A PLAN
SCALE 1:250

NOT FOR CONSTRUCTION
LANDSCAPE TENDER

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and or the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the architect for clarification.

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Key

- SHRUBS & GROUND COVERS AREA
- PORTE COCHERE GRANITE PAVEMENT (GRADIENT EFFECT)
- BLACK AUSTRAL GRANITE TO SYDNEY STANDARDS BY OTHERS
- EXTENSION OF INTERNAL PAVEMENT (STONE PAVEMENT)
- TERRACE STONE PAVEMENT TO MATCH INTERIOR FINISHES
- PROMENADE PAVEMENT BY OTHERS
- WATER FEATURE
- STONE PLANTER & SEAT WALLS
- LANDSCAPE TREES PER PUBLIC DOMAIN'S SPECIFICATION BY OTHERS
- LANDSCAPE TREES
- BOUNDARY LINE
- SETBACK BOUNDARY LINE

TW	TOP OF WALL
WL	WATER LEVEL
BL	BOTTOM OF POOL LEVEL
FS	FINISH SURFACE LEVEL
BSL	BOTTOM STRUCTURE LEVEL
A	BIKE PARKING

Note: All Landscape elements shown outside of the boundary line are by others

NORTH

Revision	Date	Description	Initial	Checked
01	16/06/15	GENERAL REVISION	MC	VV
00	17/04/15	FIRST SUBMISSION	NN	VV

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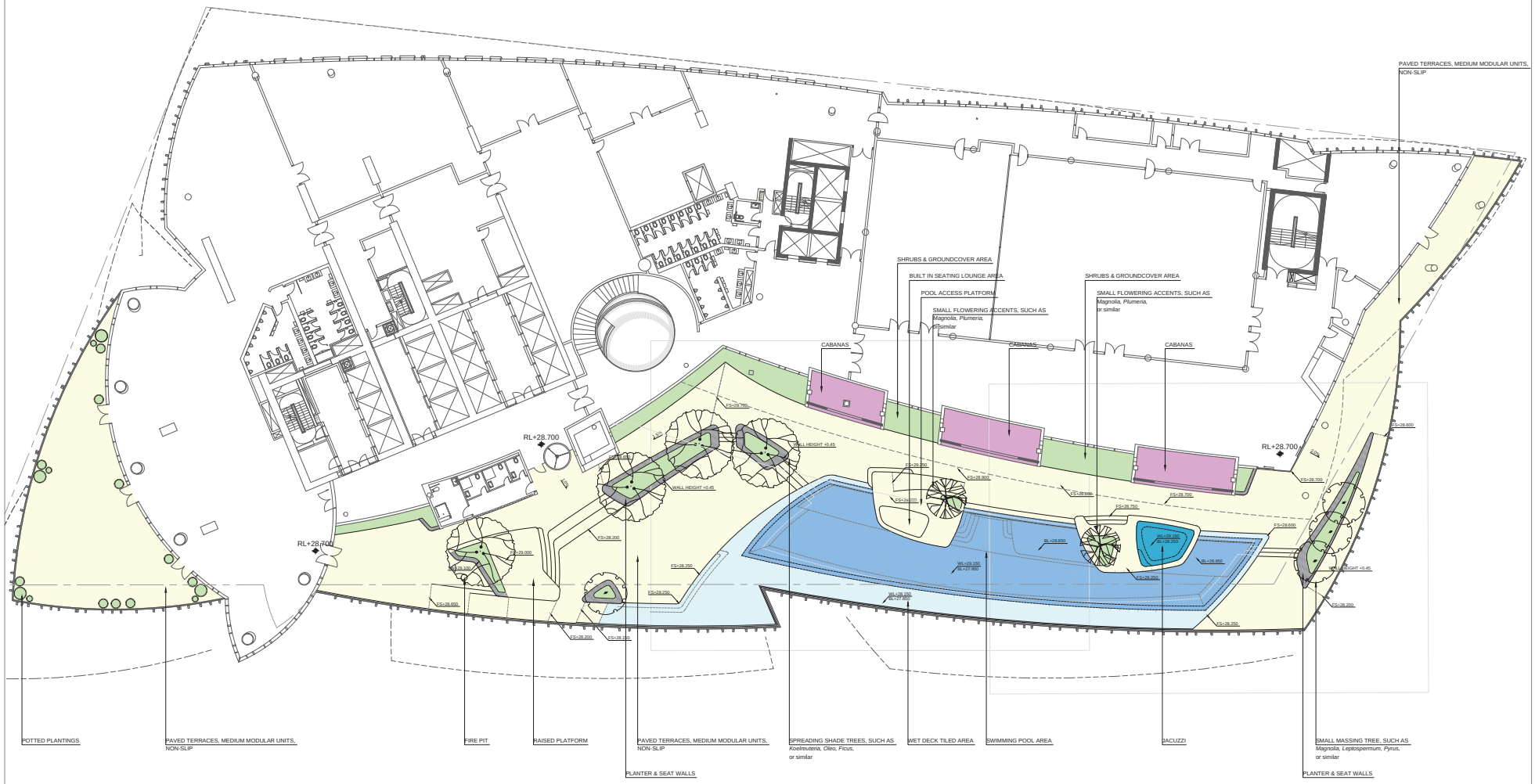
Crown Sydney Hotel Resort

GF GENERAL ARRANGEMENT PLAN

Status	DESIGN DEVELOPMENT		
Scale	1:250	@ A1	
Drawn	NN	Checked	VV
Project No.	1407		
Plot Date	06/16/15 17:30:07		
Model File	1407-DD-00-LG-301-GPL-1.dwg		

Drawing no.	Discipline/ Doc.	Series	Sector/Level Object	Sheet	Revision
00-LG-3.01					01

1407-DD00-LG-301-GPL-1.dwg



A PLAN
SCALE 1:200

Notes

Legend

- SHRUBS & GROUNDCOVER AREA
- PAVED TERRACES, MEDIUM MODULAR UNITS, NON-SLIP
- JACUZZI
- SWIMMING POOL AREA
- WET DECK TILED AREA
- CABANAS AREA
- PLANTER & SEAT WALLS
- SMALL MASSING TREE, SUCH AS *Magnolia, Leptospermum, Pyrus,* or similar
- SMALL FLOWERING ACCENTS, SUCH AS *Magnolia, Plumeria,* or similar
- SPREADING SHADE TREES, SUCH AS *Koelreuteria, Oleo, Ficus,* or similar
- BOUNDARY LINE

TW	TOP OF WALL
WL	WATER LEVEL
BL	BOTTOM OF POOL LEVEL
FS	FINISH SURFACE LEVEL
BSL	BOTTOM STRUCTURE LEVEL

Rev.	Description	Date
00	PLANNING SUBMISSION	09/04/15

NORTH

Client

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Project

CROWN SYDNEY HOTEL RESORT
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Project Phase

PLANNING SUBMISSION

Drawing Title

3F LANDSCAPE MASTER PLAN

Designed by:	DS/VV	09/04/15
Drawn by:	TY/NN	09/04/15
Checked by:	DS/VV	09/04/15

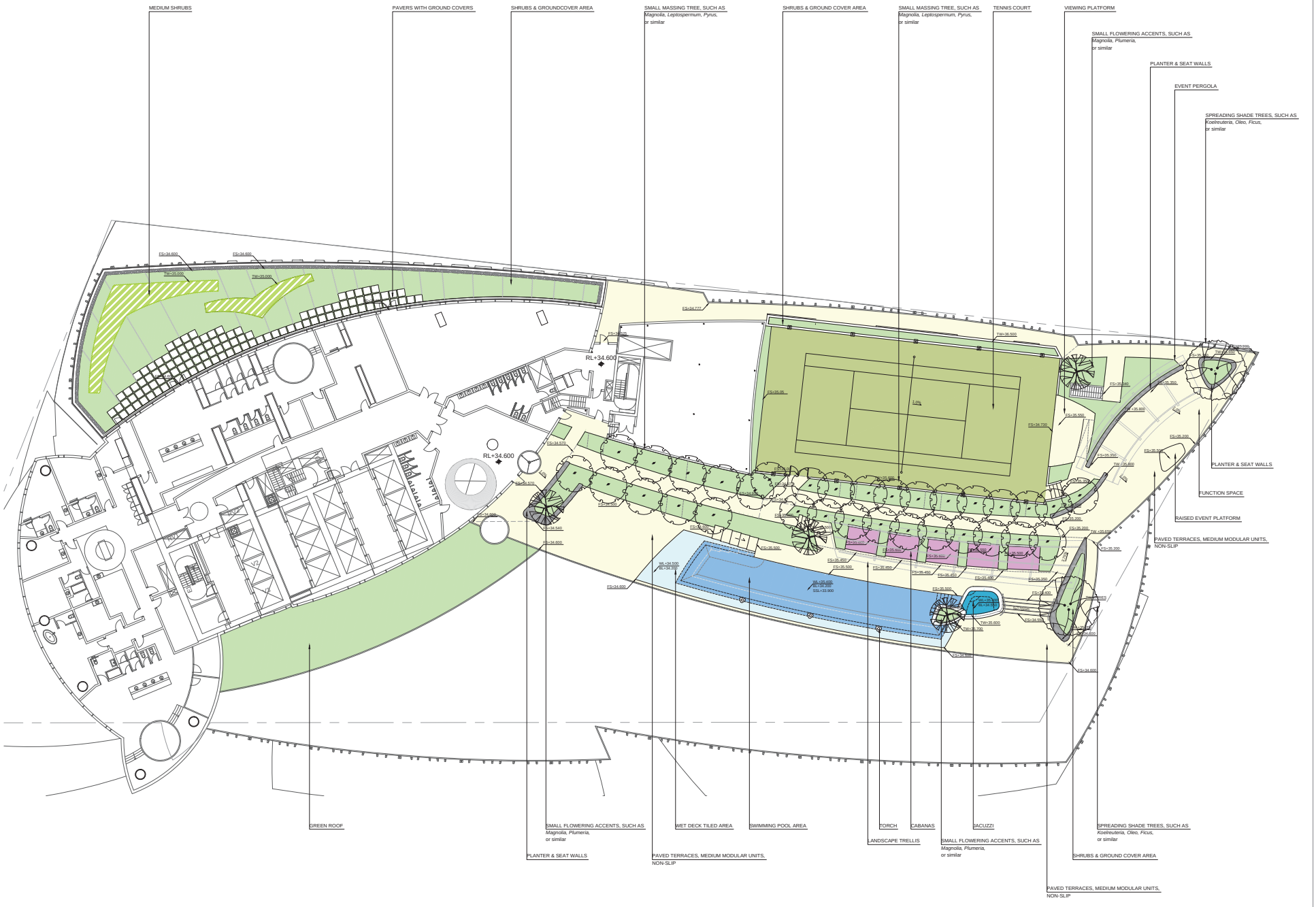
Project no. 1407

Scale AS SHOWN@A1

DWG no. 03-LG-3.01

Rev. 00

File name : 1407-PD-03-LG-301-GPL-0



A PLAN
SCALE 1:200

Notes

Legend

- SHRUBS & GROUNDCOVER AREA
- PAVED TERRACES, MEDIUM MODULAR UNITS, NON-SLIP
- JACUZZI
- SWIMMING POOL AREA
- WET DECK TILED AREA
- CABANAS AREA
- MEDIUM SHRUBS
- PLANTER & SEAT WALLS
- TENNIS COURT
- SMALL MASSING TREE, SUCH AS Magnolia, Leptospermum, Pyrus, or similar
- SMALL FLOWERING ACCENTS, SUCH AS Magnolia, Plumeria, or similar
- SPREADING SHADE TREES, SUCH AS Koelreuteria, Oleo, Ficus, or similar
- BOUNDARY LINE

TW	TOP OF WALL
WL	WATER LEVEL
BL	BOTTOM OF POOL LEVEL
FS	FINISH SURFACE LEVEL
BSL	BOTTOM STRUCTURE LEVEL

Rev.	Description	Date
00	PLANNING SUBMISSION	09/04/15

NORTH

Client

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Project

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Project Phase

PLANNING SUBMISSION

Drawing Title

4F LANDSCAPE MASTER PLAN

Designed by:	DS/VV	09/04/15
Drawn by:	TY/NN	09/04/15
Checked by:	DS/VV	09/04/15

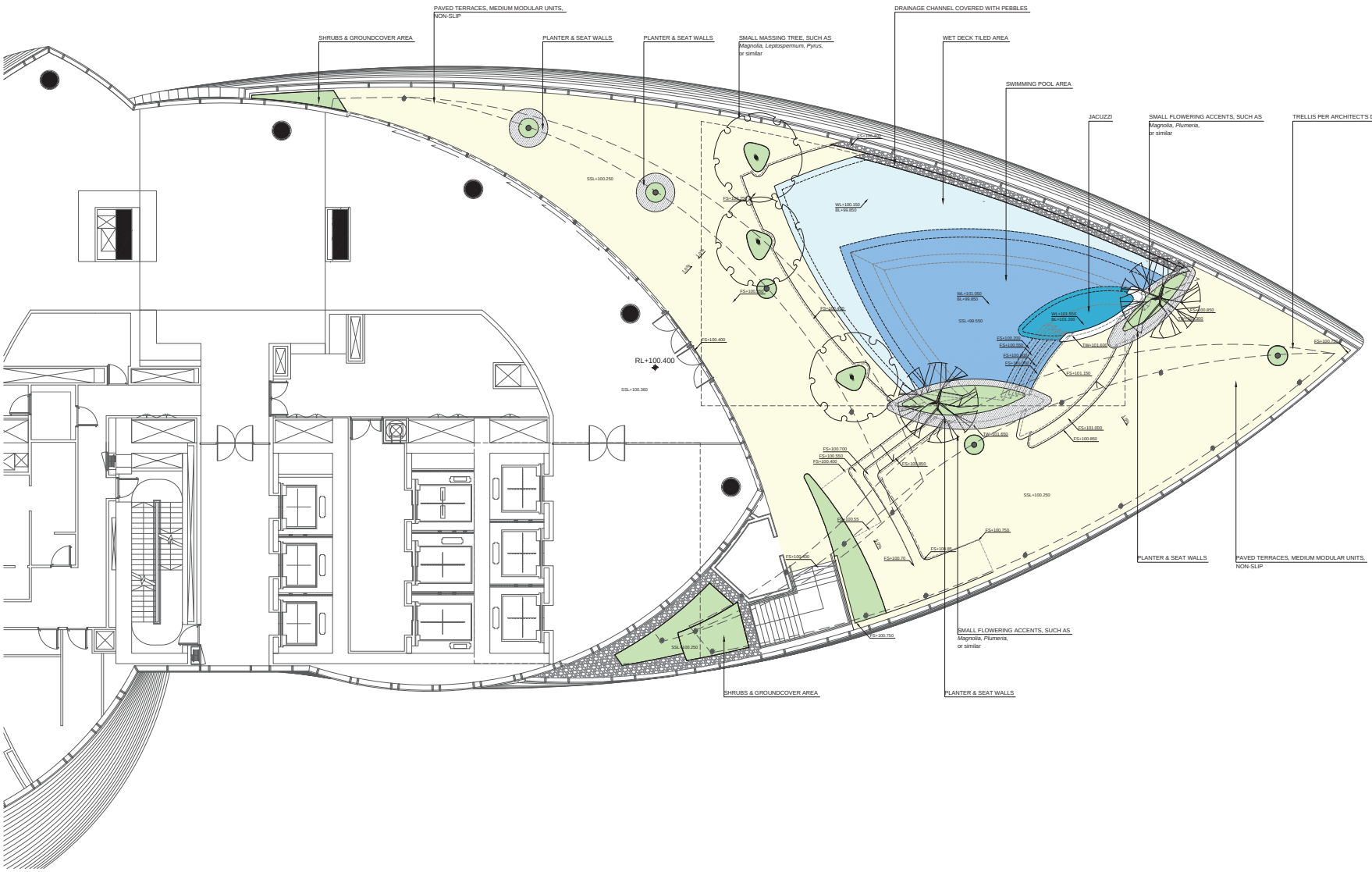
Project no. 1407

Scale AS SHOWN@A1

DWG no. 04-LG-3.01

Rev. 00

File name : 1407-PD-04-LG-301-GPL-0



A PLAN
SCALE 1:100

Notes

Legend

- SHRUBS & GROUNDCOVER AREA
- PAVED TERRACES, MEDIUM MODULAR UNITS, NON-SLIP
- JACUZZI
- SWIMMING POOL AREA
- WET DECK TILED AREA
- CABANAS AREA
- PLANTER & SEAT WALLS
- SMALL MASSING TREE, SUCH AS *Magnolia, Leptospermum, Pyrus,* or similar
- SMALL FLOWERING ACCENTS, SUCH AS *Magnolia, Plumeria,* or similar
- SPREADING SHADE TREES, SUCH AS *Koelreuteria, Olea, Ficus,* or similar

TW	TOP OF WALL
WL	WATER LEVEL
BL	BOTTOM OF POOL LEVEL
FS	FINISH SURFACE LEVEL
BSL	BOTTOM STRUCTURE LEVEL

Rev.	Description	Date
00	PLANNING SUBMISSION	09/04/15

NORTH

Client

CROWN RESORT LIMITED

Project

CROWN SYDNEY HOTEL RESORT
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Project Phase

PLANNING SUBMISSION

Drawing Title

24F LANDSCAPE MASTER PLAN

Designed by:	DS/VV	09/04/15
Drawn by:	TY/NN	09/04/15
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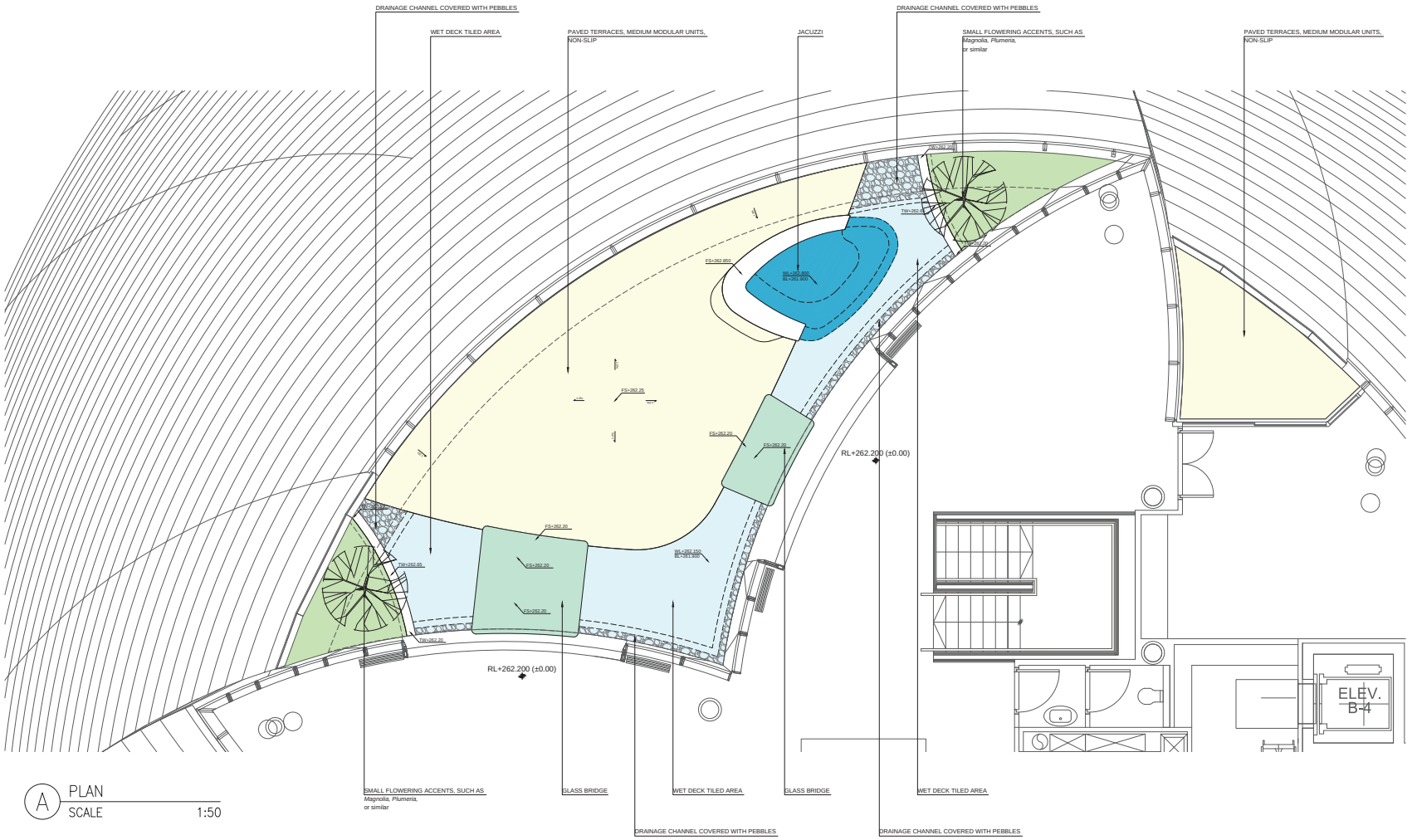
Project no. 1407

