

Visual Analysis Report

Darling Walk Precinct

November 2008


Lend Lease

fjmt

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1.0

Introduction

This Visual Analysis has been prepared to accompany the Environmental Assessment Submission for the Darling Walk Precinct.

The visual analysis methodology replicates the methodology utilised by the View Analysis Report prepared by Cox Richardson on the Darling Walk Concept Plan dated May 2008. This methodology covers context, design principles and a visual assessment of view impacts on surrounding residential buildings. The visual assessment relies on a plan and section analysis to determine the extent of direct and oblique view loss and gain to surrounding residential developments.

Explicit in the Concept Plan approval is the allowance for roof, roof plant and feature roofs above the approved envelope. The Environmental Assessment submission illustrates how the feature roof has been designed to provide an elegant visual solution to the enclosure of plant and the roofing of the Atrium whilst maintaining appropriate height and scale. This report describes the accommodation of plant and height requirements in further detail.

Based on the Cox Richardson analysis, variations from the view analysis of the approved concept plan envelope as a result of the feature roof affect only the Millennium Towers residential building. Accordingly a more detailed analysis of the view impact of the approved Concept Plan envelope and the Environmental Assessment submission on the Millennium Towers residential building is included in this report.

The Cox Richardson View Analysis Report anticipates that the effect on views from the Millennium Towers is offset by the improved outlook provided by architectural roof forms and roof gardens of the proposed development when compared to the existing Sega World Development together with the visual improvements from the general upgrading of the Harbour street Streetscape.

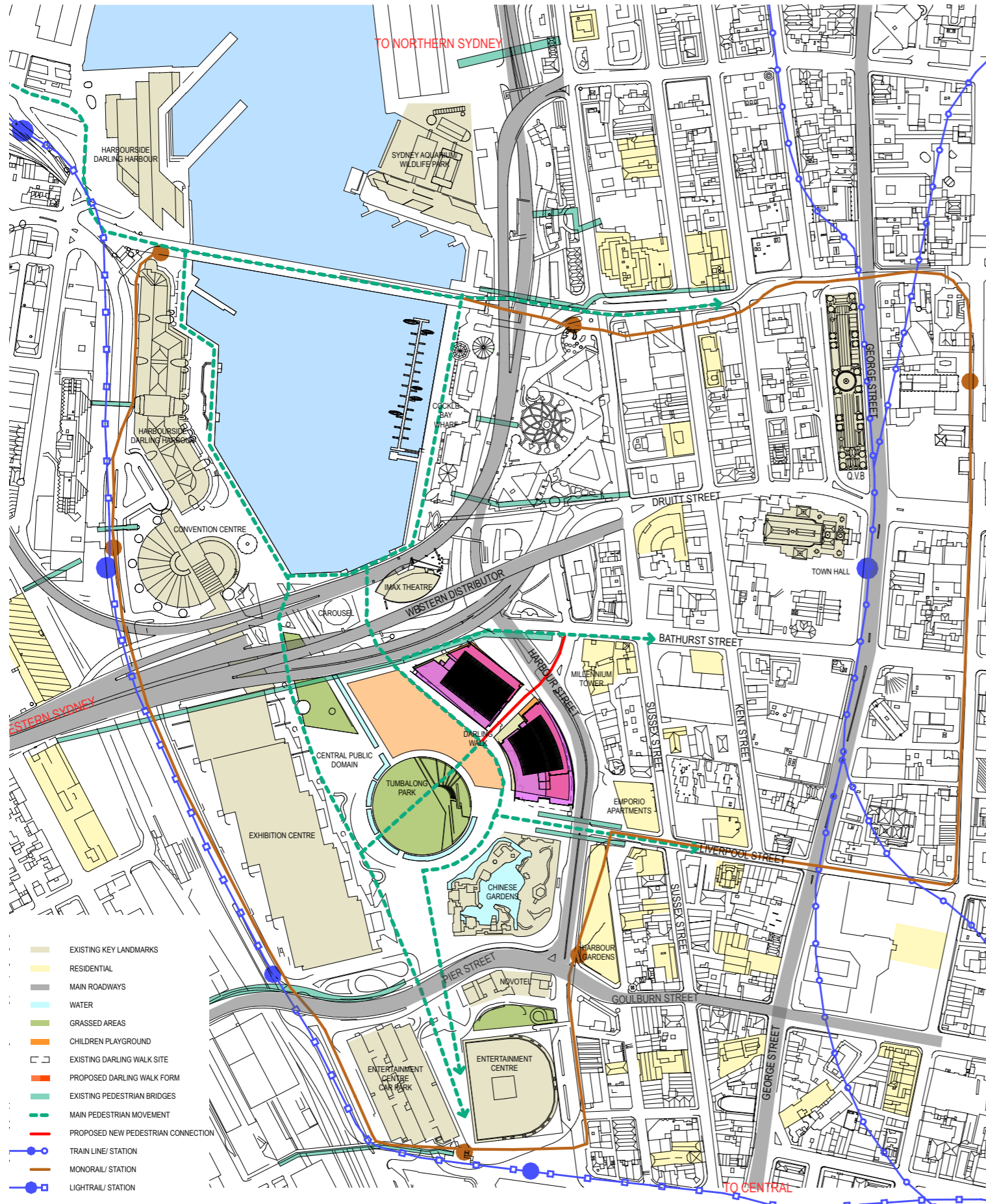
In relation to view loss into the centre of the Tumbalong Park, this report demonstrates that the Environmental Assessment submission affects the same number of apartments when compared with the approved Concept Plan envelope. It must be noted however that the view study of the approved Concept Plan envelope makes no allowance for ceiling zone, roof and roof plant structures. The Environmental Assessment proposal offsets the effect of roof and roof structures by increasing the view access through the Civic Connector. In the case of the Millennium Towers a further 18 apartments have improved views when compared to the Concept Plan.

To further reduce the impact of of the development an adjusted roof proposal has been included in this report. In this solution the roof is both lowered and shortened to minimise the view impact. One of the Millennium Tower apartments will regain views as compared to current EA proposal and 20 apartments compared to the Concept Plan

Below tables summarize the 'Millennium Apartments View Impact (to the centre of the Tumbalong Park)' for Concept Plan, Environmental Assessment Proposal and the Lowered and Shortened Roof Proposal.

MILLENNIUM TOWERS VIEW IMPACT	Total number of View Loss	Total number of View Gain	Net
CONCEPT PLAN (Excludes Impact of Roof and Plant)	33	12	21
EA PROPOSAL (Includes Impact of Roof and Plant)	39	18	21
REVISED EA ROOF OPTION (Includes Impact of Roof and Plant)	38	18	20

Improvement to Views
0
18
20



Site Context

2.0

Concepts and Principles

The redevelopment of the Darling Walk Site offers highly significant opportunities to improve the quality of the public domain within the precinct and in adjoining public open spaces. These opportunities include improvements to vistas and the visual outlook of the precinct.

Concepts and Principles which directly relate to the visual quality of the precinct through the proposal include:

- Connections and Vistas
- Built form and Massing
- Heights
- Environmental Amenity
- Views
- Roof Activation and Form
- Roof Form and Roof Plant

2.1

Development Concept Principles

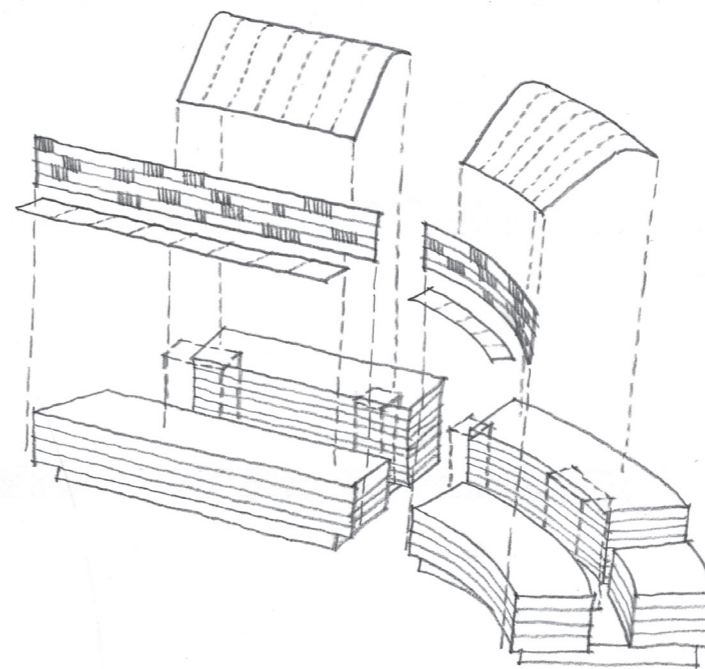
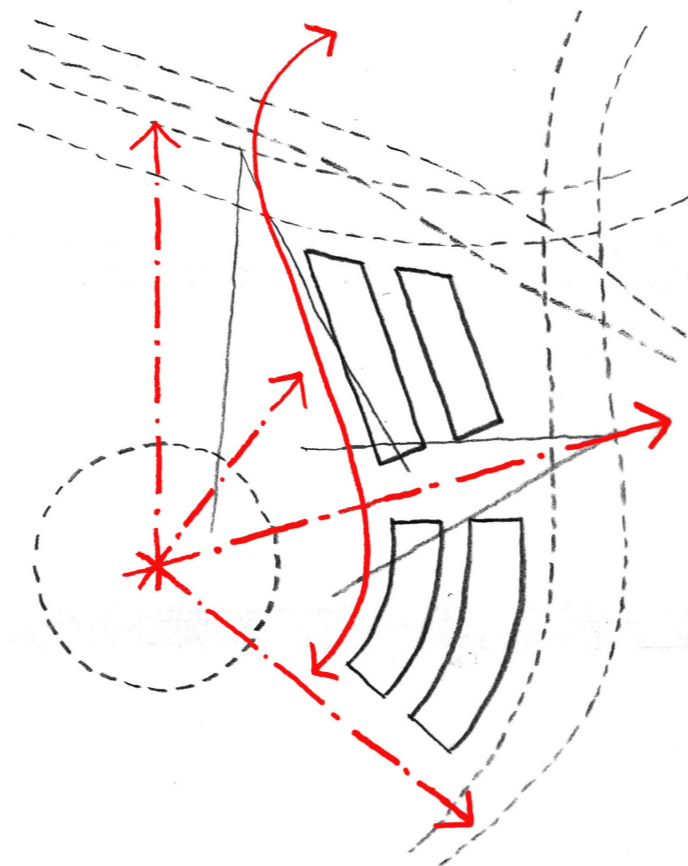
2.1.1 Connections and Vistas

The extension of the 'Day Street alignment' through the site is a primary ordering principle of the development concept. The at-grade pedestrian connection establishes a new vista from Bathurst Street to Tumbalong Park and structures the movement around, and access to, the north and south building components.

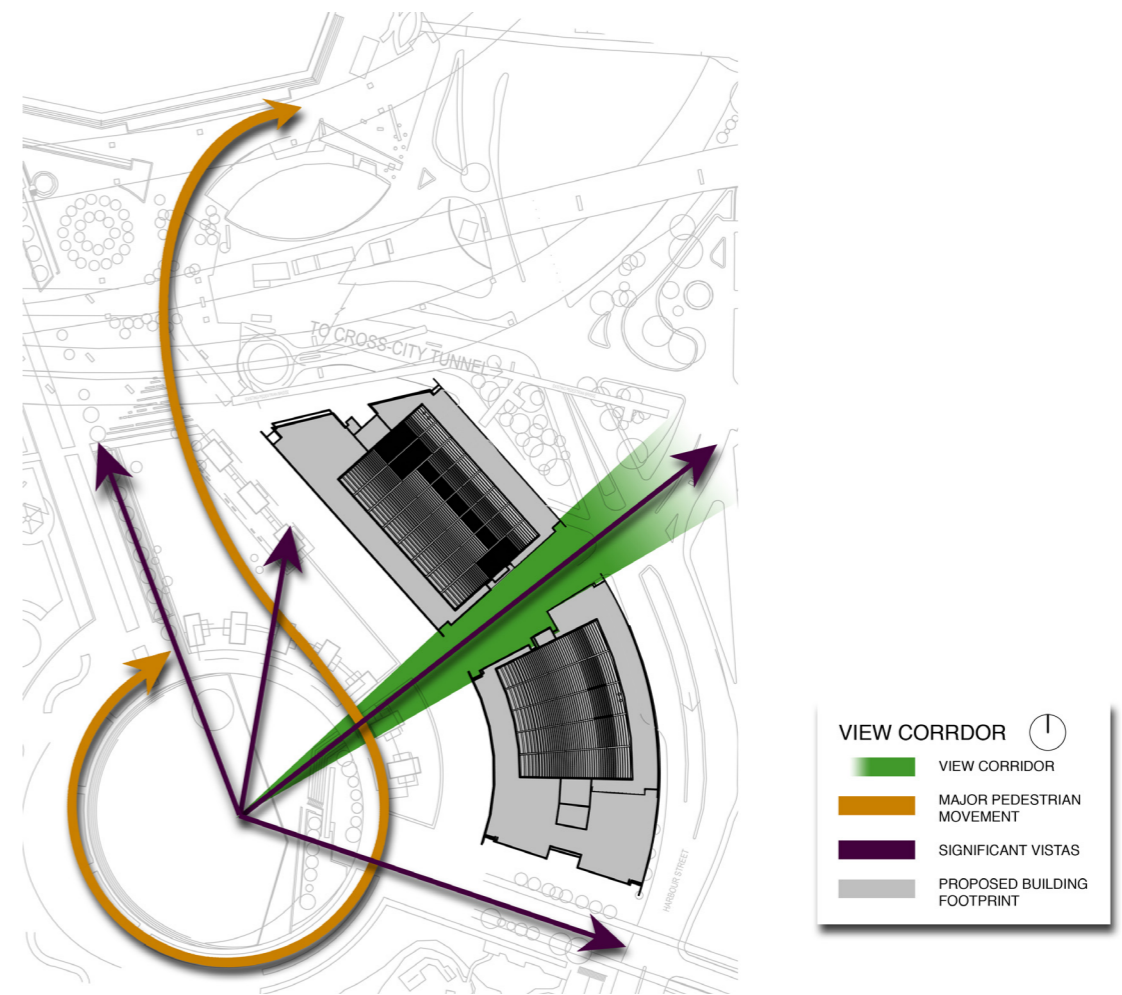
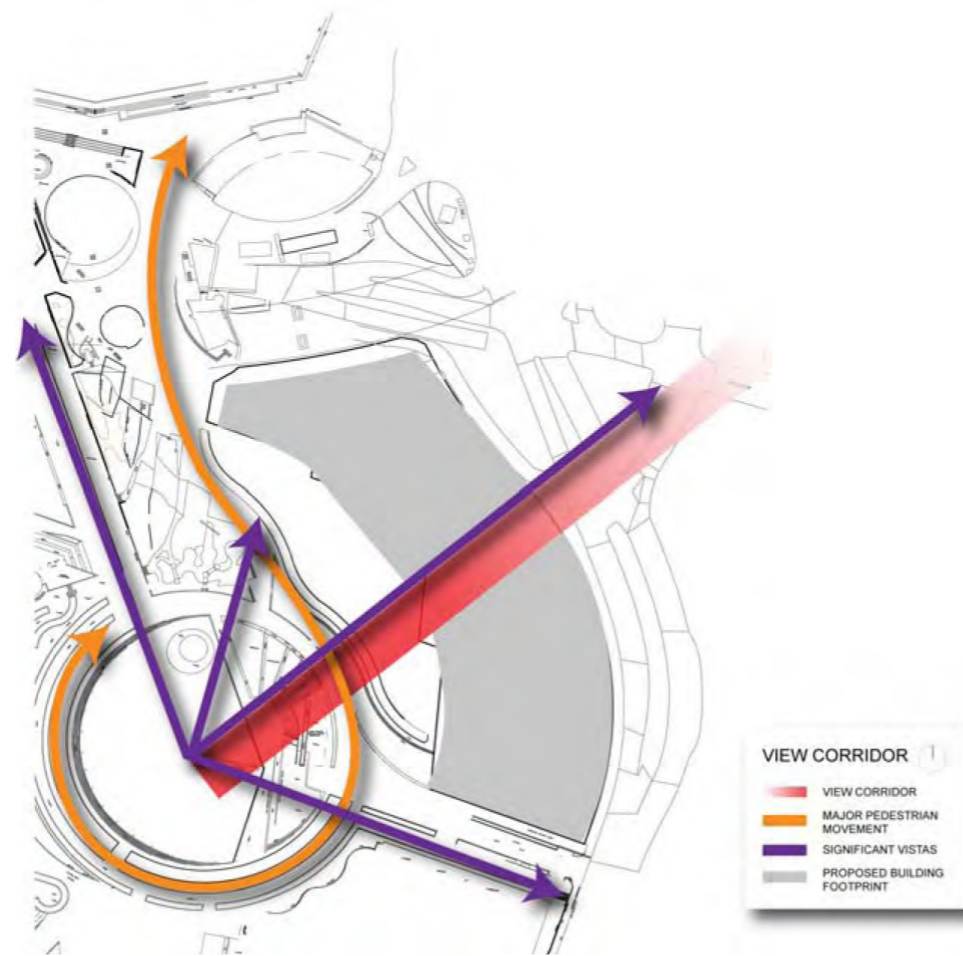
Vistas are opened beneath the western distributor to the development through reconfiguration of the public domain, and positioning of the built form to promote a continuous promenade from Darling Walk to Cockle Bay.

2.1.2 Built Form and Massing

Drawn from the geometries of the site and the form of the City, the built form of the proposal seeks an appropriate balance between a clear and identifiable formal image and an articulated and scaled assembly. The primary component parts are retail base, volumes of commercial accommodation, articulated facades and iconic atrium roof.



