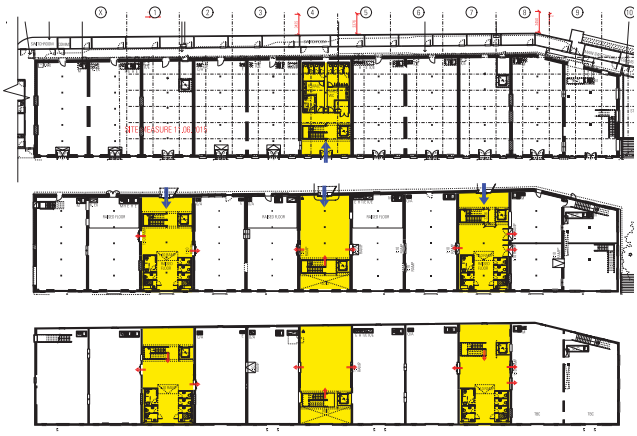
**ELEVATIONAL DIAGRAM**
Elevations describing required openable doors (green) for natural make-up air, and openable windows (yellow), including heritage windows (red).



**PLAN DIAGRAM**
PLAN DIAGRAM outlining the use of the Public Bays (3, 6, 9) to draw air through the existing internal openings to assist with cross-ventilation of internal spaces.

### 4.13.3 Natural Ventilation Strategy

The temperate climate of Sydney presents a unique opportunity to integrate passive cooling and heating strategies to manage the energy consumption of the building.

Consistent with the CMP, the existing windows have been carefully studied to maximise the opportunity for natural ventilation throughout the building.

The target for a BCA-compliant definition of 'Natural Ventilation' is 5% window opening for the floor area of each bay. Preliminary studies have indicated that this is achievable for all bays, on all levels, by utilising the public bays. The most challenging areas are the ground floor areas, that do not have the opportunity for cross-flow ventilation.

# Design Components
## Sustainability
## *Window & Balustrade Design*

Infills to be clearly articulated to existing walls as contemporary overlay

**Above:** 1980's photograph showing previously existing open metal balustrades, with openable shutters/windows behind

**Above:** Metal grilles and bars were provided historically for security of the building

**Precedent Example:** Metal balustrade precedent for detailing and quality of finish (Peter Zumthor, Vals Baths, Switzerland)


**Location:** Located at full-height openings on harbour-side facade

### 4.13.4 Window Treatments

In order to achieve the 5% window opening area for BCA compliance, it is proposed that the large openings on the water-side be converted to full-openable windows. This is consistent with previous iterations of the building design. The balustrade detailing will be sensitive to the heritage of the building, whilst allowing air-flow.

These items will be developed in detail to fully consider the heritage significance of the windows in the detailed design phse.

# 4.14

# Design Components
## Building Engineering Servicing
## *Conservation Management Plan Principles*

### 4.14.1 Conservation Management Plan (CMP) Principles

Following the Passive-design and occupant comfort investigation of the building, the Building Services Engineering team have considered active mechanical solutions as a supplementary comfort measure for colder and warmer parts of the year.

*For further detail refer Services Engineer's report.*

New services elements will be articulated as metal-clad, panelised, contemporary insertions

**CONCEPT IMAGE: describing the new services insertions as contemporary, minimalistic elements within the heritage spaces.**

### 4.14.2 CMP Extracts

**7.8.1 Mechanical Solutions to Supplement Passive Design**

**Background**

*Mechanical systems should be designed to supplement existing passive measures. This will ensure that any necessary mechanical system are not overloaded, operate efficiently and in turn reduce energy consumption.*

*Careful system selection and implementation is integral to the success of any mechanical heating, cooling and ventilation (HVAC) system. This is even more critical with heritage buildings, where mechanical systems are often coupled with passive systems, and often have a significant visual and physical impact on the building.*

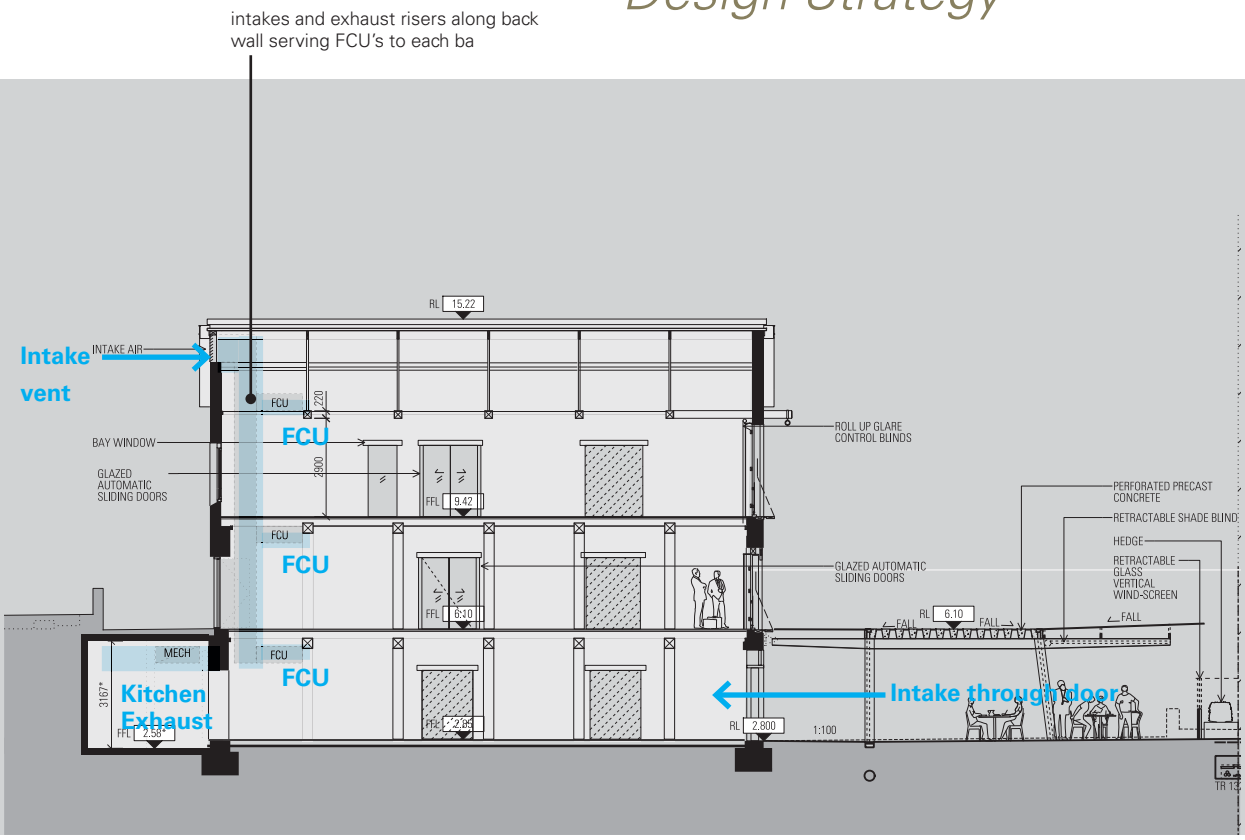
*It should be understood that there is no one size fits all approach and each building will have different features and limitations which must be carefully considered and catered for. It is important to look at the benefits and drawbacks of each system and see which one is best suited to the building, and its use.*