Scale AS SHOWN@A1

DWG no. 24-LG-3.01

Rev. 00

File name : 1407-PD-24-LG-301-GPL-0



A PLAN
SCALE 1:50

Notes

Legend

- SHRUBS & GROUNDCOVER AREA
- PAVED TERRACES, MEDIUM MODULAR UNITS, NON-SLIP
- JACUZZI
- SWIMMING POOL AREA
- WET DECK TILED AREA
- CABANAS AREA
- GLASS BRIDGE
- PLANTER & SEAT WALLS
- SMALL MASSING TREE, SUCH AS *Magnolia, Leptospermum, Pyrus,* or similar
- SMALL FLOWERING ACCENTS, SUCH AS *Magnolia, Plumeria,* or similar
- SPREADING SHADE TREES, SUCH AS *Kowtowleonia, Olea, Ficus,* or similar

TW	TOP OF WALL
WL	WATER LEVEL
BL	BOTTOM OF POOL LEVEL
FS	FINISH SURFACE LEVEL
BSL	BOTTOM STRUCTURE LEVEL

Rev.	Description	Date dd/mm/yy
00	PLANNING SUBMISSION	09/04/15

NORTH

Client

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Project Phase

PLANNING SUBMISSION

Drawing Title

69F LANDSCAPE MASTER PLAN

Designed by:	DS/VV	09/04/15
Drawn by:	TY/NN	09/04/15
Checked by:	DS/VV	09/04/15

Project no. 1407

Scale AS SHOWN@A1

DWG no. 69-LG-3.01

Rev. 00

File name : 1407-PD-69-LG-301-GPL-0

APPENDIX C

SEPP65 & RFDC COMPLIANCE CHECKLIST

ADG Ref.	Item Description	Notes	Compliance
PART3	SITING THE DEVELOPMENT		
3A	SITE ANALYSIS		
3A-1 p47	Objective: Site Analysis illustrates that design decisions have been based on opportunities & constraints of the site conditions & their relationship to the surrounding context.		✓
	Design Guidance		Considered
	Each element in the Site Analysis Checklist is addressed.		YES
3B	ORIENTATION		
3B-1 p49	Objective: Building types & layouts respond to the streetscape & site while optimising solar access within the development		✓
	Design Guidance		Considered
	Buildings along the street frontage define the street by facing it & incorporating direct access from the street	Refer podium design	YES
	Where the street frontage is to the east or west, rear buildings are orientated to the north		NA
	Where the street frontage is to the north or south, over-shadowing to the south is minimised & buildings behind the street frontage are orientated to the east & west		NA
3B-2 p49	Objective: Overshadowing of neighbouring properties is minimised during mid winter.		✓
	Design Guidance		Considered
	Living areas, private open space & communal open space receive solar access in accordance with section 3D Communal & Public Open Space and section 4A Solar & Daylight Access		YES
	Solar access to living rooms, balconies & private open spaces of neighbours are considered		YES
	Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%	There are no current adjoining properties.	NA
	If the proposal will reduce the solar access of neighbours, building separation is increased beyond minimums contained in 3F Visual Privacy		NA
	Overshadowing is minimised to the south or downhill by increased upper level setbacks	Tower is located at the north end of the podium.	YES
	Buildings are orientated at 90 deg to the boundary with neighbouring properties to minimise overshadowing & privacy impacts, particularly where minimum setbacks are used & where buildings are higher than the adjoining development	There are no shared boundaries.	NA
	A minimum of 4 hours of solar access is retained to solar collectors on neighbouring buildings	There are no existing solar collectors to consider.	NA
3C	PUBLIC DOMAIN INTERFACE		
3C-1 p51	Objective: Transition between private & public domain is achieved without compromising safety & security.		✓
	Design Guidance		Considered
	Terraces, balconies and courtyard apartments have direct street entry, where appropriate	There are no ground level dwellings	NA
	Changes in level between private terraces, front gardens & dwelling entries above the street level provide surveillance & improve visual privacy for ground level dwellings	There are no ground level dwellings	NA
	Upper level balconies & windows overlook the public domain		YES
	Front fences & walls along street frontages use visually permeable materials & treatments. Height of solid fences or walls is limited to 1m	There are no ground level dwellings. Refer podium design drawings for street frontage design	NA
	Length of solid walls is limited along street frontages		YES
	Opportunities for casual interaction between residents & the public domain is provided for. Design solutions may include seating at building entries, near letter boxes & in private courtyards adjacent to streets	Refer ground floor public domain	YES

ADG Ref.	Item Description	Notes	Compliance
	In developments with multiple buildings and/or entries, pedestrian entries & spaces associated with individual buildings/entries are differentiated to improve legibility for residents, using the following design solutions: · Architectural detailing · Changes in materials · Plant Species · Colours · Opportunities for people to be concealed are minimised	Residential entrance at ground floor porte cochere is clearly differentiated	YES
3C-2 p53	Objective: Amenity of the public domain is retained & enhanced.		✓
	Design Guidance		Considered
	Planting is used to soften the edges of any raised terraces to the street, for example above sub-basement car parking	refer landscape design	YES
	Mail boxes are located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided		YES
	The visual prominence of underground car park vents is minimised & located at a low level where possible		YES
	Substations, pump rooms, garbage storage areas & other service requirements are located in basement car parks or out of view		YES
	Ramping for accessibility is minimised by building entry location & setting ground floor levels in relation to footpath levels		YES
	Durable, graffiti resistant & easily cleanable materials are used		YES
	Where development adjoins public parks, open space or bushland, the design positively addresses this interface & uses the following design solutions: · Street access, pedestrian paths & building entries are clearly defined · Paths, low fences & planting are clearly delineate between communal/private open space & the adjoining public open space · Minimal use of blank walls, fences & ground level parking		YES
	On sloping sites protrusion of car parking above ground level is minimised by using split levels to step underground car parking		NA
	COMMUNAL & PUBLIC OPEN SPACE		
3D-1 p55	Objective: An adequate area of communal open space is provided to enhance residential amenity & to provide opportunities for landscaping.	Residents within the building will have access to the VIP pool deck at Level 04.	✓
	Design Criteria		
1	Communal open space has a minimum area equal to 25% of the site	An area of approximately 1,900sqm is provided, being approx 30% of the site area.	✓
2	Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter)		✓
	Design Guidance		Considered
	Communal open space is consolidated into a well designed, easily identified & usable area		YES
	Communal open space have a minimum dimension of 3m. Larger developments should consider greater dimensions		YES
	Communal open space are co-located with deep soil areas	There are no deep soil areas	NA
	Direct, equitable access are provided to communal open space areas from common circulation areas, entries & lobbies		YES
	Where communal open space cannot be provided at ground level, it is provided on a podium or roof		YES

ADG Ref.	Item Description	Notes	Compliance
	Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they need to: · Provide communal spaces elsewhere such as a landscaped roof top terrace or a common room · Provide larger balconies or increased private open space for apartments · Demonstrate good proximity to public open space & facilities and/ or provide contributions to public open space		NA
3D-2 p57	Objective: Communal open space is designed to allow for a range of activities, respond to site conditions & be attractive and inviting		✓
	Design Guidance		Considered
	Facilities are provided within communal open spaces & common spaces for a range of age groups (see 4F Common Circulation & Spaces), incorporating the following: · Seating for individuals or groups · Barbeque areas · Play equipment or play areas · Swimming pools, gyms, tennis courts or common rooms		YES
	Location of facilities responds to microclimate & site conditions with access to sun in winter, shade in summer & shelter from strong winds & down drafts		YES
	Visual impacts of services are minimised, including location of ventilation duct outlets from basement car parks, electrical substations & detention tanks		YES
3D-3 p57	Objective: Communal open space is designed to maximise safety.		✓
	Design Guidance		Considered
	Communal open space & public domain should be readily visible from habitable rooms & private open space areas while maintaining visual privacy. Design solutions include: · Bay windows · Corner windows · Balconies	Residential apartments will overlook common areas	YES
	Communal open space is well lit		YES
	Communal open space/facilities that are provided for children & young people are safe and contained		YES
3D-4 p59	Objective: Public open space, where provided, responds to the existing pattern & uses of the neighbourhood.		NA
	Design Guidance		Considered
	Public open space is well connected with public streets along at least one edge	Public Open Space is not proposed. The building proposal has 100% site coverage.	NA
	POS is connected with nearby parks & other landscape elements		NA
	POS is linked through view lines, pedestrian desire paths, termination points & the wider street grid		NA
	Solar access is provided year round along with protection from strong winds		NA
	Opportunities for a range of recreational activities is provided for people of all ages		NA
	Positive street address & active street frontages are provided adjacent to POS		NA
	Boundaries are clearly defined between POS & private areas		NA
3E	DEEP SOIL ZONES		
3E-1 p61	Objective: Deep soil zones are suitable for healthy plant & tree growth, improve residential amenity and promote management of water and air quality.		NA
	Design Criteria		

ADG Ref.	Item Description	Notes	Compliance
	1 Deep soil zones are to meet the following minimum requirements: Site Area (sqm) / Minimum Dim. (m) / Deep Soil Zone (% of site area) less than 650 / - / 7 650-1500 / 3 greater than 1500 / 6 greater than 1500 with significant existing tree cover / 6		
	Design Guidance		Considered
	On some sites it may be possible to provide larger deep soil zones, depending on the site area & context: · 10% of the site as deep soil on sites with an area of 650sqm - 1,500sqm · 15% of the site as deep soil on sites greater than 1,500sqm		NO
	Deep soil zones are located to retain existing significant trees & to allow for the development of healthy root systems, providing anchorage & stability for mature trees. Design solutions may include: · Basement & sub-basement car park design that is consolidated beneath building footprints · Use of increased front & side setbacks · Adequate clearance around trees to ensure long term health · Co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deep soil	There are no existing trees	NA
	Achieving the design criteria may not be possible on some sites including where: · location & building typology have limited or no space for deep soil at ground level (e.g. central business district, constrained sites, high density areas, or in centres) · there is 100% site coverage or non-residential uses at ground floor level Where a proposal does not achieve deep soil requirements, acceptable stormwater management is achieved & alterna-tive forms of planting provided	Proposal has 100% site coverage which reflects the mixed use nature of the building and the site's location at Barangaroo and Central Sydney. An acceptable stormwater solution is also proposed	YES
3F	VISUAL PRIVACY		
3F-1 p63	Objective: Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external & internal visual privacy.		✓
	Design Criteria		
	1 Separation between windows & balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side & rear boundaries are as follows: Building Height (m) / Habitable Rooms & Balconies. (m) / Non-Habitable Rooms (m) up to 12 4 storeys) / 6 / 3 up to 25 (5-8 storeys) / 9 / 4.5 over 25 (9+ storeys) / 12 / 6 Note: Separation distances between buildings on the same site should combine required building separations depending on the type of room. Gallery access circulation should be treated as habitable space when measuring privacy separation distances between neighbouring properties.		✓
	Design Guidance		Considered
	Generally as the height increases, one step in the built form is desirable due to building separations. Any additional steps do not to cause a 'ziggurat' appearance		YES

ADG Ref.	Item Description	Notes	Compliance
	For residential buildings next to commercial buildings, separation distances are measured as follows: · Retail, office spaces & commercial balconies use the habitable room distances · Service & plant areas use the non-habitable room distances		NA
	New development are located & oriented to maximise visual privacy between buildings on site & for neighbouring buildings. Design solutions include: · site layout & building are orientated to minimise privacy impacts (see 3B Orientation) · on sloping sites, apartments on different levels have appropriate visual separation distances (see pg 63 figure 3F.4)		YES
	Apartment buildings have an increased separation distance of 3m (in addition to 3F-1 Design Criteria) when adjacent to a different zone that permits lower density residential development, to provide for a transition in scale & increased landscaping (pg 63 figure 3F.5)		NA
	Direct lines of sight are avoided for windows & balconies across corners		YES
	No separation is required between blank walls		NA
3F-2 p65	Objective: Site & building design elements increase privacy without compromising access to light & air and balance outlook & views from habitable rooms & private open space.		✓
	Design Guidance		Considered
	Communal open space, common areas & access paths are separated from private open space & windows to apartments, particularly habitable room windows. Design solutions include: · setbacks · solid or partially solid balustrades on balconies at lower levels · fencing and/or trees and vegetation to separate spaces · screening devices · bay windows or pop out windows to provide privacy in one direction & outlook in another · raising apartments or private open space above the public domain or communal open space · planter boxes incorporated into walls & balustrades to increase visual separation · pergolas or shading devices to limit overlooking of lower apartments or private open space · on constrained sites where it can be demonstrated that building layout opportunities are limited, fixed louvres or screen panels on windows and/or balconies		YES
	Bedrooms, living spaces & other habitable rooms are separated from gallery access & other open circulation space by the apartment's service areas		YES
	Balconies & private terraces are located in front of living rooms to increase internal privacy		YES
	Windows are offset from the windows of adjacent buildings		NA
	Recessed balconies and/or vertical fins are used between adjacent balconies		YES
3G	PEDESTRIAN ACCESS & ENTRIES		
3G-1 p67	Objective: Building entries & pedestrian access connects to and addresses the public domain.		✓
	Design Guidance		Considered
	Multiple entries (including communal building entries & individual ground floor entries) activate the street edge		YES
	Entry locations relate to the street & subdivision pattern, and the existing pedestrian network	Future pedestrian network in this case	YES
	Building entries are clearly identifiable. Communal entries are clearly distinguishable from private entries		YES
	Where street frontage is limited, a primary street address should be provided with clear sight lines and pathways to secondary building entries		NA
3G-2 p67	Objective: Access, entries & pathways are accessible & easy to identify.		✓

ADG Ref.	Item Description	Notes	Compliance
	Design Guidance		Considered
	Building access areas including lift lobbies, stairwells & hallways are clearly visible from the public domain & communal spaces		YES
	The design of ground floors & underground car parks minimise level changes along pathways & entries		YES
	Steps & ramps are integrated into the overall building & landscape design		YES
	For large developments 'way finding' maps are provided to assist visitors & residents		YES
	For large developments electronic access & audio/video intercom are provided to manage access		YES
3G-3 p67	Objective: Large sites provide pedestrian links for access to streets & connection to destinations.		✓
	Design Guidance		Considered
	Pedestrian links through sites facilitate direct connections to open space, main streets, centres & public transport		YES
	Pedestrian links are direct, have clear sight lines, are overlooked by habitable rooms or private open spaces of dwellings, are well lit & contain active uses, where appropriate		YES
3H	VEHICLE ACCESS		
3H-1 p69	Objective: Vehicle access points are designed & located to achieve safety, minimise conflicts between pedestrians & vehicles and create high quality streetscapes.		✓
	Design Guidance		Considered
	Car park access is integrated with the building's overall facade. Design solutions include: · materials & colour palette minimise visibility from street · security doors/gates minimise voids in the facade · where doors are not provided, visible interiors reflect facade design, and building services, pipes & ducts are concealed		YES
	Car park entries are located behind the building line		YES
	Vehicle entries are located at the lowest point of the site, minimising ramp lengths, excavation & impacts on the building form and layout		YES
	Car park entry & access are located on secondary streets or lanes where available	Secondary street is not available	NO
	Vehicle standing areas that increase driveway width & encroach into setbacks are avoided	Refer to the ground floor porte cochere design	YES
	Access point is located to avoid headlight glare to habitable rooms		YES
	Adequate separation distances are provided between vehicle entries & street intersections		YES
	The width & number of vehicle access points are limited to the minimum		YES
	Visual impact of long driveways is minimised through changing alignments & screen planting	Refer to the ground floor porte cochere design	YES
	The need for large vehicles to enter or turn around within the site is avoided	Accomodated within basement carpark	YES
	Garbage collection, loading & servicing areas are screened	Accomodated within basement carpark	YES
	Clear sight lines are provided at pedestrian & vehicle crossings		YES
	Traffic calming devices, such as changes in paving material or textures, are used where appropriate		YES
	Pedestrian & vehicle access are separated & distinguishable. Design solutions include: · Changes in surface materials · Level changes · Landscaping for separation		YES
3J	BICYCLE & CAR PARKING		
3J-1 p71	Objective: Car parking is provided based on proximity to public transport in metropolitan Sydney & centres in regional areas.		✓
	Design Criteria		

ADG Ref.	Item Description	Notes	Compliance
	1 For development in the following locations: · on sites that are within 800m of a railway station or light rail stop in the Sydney Metropolitan Area; or · on land zoned, and sites within 400m of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre the minimum car parking requirement for residents & visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less. The car parking needs for a development must be provided off street.		✓
	Design Guidance		Considered
	Where a car share scheme operates locally, car share parking spaces are provided within the development.		NO
	Where less car parking is provided in a development, council do not provide on street resident parking permits		NA
3J-2 p71	Objective: Parking & facilities are provided for other modes of transport.		✓
	Design Guidance		Considered
	Conveniently located & sufficient numbers of parking spaces are provided for motorbikes & scooters		YES
	Secure undercover bicycle parking is provided & easily accessible from both public domain & common areas		YES
	Conveniently located charging stations are provided for electric vehicles, where desirable		YES
3J-3 p73	Objective: Car park design & access is safe and secure.		✓
	Design Guidance		Considered
	Supporting facilities within car parks, including garbage, plant & switch rooms, storage areas & car wash bays can be accessed without crossing car parking spaces		YES
	Direct, clearly visible & well lit access is provided into common circulation areas		YES
	Clearly defined & visible lobby or waiting area is provided to lifts & stairs		YES
	For larger car parks, safe pedestrian access is clearly defined & circulation areas have good lighting, colour, line marking and/or bollards		YES
3J-4 p73	Objective: Visual & environmental impacts of underground car parking are minimised.		✓
	Design Guidance		Considered
	Excavation minimised through efficient car park layouts & ramp design		YES
	Car parking layout is well organised, using a logical, efficient structural grid & double loaded aisles		YES
	Protrusion of car parks do not exceed 1m above ground level. Solution include stepping car park levels or using split levels on sloping sites		YES
	Natural ventilation is provided to basement & sub-basement car parking	Mechanical ventilation is proposed.	NO
	Ventilation grills or screening devices for car parking openings are integrated into the facade & landscape design		YES
3J-5 p75	Objective: Visual & environmental impacts of on-grade car parking are minimised.		✓
	Design Guidance		Considered
	On-grade car parking is avoided		YES
	Where on-grade car parking is unavoidable, the following design solutions are used: · Parking is located on the side or rear of the lot away from the primary street frontage · Cars are screened from view of streets, buildings, communal & private open space areas · Safe & direct access to building entry points is provided · Parking is incorporated into the landscape design, by extending planting & materials into the car park space · Stormwater run-off is managed appropriately from car parking surfaces · Bio-swales, rain gardens or on site detention tanks are provided, where appropriate · Light coloured paving materials or permeable paving systems are used. Shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures to large areas of paving	On-grade parking will only occur in the porte-cochere, which will be managed at all times.	YES
3J-6 p75	Objective: Visual & environmental impacts of above ground enclosed car parking are minimised.		✓
	Design Guidance		Considered
	Exposed parking is not located along primary street frontages	Parking is in the basement	NA
	Screening, landscaping & other design elements including public art are used to integrate the above ground car parking with the facade. Design solutions include: · Car parking that is concealed behind facade, with windows integrated into the overall facade design (limited to developments where larger floor plate podium is suitable at lower levels) · Car parking that is 'wrapped' with other uses, such as retail, commercial or two storey Small Office/Home Office (SOHO) units along the street frontage	Parking is in the basement	NA
	Positive street address & active frontages are provided at ground level		YES
PART4	DESIGNING THE BUILDING		
4A	SOLAR & DAYLIGHT ACCESS		
4A-1 p79	Objective: To optimise number of apartments receiving sunlight to habitable rooms, primary windows & private open space.		✓
	Design Criteria		
	1 Living rooms & private open spaces of at least 70% of apartments in a building receive a minimum of 2 hrs direct sunlight between 9am - 3pm at mid winter in Sydney Metropolitan Area and in Newcastle and Wollongong local government areas	78.78% is achieved	✓
	2 In all other areas, living rooms & private open spaces of at least 70% of apartments in a building receive a minimum of 3 hrs direct sunlight between 9 am - 3 pm at mid winter		✓
	3 A maximum of 15% of apartments in a building receive no direct sunlight between 9 am - 3 pm at mid winter		NA
	Design Guidance		Considered
	The design maximises north aspect. The number of single aspect south facing apartments is minimised		YES
	Single aspect, single storey apartments have a northerly or easterly aspect	There are no single aspect apartments.	NA
	Living areas are located to the north and service areas to the south & west of apartments		YES
	To optimise direct sunlight to habitable rooms & balconies a number of the following design features are used: · Dual aspect apartments · Shallow apartment layouts · Two storey &mezzanine level apartments · Bay windows		YES

