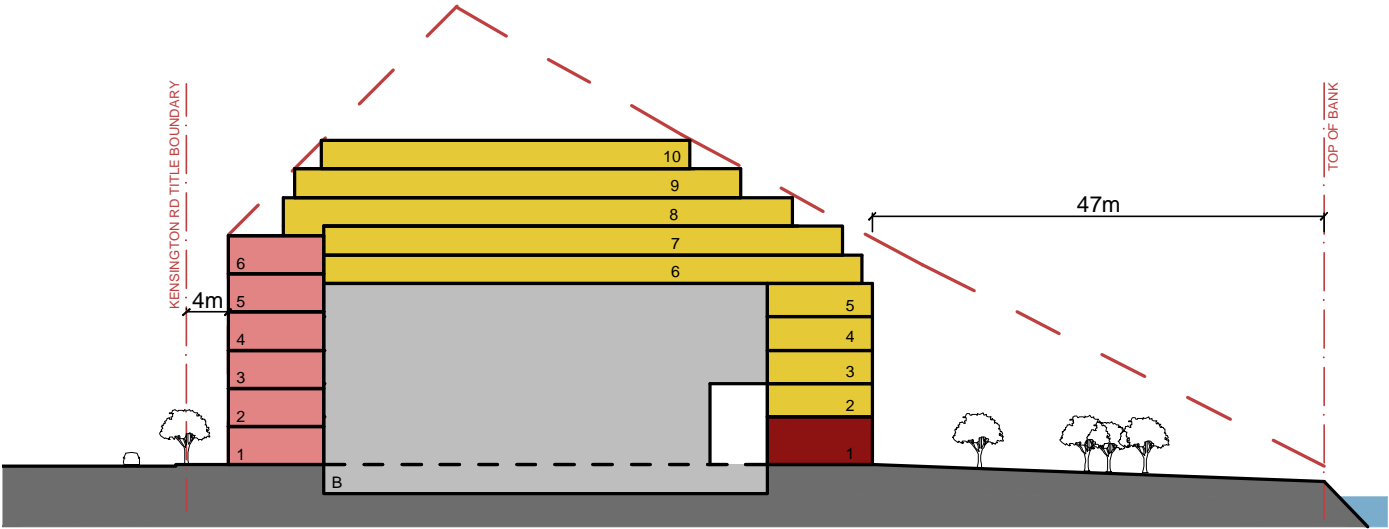


SECTION B

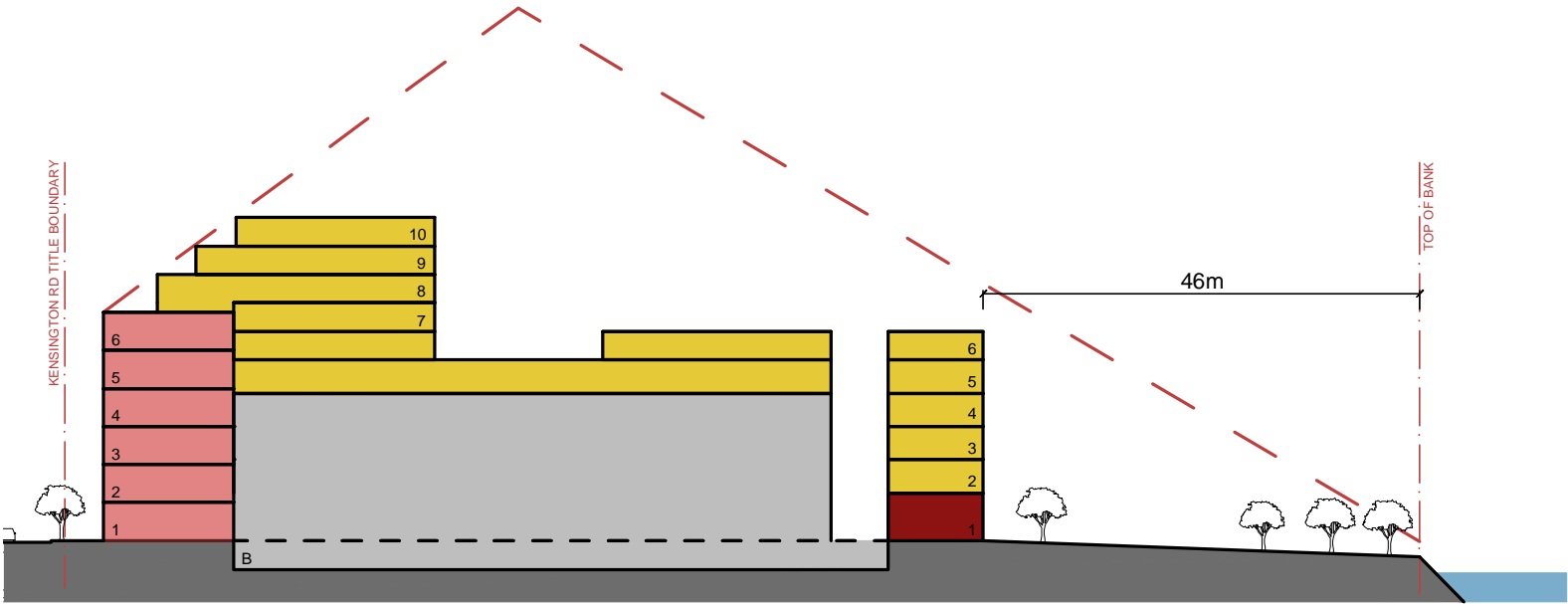
NOTE: SECTIONS SHOW AN EXAMPLE OF POTENTIAL BUILT FORM AND ARE INDICATIVE ONLY.



KEY MAP

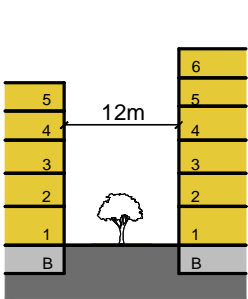


SECTION C

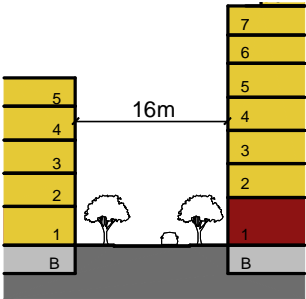


SECTION D

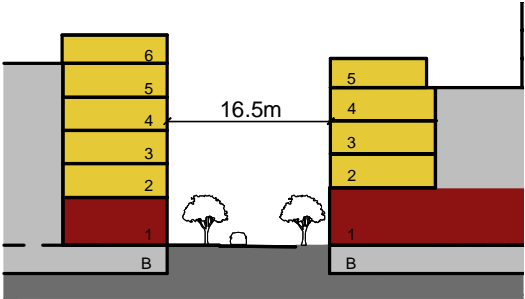
NOTE: SECTIONS SHOW AN EXAMPLE OF POTENTIAL BUILT FORM AND ARE INDICATIVE ONLY.