*Policy 28*

*Mechanical solutions, following the implementation and analysis of passive solutions, should be designed and selected in consideration of the heritage significance of the place and the objectives of the Sustainability Policy. The design of mechanical solutions should be supported by an options analysis demonstrating that the proposal presents the least impact to the significant fabric of the place and accounts for ongoing energy consumption. Mechanical solutions may not be supported if they present an adverse impact to the significance of the place.*

*...New services should be introduced in a manner that will have minimal adverse impact on significant fabric. New services should be unobtrusively located and preferably concealed within existing ducts and voids*

# Design Components
## Building Engineering Servicing
## *Design Strategy*




**CROSS SECTION:**
**Servicing of typical tenancies**

### 4.14.3 Mixed Mode & Services Strategy

The natural ventilation and passive aspects of the existing building will operate in a mixed-mode capacity.

The overall organisation of the services takes advantage of more efficient plant equipment than is currently within the building, to consolidate the location of plant within the Loading dock and top floor of Bay 11. The existing Services tunnel will be used for horizontal reticulation of the exhaust services.

New ventilation louvers are proposed along the Hickson Road facade to provide sufficient air volumes in the 'active mode'.

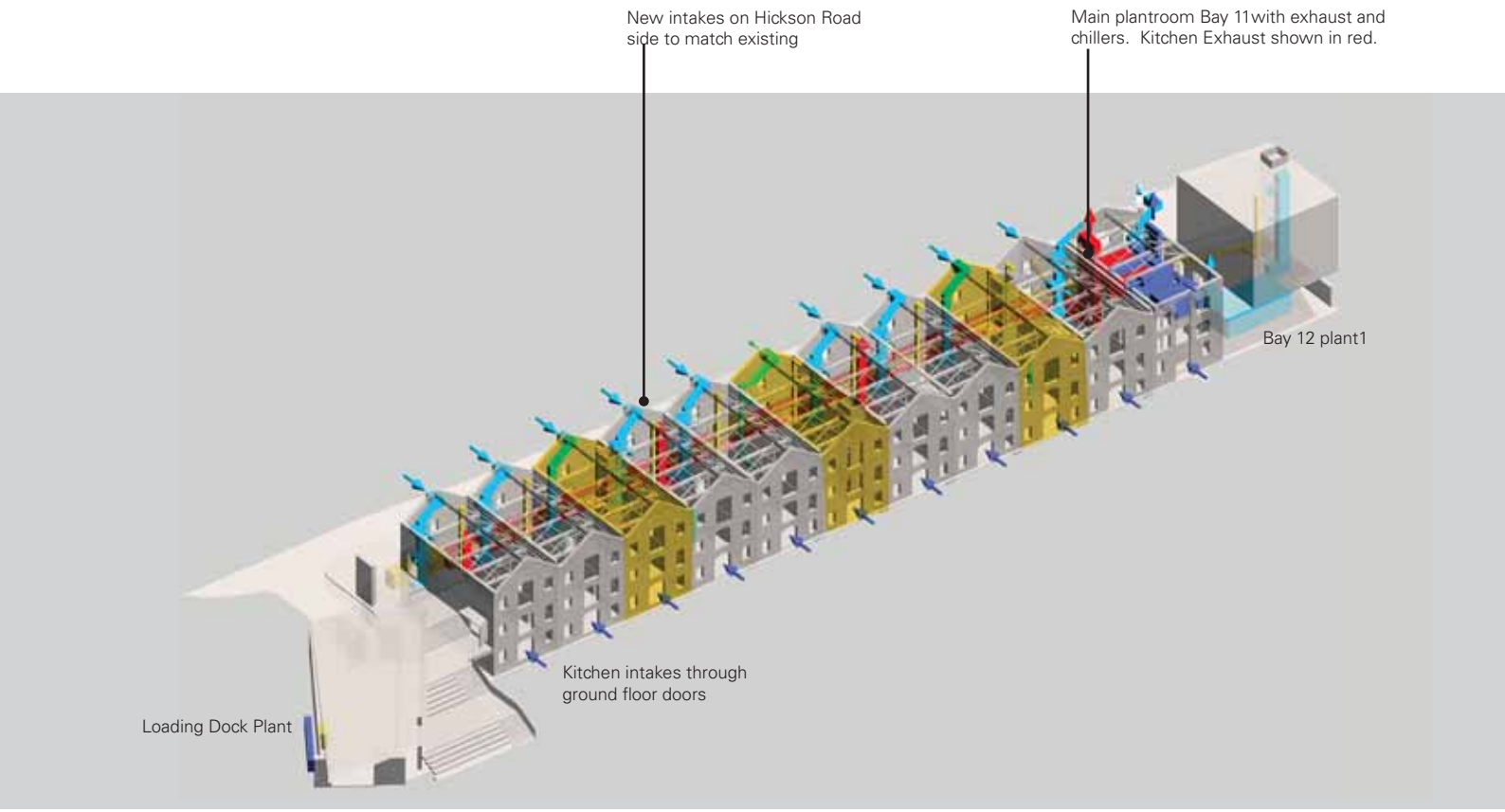
Future kitchens will be required to have raised floors for services reticulation - connecting back into the riser positions nominated. The services reticulation is designed so as to minimise impact on the heritage fabric - both now and into the future.

