

OFFICIAL



Supplementary Information

Blackwattle Bay SSP Study

December 2022

Part I



OFFICIAL

Contents

Infrastructure NSW received several requests from the Department of Planning and Environment following the issue of the Blackwattle Bay Response to Submissions in June 2022. This document compiles additional information provided in attachments, as set out below.

Visuals

Attachment 1: CGIs

Foreshore Promenade

Attachment 2: Testing promenade widths, FJMT

Sunlight and Amenity

Attachment 3: Supporting information – Residential Amenity dated 29 July 2022, FJMT

Attachment 4: Amendments Improving Sunlight to Public Spaces and Neighbours dated 11 October 2022, FJMT & Tree species advice, Tree IQ

Commercial Uses

Attachment 5: Commercial Market Peer Review, Macroplan

Attachment 6: Response to Atlas Urban Economics recommendations

Sustainability

Attachment 7: Sustainable Buildings SEPP review, Aecom

Air Quality

Attachment 8: Addendum to Air Quality Assessment, SLR

Flooding and Stormwater

Attachment 9: Addendum Letters to Blackwattle Bay State Significant Precinct Flooding and Assessment, Stantec, dated 19 October and 9 November 2022 relating to updated flood modelling assessment, flood emergency response and mitigation options.

Calculation of GFA

Attachment 10: Calculation of Gross Floor Area

Car Parking

Attachment 11: Car Parking Correction Memorandum, Infrastructure NSW

Attachment 1: CGIs









Attachment 2: Testing promenade widths, FJMT

INSW_Blackwattle Bay
Supporting Information _ Promenade
29/08/22

Promenade Width _ 2018

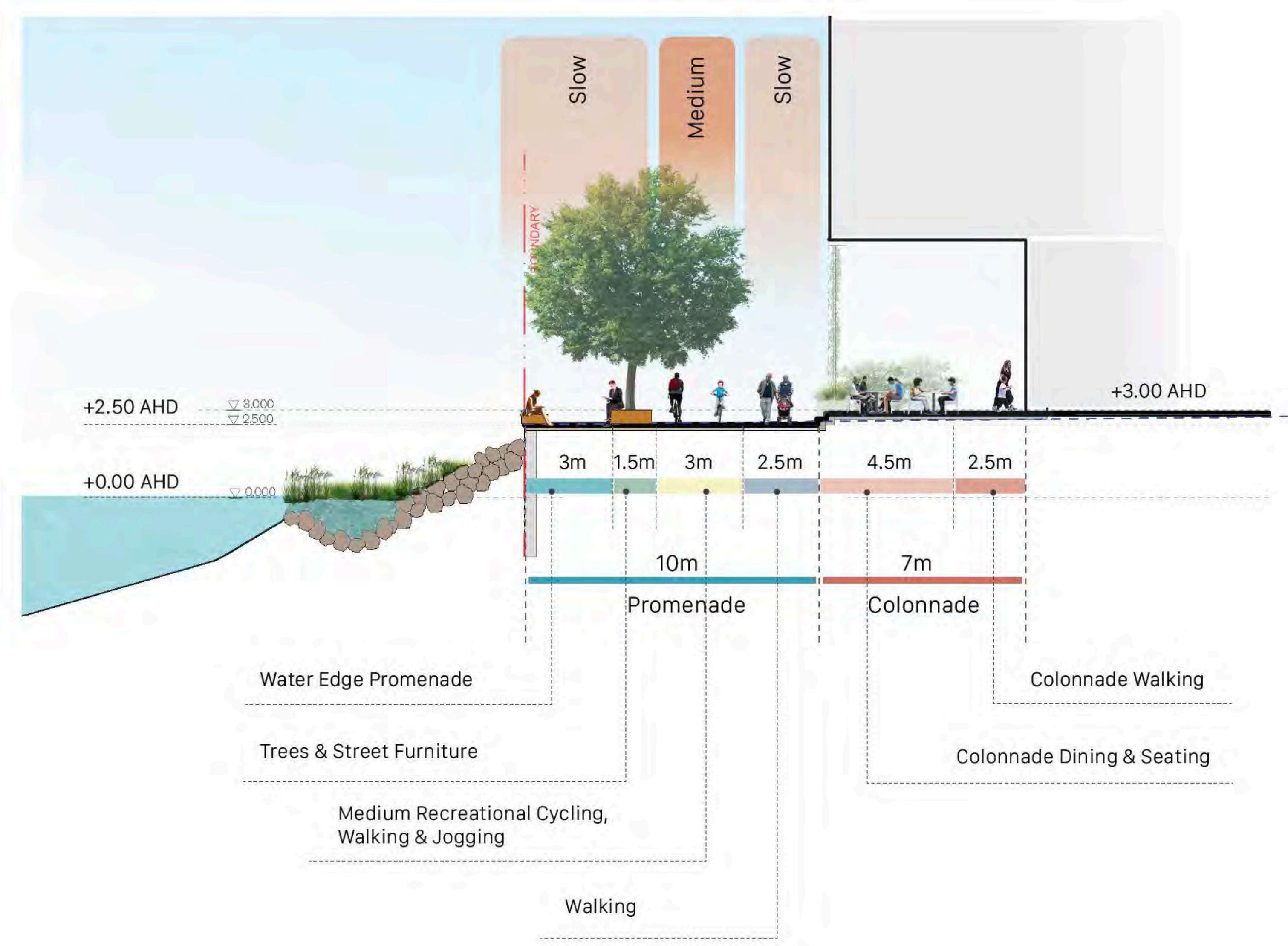
SUMMARY TABLE of Foreshore Promenade

	10m	12M	17M	20M	30M
Tower Configuration Celestino Site (Smallest Site)					
Massing					
Sun Access Pocket Park 11am					
PROS	Optimal sun access to promenade and Good ADG compliance Good area for footprint Creation of pocket parks	Optimal sun access to promenade and Good ADG compliance Good area for footprint Creation of pocket parks	ADG separation can still just be achieved	ADG separation is achieved	ADG cannot be achieved unless all habitable space north or south facing
CONS		Less optimal footprint area, less yield	Tower needs to rotate to promenade to achieve viable areas. No sunlit pocket parks. Limited pockets of sunlight along promenade	ADG is achieved but footprint constraint of 420sqm is too little - not feasible	Footprint area too little ADG would be challenging, minimal setback create a wall of buildings

SUMMARY TABLE of Foreshore Promenade

	10m	12M	17M	20M	30M
Promenade Provision	10m not including dining 3m water's edge, 1.5m landscape, 3m cycling / jogging, 2.5 walking	12m not including dining 3.5m water's edge, 2m landscape, 3m cycling / jogging, 3.5 walking / buffer	17m not including dining 2m water's edge, 5m cycling / jogging, 3m landscape, 5m walking, 2m buffer	20m not including dining 4m water's edge, 5m cycling / jogging, 3m landscape, 5m walking, 3m buffer	30m including dining 4m water's edge, 5m cycling / jogging, 2 OFF 3m landscape, 2 OFF 5m walking, 5m outdoor dining
Zone of Development	West of freeway ~ 38m	West of freeway ~ 36m	West of freeway ~ 31m	West of freeway ~ 28m	West of freeway ~ 18m
Depth of Tower, Area of Tower	20x28 (note geometry rotated N-S)	20x28 (note geometry rotated N-S)	22x22 (perpendicular to promenade)	19x22 (perpendicular to promenade)	12x34 (perpendicular to promenade)
PROS	Aligns with DCP Wider than surrounding pathways which are < 10m Least area impact on PLO Clear Distinction of private and public	<ul style="list-style-type: none"> Greater provision of water's edge, and walking zones. Minimal impact on PLO Clear Distinction of private and public 	<ul style="list-style-type: none"> Significant increase in cycling and walking zones plus buffer Width greater than most Sydney promenades 	<ul style="list-style-type: none"> Significant increase in cycling and walking zones plus buffer Width greater than most Sydney promenades Significant area adjacent to water 	Meets study requirement width Similar width to Opera House concourse
CONS	Non-compliance 30m Study Req. Requires study of potential pedestrian / visitor / cycle conflict	Non-compliance 30m Study Req. Extra level on podium to achieve area Requires study of potential pedestrian / visitor / cycle conflict	Tower forms are more constrained and cannot be rotated N-S	Depth becomes challenging to achieve viable tower area and ADG separation	Depth of tower zone unviable

Exhibited Promenade Section at PLOs

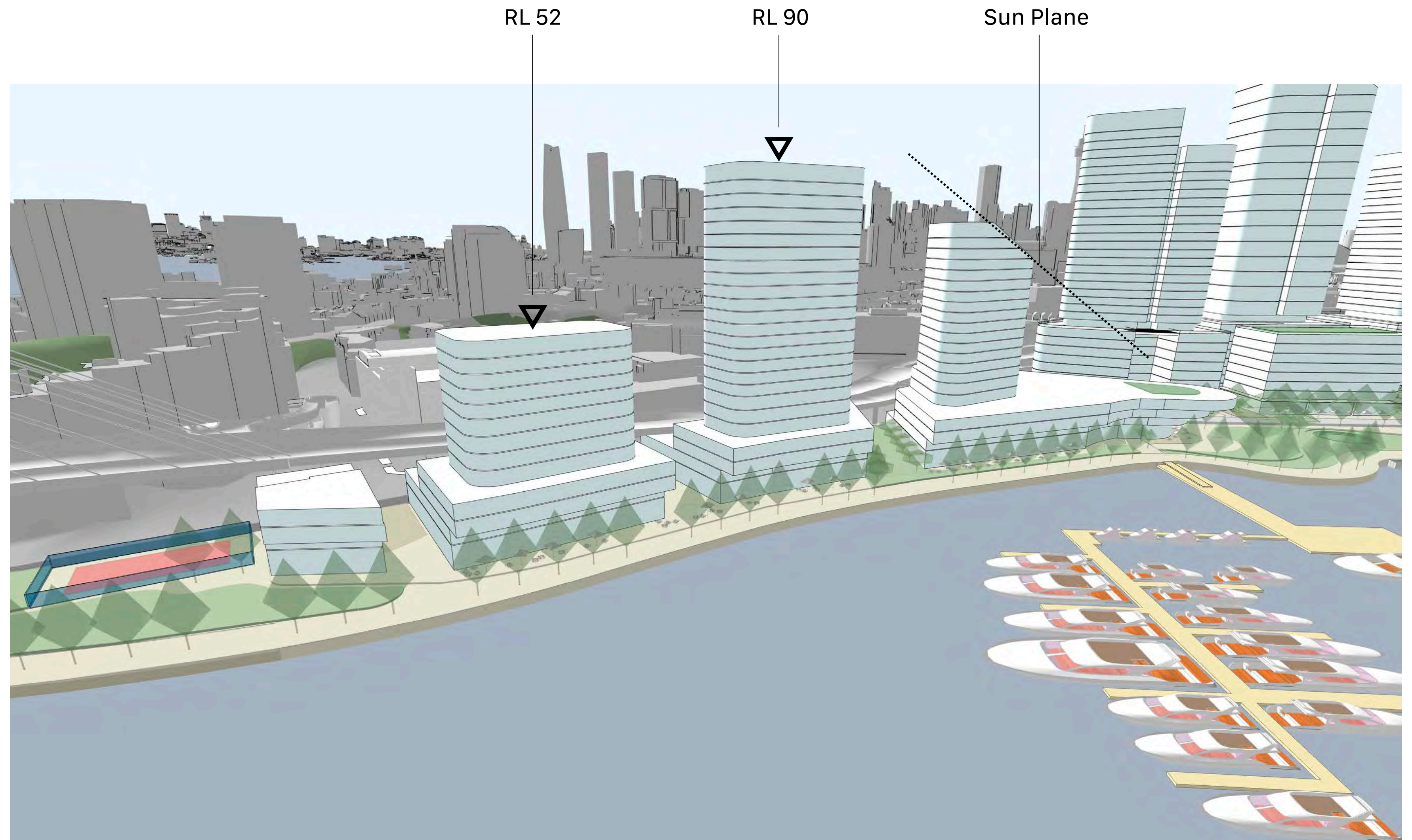


/ Typical Zone 2 10m Promenade Section

Site Amalgamation

Site Amalgamation - Option A

- / Reduced overall massing, align with DPIE recommendations
- / Equal distant spacing between towers
- / Equal distant spacing between through site links
- / Tower floor plate sizes to accommodate non-resi & resi land use



Site Amalgamation - Option A

Ground level and podium GBAs

Podium A

GF	800
1	800
2	943
3	493

Podium B

GF	2658
1	2658
2	1881
3	1881

Podium C

GF	3266
1	3266
2	1877
3	1877

Podium D

GF	3410
1	3181
2	3524
3	3524



Site Amalgamation - Option A

Cons

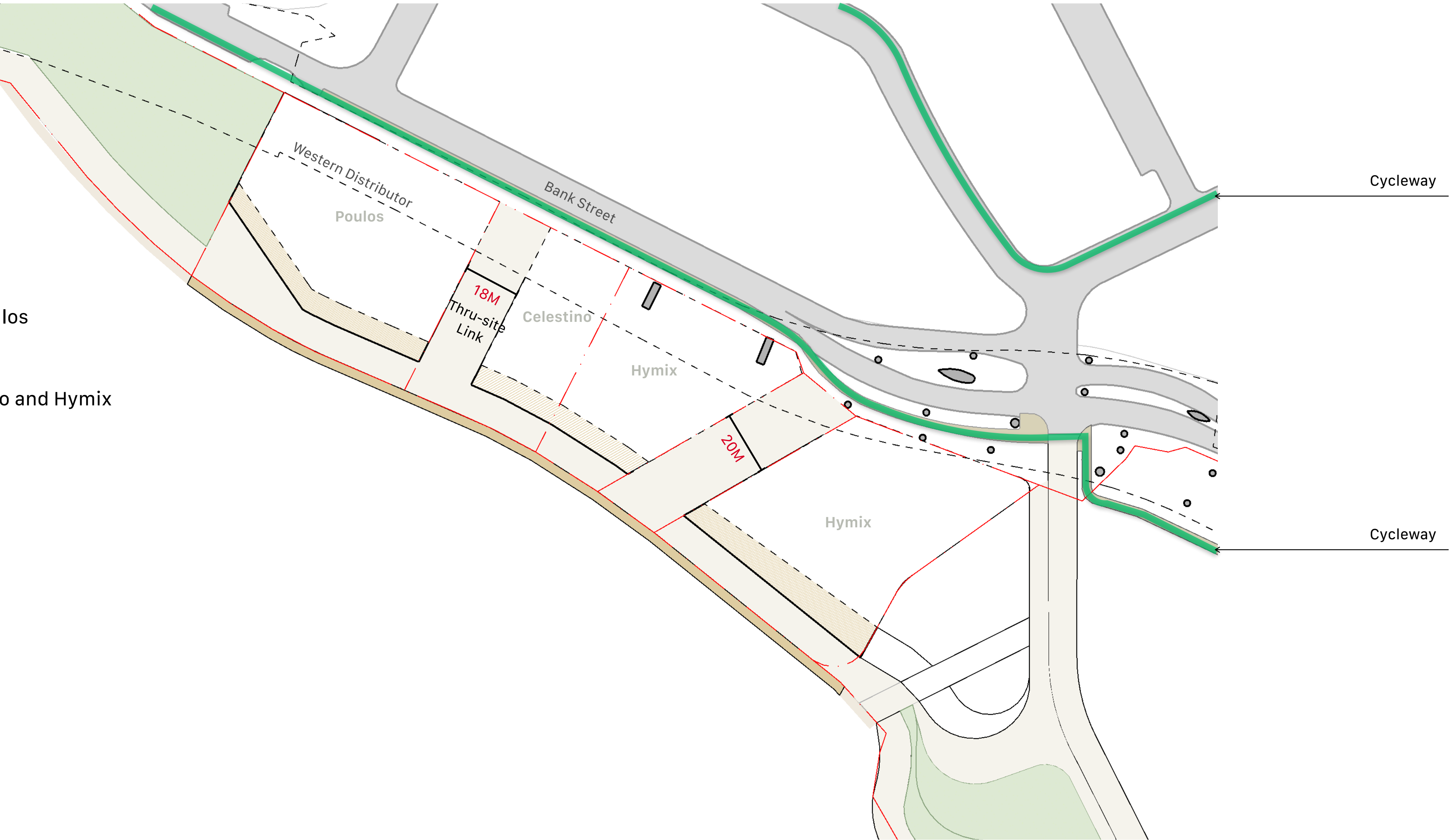
- / Splits ownership of Celestino site
- / Requires amalgamation of all 3 land owner sites
- / Not likely to happen in the short or mid term
- / Long delay in delivery of the World Class Promenade