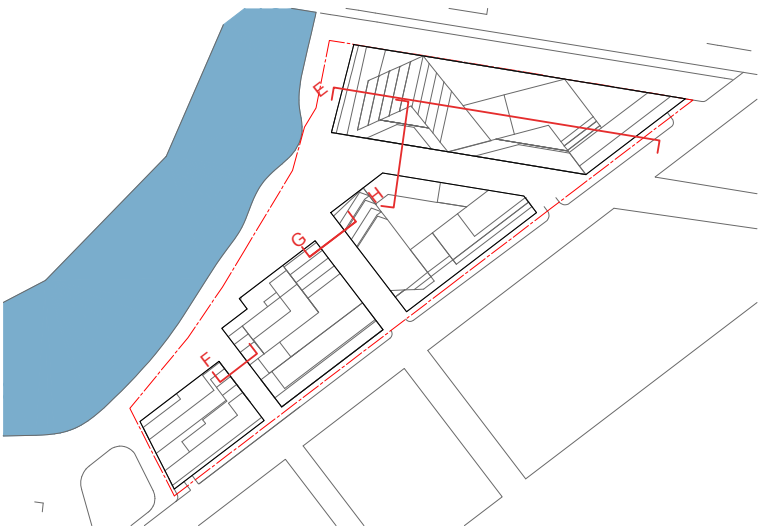
SECTION F



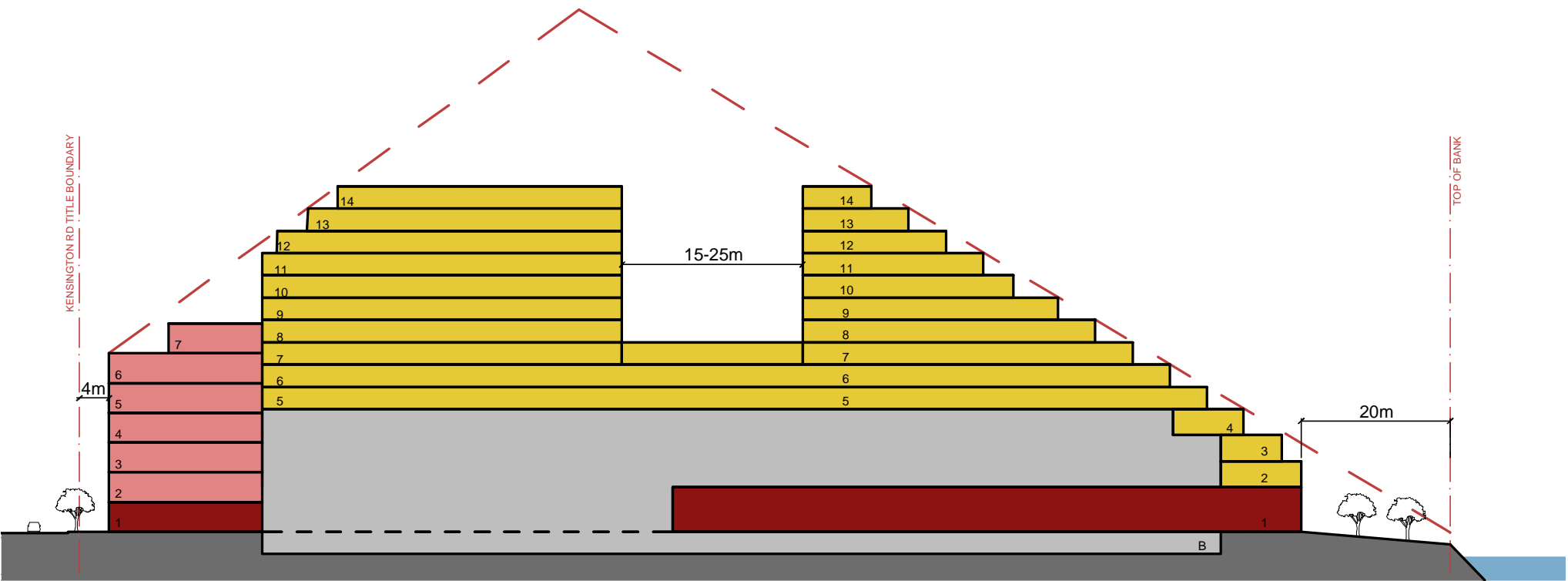
SECTION G



SECTION H



KEY MAP



SECTION E

- RESIDENTIAL
- COMMERCIAL
- RETAIL
- CAR PARKING

*PREFERRED MAXIMUM 10 STOREYS, UP TO A MAXIMUM OF 14 STOREYS, SUBJECT TO MEETING THE REQUIREMENTS OF THE DPO

4.8 URBAN DESIGN AND PUBLIC REALM

The public realm and incorporated recreation spaces proposed occupy approximately 30% of the subject land. The above proportion, includes public open space fronting the river (minimum 7.06% of the subject land).

Within the public realm and open space master plan, the key principles are:

MATERIALITY

The edge condition of the Maribyrnong River will consist of a mix of material treatments, including hard edge surfaces and paving, as well as softscape treatments including a mix of tree plantings, grasses and understory plants. The edge will be designed to ensure the development does not compromise bank stability or result in increased erosion of the Maribyrnong River. It will also be designed to be easily maintained, yet provide a setting for people to enjoy that is both immersive and compelling. A mix of landscape structures and plantings will provide biodiversity and relief from the elements. In the setting of an increased riparian zone many visitors will enjoy this varied river environment.

URBAN CHARACTER

The existing pathway will be improved and reinforced with new plantings that will help to define a new, linear urban park condition that typifies the river interface along the proposed development. The built form would reinforce the urban character of the riverfront and provide activation and passive surveillance along its length.

VEGETATION

The vegetation will be a mix of native, indigenous and exotic species fit for purpose that protects and enhances and the bio-diversity of the corridor. The species selection will privilege plantings that are hardy, tolerant to the conditions of the brackish river and have a cultural or historical relationship to the site.

