

Attachment A11

Building Services Report

Subject	Piccadilly Redevelopment - Building Services and VT Summary
Job No/Ref	295375
Date	25 August 2025
By	Ryan Crabbe

Introduction

This memorandum has been prepared to summarise the main building services and vertical transportation systems that have been designed and proposed for the Piccadilly Redevelopment project, and to provide commentary and reasoning to support the City of Sydney query relating to the high floorplate efficiencies being achieved when compared to those historically seen and referenced in the Guideline for Site Specific Planning Proposals in Central Sydney.

System Summaries

The building services and vertical transportation design intent is to replace all existing systems and equipment (except for the existing basement chamber substation) with new high efficiency systems, whilst reusing as many of the existing risers and lift shafts as possible to minimise required structural interventions.

Note: A similar schematic level of engineering design input was completed to inform the mixed-use scheme, with dedicated mechanical services, lifts and on-floor electrical/ICT and hydraulic systems being provided for the residential stratum areas.

Vertical Transportation

Replacement of existing single deck lifts serving each of the 133 Castlereagh Street and 222 Pitt Street towers with:

- 133 Castlereagh Street tower:
 - Mid rise: 6 double deck lifts
 - High rise: 5 double deck lifts
 - Sky rise: 3 double deck lifts in a satellite core
(replaced by single deck residential passenger lifts in the mixed use scheme)
 - Goods: 2 single deck lifts
- 222 Pitt Street tower:
 - 4 single deck lifts

Mechanical Services

- Centralised high efficiency water cooled chillers (and chilled water system) at L29/30 serving centralised air handling plant (L05 and L29/30) and on floor perimeter active chilled beams for space cooling
- Centralised cooling towers (and heat rejection plant) at L41/42 serving base building chillers, commercial tenant condenser water provisions and retail tenants
- Centralised electric air source heat pumps at L41/42 serving centralised air handling plant (L05 and L29/30) for space heating
- Centralised reverse cycle electric air source heat pumps at roof level of the 222 Pitt St tower serving centralised air handling plant (also at roof level) for space cooling and heating of the 222 Pitt St building

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- Life safety ventilation systems and miscellaneous ventilation systems serving ancillary and back of house areas located in plantrooms throughout both towers

Electrical Services

- Two upper chamber HV substations located in L05 and L29/30 plantrooms in addition to the exiting basement chamber HV substation located at basement level
- New LV switchrooms located at basement level and L29/30 plantroom serving both towers
- New base building and tenant generator plantrooms located at L29/30 serving both towers
- New communications and DAS rooms located at basement levels serving both towers

Hydraulic and Fire Services

- New fire services pumps at basement level and fire tanks and pumps at L41/42 serving a combined hydrant and sprinkler system for the development
- On floor electric domestic hot water (DHW) units serving commercial bathroom areas and centralised electric air source heat pumps serving end of trip areas

The following figures (1, 2 and 3) illustrate the main riser and plant massing that has been coordinated with the architectural scheme to inform the planning proposal submission



Figure 1 - Typical low rise (left) and high rise (right) level riser layouts

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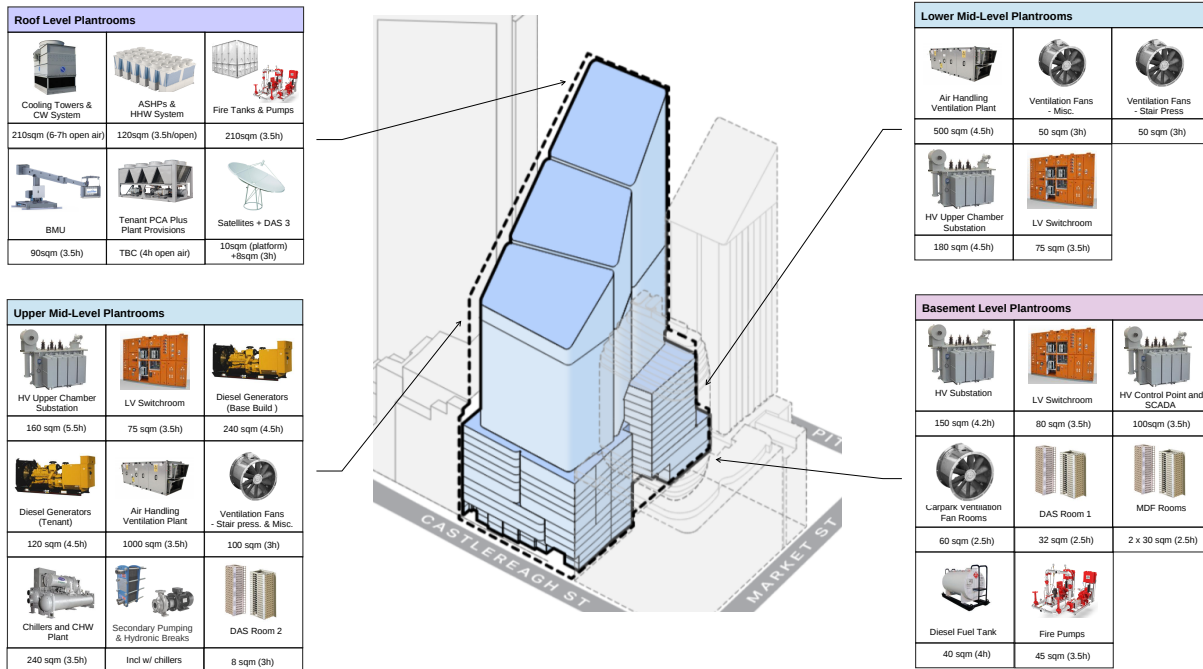