ADG Ref.	Item Description	Notes	Compliance
	To maximise the benefit to residents of direct sunlight within living rooms & private open spaces, a minimum of 1sqm of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes		YES
	Achieving the design criteria may not be possible 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 · significant views are oriented away from the desired aspect for direct sunlight Design drawings need to demonstrate how site constraints & orientation preclude meeting Design Criteria & how the development meets the objective.		NA
4A-2 p81	Objective: Daylight access is maximised where sunlight is limited.		✓
	Design Guidance		Considered
	Courtyards, skylights & high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms	Window sills are typically at floor level.	YES
	Where courtyards are used: · Use is restricted to kitchens, bathrooms & service areas · Building services are concealed with appropriate detailing & materials to visible walls · Courtyards are fully open to the sky · Access is provided to the light well from communal area for cleaning & maintenance · Acoustic privacy, fire safety & minimum privacy separation distances (see 3F Visual Privacy) are achieved	Courtyards are not used.	NA
	Opportunities for reflected light into apartments are optimised through: · Reflective exterior surfaces on buildings opposite south facing windows · Positioning windows to face other buildings or surfaces (on neighbouring sites or within site) that will reflect light · Integrating light shelves into the design · Light coloured internal finishes		NA
4A-3 p81	Objective: Design incorporates shading & glare control, particularly for warmer months.		✓
	Design Guidance		Considered
	A number of the following design features are used: · Balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas · Shading devices such as eaves, awnings, balconies, pergolas, external louvres & planting · Horizontal shading to north facing windows · Vertical shading to east & particularly west facing windows · Operable shading to allow adjustment & choice · High performance glass that minimises external glare off windows, with consideration given to reduce tint glass or glass with a reflectance level below 20% (reflective films are avoided)	High performance glass is employed	YES
4B	NATURAL VENTILATION		
4B-1 p83	Objective: All habitable rooms are naturally ventilated.		✓
	Design Guidance		Considered
	The building's orientation maximises capture & use of prevailing breezes for natural ventilation in habitable rooms		YES
	Depths of habitable rooms support natural ventilation		YES
	The area of unobstructed window openings should be equal to at least 5% of the floor area served		YES
	Light wells are not the primary air source for habitable rooms		YES

ADG Ref.	Item Description	Notes	Compliance
	Doors & openable windows maximise natural ventilation opportunities by using the following design solutions: · Adjustable windows with large effective openable areas · Variety of window types that provide safety & flexibility such as awnings & louvres · Windows that occupants can reconfigure to funnel breezes into apartment, such as vertical louvres, casement windows & externally opening doors		YES
4B-2 p83	Objective: The layout & design of single aspect apartments maximises natural ventilation.		✓
	Design Guidance		Considered
	Apartment depths limited to maximise ventilation & airflow	Refer to the inset balconies providing enhanced ventilation.	YES
	Natural ventilation to single aspect apartments is achieved with the following design solutions: · Primary windows are augmented with plenums and light wells (generally not suitable for cross ventilation) · Stack effect ventilation, solar chimneys or similar used to naturally ventilate internal building areas or rooms such as bathrooms & laundries · Courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation & avoid trapped smells		NA
4B-3 p85	Objective: Number of apartments with natural cross vent is maximised to create comfortable indoor environments for residents.		✓
	Design Criteria		
1	At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed	All apartments are greater than 10 storeys above ground.	✓
2	Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line		NA
	Design Guidance		Considered
	The building includes dual aspect apartments, cross through apartments & corner apartments, and limited apartment depths		YES
	In cross-through apartments, external window & door opening sizes/ areas on one side of an apartment (inlet side) are approximately equal to the external window & door opening sizes/areas on the other side of the apartment (outlet side)		YES
	Apartments are designed to minimise the number of corners, doors & rooms that might obstruct airflow		YES
	Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation & airflow		YES
4C	CEILING HEIGHTS		
4C-1 p87	Objective: Ceiling height achieves sufficient natural ventilation & daylight access.		✓
	Design Criteria		

ADG Ref.	Item Description	Notes	Compliance
	1 Measured from finished floor level to finished ceiling level, minimum ceiling heights are:		

Minimum Ceiling Height for apt and mixed-used buildings (m)	
Habitable rooms	2.7
Non-habitable rooms	2.4
For 2 storey apts	2.7 for main living area floor 2.4 for second floor, where its area does not exceed 50% of the apt area
Attic spaces	1.8 at edge of room with 30deg minimum ceiling slope
If located in mixed-used areas	3.3 for ground and first floor to promote future flexibility of use

	These minimums do not preclude higher ceilings if desired		✓
	Design Guidance		Considered
	Ceiling height accommodates use of ceiling fans for cooling & heat distribution		YES
4C-2 p87	Objective: Ceiling height increases the sense of space in apartments & provides for well proportioned rooms.		✓
	Design Guidance		Considered
	A number of the following design solutions are used: · Hierarchy of rooms in apartment is defined using changes in ceiling heights & alternatives such as raked or curved ceilings, or double height spaces · Well proportioned rooms are provided, for example, smaller rooms feel larger & more spacious with higher ceilings · Ceiling heights are maximised in habitable rooms by ensuring that bulkheads do not intrude. The stacking of service rooms from floor to floor & coordination of bulkhead location above non-habitable areas, such as robes or storage, can assist		YES
4C-3 p87	Objective: Ceiling heights contribute to the flexibility of building use over the life of the building.		✓
	Design Guidance		Considered
	Ceiling heights of lower level apartments should be greater than the minimum required by Design Criteria allowing flexibility & conversion to non-residential uses		NA
4D	APARTMENT SIZE & LAYOUT		
4D-1 p89	Objective: The layout of rooms within apartment is functional, well organised & provides a high standard of amenity.		✓
	Design Criteria		
	1 Apartments have the following minimum internal areas:		

Apartment Type	Minimum Internal Area (sqm)
Studio	35
1 Bedroom	50
2 Bedroom	70
3 Bedroom	90

	The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5sqm each. A fourth bedroom & further additional bedrooms increase the minimum internal area by 12sqm each		✓
	2 Every habitable room has a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight & air is not borrowed from other rooms		✓
	Design Guidance		Considered
	Kitchens is not located as part of the main circulation space in larger apartments (such as hallway or entry space)		YES
	A window is visible from any point in a habitable room		YES
	Where minimum areas or room dimensions are not met, apartments demonstrate that they are well designed and demonstrate the usability & functionality of the space with realistically scaled furniture layouts & circulation areas.		NA
4D-2 p89	Objective: Environmental performance of the apartment is maximised.		✗
	Design Criteria		
	1 Habitable room depths are limited to a maximum of 2.5 x the ceiling height	Some apartments comply, in others the depth iexceeds 2.5 x ceiling height, due to the generous size of the room.	✗
	2 In open plan layouts (living, dining & kitchen are combined) maximum habitable room depth is 8m from a window	Some apartments comply, in others the depth is 8-10m, due to the generous size of the room.	✗
	Design Guidance		Considered
	Greater than minimum ceiling heights allow for proportional increases in room depth up to the permitted max depths	Typical residential ceiling height is 2970mm	YES
	All living areas & bedrooms are located on the external face of building		YES
	Where possible: · bathrooms & laundries have external openable window · main living spaces are oriented toward the primary outlook & aspect and away from noise sources		YES
4D-3 p91	Objective: Apartment layouts are designed to accommodate a variety of household activities & needs.		✓
	Design Criteria		
	1 Master bedrooms have a minimum area of 10sqm & other bedrooms 9sqm (excluding wardrobe space)		✓
	2 Bedrooms have a minimum dimension of 3m (excluding wardrobe space)		✓
	3 Living rooms or combined living/dining rooms have a minimum width of: · 3.6m for studio & 1 bedroom apartments · 4m for 2 & 3 bedroom apartments		✓
	4 The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts		NA
	Design Guidance		Considered
	Access to bedrooms, bathrooms & laundries is separated from living areas minimising direct openings between living & service areas		YES
	All bedrooms allow a minimum length of 1.5m for robes		YES
	Main bedroom of apartment or studio apartment is provided with a wardrobe of minimum 1.8m L x 0.6m D x 2.1m H		YES
	Apartment layouts allow flexibility over time, design solutions include: · Dimensions that facilitate a variety of furniture arrangements & removal · Spaces for a range of activities & privacy levels between different spaces within the apartment · Dual master apartments · Dual key apartments Note: dual key apartments which are separate but on the same title are regarded as two sole occupancy units for the purposes of the BCA & for calculating mix of apartments · Room sizes & proportions or open plans (rectangular spaces 2:3 are more easily furnished than square spaces 1:1) · Efficient planning of circulation by stairs, corridors & through rooms to maximise the amount of usable floor space in rooms		YES
4E	PRIVATE OPEN SPACE & BALCONIES		
4E-1 p93	Objective: Apartments provide appropriately sized private open space & balconies to enhance residential amenity.		✓

ADG Ref.	Item Description	Notes	Compliance
	Design Criteria		
1	All apartments are required to have primary balconies as follows: Apartment Type / Minimum Area (sqm) / Minimum Depth (m) Studio 4 - 1 Bedroom 8 2 2 Bedroom 10 2 3+ Bedroom 12 2.4 The minimum balcony depth to be counted as contributing to the balcony area is 1m	All apartments are provided with balconies. It is noted that no wintergardens are proposed.	✓
2	For apartments at ground level or on podium or similar, a private open space is provided instead of a balcony. It must have minimum area of 15sqm & minimum depth of 3m		NA
	Design Guidance		Considered
	Increased communal open space are provided where the number or size of balconies are reduced		NA
	Storage areas on balconies is additional to the minimum balcony size		NA
	Balcony use may be limited in some proposals where: · consistently high wind speeds at 10 storeys & above · close proximity to road, rail or other noise sources · exposure to significant levels of aircraft noise · heritage & adaptive reuse of existing buildings In these situations, · juliet balconies, · operable walls, · enclosed wintergardens · bay windows are appropriate. Other amenity benefits for occupants are provided in the apartments or in the development or both. Natural ventilation is also demonstrated		NA
4E-2 p93	Objective: Primary private open space & balconies are appropriately located to enhance liveability for residents		✓
	Design Guidance		Considered
	Primary open space & balconies are located adjacent to the living room, dining room or kitchen to extend the living space		YES
	POS & balconies predominantly face north, east or west		YES
	POS & balconies are orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms		YES
4E-3 p95	Objective: Private open space & balcony design is integrated into & contributes to the overall architectural form & detail of the building		✓
	Design Guidance		Considered
	Solid, partially solid or transparent fences & balustrades are selected to respond to the location. They are designed to allow views & passive surveillance of the street while maintaining visual privacy & allowing for a range of uses on the balcony. Solid & partially solid balustrades are preferred	Glass balustrades are provided to maximise views. Surveilance of street is not achievable with residential floros beginning at Level 34. Visual privacy is not a problem dur to the height of the balconies and separation from adjacent proposed buidings.	NO
	Full width full height glass balustrades alone are generally not desirable	Glass balustrades are provided as they are integral to the building design.	NO
	Projecting balconies are integrated into the building design. The design of soffits are considered	Balconies are inset.	NA
	Operable screens, shutters, hoods & pergolas are used to control sunlight & wind		NO
	Balustrades are set back from the building or balcony edge where overlooking or where safety is an issue	Balconies do not overlook floors below.	NA
	Downpipes & balcony drainage are integrated with the overall facade & building design		YES

ADG Ref.	Item Description	Notes	Compliance
	Air-conditioning units are located on roofs, in basements, or fully integrated into the building design		YES
	Where clothes drying, storage or air conditioning units are located on balconies, they are screened & integrated in the building design	Located internally	NA
	Ceilings of apartments below terraces are insulated to avoid heat loss		YES
	Water & gas outlets are provided for primary balconies & private open space		YES
4E-4 p95	Objective: Private open space & balcony design maximises safety		✓
	Design Guidance		Considered
	Changes in ground levels or landscaping are minimised		YES
	Balcony design & detailing avoids opportunities for climbing & falling		YES
4F	COMMON CIRCULATION & SPACES		
4F-1 p97	Objective: Common circulation spaces achieve good amenity & properly service the number of apartments		✓
	Design Criteria		
1	The maximum number of apartments off a circulation core on a single level is eight		✓
2	For buildings of 10 storeys & over, the maximum number of apartments sharing a single lift is 40		✓
	Design Guidance		Considered
	Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement & access particularly in entry lobbies, outside lifts & at apartment entry doors		YES
	Daylight & natural ventilation are provided to all common circulation spaces that are above ground	Daylight only is provided (not natural ventilation)	YES
	Windows are provided in common circulation spaces & are adjacent to the stair or lift core or at the ends of corridors	Adjacent to lift core.	YES
	Longer corridors greater than 12m in length from the lift core are articulated. Design solutions include: · Series of foyer areas with windows & spaces for seating · Wider areas at apartment entry doors & varied ceiling heights		YES
	Common circulation spaces maximise opportunities for dual aspect apartments, including multiple core apartment buildings & cross over apartments		NA
	Achieving Design Criteria for the number of apartments off a circulation core may not be possible. Where development is unable to achieve this, a high level of amenity for common lobbies, corridors & apartments is demonstrated, including: · Sunlight & natural cross ventilation in apartments · Access to ample daylight & natural ventilation in common circulation spaces · Common areas for seating & gathering · Generous corridors with greater than minimum ceiling heights · Other innovative design solutions that provide high levels of amenity	Criteria 1 and 2 are achieved.	NA
	Where Design Criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level	Criteria 1 is achieved.	NA
	Primary living room or bedroom windows do not open directly onto common circulation spaces, open or enclosed. Visual & acoustic privacy from common circulation spaces to any other rooms are carefully controlled		YES
4F-2 p99	Objective: Common circulation spaces promote safety & provide for social interaction between residents		✓
	Design Guidance		Considered
	Direct & legible access are provided between vertical circulation points & apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines		YES
	Tight corners & spaces are avoided		YES
	Circulation spaces are well lit at night		YES

ADG Ref.	Item Description	Notes	Compliance
	Legible signage are provided for apartment numbers, common areas & general wayfinding		YES
	Incidental spaces, eg space for seating in a corridor, at a stair landing, or near a window are provided		NA
	In larger developments, community rooms for activities such as owners corporation meetings or resident use, are provided & are co-located with communal open space	See Level 24 Lounge and Boardroom	YES
	Where external galleries are provided, they are more open than closed above the balustrade along their length		NA
4G	STORAGE		
4G-1 p101	Objective: Adequate, well designed storage is provided in each apartment		✓
	Design Criteria		
1	In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: Apartment Type / Storage Size Volume (cubic m) Studio: 4 1 Bedroom: 6 2 Bedroom: 8 3+ Bedroom: 10 At least 50% of the required storage is to be located within the apartment		✓
	Design Guidance		Considered
	Storage is accessible from either circulation or living areas		YES
	Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proofed & screened from view from the street		NA
	Left over space such as under stairs is used for storage		NA
4G-2 p101	Objective: Additional storage is conveniently located, accessible & nominated for individual apartments		✓
	Design Guidance		Considered
	Storage not located in apartments is secure and clearly allocated to specific apartments		YES
	Storage is provided for larger & less frequently accessed items		YES
	Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages, such that allocated car parking remains accessible		YES
	If communal storage rooms are provided they are accessible from common circulation areas of the building		NA
	Storage not located in apartment is integrated into the overall building design & not visible from public domain		YES
4H	ACOUSTIC PRIVACY		
4H-1 p103	Objective: Noise transfer is minimised through the siting of buildings & building layout		✓
	Design Guidance		Considered
	Adequate building separation is provided within the development & from neighbouring buildings/adjacent uses (see 2F Building Separation & 3F Visual Privacy)		YES
	Window & door openings are orientated away from noise sources		YES
	Noisy areas within buildings including building entries & corridors are located next to or above each other while quieter areas are located next to or above quieter areas		YES
	Storage, circulation areas & non-habitable rooms are located to buffer noise from external sources		NA
	The number of party walls (shared with other apartments) are limited & are appropriately insulated		YES

ADG Ref.	Item Description	Notes	Compliance
	Noise sources such as garage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open spaces & circulation areas should be located at least 3m away from bedrooms		YES
4H-2 p103	Objective: Noise impacts are mitigated within apartments through layout & acoustic treatments		✓
	Design Guidance		Considered
	Internal apartment layout separates noisy spaces from quiet spaces, using a number of the following design solutions: · Rooms with similar noise requirements are grouped together · Doors separate different use zones · Wardrobes in bedrooms are co-located to act as sound buffers		YES
	Where physical separation cannot be achieved, noise conflicts are resolved using the following design solutions: · Double or acoustic glazing · Acoustic seals · Use of materials with low noise penetration properties · Continuous walls to ground level courtyards where they do not conflict with streetscape or other amenity requirements		YES
4J	NOISE & POLLUTION		
4J-1 p105	Objective: In noisy or hostile environments impacts of external noise & pollution are minimised through careful siting & layout		✓
	Design Guidance		Considered
	To minimise impacts the following design solutions are used: · Physical separation between buildings & the noise or pollution source · Residential uses are located perpendicular to the noise source & where possible buffered by other uses · Non-residential buildings are sited to be parallel with the noise source to provide a continuous building that shields residential uses & communal open spaces · Non-residential uses are located at lower levels vertically separating residential component from noise or pollution source. Setbacks to the underside of residential floor levels are increased, relative to traffic volumes & other noise sources · Buildings respond to both solar access & noise. Where solar access is away from noise source, non-habitable rooms will provide a buffer · Where solar access is in the same direction as the noise source, dual aspect apartments with shallow building depths are preferred · Landscape design reduces the perception of noise & acts as a filter for air pollution generated by traffic & industry		YES
	Where developments are unable to achieve Design Criteria, alternatives are considered in the following areas: · Solar & daylight access · Private open space & balconies · Natural cross ventilation		NA
4J-2 p105	Objective: Appropriate noise shielding or attenuation techniques for building design, construction & choice of materials are used to mitigate noise transmission		✓
	Design Guidance		Considered
	Design solutions to mitigate noise include: · Limiting the number & size of openings facing noise sources · Providing seals to prevent noise transfer through gaps · Using double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens) · Using materials with mass and/or sound insulation or absorption properties eg solid balcony balustrades, external screens & soffits		YES
4K	APARTMENT MIX		
4K-1 p107	Objective: A range of apartment types & sizes is provided to cater for different household types now & into the future		✓

ADG Ref.	Item Description	Notes	Compliance
	Design Guidance		Considered
	A variety of apartment types is provided		YES
	The apartment mix is appropriate, taking into consideration: · Distance to public transport, employment & education centres · Current market demands & projected future demographic trends · Demand for social & affordable housing · Different cultural & socioeconomic groups		YES
	Flexible apartment configurations are provided to support diverse household types & stages of life including single person households, families, multi-generational families & group households		YES
4K-2 p107	Objective: The apartment mix is distributed to suitable locations within the building		✓
	Design Guidance		Considered
	Different apartment types are located to achieve successful facade composition & to optimise solar access		YES
	Larger apartment types are located on ground or roof level where there is potential for more open space, and on corners where more building frontage is available	The largest apartments are located at or near to the top of the tower. There are no ground floor apartments.	YES
4L	GROUND FLOOR APARTMENTS		
4L-1 p109	Objective: Street frontage activity is maximised where ground floor apartments are located		NA
	Design Guidance		Considered
	Direct street access are provided to ground floor apartments		NA
	Activity is achieved through front gardens, terraces & the facade of the building. Design solutions include: · Both street, foyer & other common internal circulation entrances to ground floor apartments · Private open space is next to the street · Doors & windows face the street		NA
	Retail or home office spaces are located along street frontages		NA
	Ground floor apartment layouts support SOHO use & provide opportunities for future conversion into commercial or retail areas. In these cases higher floor to ceiling heights & easy conversion to ground floor amenities are provided.		NA
4L-2 p109	Objective: Design of ground floor apartments delivers amenity & safety for residents		NA
	Design Guidance		Considered
	Privacy & safety are provided without obstructing casual surveillance. Design solutions include: · Elevating private gardens & terraces above the street level by 1-1.5m (see pg 109 Figure 4L.4) · Landscaping & private courtyards · Window sill heights minimise sight lines into apartments · Integrating balustrades, safety bars or screens with exterior design		NA
	Solar access is maximised through: · High ceilings & tall windows · Trees & shrubs allow solar access in winter & shade in summer		NA
4M	FACADES		
4M-1 p111	Objective: Building facades provide visual interest along the street while respecting the character of the local area		✓
	Design Guidance		Considered
	Design solutions for front building facades include: · Composition of varied building elements · Defined base, middle & top of buildings · Revealing & concealing certain elements		YES
	Building services are integrated within the overall facade		YES
	Building facades are well resolved with appropriate scale & proportion to streetscape & with consideration of human scale. Solutions include: · Well composed horizontal & vertical elements · Variation in floor heights to enhance the human scale · Elements that are proportional & arranged in patterns · Public artwork or treatments to exterior blank walls · Grouping of floors or elements such as balconies & windows on taller buildings		YES
	Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights		NA
	Shadow is created on the facade throughout the day with building articulation, balconies & deeper window reveals		YES
4M-2 p111	Objective: Building functions are expressed by the facade		✓
	Design Guidance		Considered
	Building entries are clearly defined		YES
	Important corners are given visual prominence through change in articulation, materials or colour, roof expression or changes in height		YES
	Apartment layout is expressed externally through facade features such as party walls & floor slabs	Expressed though balconies	YES
4N	ROOF DESIGN		
4N-1 p113	Objective: Roof treatments are integrated into the building design & positively respond to the street		✓
	Design Guidance		Considered
	Roof treatments are integrated with the building design. Design solutions include: · Roof design is in proportion to the overall building size, scale & form · Roof materials compliment the building · Service elements are integrated		YES
4N-2 p113	Objective: Opportunities to use roof space for residential accommodation & open space are maximised		NA
	Design Guidance		Considered
	Habitable roof space are provided with good levels of amenity. Design solutions include: · Penthouse apartments · Dormer or clerestory windows · Openable skylights		NA
	Open space is provided on roof tops subject to acceptable visual & acoustic privacy, comfort levels, safety & security considerations		NA
4N-3 p113	Objective: Roof design incorporates sustainability features		NA
	Design Guidance		Considered
	Roof design maximises solar access to apartments during winter & provides shade during summer. Design solutions include: · Roof lifts to the north · Eaves & overhangs shade walls & windows from summer sun		NA
	Skylights & ventilation systems are integrated into the roof design		NA
4O	LANDSCAPE DESIGN		
4O-1 p115	Objective: Landscape design is viable & sustainable		✓
	Design Guidance		Considered