Through considered tree planting, the design seeks to create a waterfront that is enjoyable year round; providing deep shade in the warmer months, solar access in winter and protection from prevailing winds. Plantings will achieve a tree canopy cover of 41% of the public realm (at maturity).

PUBLIC WATERFRONT

Enable the betterment of the river edge adjoining the development. The design seeks to create a unified, publicly accessible river, as per the City of Melbourne Open Space Strategy; yet possess a verdant character that ensures the river bank remains a 'living' edge. The final detailed design of the waterfront will be subject to City of Melbourne approval. Throughout the site there is to be a clear distinction between the private and public realm.

ENGAGE WITH WATER

Include water's edge landscaping enabling people to actively engage with the waterway and reinforcing the importance of the river to the broader community.



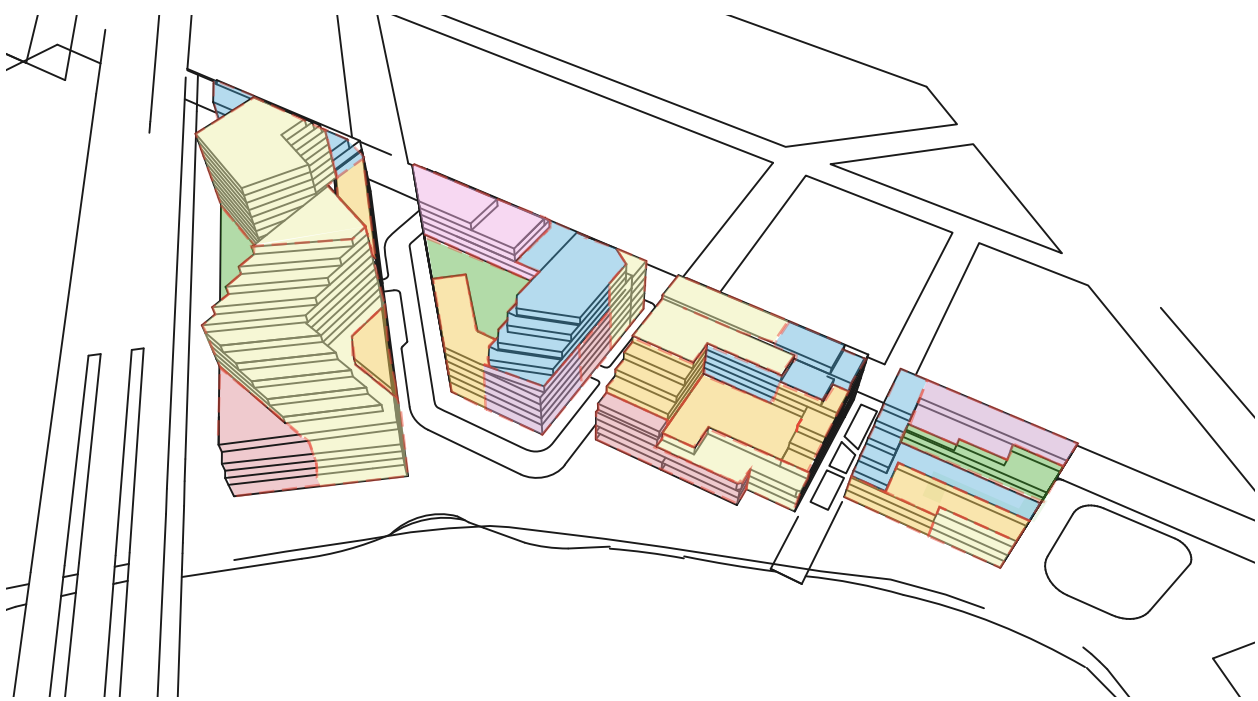
REFERENCE IMAGE OF BERGES DU RHONE, LYON

4.9 ARCHITECTURE AND DESIGN

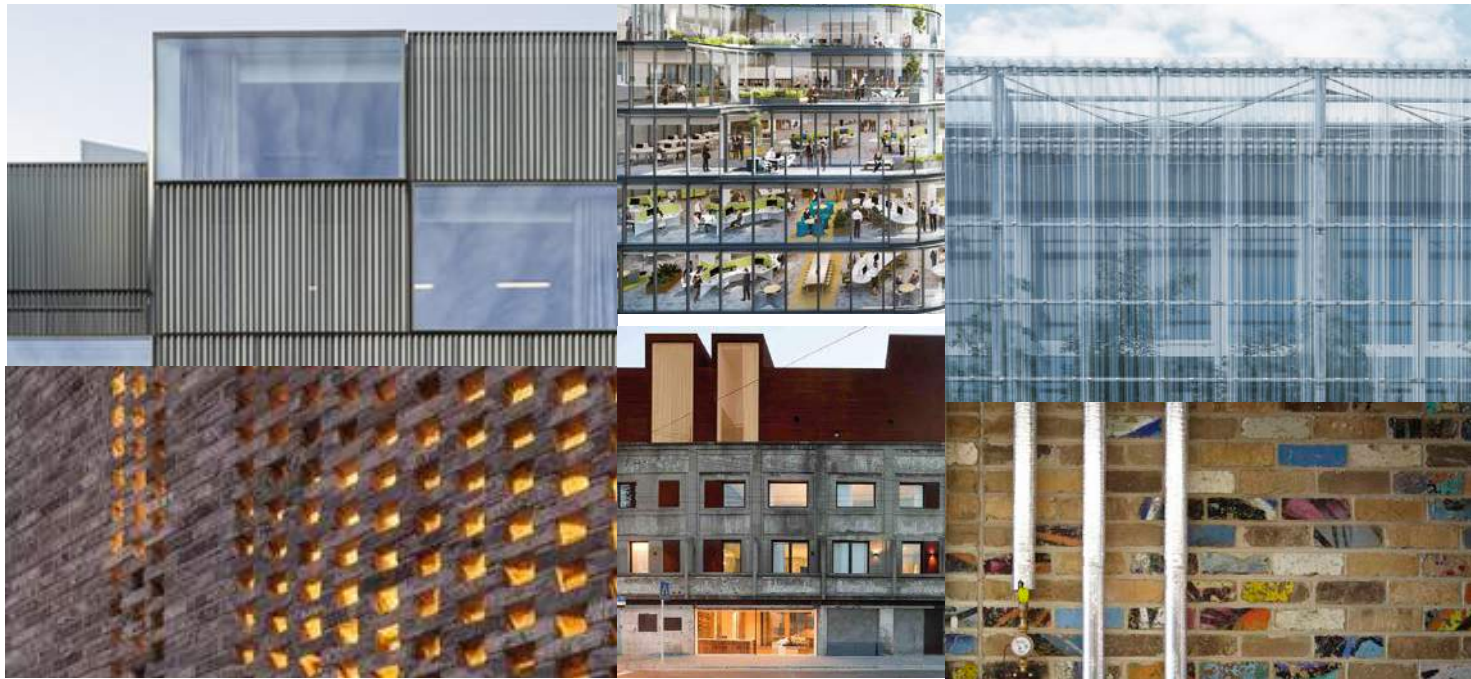
The site will be a mixture of building forms and typologies that will be distributed not only horizontally but also vertically. Strategically these variations further support diversity, not only across the site but also in each building. In the curation of the built form internal amenity of dwellings and commercial spaces will be a key driver.