### Comfort: Passive/Natural Ventilation Mode

*"For much of the year it will be possible to take advantage of moderate ambient conditions and operate the building in passive/natural ventilation mode. Thanks to the inherent passive features of the building, i.e. the high thermal mass and limited glazing, building occupants will be able to enjoy the space with the windows open and air conditioning systems turned off.*

*There is opportunity for cross flow natural ventilation from East to West on the first and second floors and, as described below, the kitchen exhaust systems will help to draw air through the building even on still days. "*

*Text provided by Northrop Engineering*




**CONCEPT DIAGRAM:**
**Description of the general services strategy (duct sizes not to scale & diagrammatic only) - utilising the public bays (yellow) and the existing services tunnel.**

### Comfort: Active Mode

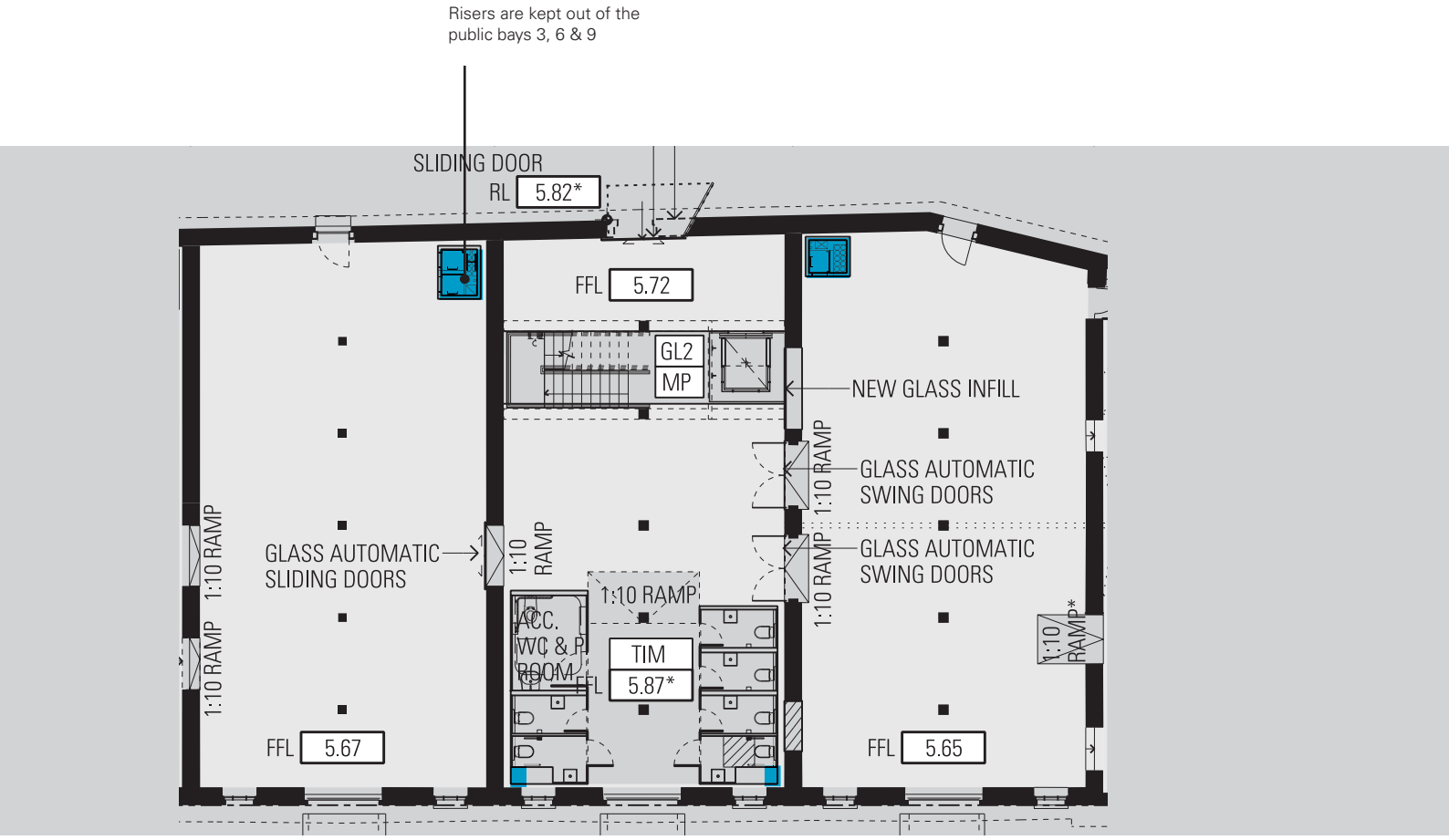
*"As the climate in Sydney also has its extremes and the nature of the proposed use of the building means that it will be densely occupied at times it will not be possible to maintain acceptable conditions all year round with only passive measures. When conditions do become uncomfortable it will be possible to close windows and use the installed heating/cooling systems with the mechanical ventilation air supply systems to condition the space. Filtration of recirculated air within the tenancy air conditioning systems will help to maintain good indoor air quality, allowing the mechanical ventilation system for the provision of outside air to be minimised to be as unobtrusive as possible."*

*Text provided by Northrop Engineering*

### Kitchen Operations

*"Regardless of the above, and whether air conditioning is on or off, kitchens must be provided with exhaust air systems, which typically remove large volumes of air and must be balanced by supply air systems. In order to minimise the mechanical ventilation systems within the building we have proposed a natural make-up air strategy where air is drawn into the building via the entrance doors. Please refer to the sketch attached which shows the make-up air paths which must be maintained while kitchens are operating."*

*Text provided by Northrop Engineering*




**PLAN (NTS)**
**Example of Bay 9 typical public bay services reticulation to avoid public space**


**CONCEPT DIAGRAM:**
**Northrop Engineering diagram showing use of existing openings to pull kitchen air exhaust into building.**