② BUILT FORM



2.2

Design Principles

2.2.1 Heights

The building height is measured to the ceiling of the uppermost habitable floor and is 37.3m AHD along Harbour Street. This is comprised of ground floor + 8 storeys. The building height adjacent Tumbalong Park is 26.2m AHD and is comprised of ground floor + 5 storeys. The highest point of the architectural vaulted roof form, which occurs half way between Harbour Street and Tumbalong Park sides, is 46.8m AHD.

2.2.2 Environmental Amenity

There is a high degree of daylight access into the proposed buildings via high vision transmitting but UV restricting glass both through the façade and the roof down into the atrium. The impact due to overshadowing for the immediate surrounding environment including the Chinese Garden and Tumbalong Park is negligible.

Recommended building separations for apartments are set out in the Residential Flat Design Code (SEPP 65) in order to minimize impact from overshadowing and increase acoustic and visual privacy. Apartment buildings on Harbour Street east are over 40m from the proposed development at their closest point. This far exceeds the recommended separation of 24m for buildings of this height set down in the Code (p28). Any impact of overshadowing or impact on visual or acoustic privacy is minimal.

Any noisy roof plant is to be suitably attenuated.

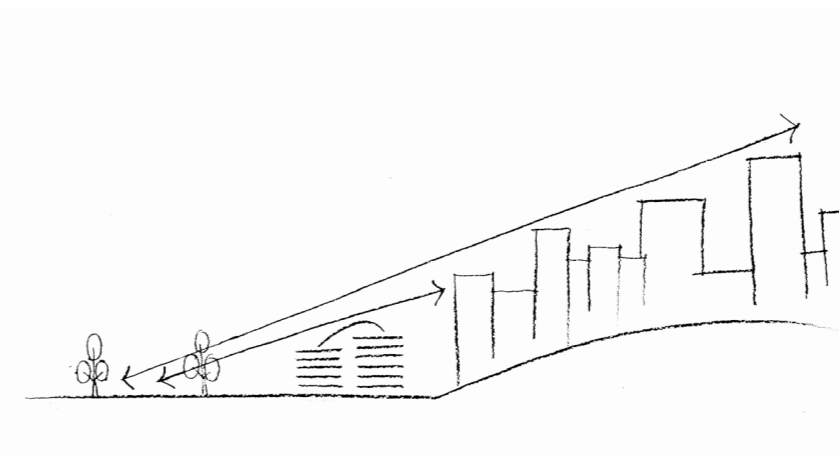
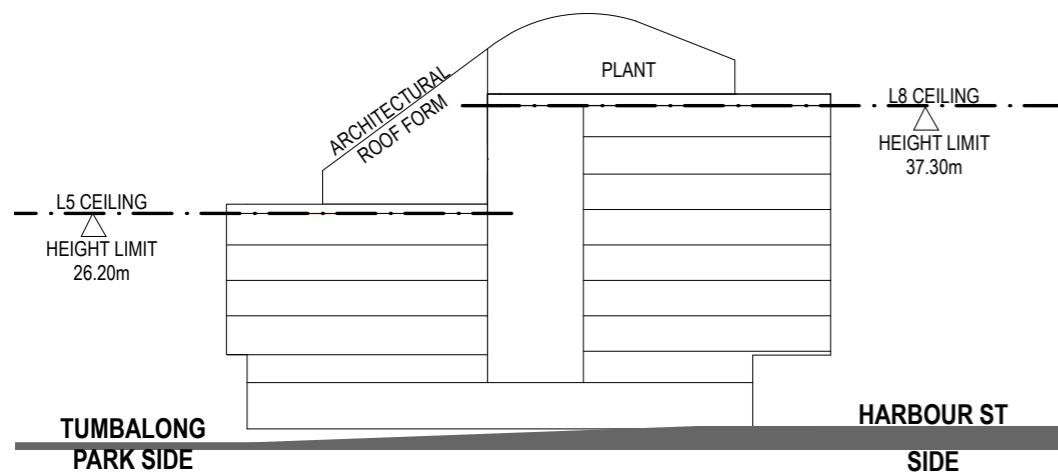
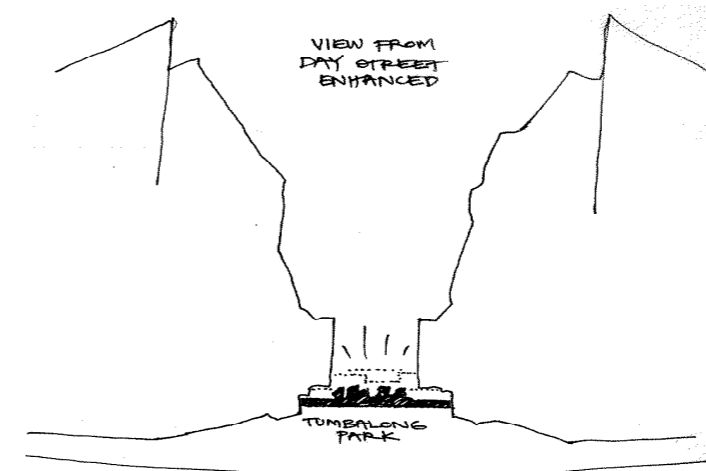
A Wind Environment Statement has been prepared for the proposal and concludes that there will be no adverse effects to wind conditions to local surrounding streets and pedestrian footpaths.

Loss of view to residents because of the Darling Walk redevelopment will not be significantly greater than that set out in the Concept Plan. The building is lower on the Tumbalong Park side. This gives a greater visual connection between the CBD and the park which includes views into and of the park from the higher surrounding buildings.

2.2.3 Views

The break between the two buildings opposite Day Street allows an inviting vista from deep inside the Darling Harbour south precinct to Day Street CBD link at ground level. There is no vertical clutter within the link to compromise the sight of Tumbalong Park and the grove of trees surrounding it. From the opposite viewpoint, at Tumbalong Park, the CBD skyline is also visible above the development to the east. Thus the important visual connection between Darling Walk precinct and the CBD is maintained.

Proposed buildings facing Harbour Street are significantly lower than the existing buildings to the east of Harbour Street. Moreover the Tumbalong Park side of the proposal is lower again. This enhances the CBD's connection with parkland beyond such that the proposal's impact on views from surrounding buildings is minimized.



2.2.4 Roof Activation and Form

Like the façades the vaulted roofs of the Darling Walk redevelopment will also be defined by their ability to provide appropriate working interiors coupled with a response to the greater context of Darling Harbour south.

A light, curving architectural roof form will bring together the two differing eastern and western sides of the building. It will soften the transition from the taller city side along Harbour Street to the warm activated side facing Tumbalong Park. Internally the transmission of light deep into the atria from above while controlling heat and glare will be achieved through the refinement and layering of high quality roof materials and structure.

Adjacent the vaulted roof, the lower roof terrace will be planted with grass and trees providing amenity for the tenants as well as softening the edges for those overlooking the new building, bringing parkland closer.

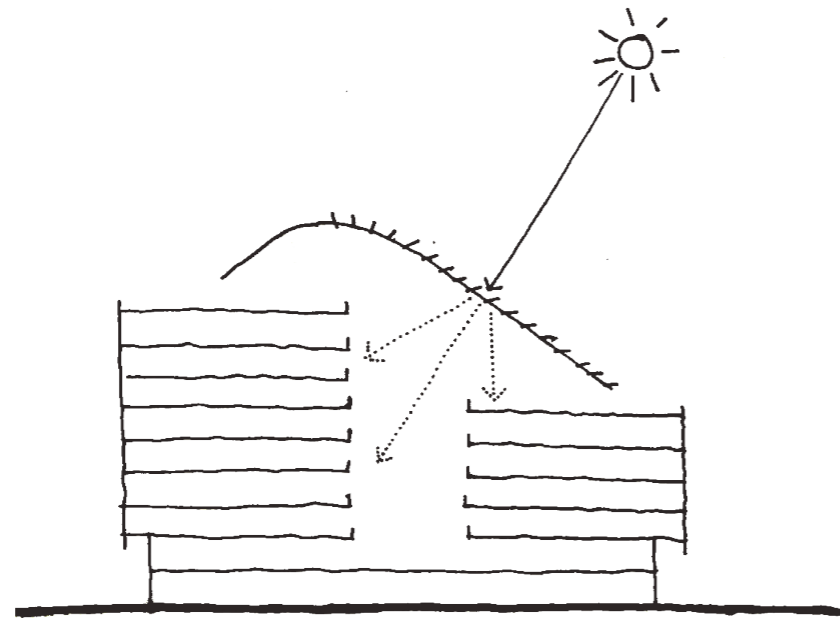
The roof will be a major part of the buildings outward response to its greater context but also a response to how that context influences its own interior within.

2.2.5 Roof Form and Plant

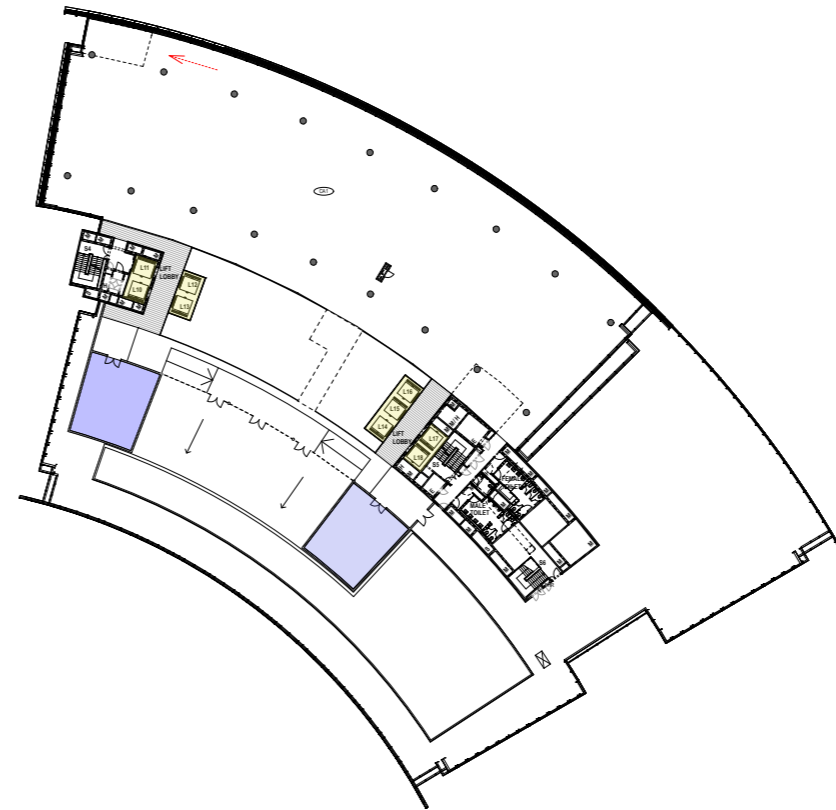
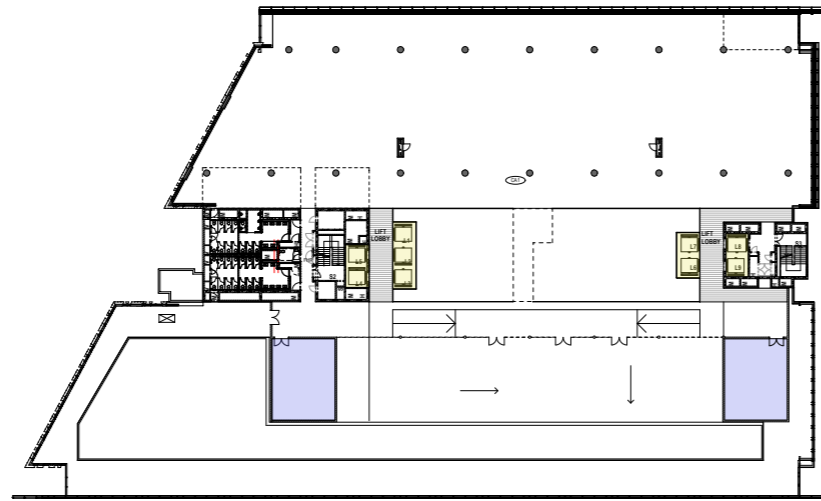
The vaulted roof incorporates all the cooling towers, generators, air handling units, fans and pumps under its profile, above Level 8 with some air handling units on Level 6. Noisy plant including generators and fans will be adequately attenuated.

Although the plant is arranged to be mechanically and spatially efficient under the roof, externally, it is not primarily apparent as plant. Penetrations through the vaulted roof have been minimized and cooling towers, which need to be open to the sky, are screened behind an open louvred roof.

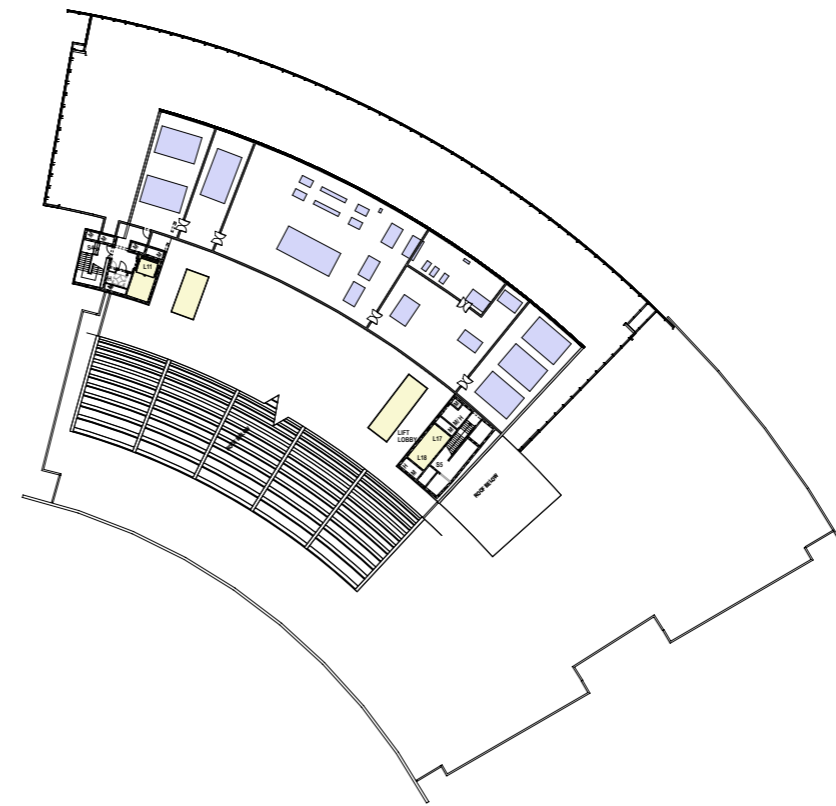
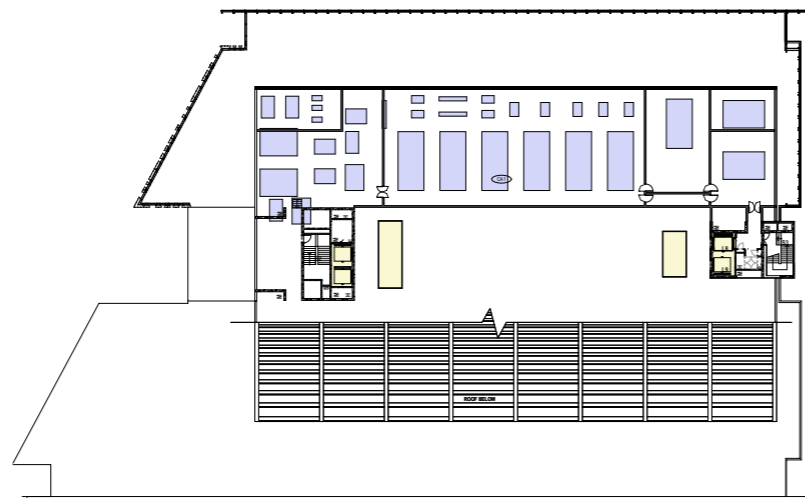
The proposed roof form elegantly encompasses roof plant equipment space requirements, atrium heat relief and smoke exhaust requirements and services transfer zones from cores to rooftop plant. Plant has been distributed between level 9, level 6 and in the basement as much as is possible within the constraints of the existing below ground services and the required energy efficiencies of a 5 star ABGR proposal.