Poulos
Celestino
Hymix

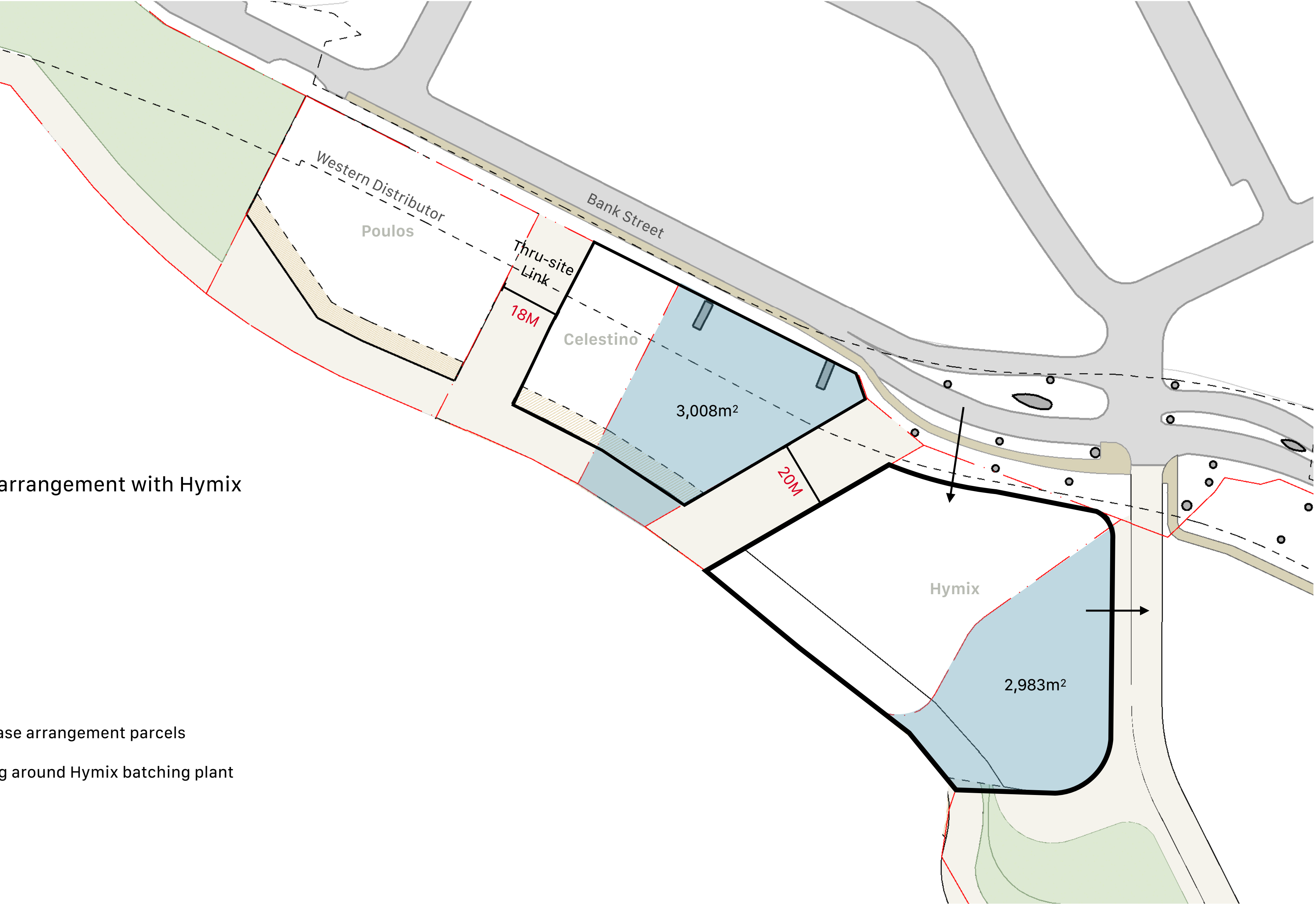


Site Amalgamation - Option B



- / Maintain existing Poulos landholding
- / Amalgamate Celestino and Hymix North



Site Amalgamation - Option B

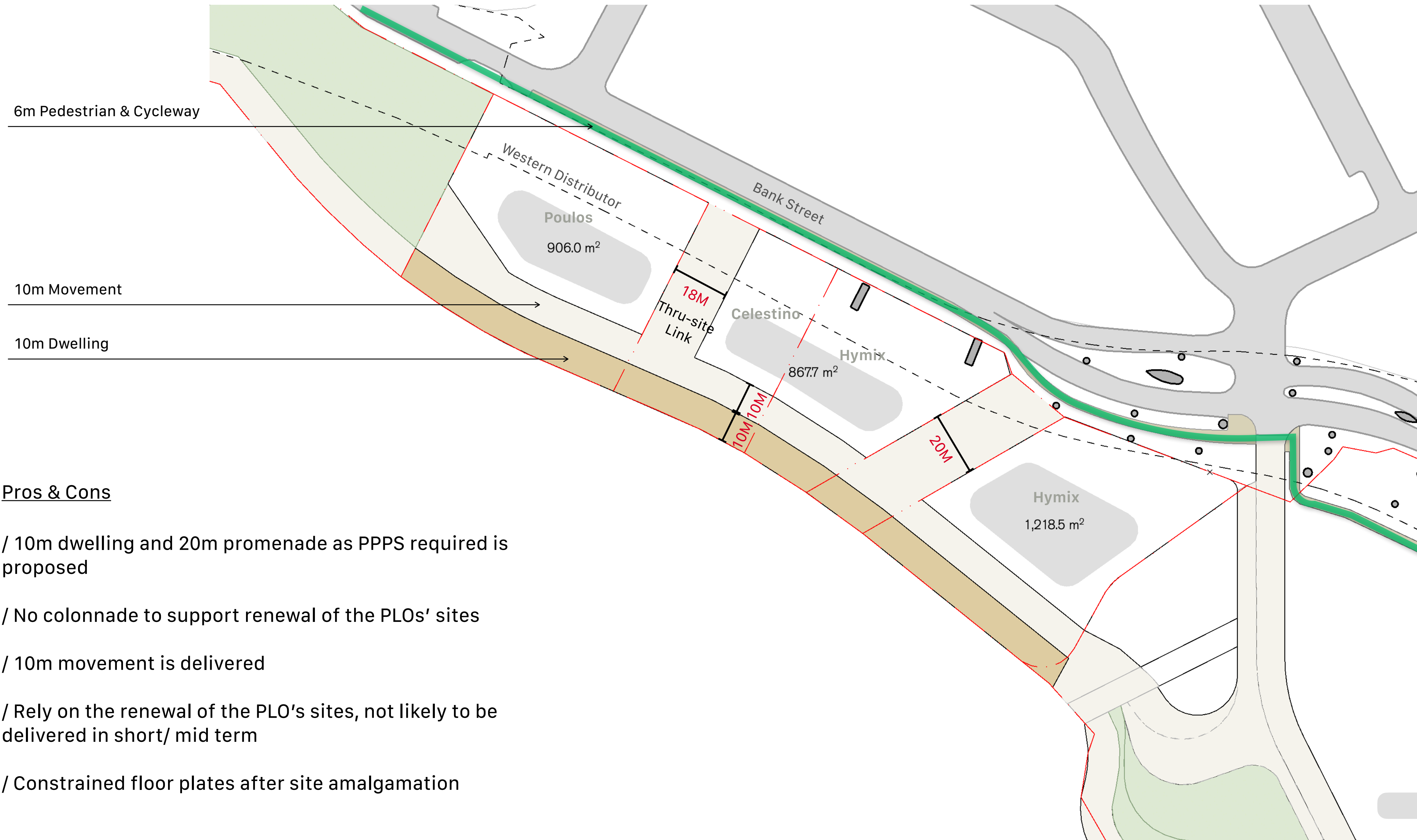


/ Potential sale / lease arrangement with Hymix

-  Indicative sale/lease arrangement parcels
-  Potential hoarding around Hymix batching plant

Site Amalgamation and Foreshore Promenade

Site Amalgamation / Promenade Study - 20m on Land



Pros & Cons

/ 10m dwelling and 20m promenade as PPPS required is proposed

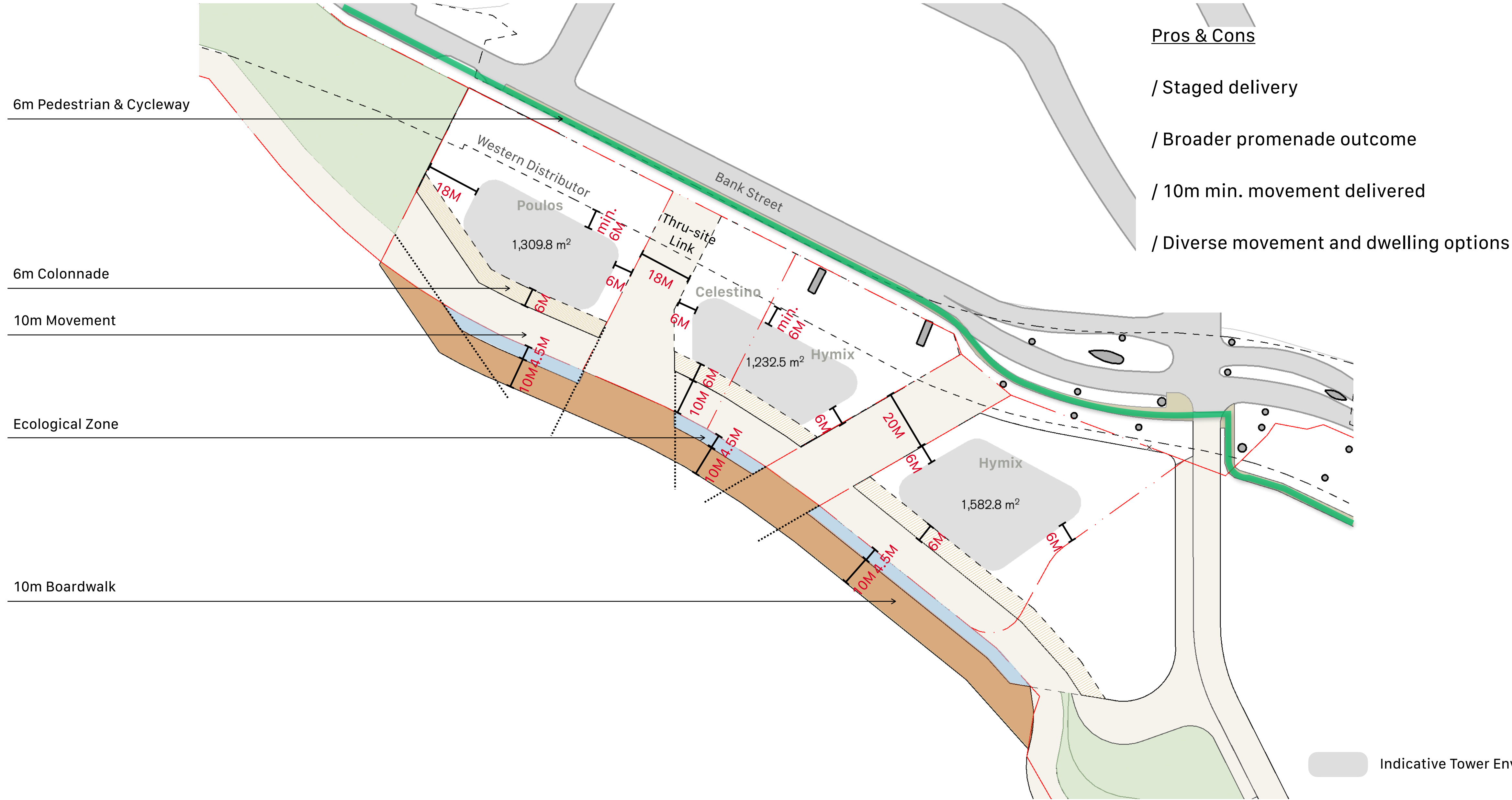
/ No colonnade to support renewal of the PLOs' sites

/ 10m movement is delivered

/ Rely on the renewal of the PLO's sites, not likely to be delivered in short/ mid term

/ Constrained floor plates after site amalgamation

Site Amalgamation / Promenade Study - 10m Promenade on Land + 6m Colonnade + 10m Boardwalk



Pros & Cons

- / Staged delivery
- / Broader promenade outcome
- / 10m min. movement delivered
- / Diverse movement and dwelling options

Site Amalgamation

Site amalgamation was examined and reviewed with the Private Land Owners. The feedback was clear that amalgamation was not supported and would potentially delay renewal and delivery of the foreshore promenade.

RtS Promenade Width Comparison

RtS Massing

The Response to Submissions Precinct Plan features a minimum 10m promenade on land with a 6m wide colonnade on the Private Land Owner sites. A 10m boardwalk expands the total promenade width to a minimum of 20m and supports stage renewal in the northern precinct.

The promenade width expands to 30m wide from the Promontory through to the Urban Park.



RtS Massing _ 20m Promenade

A 20m promenade on land reduces the building depths on the PLO sites. The colonnade is deleted.

Building separations between podium and tower forms are maintained.



RtS Massing _ 30m Promenade

A 30m promenade on land further reduces the building depths on the PLO sites. The colonnade is deleted.

Building separations between podium and tower forms are maintained.



RtS Massing

The RtS Design Code requires a minimum 3m setback to tower elements above a 4 storey podium.



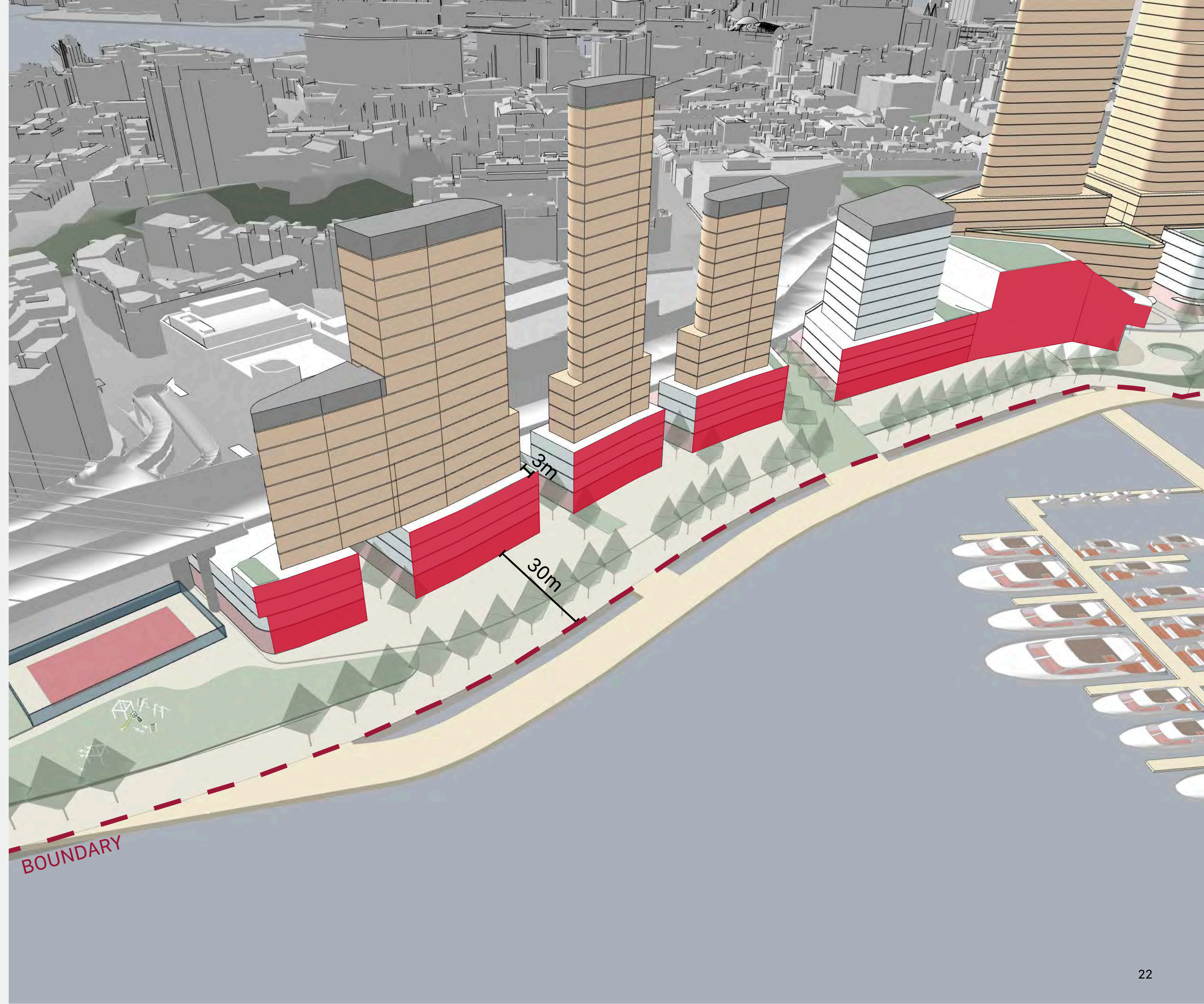
RtS Massing _ 20m Promenade

A podium to tower setback would be maintained if the promenade width were expanded to 20m.