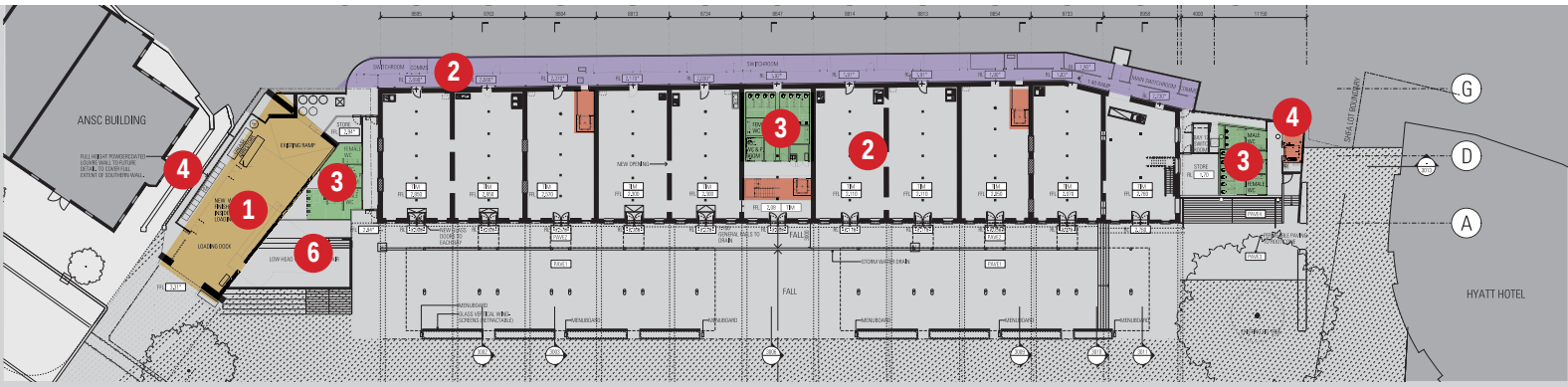
### 4.14.4 Reticulation of Services & Heritage Fabric

The services risers are consolidated so as to avoid the Public Bays, 3, 6 & 9. The positions are located in the corners of bays, in anticipation that they will be concealed within kitchen fitouts in most cases.

Creative use of existing openings for the kitchen exhaust air intakes helps to induce cross-flow ventilation, even on still days, and minimises impact on the heritage fabric.

*For further detail, refer to Appendix 1, Architectural Drawings - and Northrop Services Engineer's report.*

# 4.15 Design Components
## Basement




1. Loading Dock
2. Tenant BOH & Storage
3. Amenities
4. Plantroom
5. Circulation
6. Potential Plantroom/Storage

### 4.15.1 Basement Arrangement

The existing back of house servicing corridor will be retained for storage and services reticulation. Publicly accessible amenities are provided under Bay X, 12 and at Bay 6.

Excavations are required for the Bay 12 basement, with shoring required to consider the existing electrical pit locations adjacent.