Plant 
Lift 

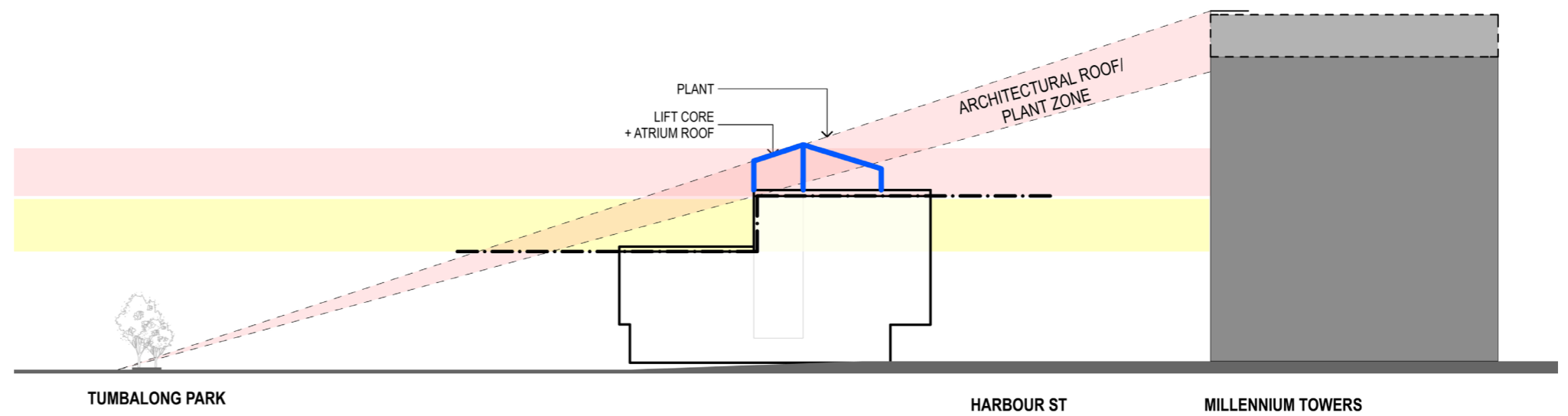
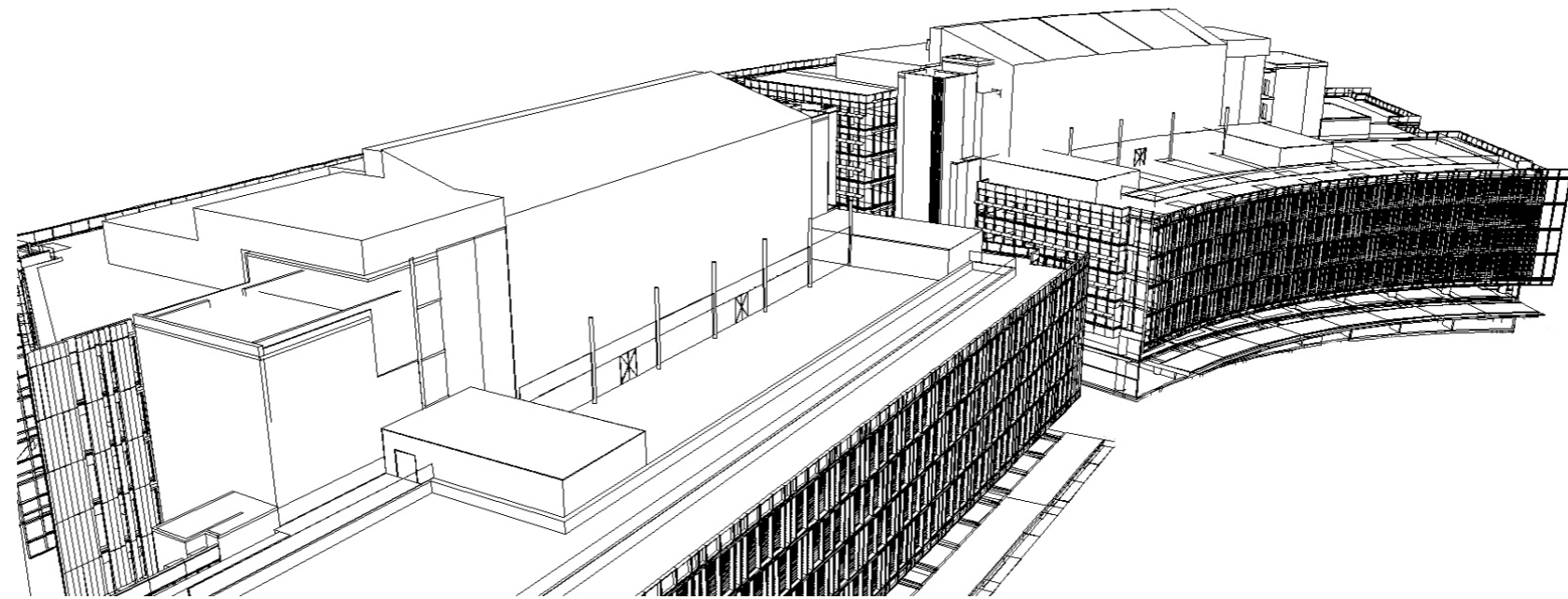


Level 6 Plant Plan

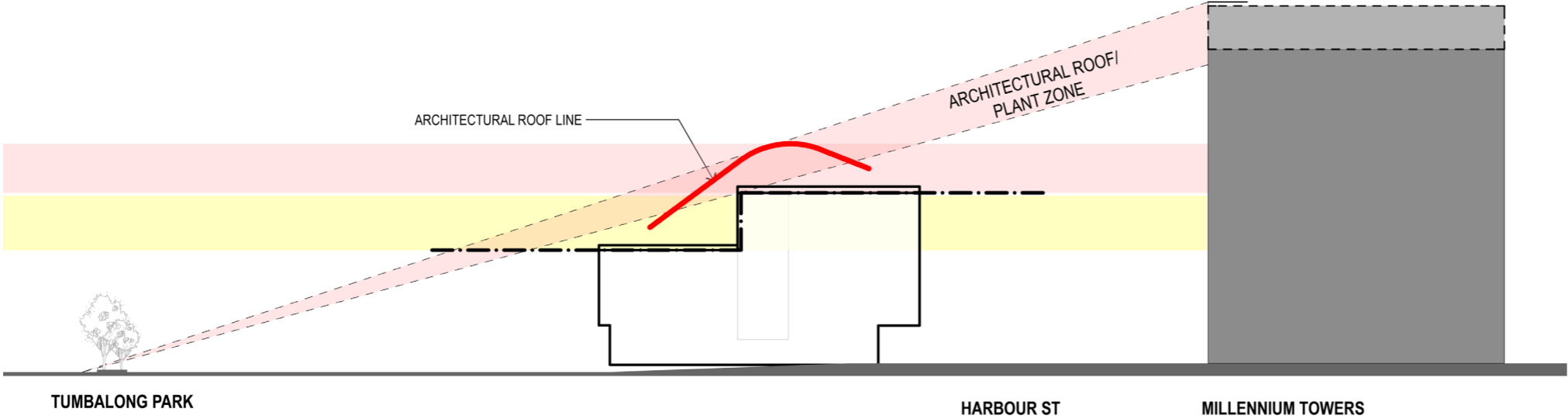
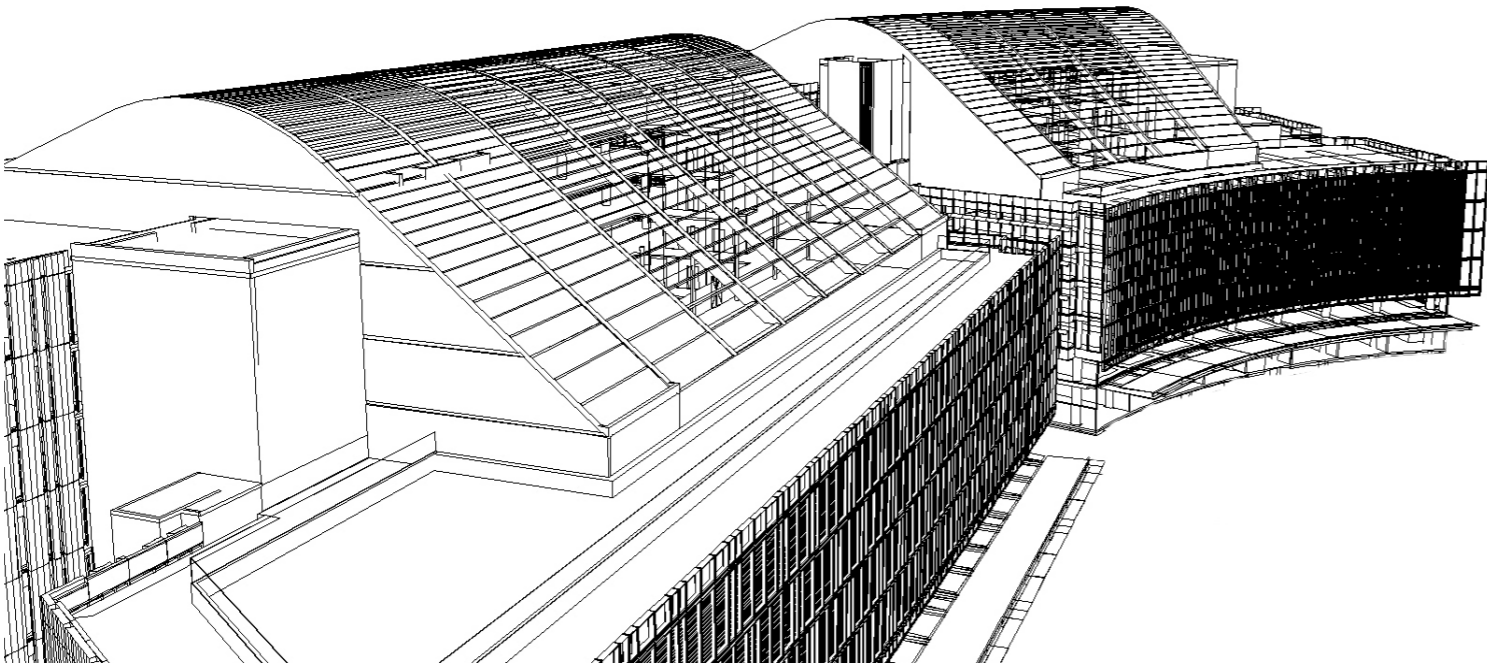


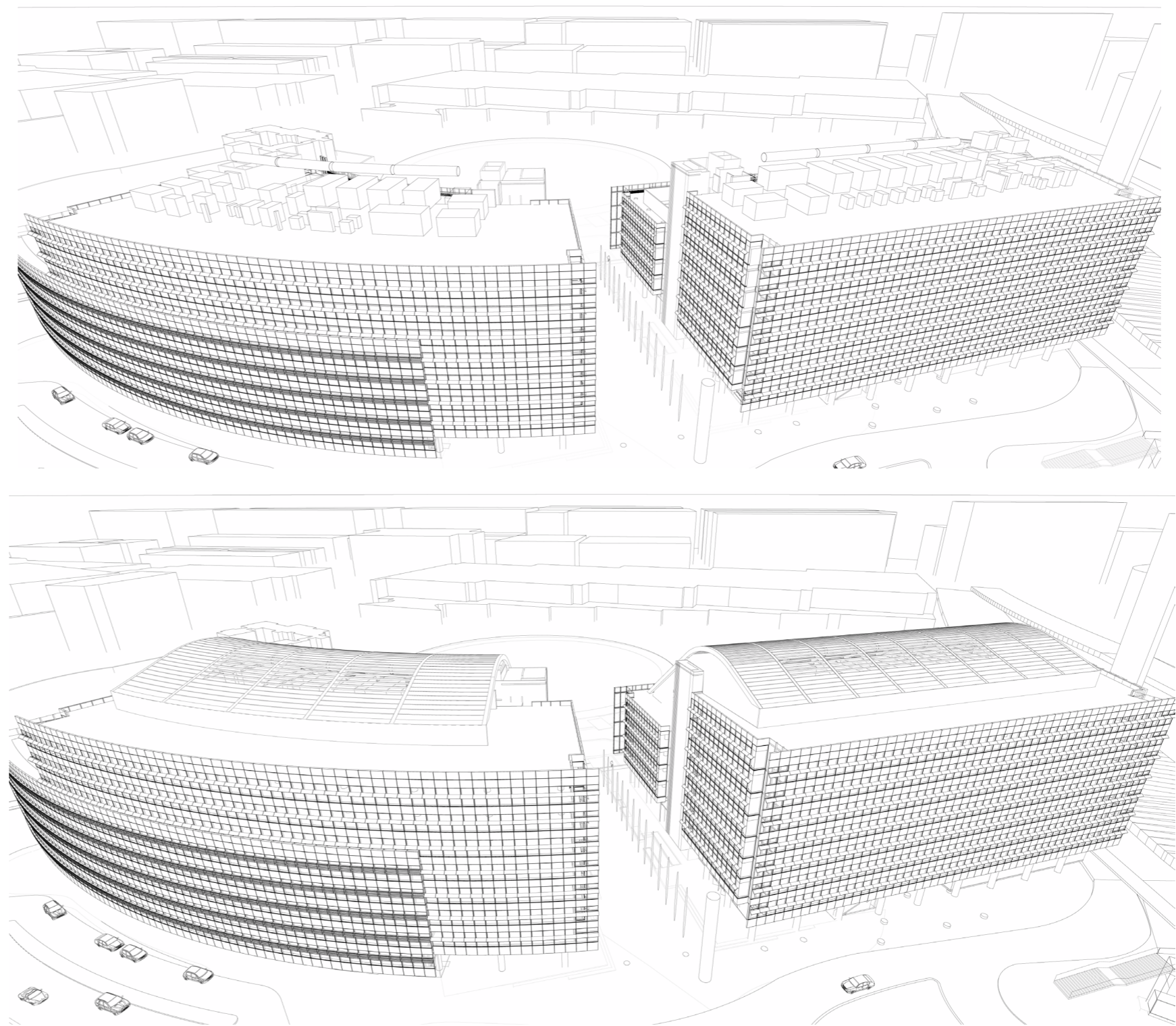
Level 9 Plant Plan

Plant and Services spatial requirement and view effects on surrounding residential building, Millennium Towers



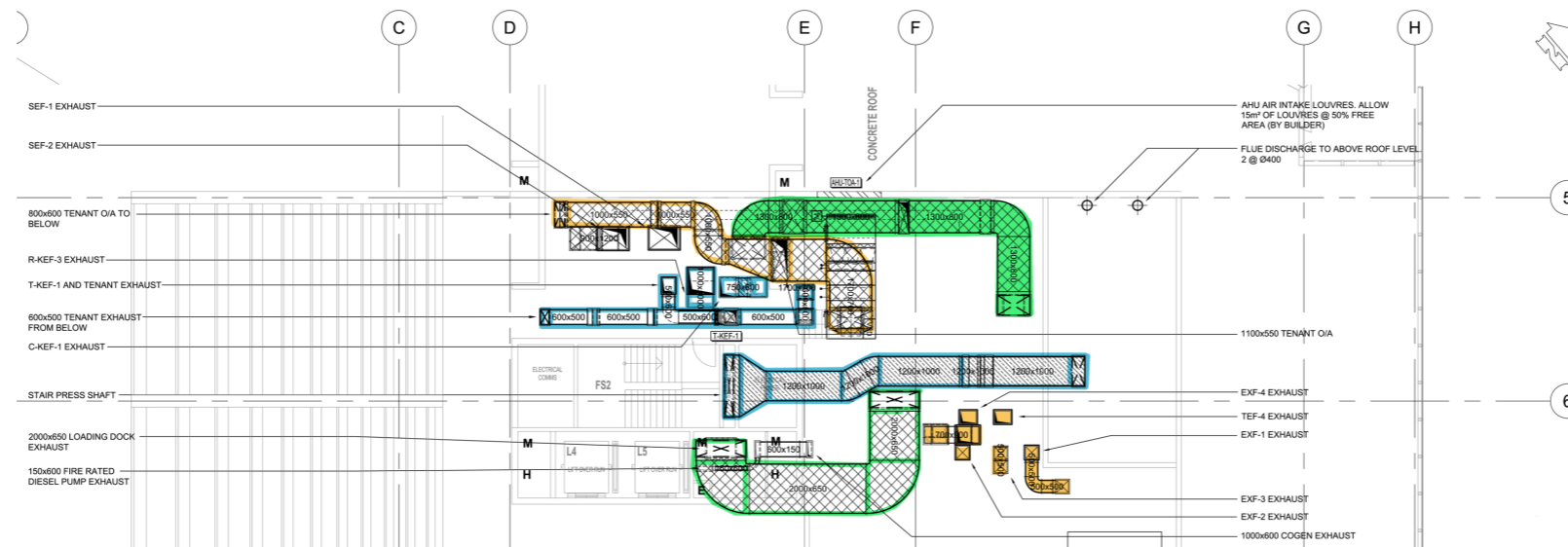
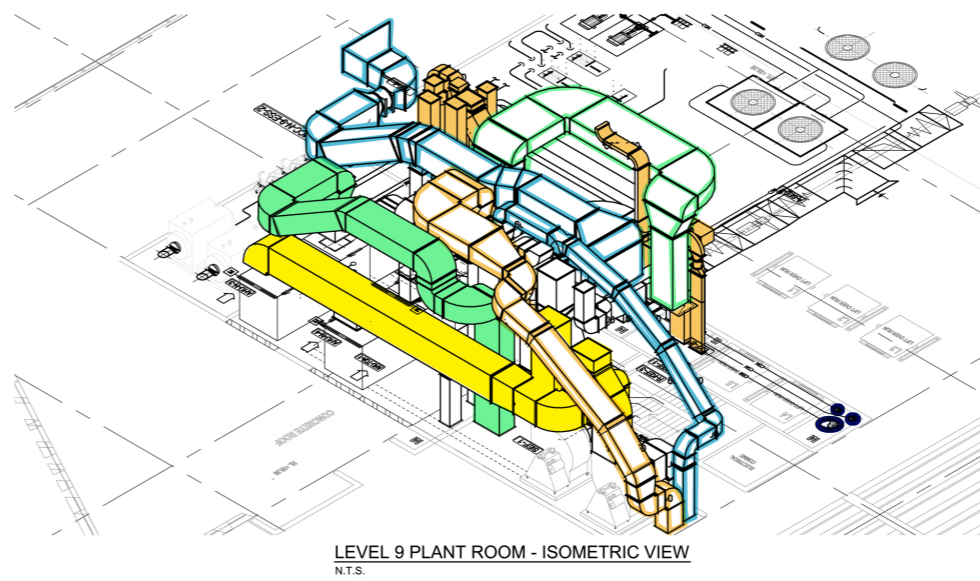
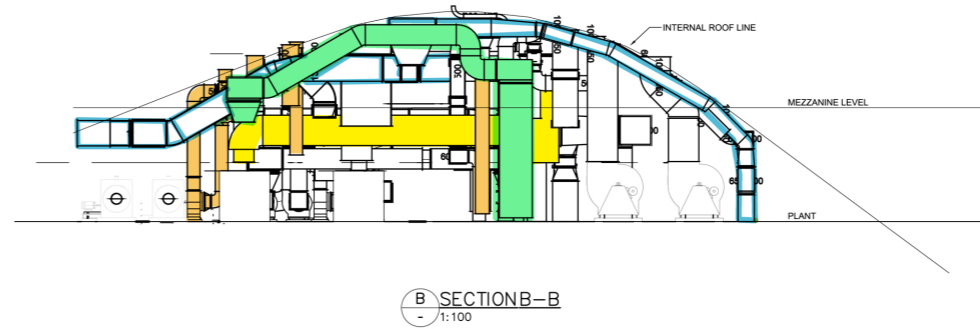
Roof and atrium spatial requirements and view effects on surrounding residential building, Millennium Towers