ADG Ref.	Item Description	Notes	Compliance
	Landscape design is environmentally sustainable & can enhance environmental performance by incorporating: · Diverse & appropriate planting · Bio-filtration gardens · Appropriately planted shading trees · Areas for residents to plant vegetables & herbs · Composting · Green roofs or walls	Refer to the landscape design.	NA
	Ongoing maintenance plans are prepared		YES
	Microclimate is enhanced by: · Appropriately scaled trees near the eastern & western elevations for shade · Balance of evergreen & deciduous trees to provide shading in summer & sunlight access in winter · Shade structures such as pergolas for balconies & courtyards		YES
	Tree & shrub selection considers size at maturity & the potential for roots to compete.		YES
4O-2 p115	Objective: Landscape design contributes to streetscape & amenity		✓
	Design Guidance		Considered
	Landscape design responds to the existing site conditions including: · Changes of levels · Views · Significant landscape features including trees & rock outcrops		YES
	Significant landscape features are protected by: · Tree protection zones · Appropriate signage & fencing during construction	There are no existing trees to protect.	NA
	Plants selected are endemic to region & reflect local ecology		YES
4P	PLANTING ON STRUCTURES		
4P-1 p117	Objective: Appropriate soil profiles are provided		✓
	Design Guidance		Considered
	Structures are reinforced for additional saturated soil weight		YES
	Soil volume is appropriate for plant growth, including: · Modifying depths & widths according to planting mix & irrigation frequency · Free draining & long soil life span · Tree anchorage		YES
	Minimum soil standards for plant sizes should be provided in accordance with:	There is no deep soil proposed.	NA

Site Area (sqm)	Recommended Tree Planting
Up to 850	1 medium tree per 50sqm of deep soil zone
850 - 1,500	1 large tree or 2 medium trees per 90sqm of deep soil zone
Greater than 1,500	1 large tree or 2 medium trees per 80sqm of deep soil zone

4P-2 p117	Objective: Plant growth is optimised with appropriate selection & maintenance		✓
	Design Guidance		Considered
	Plants are suited to site conditions, considerations include: · Drought & wind tolerance · Seasonal changes in solar access · Modified substrate depths for a diverse range of plants · Plant longevity		YES
	A landscape maintenance plan is prepared		YES

ADG Ref.	Item Description	Notes	Compliance
	Irrigation & drainage systems respond to: · Changing site conditions · Soil profile & planting regime · Whether rainwater, stormwater or recycled grey water is used		YES
4P-3 p117	Objective: Planting on structures contributes to the quality & amenity of communal & public open spaces		✓
	Design Guidance		Considered
	Building design incorporates opportunities for planting on structures. Design solutions include: · Green walls with specialised lighting for indoor green walls · Wall design that incorporates planting · Green roofs, particularly where roofs are visible from the public domain · Planter boxes Note: structures designed to accommodate green walls should be integrated into the building facade & consider the ability of the facade to change over time	Refer to the landscape plans.	YES
4Q	UNIVERSAL DESIGN		
4Q-1 p119	Objective: Universal design features are included in apartment design to promote flexible housing for all community members		✓
	Design Guidance		Considered
	Developments achieve a benchmark of 20% of the total apartments incorporating the Livable Housing Guideline's silver level universal design features		YES
4Q-2 p119	Objective: A variety of apartments with adaptable designs are provided		✓
	Design Guidance		Considered
	Adaptable housing should be provided in accordance with the relevant council policy	The size of the apartments procided makes conversion to adaptable design easily achievable upon demand	NA
	Design solutions for adaptable apartments include: · Convenient access to communal & public areas · High level of solar access · Minimal structural change & residential amenity loss when adapted · Larger car parking spaces for accessibility · Parking titled separately from apartments or shared car parking arrangements	The size of the apartments procided makes conversion to adaptable design easily achievable upon demand	NA
4Q-3 p119	Objective: Apartment layouts are flexible & accommodate a range of lifestyle needs		✓
	Design Guidance		Considered
	Flexible design solutions include: · Rooms with multiple functions · Dual master bedroom apartments with separate bathrooms · Larger apartments with various living space options · Open plan 'loft' style apartments with only a fixed kitchen, laundry & bathroom		YES
4R	ADAPTIVE REUSE		
4R-1 p121	Objective: New additions to existing buildings are contemporary, complementary & enhance area's identity & sense of place		NA
	Design Guidance		Considered
	Design solutions include: · New elements align with the existing building · Additions complement the existing character, siting, scale, proportion, pattern, form & detailing · Contemporary & complementary materials, finishes, textures & colours		NA
	Additions to heritage items are clearly identifiable from the original building		NA

ADG Ref.	Item Description	Notes	Compliance
	New additions allow for interpretation & future evolution of the building		YES/NO/NA
4R-2 p121	Objective: Adapted buildings provide residential amenity but does not precluding future adaptive reuse		NA
	Design Guidance		Considered
	Design features are incorporated sensitively to make up for any physical limitations, to ensure residential amenity. Design solutions include: · Generously sized voids in deeper buildings · Alternative apartment types when orientation is poor · Additions to expand the existing building envelope		NA
	Where developments are unable to achieve Design Criteria, alternatives are considered in the following areas: · Where there are existing higher ceilings, depths of habitable rooms can increase subject to demonstrating access to natural ventilation, cross ventilation (when applicable) and solar & daylight access (see 4A & 4B) · Alternatives to providing deep soil where less than the minimum requirement is currently available on the site · Building & visual separation subject to demonstrating alternative design approaches to achieving privacy · Common circulation · Car parking · Alternative approaches to private open space & balconies		NA
4S	MIXED USE		
4S-1 p123	Objective: Mixed use developments are provided in appropriate locations & provide active street frontages that encourage pedestrian movement.		✓
	Design Guidance		Considered
	Mixed use development are concentrated around public transport & centres		YES
	Mixed use developments positively contribute to the public domain. Design solutions include: · Development addresses the street · Active frontages provided · Diverse activities & uses · Avoiding blank walls at the ground level · Live/work apartments on the ground floor level, rather than commercial		YES
4S-2 p123	Objective: Residential levels of the building are integrated within the development. Safety & amenity is maximised.		✓
	Design Guidance		Considered
	Residential circulation areas are clearly defined. Solutions include: · Residential entries separated from commercial entries & directly accessible from the street · Commercial service areas separated from residential components · Residential car parking & communal facilities separated or secured · Security at entries & safe pedestrian routes are provided · Concealment opportunities are avoided		YES
	Landscaped communal open space are provided at podium or roof		YES
4T	AWNING & SIGNAGE		
4T-1 p125	Objective: Awnings are well located and complement & integrate with the building design.		✓
	Design Guidance		Considered
	Awnings are located along streets with high pedestrian activity & active frontages		YES
	A number of the following design solutions are used: · Continuous awnings are maintained & provided in areas with an existing pattern · Height, depth, material & form complements existing street character · Protection from sun & rain is provided · Awnings are wrapped around secondary frontages of corner sites · Awnings are retractable in areas without an established pattern		YES
	Awnings are located over building entries for building address & public domain amenity		YES
	Awnings relate to residential windows, balconies, street tree planting, power poles & street infrastructure		YES
	Gutters & down pipes are integrated and concealed		YES
	Lighting under awnings is provided for pedestrian safety		YES
4T-2 p125	Objective: Signage responds to context & desired streetscape character.		✓
	Design Guidance		Considered
	Signage is integrated into building design & respond to scale, proportion & detailing of the development		YES
	Legible & discrete way finding is provided for larger developments		YES
	Signage is limited to being on & below awnings, and single facade sign on primary street frontages	Refer building ID signage on elevations	NO
4U	ENERGY EFFICIENCY		
4U-1 p127	Objective: Development incorporates passive environmental design.		✓
	Design Guidance		Considered
	Adequate natural light is provided to habitable rooms (see 4A Solar & Daylight Access)		YES
	Well located, screened outdoor areas are provided for clothes drying	Large internal utility rooms are provided.	NO
4U-2 p127	Objective: Passive solar design is incorporated to optimise heat storage in winter & reduce heat transfer in summer.		✓
	Design Guidance		Considered
	A number of the following design solutions are used: · Use of smart glass or other on north & west elevations · Thermal mass maximised in floors & walls of north facing rooms · Polished concrete floors, tiles or timber rather than carpet · Insulated roofs, walls & floors. Seals on window & door openings · Overhangs & shading devices such as awnings, blinds & screens	High performance glass; insulated roofs, walls and floors; seals on windws and doors; inset balconies; internal blinds.	YES
	Provision of consolidated heating & cooling infrastructure is located in a centralised location (eg basement)	Refer plantroom floors	YES
4U-3 p127	Objective: Adequate natural ventilation to minimise the need for mechanical ventilation.		✓
	Design Guidance		Considered
	A number of the following design solutions are used: · Rooms with similar usage are grouped together · Natural cross ventilation for apartments is optimised · Natural ventilation is provided to all habitable rooms & as many non-habitable rooms, common areas & circulation spaces as possible		YES
4V	WATER MANAGEMENT & CONSERVATION		
4V-1 p129	Objective: Potable water use is minimised.		✓
	Design Guidance		Considered
	Water efficient fittings, appliances & wastewater reuse are incorporated		YES

ADG Ref.	Item Description	Notes	Compliance
	Apartments are individually metered		YES
	Rainwater is collected, stored & reused on site	refer tp precinct stormwater management strategy	YES
	Drought tolerant, low water use plants are used within landscaped areas		YES
4V-2 p129	Objective: Urban stormwater is treated on site before being discharged to receiving waters.		✓
	Design Guidance		Considered
	Water sensitive urban design systems are designed by a suitably qualified professional	refer tp precinct stormwater management strategy	YES
	A number of the following design solutions are used: · Runoff is collected from roofs & balconies in water tanks and plumbed into toilets, laundry & irrigation · Porous & open paving materials is maximised · On site stormwater & infiltration, including bio-retention systems such as rain gardens or street tree pits	refer tp precinct stormwater management strategy	YES
4V-3 p129	Objective: Flood management systems are integrated into site.		✓
	Design Guidance		Considered
	Detention tanks are located under paved areas, driveways or in basement car parks	refer tp precinct stormwater management strategy	YES
	On large sites, parks or open spaces are designed to provide temporary on site detention basins	refer tp precinct stormwater management strategy	YES
4W	WASTE MANAGEMENT		
4W-1 p131	Objective: Waste storage facilities are designed to minimise impacts on streetscape, building entry & amenity of residents.		✓
	Design Guidance		Considered
	Adequately sized storage areas for rubbish bins are located discreetly away from the front of the development or in basement car park		YES
	Waste & recycling storage areas are well ventilated		YES
	Circulation design allows bins to be easily manoeuvred between storage & collection points		YES
	Temporary storage are provided for large bulk items such as mattresses		YES
	Waste management plan is prepared		YES
4W-2 p131	Objective: Domestic waste is minimised by providing safe & convenient source separation & recycling.		✓
	Design Guidance		Considered
	All dwellings have a waste & recycling cupboard or temporary storage area of sufficient size to hold two days worth of waste & recycling		YES
	Communal waste & recycling rooms are in convenient & accessible locations related to each vertical core		YES
	For mixed use developments, residential waste & recycling storage areas & access is separate & secure from other uses		YES
	Alternative waste disposal methods such as composting is provided		NO
4X	BUILDING MAINTENANCE		
4X-1 p133	Objective: Building design detail provides protection from weathering.		✓
	Design Guidance		Considered
	A number of the following design solutions are used: · Roof overhangs to protect walls · Hoods over windows & doors to protect openings · Detailing horizontal edges with drip lines to avoid staining surfaces · Methods to eliminate or reduce planter box leaching · Appropriate design & material selection for hostile locations	The external envelope of the building has appropriate design for high-rise construction adjacent a marine environment.	YES
4X-2 p133	Objective: Systems & access enable ease of maintenance.		✓
	Design Guidance		Considered
	Window design enables cleaning from the inside of the building	Fully accessed by external BMU	NO
	Building maintenance systems are incorporated & integrated into the design of the building form, roof & facade		YES
	Design does not require external scaffolding for maintenance access		YES
	Manually operated systems such as blinds, sunshades & curtains are used in preference to mechanical systems		YES
	Centralised maintenance, services & storage are provided for communal open space areas within the building		YES
4X-3 p133	Objective: Material selection reduces ongoing maintenance costs.		✓
	Design Guidance		Considered
	A number of the following design solutions are used: · Sensors to control artificial lighting in common circulation & spaces · Natural materials that weather well & improve with time, such as face brickwork · Easily cleaned surfaces that are graffiti resistant · Robust & durable materials & finishes in locations which receive heavy wear & tear such as common circulation areas & lift interiors		YES

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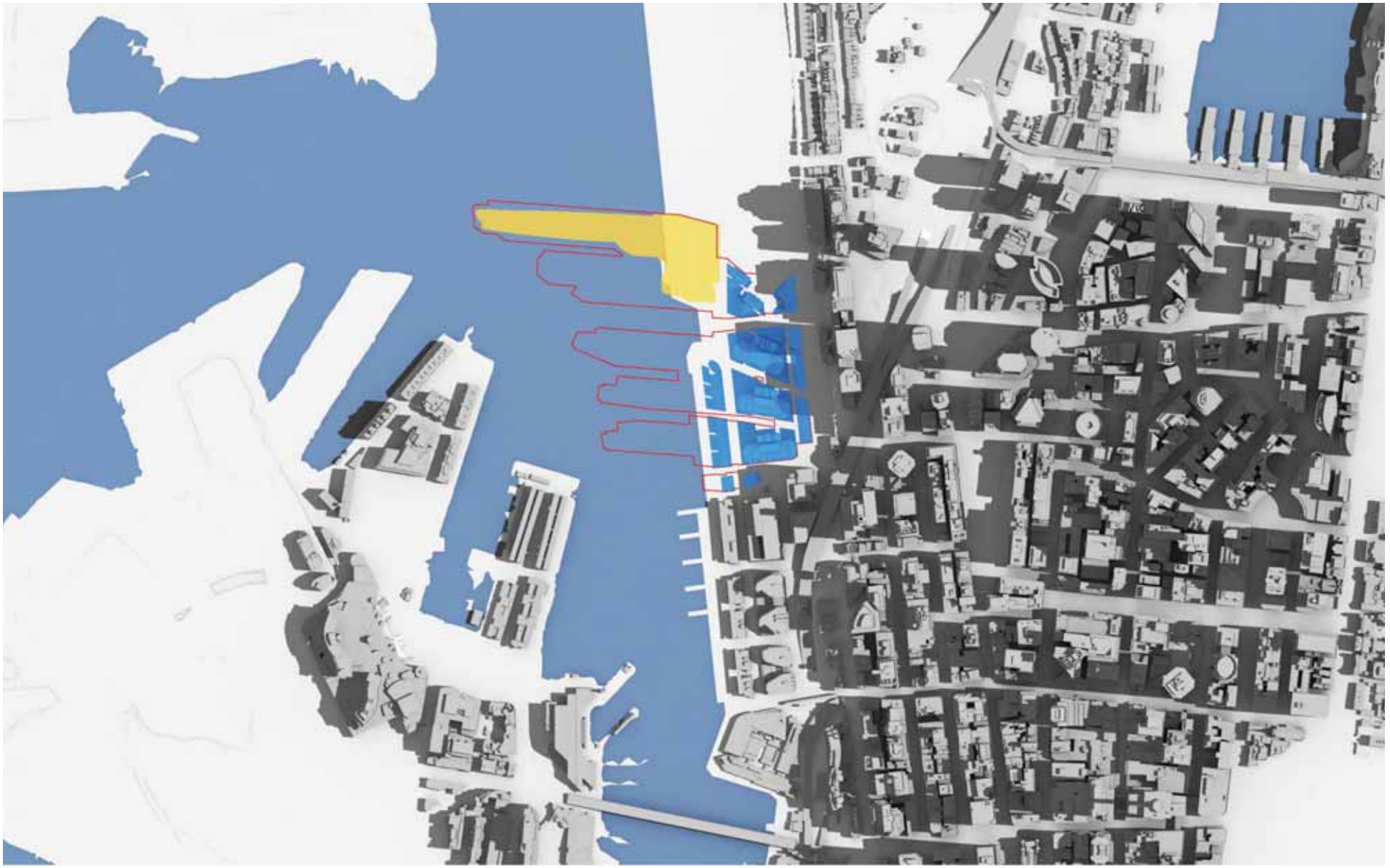
APPENDIX D

SHADOW STUDY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21st December, 9am
Crown Hotel
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Building Envelope Shadows
Proposed Concept Plan (Mod 8)
Indicative Design
Shadows cast by Existing
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Crown Sydney Hotel Resort - Shadow Study

21st December, 1pm

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Proposed Concept Plan (Mod 8) Indicative Design