# 4.16

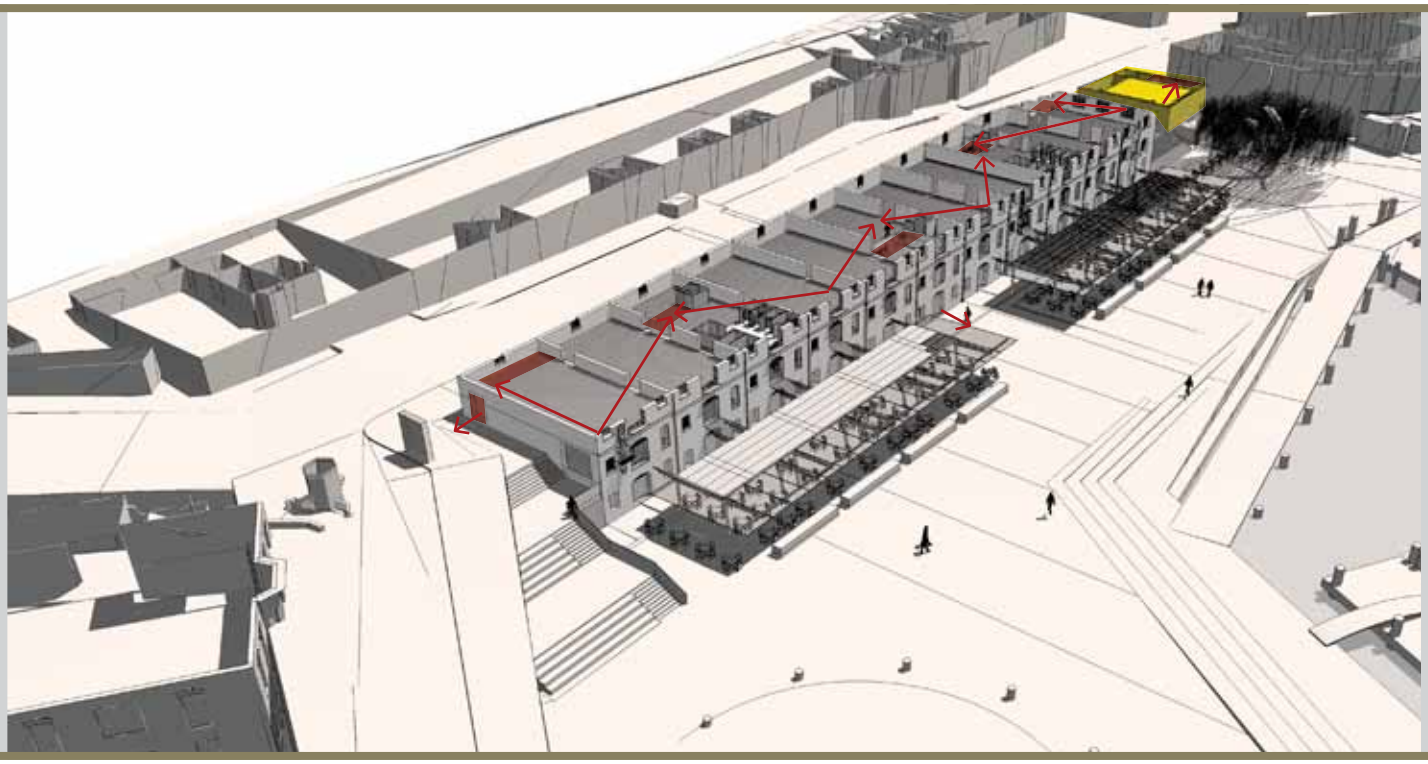
# Design Components
## Delivery & Waste


### 4.16.1 Delivery & Waste

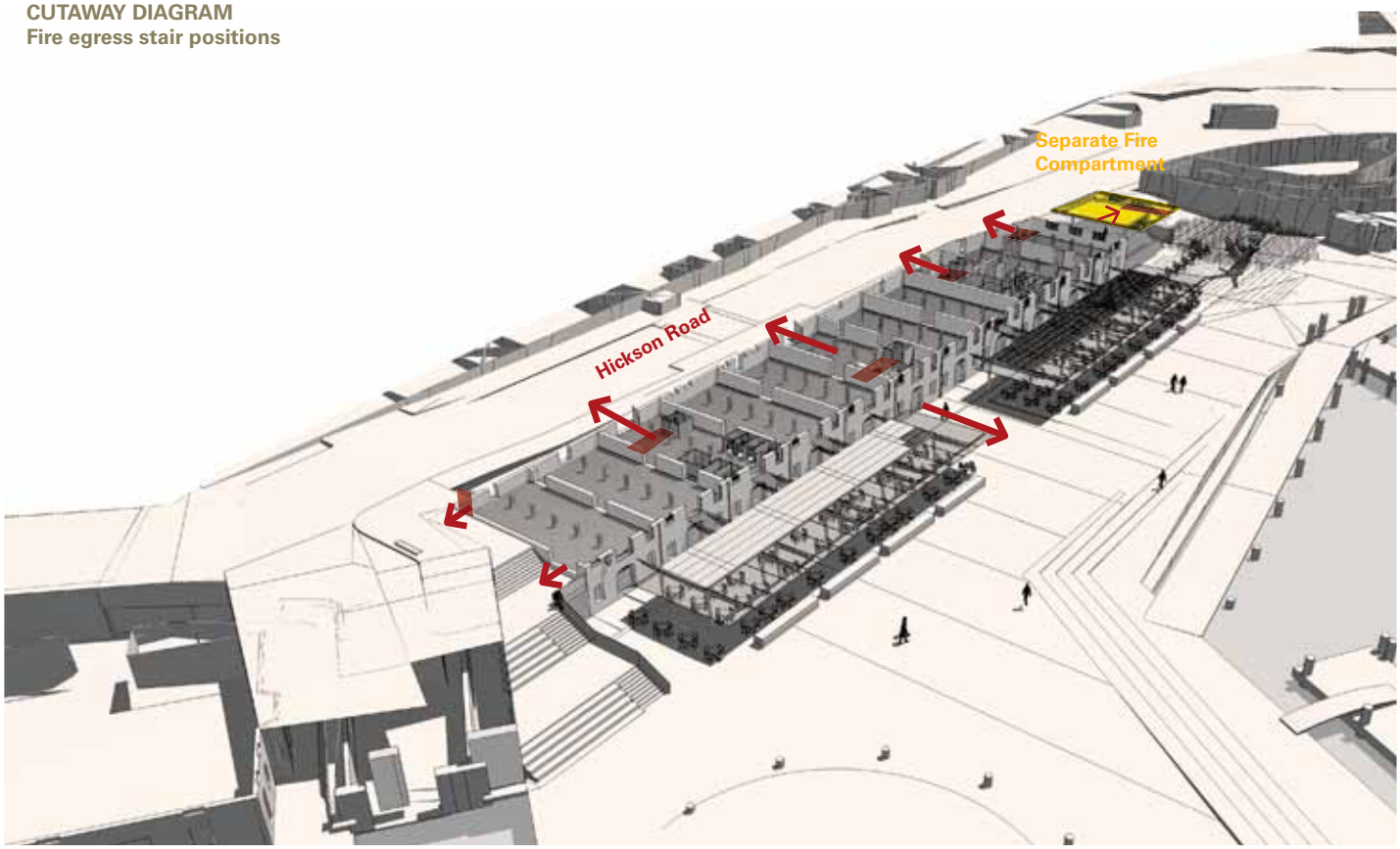
Deliveries will be centrally managed through the existing loading dock. Goods will be transported before and after hours using the 4 lifts provided. Waste will be transported via the same route. The new stairs will also be available for staff circulation as required between floors.