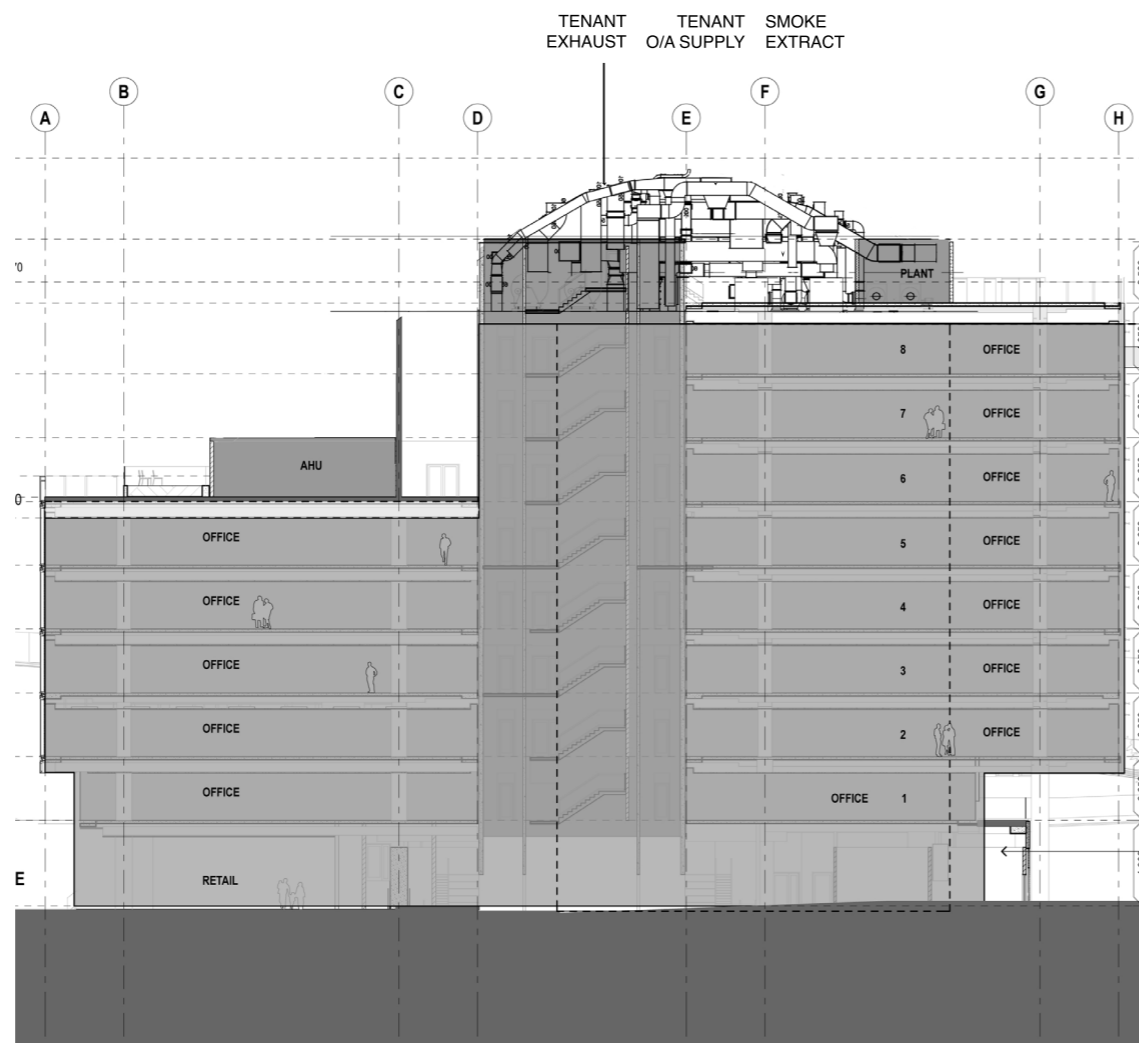


Above: Plant without roof/
Below: Plant under roof has less view impact

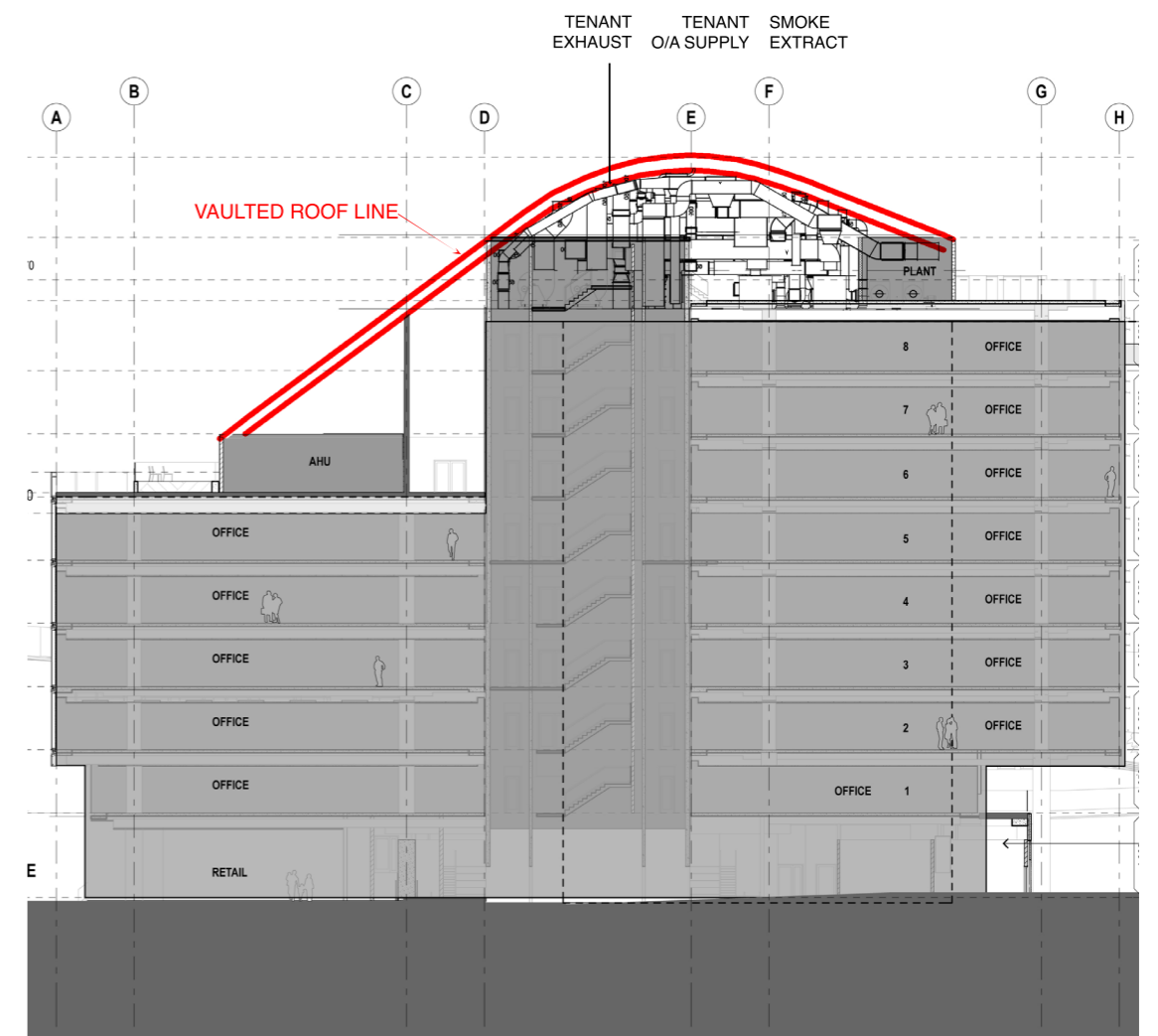
Illustrations on this page from ARUP Mechanical Engineers clearly show the roof plant equipment space requirements, atrium heat relief and smoke exhaust requirements and services transfer zones from cores to rooftop plant



Drawings courtesy of Arup Mechanical



Analytical Cross Section Without Vaulted Roof



Analytical Cross Section With Vaulted Roof

3.0

Visual Assessment

As outlined in the concept plan, the Darling Walk redevelopment will have some impact on views from surrounding buildings and Tumbalong Park when compared with the existing condition. Some views will be enhanced such as the view connection between Tumbalong Park and the CBD through the Civic Connector. Some floors in buildings to the east of the development will suffer some view loss.

The approved concept plan allows for mechanical and other building plant to be located on the roof of the building above the height limit, but by its undeveloped nature, it cannot determine the exact size and location of that plant. When analysing the developed design against the concept plan there will be some additional view loss from some floors of buildings to the east of Harbour Street.

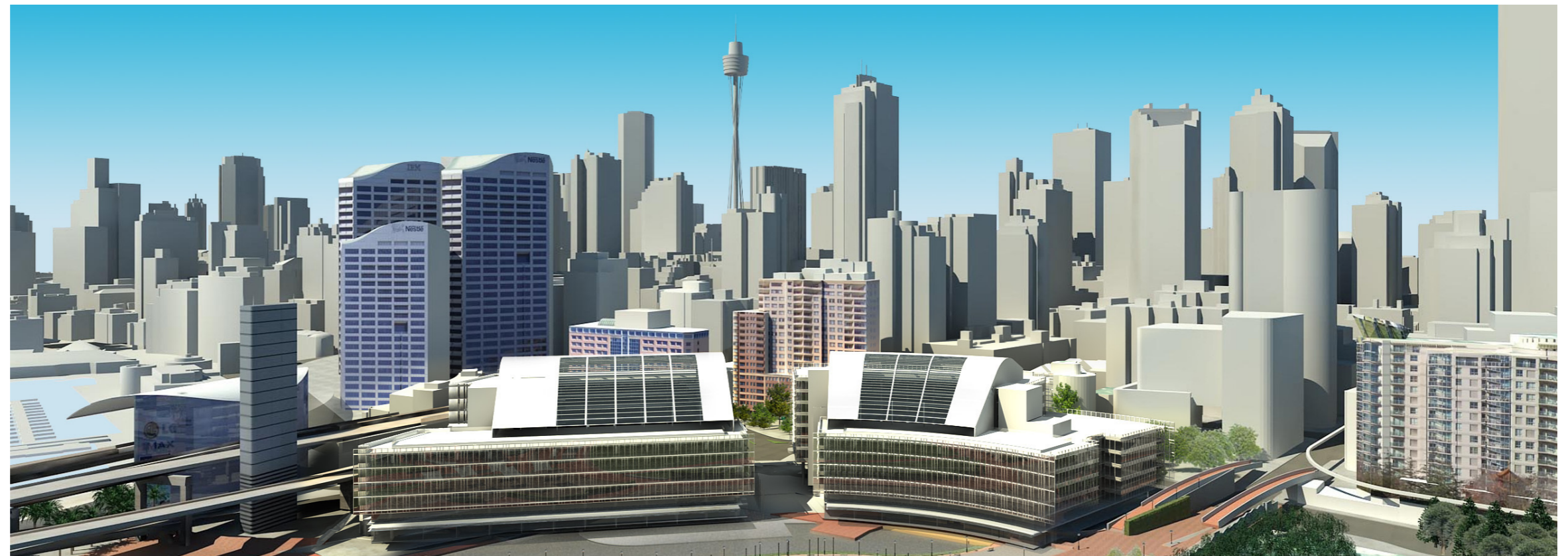
Because of the inclusion of a CBD link between the two proposed buildings, views from buildings located around Day and Bathurst Streets will be enhanced as they will achieve views not currently available of Tumbalong Park to the west as well as distant views to the horizon over Pyrmont and Ultimo.

3.1

Environmental Assessment Proposal

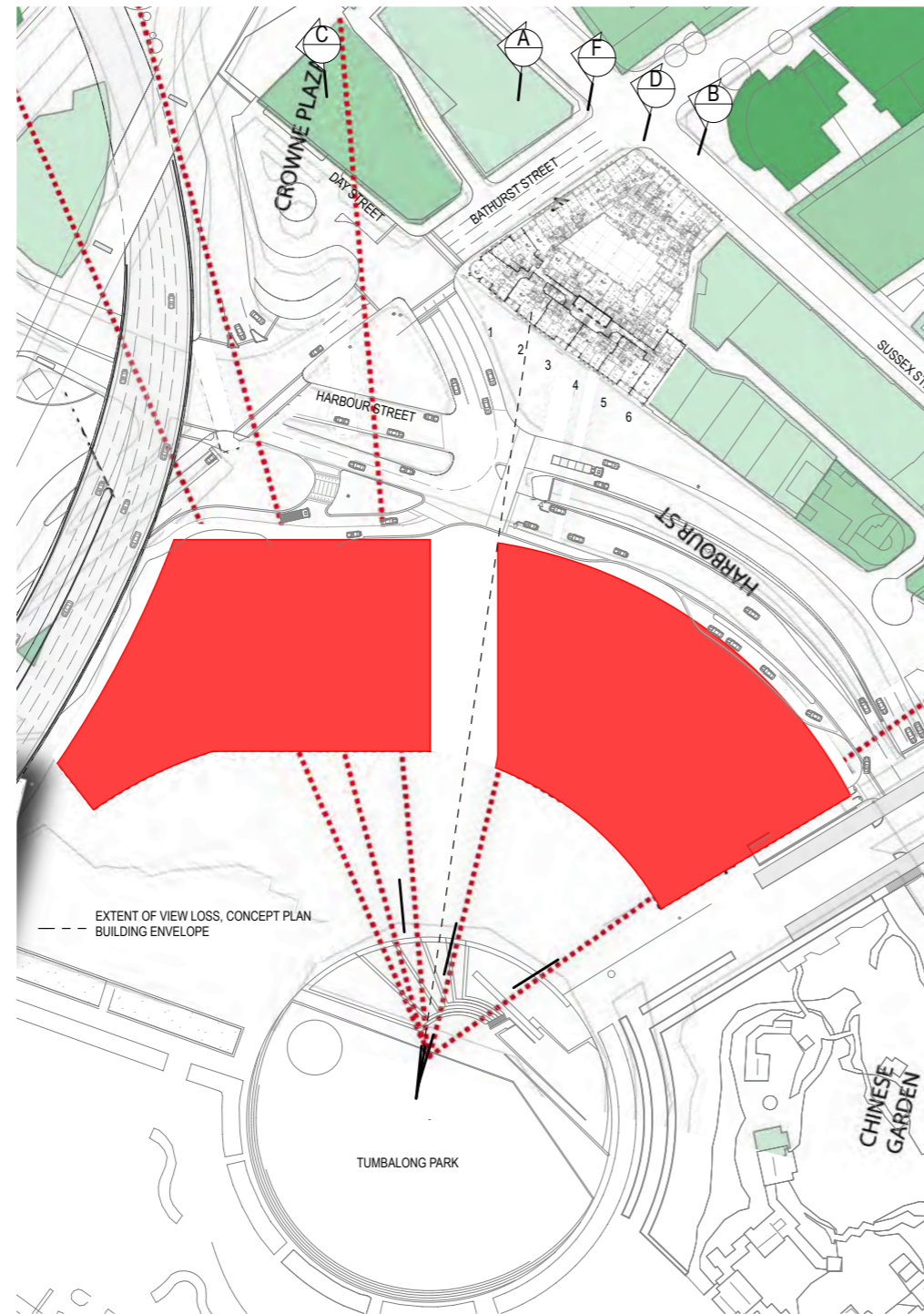
The following analysis demonstrates that the impact of the Environmental Assessment proposal on direct and oblique views to the centre of Tumbalong Park differs from the view study of the approved Concept Plan only with respect to the Millennium Towers residential building. A detailed study of the effect on views of the Concept Plan and the Environmental Assessment proposal has been undertaken for the Millennium Towers.(Sections 3.1.1 and 3.2.1 of this report)

A study has also been undertaken in response to DoP comments on the affect on view from the Harbour Garden Apartment Building. (Section 3.1.2 of this report)