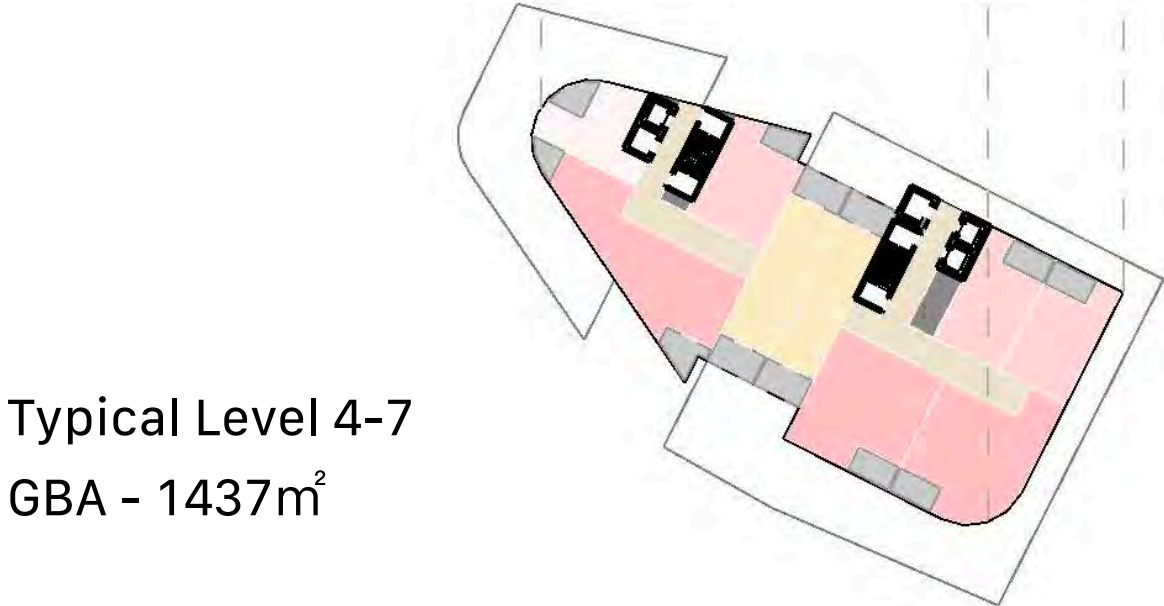
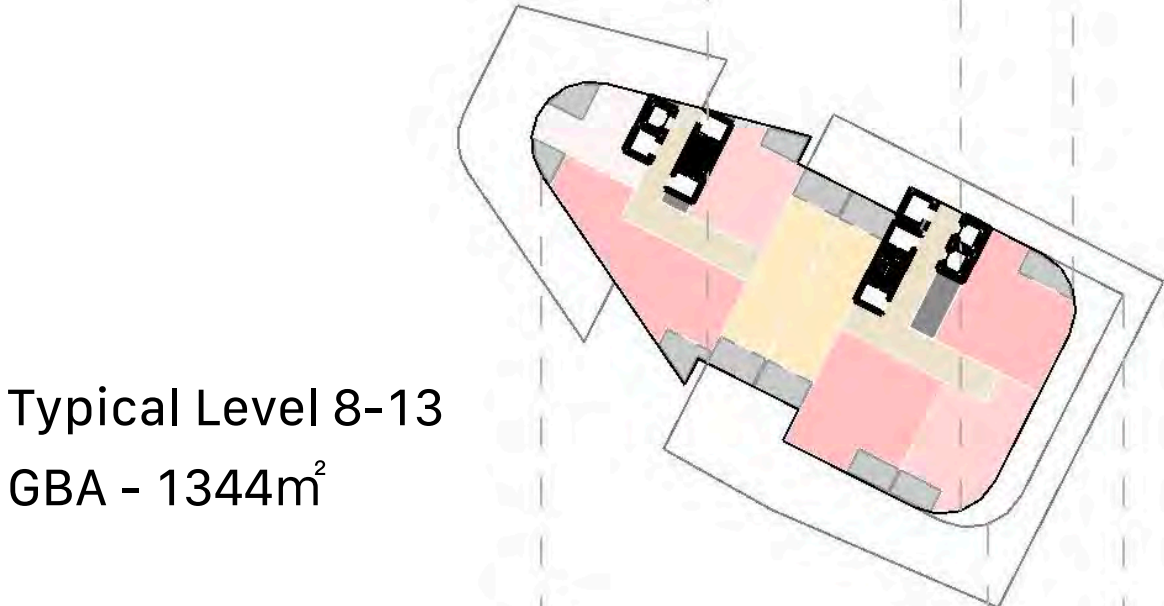
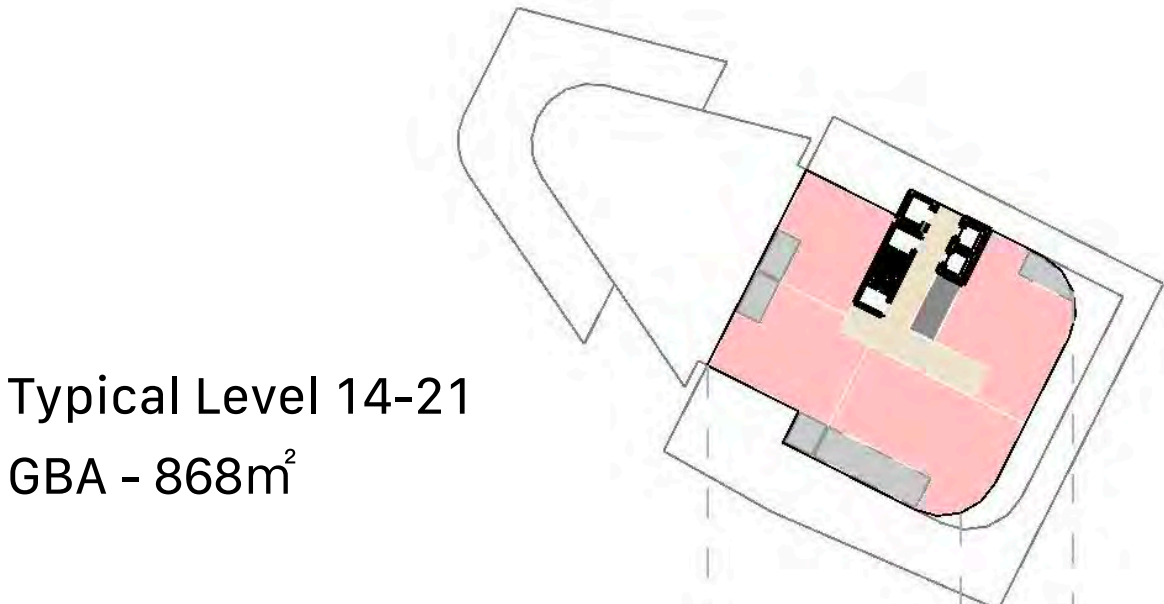
RtS Massing _ 30m Promenade

A podium to tower setback would be maintained if the promenade width were expanded to 30m.

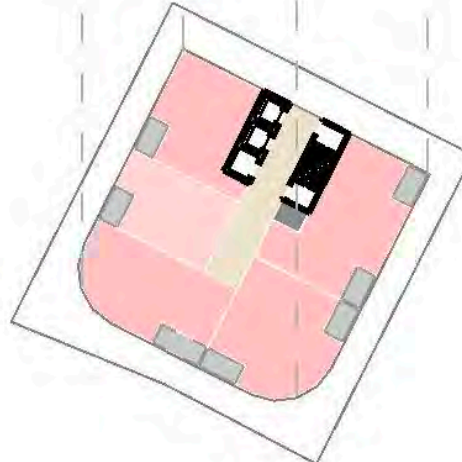
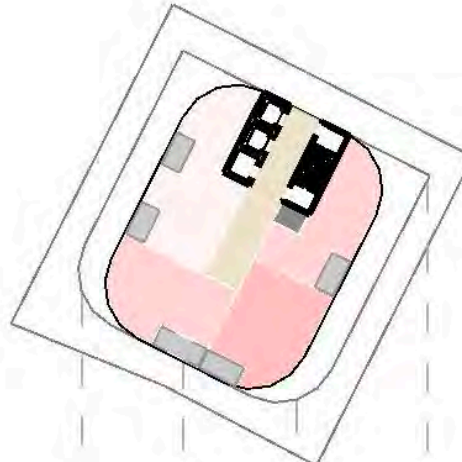


RtS Massing _ Tower

The RtS massing delivers feasible floorplates with the PLO_02 tower floorplate being the smallest at 573m² GBA, equivalent to approximately 430m² GFA.



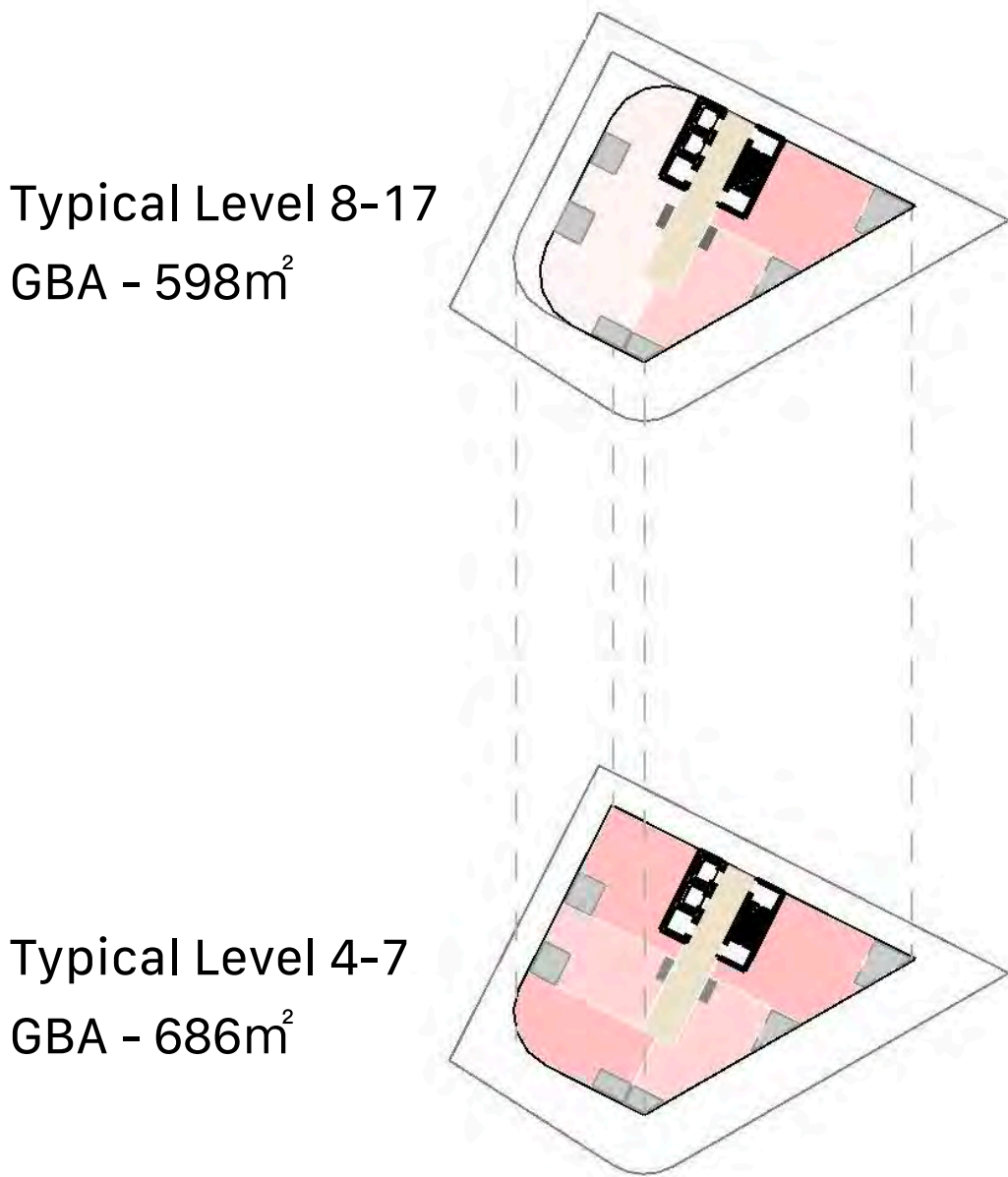
PLO_01 Poulos



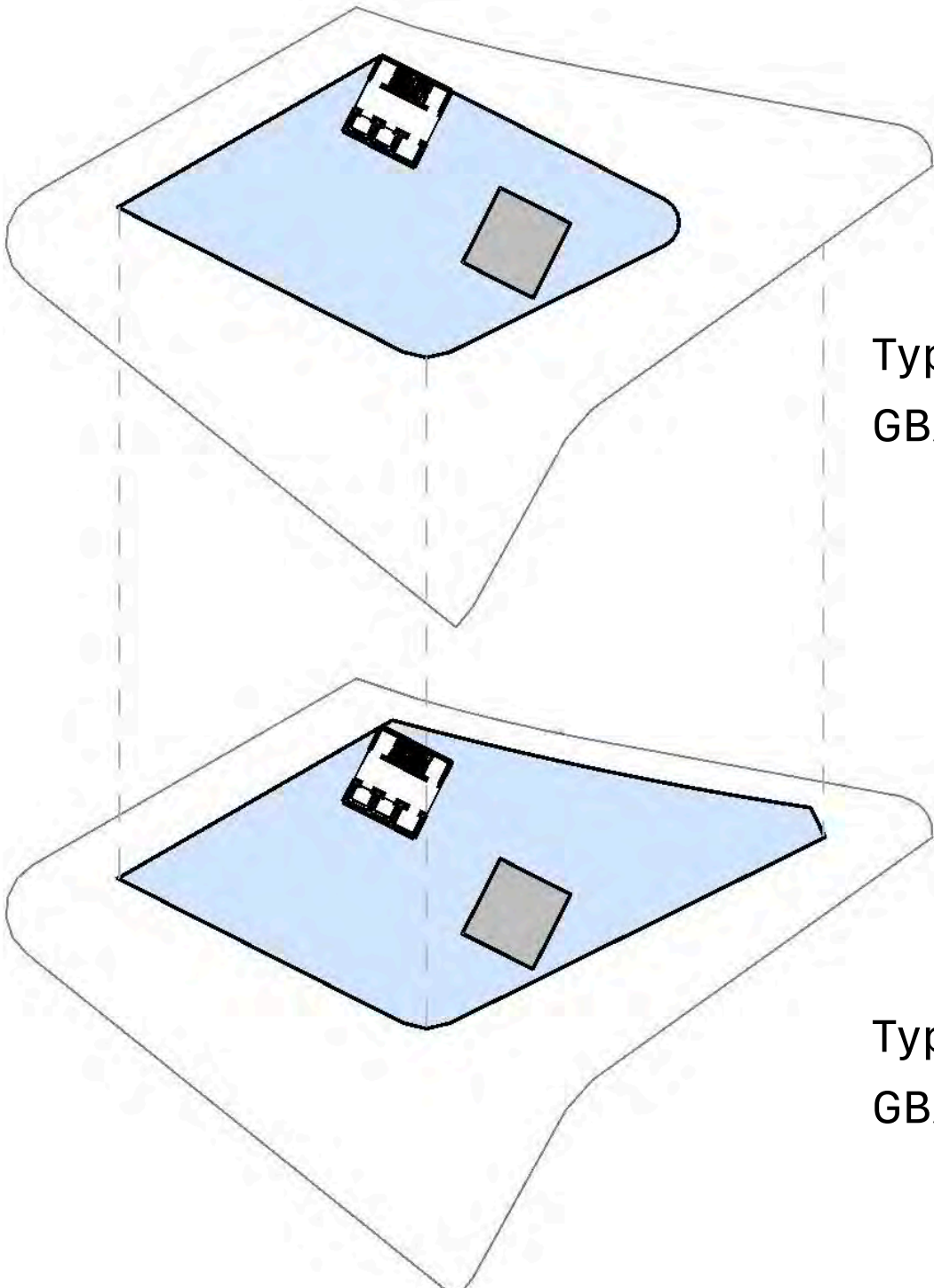
PLO_02 Celestino

RtS Massing _ Tower

The RtS massing delivers feasible floorplates for residential and commercial uses.