Fragmenting the architecture of the site promotes design diversity and it will also in effect break up the site experience. Across the precinct the architecture will support the creation of micro-precincts or small neighbourhoods that support a range of building typologies. These will be defined by an architecture that responds to the urban and landscape design for the public realm.

The materiality of the site is also derived from its context. As a proposition a material palette could be one that references the industrial heritage of the sites history and context. Masonry, glass, concrete and steel can be employed to create a unique offering and experience for the public and also those that will live within the precinct. These materials are robust, timeless, will age gracefully and stand the test of time.



ARCHITECTURE AND DESIGN MIX DIAGRAM



INDICATIVE MATERIAL PALETTE

KEY



INDICATIVE ARCHITECTURE AND DESIGN MIX

4.10 INTERNAL AMENITY

The internal amenity will meet objectives for natural ventilation and daylight penetration with each dwelling designed to ensure all bedrooms have windows and access to natural light. The residential offering across the site will also offer varying floor to floor heights. This will help to achieve a high level of internal amenity for occupants. The built form and material selection is intended provide opportunities for natural cross ventilation and passive heating and cooling.

Commercial spaces will also be designed to ensure natural light penetration to work spaces is achieved. Office floor plates vary in depth to also provide a range of working environments for prospective tenants.



4.11 BUILT FORM SHADOWS

Shadow diagrams have been prepared for 10am, 11pm, 12pm, 1pm and 2pm on September 22nd and for 11am, 12 pm, 1pm, 2pm and 3pm on June 22nd in order to ensure that the site planning strategy and built form response does not overshadow the proposed public open space areas along the Maribyrnong River.



SHADOW DIAGRAM: EQUINOX (SEPTEMBER 22ND) AT 10AM



SHADOW DIAGRAM: EQUINOX (SEPTEMBER 22ND) AT 11AM



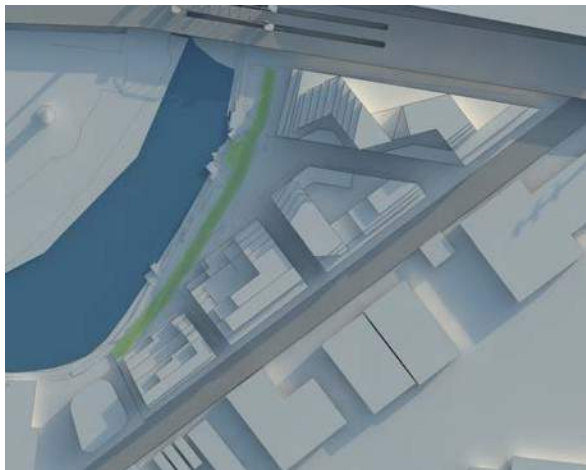
SHADOW DIAGRAM: EQUINOX (SEPTEMBER 22ND) AT 12PM



SHADOW DIAGRAM: EQUINOX (SEPTEMBER 22ND) AT 1PM



SHADOW DIAGRAM: EQUINOX (SEPTEMBER 22ND) AT 2PM



SHADOW DIAGRAM: SOLSTICE (JUNE 22ND) AT 11AM



SHADOW DIAGRAM: SOLSTICE (JUNE 22ND) AT 12PM



SHADOW DIAGRAM: SOLSTICE (JUNE 22ND) AT 1PM



SHADOW DIAGRAM: SOLSTICE (JUNE 22ND) AT 2PM



SHADOW DIAGRAM: EQUINOX (JUNE 22ND) AT 3PM

5.0 STAGING

The redevelopment of the subject land is proposed to occur in four stages generally occurring from North to South.

The key road network improvements proposed as part of the access strategy for the development include four main vehicular access points as illustrated in the Framework Plan. The general delivery timing of these are outlined below:

Stage 1

- Site Access 1: Unsignalised direct access point to Kensington Road
- Site Access 2: Signalised intersection, and full construction of the internal loop road up to the Maribyrnong River*