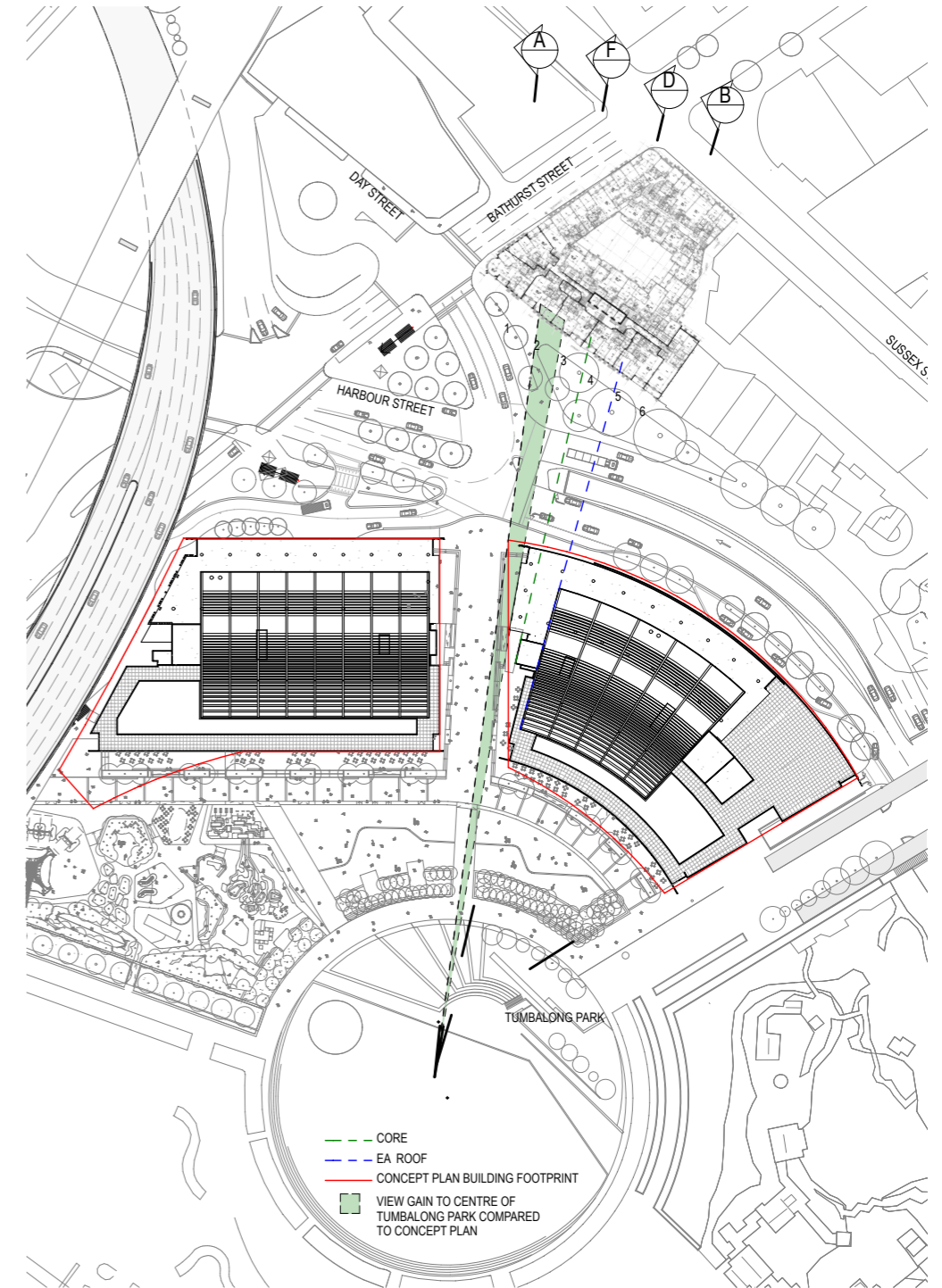


3.1.1 Millennium Towers Detailed View Study

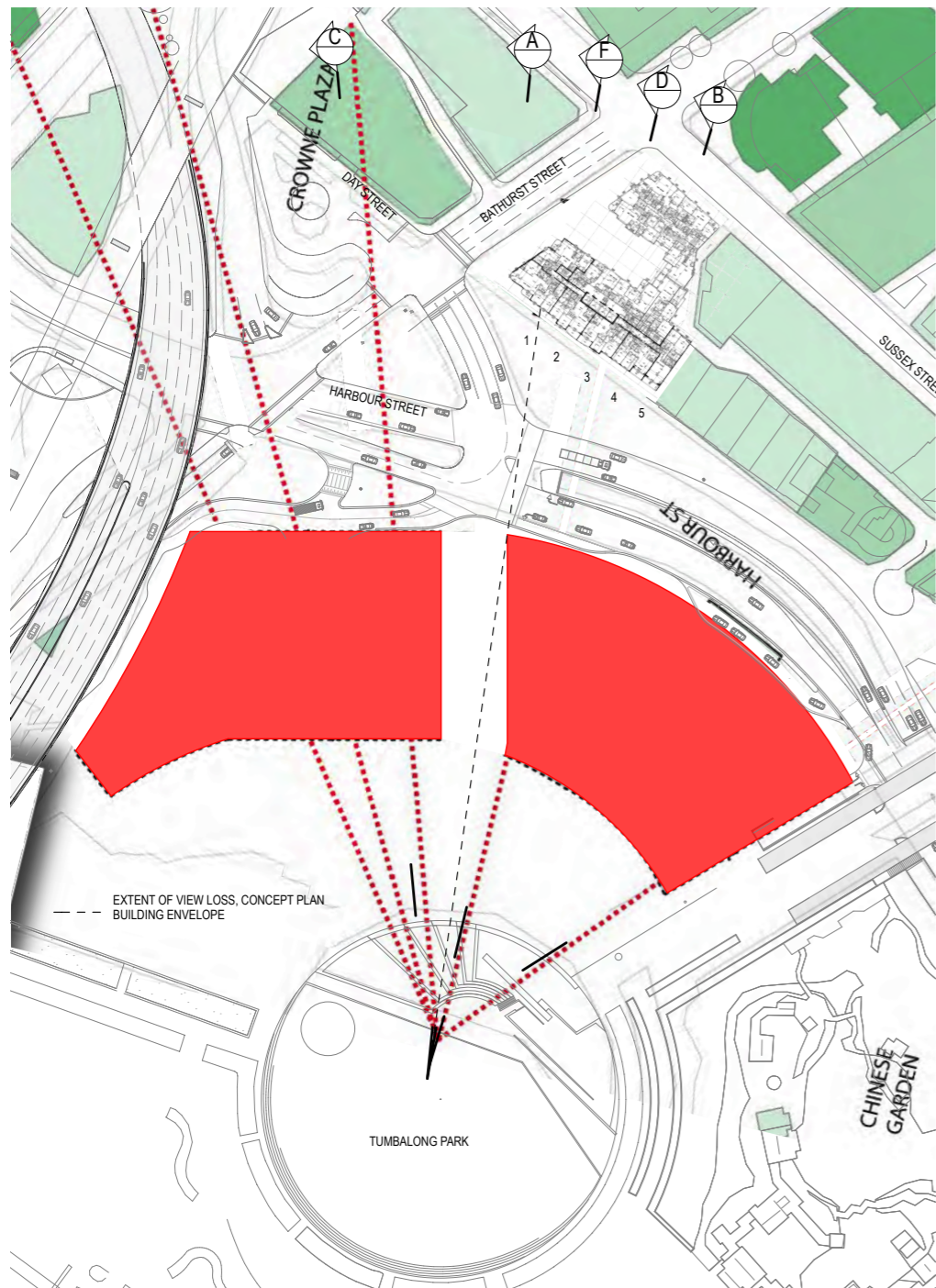
The following illustrations show the impact of the proposed development on the view loss in comparison with the concept plan and the existing Sega building. These comparisons follow the methodology of the 'View Analysis Report' by Cox Richardson, May 2008.



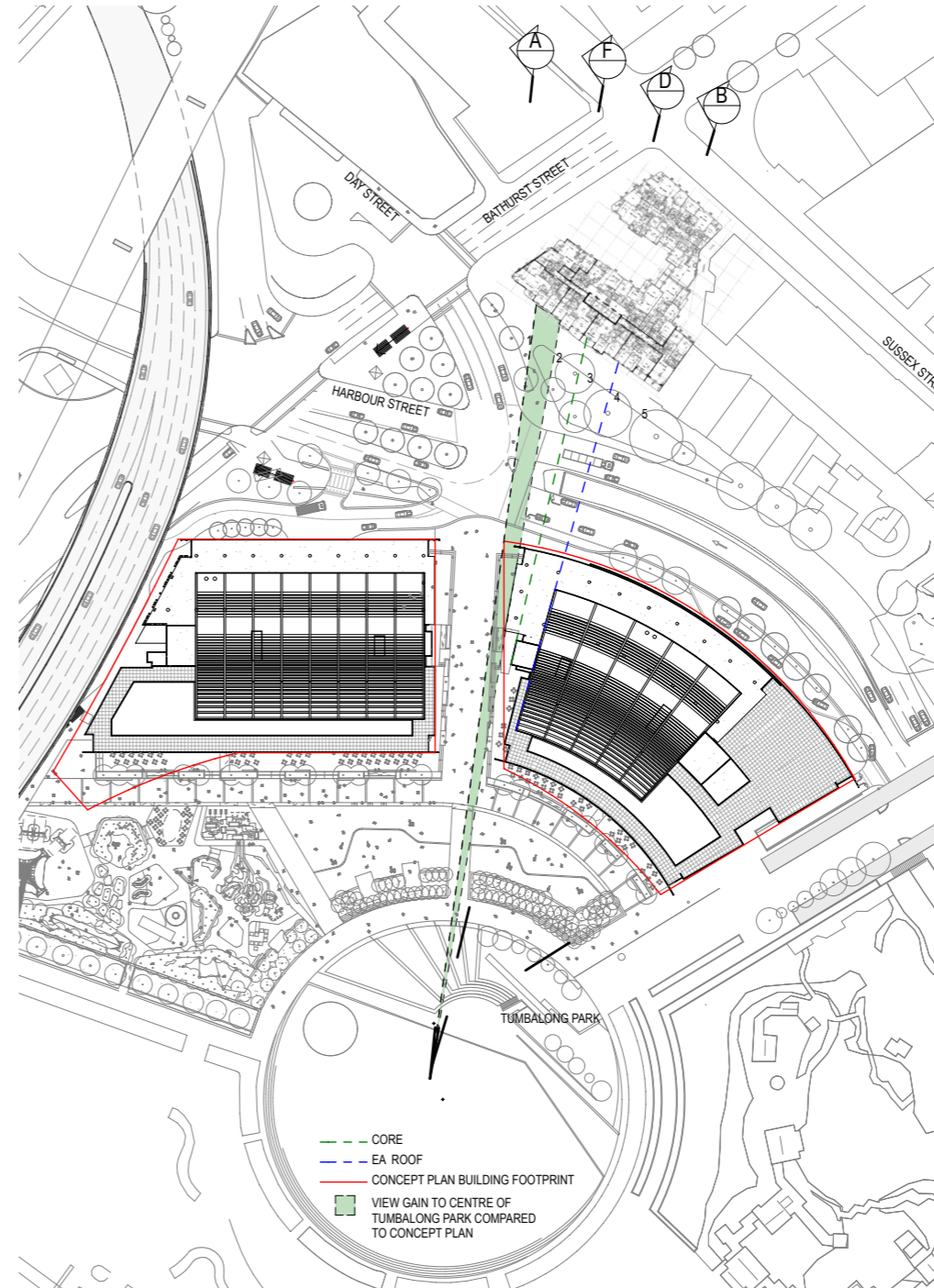
Level 01-15 Millennium Towers Plan and Views - Concept Plan Scheme



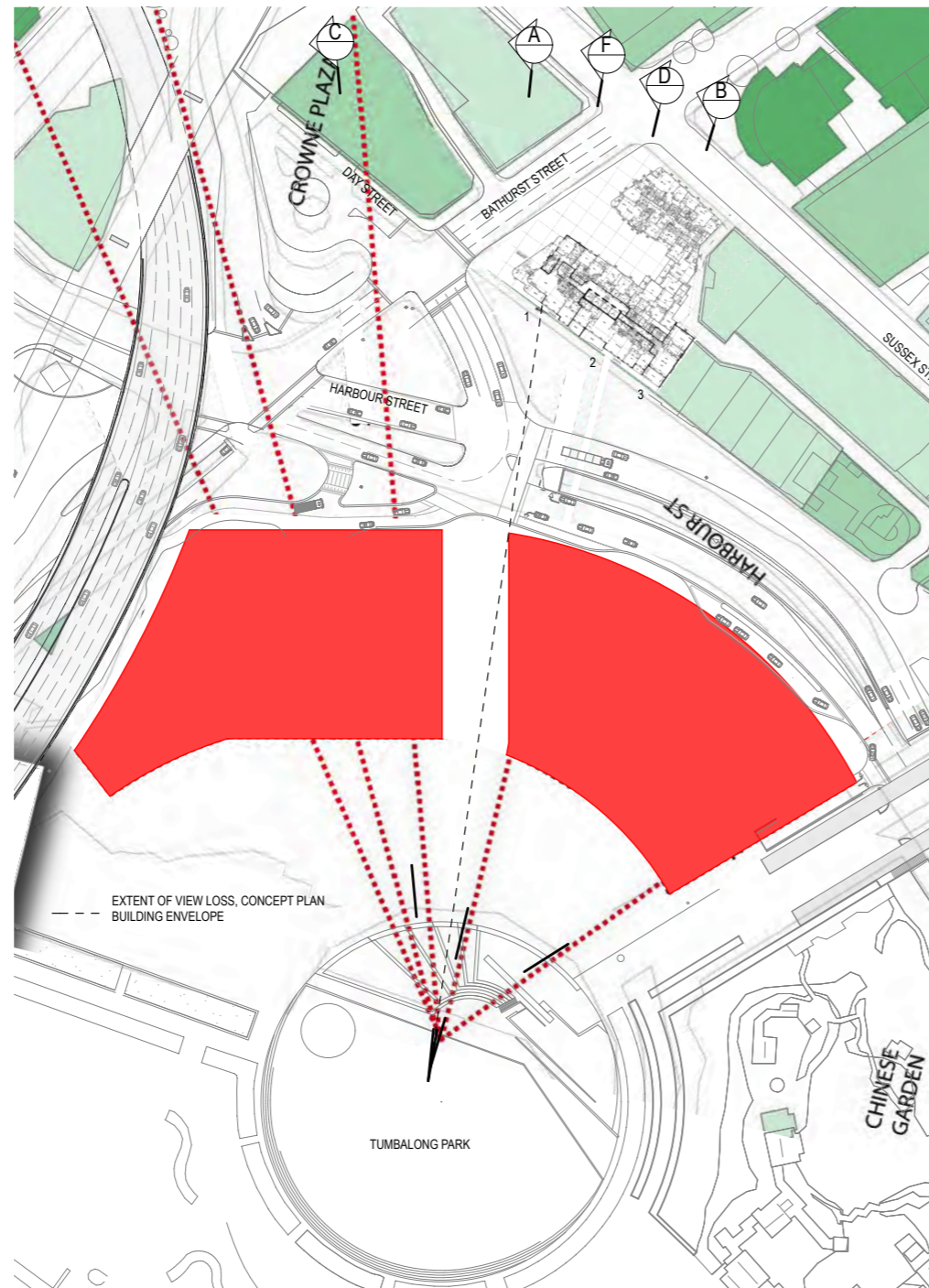
Level 01-15 Millennium Towers Plan and Views - EA Proposal



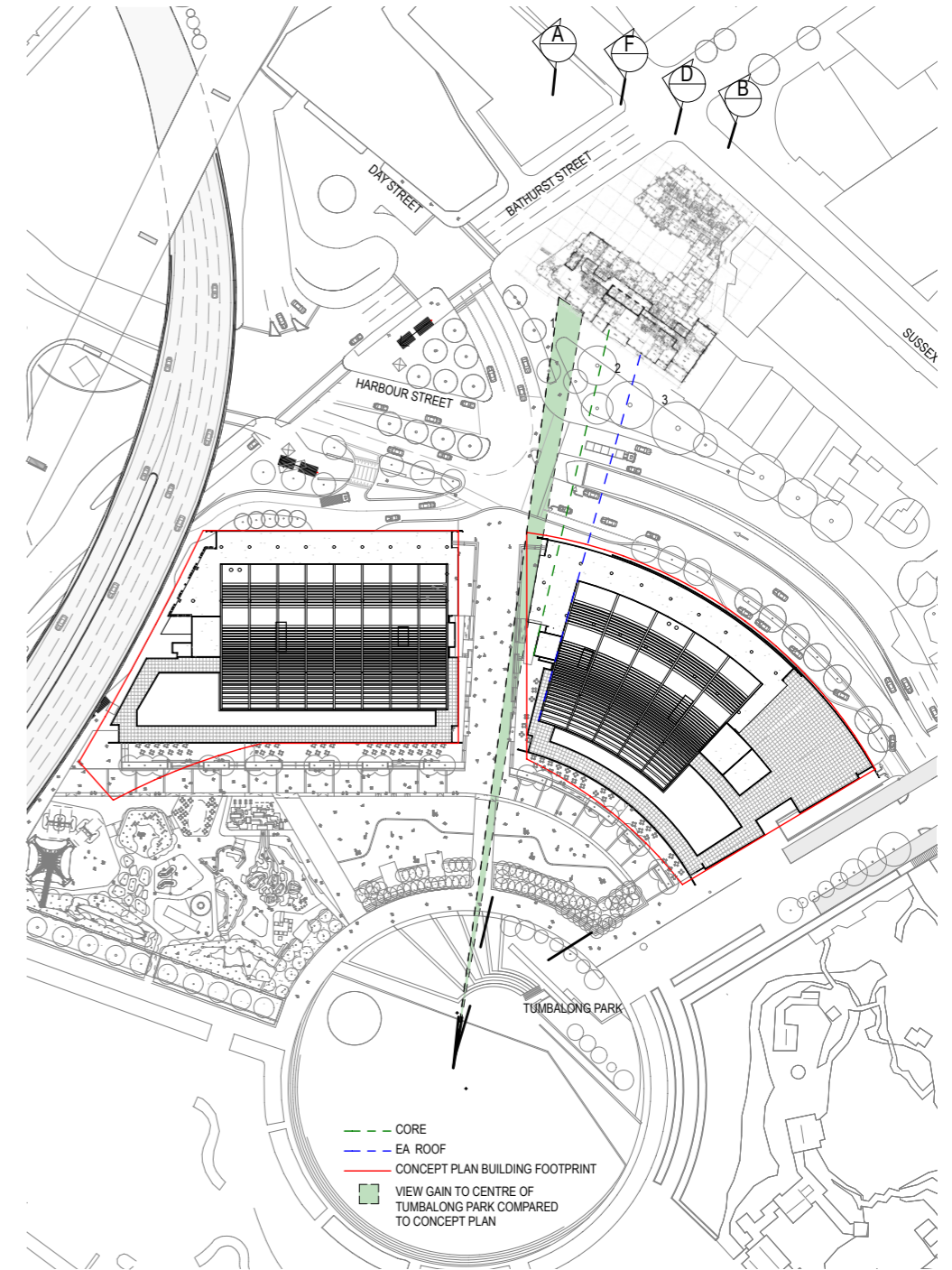
Level 16-18 Millennium Towers Plan and Views - Concept Plan Scheme