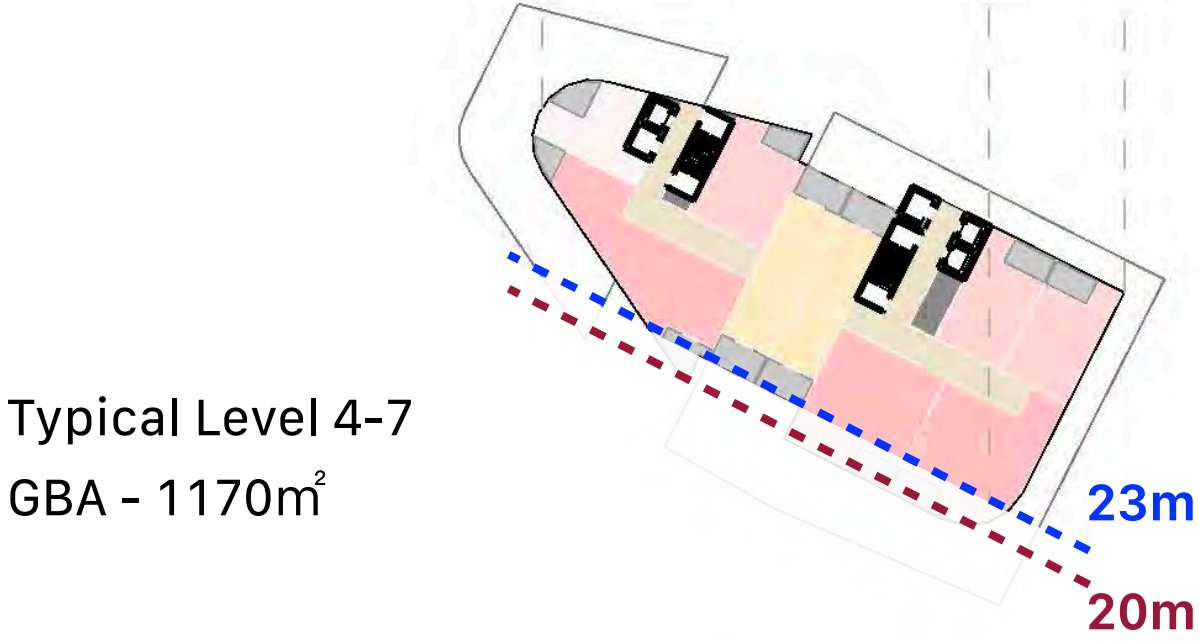
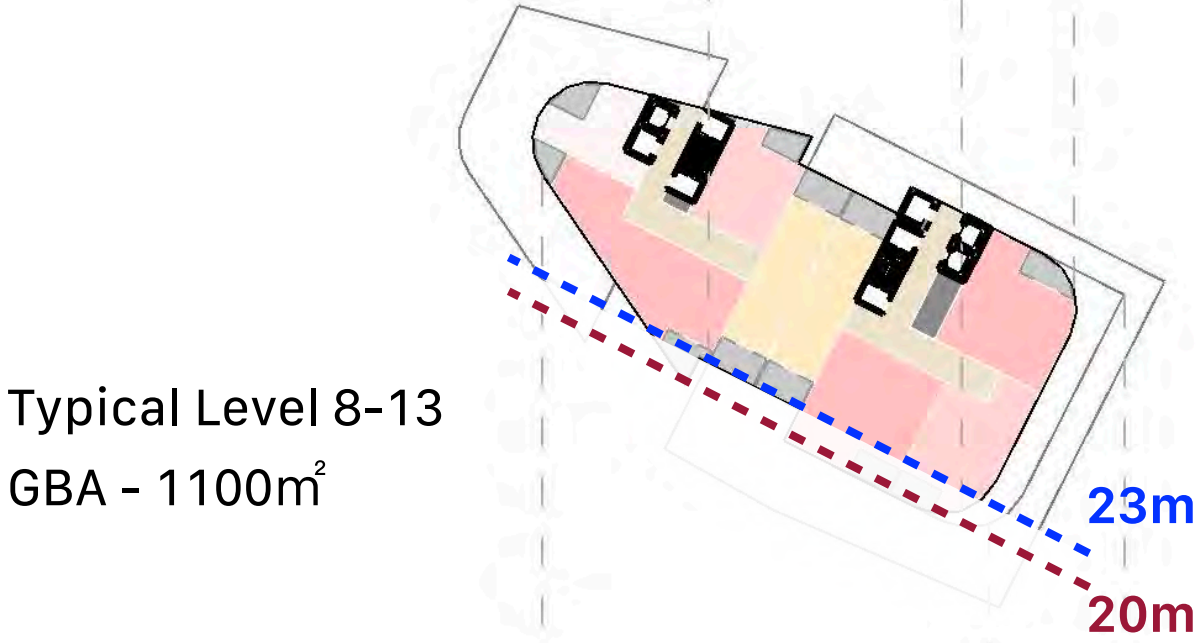
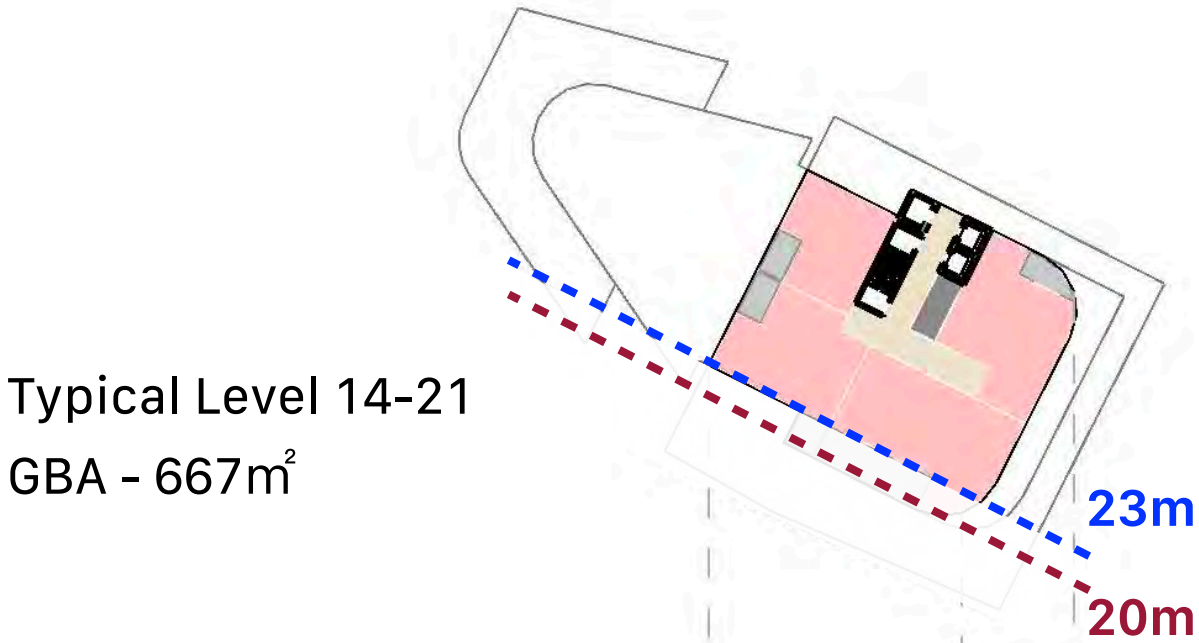
PLO_03-01 Hymix



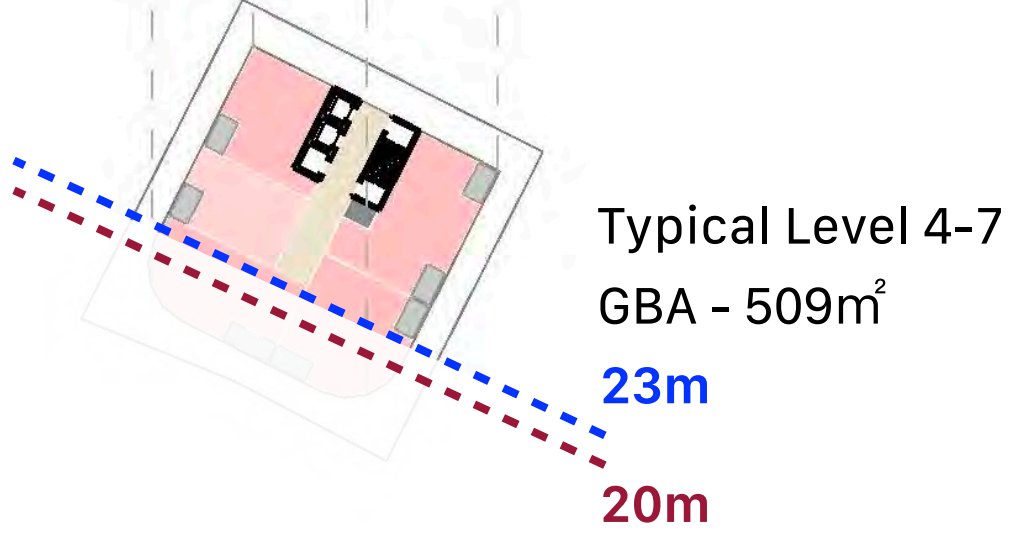
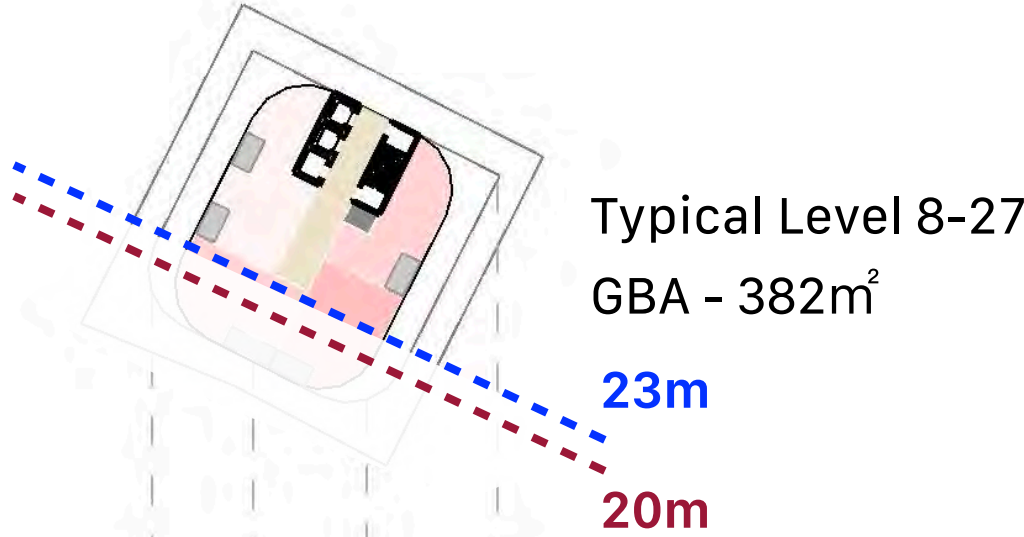
PLO_03-02 Hymix

RtS Massing _ 20m Promenade

A 20m promenade on land would reduce the feasibility of floorplates and would likely constrain renewal of the Private Land Owner sites. The PLO_02 tower floorplate is reduced to 382m² GBA, equivalent to approximately 285m² GFA.



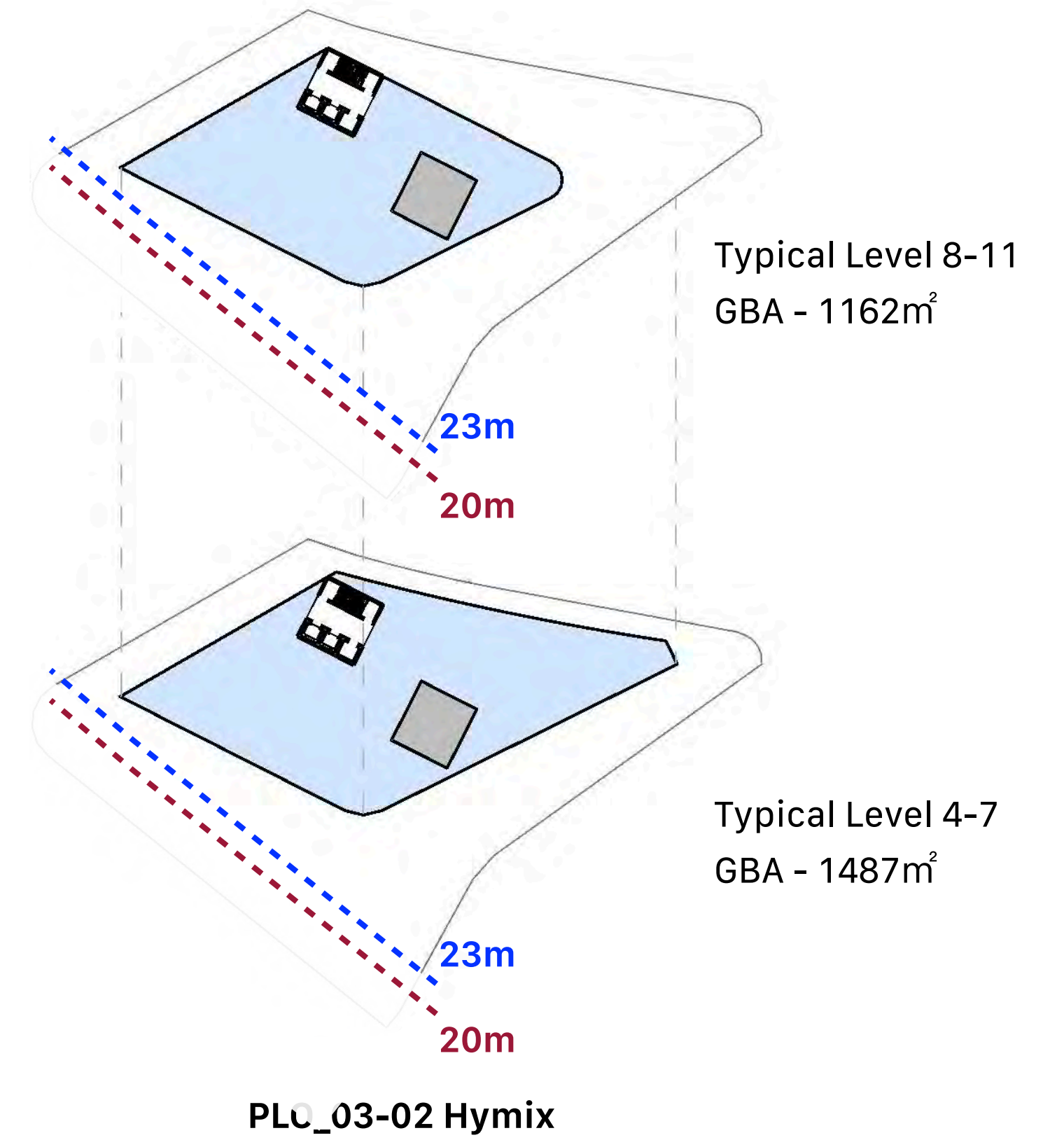
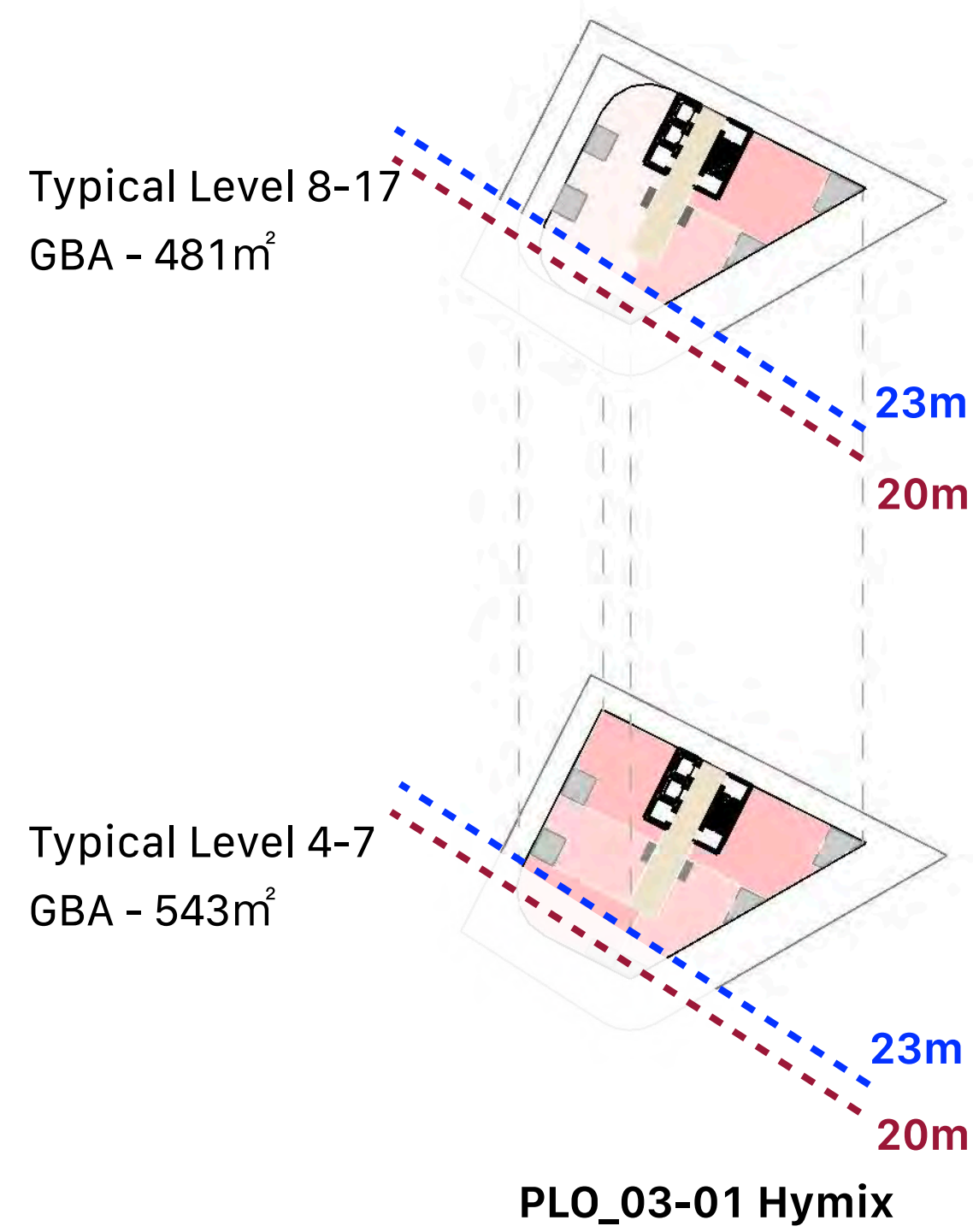
PLO_01 Poulos