# 4.17

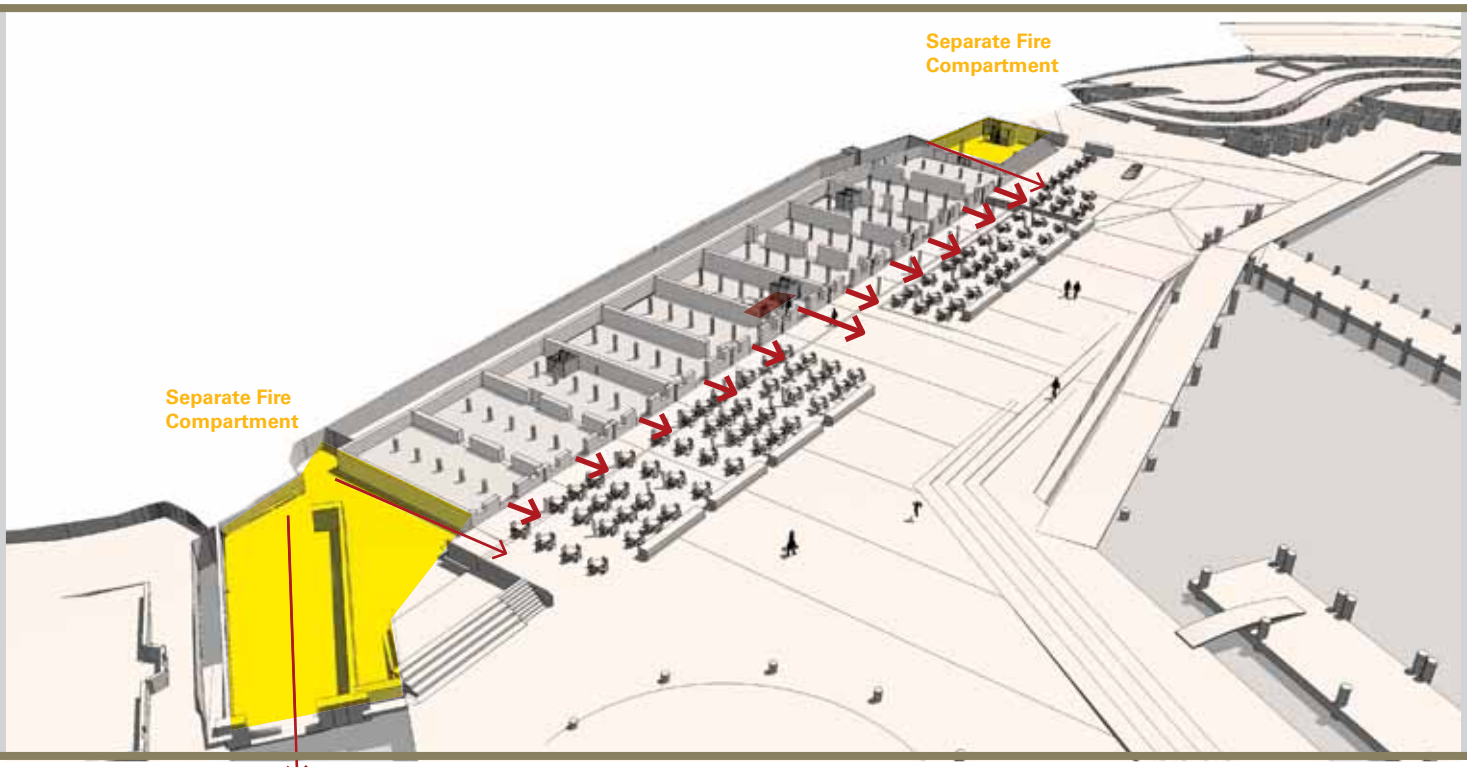
## Design Components
BCA & Fire Safety



**CUTAWAY DIAGRAM**
**Fire egress stair positions**




**CUTAWAY DIAGRAM**
**Egress positions to outside**




**CUTAWAY DIAGRAM**
**Fire compartmentation**

### 4.17.1 BCA Compliance & Fire Safety

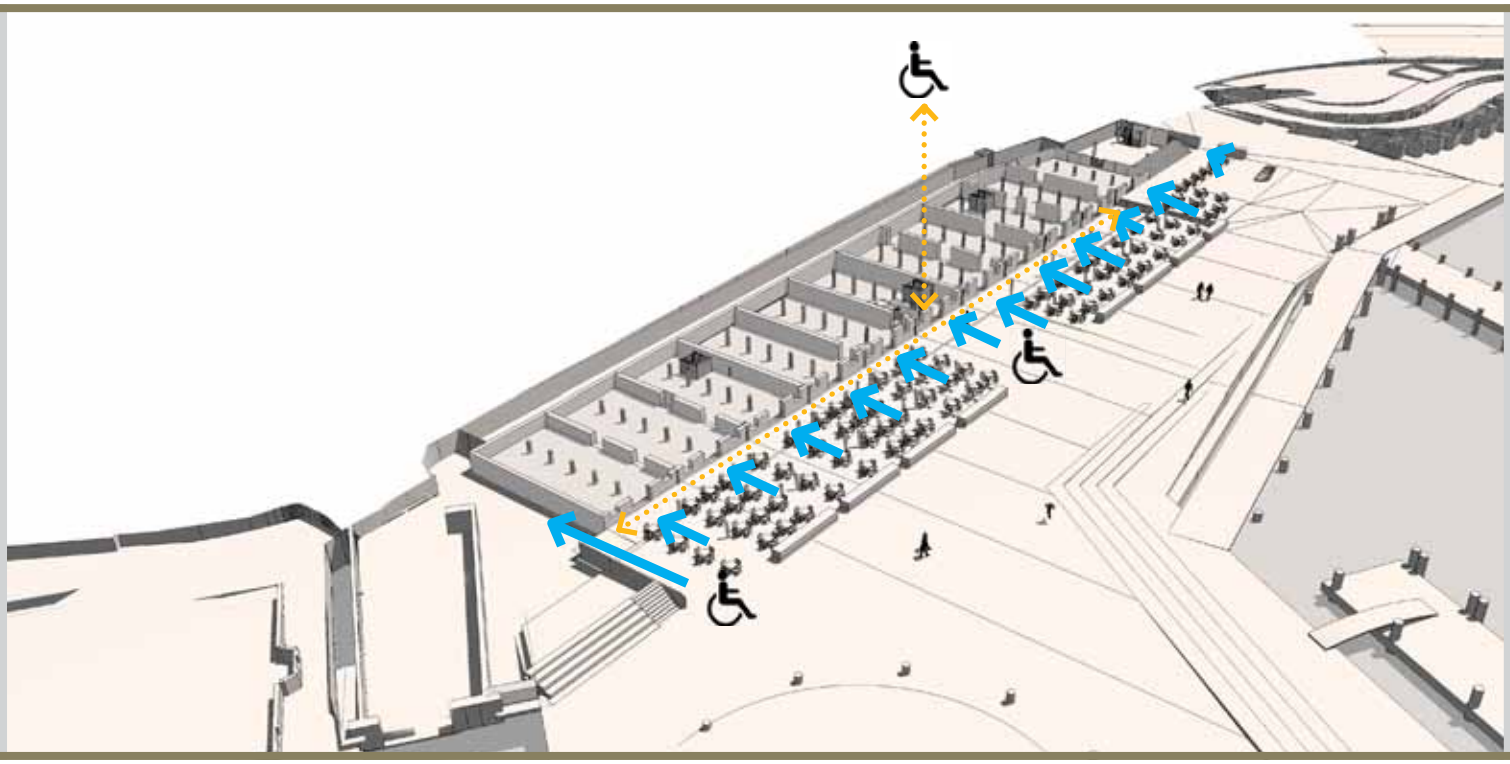
The heritage building has been designed as a separate fire compartment to the Bay X and Bay 12 basements. Hold-open doors will be provided in the BOH corridor, to fire-trip closed in an egress scenario (with free-opening handle for egress).

Fire egress is addressed via 5 stairs, 3 of which are generally used for public circulation in Bays 3, 6 & 9. The fire-stair widths have been fire-engineered to fit within the existing heritage structure.