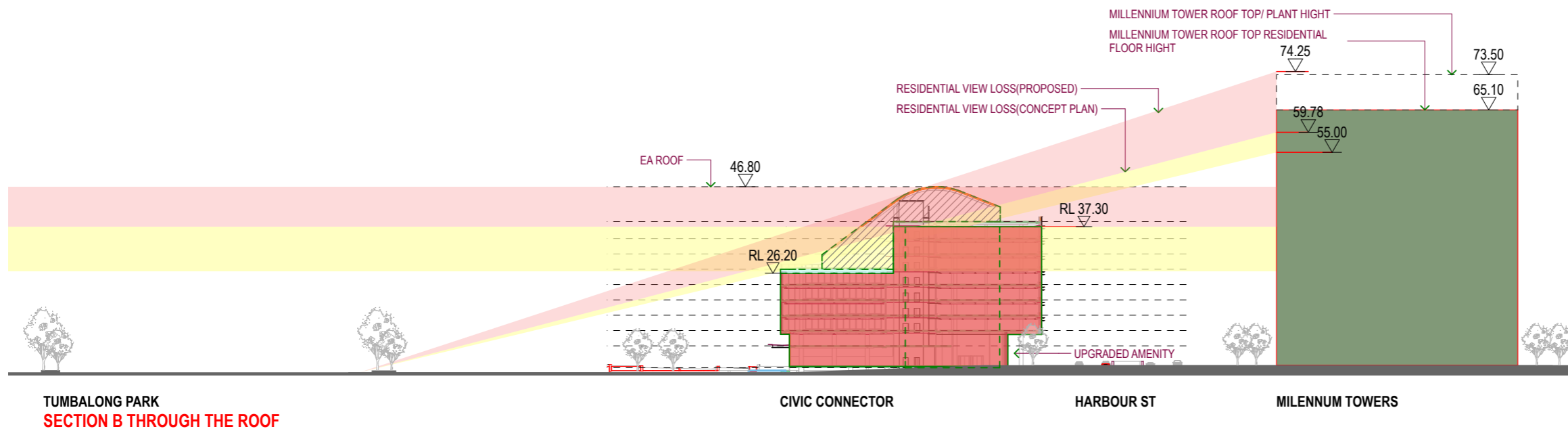
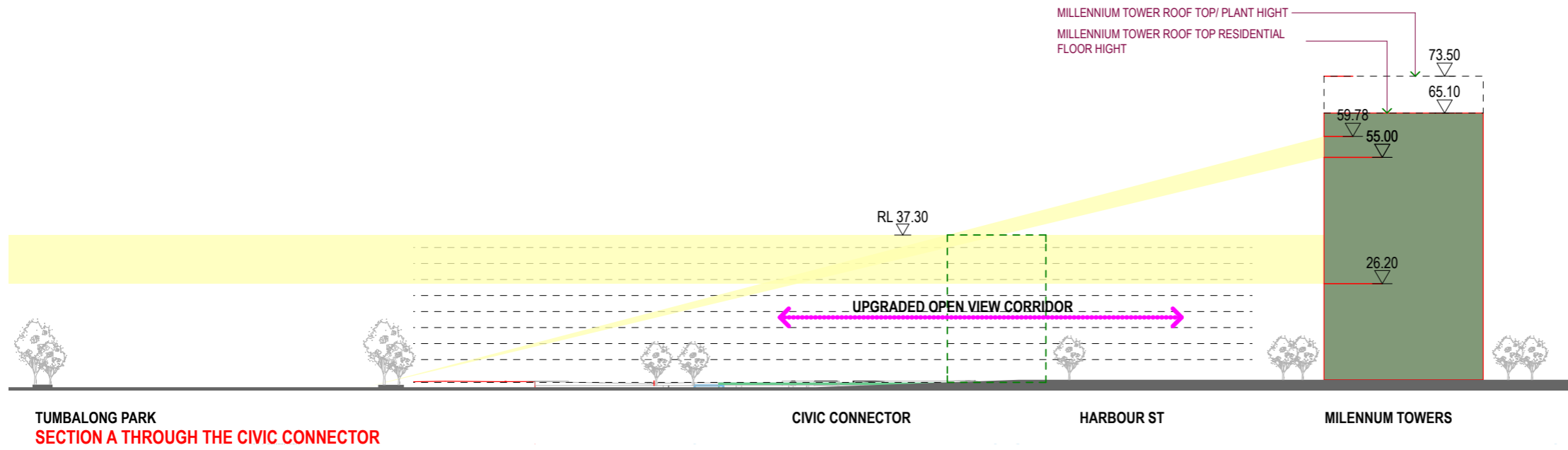
Level 16-18 Millennium Towers Plan and Views - EA Proposal

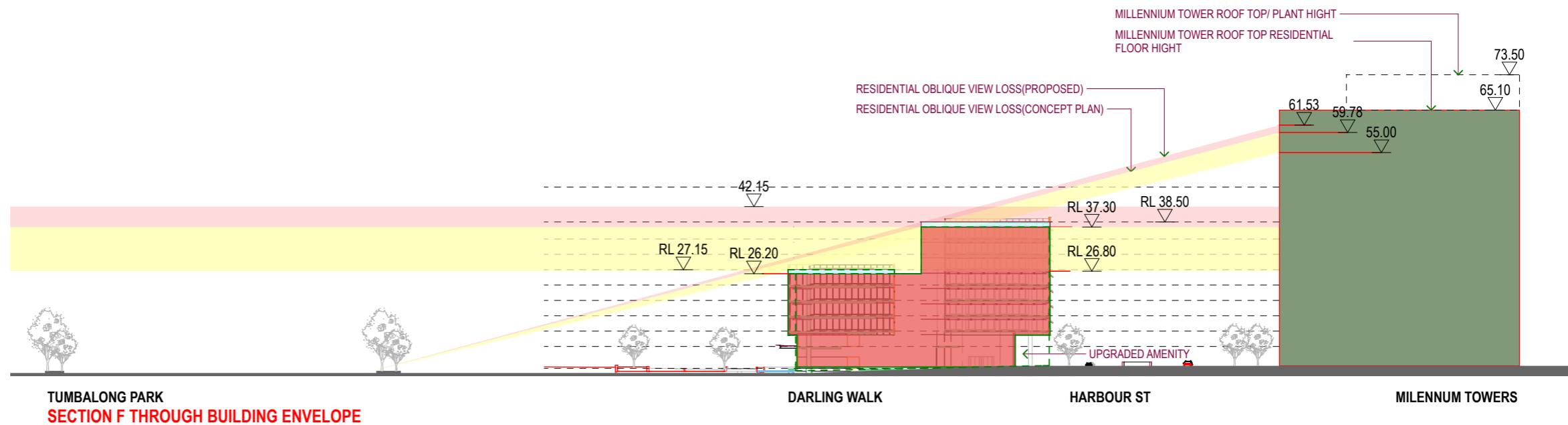
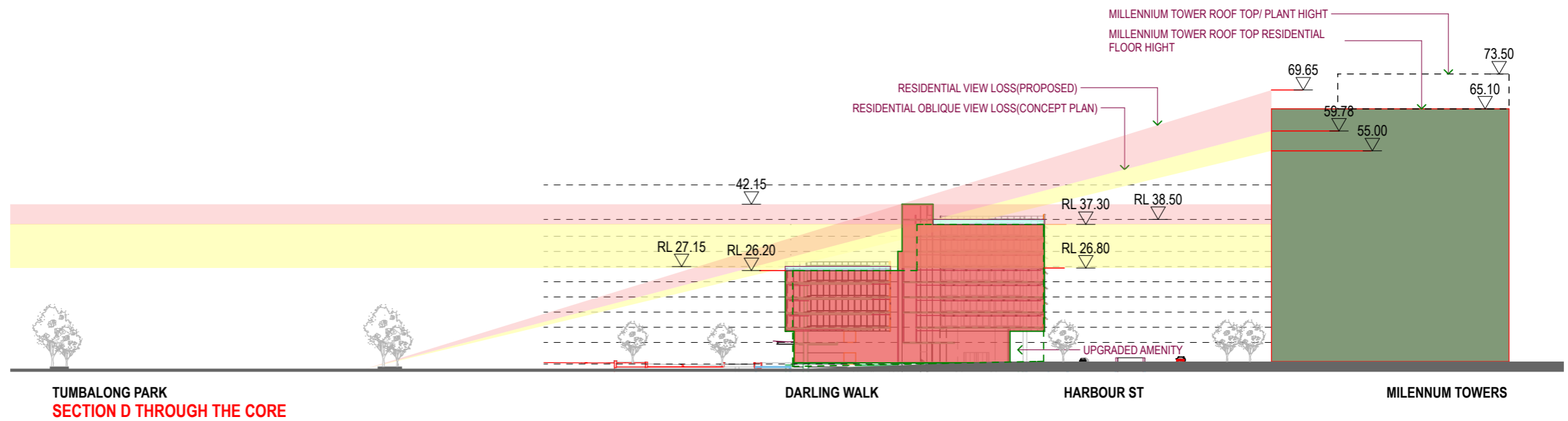


Level 19-20 Millennium Towers Plan and Views - Concept Plan Scheme

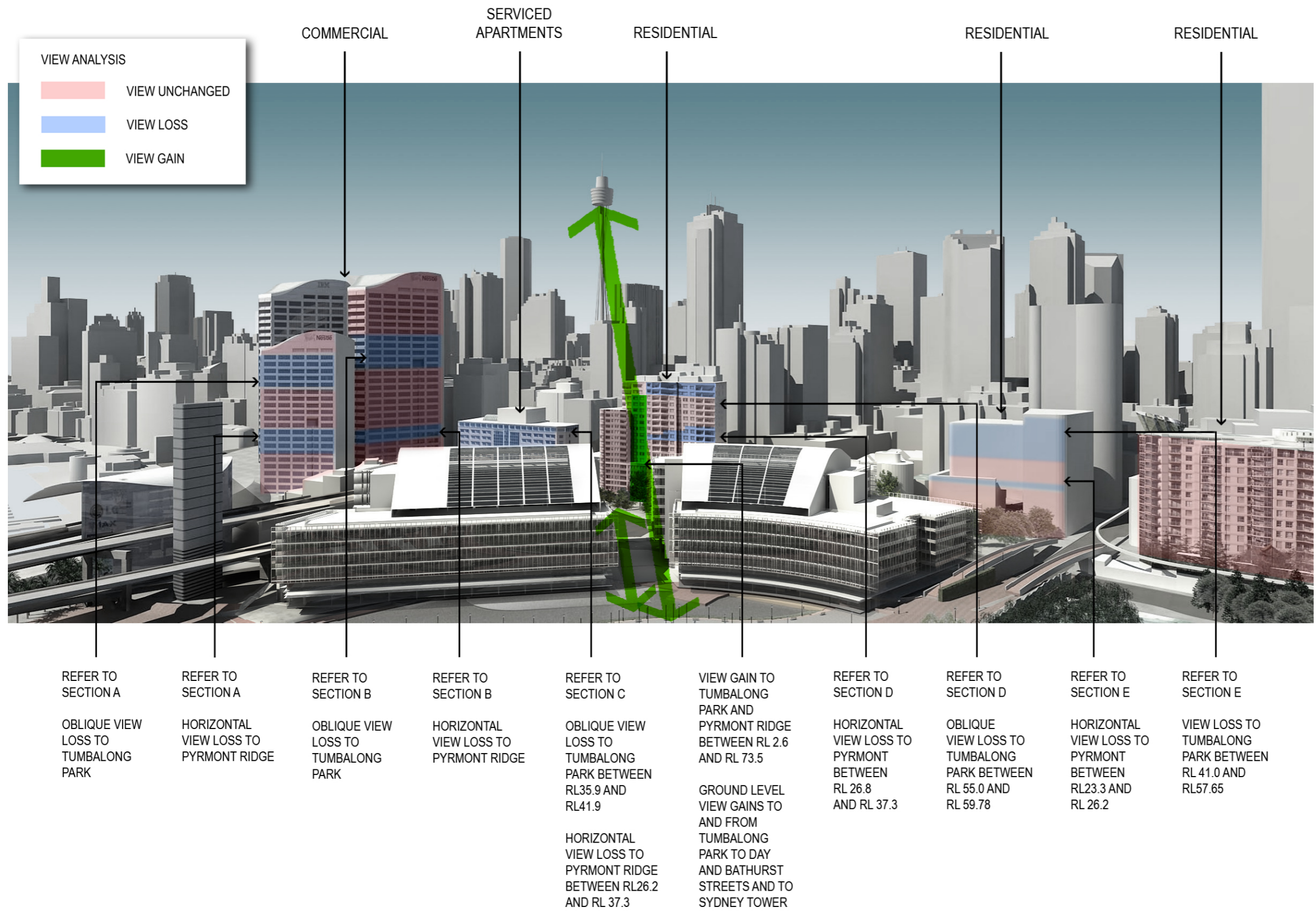


Level 19-20 Millennium Towers Plan and Views - EA Proposal





Affected Private Views Darling Harbour South Precinct - EA Proposed Scheme



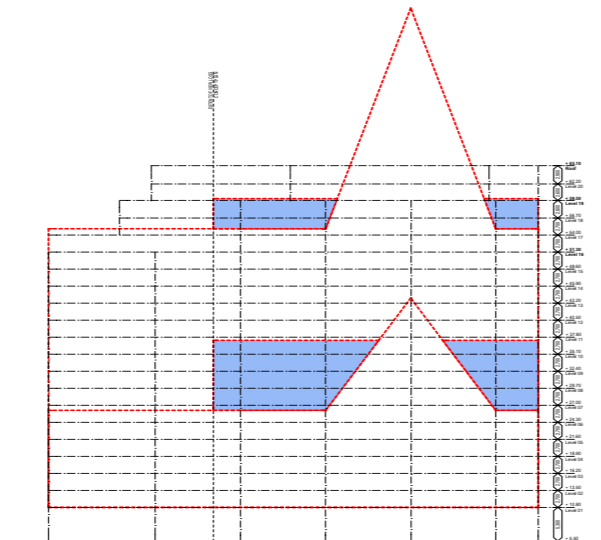


EA Scheme Oblique View Impact Study on Millennium Towers

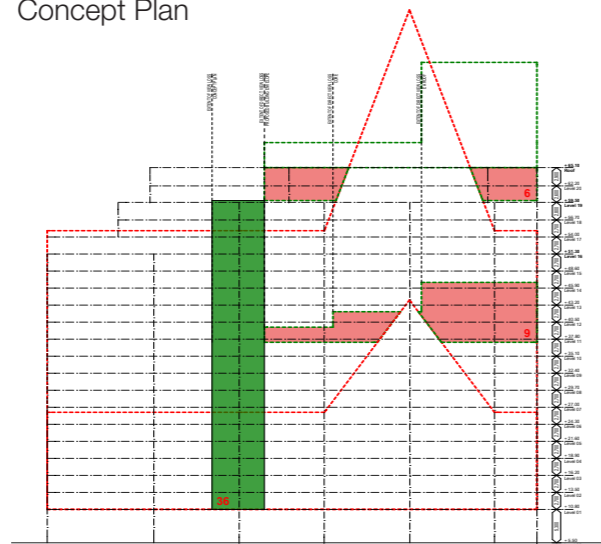
In addition to the reduced number of apartments with view loss, a number of apartments receive view improvement when compared to the Concept Plan envelope.

These apartments will have partial view loss but this loss is noticeably less than under the approved Concept Plan.

MILLENNIUM TOWERS VIEW IMPACT	Improvement to Views
CONCEPT PLAN <i>(Excludes Impact of Roof and Plant)</i>	0
EA PROPOSAL <i>(Includes Impact of Roof and Plant)</i>	18



Concept Plan



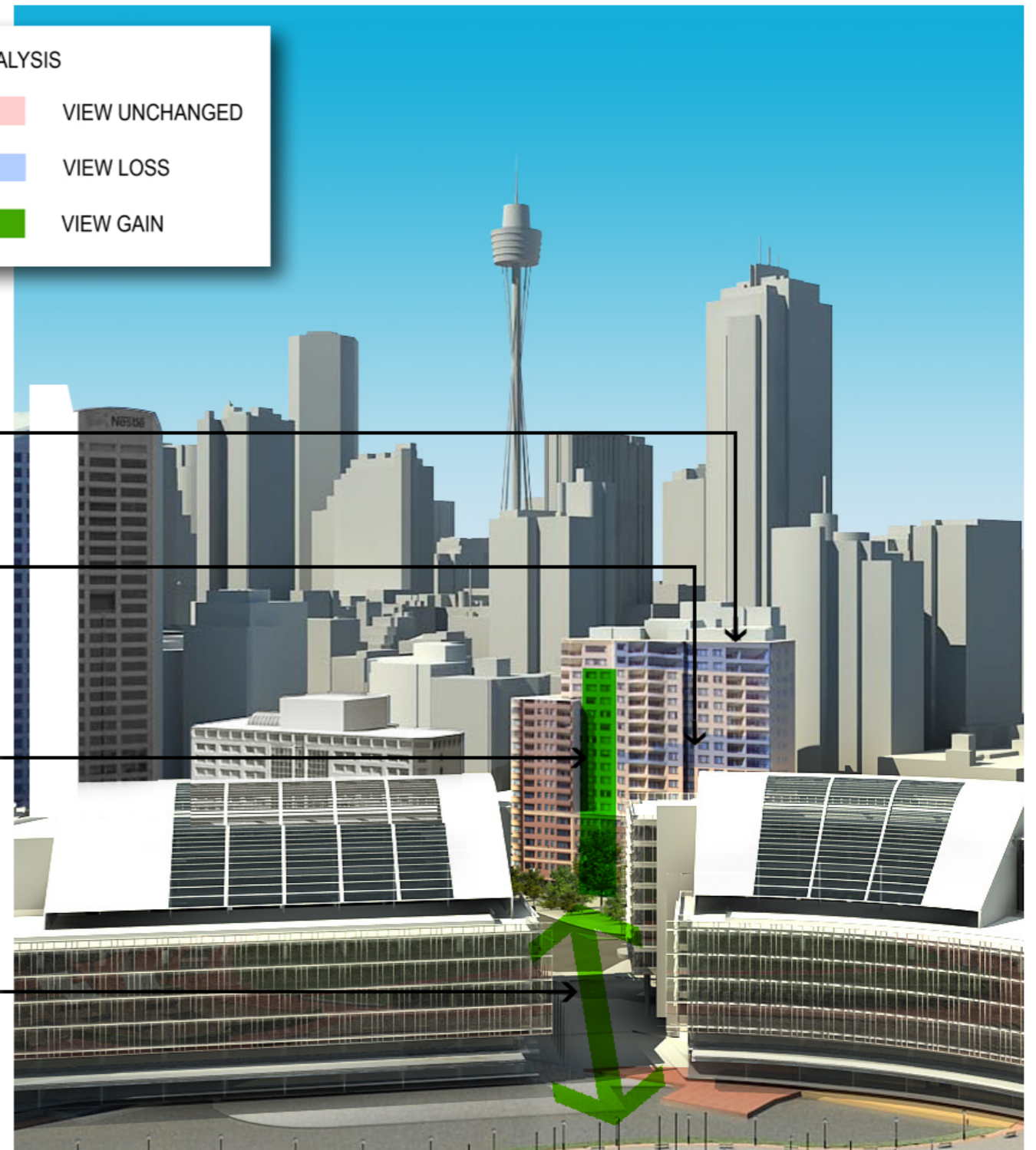
EA Proposal

- VIEW GAIN COMPARED TO CONCEPT PLAN
- EA PROPOSAL
- CONCEPT PLAN

VIEW ANALYSIS

- VIEW UNCHANGED
- VIEW LOSS
- VIEW GAIN

- 12 RESIDENCES
OBLIQUE
VIEW LOSS TO
TUMBALONG PARK
DUE TO ROOF/
PLANT
- 27 RESIDENCES
HORIZONTAL VIEW
LOSS TO PYRMONT
DUE TO ROOF/
PLANT
- 18 RESIDENCES:
VIEW GAIN TO
TUMBALONG
PARK AND
PYRMONT RIDGE
BETWEEN
FLOORS 1 AND 21
(RL 2.6 AND
RL 73.5)
DUE TO WIDENED
CIVIC CONNECTOR
- GROUND LEVEL
VIEW GAINS TO
AND FROM
TUMBALONG PARK
TO DAY AND
BATHURST
STREETS AND TO
SYDNEY TOWER



Millennium Towers Detailed View Analysis - Environmental Assessment Proposal

3.1.2 Harbour Gardens Apartments Detailed View Study

Further study of the effect on views on the Harbour Gardens Apartments with the Environmental Assessment proposal has been undertaken below.