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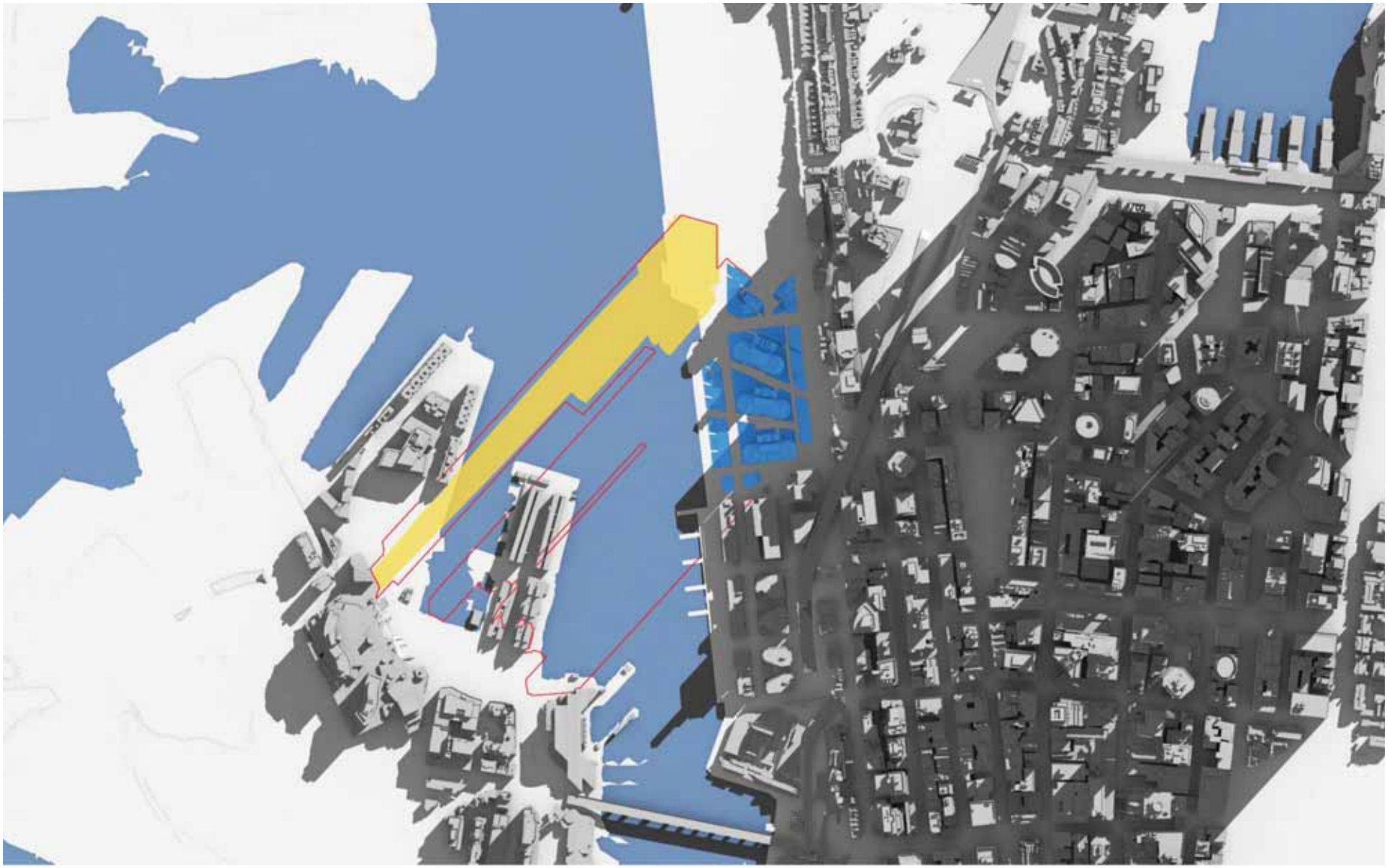
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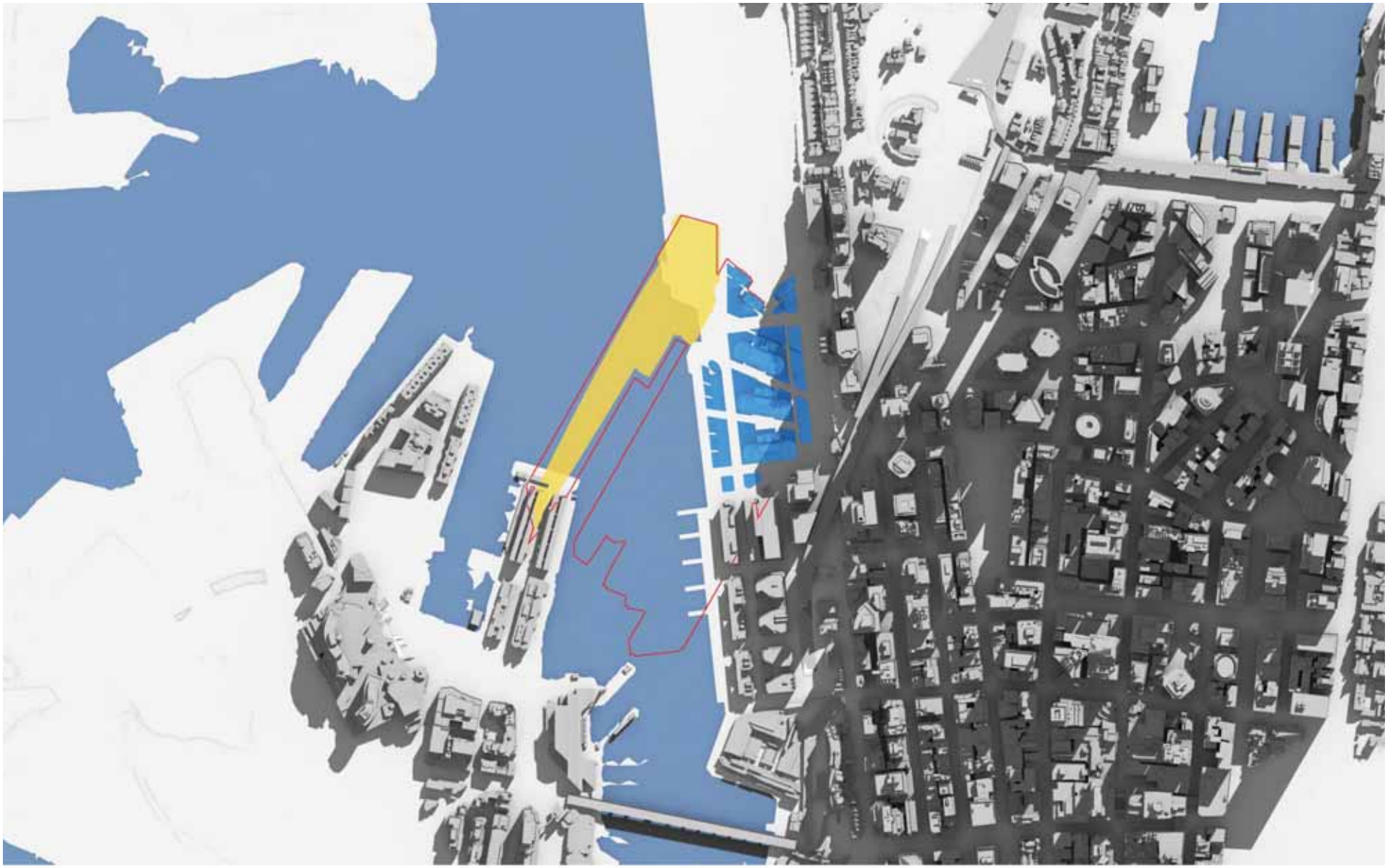
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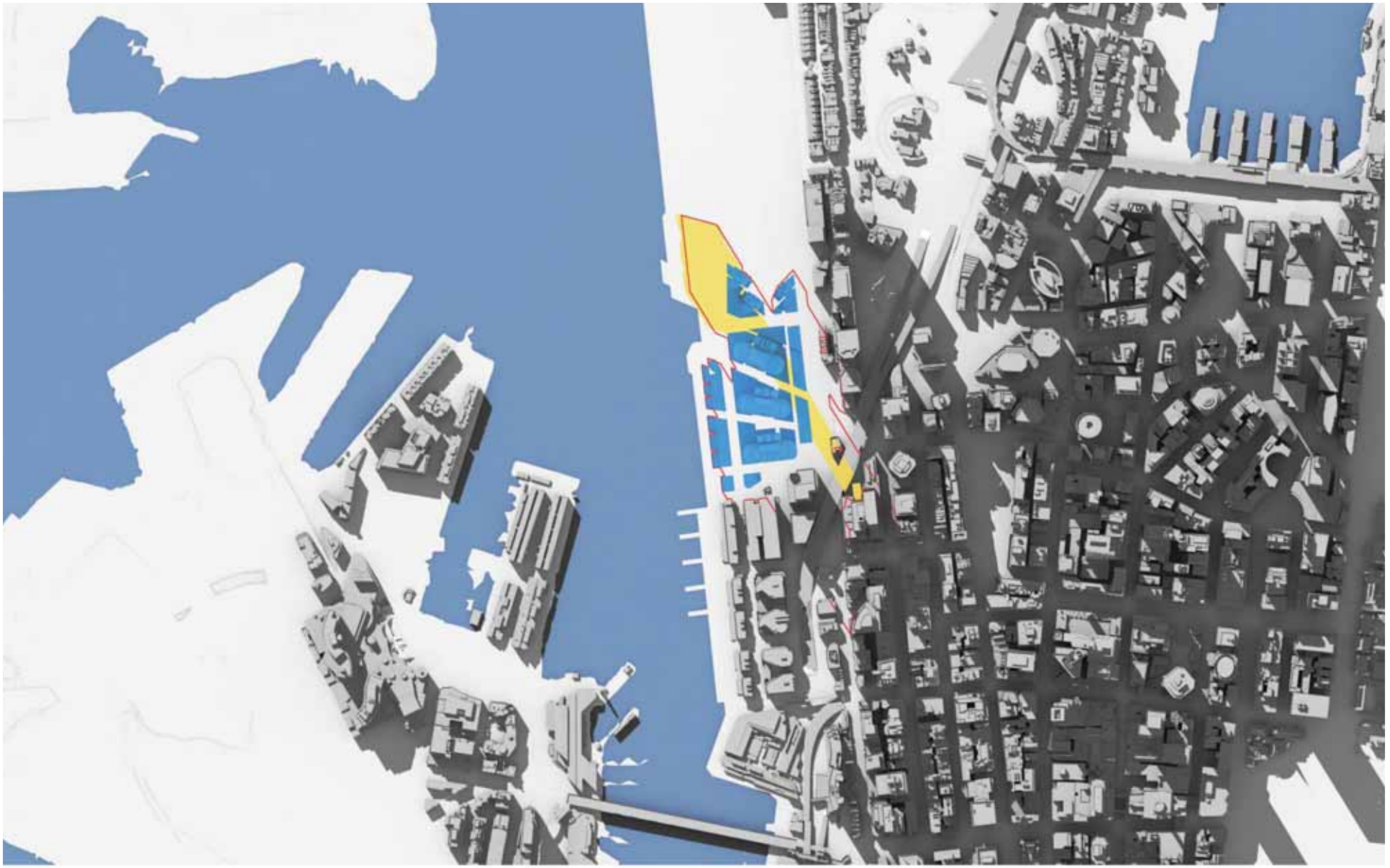
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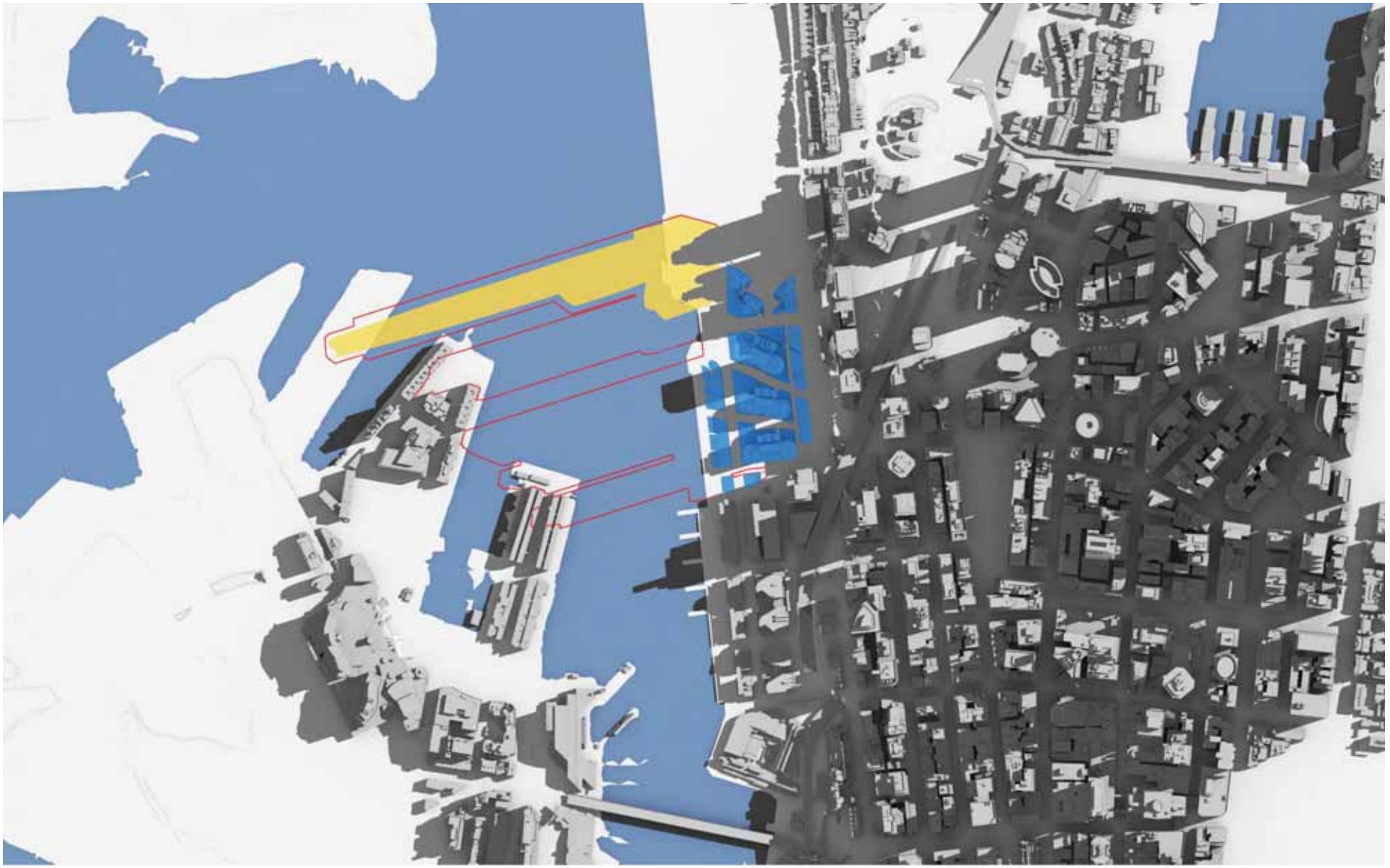

Crown Sydney Hotel Resort - Shadow Study

21st March, 9am

Crown Hotel Building Shadows

Proposed Concept Plan (Mod 8) Building Envelope Shadows

Proposed Concept Plan (Mod 8) Indicative Design

Shadows cast by Existing City Buildings


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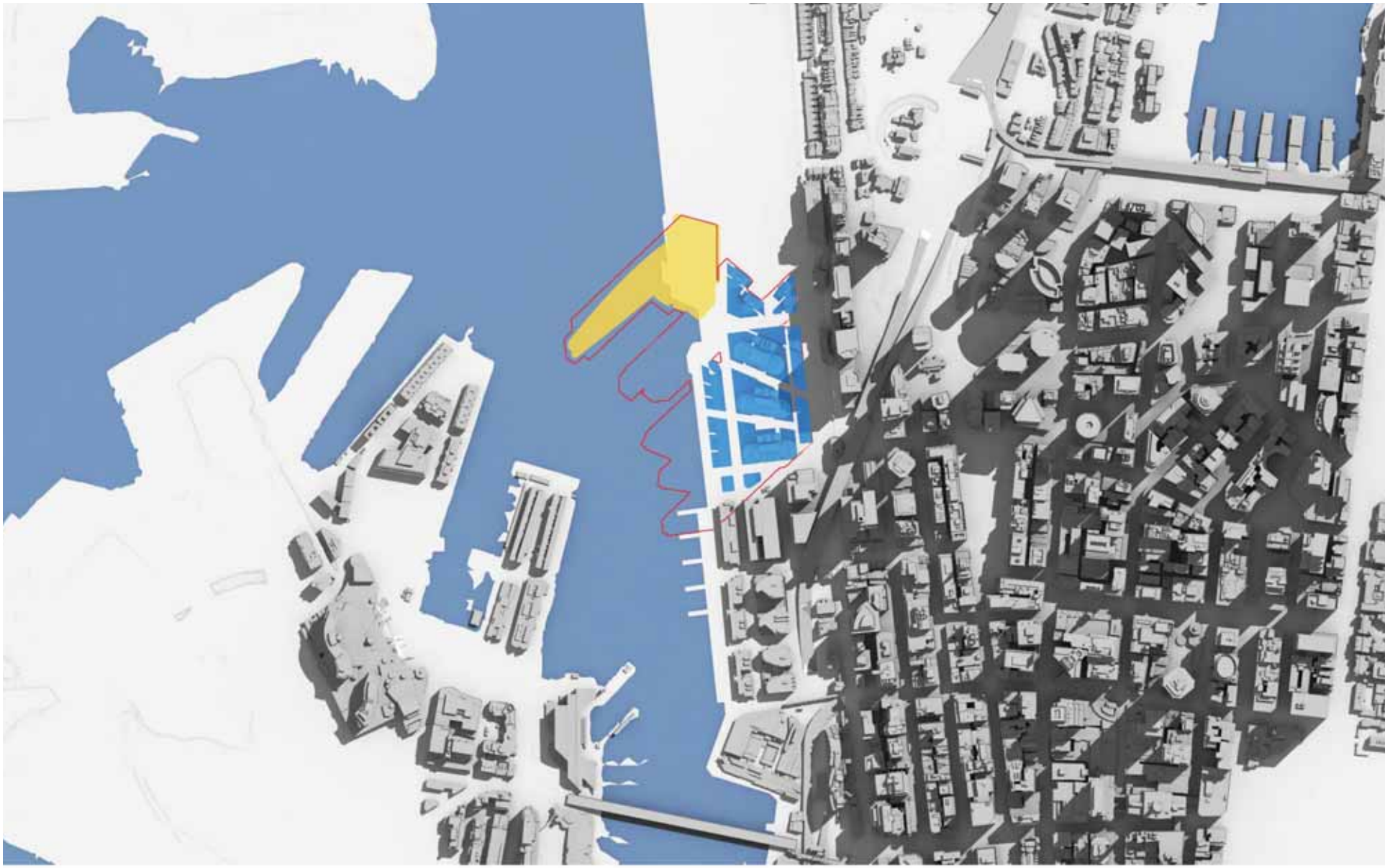