Stage 2

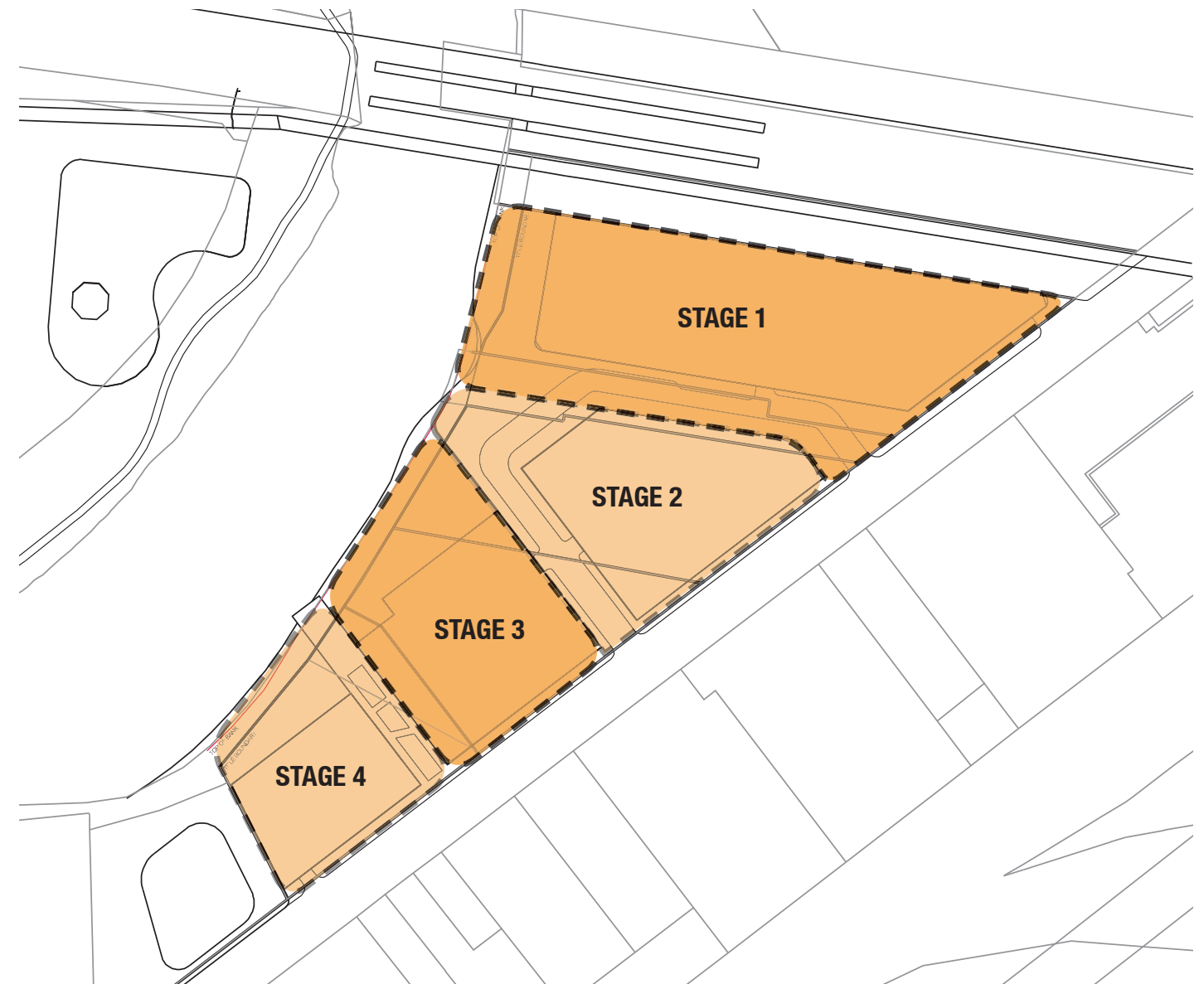
- Site Access 3: Unsignalised Kensington Road/Internal Road Southwest intersection (this will also provide for vehicular access to Stage 3)

Stage 4

- Site Access 4: Unsignalised access direct from Kensington Road to site 4 via a new crossover

*Signalisation of Site access 2 will be triggered as traffic generation rates warrant their need.

It is noted that any traffic or infrastructure related treatments including flood mitigation works along Kensington Road will generally be sequenced in line with the above staging and in accordance with plans and specifications approved by the City of Melbourne Engineering Services.



APPENDIX A CONSULTANT REPORT SUMMARY

A.1 TRAFFIC

GTA has undertaken an Integrated Transport and Access Plan of the West Melbourne Waterfront Precinct Project (WMW). West Melbourne Waterfront aims to provide a well-integrated pedestrian realm with improved connections to nearby parks and facilities promoting the usability of public transport and ‘liveability’ for future occupants. Key public transport and pedestrian/cycling network improvements proposed as part of the development include:

- Upgrades of existing bus facilities.
- Pedestrian footpaths on both sides of all internal roads.
- A signalised pedestrian crossing at the primary site intersection to Kensington Road.
- Resident/employee bicycle parking in secure locations and visitor bicycle parking in publicly accessible locations
- A shared path on the north-west side of Kensington Road under the rail overpass (north of the site) to improve connectivity and improve existing safety and amenity.
- ‘Shared area’ to encourage low vehicle speeds and safe interaction between users.

Analysis of the anticipated car parking demand for the various uses indicates that the parking provision has the capacity to exceed the demand by more than 100 spaces at all times across a typical week.

The key road network improvements proposed as part of the access strategy for the development include (from the north to south along Kensington Road):

- Site Access 1: Unsignalised direct access point to Kensington Road for the proposed office car park and loading areas at the north-east corner of the site.
- Site Access 2: Signalised intersection provided south of Site Access 1, and full construction of the north-east section of the internal loop road toward the Maribyrnong River.
- Site Access 3: Unsignalised Kensington Road/Internal Road Southwest intersection south of Site Access 2, including dedicated left and right turn deceleration lanes and left and right exit stand-up lanes.
- Site Access 4: Unsignalised access direct from Kensington Road to the southernmost development site, via a new crossover.

The Development Plan has been informed by the Transport Impact Assessment which was completed using the intersection traffic modelling program SIDRA, indicating that the proposed site access points will be expected to operate satisfactorily at full development.

Overall, the recommended works package for the development is suitably underpinned by engineering best practice and is expected to deliver a well-balanced transport outcome which builds on the existing accessibility, safety and amenity of the area and promotes sustainable travel choice.

A.2 SUSTAINABLE DESIGN

Cundall has undertaken an Environmental Sustainable Assessment of the West Melbourne Waterfront Precinct Project (WMW). This outlined the recommended sustainability commitments and sought to reflect the mixed use and staged nature of the project.

In addition to meeting all relevant local, state and federal governments’ legislative requirements, the proposed public realm and staged development will also meet the sustainability objectives and requirements set out in Clause 22.19 Energy, Water and Waste Efficiency and Clause 22.23 Stormwater Management (Water Sensitive Urban Design) of the Melbourne Planning Scheme for the City of Melbourne. Development is to:

- Minimise the production of greenhouse gas emissions and maximise energy efficiency.
- Minimise mains potable water use and encourage the use of alternative water sources.
- Minimise waste going to landfill, maximise the reuse and recycling of materials and lead to improved waste collection efficiency
- Achieve the best practice water quality performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999 (or as amended).

For ease of direction the recommended project objectives and commitments have been broken down into the four different functional and land use types, and the following tables provide a summary of the potential precinct commitments that can be made to meet in part the sustainability requirements for the individual residential components within each stage of the overall development.