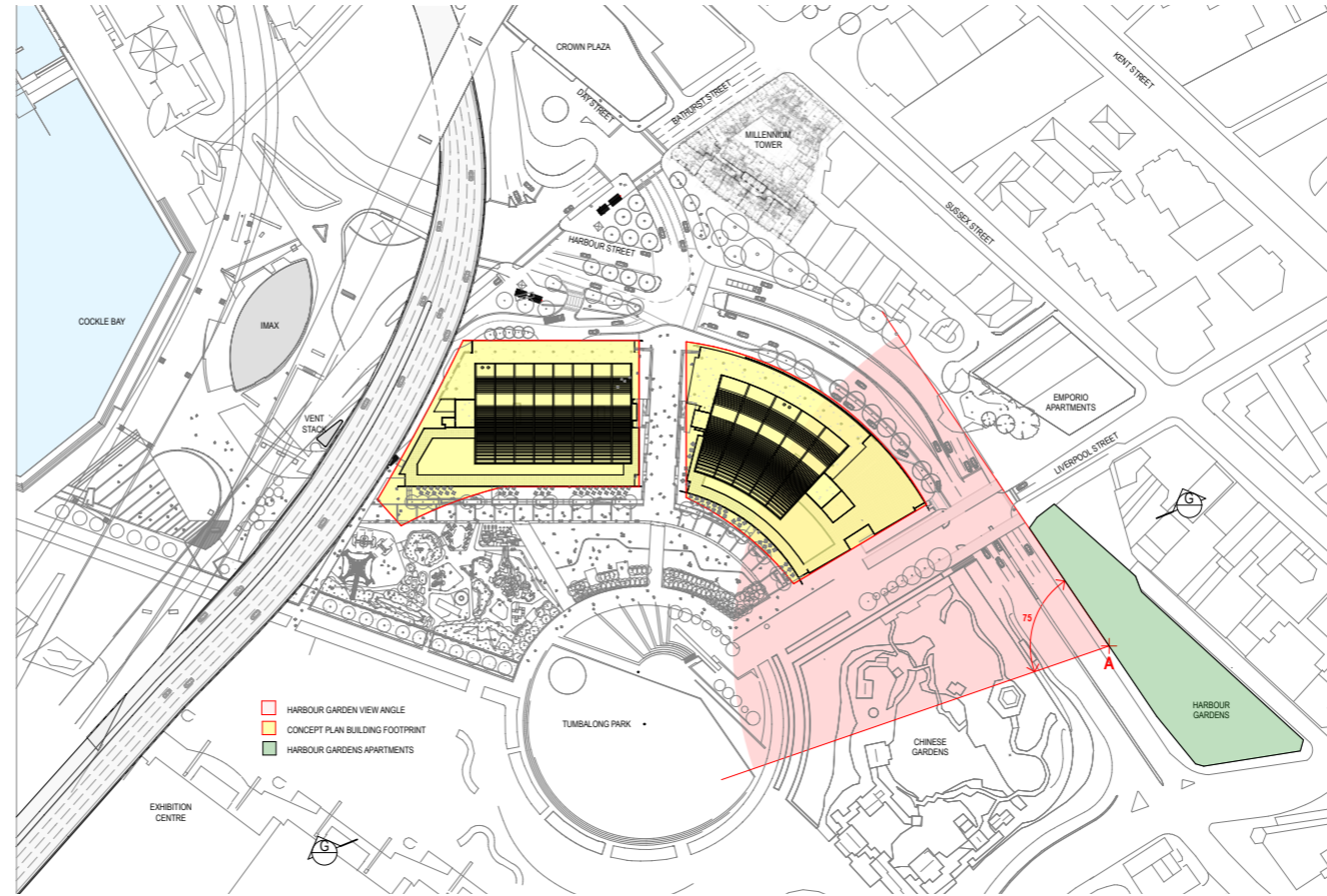
Computer modelling and visualisation have been used to compare the views for the Harbour Gardens Apartments of the concept Plan and EA proposal when compared to the existing Sega World building.

Views have been taken from three levels representing eye level of the two Concept Plan height controls plus the top floor of the Harbour Gardens Apartments.

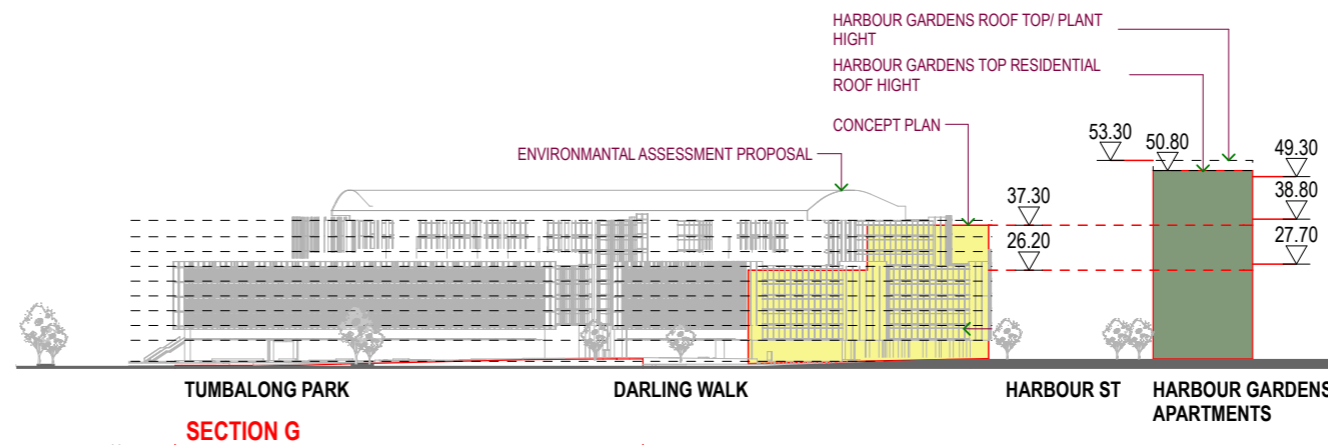
The Study 3D views have been taken from the centre of the Harbour Gardens Apartments in Plan (point A) to represent the median angle for view analysis.

These studies demonstrate the EA Proposal result in no significant difference in view loss to Cockle Bay when compared to the Concept Plan (excluding rooftop plant or roof feature).

The 3D views also reinforce the importance of the proposed roof form as the 'Fifth Facade' of the building which both conceals rooftop plant and provides a sculptural form to the proposal.



Plan



Sega Building
View from Harbour Gardens Apartments RL 27.70M



Concept Plan
View from Harbour Gardens Apartments RL 27.70M



Environmental Assessment Proposal
View from Harbour Gardens Apartments RL 27.70M





Sega Building
View from Harbour Gardens Apartments RL 38.80M



Concept Plan
View from Harbour Gardens Apartments RL 38.80M



Environmental Assessment Proposal
View from Harbour Gardens Apartments RL 38.80M

Sega Building
View from Harbour Gardens Apartments RL 49.30M



Concept Plan
View from Harbour Gardens Apartments RL 49.30M



Environmental Assessment Proposal
View from Harbour Gardens Apartments RL 49.30M



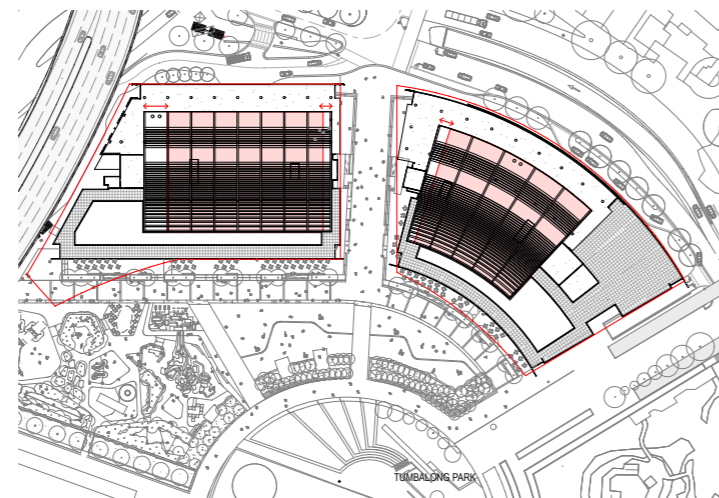
3.2

Lowered and Shortened Roof Proposal

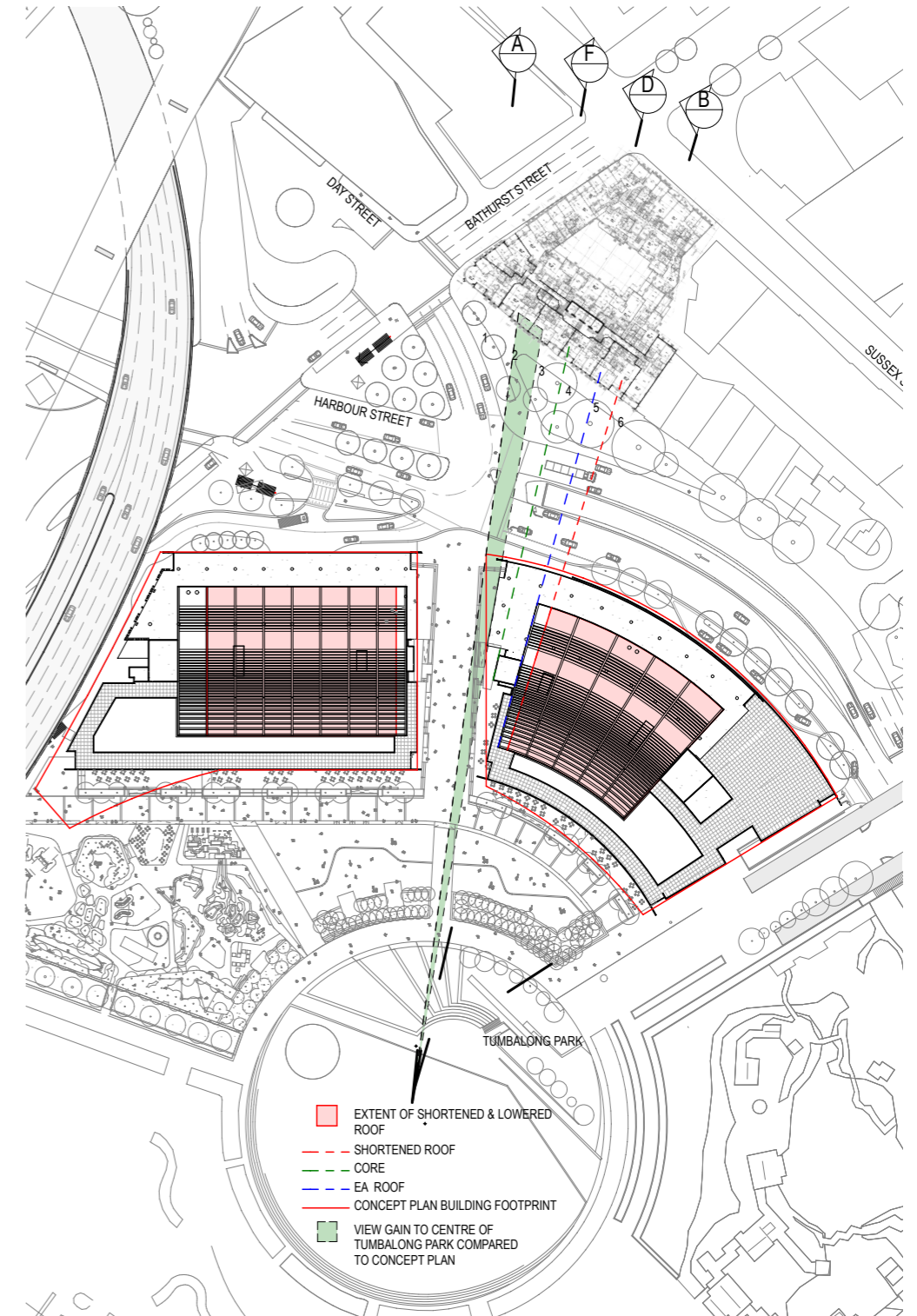
In response to initial feedback from the Department of Planning regarding the proposed roof and the effect on views, a study has been undertaken to investigate ways to reduce the extent of feature roof and the corresponding effect on views.

The option for a lowered and shortened roof reduces the height of the roof by 0.8m, the maximum possible within services constraints, shortens the extent of the northern roof by one bay at the northern end and 3m at the southern end the southern roof by 2.8m at the northern end only. (@ its western side) The extent of the Lowered and Shortened Roof is shaded pink in figure below.

View impacts as a result of this measure have been analysed using the same methodology as the Environmental Assessment proposal and Concept Plan view analysis.