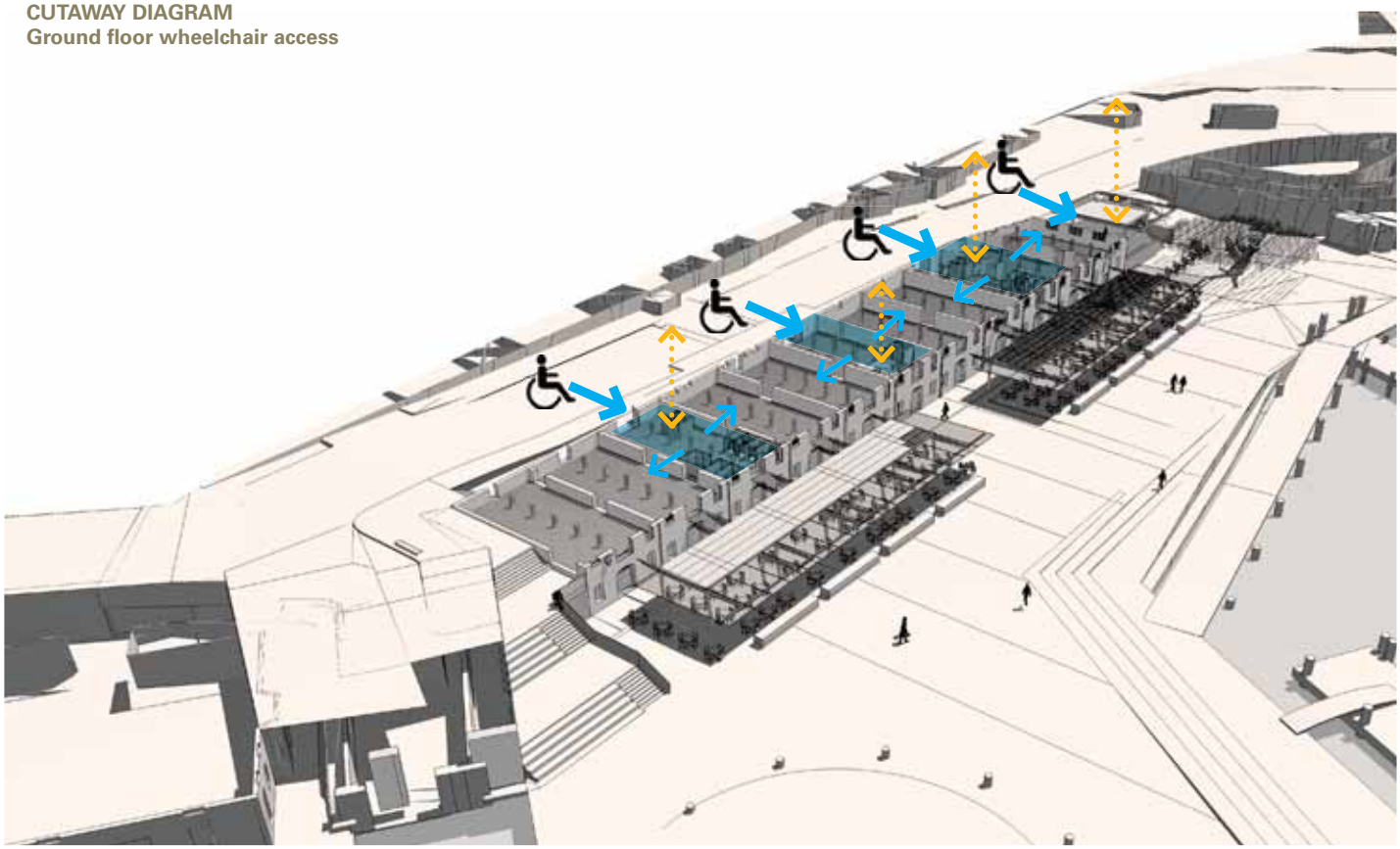
*For further detail refer to the BCA report*