PUBIC REALM, COMMUNITY AND SITE INFRASTRUCTURE

- Interconnection of existing cycling trail along Maribyrnong River with the site.
- Fitness stations will be provided adjacent to walking / cycling trails.
- Directional signage for public transport, cycling / walking trails and other community facilities will be provided around the precinct.
- A site-wide approach to storm water re-use and treatment will be followed to ensure the development achieves the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).
- Water Sensitive Urban Design elements will be incorporated to prevent overland flow and river’s edge will be enhanced and protected.
- Pavilion and river front to be designed to mitigate flooding impacts.
- Sustainability information to be provided to tenants via an online platform similar to, for example, the Building Link system.
- Reduced heat island effect through the use of landscaped terraces and green roofs.
- A diversity of apartment sizes to be provided to support housing diversity.
- Opportunities to incorporate the following community assets will be maximised:
 - Public Art;
 - Playgrounds; and / or
 - Bicycle Repair Station.



Promote sense of Community and Interaction



Minimise energy use and associated greenhouse gas emissions



Provide occupants with a comfortable internal space whilst reducing potentially detrimental health impacts



Reduce use of potable water and increase drought resilience



Minimise the environmental impact of materials selection



Minimise impacts to or improve the local ecology



Improve sustainable transport use



Minimise environmental impact of building emissions



Minimise impacts during construction and maximise operational potential

RESIDENTIAL DEVELOPMENTS

The following provides a summary of the Precinct commitments being made to meet in part the sustainability requirements for the individual residential components within each stage of the overall development.

Energy and Greenhouse Gas Emissions

- Commitment to attain a minimum average energy rating of 7.0-Star and aspiration of 7.5-Star rating to minimise apartment energy use, peak electricity demand and enable development reach its 5-Star performance potential against the Green Star – Multi Unit Residential (v1) rating tool.
- All clothes dryers, dishwashers, refrigerators, and / or clothes washers provided as part of base building will be within one star of highest available ‘Energy Rating’.
- LED lighting will be generally used within apartments and common areas with controls to limit unnecessary use of lighting in common areas.
- Lighting power densities within car park will be at least 20% less than BCA maximum illumination power density allowances.
- All car park ventilation systems will be CO controlled and have variable speed drive (VSD) fans.
- Efficient domestic hot water systems will be used (e.g. solar boosted centralised gas).

Indoor Environmental Management

- Design to achieve daylight factors (DF) of $\geq 1.5\%$ for 60% of living areas.
- An aspirational average heating & cooling loads of ≤ 68 MJ/m2 (i.e. 7.5-Star) will be targeted in order to reach the 5-Star performance potential against the Green Star – Multi Unit Residential (v1) rating tool.
- Require at least 95% of all internal applied adhesives, sealants & paints specified to be low VOC based on relevant industry best practice standards (e.g. Green Star).
- Maximise the use of low formaldehyde engineered wood products internally as per the international E1 standard or recognised equivalent.
- Design to maintain internal noise levels at best practice levels between bounding apartments and separating floors above habitable rooms.
- Internal lighting will be designed so that ≥ 300 Lux is achieved on the surface of the kitchen sink, cooktop or stove and vanity basins.
- Dedicated and separate extract fans will be provided to $\geq 90\%$ of kitchens.



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Minimise environmental impact of building emissions



Minimise impacts during construction and maximise operational potential

Potable Water Conservation

- The following minimum WELS ratings for fixtures & fittings will be met:
 - Showerheads 7.5L/s
 - WC's 4-Star
 - Taps 5 Star
- Temporary storage for at least 80% of routine fire protection system test water / maintenance drain downs will be provided for re-use within precinct.
- On-site collection and re-use of rainwater for landscape irrigation and / or toilet flushing within common area amenities.
- Support the overall precinct response to meeting the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).

Materials

- Provide areas for storage for the separation of general waste and recycling within all apartment buildings.
- Maximise opportunities for the use of materials with recycled content.
- At least 30% of all PVC used for pipe, conduit and cabling will be sourced from a manufacturer with an accredited ISO14001 EMS.
- 95% of all timber products will be sourced from re-used timber, post- consumer recycled timber, FSC or AFCS certified.
- A guide to residents informing on sustainable materials selection as part of an overall sustainability information package will be provided.
- Where waste chutes are provided for general waste, the design team will investigate the potential to also provide a separate chute for recycling.



Land Use and Ecology

- Significant vegetation on the precinct will be retained and there will be a net gain in number of trees in site.
- Provision of landscaped roof gardens for use by residents for social engagement and / or market gardening.

Transport

- Best practice provisions of cyclist facilities for residents and visitors.
- Spaces to be allocated to a recognised car share scheme.

Reduction of Emissions

- All refrigerants will have an Ozone Depleting Potential (ODP) of zero.
- All insulants will be ODP free.
- Support the overall precinct response to meeting the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).
- External lighting will be designed so that it is directed at the building and not directed to the sky or towards other properties.

Management

- A Construction Management Plan will be required to address public access, sediment control & drainage, demolition & excavation, noise and pollution.
- A Waste Management Plan (WMP) will be required with a commitment for recycling of a minimum of 80% of non-contaminated construction waste.
- A suitably qualified independent ESD Consultant will be required to provide sustainability advice throughout all design stages and during construction.
- A Resident User Guide (RUG) will be provided to tenants.
- Sustainability information will be provided to residents via an online platform similar to, for example, the Building Link system.



Promote sense of Community and Interaction



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Minimise impacts to or improve the local ecology



Improve sustainable transport use



Minimise environmental impact of building emissions



Minimise impacts during construction and maximise operational potential

COMMERCIAL DEVELOPMENTS

The following provides a summary of the Precinct commitments being made to meet in part the sustainability requirements for the individual commercial office spaces within each stage of the overall development.

Energy and Greenhouse Gas Emissions

- Offices >5000m² to be designed to achieve a potential 5-Star NABERS Energy Base Building Rating, with strata title or offices less than 5,000m² to be designed to achieve a potential 4-Star rating.
- Building Energy Sub-Metering to be provided for each tenant and any building services load over 100kVA.
- General use of LED lighting with lighting controls to limit unnecessary use of lighting (common areas, toilets, corridors, meeting rooms).
- Lighting power densities within car park will be at least 20% less than BCA maximum illumination power density allowances.
- All car park ventilation systems will be CO controlled and have variable speed drive (VSD) fans.
- Solar boosted centralised gas domestic hot water systems will be used.

Indoor Environmental Management (IEQ)

- Minimum outside air ventilation rates will be increased 50%.
- CO₂ monitoring to be provided at all return points on each floor to control outdoor air ventilation rates.
- Require at least 95% of all internal applied adhesives, sealants & paints specified to be low VOC based on relevant industry best practice standards (e.g. Green Star).
- Maximise the use of low formaldehyde engineered wood products internally as per the international E1 standard or recognised equivalent.
- Design to achieve a Predicted Mean Vote (PMV) of between -1 and +1 for 98% of the year.
- Design to achieve a daylight factor of >2% in at least 30% of NLA.
- Design of internal lighting so that <400 Lux is maintained at desk level.