PLO_02 Celestino

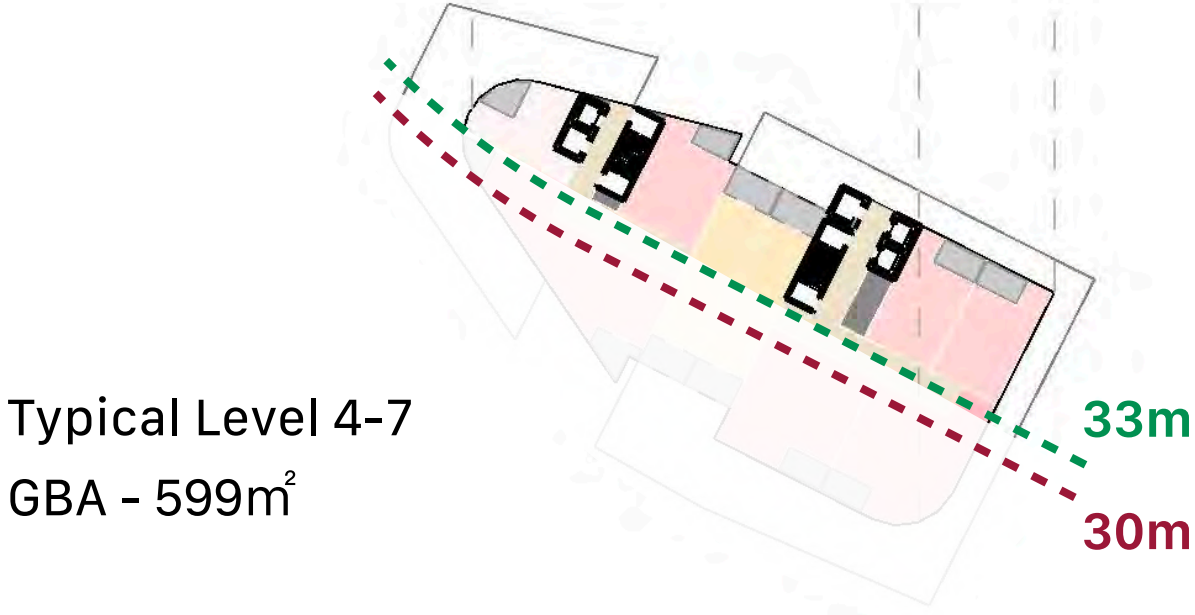
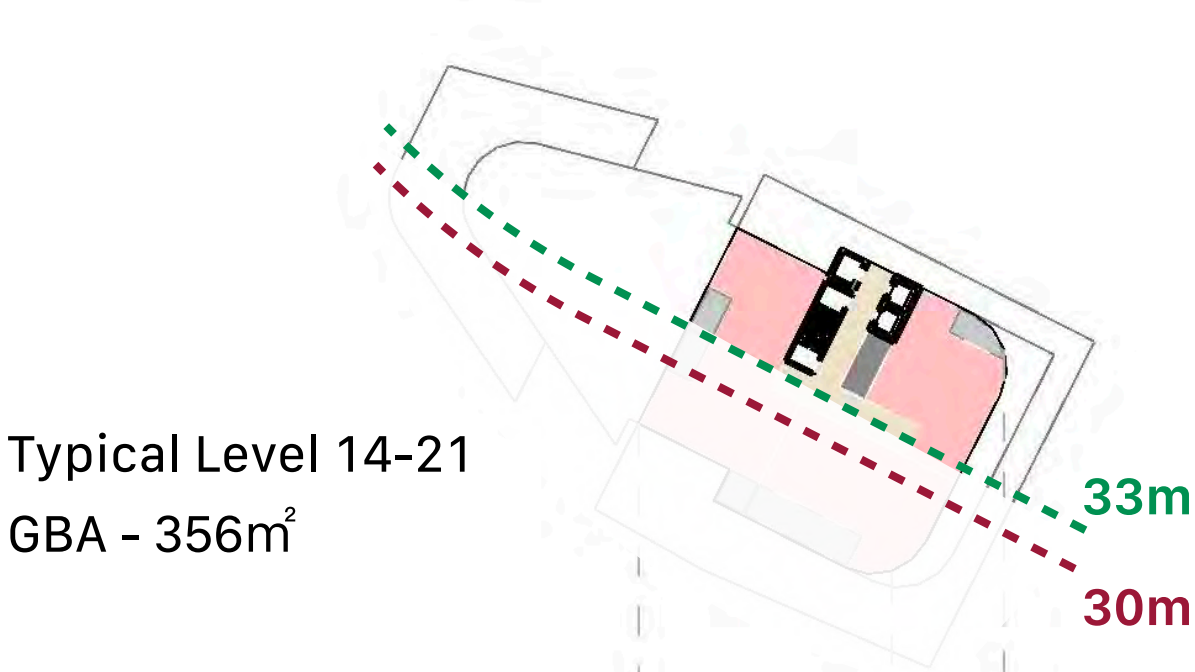
RtS Massing _ 20m Promenade

A 20m promenade on land would reduce the feasibility of floorplates. PLO03-02 is the least impacted.

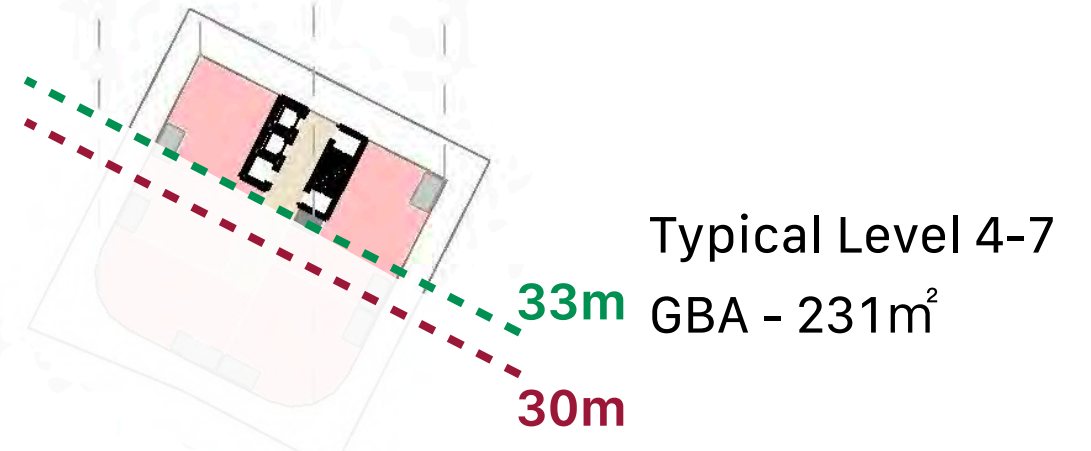
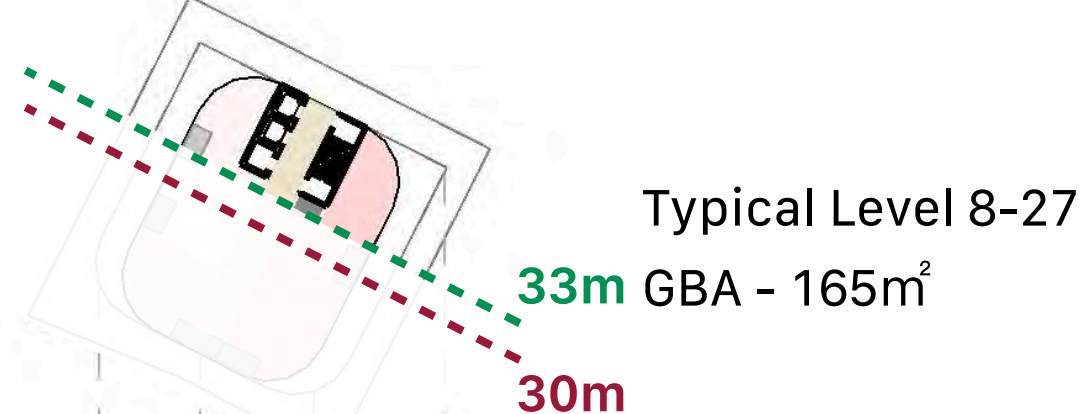


RtS Massing _ 30m Promenade

A 30m promenade on land would significantly reduce the feasibility of floorplates and is unlikely to realise renewal of the Private Land Owner sites. The PLO_02 tower floorplate is reduced to 382m² GBA, equivalent to approximately 285m² GFA.



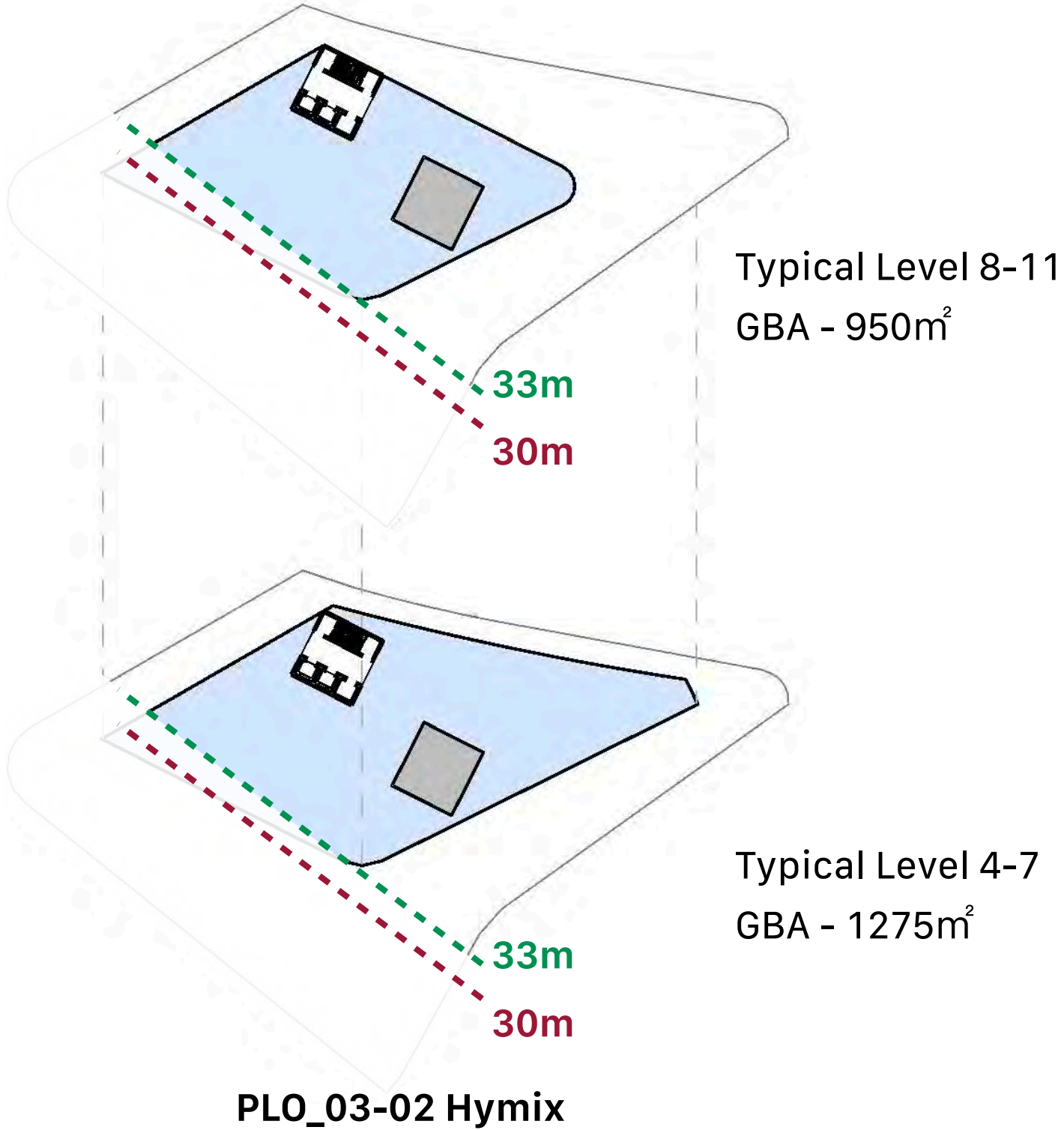
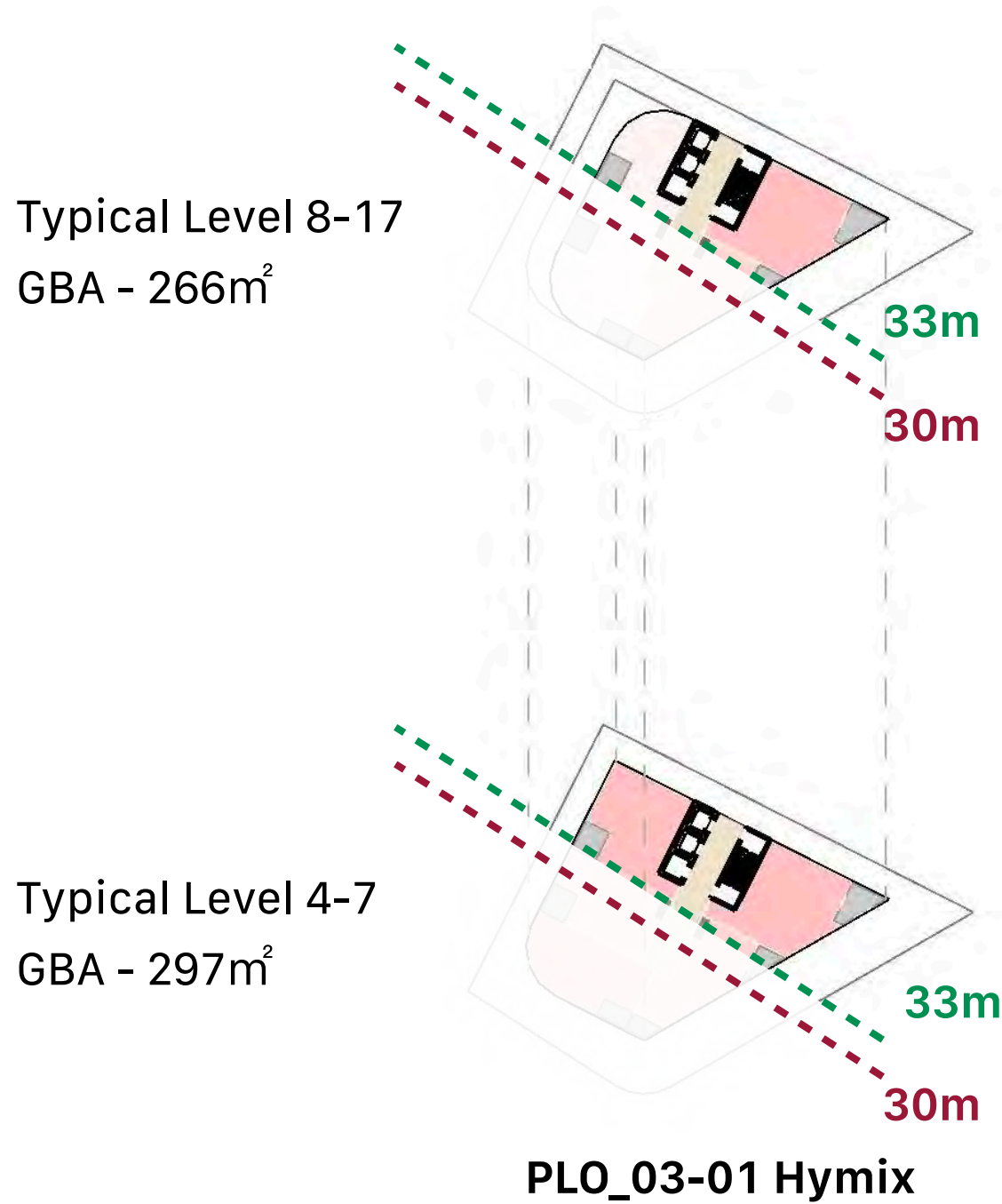
PLO_01 Poulos



PLO_02 Celestino

RtS Massing _ 30m Promenade

A 30m promenade on land would significantly reduce the feasibility of floorplates and is unlikely to realise renewal of the Private Land Owner sites.



RtS Massing _ Submitted Yields

The yield breakdown for the RtS massing with 10m promenade on land, 6m colonnade and 10m boardwalk is provided opposite.