# 4.18

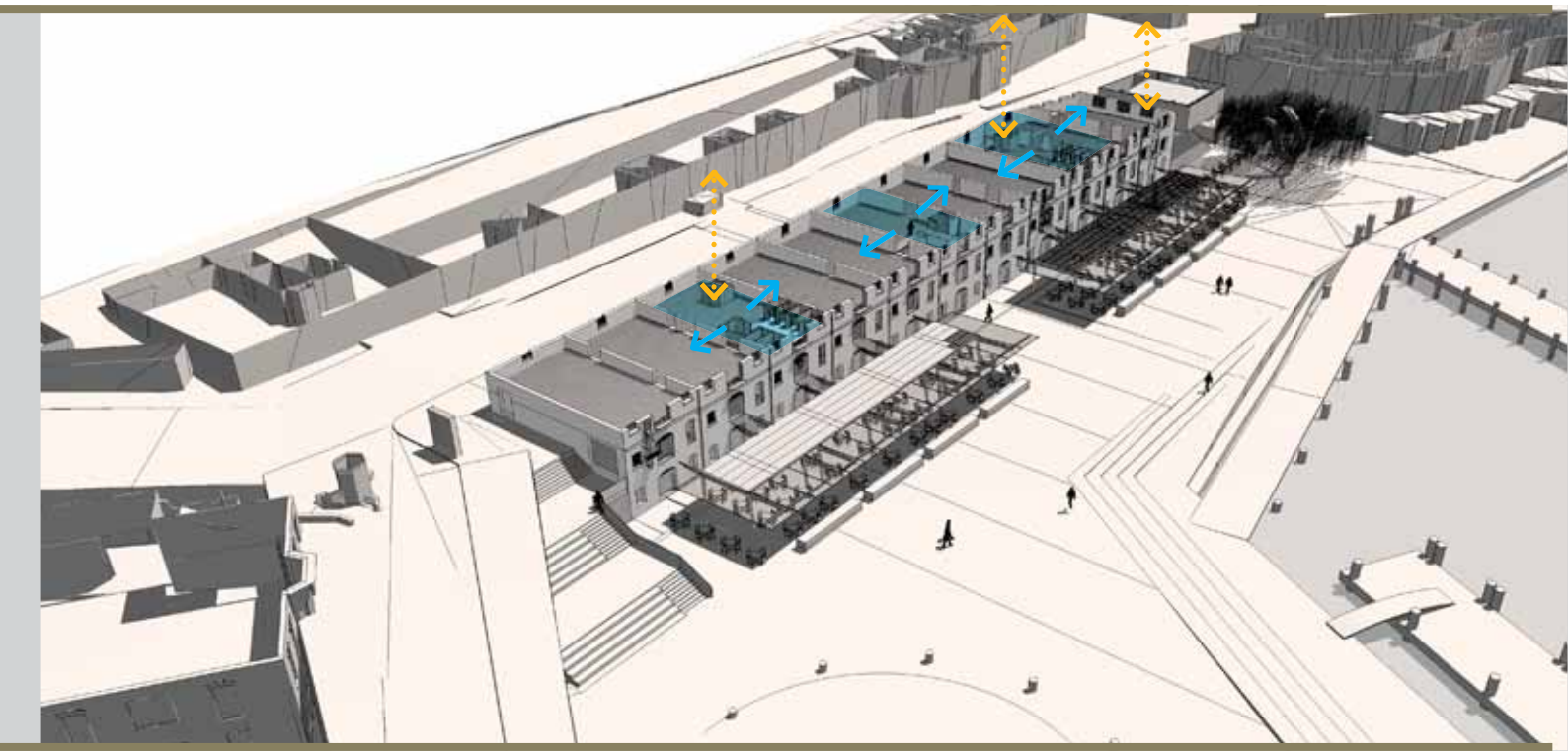
## Design Components
Accessibility



**CUTAWAY DIAGRAM**
**Ground floor wheelchair access**



**CUTAWAY DIAGRAM**
**Hickson Road Level access points**



**CUTAWAY DIAGRAM**
**Top floor wheelchair access positions**

### 4.18.1 Accessibility

Careful consideration has been given to improving and introducing accessible paths of travel throughout the existing site and building.

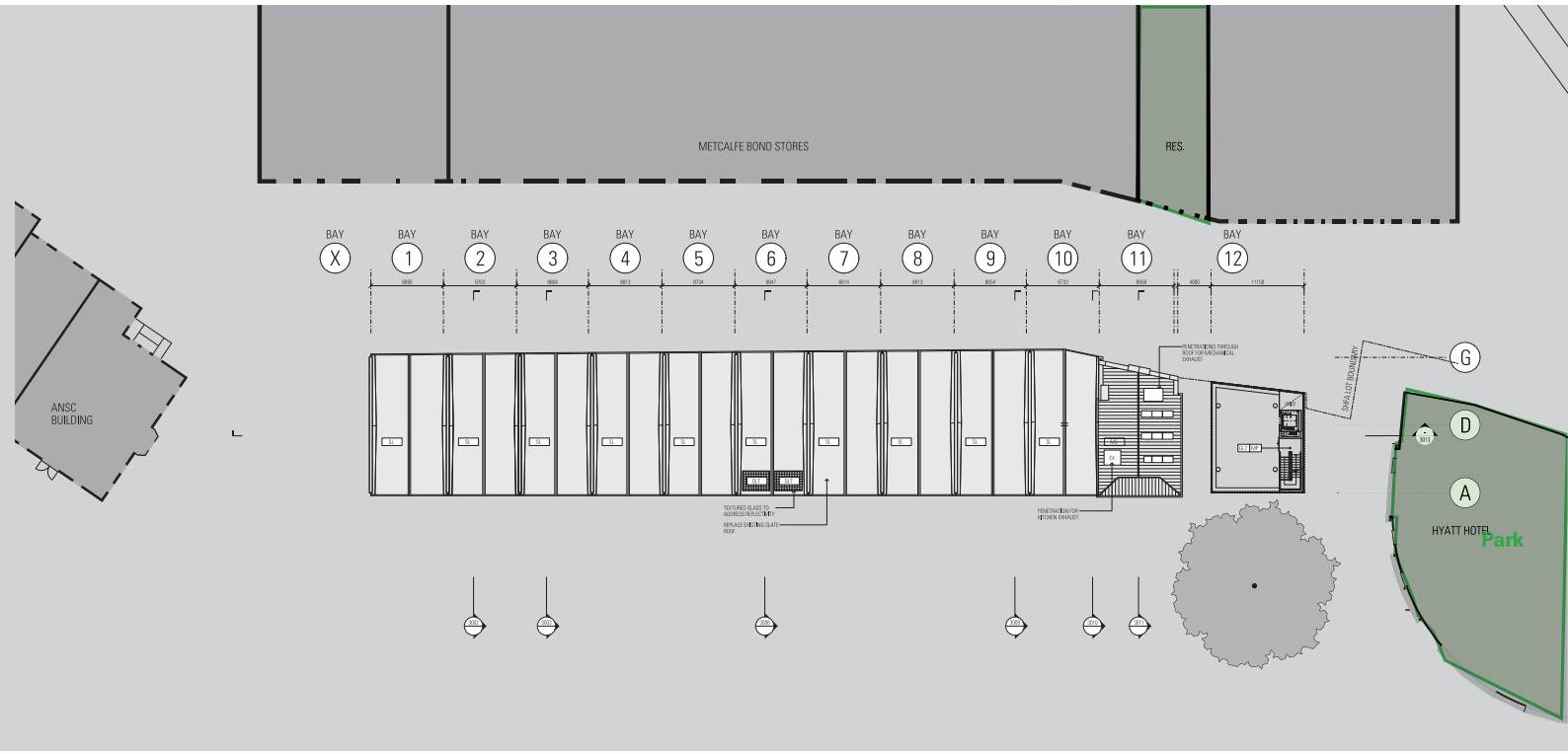
The primary accessible links are through Bays 3, 6 & 9 with vertical access from Hickson Road to the promenade in Bay 6. The new external gradients are designed to be access-compliant for wheelchairs throughout.

Wheelchairs are afforded 3 key entry points from Hickson road to access amenities and lifts, and one key access point from the promenade level (Bay 6). Two sets of amenities are provided for general public use at this level also.

Working with the constraints of the existing internal floor levels, the design has maximised accessibility. Level access is provided into the main circulation bays, with some ramps required to transition into main entrance areas.

*For further detail refer to the DDA report.*

# 4.19 Design Components
## Acoustics




**PLAN DIAGRAM**
**Adjacent residents and hotel highlighted**

### 4.19.1 Acoustics to Neighbours

Attention has been given to addressing acoustic break-out noise to adjacent neighbours - partcularly to the Park Hyatt and adjacent residences.

The new Bay 12 envelope design uses glass blocks for high acoustic performance.

### 4.19.2 Internal Acoustics

The interior of the building re-uses the heritage floors as a design and heritage feature. Inter-tenancy acoustics has been judged as generally acceptable for most types of use. In the event that additional acoustic absorption or insulation is required, the fitout guide for tenants will stipulate the appropriate method to do so. It is currently envisaged that this would be undertaken via under-floor insulation, kept within the floor joist depth in order to expose the existing joists and floor underside to the greatest extent.

*For further detail refer to the Acoustic Engineer report.*