Potable Water Conservation

- The following minimum WELS ratings for fixtures & fittings will be met:
 - Showerheads 7.5L/s
 - WC's 4-Star
 - Taps 5 Star
- Temporary storage for at least 80% of routine fire protection system test water / maintenance drain downs will be provided for re-use within precinct.
- Collection and re-use of rainwater for landscape irrigation and toilet flushing
- Support the overall precinct response to meeting the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).



Materials

- Provide areas for storage for the separation of general waste and recycling.
- Maximise opportunities for the use of materials with recycled content.
- At least 30% of all PVC used for pipe, conduit and cabling will be sourced from a manufacturer with an accredited ISO14001 EMS.
- 95% of all timber products will be sourced from re-used timber, post-consumer recycled timber, FSC or AFCS certified.
- A guide to tenants informing on sustainable materials selection as part of an overall sustainability information package will be provided.
- Demolition brick and concrete to be crushed and re-used on site. Where this is not practical, at least 80% of material will be recycled or reused offsite.

Land Use and Ecology

- Significant vegetation to be retained and there will be a net gain in number of trees in site.
- Provision of landscaped terraces and podiums for social interaction and mitigation of heat island effect.

Transport

- Minimum of bicycle parking for 5% of the building staff will be provided, with aspiration for 10% provisions.
- Showers (1 for each 10 bicycle spaces) as well as lockers and changing facilities will also be provided.

Reduction of Emissions

- All refrigerants will have an Ozone Depleting Potential (ODP) of zero.
- All insulants will be ODP free.
- Support the overall precinct response to meeting the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).
- External lighting will be designed so that it is directed at the building and not directed to the sky or towards other properties.

Management

- A Construction Management Plan will be required to address public access, sediment control & drainage, demolition & excavation, noise and pollution.
- A Waste Management Plan (WMP) will be required with a commitment for recycling of a minimum of 80% of non-contaminated construction waste.
- A suitably qualified independent ESD Consultant will be required to provide sustainability advice throughout all design stages and during construction.
- A Building User Guide (BUG) will be provided to tenants.



Promote sense of Community and Interaction



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Minimise impacts to or improve the local ecology



Improve sustainable transport use



Minimise environmental impact of building emissions



Minimise impacts during construction and maximise operational potential

RETAIL DEVELOPMENTS

As part of meeting the sustainability requirements, the retail components in the development will adhere to the commitments related to the base building outlined in this section of the report. Additionally, a Tenant Fitout Guide will be developed to ensure there is no compromise in the overall sustainability performance of the development. A set of minimum commitments to be included in the fitout guide have been defined in this section.

Energy and Greenhouse Gas Emissions

- Subject to regulatory approval the opportunity of using the Maribyrnong River for heat rejection as part of a water-based geothermal heat rejection component for the HVAC system will be investigated.
- General use of LED lighting with lighting controls to limit unnecessary use of lighting in common areas.
- All car park ventilation systems will be CO controlled and have variable speed drive (VSD) fans.
- Lighting power density within car park will be at least 20% less than BCA maximum illumination power density allowances.
- Building Energy Sub-Metering to be provided for each tenant and any building services load over 100kVA.

Indoor Environmental Management (IEQ)

- Require at least 95% of all internal applied adhesives, sealants & paints specified to be low VOC based on relevant industry best practice standards (e.g. Green Star).
- Maximise the use of low formaldehyde engineered wood products internally as per the international E1 standard or recognised equivalent.

Potable Water Conservation

- Temporary storage for at least 80% of routine fire protection system test water / maintenance drain downs will be provided for re-use within precinct.
- On-site collection and re-use of rainwater for landscape irrigation and toilet flushing.
- Support the overall precinct response to meeting the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).



Materials

- Provide areas for the storage and separation of general waste and recycling in accordance to best practice guidelines.
- At least 30% of all PVC used for pipe, conduit and cabling to be sourced from a manufacturer with an accredited ISO14001 EMS.
- 95% of all timber products to be sourced from re-used timber, post-consumer recycled timber or FSC / AFS certified.
- Provide a guide to tenants informing of sustainable materials selection as part of an overall sustainability information package.
- Brick and concrete to be crushed and re-used on the site. Where this is not practical, at least 80% of this material to be recycled or reused offsite.

Land Use and Ecology

- Significant vegetation to be retained and there will be a net gain in number of trees in site.
- Provision of landscaped areas for staff and patrons to use for social engagement.

Transport

- Bicycle parking for 5% of the building staff to be provided.
- Showers (1 for each 10 bicycle spaces) as well as lockers and changing facilities will also be provided.
- Secure visitor bicycle parking will be provided.

Reduction of Emissions

- All refrigerants will have an Ozone Depleting Potential (ODP) of zero.
- All insulants will be ODP free.
- Support the overall precinct response to meeting the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999).
- External lighting will be designed so that it is directed at the building and not directed to the sky or towards other properties.

Management

- A Construction Management Plan will be required to address public access, sediment control & drainage, demolition & excavation, noise and pollution.
- A Waste Management Plan (WMP) will be required with a commitment for recycling of a minimum of 80% of non-contaminated construction waste.
- A suitably qualified independent ESD Consultant will be required to provide sustainability advice throughout all design stages and during construction.
- A Building User Guide (BUG) will be provided to retail tenants.



Promote sense of Community and Interaction



Minimise energy use and associated greenhouse gas emissions



Provide occupants with a comfortable internal space whilst reducing potentially detrimental health impacts



Reduce use of potable water and increase drought resilience



Minimise the environmental impact of materials selection



Minimise impacts to or improve the local ecology



Improve sustainable transport use



Minimise environmental impact of building emissions



Minimise impacts during construction and maximise operational potential

A.3 ACOUSTIC

Overview

Arup has undertaken a noise and vibration assessment of the West Melbourne Waterfront Precinct Project (WMW). Based on noise measurement surveys and preliminary noise modelling results, it has been shown that the WMW site can be protected from transportation noise by appropriate design and use of acoustic and architectural treatments and building materials. The form of the buildings is expected to adequately shield the open areas of the development. The rail transportation corridor is the dominate noise source in the vicinity of the subject site. Train noise predominately impacts the northern end however other areas of the site are also affected by rail noise. The integration of noise mitigation into the design of the development will assist in controlling rail noise to meet the project noise limits. To assist with understanding the requirements of acoustic treatment three (3) categories of acoustic treatment have been nominated. It is suggested that a site wide acoustic management plan be considered for commercial noise sources such as mechanical services noise and music and the impact on future residential areas.