Figure 2 - 133 Castlereagh Street Tower Plantroom Massing (Commercial Scheme)

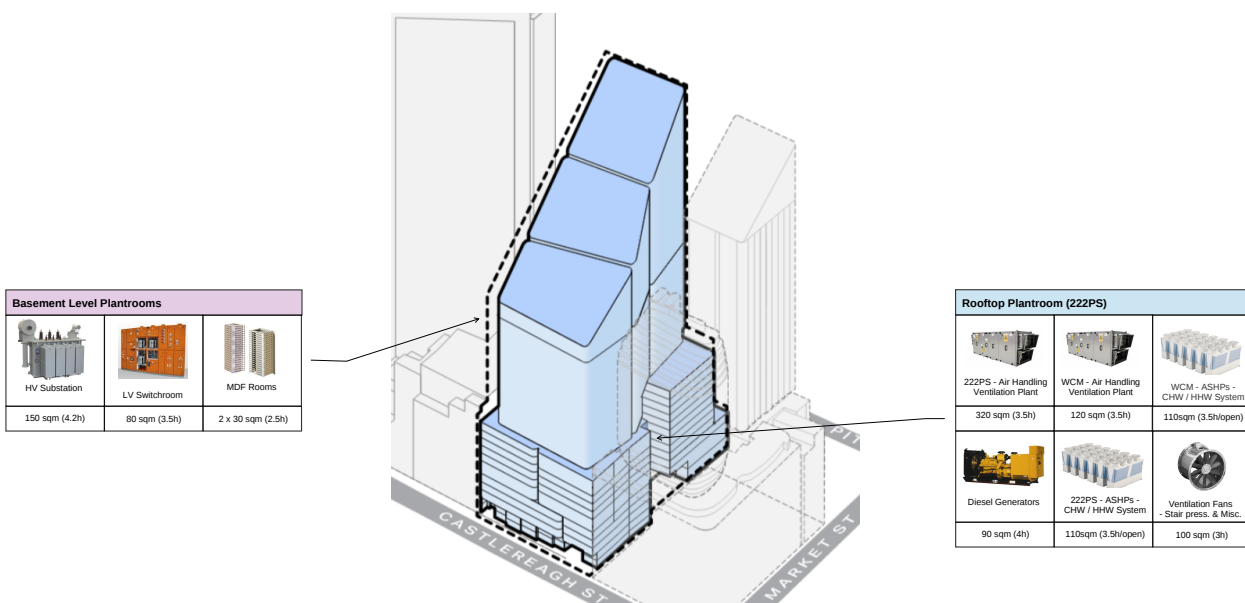


Figure 3 - 222 Pitt Street Tower Plantroom Massing (Commercial Scheme)

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Building Floorplate Efficiencies

The proposed building services and vertical transportation strategies have positively contributed to the improved building efficiencies being realised above those referenced in the Guideline for Site Specific Planning Proposals in Central Sydney.

The large size of the Piccadilly redevelopment floorplates at >2,500sqm, compared to PCA Premium grade floorplate sizes of >1,000sqm to 1,200sqm, inherently leads to increased floorplate efficiencies (as seen in precedent projects such as Australian Technology Park (ATP) Building 2 and Quay Quarter Tower), but the building services and VT selections contribute by:

- Reducing riser sizes through:
 - Using a hydronic based air conditioning system (chilled beams) as opposed to an all-air system, leading to perimeter ductwork risers being notably smaller compared to an all air VAV system
 - Having distributed ventilation plantrooms meaning that ductwork is fed from multiple locations within the tower, rather than simply top down and bottom up, reducing ductwork sizes again
- Implementing a double deck lifting strategy:

Using a double deck (DD) lifting strategy as opposed to a single deck (SD) lifting strategy reduces lift numbers as the following comparative study for this development demonstrates:

Building Rise	Qty of DD lifts	Qty of SD lifts	Difference in qty
Mid rise	6	10	4
High rise	5	8	3
Sky rise	3	5	2

The above highlights a reduction in 9 lifts by utilising a DD strategy, which (including lobby areas) equates to approximately 125sqm NLA saving, which is a ~5-6% improvement in floorplate efficiency alone.

- Irregular core shape
 - Unlike many buildings that opt to ‘square off’ core areas, the Piccadilly concept scheme has a more irregular shaped core layout that matches the required services risers and structural coordination needed, which itself release more NLA

Conclusion

New building services systems and lifts are being installed throughout as part of the redevelopment to suit the planning of the new building form and to achieve the projects required sustainability targets.

The system selections, plant massing strategies and in particular the use of a double deck lifting strategy have also contributed to high floorplate efficiencies as seen in the planning proposal submission.