Room Name	Zone Number	Number of Stories (excludes plant)	Zone Category	Area	Efficiency	GFA	Site Area	FSR	Total Non-Res GFA	Apartments	Retail	Commercial	Residential	Other
Private Landowners														
	PLO 01 - Poulos	1	01 GBA - RETAIL	2757.4	0.5	1378.7					1378.7			
		3	02 GBA - COMMERCIAL	7015	0.8	5612.0						5612.0		
		15	03 GBA - RESIDENTIAL	17186.7	0.75	12890.0				151.6			12890.0	
		19		26,959m ²		19,881m²	5,073m ²	3.9	6,991m ²					
	PLO 02 - Celestino	1	01 GBA - RETAIL	1660.4	0.5	830.2					830.2			
		3	02 GBA - COMMERCIAL	4010.8	0.8	3208.6						3208.6		
		20	03 GBA - RESIDENTIAL	12186.8	0.75	9140.1				107.5			9140.1	
		24		17,858m ²		13,179m²	2,971m ²	4.4	4,039m ²					
	PLO 03 - Hymix 01	1	01 GBA - RETAIL	2258.2	0.5	1129.1					1129.1			
		3	02 GBA - COMMERCIAL	3548.4	0.8	2838.7						2838.7		
		12	03 GBA - RESIDENTIAL	7529.6	0.75	5647.2				66.4			5647.2	
		16		13,336m ²		9,615m²	3,024m ²	3.2	3,968m ²					
	PLO 03 - Hymix 02	1	01 GBA - RETAIL	3522.7	0.5	1761.4					1761.4			
		11	02 GBA - COMMERCIAL	21116.4	0.8	16893.1						16893.1		
		12		24,639m ²		18,654m²	4,667m ²	4.0	18,654m ²					
						82,792m²								
						61,329m²	15,735m ²	3.9	33,652m ²	325.6				
Site 2														
	Building 01	1	04 GBA - PUBLIC	2052.7	0.5	1026.4								1026.4
		3	04 GBA - PUBLIC	7631.5	0.8	6105.2								6105.2
		4		9,684m ²		7,132m²			7,132m ²					
	Building 2B	1	01 GBA - RETAIL	1002.9	0.5	501.5					501.5			
		5	03 GBA - RESIDENTIAL	5014.5	0.75	3760.9				46.4			3760.9	
		6		6,017m ²		4,262m²			501m ²					
	Building 2A	1	01 GBA - RETAIL	366.8	0.5	183.4					183.4			
		25	03 GBA - RESIDENTIAL	26964.4	0.75	20223.3				249.7			20223.3	
		26		27,331m ²		20,407m²			183m ²					
	Building 03	1	01 GBA - RETAIL	2311.3	0.5	1155.7					1155.7			
		33	03 GBA - RESIDENTIAL	61027.7	0.75	45770.8				565.1			45770.8	
		34		63,339m ²		46,926m²			1,156m ²					
	Building 04	0.5	01 GBA - RETAIL	1697.9	0.5	849.0					849.0			
		0.5	02 GBA - COMMERCIAL	853.2	0.5	426.6						426.6		
		24	02 GBA - COMMERCIAL	45775.1	0.8	36620.1						36620.1		
		25		48,326m ²		37,896m²			37,896m ²					
	Building 5A	1	01 GBA - RETAIL	1584.7	0.5	792.4					792.4			
		5	02 GBA - COMMERCIAL	7923.5	0.8	6338.8						6338.8		
		6		9,508m ²		7,131m²			7,131m ²					
	Building 5B	1	01 GBA - RETAIL	1794.5	0.5	897.3					897.3			
		5	02 GBA - COMMERCIAL	7108.4	0.8	5686.7						5686.7		
		6		8,903m ²		6,584m²			6,584m ²					
	Building 06	1	01 GBA - RETAIL	1352.1	0.5	676.1					676.1			
		5	02 GBA - COMMERCIAL	6761	0.8	5408.8						5408.8		
		6		8,113m ²		6,085m²			6,085m ²					
						181,222m²								
						136,423m²	41,863m ²	3.3	66,668m ²	861				
	Retail GFA					5,055m²								
	Commercial GFA					54,481m²								
	Residential GFA					69,755m²								
	Other GFA					7,132m²								
	Total BMD					264,015m²	52,931m ²	3.7	100,319m ²	1187	10,154	83,033	97,432	7,132
											5.1%	42.0%	49.3%	3.6%

RtS Massing _ 20m Promenade Yields

The yield breakdown for a 20m promenade on land is provided opposite.

20m Promenade														
Room Name	Zone Number	Number of Stories (excludes plant)	Zone Category	Area	Efficiency	GFA	Site Area	FSR	Total Non-Res GFA	Apartments	Retail	Commercial	Residential	Other
Private Landowners														
	PLO 01 - Poulos	1	01 GBA - RETAIL	3439.5	0.5	1719.8					1719.8			
		3	02 GBA - COMMERCIAL	6073.1	0.8	4858.5						4858.5		
		15	03 GBA - RESIDENTIAL	13750.1	0.75	10312.6				121.3				10312.6
		19		23,263m ²		16,891m²	5,073m ²	3.3	6,578m ²					
	PLO 02 - Celestino	1	01 GBA - RETAIL	1532.1	0.5	766.1					766.1			
		3	02 GBA - COMMERCIAL	3221.3	0.8	2577.0						2577.0		
		20	03 GBA - RESIDENTIAL	8151.2	0.75	6113.4				71.9				6113.4
		24		12,905m ²		9,456m²	2,971m ²	3.2	3,343m ²					
	PLO 03 - Hymix 01	1	01 GBA - RETAIL	1993.3	0.5	996.7					996.7			
		3	02 GBA - COMMERCIAL	2922.6	0.8	2338.1						2338.1		
		12	03 GBA - RESIDENTIAL	6020	0.75	4515.0				53.1				4515.0
		16		10,936m ²		7,850m²	3,024m ²	2.6	3,335m ²					
	PLO 03 - Hymix 02	1	01 GBA - RETAIL	3267.4	0.5	1633.7					1633.7			
		11	02 GBA - COMMERCIAL	19526.5	0.8	15621.2						15621.2		
		12		22,794m ²		17,255m²	4,667m ²	3.7	17,255m ²					
				69,897m²		51,452m²	15,735m ²	3.3	30,511m ²	246.4				
Site 2														
	Building 01	1	04 GBA - PUBLIC	1707.7	0.5	853.9								853.9
		3	04 GBA - PUBLIC	7531.5	0.8	6025.2								6025.2
		4		9,239m ²		6,879m²			6,879m ²					
	Building 2B	1	01 GBA - RETAIL	1002.9	0.5	501.5					501.5			
		5	03 GBA - RESIDENTIAL	5014.5	0.75	3760.9				46.4				3760.9
		6		6,017m ²		4,262m²			501m ²					
	Building 2A	1	01 GBA - RETAIL	366.8	0.5	183.4					183.4			
		25	03 GBA - RESIDENTIAL	26964.4	0.75	20223.3				249.7				20223.3
		26		27,331m ²		20,407m²			183m ²					
	Building 03	1	01 GBA - RETAIL	2311.3	0.5	1155.7					1155.7			
		33	03 GBA - RESIDENTIAL	61027.7	0.75	45770.8				565.1				45770.8
		34		63,339m ²		46,926m²			1,156m ²					
	Building 04	0.5	01 GBA - RETAIL	1697.9	0.5	849.0					849.0			
		0.5	02 GBA - COMMERCIAL	853.2	0.5	426.6						426.6		
		24	02 GBA - COMMERCIAL	45775.1	0.8	36620.1						36620.1		
		25		48,326m ²		37,896m²			37,896m ²					
	Building 5A	1	01 GBA - RETAIL	1584.7	0.5	792.4					792.4			
		5	02 GBA - COMMERCIAL	7923.5	0.8	6338.8						6338.8		
		6		9,508m ²		7,131m²			7,131m ²					
	Building 5B	1	01 GBA - RETAIL	1794.5	0.5	897.3					897.3			
		5	02 GBA - COMMERCIAL	7108.4	0.8	5686.7						5686.7		
		6		8,903m ²		6,584m²			6,584m ²					
	Building 06	1	01 GBA - RETAIL	1352.1	0.5	676.1					676.1			
		5	02 GBA - COMMERCIAL	6761	0.8	5408.8						5408.8		
		6		8,113m ²		6,085m²			6,085m ²					
				180,777m ²		136,170m²	41,863m ²	3.3	66,415m ²	861				
						5,055m²								
						54,481m²								
						69,755m²								
						6,879m²								
Total BMD				250,674m ²		187,622m²	52,931m ²	3.5	96,926m ²	1108	10,171	79,876	90,696	6,879
											5.4%	42.6%	48.3%	3.7%

RtS Massing _ 30m Promenade Yields

The yield breakdown for a 30m promenade on land is provided opposite.

30m Promenade														
Room Name	Zone Number	Number of Stories (excludes plant)	Zone Category	Area	Efficiency	GFA	Site Area	FSR	Total Non-Res GFA	Apartments	Retail	Commercial	Residential	Other
Private Landowners														
	PLO 01 - Poulos	1	01 GBA - RETAIL	2162.1	0.5	1081.1					1081.1			
		3	02 GBA - COMMERCIAL	4498.5	0.8	3598.8						3598.8		
		15	03 GBA - RESIDENTIAL	7118.8	0.75	5339.1				62.8			5339.1	
		19		13,779m ²		10,019m²	5,073m ²	2.0	4,680m ²					
	PLO 02 - Celestino	1	01 GBA - RETAIL	1194.5	0.5	597.3					597.3			
		3	02 GBA - COMMERCIAL	2208.5	0.8	1766.8						1766.8		
		20	03 GBA - RESIDENTIAL	3561.2	0.75	2670.9				31.4			2670.9	
		24		6,964m ²		5,035m²	2,971m ²	1.7	2,364m ²					
	PLO 03 - Hymix 01	1	01 GBA - RETAIL	1670.2	0.5	835.1					835.1			
		3	02 GBA - COMMERCIAL	1953	0.8	1562.4						1562.4		
		12	03 GBA - RESIDENTIAL	3314.8	0.75	2486.1				29.2			2486.1	
		16		6,938m ²		4,884m²	3,024m ²	1.6	2,398m ²					
	PLO 03 - Hymix 02	1	01 GBA - RETAIL	2637.5	0.5	1318.8					1318.8			
		11	02 GBA - COMMERCIAL	15939.3	0.8	12751.4						12751.4		
		12		18,577m ²		14,070m²	4,667m ²	3.0	14,070m ²					
				46,258m²		34,008m²	15,735m ²	2.2	23,512m ²	123.5				
Site 2														
	Building 01	1	04 GBA - PUBLIC	1114.7	0.5	557.4								557.4
		3	04 GBA - PUBLIC	6938.5	0.8	5550.8								5550.8
		4		8,053m ²		6,108m²			6,108m ²					
	Building 2B	1	01 GBA - RETAIL	1002.9	0.5	501.5					501.5			
		5	03 GBA - RESIDENTIAL	5014.5	0.75	3760.9				46.4			3760.9	
		6		6,017m ²		4,262m²			501m ²					
	Building 2A	1	01 GBA - RETAIL	366.8	0.5	183.4					183.4			
		25	03 GBA - RESIDENTIAL	26964.4	0.75	20223.3				249.7			20223.3	
		26		27,331m ²		20,407m²			183m ²					
	Building 03	1	01 GBA - RETAIL	2311.3	0.5	1155.7					1155.7			
		33	03 GBA - RESIDENTIAL	61027.7	0.75	45770.8				565.1			45770.8	
		34		63,339m ²		46,926m²			1,156m ²					
	Building 04	0.5	01 GBA - RETAIL	1697.9	0.5	849.0					849.0			
		0.5	02 GBA - COMMERCIAL	853.2	0.5	426.6						426.6		
		24	02 GBA - COMMERCIAL	45775.1	0.8	36620.1						36620.1		
		25		48,326m ²		37,896m²			37,896m ²					
	Building 5A	1	01 GBA - RETAIL	1584.7	0.5	792.4					792.4			
		5	02 GBA - COMMERCIAL	7923.5	0.8	6338.8						6338.8		
		6		9,508m ²		7,131m²			7,131m ²					
	Building 5B	1	01 GBA - RETAIL	1794.5	0.5	897.3					897.3			
		5	02 GBA - COMMERCIAL	7108.4	0.8	5686.7						5686.7		
		6		8,903m ²		6,584m²			6,584m ²					
	Building 06	1	01 GBA - RETAIL	1352.1	0.5	676.1					676.1			
		5	02 GBA - COMMERCIAL	6761	0.8	5408.8						5408.8		
		6		8,113m ²		6,085m²			6,085m ²					
				179,591m ²		135,399m²	41,863m ²	3.2	65,644m ²	861				
	Retail GFA					5,055m²								
	Commercial GFA					54,481m²								
	Residential GFA					69,755m²								
	Other GFA					6,108m²								
	Total BMD			225,850m ²		169,407m²	52,931m ²	3.2	89,156m ²	985	8,887	74,160	80,251	6,108
											5.2%	43.8%	47.4%	3.6%

**Attachment 3: Supporting information – Residential Amenity dated 29 July 2022,
FJMT**

Blackwattle Bay - Supporting Information - Residential Amenity
NSW — 29/07/22

Introduction

The Blackwattle Bay State Significant Precinct Study was exhibited during July and August 2021. The Response to Submissions Precinct Plan presents a revised built form that:

- responds to community and stakeholder submissions
- reduces height and massing to improve solar to public domain, adjoining properties and new residential dwellings
- responds to Apartment Design Guide Objectives and Design Guidance

This Supporting Information package outlines the analysis and testing undertaken for potential residential buildings within the revised precinct plan.

This information is supplementary to the Urban Design Statement, Volumes 1 and 2, and the Response to Submissions Urban Design Statement addendum.

The analysis and testing demonstrates the potential for residential to be aligned with key objectives of the Apartment Design Guide including building separation, solar access and cross ventilation. Specifically:

- 70% of apartments can achieve minimum of 2 hours solar between 9am and 3pm on 21 June.
- 60% of apartments below 9 storeys are able to be cross-ventilated.

The precinct is bounded by the Western Distributor to the north-east. Residential use is positioned to balance amenity opportunities and constraints with greater than 80% of apartments facing away from the Western Distributor or with a frontage perpendicular to the Western Distributor.

Recommendations made in SLR's Noise and Air Quality Response reports (Attachment 12 and 13) are incorporated in the Revised Precinct Plan and the studies in this Supporting Information package.

Consistent with the guidance of the Apartment Design Guide and Development Near Rail Corridors and Busy Roads - Interim Guideline, where noise and air quality limit opportunity for cross-ventilation, full alignment with this design criteria may not be preferred.



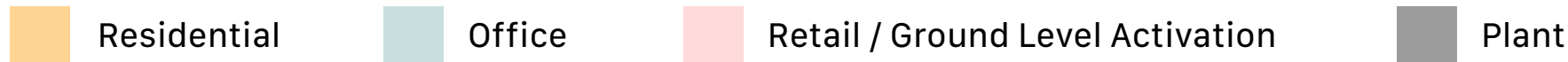
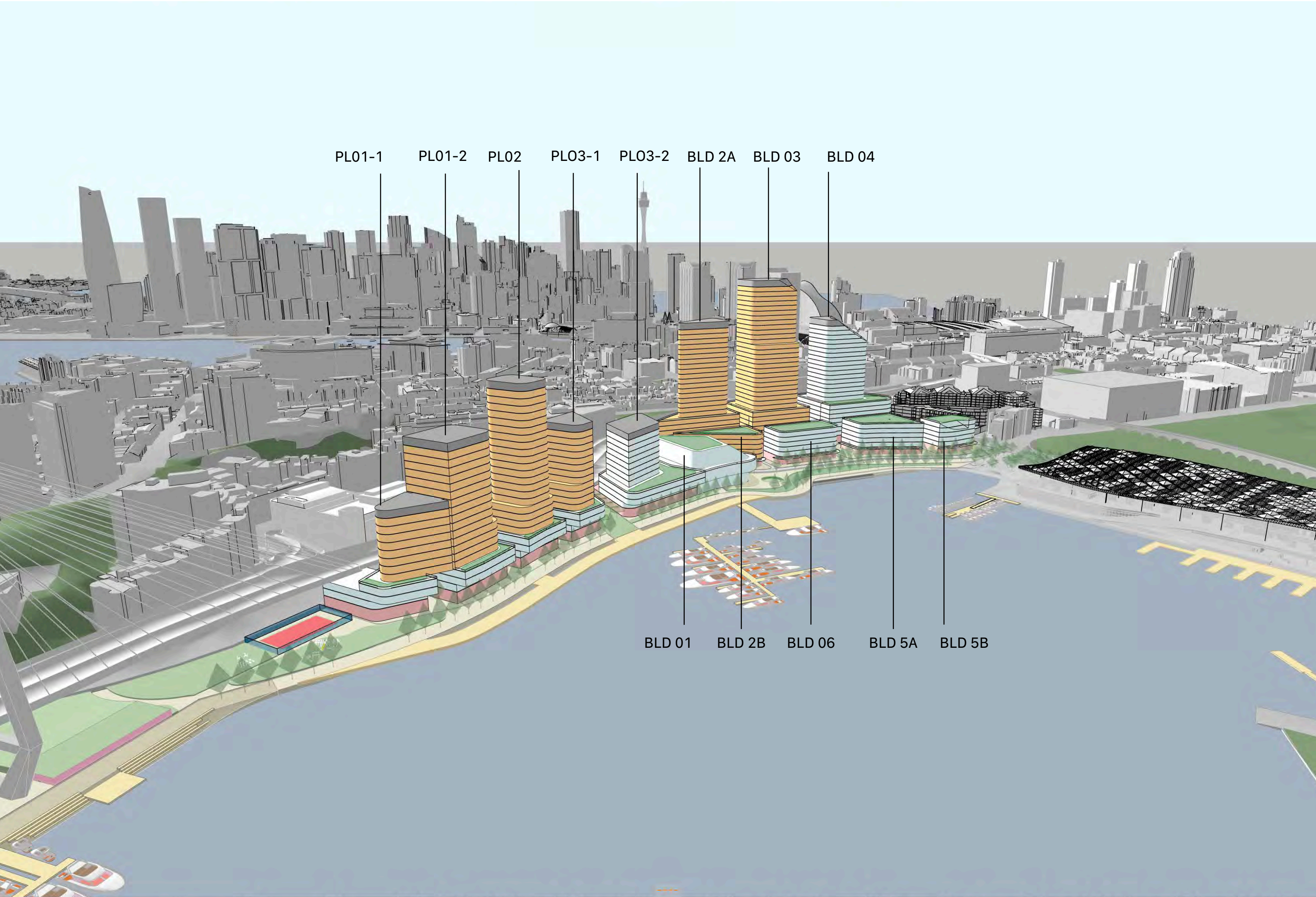
Residential Use

The use distribution in the Revised Precinct Plan considers:

- supportable quantum of commercial floorspace in the precinct
- variety of floor plate sizes and configuration for commercial use
- solar access to public domain
- vistas through the built form
- provision of new homes in the precinct
- solar orientation of apartments
- noise
- air quality
- wind comfort
- outlook
- residential address

Residential use is proposed across the precinct on both private land owner sites and government owned land. The proposed use split in the Revised Precinct Plan is 43% residential and 57% non-residential.