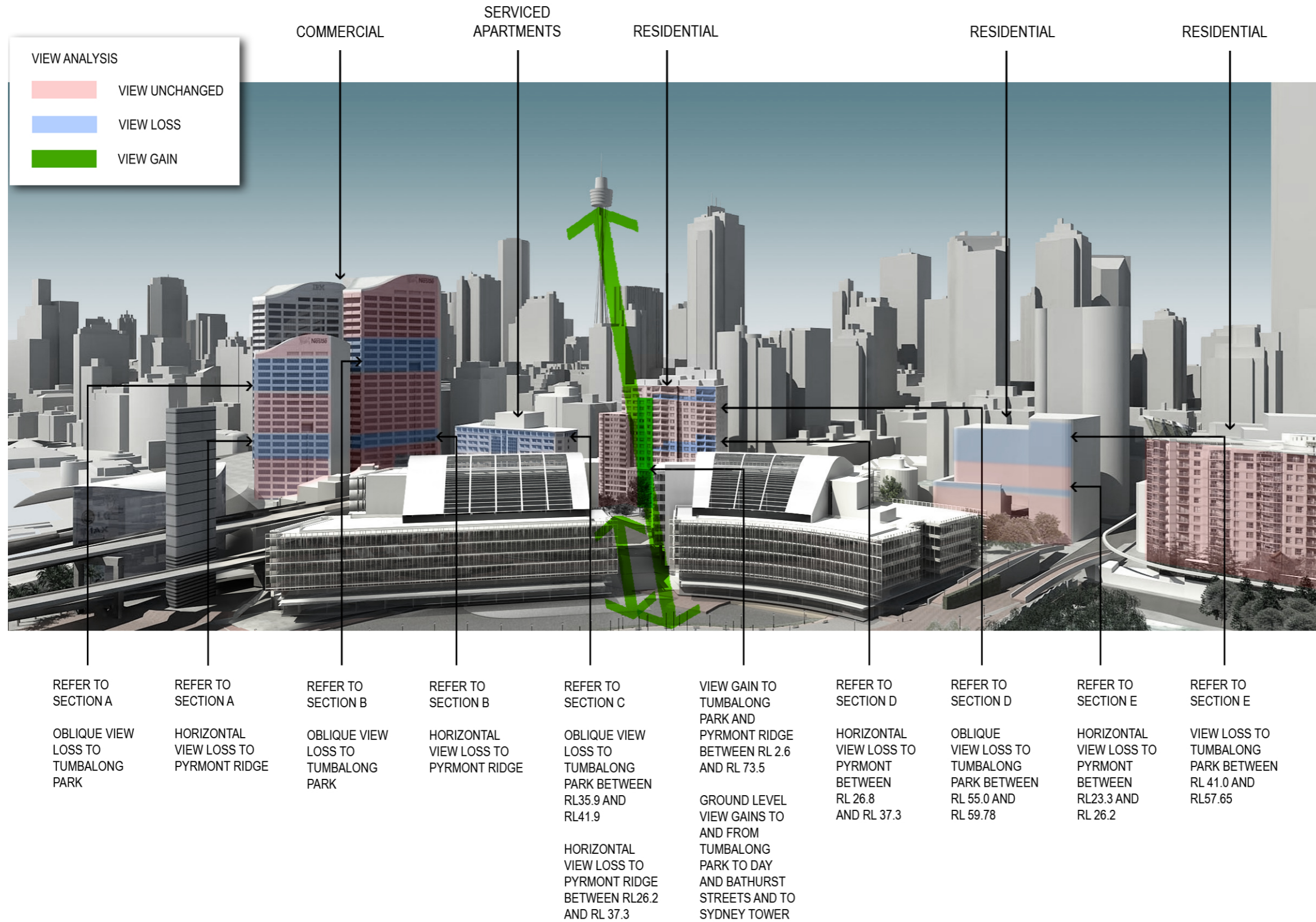


Lowered & Shortened Roof Proposal



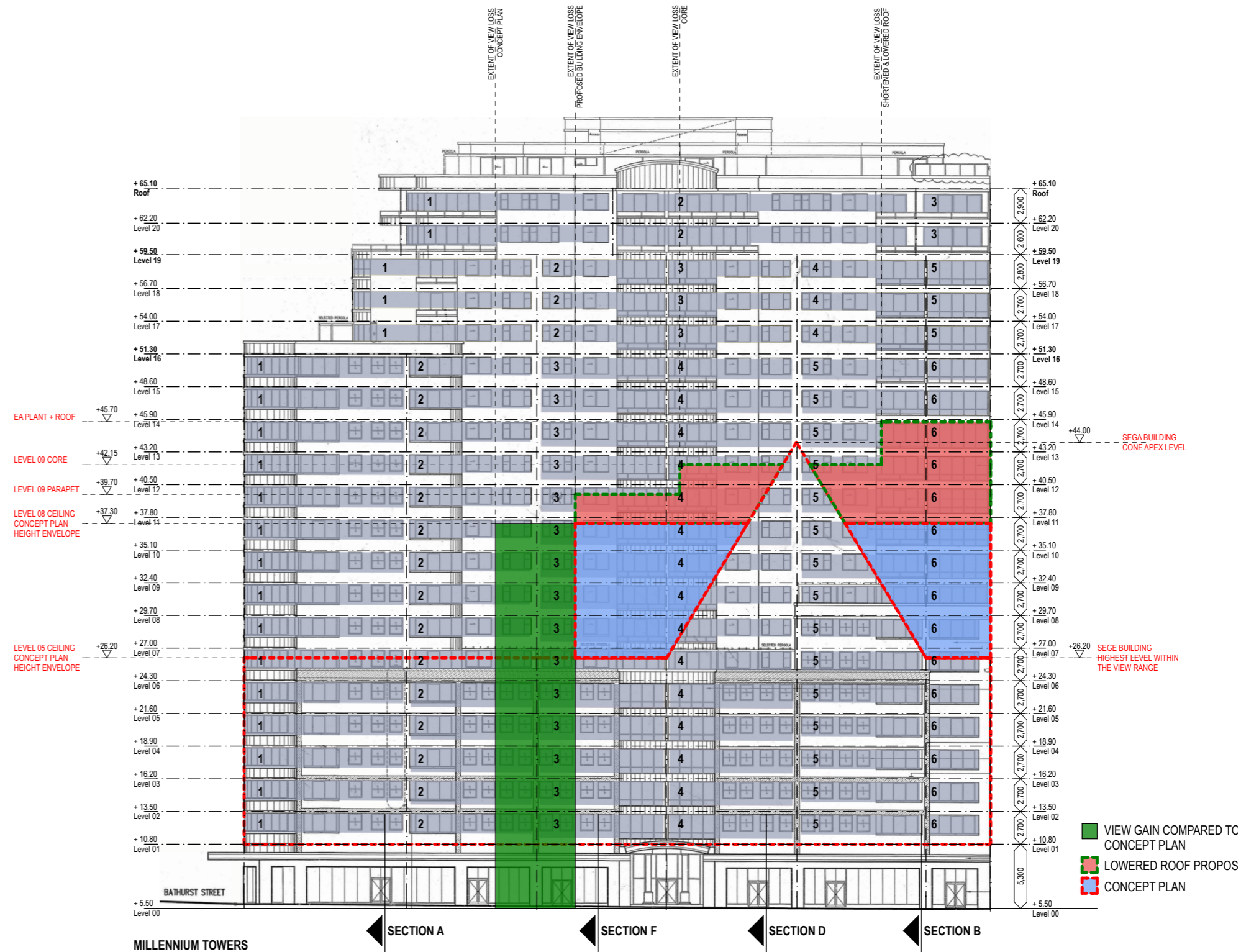
Level 01-15 Millennium Towers Plan and Views - Lowered & Shortened Roof Proposal

Affected Private Views Darling Harbour South Precinct - Lowered and Shortened Roof Proposal



3.2.1 Millennium Towers Detailed View Study

The following illustrations show the impact of the proposed shortened and lowered Roof option on the view loss in comparison with the concept plan and the existing Segra building and follow the methodology of the 'view analysis report' by Cox Richardson, May 2008



Lowered and Shortened Direct View Impact Study on Millennium Towers

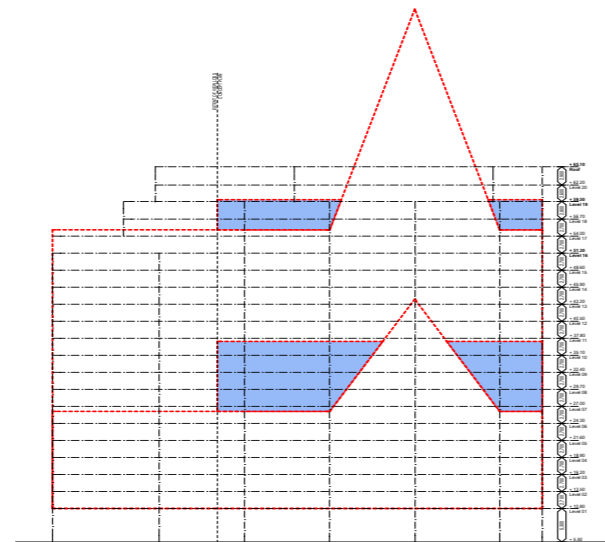


Lowered and Shortened Oblique View Impact Study on Millennium Towers

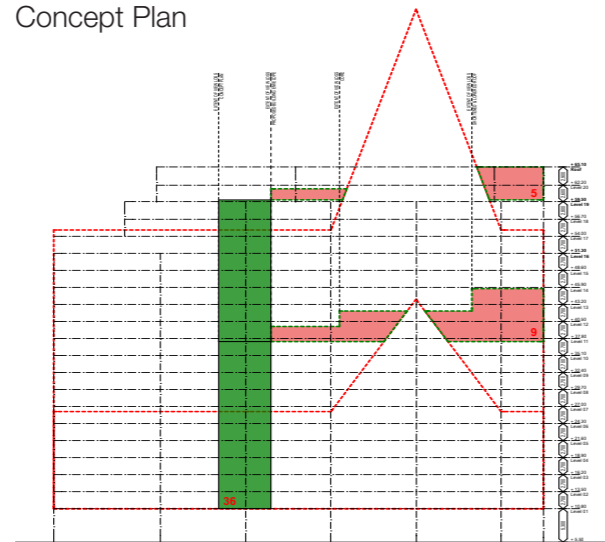
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These apartments will have partial view loss but this loss is noticeably less than under the approved Concept Plan.

MILLENNIUM TOWERS VIEW IMPACT	Improvement to Views
CONCEPT PLAN (Excludes Impact of Roof and Plant)	0
REVISED EA ROOF OPTION (Includes Impact of Roof and Plant)	20



Concept Plan



Lowered and Shortened Roof Option

- VIEW GAIN COMPARED TO CONCEPT PLAN
- EA PROPOSAL
- CONCEPT PLAN

Millennium Towers Detailed View Analysis - Lowered and Shortened Roof Proposal

VIEW ANALYSIS

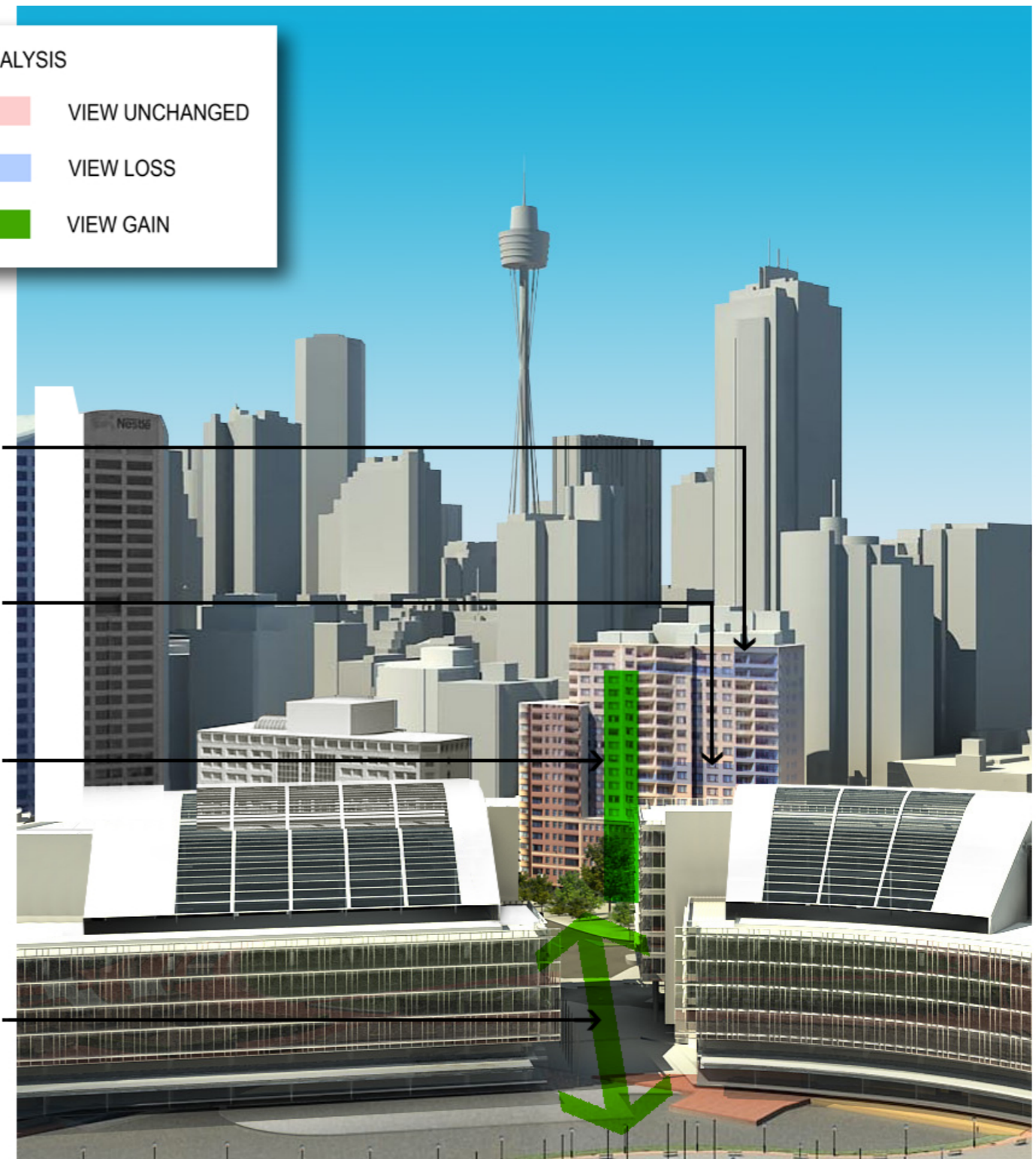
- VIEW UNCHANGED
- VIEW LOSS
- VIEW GAIN

11 RESIDENCES
OBLIQUE
VIEW LOSS TO
TUMBALONG PARK
DUE TO ROOF/
PLANT

27 RESIDENCES
HORIZONTAL VIEW
LOSS TO PYRMONT
DUE TO ROOF/
PLANT

18 RESIDENCES
VIEW GAIN TO
TUMBALONG
PARK AND
PYRMONT RIDGE
BETWEEN
FLOORS 1 AND 21
(RL 2.6 AND
RL 73.5)
DUE TO WIDENED
CIVIC CONNECTOR

GROUND LEVEL
VIEW GAINS TO
AND FROM
TUMBALONG PARK
TO DAY AND
BATHURST
STREETS AND TO
SYDNEY TOWER



4.0

Tables and Schedules

Following tables compare the effect on views of the Concept Plan envelope, the Environmental Assessment proposal and the lowered and shortened roof option.

These tables do not include the improvement to the views identified in the preceding visual analysis.

CONCEPT PLAN WITHOUT PLANT & ROOF			
Development Name	Land Use	Extent of view loss/gain as a result of proposal	Total number of dwellings/rooms affected compared to Existing Segs
Crowne Plaza	Hotel	Oblique (partial) view loss to the centre of Tumbalong Park on floor 10 (RL36.9 and RL41.9)	9 of 368 rooms in development
		Horizontal view loss to Pymont ridge between floors 4-9 (RL26.2 - RL37.3)	84 of 368 rooms
Millennium Towers	Mixed Use	View gains to Tumbalong Park and Pymont ridge on floors 1 and 21 (RL2.6 & RL26.2)	12 of 319 dwellings
		Oblique (partial) view loss to the centre of Tumbalong Park on floors (RL55.0 and RL59.78)	10 of 319 dwellings
		Horizontal view loss to Pymont ridge between floors (RL26.2 & RL37.3)	23 of 319 dwellings
Emporio Apartments	Mixed Use	Oblique (partial) view loss to the centre of Tumbalong Park on floors 11-16 (RL38.1 and RL58.2)	15 of 167 dwellings
		Horizontal view loss to Pymont ridge between floor 6 (RL23.3 & RL26.2)	3 of 167 dwellings
Tumbalong Park	Open Space	View gains from centre of Tumbalong park towards Day Street and Sydney Tower	Significant public view gain
Day Street	Public Domain	View gain from CBD towards centre of Tumbalong Park	Significant public view gain

EA SCHEME WITH PLANT + ROOF			
Development Name	Land Use	Extent of view loss/gain as a result of proposal	Total number of dwellings/rooms affected compared to Concept Plan without Plant + Roof
Crowne Plaza	Hotel	Oblique (partial) view loss to the centre of Tumbalong Park on floor 10 (RL36.9 and RL41.9)	9 of 368 rooms in development
		Horizontal view loss to Pymont ridge between floors 4-9 (RL26.2 - RL37.3)	84 of 368 rooms
Millennium Towers	Mixed Use	View gains to Tumbalong Park and Pymont ridge on floors 1 and 21 (RL2.6 & RL26.2)	18 of 319 dwellings
		Oblique (partial) view loss to the centre of Tumbalong Park on floors (RL55.0 and RL59.78)	12 of 319 dwellings
		Horizontal view loss to Pymont ridge between floors (RL26.2 & RL37.3)	27 of 319 dwellings
Emporio Apartments	Mixed Use	Oblique (partial) view loss to the centre of Tumbalong Park on floors 11-16 (RL38.1 and RL58.2)	15 of 167 dwellings
		Horizontal view loss to Pymont ridge between floor 6 (RL23.3 & RL26.2)	3 of 167 dwellings
Tumbalong Park	Open Space	View gains from centre of Tumbalong park towards Day Street and Sydney Tower	Significant public view gain
Day Street	Public Domain	View gain from CBD towards centre of Tumbalong Park	Significant public view gain

SHORTENED AND LOWERED ROOF			
Development Name	Land Use	Extent of view loss/gain as a result of proposal	Total number of dwellings/rooms affected compared to Concept Plan without Plant + Roof
Crowne Plaza	Hotel	Oblique (partial) view loss to the centre of Tumbalong Park on floor 10 (RL36.9 and RL41.9)	9 of 368 rooms in development
		Horizontal view loss to Pymont ridge between floors 4-9 (RL26.2 - RL37.3)	84 of 368 rooms
Millennium Towers	Mixed Use	View gains to Tumbalong Park and Pymont ridge on floors 1 and 21 (RL2.6 & RL26.2)	18 of 319 dwellings
		Oblique (partial) view loss to the centre of Tumbalong Park on floors (RL55.0 and RL59.78)	11 of 319 dwellings
		Horizontal view loss to Pymont ridge between floors (RL26.2 & RL37.3)	27 of 319 dwellings
Emporio Apartments	Mixed Use	Oblique (partial) view loss to the centre of Tumbalong Park on floors 11-16 (RL38.1 and RL58.2)	15 of 167 dwellings
		Horizontal view loss to Pymont ridge between floor 6 (RL23.3 & RL26.2)	3 of 167 dwellings
Tumbalong Park	Open Space	View gains from centre of Tumbalong park towards Day Street and Sydney Tower	Significant public view gain
Day Street	Public Domain	View gain from CBD towards centre of Tumbalong Park	Significant public view gain

5.0

Conclusion

In the case of the Millennium Towers, the Environmental Assessment proposal achieves the objectives of the Concept Plan with regard to roof form and views with a net effect on views of the same number of the apartments. This is despite no allowance for roof or roof forms in the Concept plan view analysis.

The proposed option to lower and shorten the roof will allow one apartment to regain views to Tumbalong Park in comparison to the EA scheme and a total of 20 apartments benefit from view improvement compared to the concept plan.'

In the case of the Harbour Gardens Apartment, the Environmental Assessment Proposal achieves the objectives of the Concept Plan with regard to Roof form and views.