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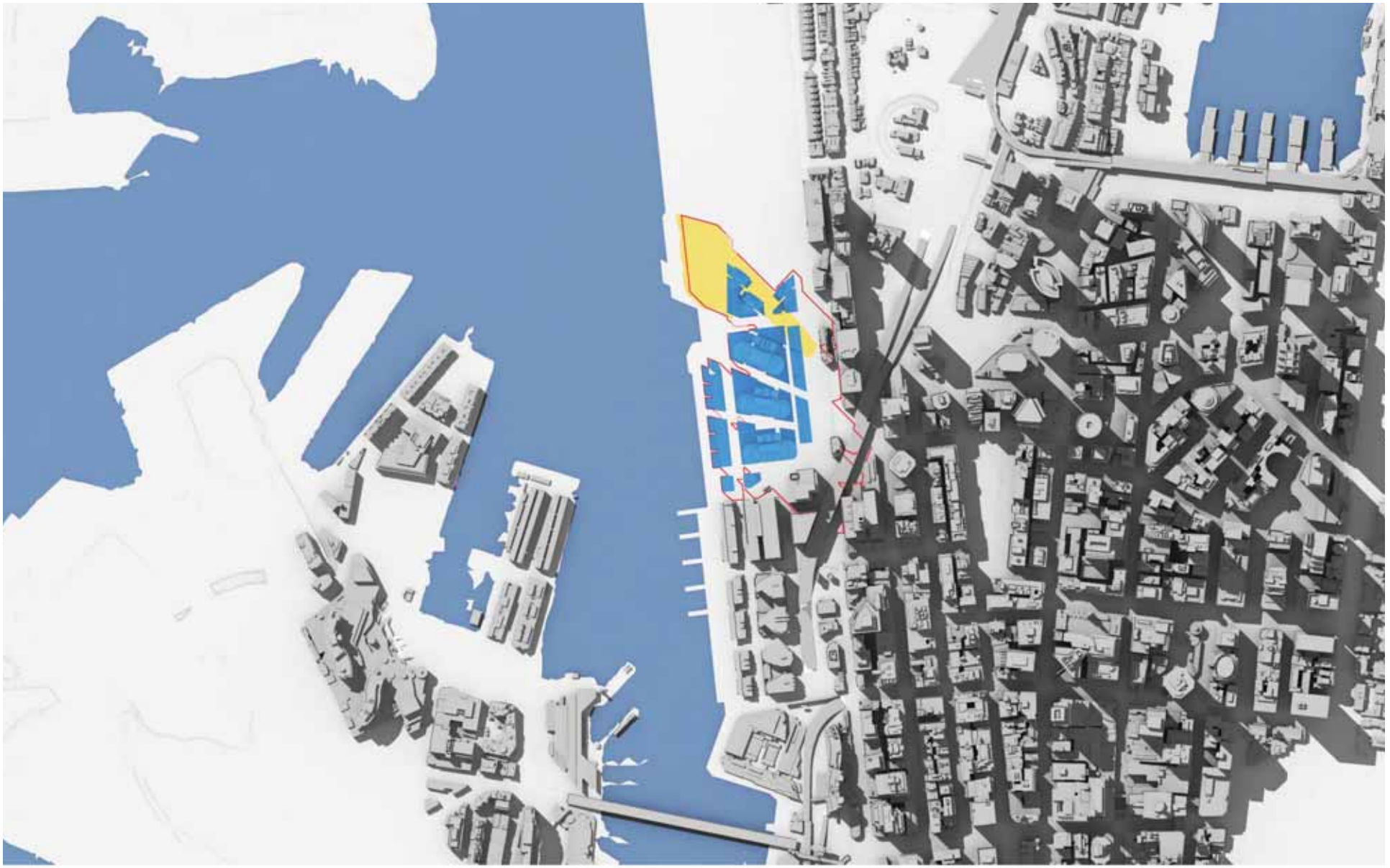
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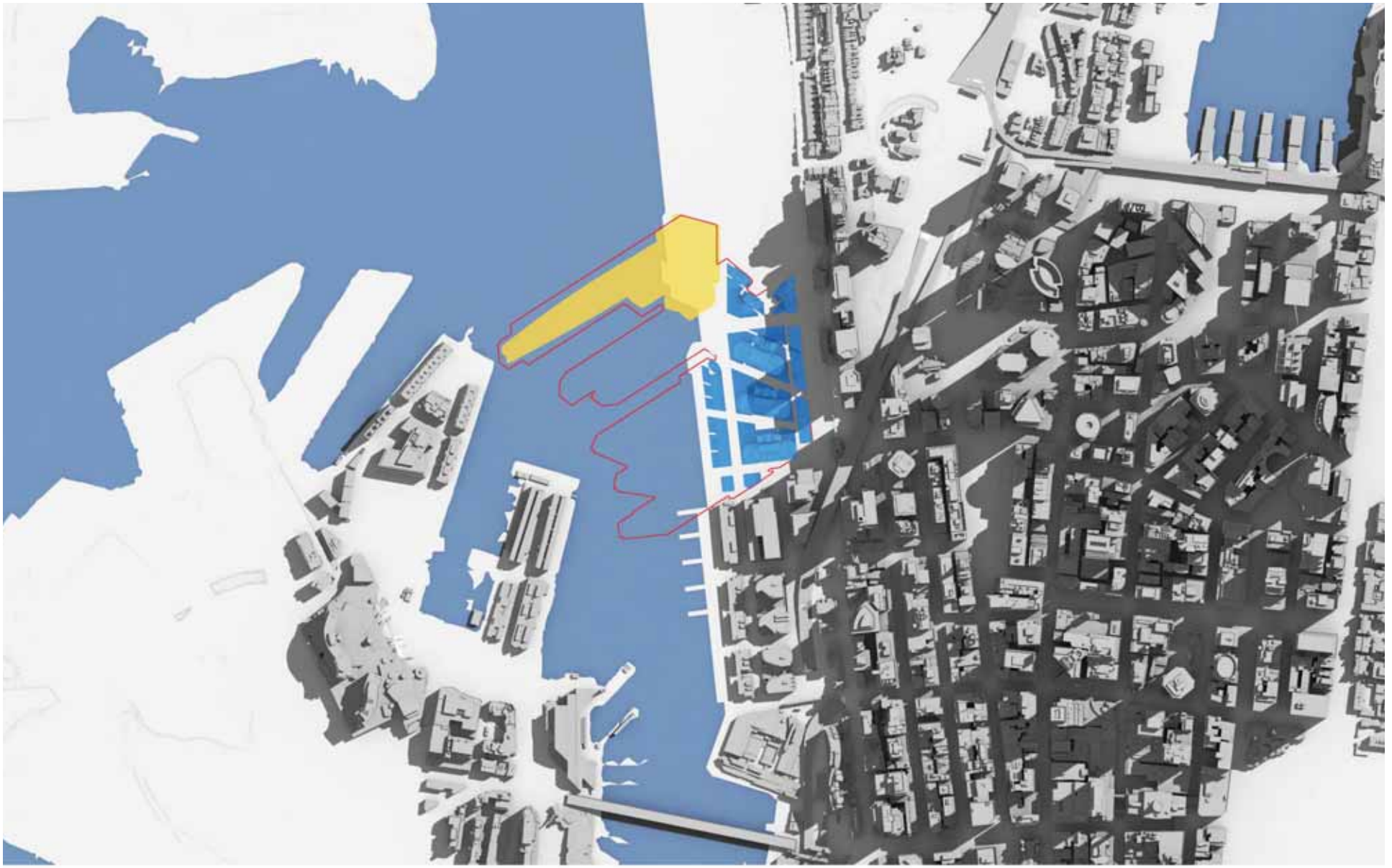
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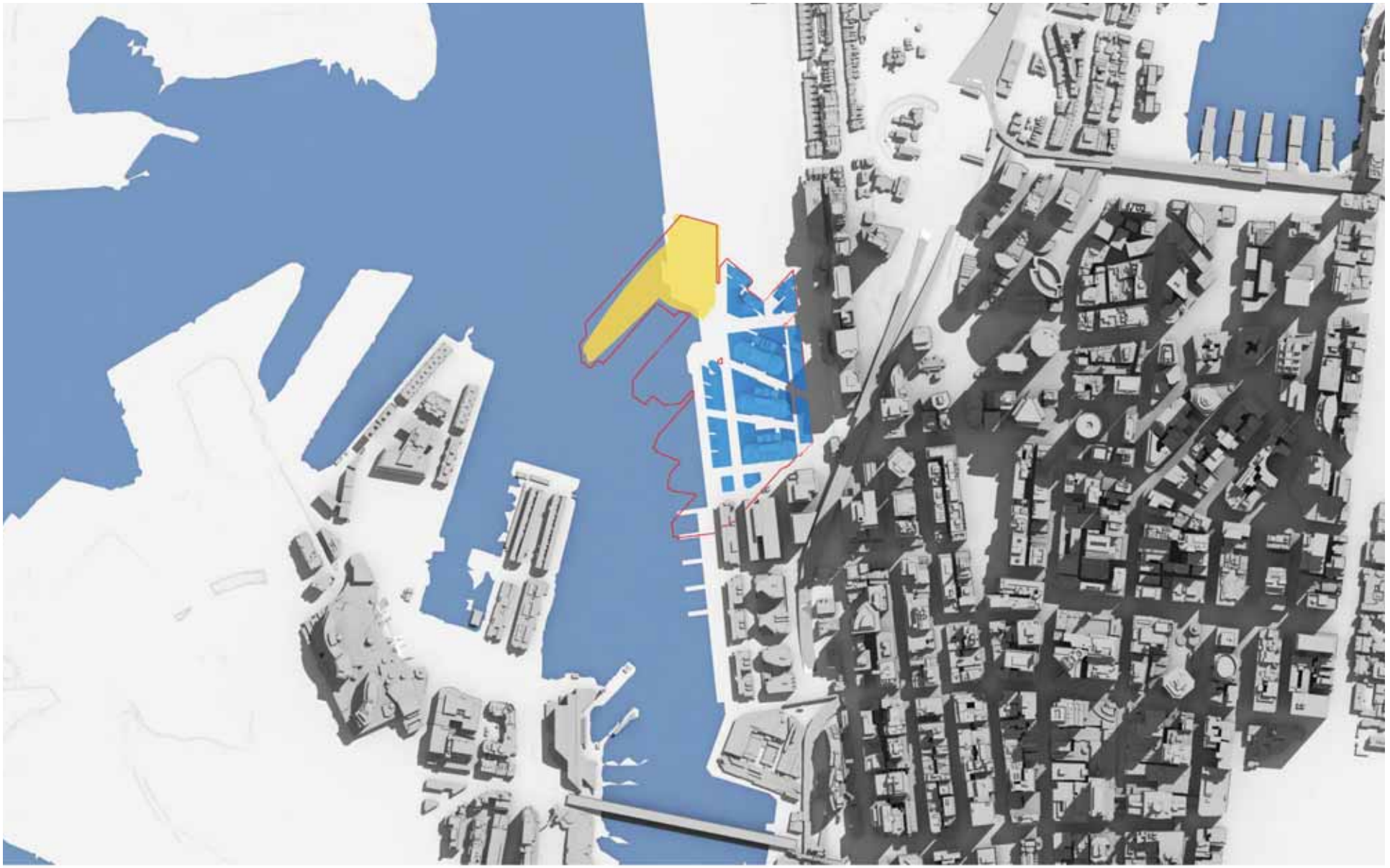
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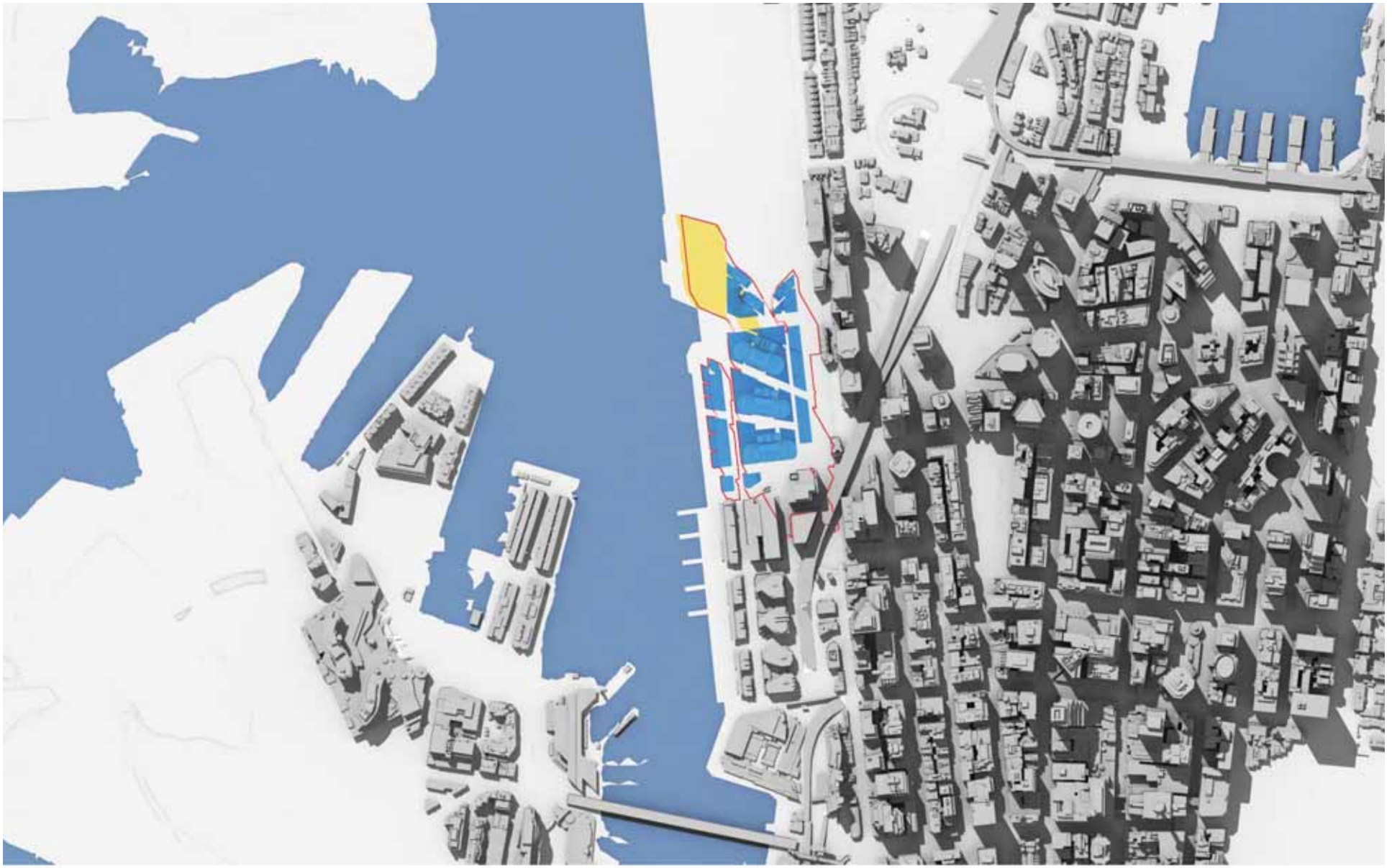
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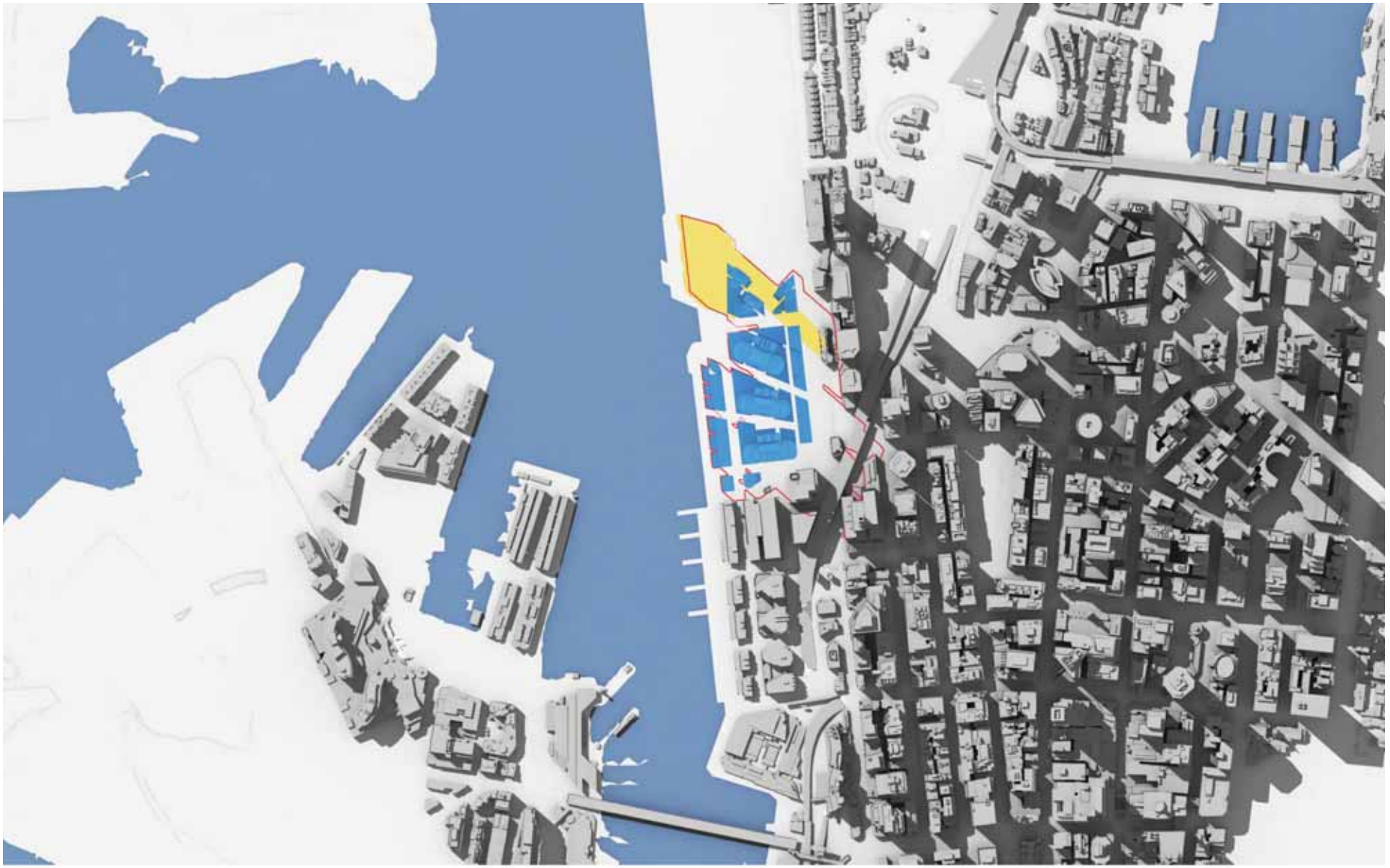
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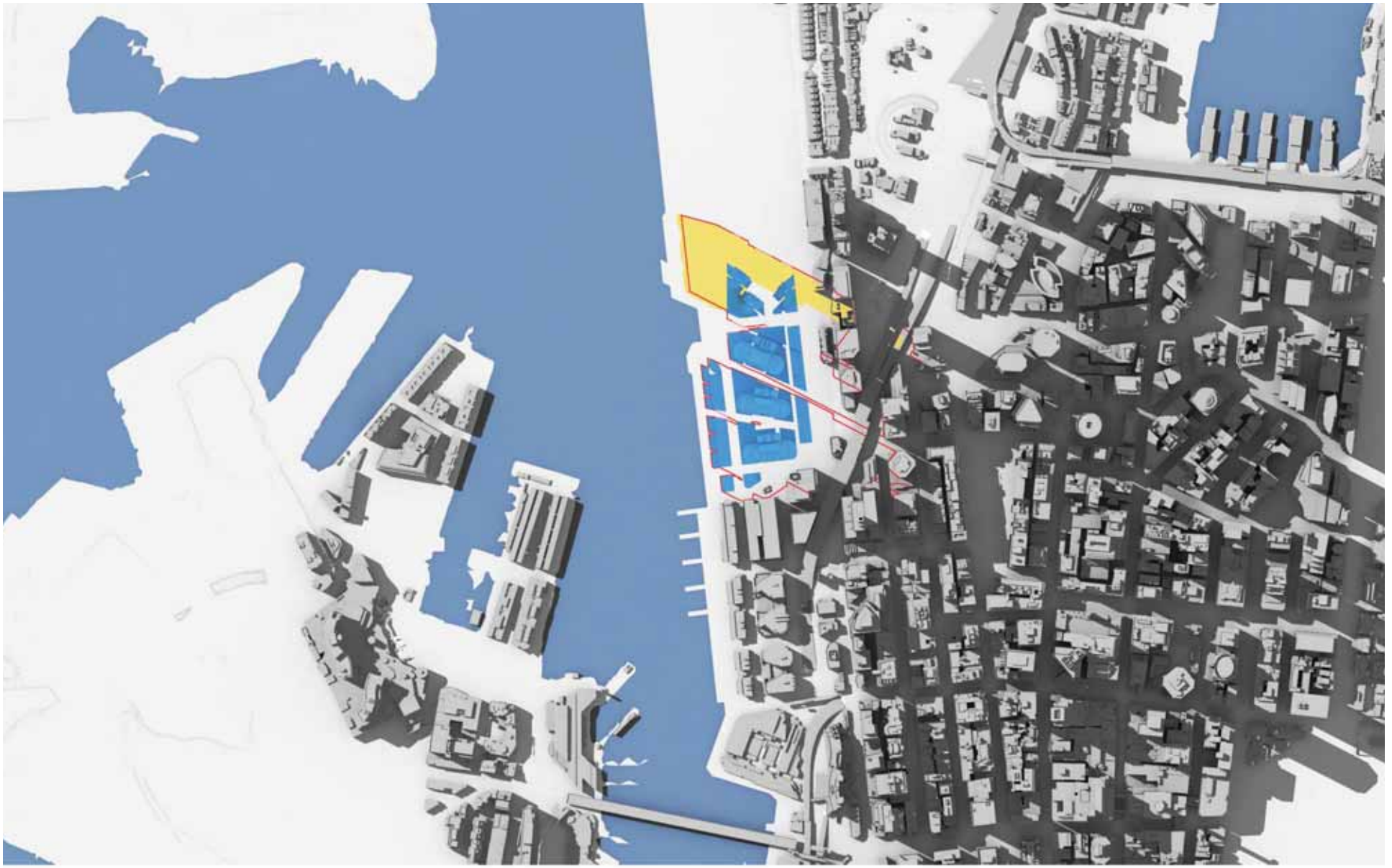
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APPENDIX E

VISUAL IMPACT PHOTOMONTAGE

Visual Impact Photomontage Methodology

BACKGROUND

This document was prepared by Virtual Ideas to describe the processes used to create the visual impact photomontages and illustrate the accuracy of the results.

Virtual Ideas is a highly experienced 3D visualisation company, which commonly prepares material for both application and court use, and is familiar with the requirements to provide 3D visualisation media that will communicate the visual impact of proposed developments. Our methodologies and results have been inspected by various court appointed experts in a variety of cases and have always been found to be accurate and acceptable.

OVERVIEW

The process of creating accurate photomontage renderings begins with the creation of an accurate, real world scale digital 3D model. We then take site photographs from known locations and place cameras in the digital 3D model that match the real world position of the site photography.

By matching the lens properties of the cameras in the digital 3D software, to that of the real world photography, and rotating the cameras in the software so that surveyed points in 3D space align with the corresponding points on the photograph, we can create a rendering that is correct in terms of position, scale, rotation, and perspective. Time and data information is also recorded during the site photography so that accurate lighting conditions can be reproduced in the 3D rendering.

A digital image is then rendered from the camera in the 3D software application that is then superimposed into the real world photo to generate an image that represents accurate form and visual impact.

DESCRIPTION OF COLLECTED DATA

To create the 3D model and establish accurate reference points for alignment to the photography, a variety of information was collected. This includes the following:

1) Proposed Concept plan (Mod 8) drawings
   - Created by: RHSP Architects
   - Supplied by: Lend Lease
   - Format: DWG file
   - Content: Plan and elevation of proposed concept plan with RL's indicated

2) Ortho-corrected aerial photography of the city of Sydney and surrounds
   - Created by: Department of Lands
   - Supplied by: Department of Lands
   - Format: ecw
   - Content: Ortho-corrected aerial photography

3) Digital terrain model of the city of Sydney and surrounding suburbs
   - Created by: Department of Lands
   - Supplied by: Department of Lands
   - Format: DWG
   - Content: 3D contours of the ground plane only (no buildings)

4) Surveyed 3D model of the city of Sydney buildings and ground plane
   - Created by: AAM Hatch
   - Supplied by: Lend Lease
   - Format: DWG
   - Content: 3D model of the city of Sydney buildings and ground plane

5) 3D model of the proposed concept plan
   - Created by: RHSP Architects
   - Supplied by: Lend Lease
   - Format: DWG
   - Content: 3D model of the Barangaroo buildings

5) 3D model of the Proposed Crown Sydney Hotel Resort Design
   - Created by: Wilkinson Eyre Architects
   - Supplied by: Wilkinson Eyre Architects
   - Format: Rhino
   - Content: 3D model of the Crown Sydney Hotel Resort

6) Site photography
   - Created by: Luke Kolln and Rick Mansfield of Virtual Ideas (VI Photos)
   - Format: JEPG file
   - Content: High resolution photo

7) 3D model of the submitted Barangaroo South Buildings
   - Created by: RHSP Architects
   - Supplied by: RHSP Architects
   - Format: DWG
   - Content: 3D model of the Barangaroo buildings

CREATION OF THE DIGITAL 3D MODEL

Creating the surrounding terrain model

Using our software application (3D Studio Max), we imported the Lands 3D topographical CAD data and created a three dimensional terrain model at real world scale. This model was referenced back to MGA co-ordinates using a common reference point that all project drawings are being referenced to. The ortho-corrected aerial photography was then mapped to this model giving us a relatively accurate source for referencing camera positions in both position and height.

Creating the Sydney city buildings 3D model

To have sufficient survey data that would allow us to accurately align the 3D model to the photography, a surveyed 3D model was purchased from AAM hatch and positioned into the 3D scene using the common MGA reference point as the origin. In addition, a surveyed ground plane from AAM Hatch was also purchased and positioned under the buildings.

The building survey was created by AAM Hatch using photogrammetric mapping equipment and techniques.

Creating the Barangaroo buildings 3D model

The Barangaroo building models were created with information supplied by RHSP, Lend Lease and the Barangaroo Delivery Authority (BDA). At all points in the creation of these models, careful attention was taken to ensure that the footprint and heights of the buildings were correct.

SITE PHOTOGRAPHY

Site photography was taken from the positions agreed with Crown Resorts Limited. The positions were selected to fulfil the Director General Requirements provided by the Department of Planning and Environment. Additional locations for photomontages were requested by the city of Sydney, and subsequently photographed.

The DGR requirements for photomontage photography have been defined as follows: “using human eye focal lengths (50mm at 35mm FX format and 46 angle of view) from long range, medium range and short range positions so that they can be assessed with respect to visibility, visual absorption capacity and visual impact rating, as well as a comparison analysis with the approved Concept Plan.”

This request was reviewed during the Mod 4 application and it was determined that due to the scale of the Barangaroo buildings and the specific locations of the DGR photomontages, it was not effective to use 50mm lenses in all circumstances as this would not produce a result where the buildings could be evaluated in respect to the surroundings. In addition in most cases it was not possible to take medium range and long range options for each view as the topography vegetation, and surrounding built form did not accomodate.

The specific requirment for the lens selection for each shot was based on the following criteria that was agreed to with Lend Lease and the Department of Planning and Environment, and was deemed acceptable by the Department of Planning for all previous Barangaroo concept plan application,.

- All photographs should be taken with a Canon 5D, which is 35mm FX format.
- The on-site location for the photograph should be as close as possible to the instructed location.
- The entirety of the proposed buildings, including the approved concept plan envelope should be in view in each photo where possible.
- Surrounding existing buildings should also be visible in each photomontage to allow for fair and accurate comparison to existing built form.

The lens size selected for each shot ranges from 17-40mm, and in additon crop markes have been added to the photographs to illustrate the extents of longer lens sizes.

For further explanation of digital photography and the human eye refer to Appendix A.

In most cases, we consider that a 17-24mm lens is a fair representation of the focal length of the human eye. It is difficult to define the exact focal length of the eye as we have to consider the distance to the subject and peripheral vision.

CREATION OF PHOTOMONTAGES

The positions of the real world photography were located in the 3D scene using the lands and AAM Hatch 3D models, and the orthocorrected photography.

Cameras were then created in the 3D scene to match the locations and height of where the photographs were taken from. The lens data stored in the metadata of the photograph was also used for accuracy. The cameras were then aligned in rotation so that the points of the 3D model aligned with their corresponding objects that are visible in the photograph.

A realistic sun & skylight light system was then created in the 3D scene and matched to the precise time and date of when each photograph was taken.

3D renderings of the new buildings were then created from the selected cameras at the exact pixel dimensions and aspect ratio of the original digital photograph (4368 x 2912 pixels and 5616 x 3744 pixels).

The 3D renderings were then placed into the digital photography, and masked-out where existing form appeared in front of the buildings.

In conclusion, it is my opinion as an experienced 3D architectural visualisation professional, that the images included in this assessment accurately portray the level of visibility and impact of the built form with respect to the surrounds.

Yours sincerely

Grant Kolln,
Director - Virtual Ideas

MAP SHOWING CAMERA LOCATIONS

MAP SHOWING CAMERA LOCATIONS

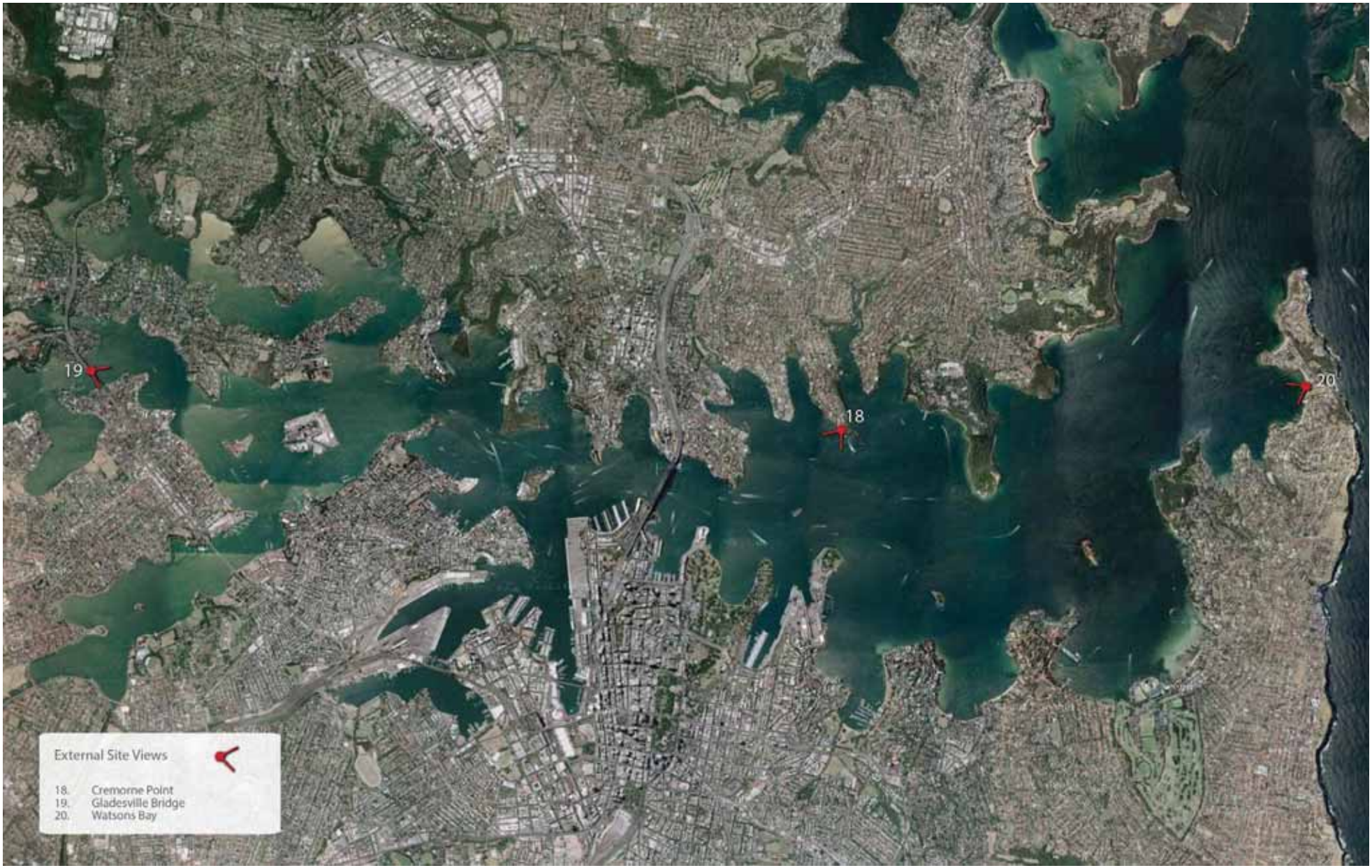

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	HICKSON ROAD
Camera R.L.	17.5m
MGA coords:	X: 333734.347, Y: 6252097.407
Lens:	24mm
Dimensions:	4368 x 2912
Date:	18/06/2010 12:30 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 24mm lens was to capture the heights of several existing city buildings to the left of the image, and also show the building immediately to the right of the viewer. Including the handrail in this image also visually desribes that the viewer is standing on the bridge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	KENT ST (CNR MARGARET ST)
Camera R.L.	17.9m
MGA coords:	X: 333899.463, Y: 6251329.789
Lens:	20mm
Dimensions:	4368 x 2912
Date:	2/06/2010 2:19 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 20mm lens was to capture the heights of the Westpac building, while also providing enough room to see the extent of the future Barangaroo buildings and the approved concept plan.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

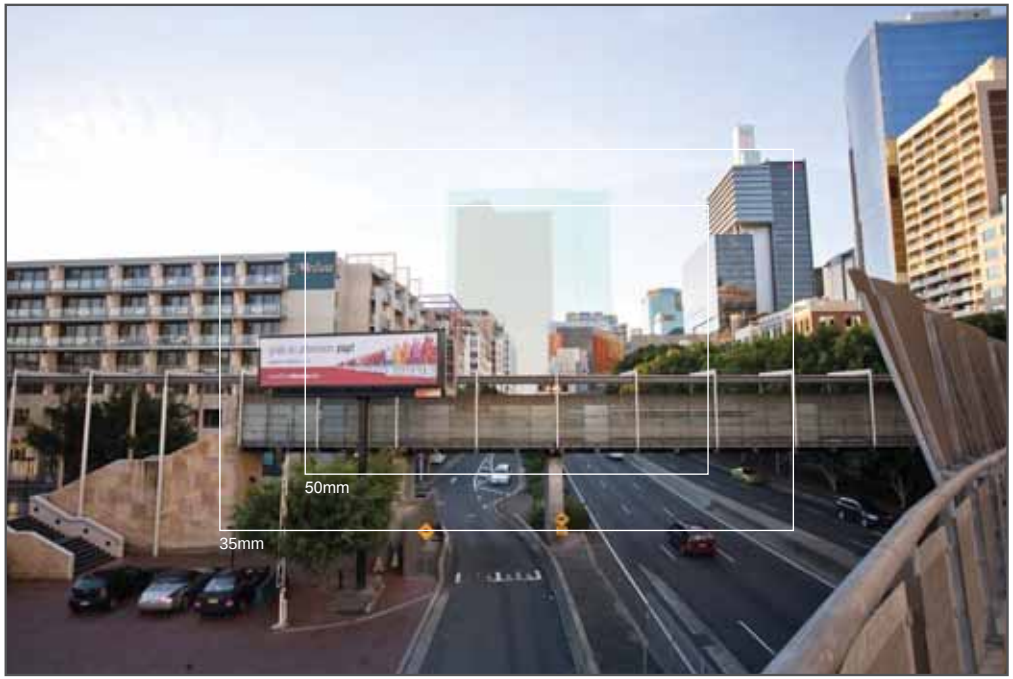

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

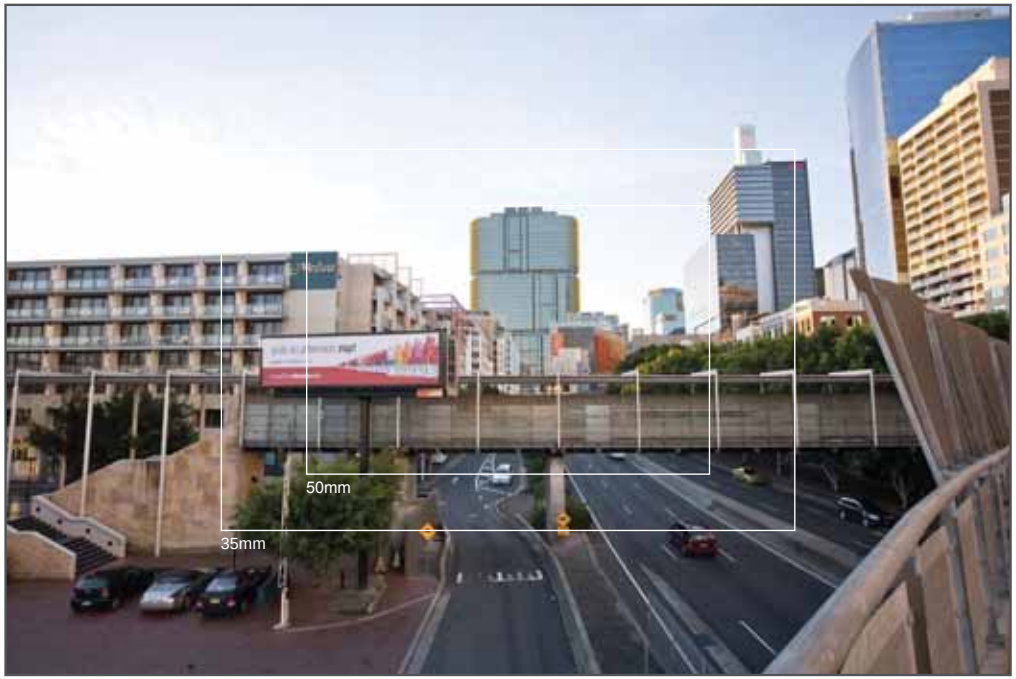

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	SHELLEY ST FROM KING ST BRIDGE
Camera R.L.	11.8m
MGA coords:	X: 333775.939, Y: 6250899.372
Lens:	20mm
Dimensions:	4368 x 2912
Date:	8/06/2010 5:41 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 20mm lens was to capture the heights of several existing city buildings to the right of the image, and also show some of the built form to the left of the viewer. Including the handrail in this image also visually desribes that the viewer is standing on the bridge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	LIME STREET
Camera R.L.	6.7m
MGA coords:	X: 333693.502, Y: 6250920.272
Lens:	22mm
Dimensions:	4368 x 2912
Date:	8/06/2010 5:47 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 22mm lens was that to show the width of the street in front of the viewer, as well as to capture the height of the lime st buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	HIGH STREET
Camera R.L.	16.0m
MGA coords:	X: 333744.51, Y: 6252031.60
Lens:	25mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 12:35:12 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 25mm lens was that to show the width of the street in front of the viewer, as well as to capture the height of the High st buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	GAS LANE
Camera R.L.	21.17m
MGA coords:	X: 333142.1113, Y: 6251923.256
Lens:	17mm
Dimensions:	4368 x 2912
Date:	2/06/2010 4:55 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 17mm lens was to capture as much of the barangaroo buildings as possible as we were very close to the subject. We also wanted to show some of the sides of the Gas lane buildings .

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

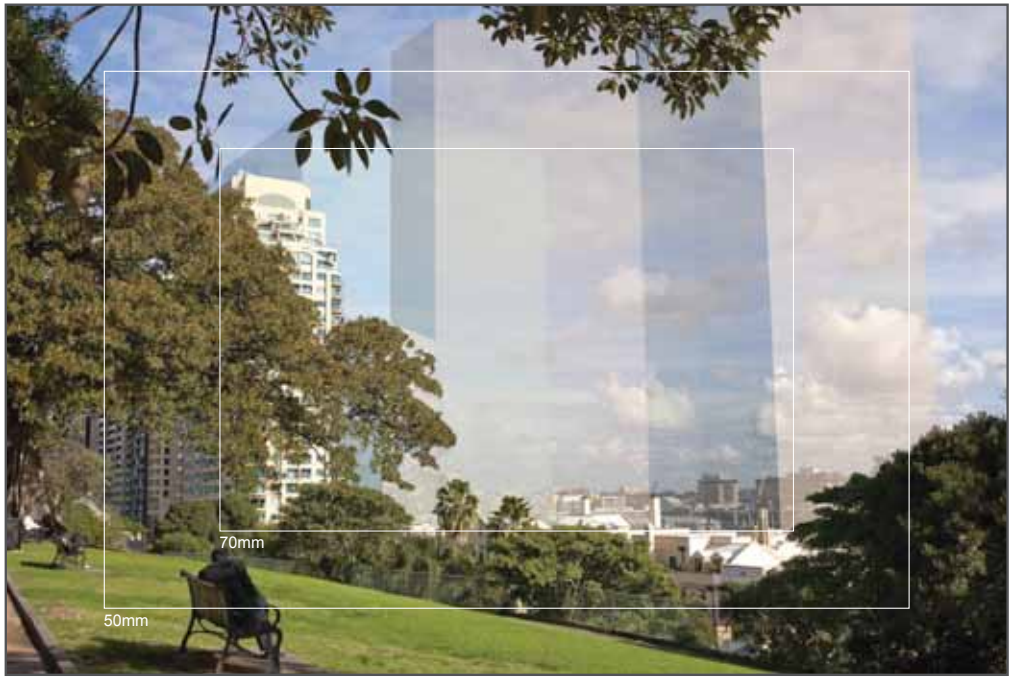

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

IImage showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	MILLERS POINT (OBSERVATORY HILL)
Camera R.L.	43.2m
MGA coords:	X: 333894.874, Y: 6252001.792
Lens:	40mm
Dimensions:	4368 x 2912
Date:	2/06/2010 2:57 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 40mm lens was that from this specific location the wider lens only captured more of the underside of the canopy and did not see any additional built form. Therfore we selected a 40mm lens as this balanced the amount of built form vs the surrounding nature in the image.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	CLYNE RESERVE
Camera R.L.	20.78m
MGA coords:	X: 333657.71, Y: 6252257.07
Lens:	25mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 12:28:48 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 25mm lens was to provide enough immediate context from the camera location, while still being able to see enough of the Barangaroo buildings in the distance.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	MUNN RESERVE
Camera R.L.	18.12m
MGA coords:	X: 333731.60, Y: 6252111.36
Lens:	25mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 12:16:37 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 25mm lens was to provide enough immediate context from the camera location, while still being able to see enough of the Barangaroo buildings in the distance.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	SYDNEY HARBOUR BRIDGE
Camera R.L.	47.63m
MGA coords:	X: 334214.97, Y: 6252259.87
Lens:	25mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 12:51:10 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 25mm lens was to provide enough immediate context from the camera location, while still being able to see enough of the Barangaroo buildings in the distance.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	DARLING HARBOUR (PYRMONT BRIDGE)	
Camera R.L.	13.6m	
MGA coords:	X: 333547.744, Y: 6250747.816	
Lens:	22mm Dimensions:	4368 x 2912
Date:	8/06/2010 5:15 PM	
Camera:	Canon EOS 5D	

Rationale for lens selection

The rationale for using a 22mm lens was to capture the surrounding city buildings, while capturing some of the foreground elements so that the viewer could feel like they were standing on the bridge.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image. (See apendix B)

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

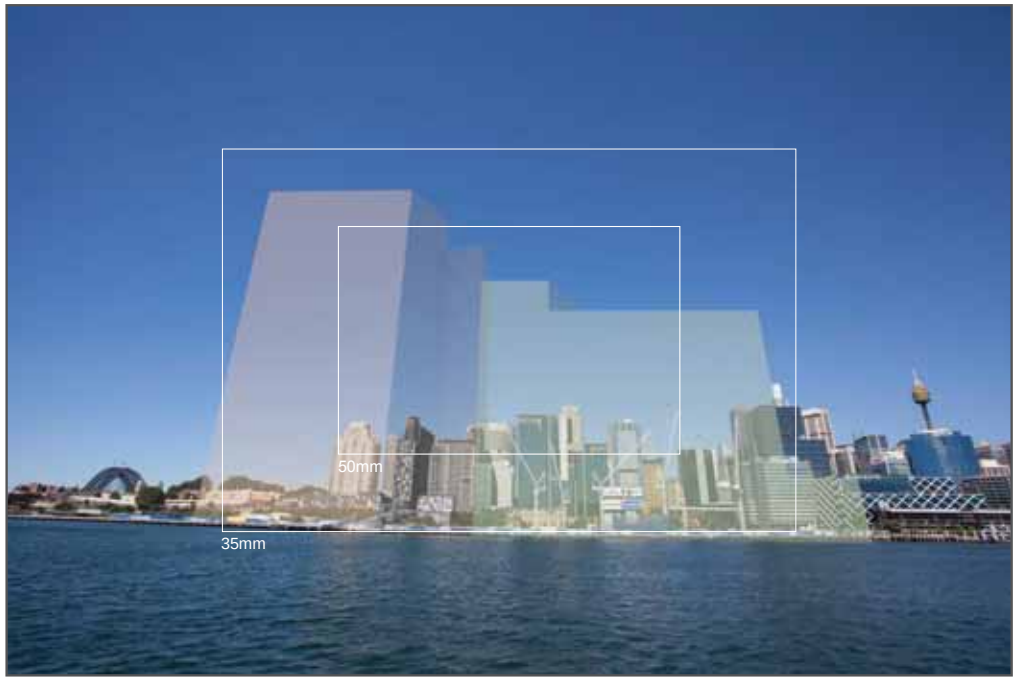

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	Ballaarat PARK
Camera R.L.	3.90m
MGA coords:	X: 333259.86, Y: 6251452.93
Lens:	17mm
Dimensions:	4368 x 2912
Date:	2/06/2010 2:57 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 17mm lens was to be able to show the entire Stage 1 SSD buildings, along with some of the surrounding buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

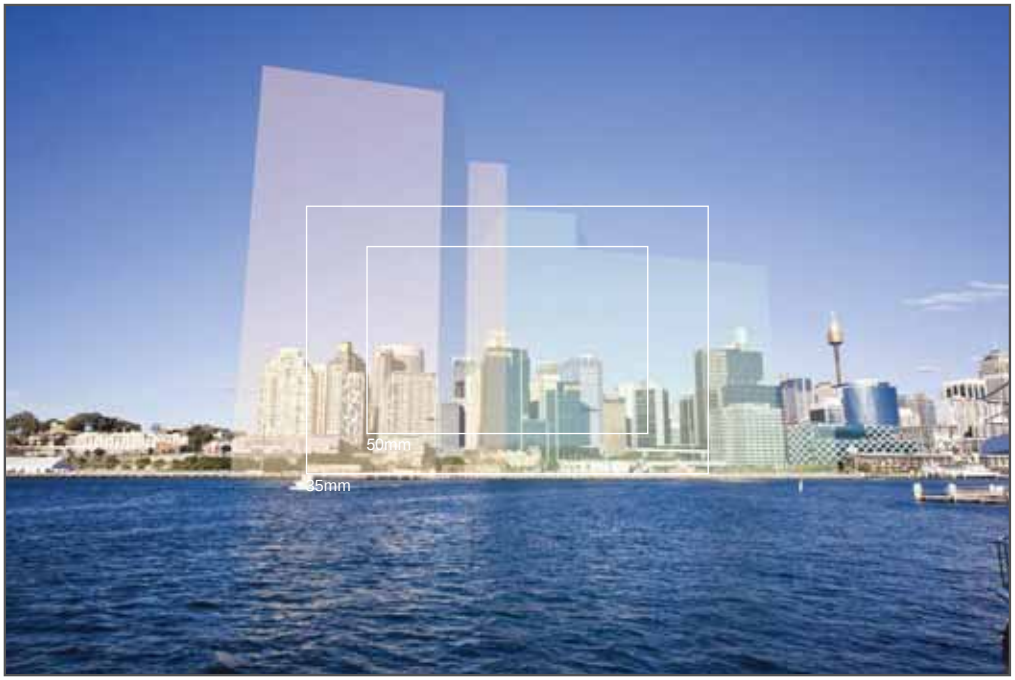

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	PYRMONT PARK PIER
Camera R.L.	4.2m
MGA coords:	X: 333136.251, Y: 6251610.664
Lens:	24mm
Dimensions:	4368 x 2912
Date:	2/06/2010 4:55 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 14mm lens was to capture as much of the city buildings as possible from the selected position.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

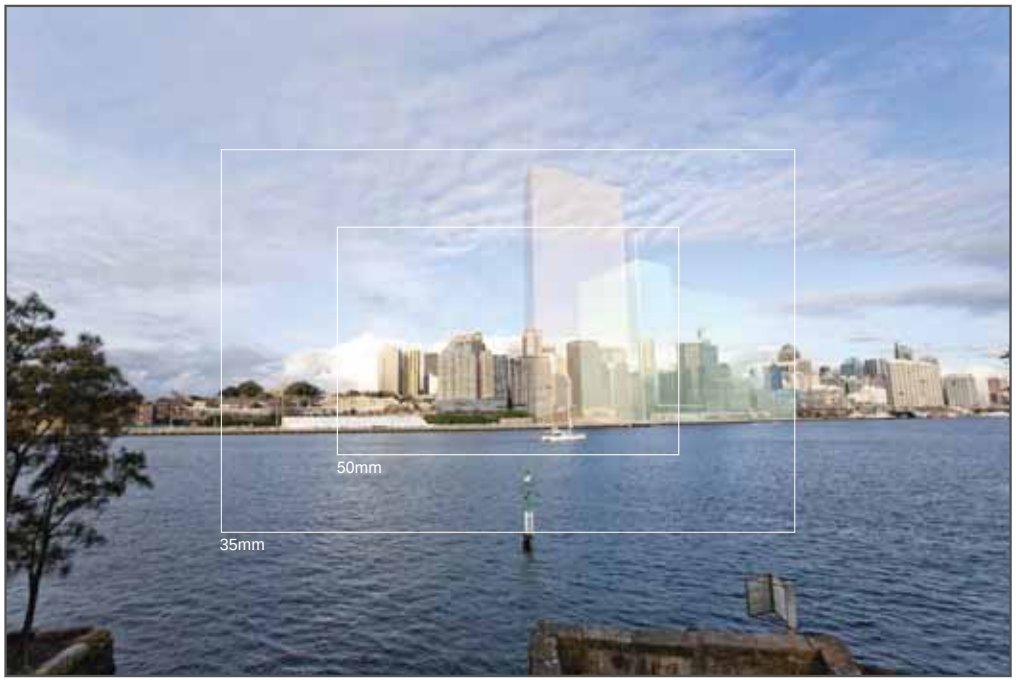

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	BALMAIN EAST
Camera R.L.	11.6m
MGA coords:	X: 333142.111, Y: 6251923.256
Lens:	17mm
Dimensions:	4368 x 2912
Date:	2/06/2010 4:55 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 17mm lens was to capture as much of the city buildings as possible from the selected position. We also wanted to show some of the foreground element so the viewer knows where they are standing.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

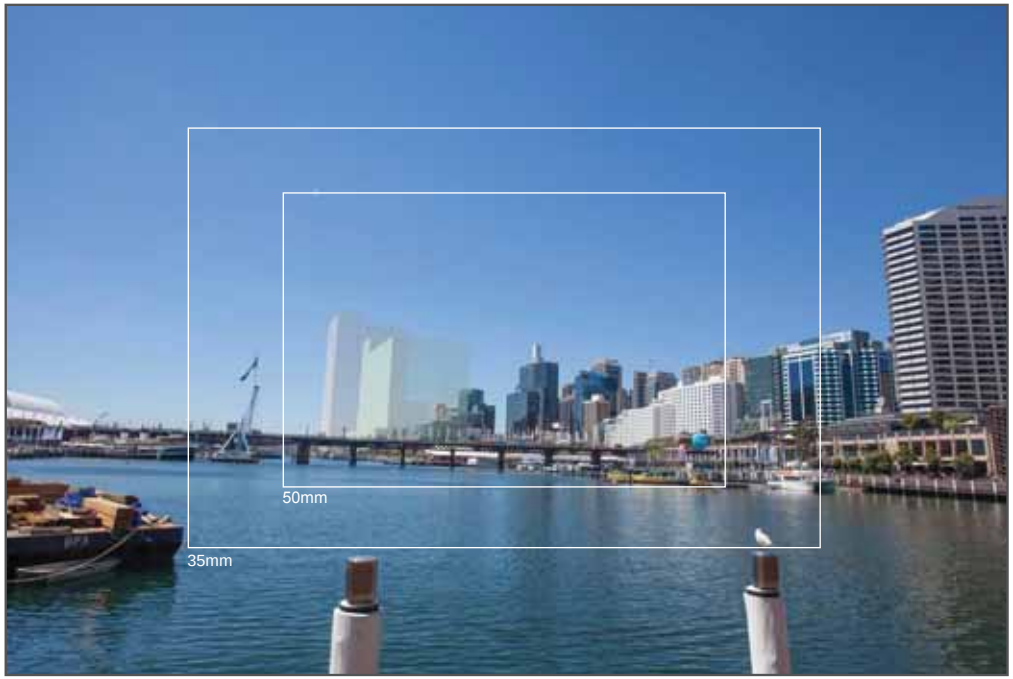

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

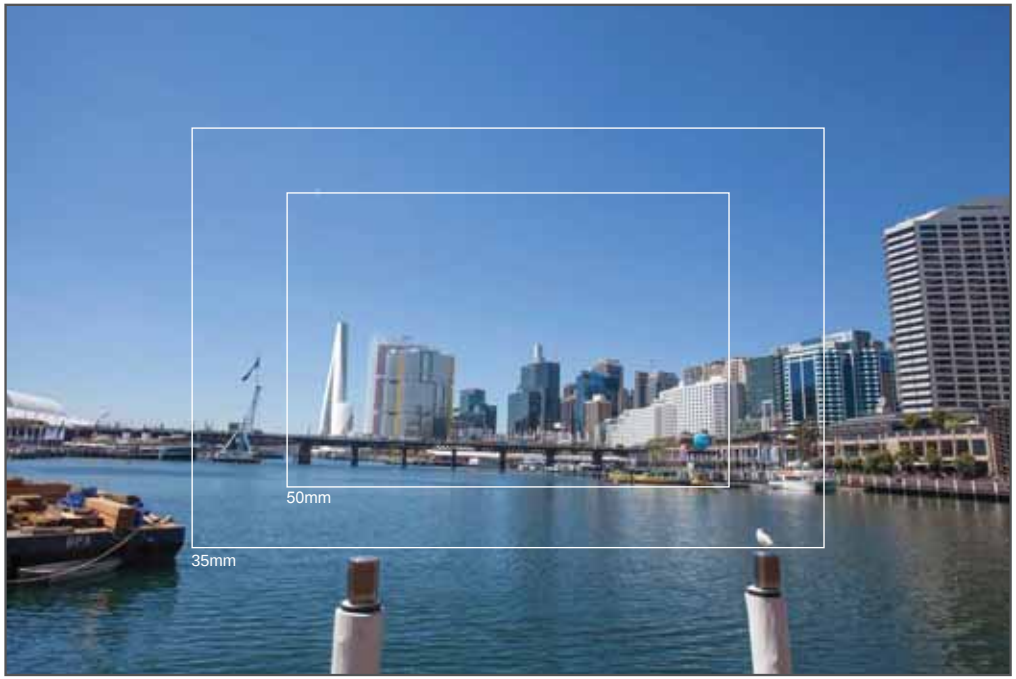

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	DARLING HARBOUR
Camera R.L.	1.93m
MGA coords:	X: 333552.38, Y: 6250416.21
Lens:	22mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 1:43:05 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 22mm lens was to capture the surrounding city buildings, while capturing some of the foreground elements so that the viewer could feel like they were standing in Darling Harbour.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	BLUES POINT
Camera R.L.	14.5m
MGA coords:	X: 333783.957, Y: 6253021.351
Lens:	21mm
Dimensions:	4368 x 2912
Date:	2/06/2010 3:58 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 21mm lens was to capture as much of the city buildings as possible from the selected position. We also wanted to show some of the foreground elements so the viewer knows where they are standing.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	OPERA HOUSE WESTERN FORECOURT
Camera R.L.	4.68m
MGA coords:	X: 334826.856, Y: 6252268.439
Lens:	25mm
Dimensions:	4368 x 2912
Date:	2/06/2010 4:55 PM
Camera:	Canon EOS 5D

Rationale for lens selection

The rationale for using a 25mm lens was to capture as much of the city skyline as possible from the selected position. We also wanted to show some of the bridge and also the foreground element so the viewer knows where they are standing.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

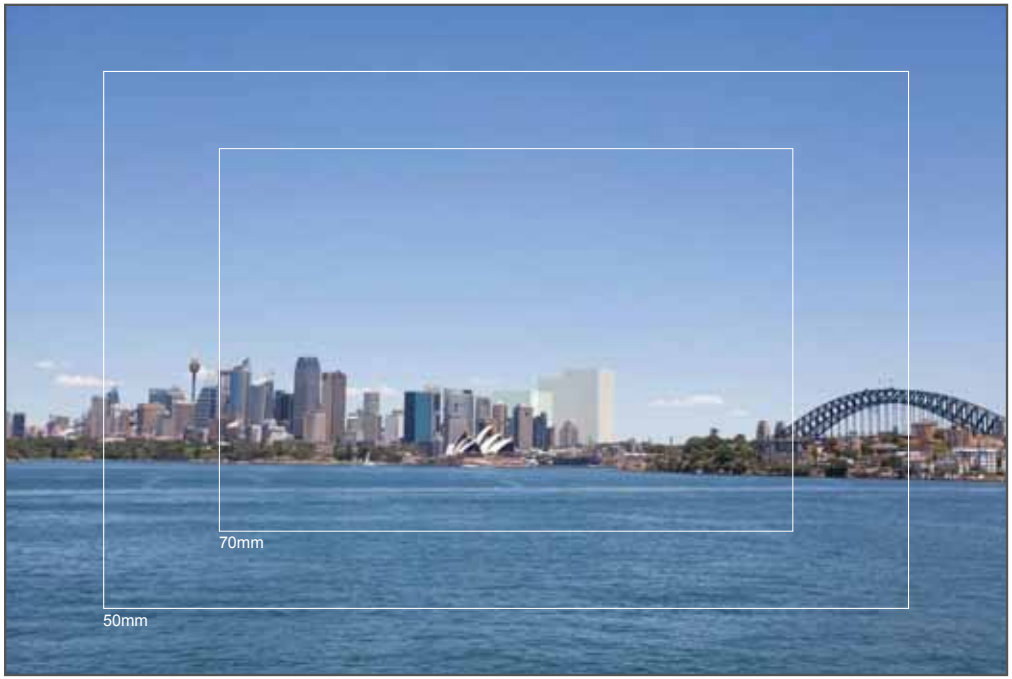

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

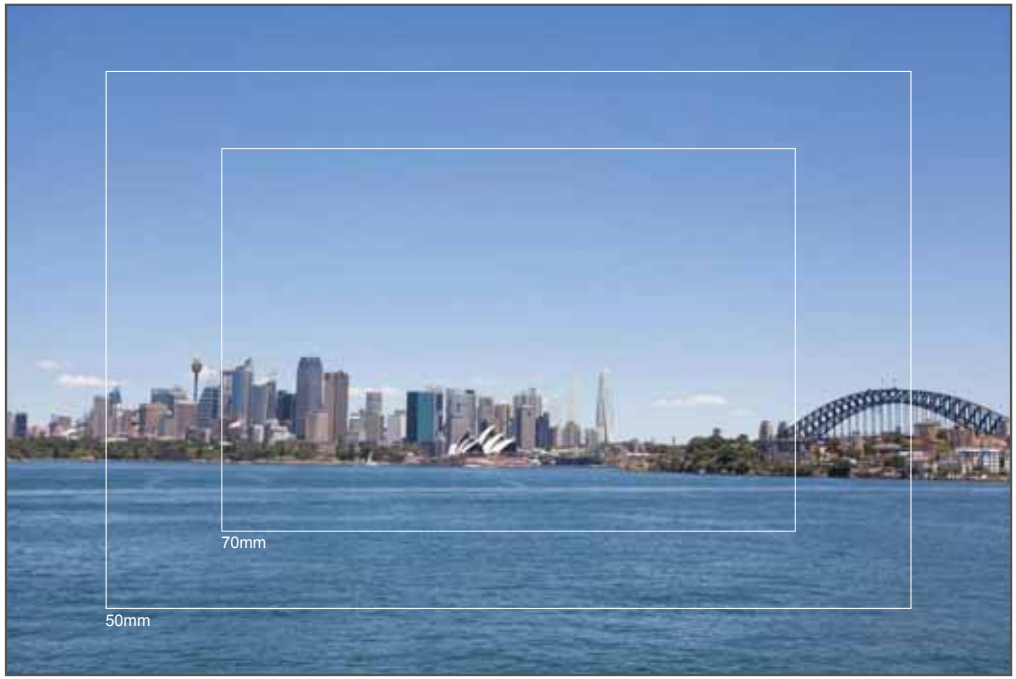

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	CREMORNE POINT
Camera R.L.	6.50m
MGA coords:	X: 336260.81, Y: 6253382.67
Lens:	40mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 11:11:55 AM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 40mm lens was that from this specific location the wider lens did not provide a close enough view of the Barangaroo buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

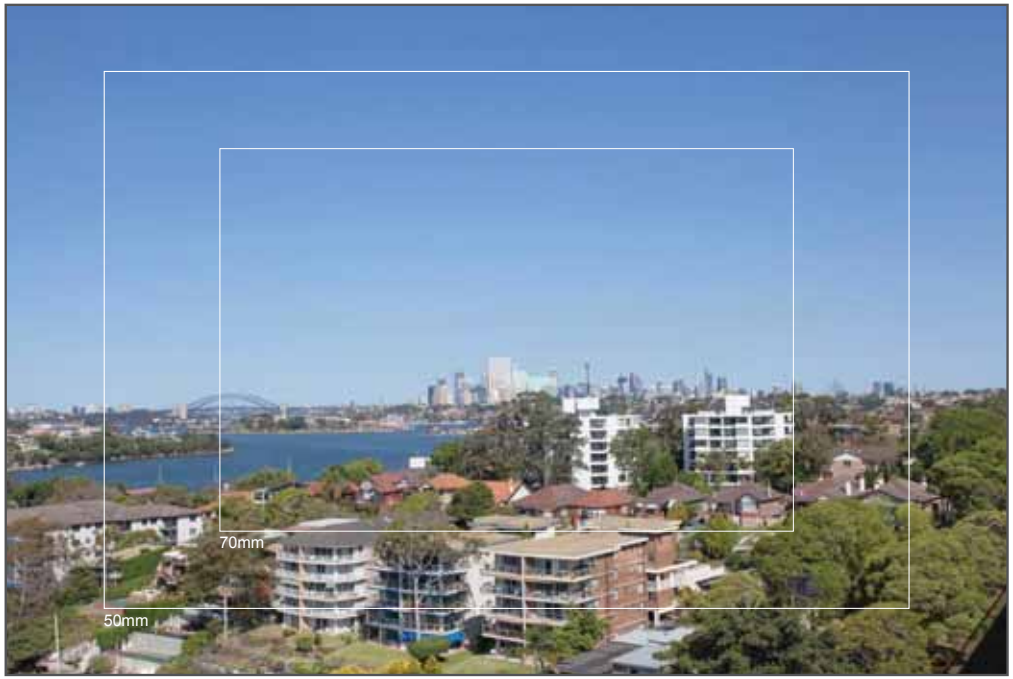

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

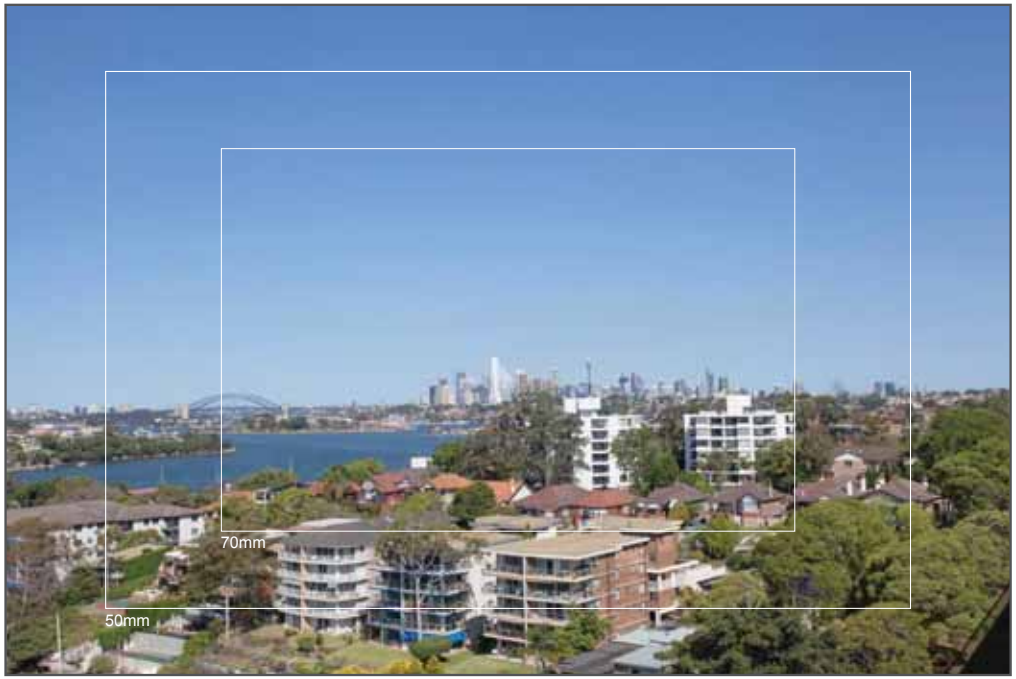

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	GLADESVILLE BRIDGE
Camera R.L.	41.57m
MGA coords:	X: 328625.52, Y: 6253826.63
Lens:	40mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 2:41:51 PM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 40mm lens was that from this specific location the wider lens did not provide a close enough view of the Barangaroo buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

Photographic data

Location:	WATSONS BAY
Camera R.L.	1.85m
MGA coords:	X: 341048.94, Y: 6253777.40
Lens:	40mm
Dimensions:	5616 x 3744
Date:	14/11/2013, 10:13:21 AM
Camera:	Canon EOS 5D Mark II

Rationale for lens selection

The rationale for using a 40mm lens was that from this specific location the wider lens did not provide a close enough view of the Barangaroo buildings.

Overlays showing longer lenses have been included to illustrate the effect of a longer lens. Note that using a longer lens from the same location will have the same effect as cropping the wider image.

Image showing massing of the Proposed Crown Sydney Hotel Resort Application with indicative design.

APPENDIX A - DIGITAL CAMERA LENSES FOR PHOTOMONTAGES AND VISUAL IMPACT ASSESSMENTS

The intention of a photomontage rendering is to visually communicate how proposed built form sits in respect to its surroundings. To achieve this, a digitally rendered image from a digital 3D model is accurately superimposed into a digital photograph to provide an accurate representation in terms of light, material, scale, and form.
Camera lens selection also plays an important part in creating a photomontage that communicates visual impact. There are several things to consider with respect to lens selection.

Field of View of the Human Eye

This is a topic that varies depending on the source of information. In many cases, the field of view of the eye is stated to be 17mm. Other sources of information on the web say that it is more like 22-24mm. Whichever the case, it is clear that the human eye has quite a wide field of view and when we stand close to a subject (say a building) we have quite a lot of vision towards the top, sides and bottom. In addition to this, the human eye can change focus and target direction extremely quickly allowing us to view a large structure in a very short period of time, effectively making our perceived field of view even larger.

The Perspective of the human eye

It is difficult to accurately reproduce what the human eye sees by the means of a printed image. As the back of the human eye is curved and the sensors on cameras are flat the perspective of a photograph can look quite different to how we see things in the real world, especially with a larger field of view, or wider lens.
In digital photography circles, it is commonly stated that using a longer lens (approx 50mm) reduces the amount of perspective in an image and therefore looks more like what the human eye would see in reality, but this is talking about perspective only, and does not consider the field of view of the eye. If you take a photo using a 50mm lens, print the photo, and hold the print out against the actual view in the same location the photo was taken from, it becomes very clear that the human eye can see much more of the surrounding information than what is shown on the print out.

Changing the FOV on a digital camera

The main difference in using a longer lens vs. a wider lens is the amount of information that is displayed at the edges of the subject. Changing the lens to a smaller FOV produces the same result as cropping in on the wide angle image, providing that the position and the angle of the camera remains constant while taking the photographs. In short, a lens with a wider FOV does not create an image that has incorrect perspective it simply means that the perspective is extended at the edges of the image showing more of the surrounds in the images.

What all of this means for visual assessment, is that there is no ‘one size fits-all’ solution for lens selection. If we follow the opinion that a longer lens produces images that are closer to the perspective of the human eye, we will inevitably be in the situation where we cannot show the entirety of our subject and enough of the surrounds that it resides in. Also if we strictly stick to a 17mm lens we will have situations where the subject is far away and looks very small in the image, again making it difficult to assess visual impact. For these reasons, we have taken the view that we can never totally represent what the human eye will see on a piece of paper, and for visual impact photomontages we should select lenses that strike a balance between the two and can accurately display the built form in its surroundings.

The most effective way to accurately gauge visual impact and get a real world feeling for scale, would be to take prints of the photomontages to the exact site photography locations and compare the prints with the scale of the existing built form.

APPENDIX F

SIGNAGE LOCATIONS