Apartment buildings are proposed where there is access to good amenity including sunlight and outlook. In response to submissions, building separations between apartment buildings have been increased, particularly in the northern zone of the precinct plan.



Residential - Solar Amenity

Objective 4A-1 of the Apartment Design Guide outlines the following Design Criteria for solar access to habitable rooms, primary windows and private open space.

1. *Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas*

and;

3. *A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter*

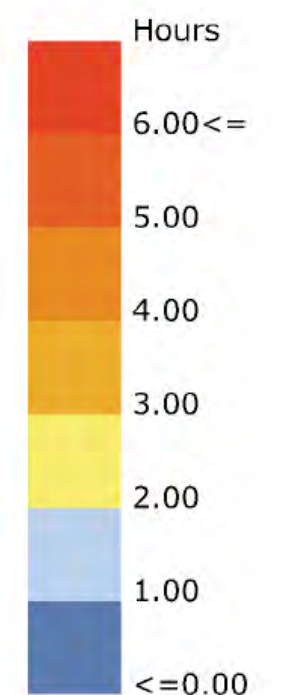
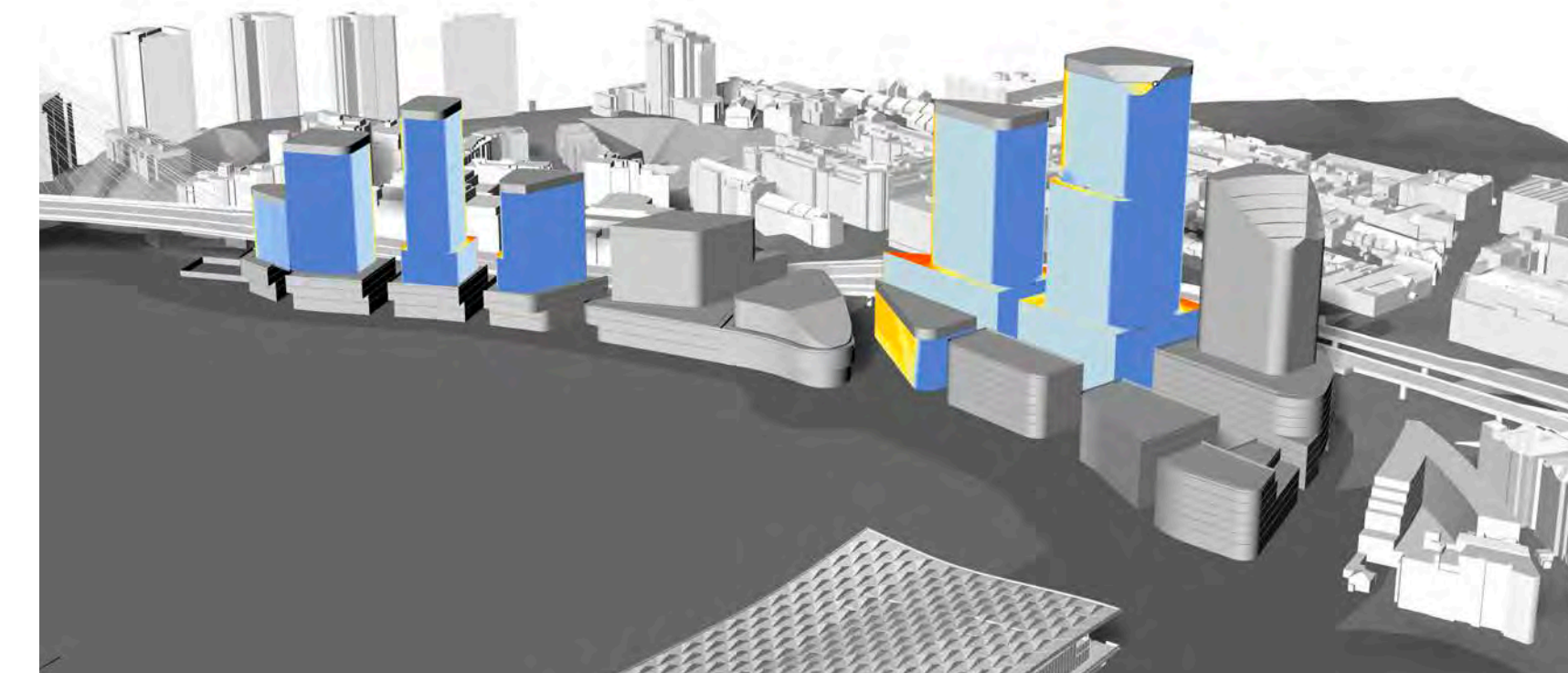
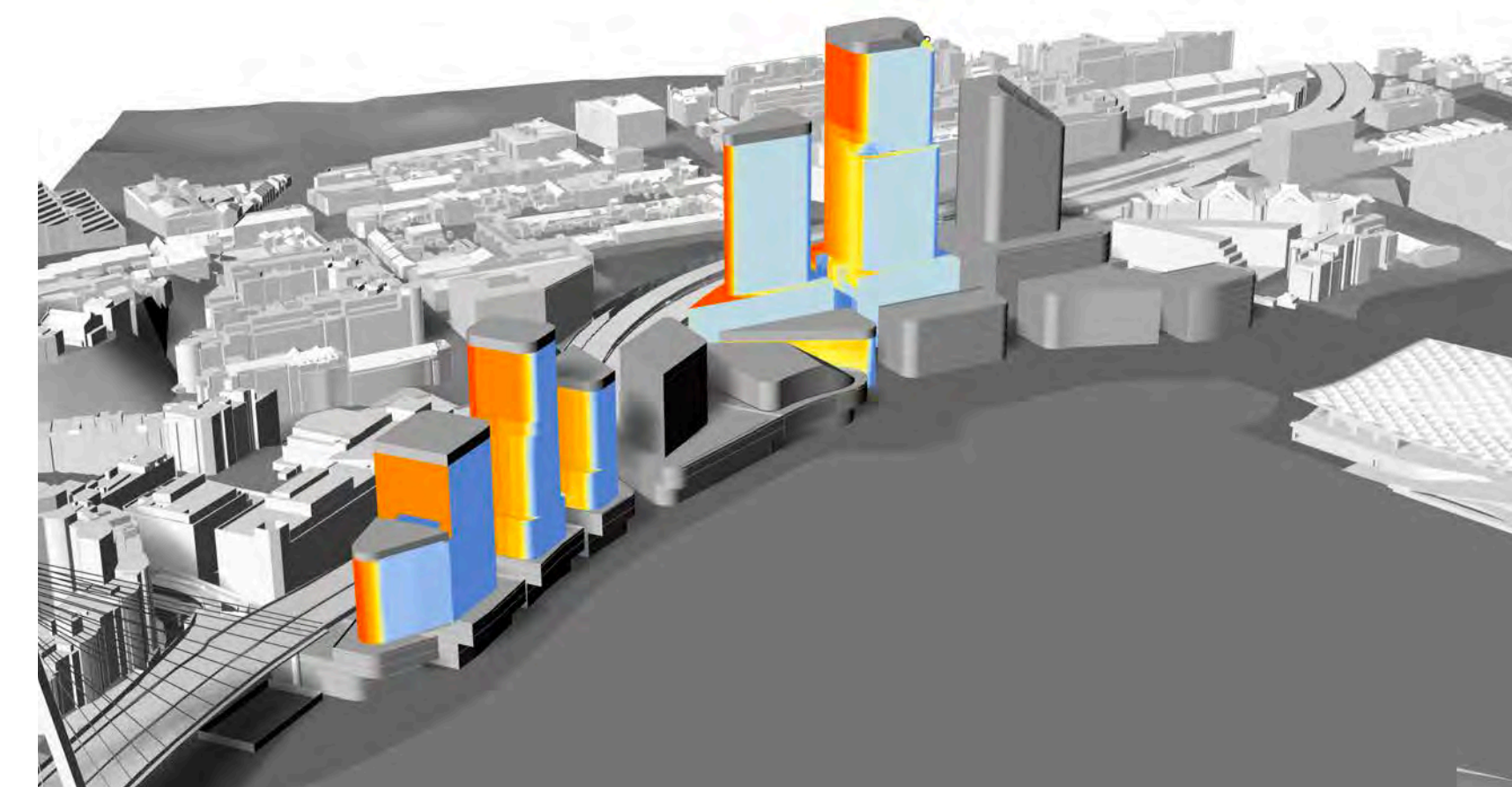
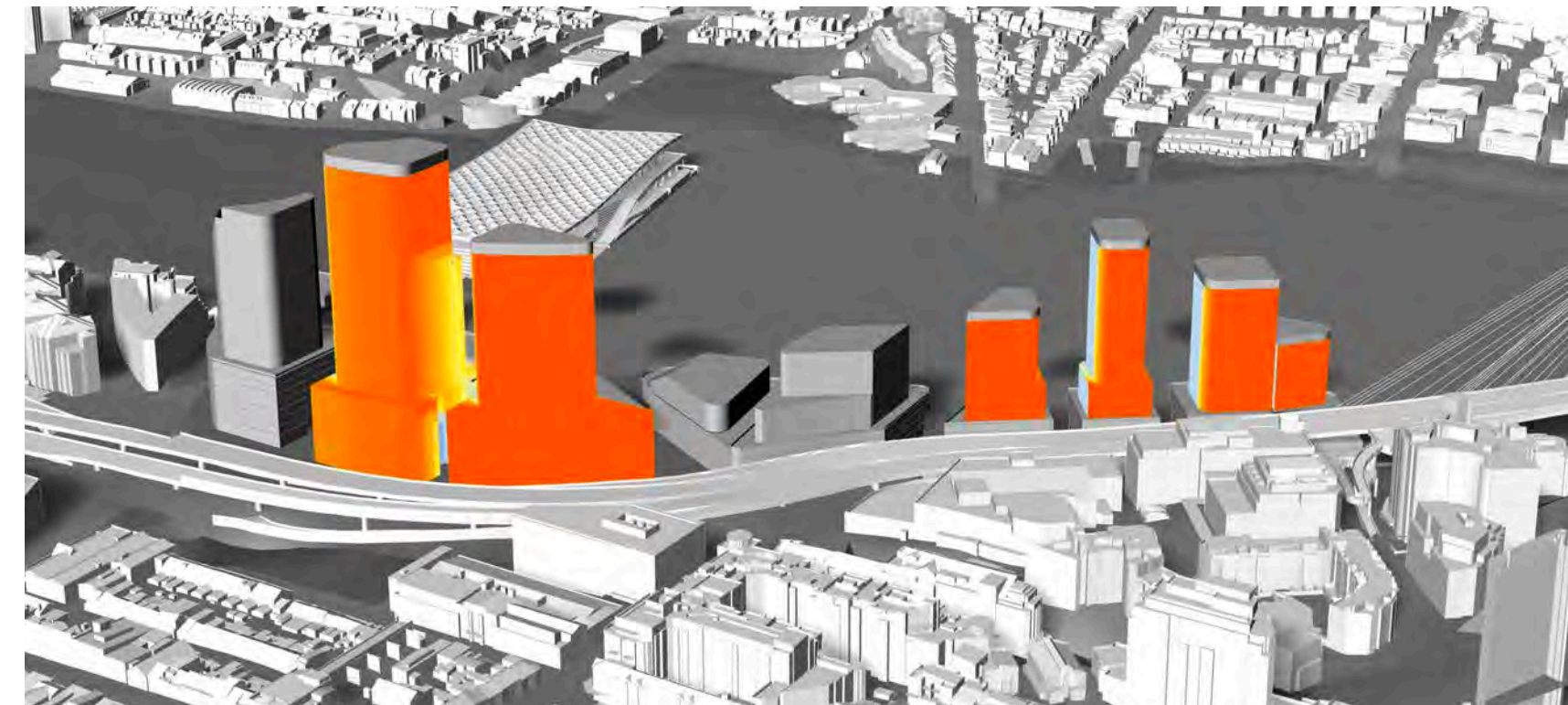
Heat map analysis identifies faces of the residential envelopes that receive 2 hours or greater of solar between 9am and 3pm on 21 June.

ADG Objective 4A-1 Design Guidance advises:

Achieving the design criteria may not be possible on some sites. This includes:

- *where greater residential amenity can be achieved along a busy road or rail line by orientating the living rooms away from the noise source*
- *on south facing sloping sites*
- *where significant views are oriented away from the desired aspect for direct sunlight*

The heat map analysis, in conjunction with considerations of noise, air quality and outlook, have informed the indicative layout plans included in this Supporting Information package.



Air Quality

The exhibited Precinct Plan for Blackwattle Bay referenced and incorporated principles outlined in the Department of Planning 'Development near Rail Corridors and Busy Roads - Interim Guideline'. See extracts related to air quality opposite.

The principles are continued in the Revised Precinct Plan. Residential use is now indicated below 8 storeys on the Private Land Owner sites reflecting submissions and feedback from these stakeholders.

SLR has outlined key recommendations in Attachment 12 - Air Quality Response:

If the modelling predicts significant exceedances at proposed residential locations, additional mitigation measures could be adopted. These can include:

- Reducing the number of apartments facing the Western Distributer by designing building cores to the east; or
- Provision of mechanical ventilation for apartments facing the Western Distributer with fixed glazing to the east and operable windows to non-impacted facades.

The indicative plans in this supporting information package incorporate these recommendations with detailed issues to be addressed in future design and development applications.



/ Air Quality

The principles developed to mitigate the impacts of noise on sensitive uses also assist in relation to the zone of poor air quality around the Western Distributer during periods of heavy traffic flow.

The Development near Rail Corridors and Busy Roads - Interim Guideline outlines the reductions in pollutant concentrations to be expected in the first 10m and 20m from the kerbside of a traffic corridor.

[reference recommendations of SLR Air Quality report]

Natural ventilation to apartments is able to be provided throughout the residential portions of the use mix. In detailed design, the lowest residential floors will require specific solutions to provide alternative fresh air paths with possible mechanical assistance to ensure that residents have the option to open windows and doors for natural ventilation or close windows and doors but maintain access to fresh air.

The Interim Guidelines note that air quality should be considered 'within 60 metres of an area significantly impacted by existing sources of air pollution [such as] ... adjacent major industrial sources ...'. The Hymix concrete batching plant is an existing industrial facility that impacts air quality and is likely to remain in operation concurrent with renewal of early stages of Blackwattle Bay.

The draft Precinct Plan places residential uses outside a 60m radius of the primary plant zone of the Hymix concrete batching facility. A zero lot commercial building in Area 3 along the south boundary of the Hymix site will buffer the pedestrian movements and activity in Park Street. Other sensitive uses such as childcare can be located outside the 60m radius. Renewal of the central Area 2 site (PLO 02) is not precluded under the current Hymix plant configuration.

Renewal of the Hymix site (PLO 03) is assumed to include residential and commercial with an integrated batching plant that contains any noise and air quality sources or a mixed use development that replaces the existing concrete batching plant.

"When air quality should be a design consideration:

- Within 20 metres of a freeway or main road (with more than 2500 vehicles per hour, moderate congestions levels of less than 5% idle time and average speeds of greater than 40 km/hr)
- Within 60 metres of an area significantly impacted by existing sources of air pollution (road tunnel portals, major intersection / roundabouts, overpasses or adjacent major industrial sources)"

Development Near Rail Corridor and Busy Roads - Interim Guideline, NSW, P35

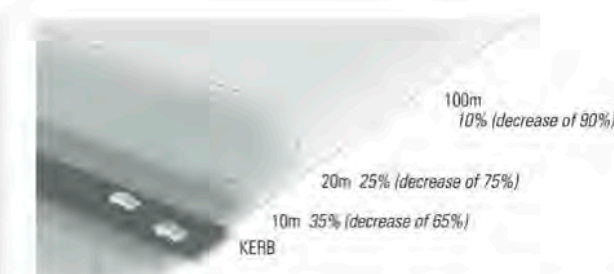
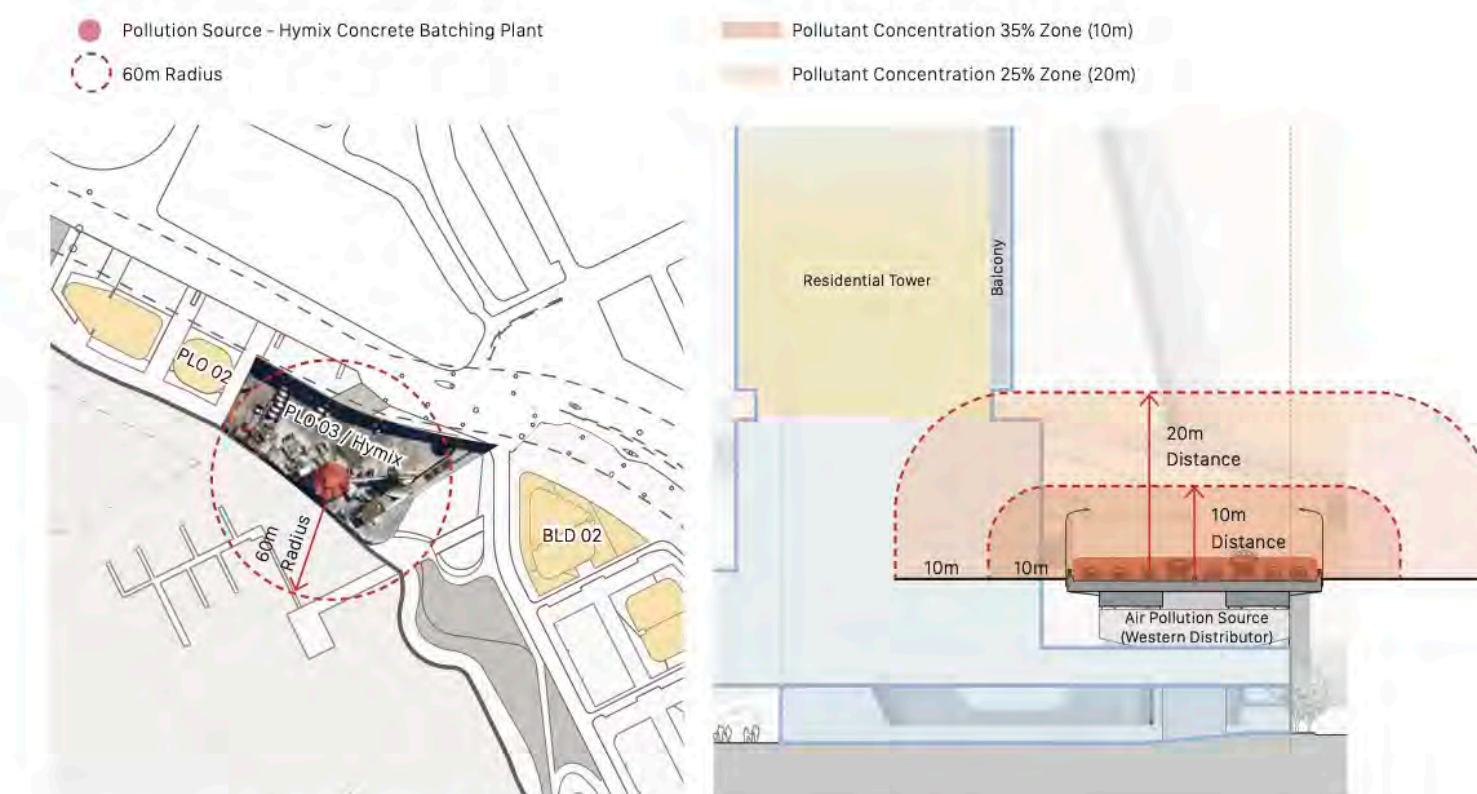


Figure 4.4: Percentage of pollutant concentration shown relative to kerbside concentration of 100%

Source: Development Near Rail Corridor and Busy Roads - Interim Guideline, NSW



/ Air Pollution Impact from Existing Hymix Site

/ Air Pollution Impact from Western Distributer

Noise

The exhibited Precinct Plan for Blackwattle Bay referenced and incorporated principles outlined in the Department of Planning 'Development near Rail Corridors and Busy Roads - Interim Guideline'. See extracts related to noise opposite.

SLR has outlined key recommendations in Attachment 13 - Noise Response:

Where the modelling predicts significant noise impacts at proposed residential facades, this could be mitigated through facade and ventilation system design, building layout, and the proposed habitable/non-habitable uses on each level and area. These measures can include some or all of the following:

- Facade set at oblique or perpendicular angles to the primary noise source, with shielded ventilation openings
- Reorienting and reducing the number of habitable spaces (particularly bedrooms) facing the Western Distributor
- Provision of attenuated natural ventilation measures e.g. partially or fully enclosed balconies with solid balustrades and acoustic absorption, offset window openings or acoustic plenums for habitable spaces

The indicative plans in this supporting information package incorporate these recommendations with detailed issues to be addressed in future design and development applications.



/ Noise

Vehicular traffic along the Western Distributor is a key noise source constraint to be considered in the renewal of Blackwattle Bay. The positioning of sensitive uses and setbacks and separations of the built form are urban design initiatives that can mitigate the noise impacts.

Vertical separation between the residential uses in Area 2 & 3 and the noise source of the Western Distributor is a consistently applied principle in the draft Precinct Plan. Residential zones are introduced on the 9th storey across the site mitigating the impact of the Western Distributor primarily through distance. BLD 02 is an exception as its location is more horizontally separated from the main traffic lanes than other buildings.

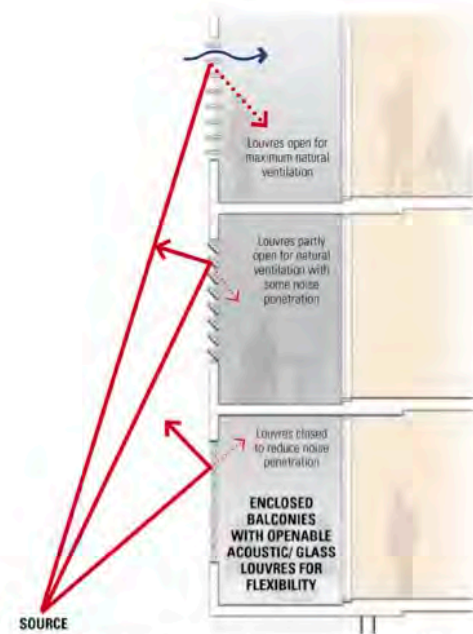


Figure 4J.2 Enclosing balconies to function as wintergardens is an effective means of reducing road and rail noise (Source: Development Near Rail Corridors And Busy Roads - Interim Guideline, NSW)

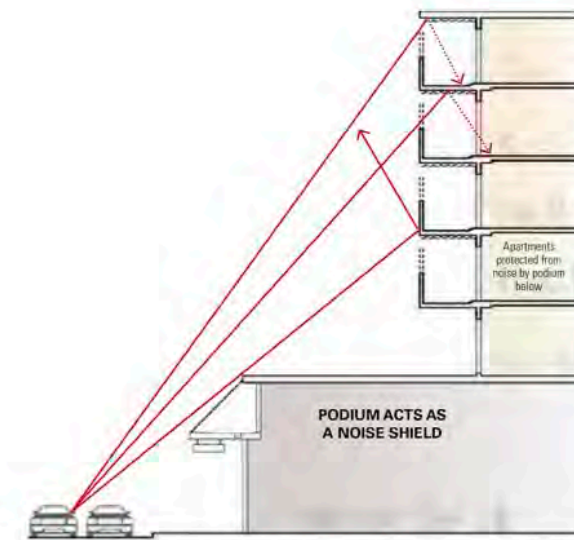
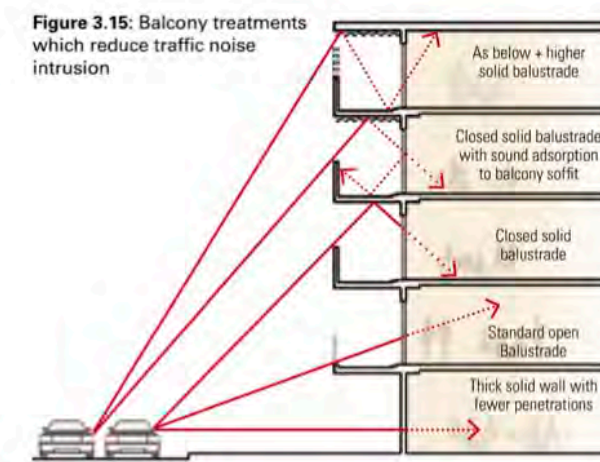


Figure 4J.3 Setting back the residential component above a podium helps shield apartments from major noise. Balcony soffits can be treated with sound absorption to assist to mitigate noise (Source: Development Near Rail Corridors And Busy Roads - Interim Guideline, NSW)



Source: Development Near Rail Corridor and Busy Roads - Interim Guideline, NSW

In Area 3 residential uses are setback 6m from the 8 storey street wall below. In Area 2, where sites are more constrained by the Western Distributor structure, a minimum setback to residential uses of 6m from the Western Distributor is prescribed with non-residential uses below setback 3m from the Western Distributor forming a noise shield to dwellings in the tower.

The Apartment Design Guide anticipates noise constrained sites near major roads, rail lines and beneath flight paths in Section 4J Noise and Pollution. Reference is made to the NSW Government's Development near Rail Corridors and Busy Roads - Interim Guideline.

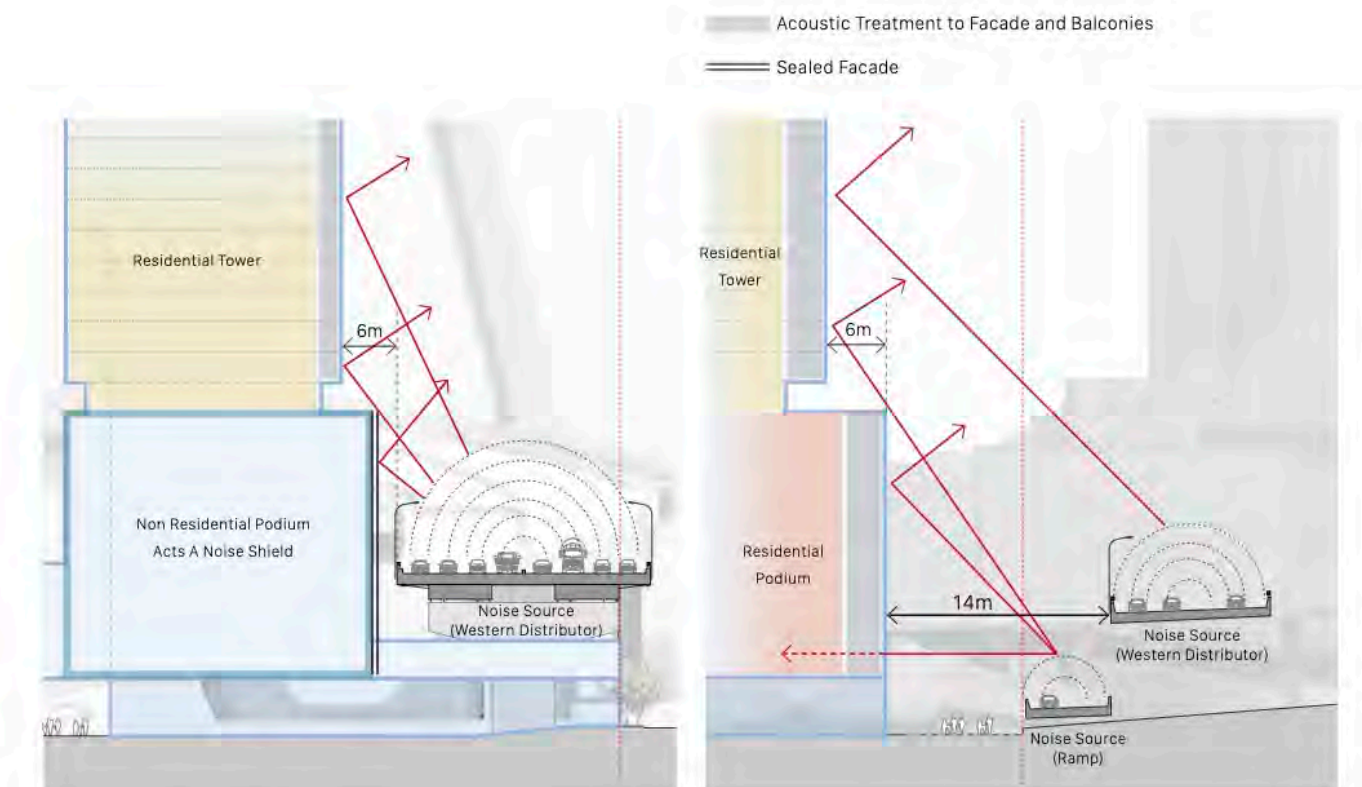
Objective 4J-1 of the ADG provides design guidance in relation to noise impacts. The Objective also notes that achieving the design criteria of the ADG may not be possible in some situations due to noise (and pollution). Notwithstanding this acknowledgement, the residential

components of the draft Precinct Plan are expected to achieve high levels of amenity with application of effective strategies in detailed design.

Detailed design opportunities identified in the Interim Guideline and the ADG include:

- limiting the number and size of openings facing noise sources
- providing seals to prevent noise transfer through gaps
- using double or acoustic glazing, acoustic louvres or enclosed balconies (winter gardens)
- using materials with mass and/or sound insulation or absorption properties eg. Solid balcony balustrades, external screens and soffits

Testing of residential floor plate planning for Area 2 in particular indicates that apartments can be configured to position balconies and primary openings to living spaces perpendicular to the Western Distributor whilst satisfying the solar amenity guidelines of the ADG.



/ Mitigation of Noise Impact of Buildings in Area 2

/ Mitigation of Noise Impact of BLD 02 in Area 3

Indicative Apartment Layouts _ Podium

The indicative apartment layouts at podium level show the positioning of residential buildings to the north of other built form, particularly on site of the existing fish market.

Inclusion of residential in the podium or street wall levels of the precinct massing has benefits for the diversity of the streetscape, engagement with the public domain and surveillance of pedestrian movement networks.

Where residential is closest to the Western Distributor, to the north of Miller Street, the indicative plans show lift and stair cores located to the north-east, consistent with SLR's recommendations.

The number of apartments directly fronting the Western Distributor is minimised and the ADG aligned building separations provide for sun light access and air flow between the building envelopes.

In the southern zone, where the building separations from the Western Distributor are greater, lift and stair cores are more centrally placed with cross-over apartments contributing to a potential variation of dwelling types and providing options for ventilation openings away from noise and poor air quality.

On the western side of the Building 03 podium, where solar access is less favourable, serviced apartments or other accommodation types could be delivered.



Studio / 1 Bed 2 Bed 3 Bed Cross-Through / Cross-Over (2 Bed / 3 Bed) Serviced Apartments

Indicative Apartment Layouts _ Tower

In the tower levels, building separations increase to a minimum of 24m and apartments are positioned above the 8 storey height at which SLR states that there are 'no significant exceedances predicted' in relation to air quality.

Apartments facing toward the Western Distributor are minimised and, on the existing Fish Market site, additional setbacks from the podium levels further separate apartments from noise sources.



- Studio / 1 Bed
- 2 Bed
- 3 Bed
- Cross-Through / Cross-Over (2 Bed / 3 Bed)

ADG Solar _ Podium

Each residential building is able to meet the ADG design criteria at podium level of 70% of living rooms, balconies and private open spaces receiving a minimum of 2 hours solar between 9am and 3pm on the 21 June.



ADG Solar _ Tower

Each residential building is able to meet the ADG design criteria at tower level of 70% of living rooms, balconies and private open spaces receiving a minimum of 2 hours solar between 9am and 3pm on the 21 June.



ADG Cross Ventilation _ Podium

Each residential building is able to meet the ADG design criteria of 60% cross ventilation to apartments below 9 storeys.



Noise / Air Quality

Greater than 80% of apartments face away from the Western Distributor or have a frontage perpendicular to the Western Distributor in the indicative layout plans.

Single orientation apartments at podium level facing the Western Distributor can be minimised. Ventilation and acoustic treatments in line with Department of Planning guidelines and SLR recommendations would be incorporated in detailed proposals for individual sites.



Summary

The Revised Precinct Plan incorporates adjustments to building heights and massing, with increases in building separations for residential use.

The indicative plans demonstrate that the design criteria of solar access and cross ventilation provided in the Apartment Design Guide are able to be met in the precinct plan.

The indicative plans show that apartments can be configured to minimise exposure to noise and poor air quality sources.

Where recommended to address noise and quality constraints in relation to the Western Distributor, alternative strategies for fresh air supply and noise attenuation will need to be investigated in detailed design for selected apartments.