Internal Rail Noise Levels

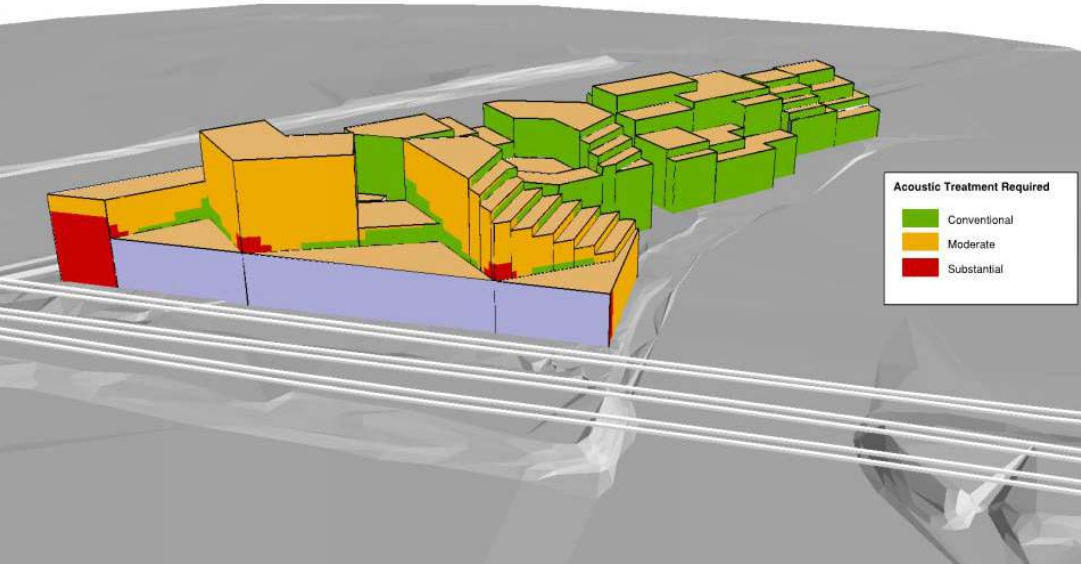
As noted above, the rail transportation corridor is the dominate noise source in the vicinity of West Melbourne Waterfront. Train noise predominately impacts the northern end of the subject site however other areas of the site are also affected by rail noise. The integration of noise mitigation into the design of the development will assist in controlling rail noise to meet the project noise limits. To assist with understanding the requirements of acoustic treatment three (3) levels of acoustic treatment have been provided.

The table describes the required levels of acoustic treatment based on predicted noise levels resulting from operational passenger rail.

Proposed constructions to achieve Lmax 55 dB(A) internal.

Predicted External Noise Levels (L _{max})	Noise Control Required	Glazed Construction (operable)*	Glazed Construction (non-operable)	Masonry/ Drywall Construction
≤ 80 dB(A)	Conventional	6/12/6 double glazed unit or 10 mm laminated glazing	-	100 mm concrete panel or lightweight drywall construction
≤ 90 dB(A)	Moderate	Double sliding door system with 100mm minimum gap between panes.	Deep cavity (~100mm) double glazed unit.	100 mm concrete panel or 140 mm hollow core blockwork or substantial drywall construction
> 90 dB(A)	Substantial	Wintergarden – two operable glazed facades, separated by a room.	Deep cavity (~100mm) double glazing with additional glazed layer	150mm concrete panel or 140mm core-filled blockwork

A contour map showing the coverage areas where each of the three (conventional, moderate or substantial) types of acoustic treatment are required to achieve internal noise levels of Lmax 55 dB(A) is provided below.



Predicted levels of acoustic treatment to achieve Lmax 55 dB(A) internal

Road Noise

The acoustic requirements of the façade of the proposed developments along the western interface adjacent to Kensington Road (major road) have been informed by unattended noise monitoring results.

To achieve the recommended internal noise levels, the building envelope elements (glazing including framing and all cladding elements) must achieve the following minimum sound reduction index:

- Rw + Ctr = 32.

This can be achieved by the “conventional” construction described in the previous table.

A.4 HYDRAULICS

Key Hydraulic Modelling Results

Changes to Flood Levels and Flow Distribution.

Modelling of a number of scenarios indicates that changes to flood levels are likely to be small, typically less than a few centimetres and depending on the development scenario may be positive or negative. Of perhaps more significance is that there exists the potential to improve safety and reduce flood damage by reducing and or removing the flows down Kensington Road. Under existing conditions only a small portion of the flow takes the relatively restricted path down Kensington Road beneath the rail bridge. Sending this flow back through the main river crossing has almost no significant impact on the flow in the Maribyrnong River but makes a significant difference to the safety and usability along much of Kensington Road.

Loss of flood plain storage

Given the extensive fill currently on the development site the potential loss of floodplain storage was never expected to be significant. Having modelled a number of development scenarios it is clear that the proposed development will not have any significant effect on available floodplain storage and subsequently downstream flows. Modelling of a larger reduction in floodplain storage created by the raising of Hobsons Road and Kensington Road confirms that a reduction in flood plain storage greater than required for this development still results in no significant change in downstream flood flows.

Effect of reduced setback

Modelling confirms the significant shielding effect of the railway embankment immediately upstream of the WMW site. Although care will still be required to appropriately detail the edge treatments to achieve a hydraulically smooth design the modelling of 10 and 30 m setback options indicates that increasing setback beyond 10m is not beneficial.

Egress

Egress remains an important consideration for which there are a number of options, rather than relying on a high standard flood refuge.

The Kensington Road Egress Concept detailed was analysed to provide an indication of the potential effects of undertaking a high standard local mitigation approach to reducing flood risk and damage to a local area and providing this area with a high quality means of egress. This concept involves the construction of elevated sections in Hobsons and Kensington Road which will also protect other properties.

PROJECT TEAM

The Project team includes a mix of local and global knowledge of design best practice. The design team are industry leaders in thought leadership and the delivery of large scale mixed use projects in Australia and abroad.

The consultant team includes:



