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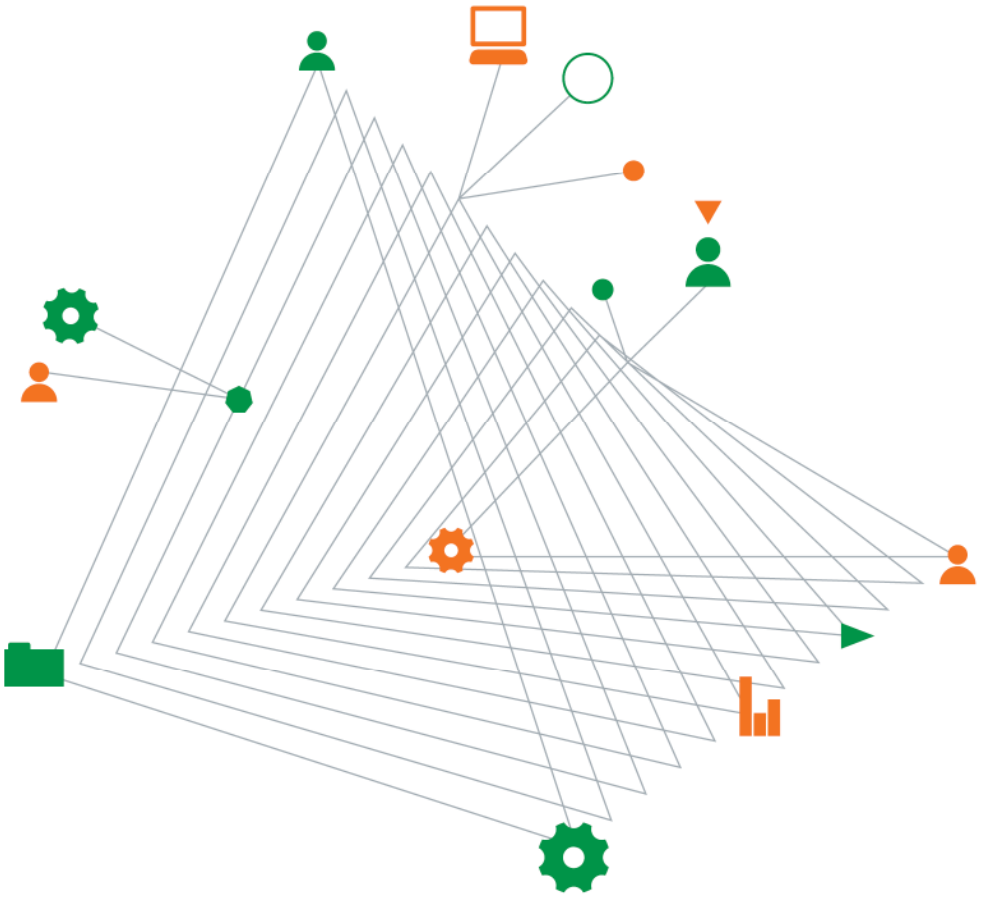
Mirvac Projects Pty Ltd

Preliminary Site Contamination Assessment

Harbourside Shopping Centre
Darling Drive, Darling Harbour, Sydney

3 February 2020



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Preliminary Site Contamination Assessment

Prepared for
Mirvac Projects Pty Ltd

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1. Introduction

1.1. General

Coffey Services Australia Pty Ltd (Coffey) was engaged by Mirvac Projects Pty Ltd (Mirvac) to prepare a Preliminary Site Contamination Assessment for the proposed redevelopment of the Harbourside Shopping Centre (the 'site'), which is situated on the western foreshore of Darling Harbour immediately south of heritage listed Pyrmont Bridge. The location of the site is shown in Figure 1.

The work was commissioned by Mr. Lachlan Attiwill on behalf of Mirvac. The commission was in response to a proposal submitted by Coffey dated 30th July 2018 (ref: GEOTLCOV25340AB-AA).

1.2. Objective

The objective of this assessment was to:

- Review available records to describe the historic uses of the site.
- Observe conditions and land uses currently on the site and land use activities on properties adjacent to the site.
- Assess the data collected during the review and the site observation, to develop a preliminary conceptual site model (CSM) which notes potential areas of environmental concern (AEC) and contaminants of potential concern (COPC).
- Provide an opinion on whether the site is suitable, or can be made suitable, for the proposed land uses in accordance with Clause 7 of State Environmental Planning Policy No. 55 (SEPP 55) Remediation of Land.

1.3. Proposed Development

Coffey understands that Mirvac will apply for planning approval for a development concept to replace the existing Harbourside Shopping Centre with a multi-storey retail centre and residential tower with a three-level basement car park provided in the centre of the site with a finished floor level of -7.5m AHD. Mirvac proposes to demolish the existing Harbourside Shopping Centre to facilitate this development.

Coffey understands that the ground floor and Levels 1 to 5 of the development will be used for commercial retail and offices. A tower structure will be constructed in the central part of the site to an elevation of 153.75mAHD, and Levels 6 to 43 will be used for residential apartments.

Coffey understands that the proposed development will fall within the footprint of the existing Harbourside Shopping Centre and does not require modification of the existing seawall.

Information, including a more detailed description of the proposed development concept is provided in Appendix A.

2. Site information

2.1. Site identification

The generic information relating to the site is summarised in Table 2.1. The location and site layout of the site are shown in Figures 1 and 2 respectively.

Table 2.1: Site Identification

Site Address:	Darling Drive, Sydney, NSW, 2000
Lot Number	Lot 1 of Deposited Plan (DP) 776815 Part Lot 2015, DP 1234971
Approx. Site Area:	1.5 ha
Current Land Use:	Commercial retail shopping facility
Land ownership	The site is owned by Sydney Harbour Foreshore Authority. Mirvac holds a long term lease to operate the Harbourside Shopping Centre.

2.2. Site condition and surrounding environment

An experienced Coffey environmental engineer inspected the site and surrounds on 16th February 2015. The key observations are summarised below:

- The site is occupied entirely by the Harbourside Shopping Centre, which comprises a commercial retail outlet immediately adjacent to the Darling Harbour foreshore. Harbourside Shopping Centre comprises numerous individual retail outlets, amusement centres and restaurants spread across two floors. The shopping centre also provides public amenities and a large public open space located centrally on the ground floor for patrons using the various fast food outlets.
- Areas immediately surrounding the shopping centre are hard paved. The paved areas adjacent eastern façade of the shopping centre were in use by various harbour-side restaurants for patron seating.
- The northwestern façade of the shopping centre is utilised by the retail outlets and restaurants as a loading dock. The loading dock was surfaced with concrete/asphalt hardstand and extended beyond the boundary of the site, extending beneath the Darling Drive overpass. Runoff from the loading dock is channelled towards drains which discharge to Cockle Bay via the local stormwater system. Cardboard and putrescible wastes are stored separately in the northwestern corner loading dock within the site. These wastes are collected periodically by licensed waste contractors.
- Waste oils from restaurants are accumulated in a small above ground storage tank (approx. 1500L) in the northwestern corner of the loading dock. Our observations indicate that waste oil is decanted directly into this tank, and that waste oil is removed by vacuum truck periodically. Staining associated with oil spillages was evident. The tank was in a concrete hardstand area, and waste oils released to the ground drained to the sewer system.
- Many small LPG gas bottles were stored within secure cages within the loading dock area. These gas bottles are used by various restaurants within the shopping centre.

- Several shipping containers are also present off site directly beneath the Darling Drive overpass. It is understood that these containers are utilised by tenants within the shopping centre to store merchandise.
- No evidence of underground storage tanks (UST), or other bulk chemical or waste storage facilities was apparent.

Discussions with Mr. Paul Daley, Mirvac Facility Manager, confirmed that:

- There is no basement within the site, apart from localised pits for lifts and sumps associated with the pumped sewer system.
- There are no back-up electrical generators for the shopping centre.
- There are no USTs or other bulk fuel or chemical storage facilities within the site.
- Fire fighting infrastructure comprises pressurised reticulated water system and sprinklers. No firefighting foams or chemicals are stored on site.

Land uses surrounding the site are summarised in Table 2.2.

Table 2.2: Surrounding land uses

Direction	Land Use
North	Pyrmont Bridge beyond which lies the Australian Maritime Museum
East	Darling harbour public realm and Cockle Bay
South	Sydney International Convention & Entertainment Centre (currently under redevelopment)
West	Darling Drive beyond which lies the Sydney Light Rail corridor. To the southwest lies the International Convention Centre Hotel (currently under construction).

Selected photographs of the site are presented in Appendix B.

2.3. Geology

Reference to the Sydney 1:100,000 Geological Sheet (Sheet No. 9130; dated 1983) produced by the NSW Geological Survey indicates the site is underlain by medium to coarse grained sandstone with very minor shale and laminite lenses. The published geological records indicate that Quaternary alluvial sediments comprising silty to peaty quartz sand, silt and clay encroach the southern extent of the site.

Previous investigations (Coffey, Aug 2013a) installed seventeen boreholes within areas to the south and southwest of the site. A summary of the ground conditions recorded within these boreholes is presented in Table 2.3.

Table 2.3: Summary of ground conditions to the south and west of the site

Unit	Depth to Top of Unit (mbgs)	Approx. Unit Thickness	Material Description
Fill	0m	0.4m to 3.9m	Asphalt and concrete paving overlying FILL with the consistency of sand and gravelly sand: fine to coarse grained, brown, orange and grey, gravel is fine to coarse. FILL thickness increased toward Cockle Bay (east).

Unit	Depth to Top of Unit (mbgs)	Approx. Unit Thickness	Material Description
Alluvium	Observed in discrete horizons at 2.5m and 3.0m	0.4m to 0.7m	SAND: Medium to coarse, dark grey and brown, with a trace of clay and roots. Typically observed as loose to medium dense, and moist.
Residual Soil	0.6m to 3.4m	0.2m to 1.5m	Silty SAND: fine to coarse, orange brown mottled grey, with a trace of fine to medium sandstone gravel. Typically observed as medium dense to dense.
Sandstone	0.8m to 4.1m. Generally deepest at the southern boundary	Not proven	SANDSTONE: Fine to medium grained, orange brown mottled pale grey. Ranges from highly weathered to fresh with dark grey interlaminated shale seams up to 1m thick.

Indicative geological cross sections through the site presenting the inferred sub-surface conditions are presented within Appendix D.

2.4. Acid sulfate soils

With reference to the Acid Sulfate Soil (ASS) Risk Map available in the Australian Soil Resource Information System (ASRIS), the site is noted as 'Disturbed Terrain' which relates to the historic reclamation of low-lying areas along the Darling Harbour foreshore for port facilities in the mid-1800s.

Analysis of alluvial soils collected from land immediately to the southeast provided a strong indication that these soils are classified as Potential ASS (Coffey, Aug 2013a).

The ASRIS map indicated that there was a high probability of ASS or Potential ASS in sediments in Darling Harbour and Sydney Harbour. There is evidence that the site and surrounding area has been reclaimed using harbour sediments, possibly along with other sources of fill material. Therefore it is possible that the some of the fill material at the site could contain ASS or Potential ASS.

2.5. Hydrogeology

Given the proximity of the site to Darling Harbour and the local stratigraphy, it is expected that groundwater beneath the site will be saline and tidally influenced in fill material, with a net gradient towards the Cockle Bay. Standing water levels recorded in monitoring wells installed to the southeast of the site ranged from 0.4m to 0.6mAHD.

As part of this assessment, Coffey referred to records held by the NSW Office of Water to identify registered groundwater bores within the vicinity of the site. In summary, no registered groundwater bores existing within a 500m radius of the site, although Coffey acknowledges that groundwater monitoring wells are installed in the vicinity of the site.

2.6. Hydrology

No water bodies are located within the site. Cockle Bay is the nearest surface water body and is approximately 30m east of the site.

3. Previous Reports

3.1. General

Mirvac provided the following reports for Coffey's review:

- Coffey (Aug 2013a); *Detailed Site Investigation Report for SSDA6 – International Convention Centre Hotel Development, Sydney International Convention, Exhibition & Entertainment Precinct* (Ref: GEOTLCOV24303AH-AD)
- Coffey (Aug 2013b); Geotechnical Investigation Report for SSDA6 – Sydney International Exhibition and Entertainment Precinct – ICC Hotel (Ref: GEOTLCOV24303AH-AH)
- Douglas Partners (June 2013); *Preliminary Geotechnical Assessment of Piles – Proposed Upgrade of Harbourside Shopping Centre, Darling Drive, Darling Harbour* (Project Ref: 73498)

3.2. Detailed Site Investigation – ICC Hotel Development (Coffey, Aug 2013a)

The Detailed Site Investigation (DSI) was prepared for the ICC Hotel development site, which adjoins the Harbourside Shopping Centre to the southwest. The ICC Hotel development comprises a tall hotel tower, ground floor lobby and single storey basement for use as a loading dock and plant storage area.

The DSI presents the findings of a site history review and programme of intrusive investigation to assess potential sources of contamination. The results from the investigation were also used to prepare the Geotechnical Investigation Report (Coffey, Aug 2013b). Records of sampling locations within the ICC Hotel site from several previous phases of investigation were also reviewed. The investigation locations considered within this assessment are presented on Figure 2.

Coffey found that the ICC Hotel Site had historically formed part of the Darling Harbour Goods Yard which was developed on reclaimed land and was used for rail and maritime freight activities within the surrounding area. The ICC Hotel site was subsequently redeveloped in circa 1980's and comprised a passenger drop off/pick up area adjacent to the Harbourside Shopping Centre and Convention Centre. Construction work to redevelop the ICC Hotel site commenced in 2015.

The key investigation findings relevant to the Harbourside Shopping Centre site are:

- The subsurface comprised heterogeneous fill materials over a thin layer of alluvial deposits. Sandstone bedrock was encountered at depth. The thickness of fill generally increased in an easterly direction towards Cockle Bay. The ground conditions encountered are summarised in Table 2.3.
- Standing water levels recorded in monitoring wells installed to the southeast of the site ranged from 0.4m to 0.6mAHD, although some variability was expected due to the proximity of the tidally influenced Cockle Bay.
- Analysis of soil and groundwater samples collected from the site reported concentrations of COPC below health assessment criteria for a commercial/industrial land use. Coffey concluded that the soil and groundwater present beneath the site did not pose unacceptable potential health risks to future construction workers or the future users of the ICC hotel.

- Undisturbed alluvial deposits beneath the site are likely to comprise PASS or actual ASS. Coffey concluded that these materials would require management if disturbed during construction.

- Total Recoverable Hydrocarbons C_{16}-C_{34}, naphthalene, toluene, copper and nickel were detected in groundwater samples, although at levels which Coffey considered did not warrant further assessment. Coffey noted that the source of these COPC had not been identified and may derive from fill material placed within the ICC Hotel site and/or historic land uses. Coffey noted, that given the tidally influenced groundwater, the source of impact may derive from materials beyond the site boundary.

On the basis of the findings of the DSI, Coffey concluded that no remediation was required and the ICC site was assessed to be suitable for the proposed hotel development, provided that an appropriate ASS Management Plan was prepared and implemented for construction excavation and dewatering.

3.3. Preliminary Geotechnical Assessment of Piles (Douglas Partners, June 2013)

This report presents an assessment of the existing pile foundation system beneath the Harbourside Shopping Centre. The report indicated the nature of the overburden materials consisted of poorly compacted sand, rubble and rock filling to depths of up to 10 m.

4. Site History

4.1. Aerial photographs and historical map extracts

Aerial photographs and historical maps for the period between 1845 and 2001 were reviewed to assess the sequence of development of the site and the surrounding land. Table 4.1 summarises the findings of our review. Selected aerial photographs and historic maps are provided in Figures 3 to 14.

Table 4.1: Summary of aerial photographs and historic map extracts

Date	Description of historic land uses
Historical Map Extracts	
1845 – Shield's Plan of Sydney (Figure 3)	The shows the site is situated along the western shoreline of Cockle Bay with the southern and eastern portions of the site submerged within the harbour. Cockle Bay appears to relatively undeveloped with the exception of Burn's House located directly west of the site. An access track leading from Burn's House to Darling harbour runs through the centre of the site.
1865 – Trigonometric Survey Plan (Figure 4)	The Trigonometric Survey Plan indicates the orientation of the foreshore within the site appears to have remained unchanged from 1845. The western foreshore of Cockle Bay to the south of the site had been developed with a rail corridor, suggesting some land reclamation had occurred to establish the rail corridor. The plan shows a number of structures established within the area although the specific land uses were not identified.
1885 – 1895 Atlas of Suburbs of Sydney (Figure 5)	Review of the historic maps for the Suburbs of Sydney for the period between 1885 and 1890 indicates the majority of the site falls within a substantial railway goods yard, confirming that land reclamation has occurred to establish this infrastructure. Burn's House has been removed in place of the rail infrastructure. Land uses to the south of the site comprise a rail corridor linking the site with the wharves along the southern Cockle

Date	Description of historic land uses
	Bay foreshore and Sydney Terminus to the south and a Meat Market. Land uses to the north comprise rail sidings that link to Railway Wharves fronting onto Pyrmont Bay. Pyrmont Bridge has been established to the north of the site connecting the western and eastern shores of Cockle Bay.
1938 – 1950 Civic Survey of Pyrmont (Figure 6)	The Civic Survey of Pyrmont shows the site has been developed and forms part of a complex of three Goods Sheds (known to be referred to as the Darling Harbour Goods Yard) associated with rail freight in the area. Land use to the south remains rail sidings. Land use to the west appears to comprise commercial-type buildings, including the following referenced businesses: • Pitt, Son & Badgery – stock and station agency associated with the transportation of livestock to the various Sydney Markets • Yellow Express Carriers – freight transportation business • Goldsborough Mort & Coy – wool store and various warehousing/storage uses
Aerial Photographs	
1930 (Figure 7)	The site forms part of a large goods yard, associated rail sidings wharves identified within historic map extracts. Pyrmont bridge has been constructed to the north of the site with Pyrmont Power Station visible further north. Several wharf structures are present to the south and east of the site along Cockle Bay. Development to the west appears to comprise commercial-type structures with a pockets of low-rise (possibly residential dwellings) located between Pyrmont Street and Wentworth Park.
June 1942 (Figure 8)	No significant changes to the site are noted. Land located to the west of the site is further developed into a mixture of commercial and residential structures.
August 1951 (Figure 9)	No significant changes to the site are noted. Building foundations for additional structures can be seen within the rail corridor located to the south of the site.
May 1961 (Figure 10)	No significant changes to the visible portion of the site are identified. Construction of new goods yards along the rail corridor to the south of the site has commenced with an additional four elongated warehouse structures present.
August 1972 (Figure 11)	No visible changes to the site are noted. The additional goods yards to the south of the site have been completed. High density commercial buildings have replaced many low lying buildings in the commercial district located east of Darling Harbour.
August 1982 (Figure 12)	No visible changes to the site are identified. Construction has on the Western Distributor Freeway located to the south of the site.
October 1991 (Figure 13)	The Rail Goods Sheds and associated rail sidings have been demolished. Similarly, existing infrastructure on surrounding land has also been removed. The Harbourside Shopping Centre and landscaped public open space has been established surrounding Cockle Bay foreshore, broadly resembling the current day layout. Land uses to the south have substantially changed with the Sydney International Convention Centre and exhibition halls now present. Land uses to the west of the site appear to have remained substantially unchanged from the previous aerial photograph. The Western Distributor Freeway appears to have been fully constructed to the south of the site.
2002 (Figure 14)	General site conditions do not appear to have changed from 1991.

Date	Description of historic land uses
2015 (Google Maps)	Available satellite imagery show the site conditions in 2015 remained relatively unchanged. The International Convention Centre and exhibition halls to the south were demolished in 2015 to facilitate the construction of new convention and entertainment centre.

4.2. Review of available heritage assessments

Several heritage assessments were prepared for the development of the Sydney International Convention Centre, Exhibition & Entertainment Precinct (SICEEP)[1]. The following documents in the public domain provide further detail regarding early land uses and the former Darling Harbour Goods Yard, which historically occupied the site:

- Tanner Kibble Denton Architects (Feb 2013); *Statement of Heritage Impact –SICEEP, Darling Harbour*.
- Casey & Lowe (March 2013); *Non-Indigenous Archaeological Assessment and Impact Statement for SSDA1; Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP)*.

Table 4.2 presents a summary of historical uses identified within the heritage assessments noted above.

Table 4.2: Historic land uses identified within readily available heritage assessments

Period	Description of historic land uses
1794	The first grants of land on the western side of Cockle Bay were made to John Malone and William Mitchell (TKD, Feb 2013). Land uses at this time are not specified.
1836	Casey & Lowe (March 2013) present a plan from circa 1836 which shows much of the southern portion of the site remaining partially or entirely submerged at this time. 'Burns House' is established immediately to the west of the site, although the use of this building is not known. The remainder of the land does not appear to be developed.
1850s	In 1853, a proposal was made to connect Darling Harbour to the main Sydney railway line. An additional 7½ acres (3.04 ha) was resumed for a goods terminus at Pyrmont. The Darling Harbour Branch Line opened c.1859.
1860s	Reclamation also took place on the western shore of Darling Harbour using spoil excavated from the railway terminus and by 1865 an embankment was formed east of Pyrmont Street, extending between Allen Street and a point just south of Fig Street (Casey & Lowe, Mar 2013). It is also reported that reclamation it is likely to have used 'old wharf and pier structures' incorporated in the fill.
1870 – 1890	Further reclamation took place during the 1870s to enable the construction of the Darling Harbour Goods Yards and associated Iron Wharf. The Iron Wharf was constructed between 1874 and 1876 and comprised a substantial iron structure which extended along the western shore of Cockle Bay. The wharf was constructed with tubular cast iron columns with hard wood decking. A stone retaining wall was constructed adjoining the iron wharf and fill materials were placed behind.

[1] SICEEP covers an area of approximately 20Ha and extends from Hay Street in the south to the ICC Hotel site immediately to southwest of the site.

Period	Description of historic land uses
	The construction of the Darling Harbour Goods Yard took place between 1874 and 1888. These yards were extended north between 1888 and 1891 in a second phase of construction to connect with the Pyrmont Bay wharves and Darling Island.
1890 – 1920	The Darling Harbour Goods Yards went through a further period of rapid expansion where two additional Goods Sheds and associated offices were established in 1902. Construction of two-tier outwards goods shed completed between 1906-1922.
1920 – 1980	As waters south of Pyrmont Bridge became too shallow for increasing size of commercial vessels, wharf operations declined resulting the gradual dismantling of the Iron Wharf during the 1920s. The Darling Harbour Goods Yard remained operational until circa 1980s and was eventually dismantled to enable to construction of the Harbourside Shopping Centre, Sydney International Convention Centre, and associated public realm, which opened c.1988.

4.3. Licences to Store Dangerous Goods

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by Safe Work NSW (formerly WorkCover NSW) found no record of licenses to store dangerous goods within the site.

The dangerous goods search response received from Safe Work NSW is presented in Appendix C.

4.4. NSW EPA Records

4.4.1. Contaminated Land Public Register

Coffey referred to the NSW EPA online contaminated land register on 6th August 2018. The search identified that no notices, management or maintenance orders that have been issued by the NSW EPA under the CLM Act in relation to the site.

4.4.2. Protection of the Environment Operation Act 1997 Register

Coffey undertook a search of the NSW EPA's online database of environment protection licences, and associated notices. No EPL or notices issued under the POEO Act were identified for the site or surrounding land.

4.5. Summary of site history

Available records indicate that the western portion of the site historically formed part of a tidal mudflat, with the eastern portion of the site was submerged within Cockle Bay. Land reclamation activities commenced in the 1860s to extend the Darling Harbour railway branch line towards the Pyrmont Bay wharves.

Further land reclamation took place during the 1870s to enable the construction of the Darling Harbour Goods Yards and associated Iron Wharf. The site was located in the western part of the goods yard and Iron Wharf. At this time, land uses surrounding the site comprised various commercial uses (i.e. warehouses, livestock agencies, meat market) which relied on the adjoining goods yards.

The Darling Harbour Goods Yard went through a period of expansion between the 1880s and 1920 where two additional goods sheds were established; one of these sheds was positioned substantially within the site. The Pyrmont Power Station was established approximately 350m north of the site at this time. The Darling Harbour Goods Yards remained operational until circa 1980s and were eventually dismantled as part of the redevelopment of the wider Darling Harbour precinct for public open space and exhibition/entertainment land uses, which opened for Australia's Bicentennial celebrations in 1988. The Harbourside Shopping Centre was part of this redevelopment of the wider Darling Harbour precinct

4.6. Integrity Assessment of Historical Data

The following sources of information were referred to for this assessment:

- Readily available historic map extracts and heritage assessments available in the public domain.
- Selected aerial photographs.
- NSW EPA register for listings of contaminated sites.
- Heritage assessments available within public domain relating to the site and land surrounding the site.
- Licences to store dangerous Goods certificates.

As substantial development of the site and surrounding land was known to have occurred prior to the earliest available aerial photographs, a review of historic maps and available heritage assessments was undertaken to establish the historic sequence of site development, particularly relating to the early land reclamation activities and rail/maritime freight operations. As such, Coffey considers that the time period for the historical review is appropriate for this particular site.

In general, there appears to be good correlation between the historic map extracts reviewed and heritage assessments available for the site although the latter provides far greater detail on the history of the area rather than the specific historic uses of the site. Coffey considers this not to be a substantial data gap.

Records provided by Safe Work NSW indicate no licences to store Dangerous Goods had been issued for this site. This information is consistent with anecdotal information provided by the Facility Manager and observations made by Coffey during the site walkover.

In summary, the data reviewed is considered to be generally accurate, representative and usable for the purposes of interpretation within the context and objective of this assessment.

5. Preliminary contamination assessment

5.1. Areas of environmental concern

A review of current and historic land uses has identified the following AEC:

- Fill of unknown origin and quality.
- Waste cooking oil AST associated with a retail food court in the northwestern portion of the site.

- Former Darling Harbour Goods Yard & associated Iron Wharf.

The AECs and associated chemicals of potential concern are summarised in Table 5.1.

Table 5.1: Summary of Potentially Contaminating Activities, Potential Areas of Environmental Concern, Likelihood of Contamination and Potential Chemicals of Concern

Potentially Contaminating Activity/Source	Sub Component / Description	Potential Areas of Environmental Concern	Likelihood of Contamination	Chemicals of Potential Concern
Fill of Unknown Origin and Quality	Historical records indicate that the site was reclaimed during the 1860s for establishment of rail corridor and the Darling Harbour Goods Yards and the adjoining Iron Wharf. The source and quality of fill is understood to derive from spoil generated from the Sydney rail terminus although may have also included sandstone cut to form the rail corridor immediately east of the site. Available records suggest fill may have also included 'old wharf and pier structures'. The site was redeveloped in c.1980 in its current configuration. During this period, a proportion of the historic fill materials may have been removed and/or additional fill materials introduced to the site.	Fill material comprises the upper portion of the subsurface, and is suspected to be present across the entire site. *Soil and groundwater media potentially affected.*	*Low to moderate likelihood of contamination.* The sequence of historic site development indicates that fill of different origins and quality has been placed on site during different periods. The sequence of fill placement, and the heterogeneous nature of fill materials indicates that contamination impact (where present) will be randomly distributed throughout the fill on site, albeit certain contaminants associated with a particular fill event will be present in discrete horizons of fill where significant reworking of fill has not occurred during subsequent site development.	TPH, BTEX, PAH, OCP, PCB, Metals and asbestos
Waste Cooking Oil AST	Waste cooking oils from restaurants within the shopping centre are disposed to an AST within the northwestern part of the site. Oils are reportedly decanted into the tank, and subsequently removed via vacuum truck. Evidence of oil spillages was noted on hardstand surfaces surrounding the tank during the walkover survey.	The waste cooking oil AST is considered to be a point source of potential contamination within the northwestern portion of the site, due to likely impact on aesthetics. *Soil and groundwater media potentially affected*	*Low to moderate likelihood of contamination.* The repeated application of high temperatures to cooking oils results in a waste product that is typically non-volatile and of low solubility. Partial oxidation of vegetable oils and food products being cooked may also introduce a source of heavy-end PAH compounds. The existing hardstand surface and associated drain is assessed to restrict waste oil entering the sub-surface, where accidental spillages occur. Where waste oils enter the subsurface, these are anticipated to be concentrated within shallower fill locally, although some potential impact to deeper soils and groundwater may have occurred.	Oil and Grease and PAH
Former Darling Harbour Goods Yard & associated Iron Wharf	Available records indicate that the site was within the footprint of the former Darling Harbour Goods Yards, which operated between c.1870 and 1980 and were used to convey freight between rail and maritime transportation modes.	The site was situated within the western-most shed within the former goods yard. As little information is available to describe the types of activities undertaken within specific areas of the goods yard, contamination impacts from this historic use may be present across the entire site. *Soil and groundwater media potentially affected.*	*Moderate likelihood of contamination* Activities within the goods yard and adjoining wharf are assessed to be varied, including heavy rail sidings (oils, asbestos, heavy metals), and minor maintenance activities potentially representing a source of heavy metal, TPH, PAH and VOC/SVOC contamination. [2] Localised contamination may have also been caused through leaks or spillage from drums or bulk tanks stored on site during transit or as part of the historic storage of goods. Asbestos used within rail engines (boilers, brake linings etc.), structures and insulation products may have also entered the ground during the operation and subsequent demolition of the goods yard. The redevelopment of the goods yard during the mid 1980's may have removed contamination (if present) within shallow soils through minor re-grading of the site, but contamination within deeper fill and natural soils/rock may remain which could represent a source of groundwater contamination.	TPH, PAH, BTEX, VOC/SVOC, Metals, Asbestos

Notes: TPH = Total Petroleum Hydrocarbons; BTEX = Benzene, Toluene, Ethylbenzene, Xylene; PAH = Polycyclic Aromatic Hydrocarbons; Heavy Metals = arsenic, cadmium, chromium, copper, lead, nickel, mercury, zinc; OCP = Organochlorine Pesticides; PCB = Polychlorinated Biphenyls, VOC/SVOC = volatile and semi-volatile organic compounds.

[2] It is noted that the main rail engineering works were situated in Eveleigh, approximately 3km south of the Goods Yards. It is assessed that major maintenance and repair works would have occurred in Eveleigh, rather than within the Darling Harbour Goods yards. It is considered possible that minor maintenance/repairs works may have been undertaken within the Goods Yards however.

5.2. Potential exposure pathways

The following pathways and exposure routes have been identified by which potential contaminants have been identified at the site may reach environmental and/or human receptors:

- Dermal contact with soil and/or groundwater.
- Incidental ingestion of soils and dust and/or groundwater.
- Inhalation of dusts, vapours and fibres.
- Seepage of groundwater into Cockle Bay.
- Surface runoff / overland flow.

5.3. Potential receptors

In the context of the current and proposed use of the site, the following potential receptors have been identified

- Current site users – site visitors and commercial workers.
- Future site users – commercial (retail and office) workers, and residents occupying dwellings within the upper floors of the development, users of the basement car park.
- Construction workers and maintenance workers involved in excavation.
- Aquatic species in Cockle Bay.

5.4. Preliminary conceptual site model

Table 5.3 presents a preliminary conceptual site model, discussing the plausible pollutant linkages between the potential AECs and receptors. The following nomenclature was used in Table 5.3 to annotate the nature of pollutant linkages considered:

P = plausible complete pathways

p = partially complete pathway depending on site conditions/exposure scenario

n = pathway not complete

n/a = pathway not applicable

Table 5.2: Preliminary Conceptual Site Model

Receptor	Media	Plausible Exposure Pathway (No Mitigation)					Discussion of Plausible Pollutant Linkages
		Dermal Contact	Ingestion	Inhalation	Seepage into Cockle Bay	Runoff / Overland Flow	
Current Site Users	Soil / Groundwater	n	n	n	n/a	n/a	Current site users comprise commercial workers (retail and office) and site visitors. Hardstand surfaces exist across the site, restricting these users to be exposed to underlying fill via the dermal contact, inhalation/ingestion exposure pathways. Commercial (retail and office) workers may be exposed to waste oils via dermal contact pathway although given that these oils derive from a food-grade facility, and the frequency/duration of exposure is low, this exposure pathway is not considered complete. The assessment has not identified a significant source of volatile contamination, albeit the former goods yard may have introduced volatile contaminants into the subsurface. In consideration of the open plan nature of the existing shopping centre and lack of basement/accessible subsurface structure, it is assessed that current site users are unlikely to be exposed to unacceptable levels of vapours within an indoor environment.
Future Site Users	Soil / Groundwater	n	n	**P**	n/a	n/a	Future site users will comprise both retail/office workers and site visitors within the proposed commercial complex, and residents occupying the upper floors of the development. The proposed development plans indicate hard stand surfaces will be retained as part of the development, which will restricting these users to be exposed to underlying fill via the dermal contact, soil inhalation/ingestion exposure pathways. The proposed development will introduce a three-storey basement car park. It is anticipated that the basement will remove a substantial portion of the fill that may contain contamination, commercial workers (i.e. car park attendant, maintenance worker accessing plant rooms etc.) and frequent users of the car park (i.e. residents, site visitors) may be exposed to

Receptor	Media	Plausible Exposure Pathway (No Mitigation)					Discussion of Plausible Pollutant Linkages
		Dermal Contact	Ingestion	Inhalation	Seepage into Cockle Bay	Runoff / Overland Flow	
							vapours derived from volatile contaminants present in soil and groundwater.
Construction & Maintenance Workers	Soil / Groundwater	**P**	**P**	**P**	n/a	n/a	Workers during the redevelopment of the site and during future maintenance events may be exposed to potentially contaminated fill materials via direct exposure routes; namely; dermal contact, inhalation/ingestion of dust/fibres, and inhalation of vapours.
Aquatic Species in Cockle Bay	Soil / Groundwater	n/a	n/a	n/a	**P**	**P**	Potentially impacted soils and groundwater within the site could adversely affect aquatic receptors within Cockle Bay via soil leaching and lateral groundwater transport pathways. These pathways may be enhanced by existing services which can act as a preferential flow pathway. The removal of existing hardstand surfaces may enable soils to be transported via surface water runoff/overland flow directly into Cockle Bay, or via existing stormwater drainage conduits.

6. Conclusions and recommendations

The site comprises a modern retail facility situated on the foreshore of Cockle Bay. The results of the Preliminary Site Contamination Assessment indicate that the site historically comprised a tidal mudflat prior to a period of land reclamation in 1860 and development as part of a substantial rail and maritime freight facility. The Darling Harbour Goods Yard and associated Iron Wharf occupied the site until c.1980 when it was demolished as part of the wider regeneration of the Darling Harbour area. It is understood the Harbourside Shopping Centre opened in mid-1980s, and the building envelope has remained substantially unchanged since that time.

Coffey understands that Mirvac proposes to redevelop the site, which will include demolition of the existing retail structure and construction of a multi-storey mixed-use development with ground floor and Levels 1 to 5 being used for commercial retail and office uses over a three-level basement car park. A tower structure constructed in the central part of the site where Levels 6 to 43 will be used for residential apartments.

Coffey understands that the proposed development will fall within the footprint of the existing Harbourside Shopping Centre, and is expected not to require modification of the existing seawall.

Based on our review of available records, the following AEC have been identified at the site:

- Fill of unknown origin and quality.
- Waste cooking oil AST situated within the northwestern portion of the site.
- Former Darling Harbour Goods Yard & associated Iron Wharf.

The conceptual site model presented identifies several plausible linkages between chemicals potentially associated with the AEC, and environmental and/or human receptors.

In conclusion, it is assessed that the site can be made to be suitable for proposed development in accordance with Clause 7 of SEPP 55 – Remediation of Land.

In light of the identified AECs, it is recommended that further characterisation of the site is carried out involving an intrusive field sampling programme and laboratory testing to identify the nature and extent of potential contamination associated with the AECs. The findings of the investigation should be used to assess the suitability of the site for the actual land uses proposed and inform the requirement for remedial and/or management measures to be incorporated into the future development as well as appropriate management of surplus excavated material arising during construction earthworks.

We recommend that additional investigation include an assessment for ASS to develop an appropriate ASS management plan for implementation during basement excavation.

7. References

- Casey & Lowe (March 2013); *Non-Indigenous Archaeological Assessment and Impact Statement for SSDA1; Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP)*.
- Coffey (Aug 2013a); *Detailed Site Investigation Report for SSDA6 – International Convention Centre Hotel Development, Sydney International Convention, Exhibition & Entertainment Precinct* (Ref: GEOTLCOV24303AH-AD)
- Coffey (Aug 2013b); Geotechnical Investigation Report for SSDA6 – Sydney International Exhibition and Entertainment Precinct – ICC Hotel (Ref: GEOTLCOV24303AH-AH)
- Douglas Partners (June 2013); *Preliminary Geotechnical Assessment of Piles – Proposed Upgrade of Harbourside Shopping Centre, Darling Drive, Darling Harbour* (Project Ref: 73498)
- Geological Survey of NSW (1983); Geological Sheet No. 9130 - Sydney (Scale 1:100,000)
- NEPC (2013) *National Environmental Protection (Assessment of Site Contamination)* Measure 1999, as amended in 2013, National Environment Protection Council.
- State Environmental Planning Policy No. 55—Remediation of Land, and its associated planning guidelines Managing Land Contamination (DUAP, 1998)
- Tanner Kibble Denton Architects (Feb 2013); *Statement of Heritage Impact –SICEEP, Darling Harbour*.

Important information about your **Coffey** Environmental Report

Introduction

This report has been prepared by Coffey for you, as Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Coffey should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Coffey would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Coffey prepared the report and has familiarity with the site, Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Coffey disowns any responsibility for such misinterpretation.

Data should not be separated from the report

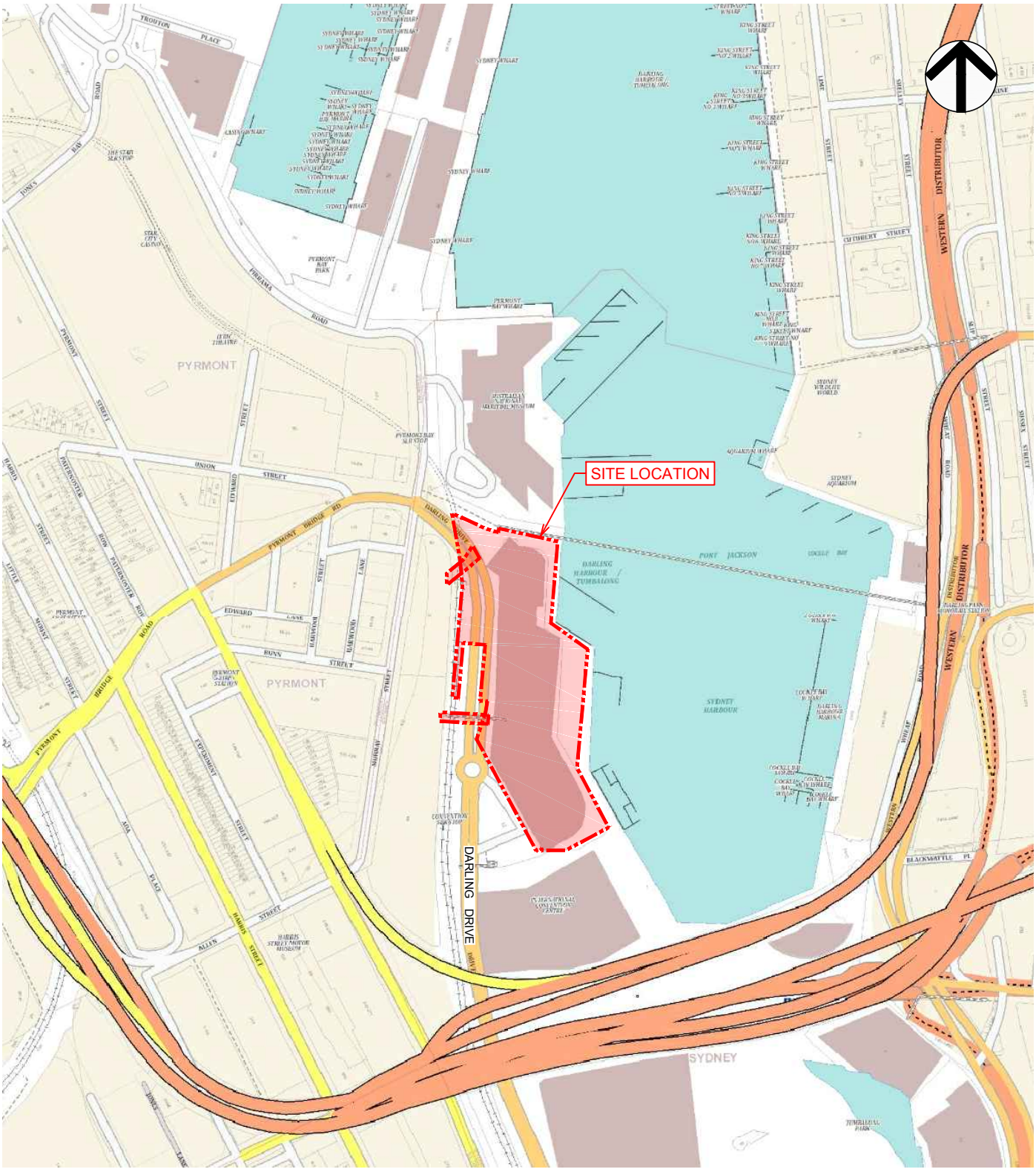
The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

Figures



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approved	-
date	6 / 08 / 18
scale	AS SHOWN
original size	A4

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: SITE LOCATION PLAN

project no: 754-GEOTLCOV25340AB-AB | figure no: FIGURE 1 | rev: A

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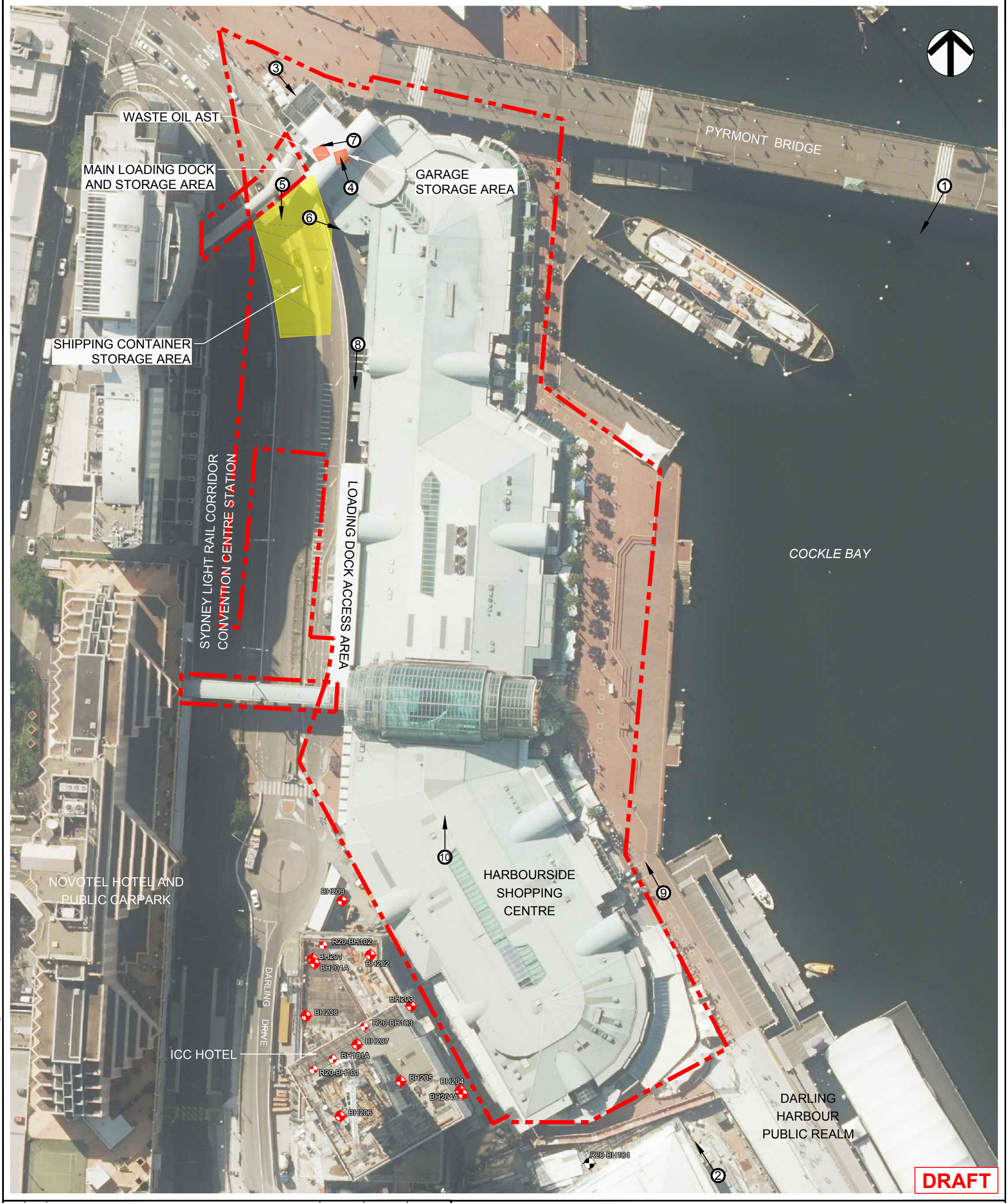

revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE			

LEGEND

- APPROXIMATE SITE BOUNDARY
- SITE PHOTOGRAPH AND DIRECTION
- PREVIOUS INVESTIGATION LOCATIONS (COFFEY AUG 2013a)

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Scale (metres) 1:1000

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scale	AS SHOWN
original size	A3

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client:	MIRVAC PROJECTS PTY LTD
project:	HARBOURSIDE SHOPPING CENTRE DARLING HARBOUR, SYDNEY, NSW
title:	SITE LAYOUT PLAN
project no:	754-GEOTLCOV25340AB-AB
figure no:	FIGURE 2
rev:	A

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1845

CITY OF SYDNEY NSW, SURVEYED AND CHARTED BY ASSISTANT FRANCIS W.SHEILDS; AND CORRECTED TO THE 1ST FEBRUARY 1845.

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

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approved	ML
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scale	NTS
original size	A3

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client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: HISTORICAL MAP EXTRACT - 1845

project no: 754-GEOTLCOV25340AB-AB | figure no: FIGURE 3

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1865

SECTION W OF PLAN, OF THE TRIGONOMETRICAL SURVEY OF THE CITY OF SYDNEY.

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approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

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A TETRA TECH COMPANY

client:	MIRVAC PROJECTS PTY LTD
project:	HARBOURSIDE SHOPPING CENTRE DARLING HARBOUR, SYDNEY, NSW
title:	HISTORICAL MAP EXTRACT - 1865
project no: 754-GEOTLCOV25340AB-AB	figure no: FIGURE 4

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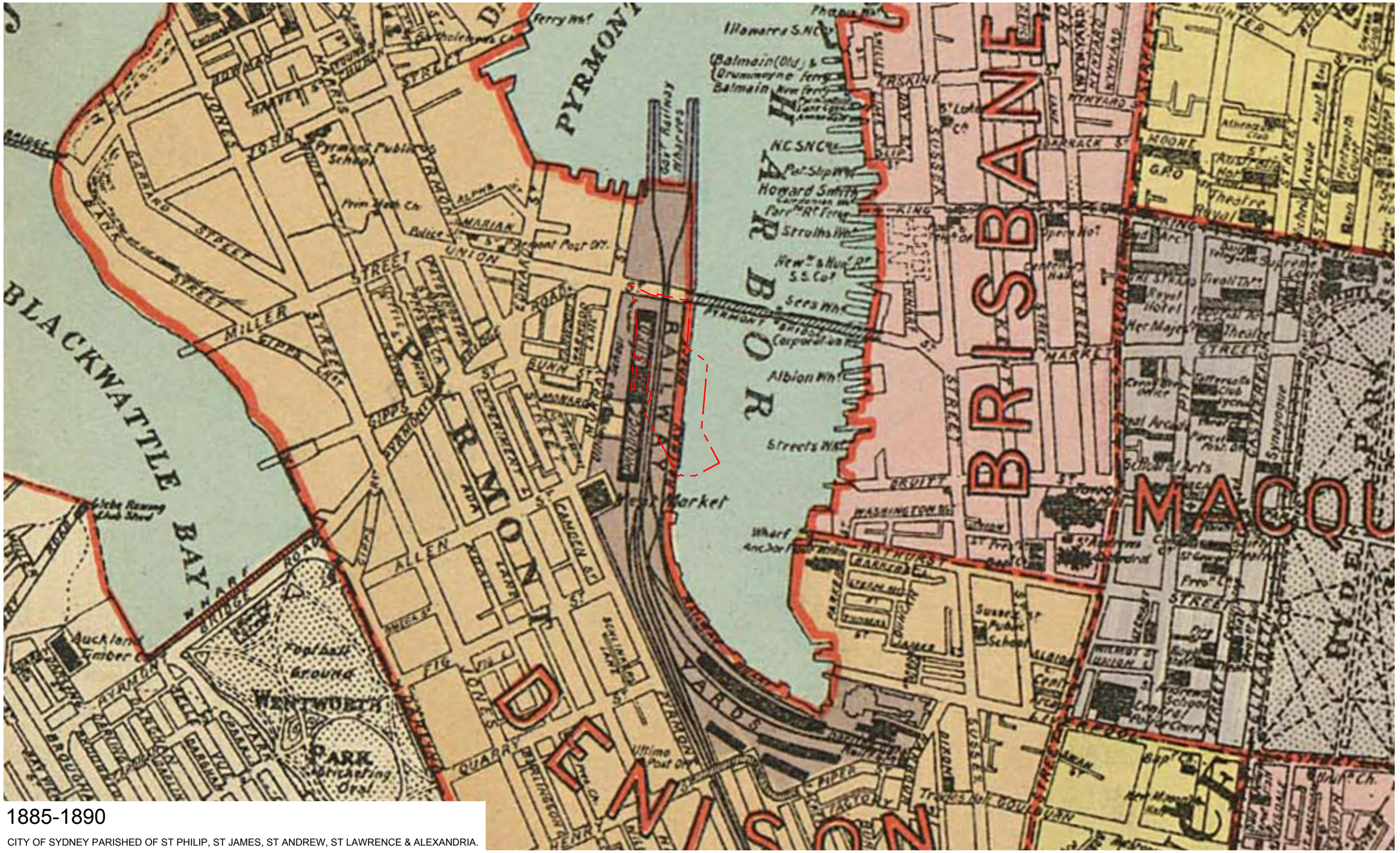

1885-1890

CITY OF SYDNEY PARISHED OF ST PHILIP, ST JAMES, ST ANDREW, ST LAWRENCE & ALEXANDRIA.

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

drawn	ML/AW
approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

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project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: HISTORICAL MAP EXTRACT - 1885-1890

project no: 754-GEOTLCOV25340AB-AB | figure no: FIGURE 5

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1938-1950

COUNCIL OF THE CITY OF SYDNEY, CIVIC SURVEY.

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

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approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

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client:	MIRVAC PROJECTS PTY LTD
project:	HARBOURSIDE SHOPPING CENTRE DARLING HARBOUR, SYDNEY, NSW
title:	HISTORICAL MAP EXTRACT - 1938-1950
project no: 754-GEOTLCOV25340AB-AB	figure no: FIGURE 6

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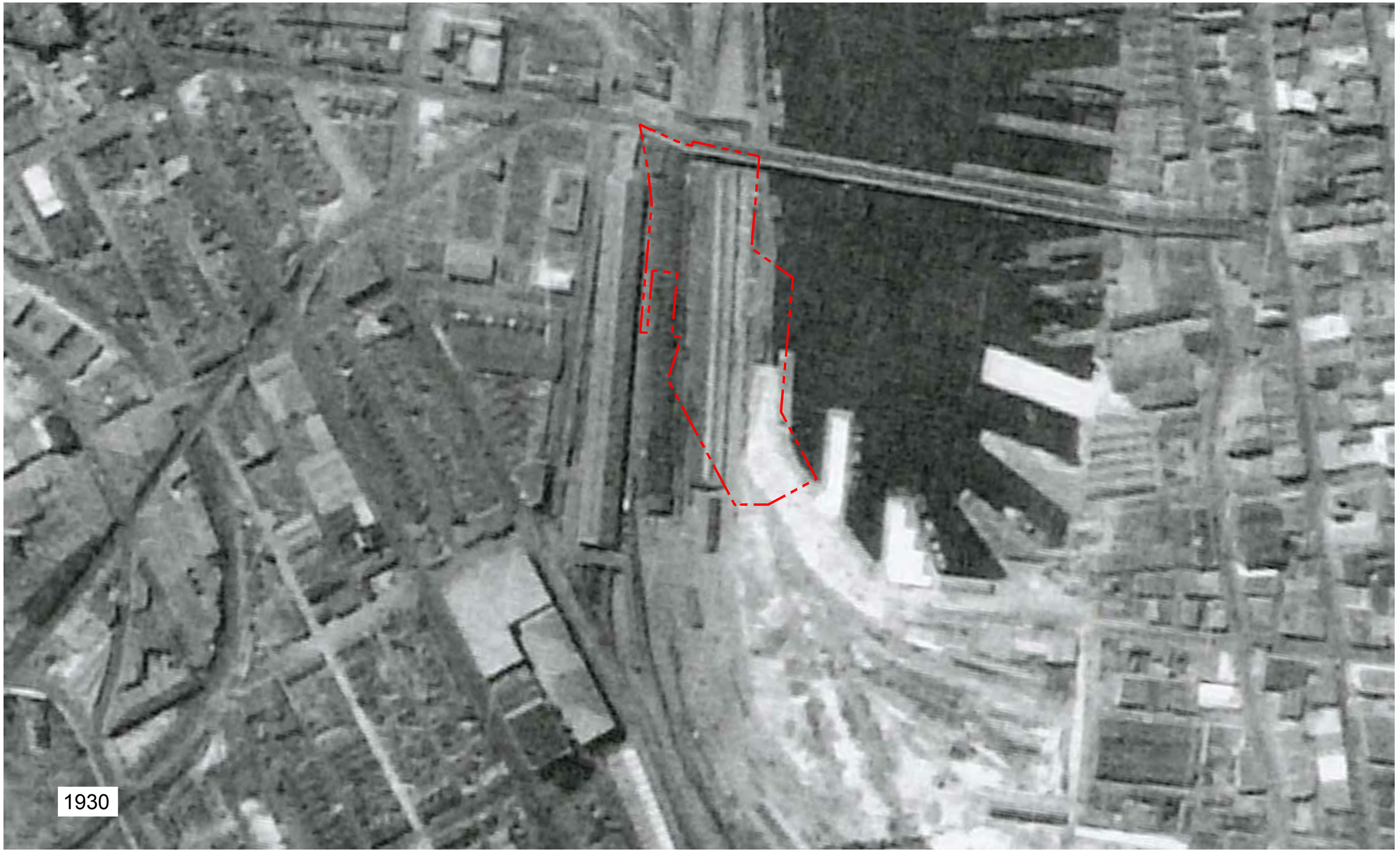

revision	description	drawn	approved	date

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approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

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client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1930

project no: 754-GEOTLCOV25340AB-AB | figure no: FIGURE 7

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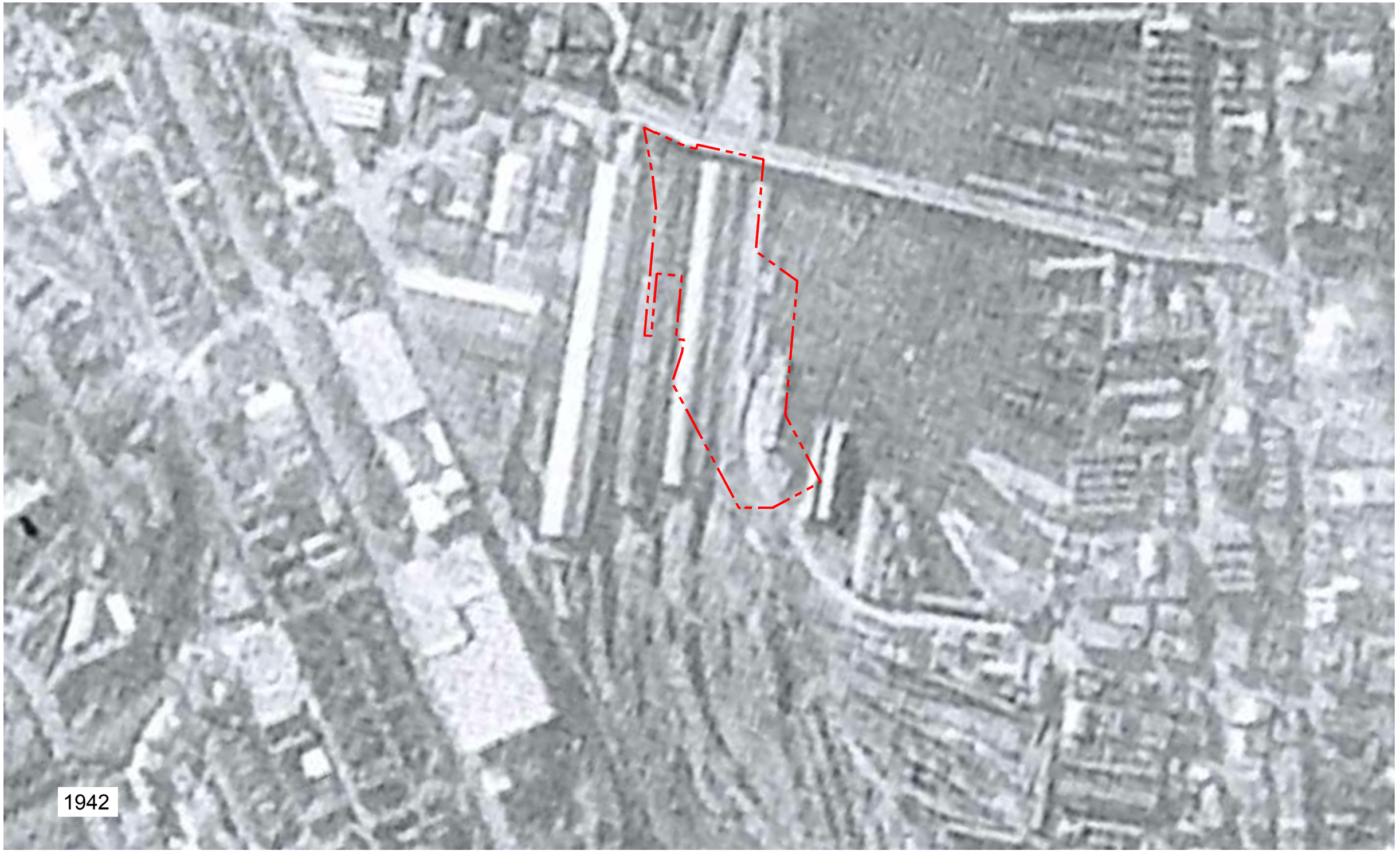

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

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approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1942

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 8

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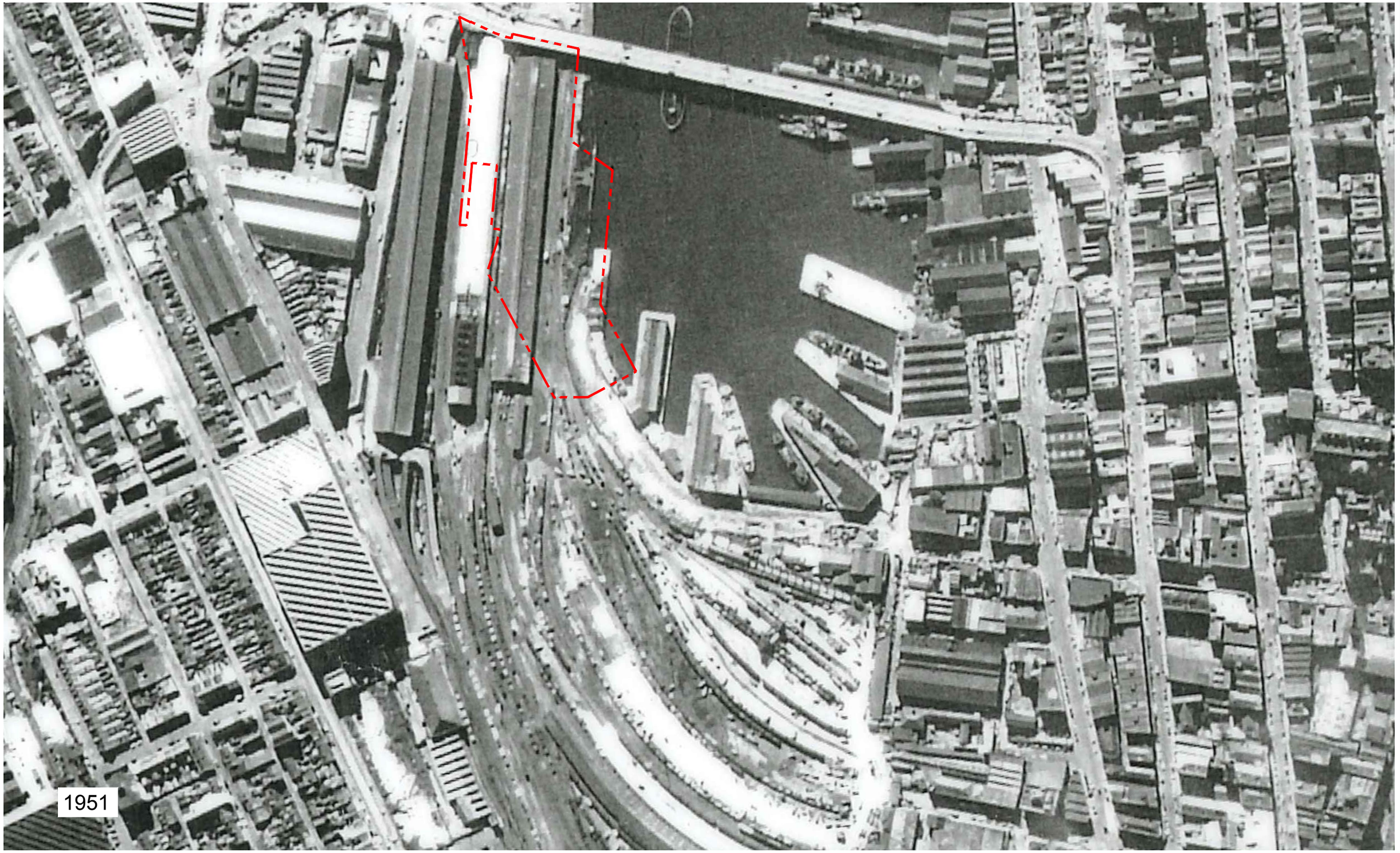

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

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approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1951

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 9

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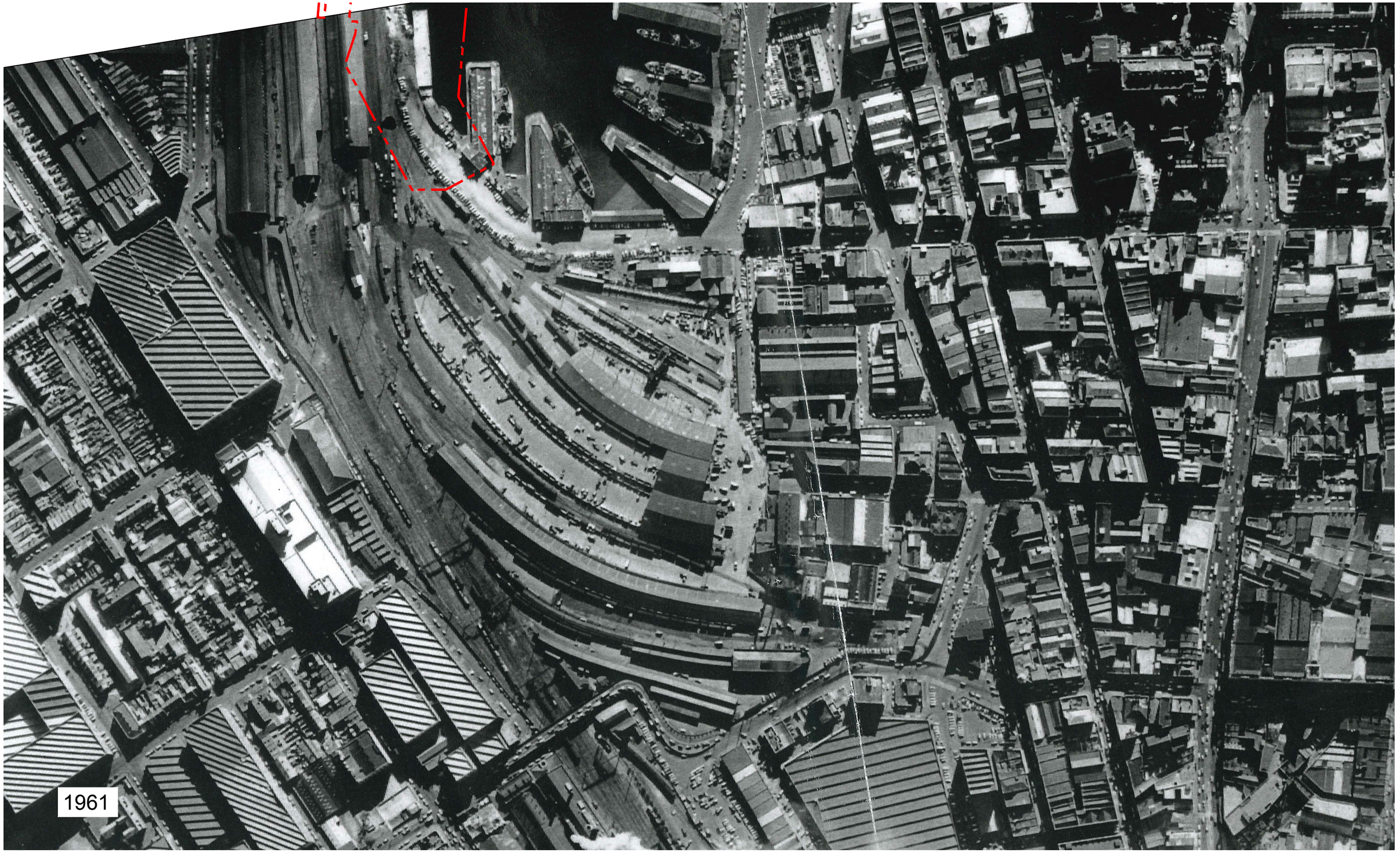

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

drawn	ML/AW
approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1961

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 10

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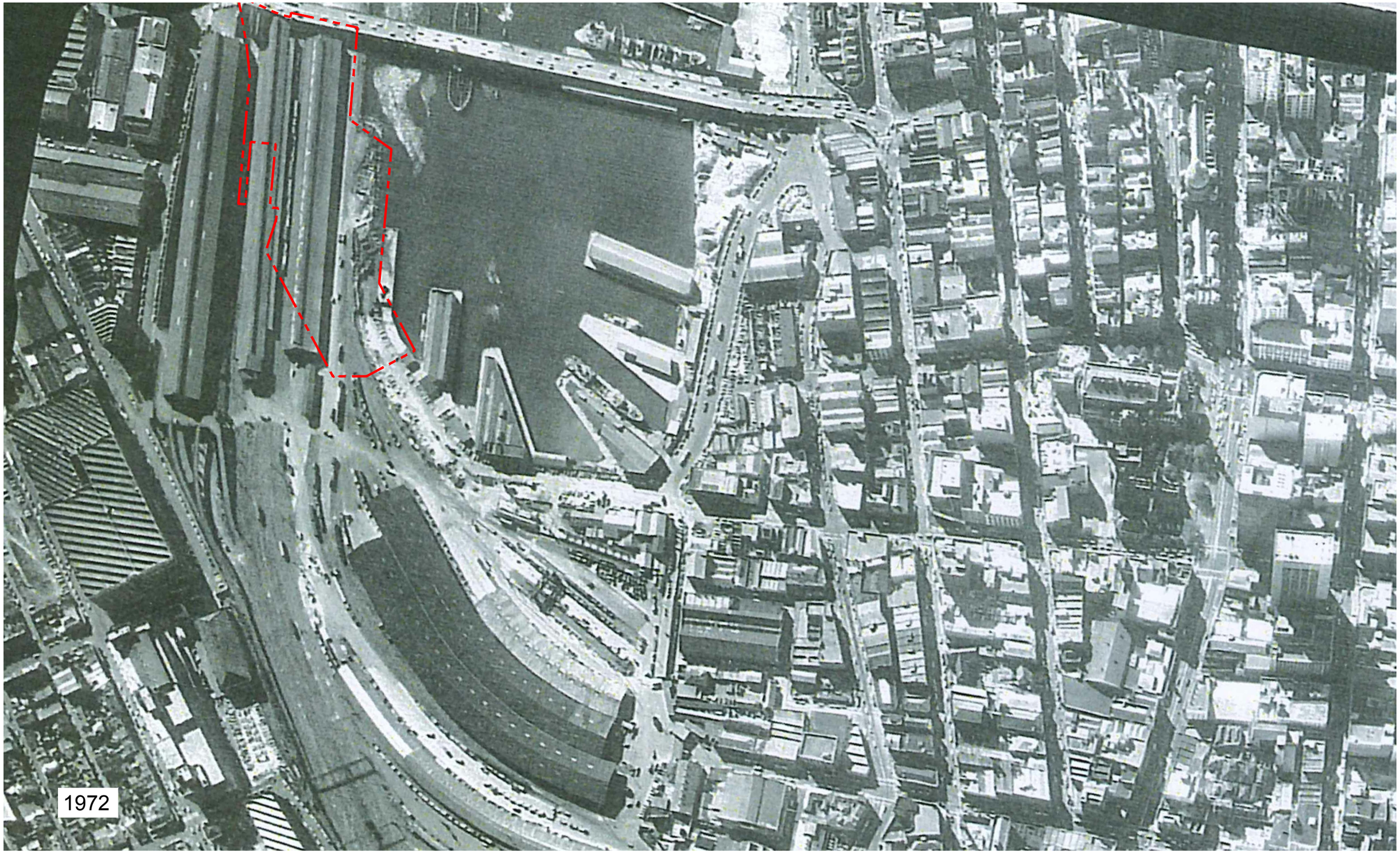

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

drawn	ML/AW
approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1972

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 11

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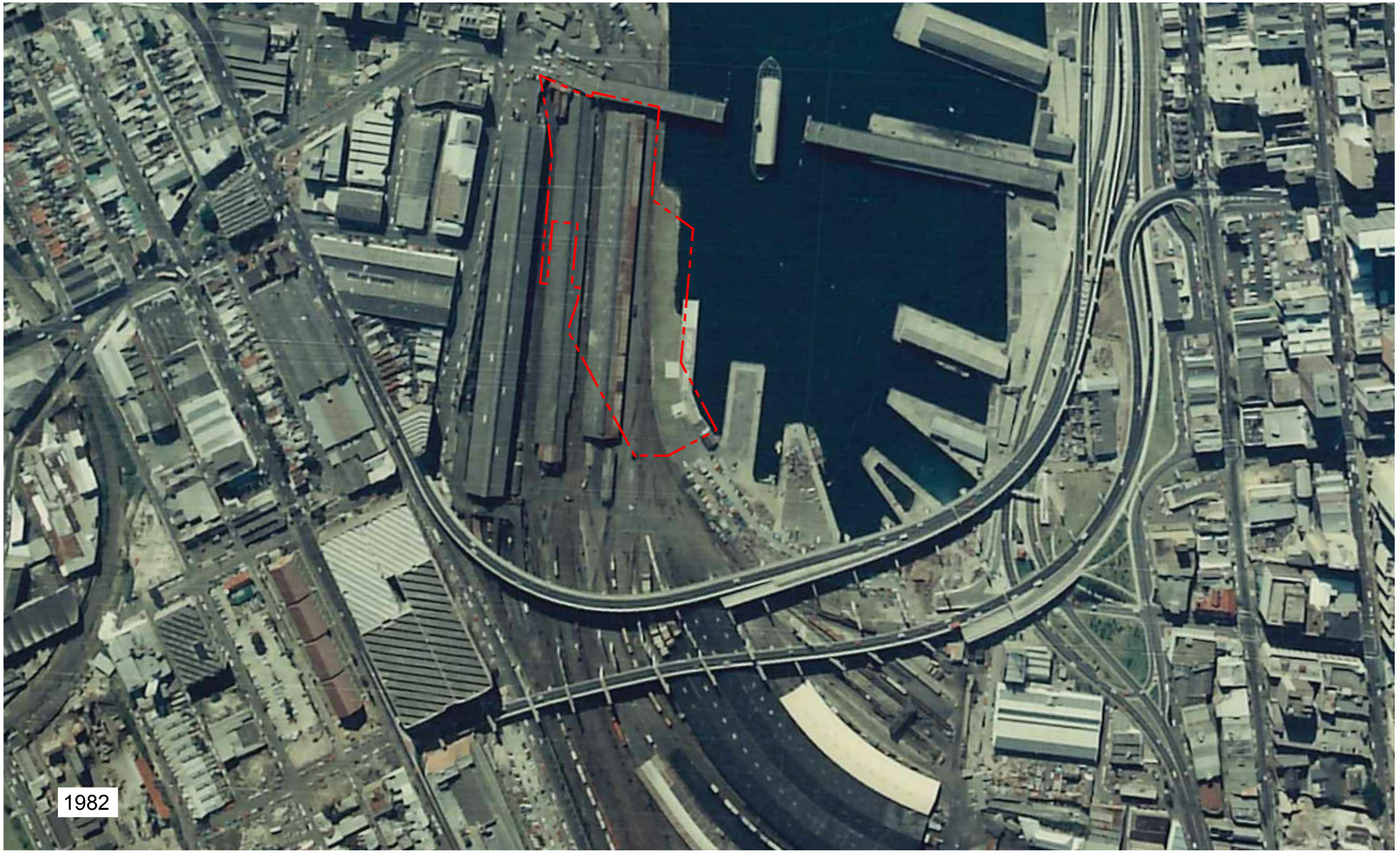


revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

drawn	ML/AW
approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

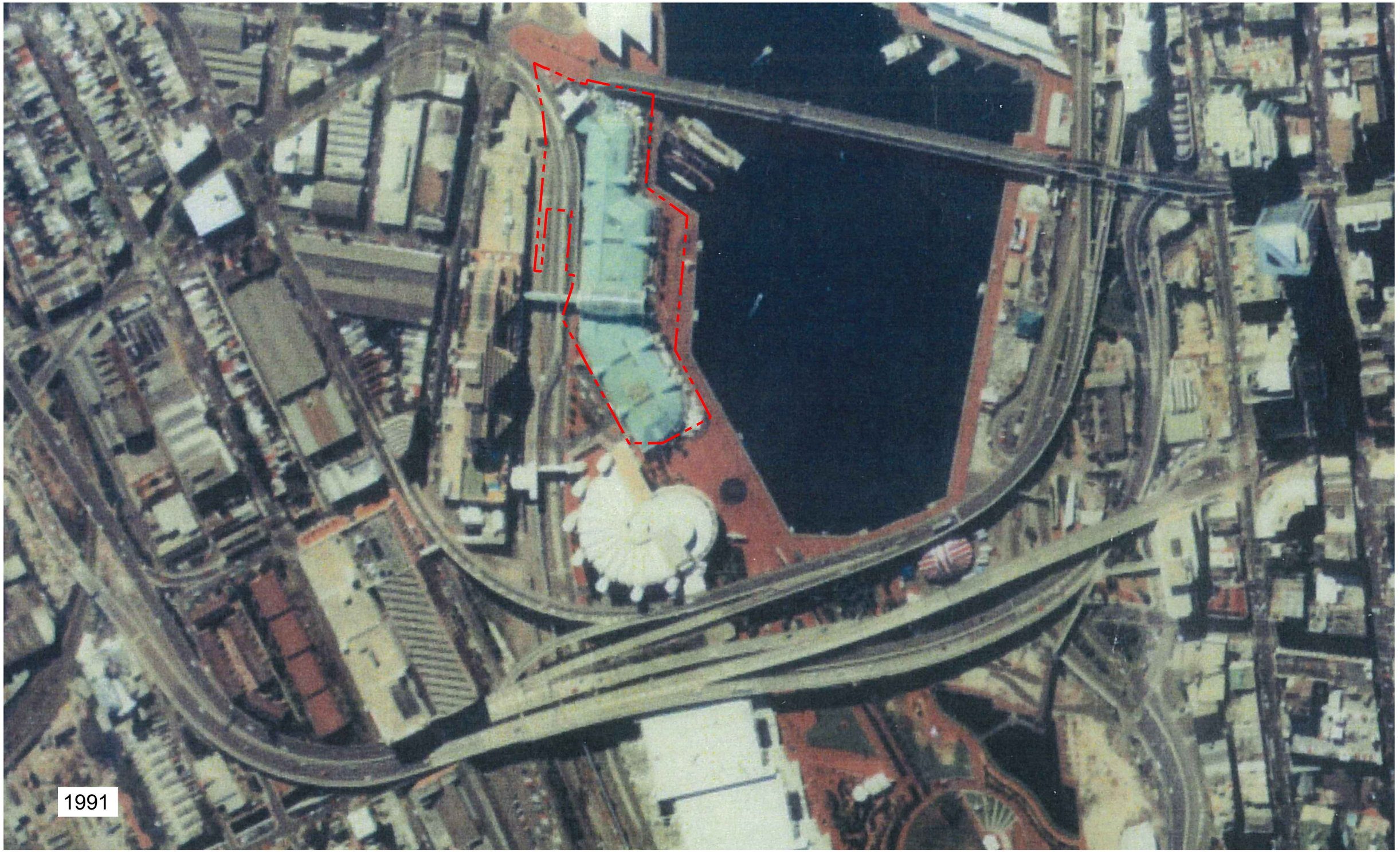
project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1982

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 12

PLOT DATE: 6/08/2018 11:27:08 AM DWG FILE: \\TS279\FS1\TTL\OCAL\DATA\2. TECHNICAL\GEOTECHNICS\1.PROJECTS\GEOTLCOV25340AB HARBOURSIDE RAP ASS\CAD\754-GEOTLCOV25340AB-HIST.DWG



revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

drawn	ML/AW
approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 1991

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 13

PLOT DATE: 6/08/2018 11:27:10 AM DWG FILE: \\TTS779FS1.TTT.LOCAL\DATA\2. TECHNICAL\GEOTECHNICS\1.PROJECTS\GEOTLCOV25\GEOTLCOV25340AB HARBOURSIDE RAP_ASS\CAD\754-GEOTLCOV25340AB-AB-HIST.DWG

revision	description	drawn	approved	date

LEGEND

APPROXIMATE SITE FOOTPRINT

drawn	ML/AW
approved	ML
date	6 / 08 / 18
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client: MIRVAC PROJECTS PTY LTD

project: HARBOURSIDE SHOPPING CENTRE
DARLING HARBOUR, SYDNEY, NSW

title: AERIAL PHOTOGRAPH - 2002

project no: 754-GEOTLCOV25340AB-AB

figure no: FIGURE 14

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Appendix A – Proposed Development Concept

Summary

Mirvac had previously lodged State Significant Development (SSD) Development Application (DA) for the redevelopment of the Harbourside Shopping Centre (Harbourside) (SSD 7874).

The SSD DA was publicly exhibited for a period of 62 days from 15 December 2016 to 14 February 2017. During this time, ten (10) submissions were received from government agencies and City of Sydney Council and over 140 submissions were received from the general public.

Proposed Amended Development

Since exhibition of the proposal and given the nature and range of submissions made from agencies and the pubic, Mirvac has reviewed the overall approach and elements of the Concept Proposal. This has accordingly led to developing an Amended Concept Proposal. The final Amended Concept Proposal includes substantial amendments made by Mirvac pursuant to Clause 55 of the Environmental Planning & Assessment Regulation, in the main to address matters raised in the submissions and deliver an overall significantly improved outcome on the site and for the broader Darling Harbour precinct.

The following key amendments have been made to the proposal:

Relocation of the Tower

The tower element of the Concept Proposal has been relocated from the north of the site to the centre of the site (the widest part of the site) to allow for an increased setback from the heritage listed Pyrmont Bridge, improved relationship to the waterfront and ICC Hotel, to minimise view impacts from 50 Murray Street, together with reducing overshadowing impacts on the public domain and improved solar amenity to the northern end of the retail centre.

Reduction in Height of the Tower

The height of the tower has also been reduced from 166.35mAHD to 153.75mAHD. The reduction in the height will minimise overshadowing impacts to the public domain as well better relate to the height of the ICC Hotel.

Reduction in Height of the Podium

A portion of the podium height at its northern extent has been partly reduced from 30.5mAHD to 25mAHD. The reduction in height provides for improved view sharing from 50 Murray Street.

Removal of Tower ‘Tail’ element

As part of the relocation of the tower and refinement of the podium, the stepped form of the lower tower element has now been removed. This design move has been made in order to again improve views from adjacent buildings from the west.

Building Footprint of the Tower

The building footprint of the tower has increased in width, to accommodate the floorspace from the reduction in height of the tower and removal of the ‘tail’.

Gross Floor Area / Land Use Mix

The amended proposal retains the same overall 87,000sqm of GFA, however there is a minor adjustment in the split between non-residential and residential:

- Non-residential uses floor space – 49,000sqm; and
- Residential uses floor space – 38,000sqm

In response to market demand and the focus of local and regional strategic planning policies, it is proposed for the podium to include both retail and commercial land uses. Indicatively, comprising approximately 23,000sqm of commercial net lettable area and 15,000sqm of retail gross lettable area.

The podium enables large campus sized commercial floor plates that are favoured by large multinational tech, finance and professional services companies.

Apartment numbers

As a result of a review of the mix and sizing of apartments, there is a minor reduction in the indicative number of apartments, from 364 to 357. Note, this yield is on the 'Indicative Design' only and will be subject to future design development and a Stage 2 DA. This Stage 1 DA only seeks approval for land uses and the building envelope comprising a total of 87,000sqm GFA.

Car Parking Spaces

The extent of the basement will remain the same but will extend over three levels, providing a minor increase of car parking spaces. As above, this is based on the 'Indicative Design' only.

A more detailed and comprehensive description of the amended proposal is contained in the Response to Submissions and Amended Concept Proposal prepared by Ethos Urban.

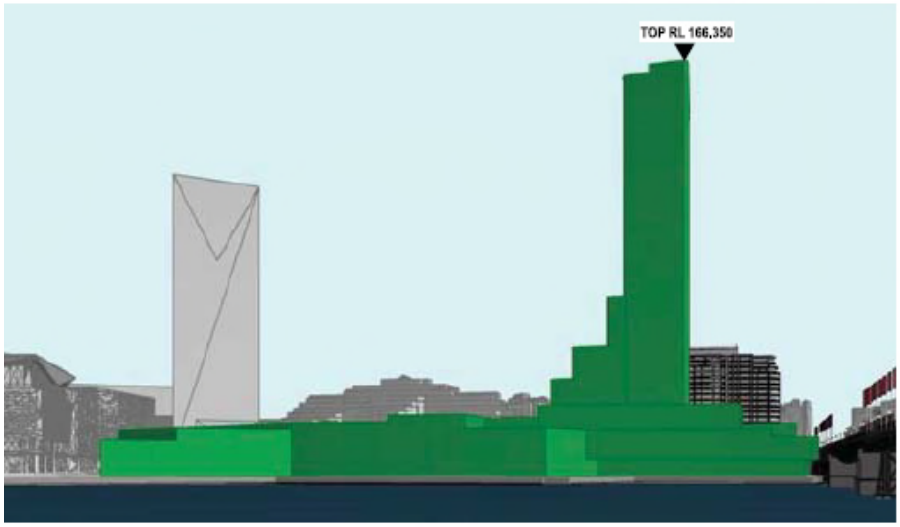

Figure 1 Original submitted Concept Proposal

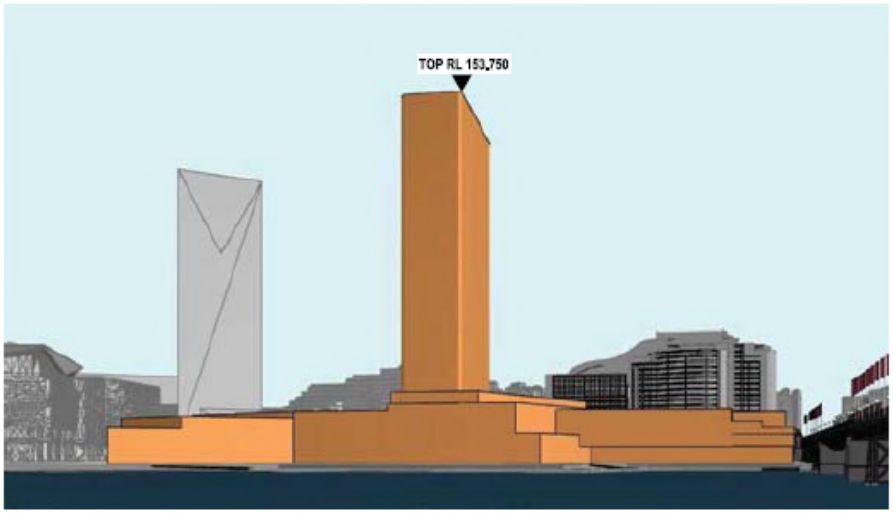

Figure 2 Amended Concept Proposal

Landscaped Open Space and Public Domain

All of the key concepts and public benefits as originally proposed are retained under the amended Concept Proposal, with the addition of further landscaping opportunities on the northern rooftop extent of the retail podium, further enhancing views and outlook from 50 Murray Street.

The final Concept Proposal seeks approval for the following key components and development parameters:

- Demolition of existing site improvements, including the Harbourside Shopping Centre, pedestrian bridge link across Darling Drive, obsolete monorail infrastructure, and associated tree removal;
- A network of open space areas and links generally as shown within the Public Domain Concept Proposal, to facilitate re-integration of the site into the wider urban context;
- Building envelopes;
- Land uses across the site, non-residential and residential uses;
- A maximum total Gross Floor Area (GFA) across the Harbourside site of 87,000m^2 for mixed use development (49,000sqm non-residential and 38,000sqm residential development);
- Basement car parking;
- Car parking rates to be utilised in subsequent detailed (Stage 2) Development Applications);
- Urban Design and Public Realm Guidelines to guide future development and the public domain; and
- Strategies for utilities and services provision, drainage and flooding, and ecological sustainable development.

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STAGE 1 DA HARBOURSIDE

Drawing Number	Name
SSDA1-000	Cover Page
SSDA1-001	Location Plan
SSDA1-002	Context Plan
SSDA1-003	Site Analysis
SSDA1-004	Existing Site Plan
SSDA1-100	Envelope Plan - Podium
SSDA1-101	Envelope Plan - Tower
SSDA1-102	Envelope Plan - Basement
SSDA1-103	Envelope East Elevation
SSDA1-104	Envelope West Elevation
SSDA1-105	Envelope Cross Sections
SSDA1-200	Demolition Plan - Existing Harbourside & Monorail Station
SSDA1-300	Indicative Plan Only - B3
SSDA1-301	Indicative Plan Only - B2
SSDA1-302	Indicative Plan Only - B1
SSDA1-303	Indicative Plan Only - Ground Floor Retail
SSDA1-304	Indicative Plan Only - Level 1 Retail / Commercial
SSDA1-305	Indicative Plan Only - Level 2 Retail / Commercial
SSDA1-306	Indicative Plan Only - Level 3 Commercial
SSDA1-307	Indicative Plan Only - Level 4 Retail / Commercial / Resi
SSDA1-308	Indicative Plan Only - Level 5 Retail / Resi / Podium Roof Plan
SSDA1-309	Indicative Plan Only - Typical 1B
SSDA1-310	Indicative Plan Only - Typical 2B
SSDA1-311	Indicative Plan Only - Typical 3B
SSDA1-312	Indicative Plan Only - Sub Penthouse
SSDA1-313	Indicative Plan Only - Penthouse
SSDA1-314	Indicative Plan Only - Roof Plan
SSDA1-315	Indicative Elevation Only - East
SSDA1-316	Indicative Elevation Only - West
SSDA1-317	Indicative Elevation Only - North
SSDA1-318	Indicative Only - Section (23.1)
SSDA1-400	Shadow Analysis - Winter Solstice - 21st of June 9-10am
SSDA1-401	Shadow Analysis - Winter Solstice - 21st of June 11-12pm
SSDA1-402	Shadow Analysis - Winter Solstice - 21st of June 1-2pm
SSDA1-403	Shadow Analysis - Winter Solstice - 21st of June 3pm
SSDA1-404	Shadow Analysis - Equinox - 21st of Sep 9-10am
SSDA1-405	Shadow Analysis - Equinox - 21st of Sep 11-12pm
SSDA1-406	Shadow Analysis - Equinox - 21st of Sep 1-2pm
SSDA1-407	Shadow Analysis - Equinox - 21st of Sep 3pm
SSDA1-408	Shadow Analysis - Summer Solstice - 21st of Dec 9-10am
SSDA1-409	Shadow Analysis - Summer Solstice - 21st of Dec 11-12pm
SSDA1-410	Shadow Analysis - Summer Solstice - 21st of Dec 1-2pm
SSDA1-411	Shadow Analysis - Summer Solstice - 21st of Dec 3pm
SSDA1-412	Shadow Analysis - Perspective - Winter Solstice - 21st of June 9-10am
SSDA1-413	Shadow Analysis - Perspective - Winter Solstice - 21st of June 11-12pm
SSDA1-414	Shadow Analysis - Perspective - Winter Solstice - 21st of June 1-2pm
SSDA1-415	Shadow Analysis - Perspective - Winter Solstice - 21st of June 3pm
SSDA1-416	Shadow Analysis - Perspective - Equinox - 21st of Sep 9-10am
SSDA1-417	Shadow Analysis - Perspective - Equinox - 21st of Sep 11-12pm
SSDA1-418	Shadow Analysis - Perspective - Equinox - 21st of Sep 1-2pm
SSDA1-419	Shadow Analysis - Perspective - Equinox - 21st of Sep 3pm
SSDA1-420	Shadow Analysis - Perspective - Summer Solstice - 21st of Dec 9-10am
SSDA1-421	Shadow Analysis - Perspective - Summer Solstice - 21st of Dec 11-12pm
SSDA1-422	Shadow Analysis - Perspective - Summer Solstice - 21st of Dec 1-2pm
SSDA1-423	Shadow Analysis - Perspective - Summer Solstice - 21st of Dec 3pm
SSDA1-500	Amenity Diagrams - Solar Access
SSDA1-501	Amenity Diagrams - Natural Ventilation
SSDA1-502	Amenity Diagrams - South Facing

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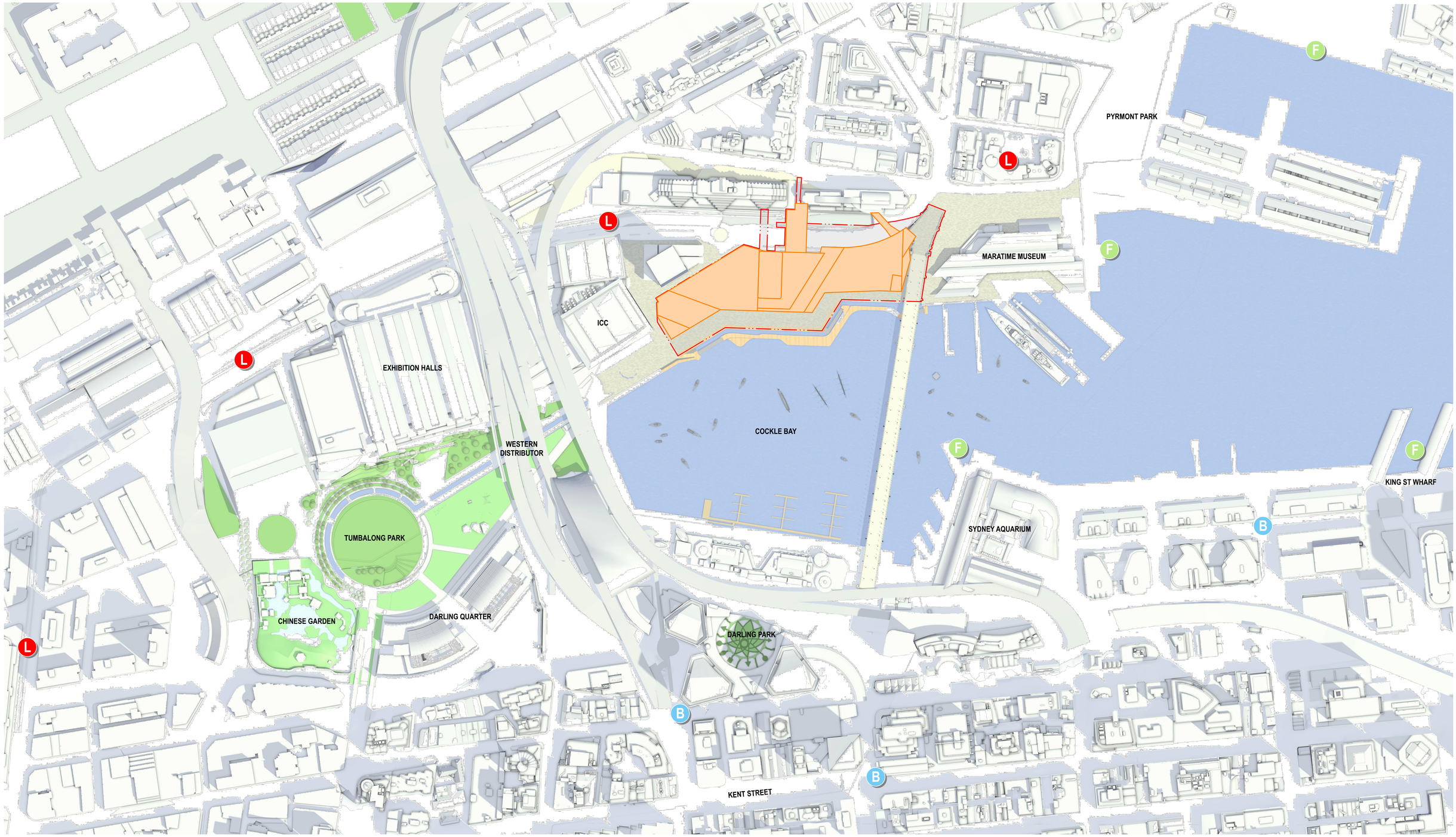

BOUNDARY LEGEND

- PROPOSED SSDA 1 BOUNDARY
- WATERFRONT & PYRMONT BRIDGE SETBACKS
- ENVELOPE EXTENT

0 20 50 100m

fjmt

Location Plan

Mirvac - Harbourside

1:2000 @ A1 29/1/20

For Information **SSDA1-001**

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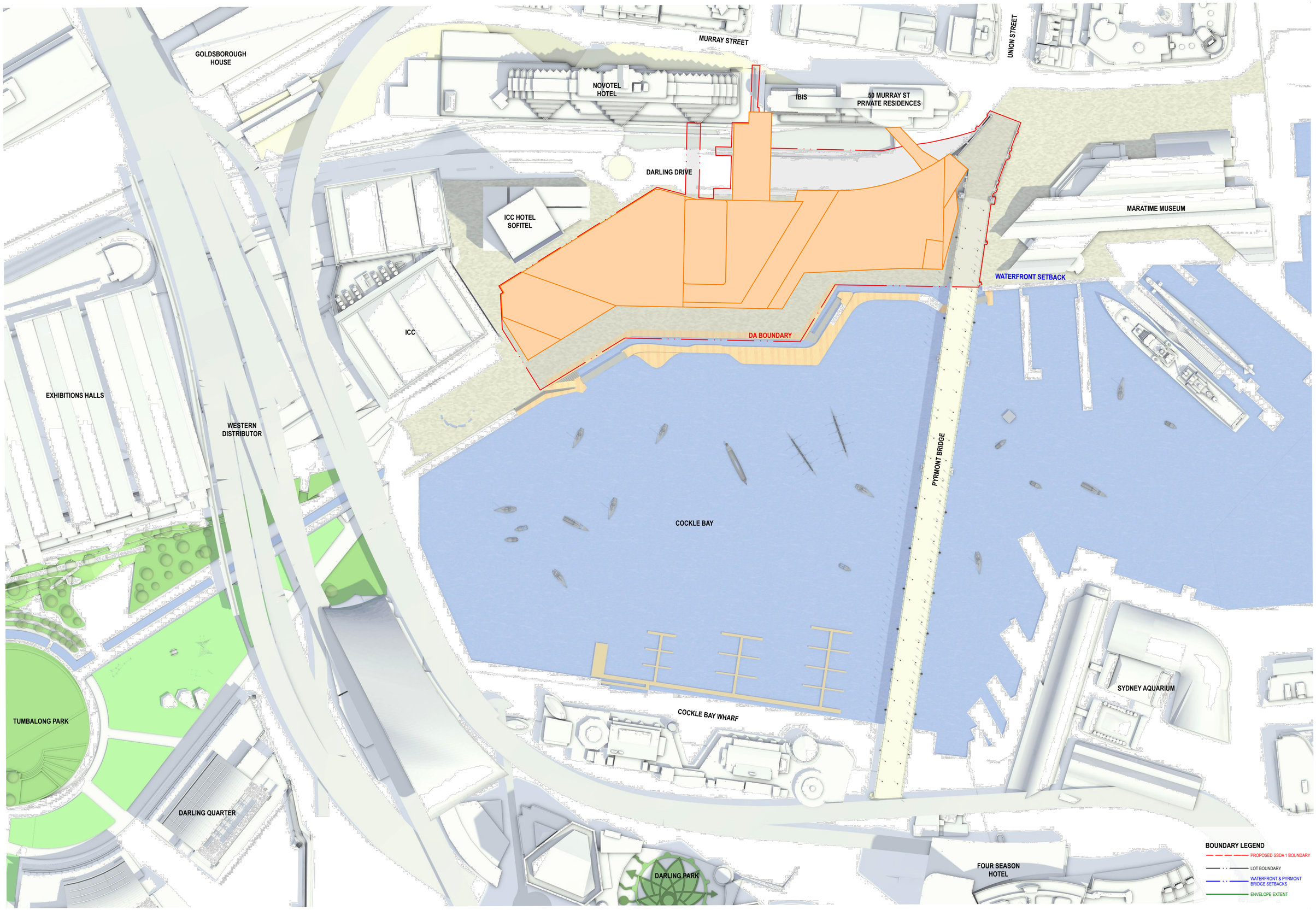

fjmt

Context Plan

Mirvac - Harbourside

1:1000 @ A1

29/1/20

For Information

SSDA1-002

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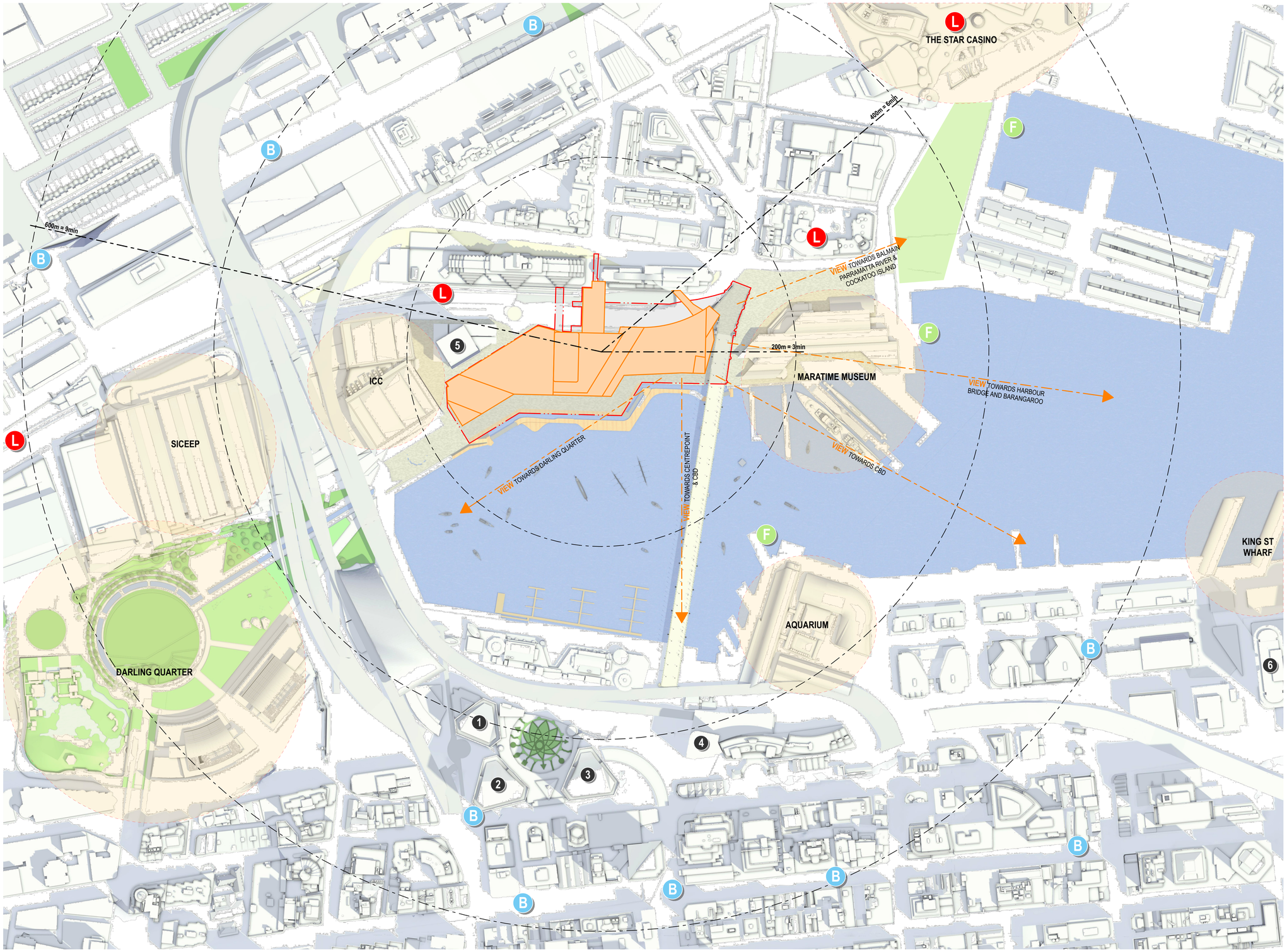

LEGEND

- DA BOUNDARY
- ENVELOPE EXTENT
- ENVELOPE EXTENT
- GREEN PUBLIC SPACES
- CULTURAL NODES
- PROXIMITY - WALKING TIMES
- VIEWS

PUBLIC TRANSPORTATION

- FERRY WHARF
- TRAIN STATION
- LIGHT RAIL
- BUS STOP

CONTEXT

NEIGHBOURING TOWERS GREATER THAN AHD 80

1. DARLING TOWER 3 - RL 90.0
2. DARLING TOWER 2 - RL 130.0
3. DARLING TOWER 1 - RL130.0
4. FOUR POINTS - RL 93.6
5. ICC HOTEL SOFITEL - RL 133.550
6. C5 - RL 168.0

fjmt

Site Analysis

Mirvac - Harbourside

0 20 50 100m

1:2000 @ A1 29/1/20

For Information **SSDA1-003**

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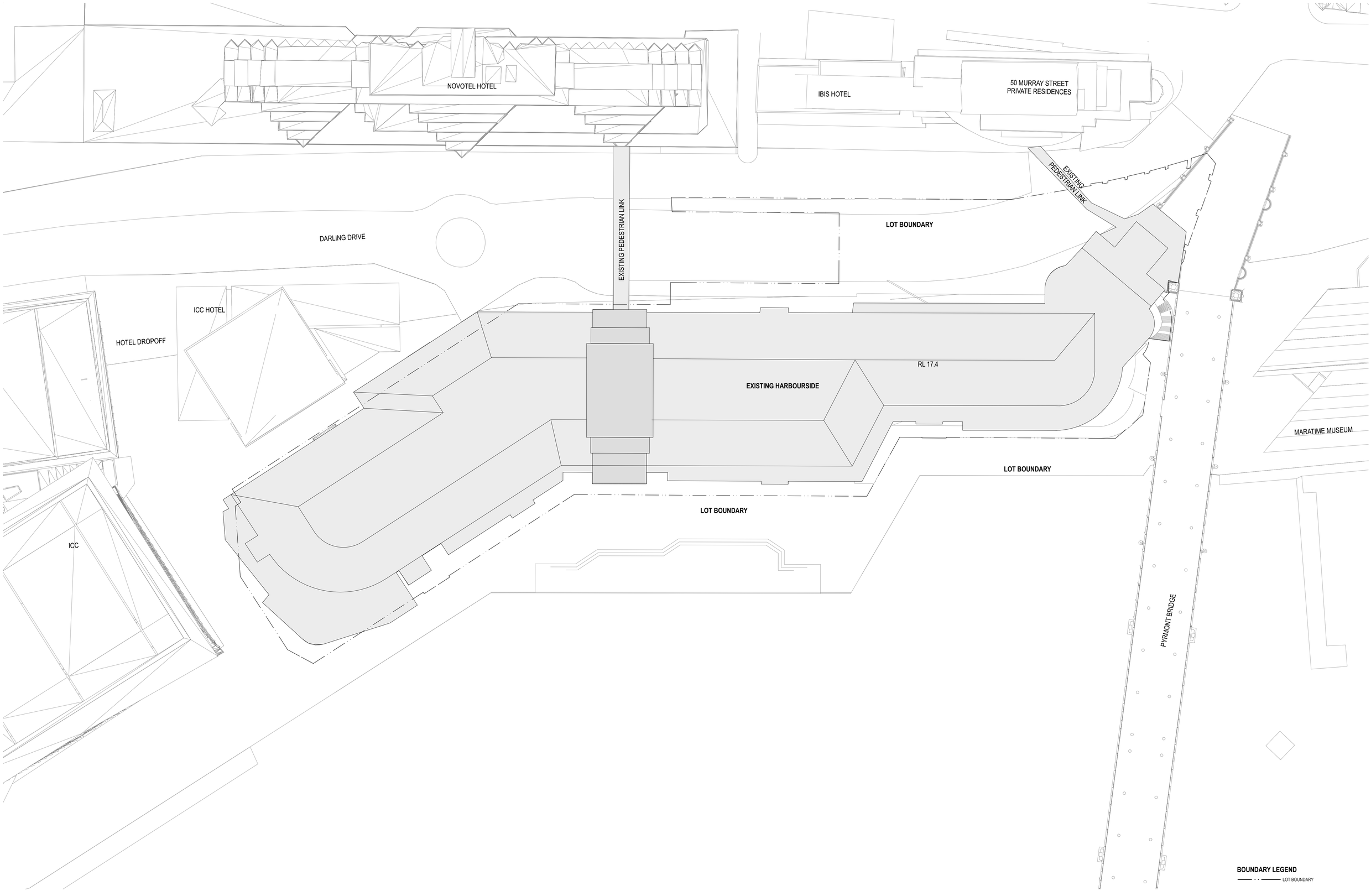

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Existing Site Plan

Mirvac - Harbourside

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For Information **SSDA1-004**

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NOVOTEL HOTEL

IBIS HOTEL

50 MURRAY STREET

ICC HOTEL SOFITEL

U/S 14.000

U/S 15.500

21.750

17.500

25.000

25.000

31.000

26.500

23.100

20.500

15.500

16.650

14.000

ENVELOPE UNDER
DARLING DRIVE

OUTLINE OF
TOWER ENVELOPE
SEE DRAWING
SSDA1-101
ENVELOPE PLAN - TOWER

DA BOUNDARY BRIDGE CONNECTION

DA BOUNDARY BRIDGE CONNECTION

DA BOUNDARY EXTENT
BUNN ST BRIDGE

DA BOUNDARY EXTENT
BUNN ST BRIDGE

DA BOUNDARY GROUND

DA BOUNDARY GROUND

DA BOUNDARY EXTENT GROUND
MOVEABLE LINK

DA BOUNDARY EXTENT GROUND

DA BOUNDARY EXTENT GROUND

DA BOUNDARY

DA BOUNDARY

DA BOUNDARY

DA BOUNDARY

E 333400
N 6250650

E 333400
N 6250700

E 333450
N 6250700

BOUNDARY LEGEND

PROPOSED STAGE 1 DA BOUNDARY

LOT BOUNDARY

BASEMENT ENVELOPE EXTENT

PODIUM

0 1 2 5m

1:100 @ A1

29/1/20

fjmt

Envelope Plan - Podium

Mirvac - Harbourside

SSDA1-100

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NOVOTEL HOTEL

IBIS HOTEL

50 MURRAY STREET

ICC HOTEL SOFITEL

DARLING DRIVE

DA BOUNDARY BRIDGE CONNECTION

DA BOUNDARY BRIDGE CONNECTION

DA BOUNDARY EXTENT BUNN ST BRIDGE

DA BOUNDARY EXTENT BUNN ST BRIDGE

DA BOUNDARY GROUND

DA BOUNDARY GROUND

DA BOUNDARY MEMORIAL LINK

DA BOUNDARY EXTENT GROUND

DA BOUNDARY EXTENT GROUND

DA BOUNDARY

DA BOUNDARY

DA BOUNDARY

DA BOUNDARY

PODIUM ENVELOPE BELOW
SEE DRAWING SSDA1-100
ENVELOPE PLAN - PODIUM

RL 153.750

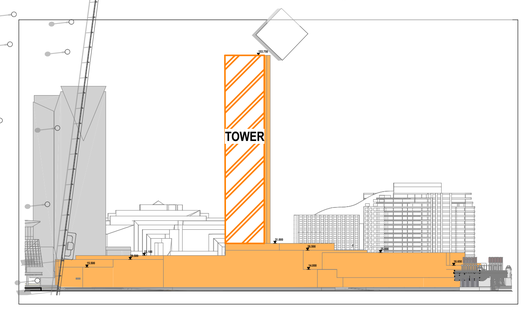
53,200

12,000

BOUNDARY LEGEND

PROPOSED STAGE 1 DA BOUNDARY

LOT BOUNDARY



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29/1/20

For Information

SSDA1-101

fjmt

Envelope Plan - Tower

Mirvac - Harbourside

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DA BOUNDARY EXTENT GROUND

DA BOUNDARY GROUND

DA BOUNDARY GROUND

DA BOUNDARY

DA BOUNDARY EXTENT GROUND

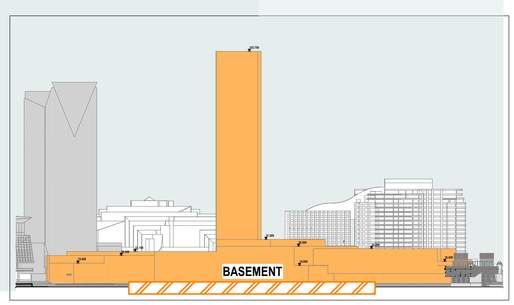
DA BOUNDARY

DA BOUNDARY

BOUNDARY LEGEND

LOT BOUNDARY

WATERFRONT & PYRMONT BRIDGE SETBACKS



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Envelope Plan - Basement

Mirvac - Harbourside

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For Information

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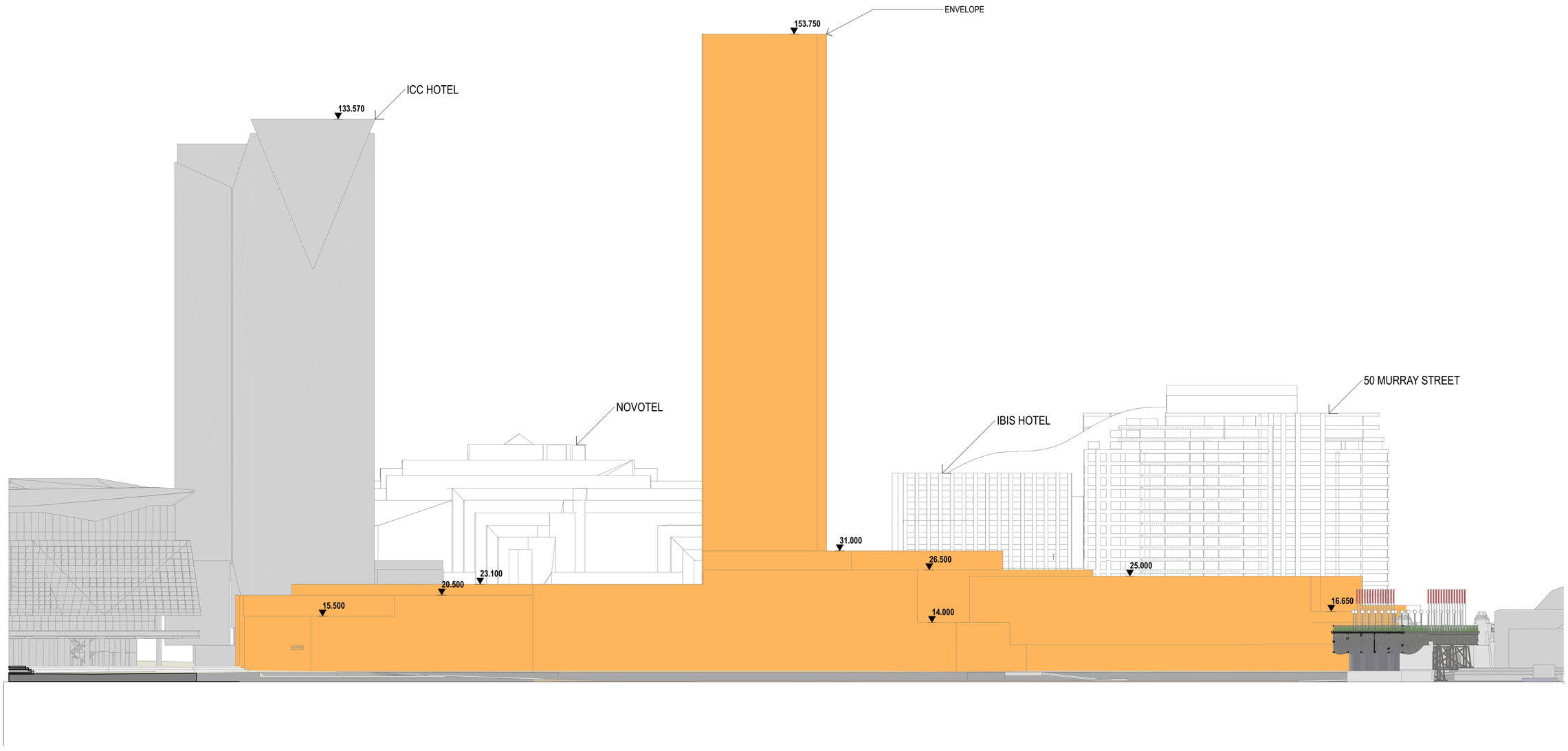

fjmt

Envelope East Elevation

Mirvac - Harbourside

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For Information

SSDA1-103

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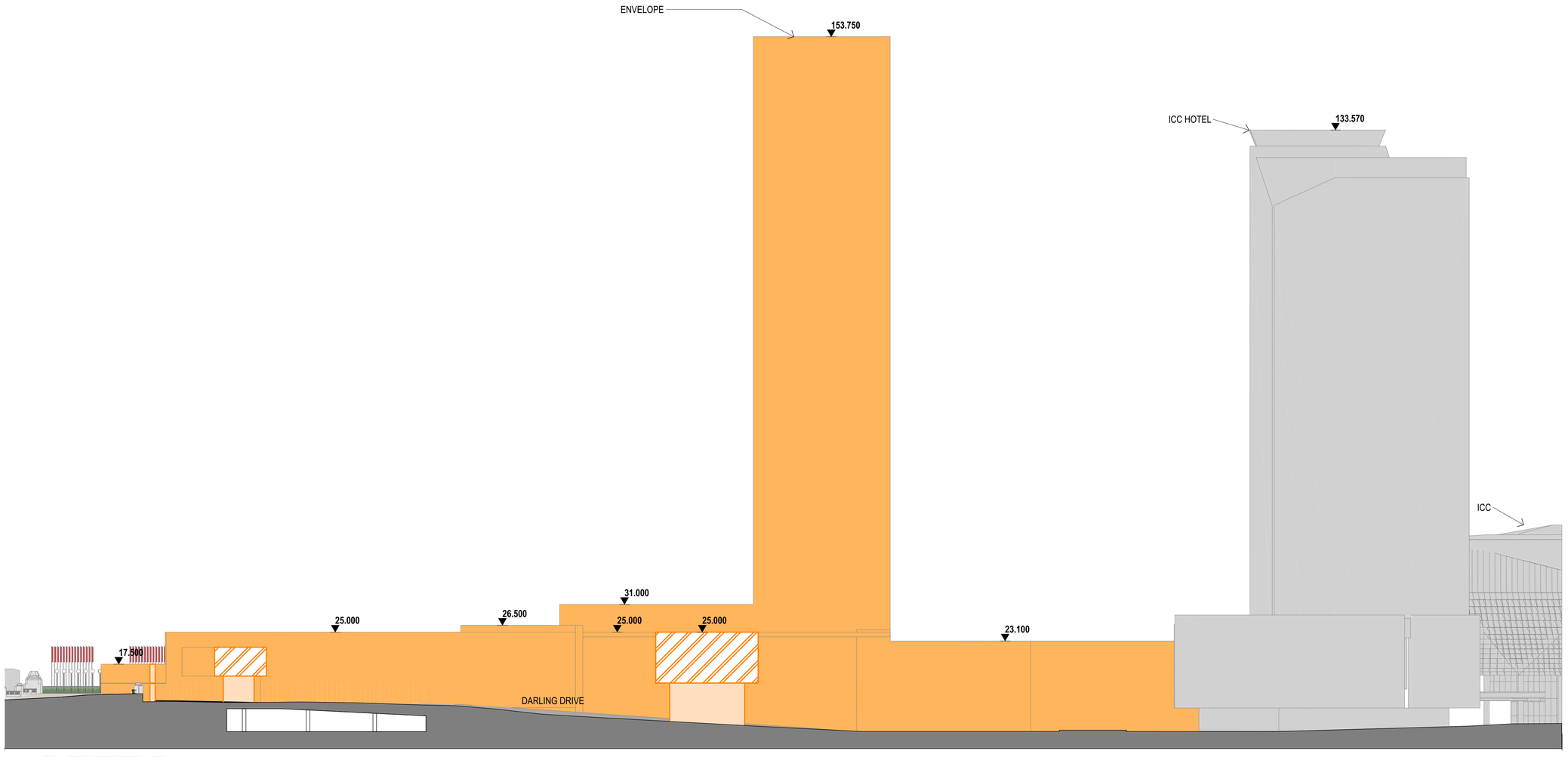

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Envelope West Elevation

Mirvac - Harbourside

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29/1/20

For Information

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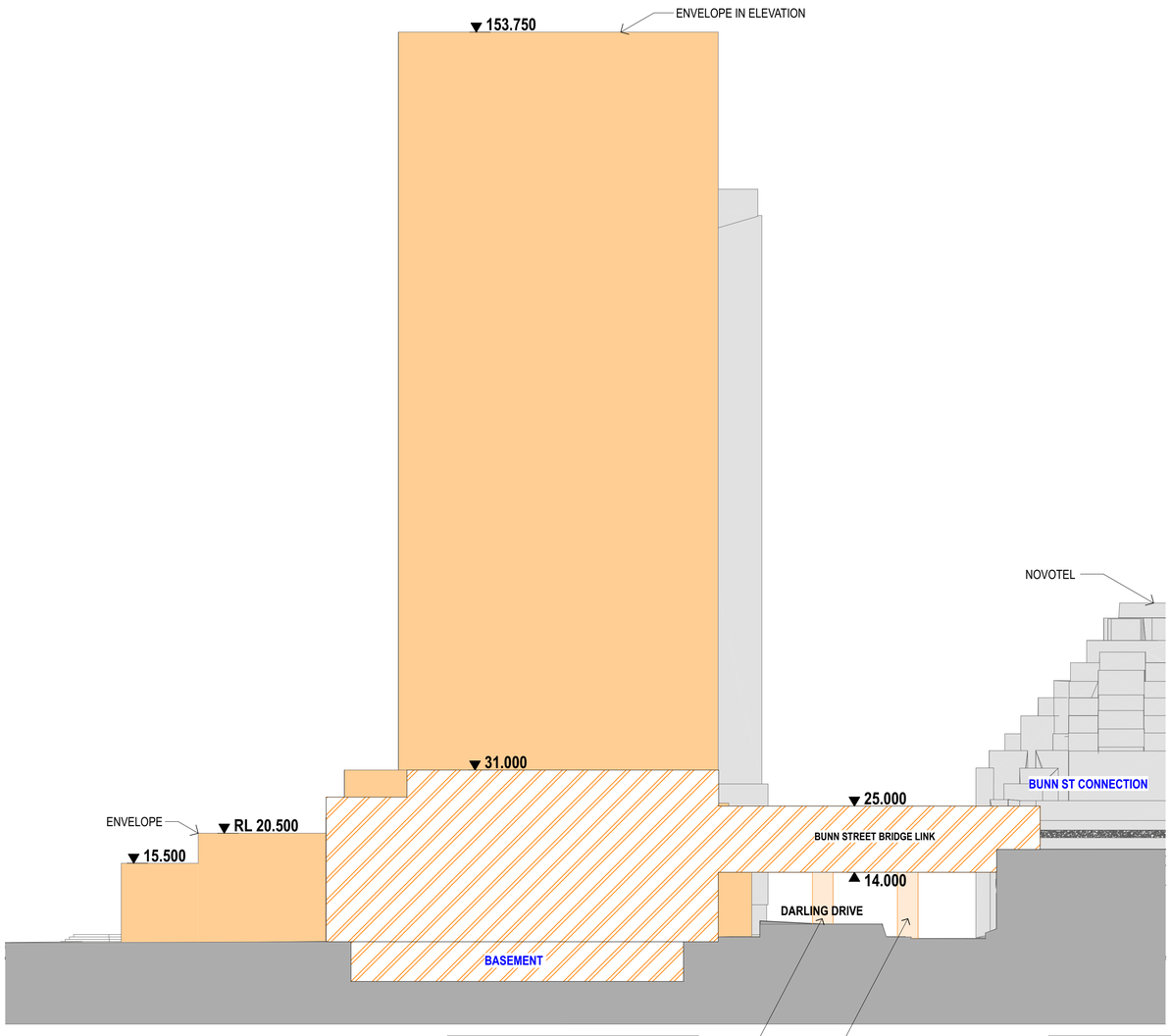

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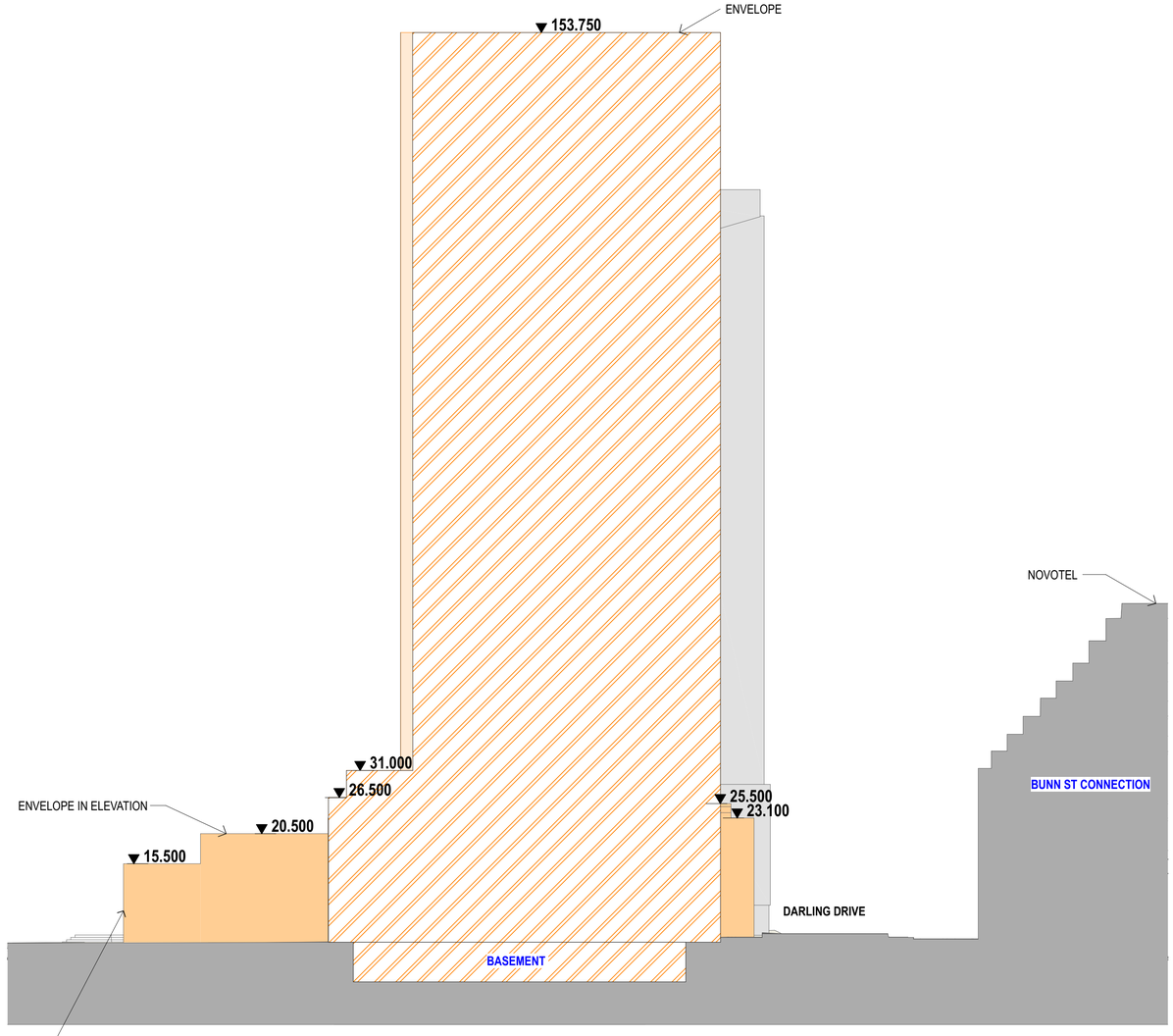

SECTION ENVELOPE SECTION 2
1:500

fjmt

Envelope Cross Sections

Mirvac - Harbourside

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1:500 @ A1

29/1/20

For Information

SSDA1-105

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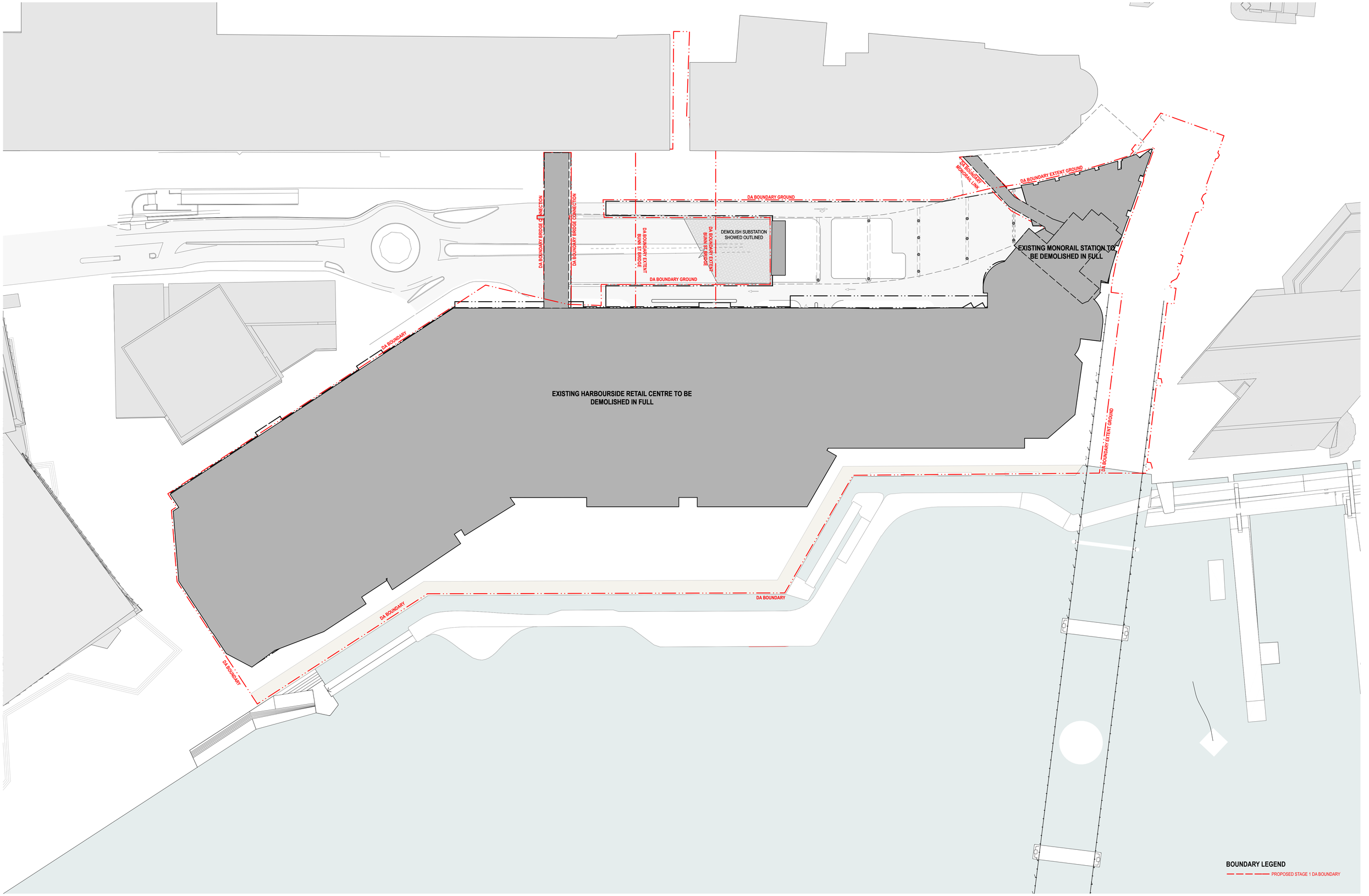


fjmt

Demolition Plan - Existing Harbourside & Monorail Station

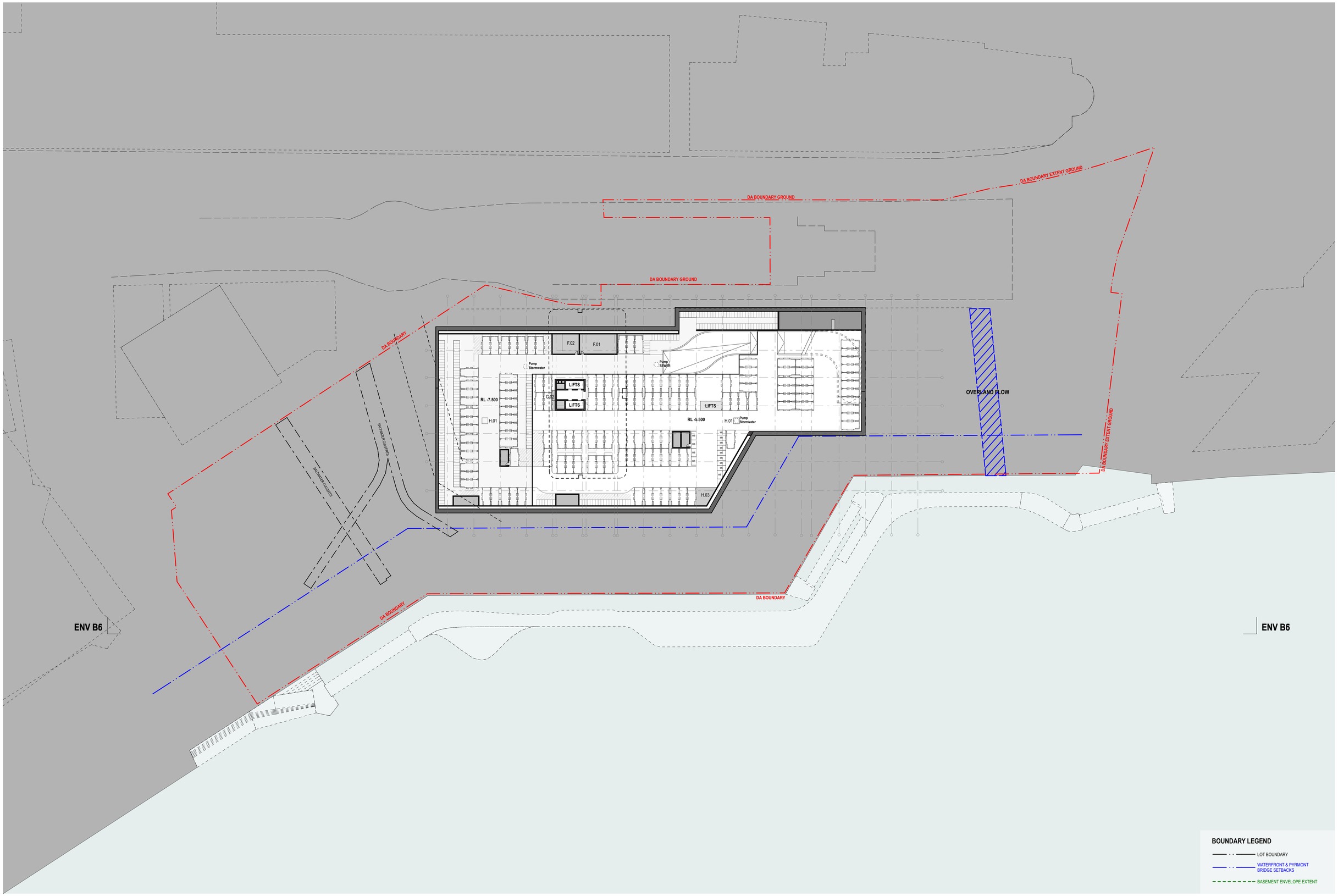
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-200**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - B3

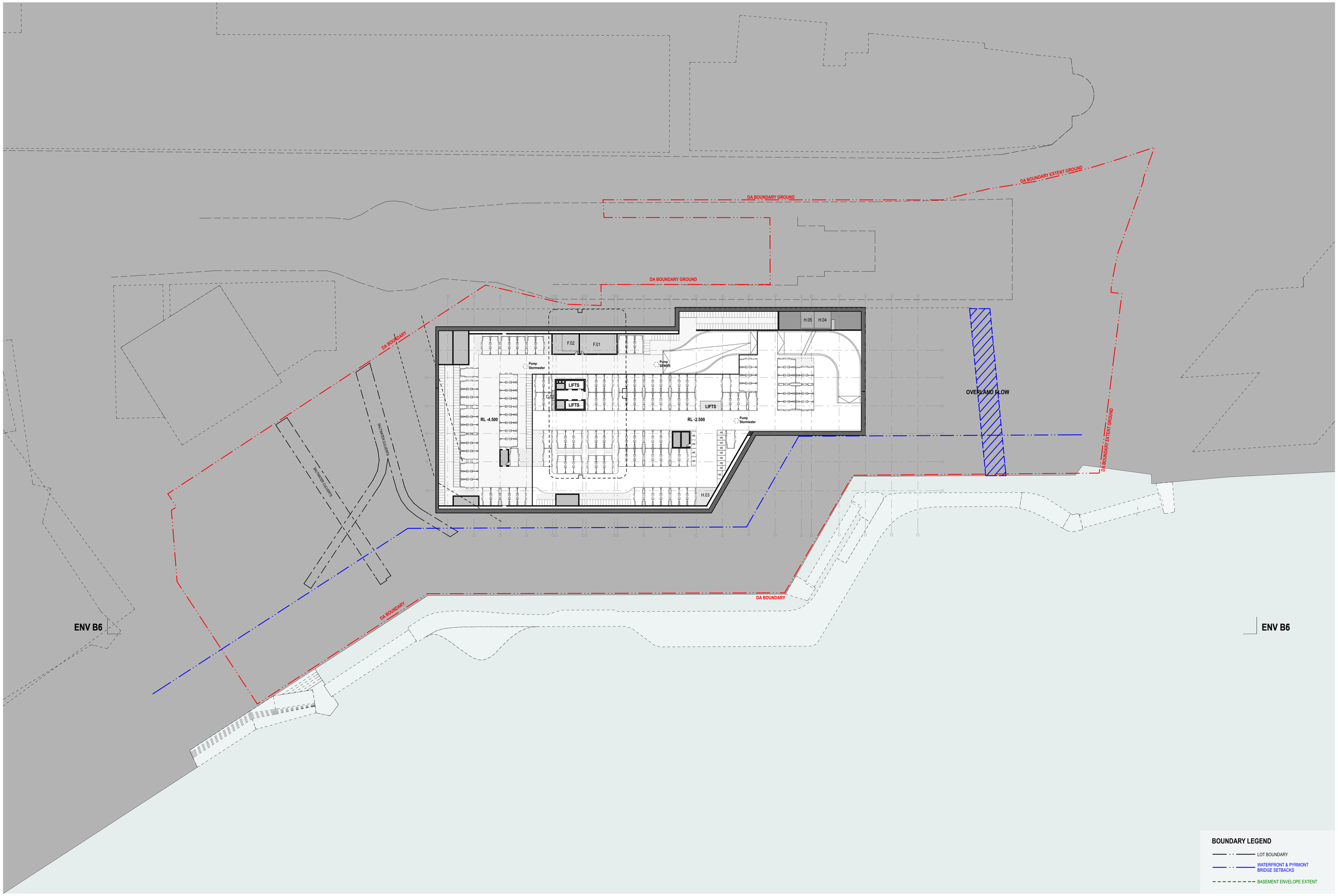
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-300**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - B2

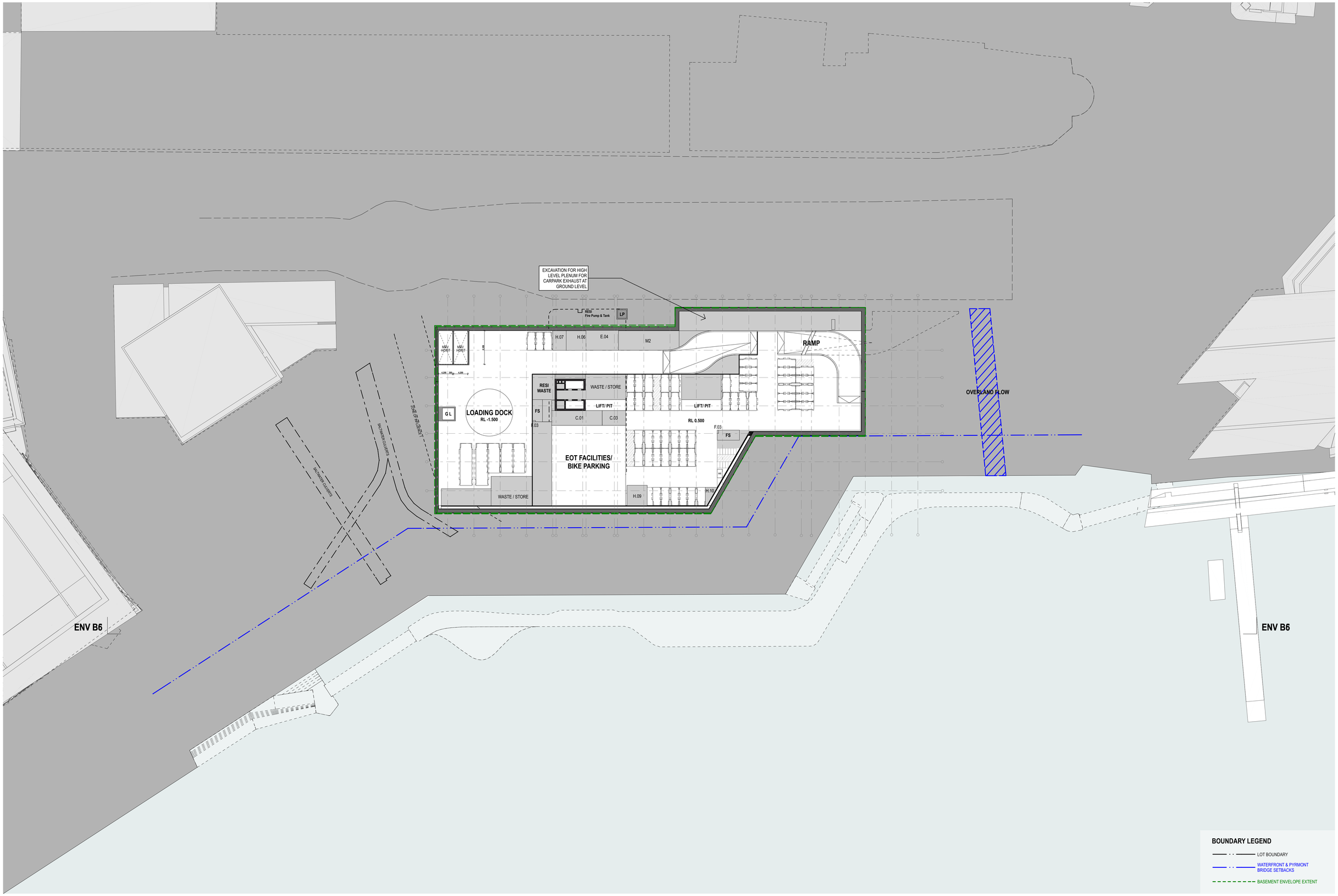
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-301**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - B1

Mirvac - Harbourside

0 5 10 20m

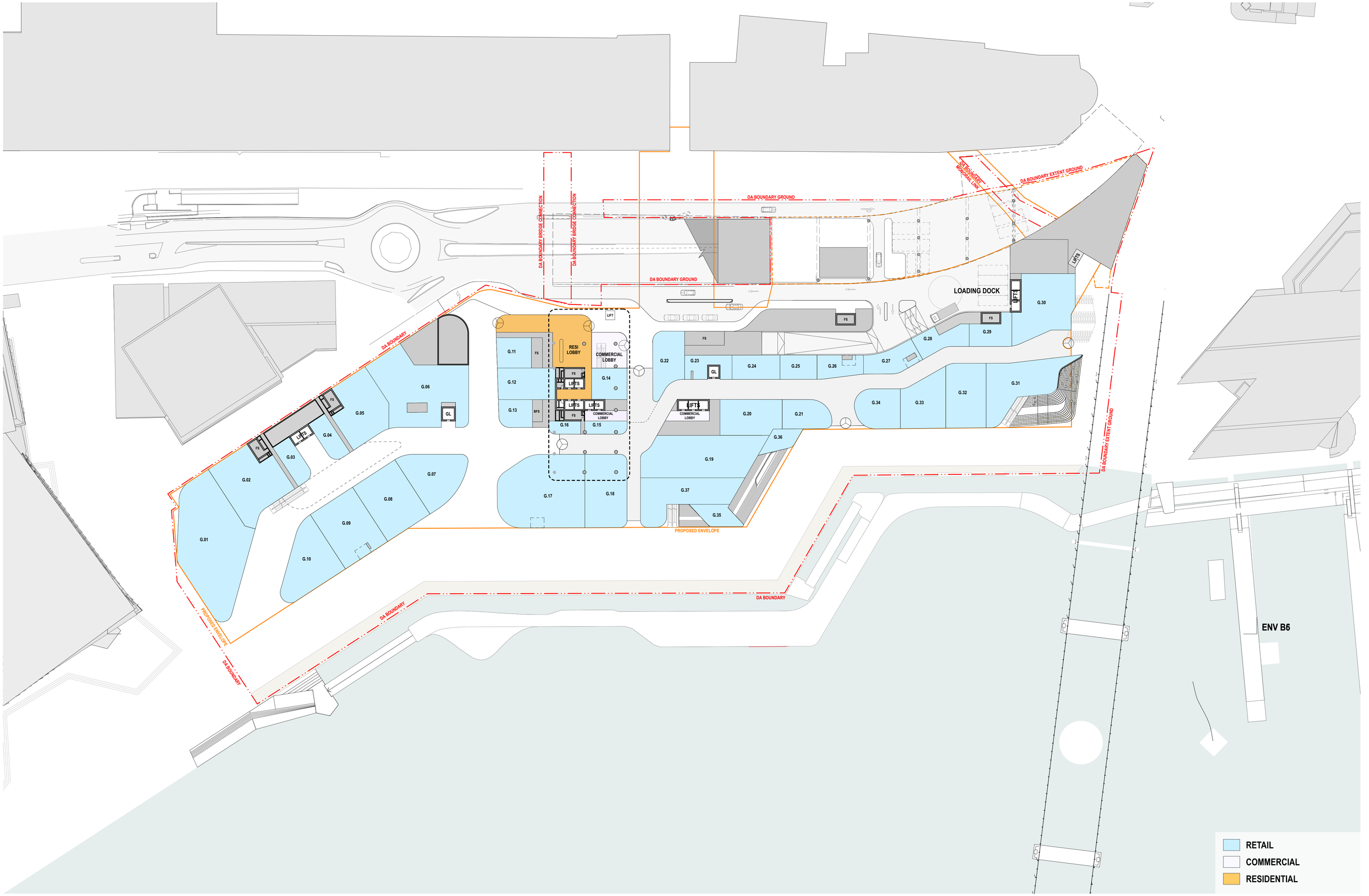
1:500 @ A1

29/1/20

For Information

SSDA1-302

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - Ground Floor Retail

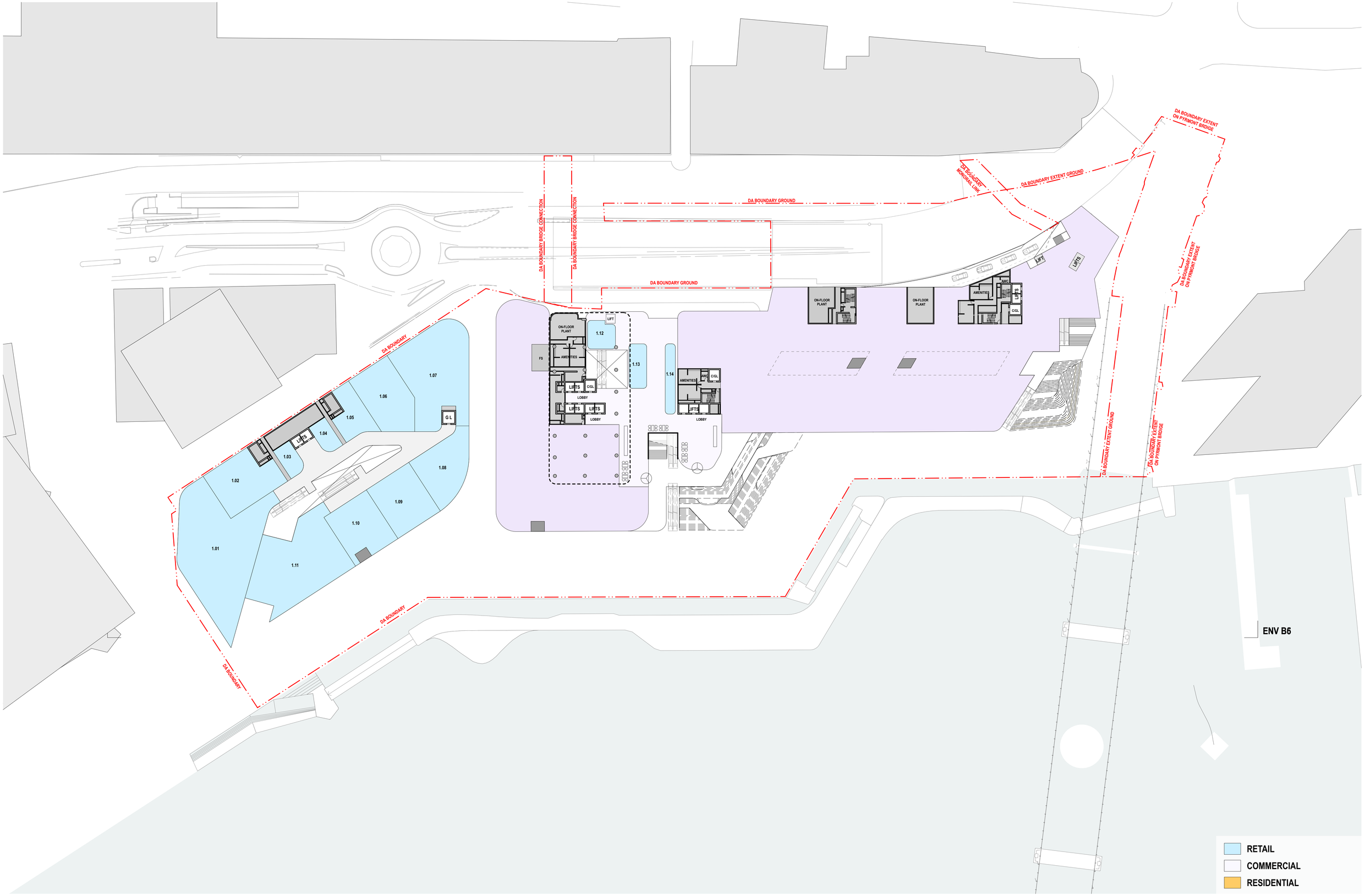
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-303**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - Level 1 Retail / Commercial

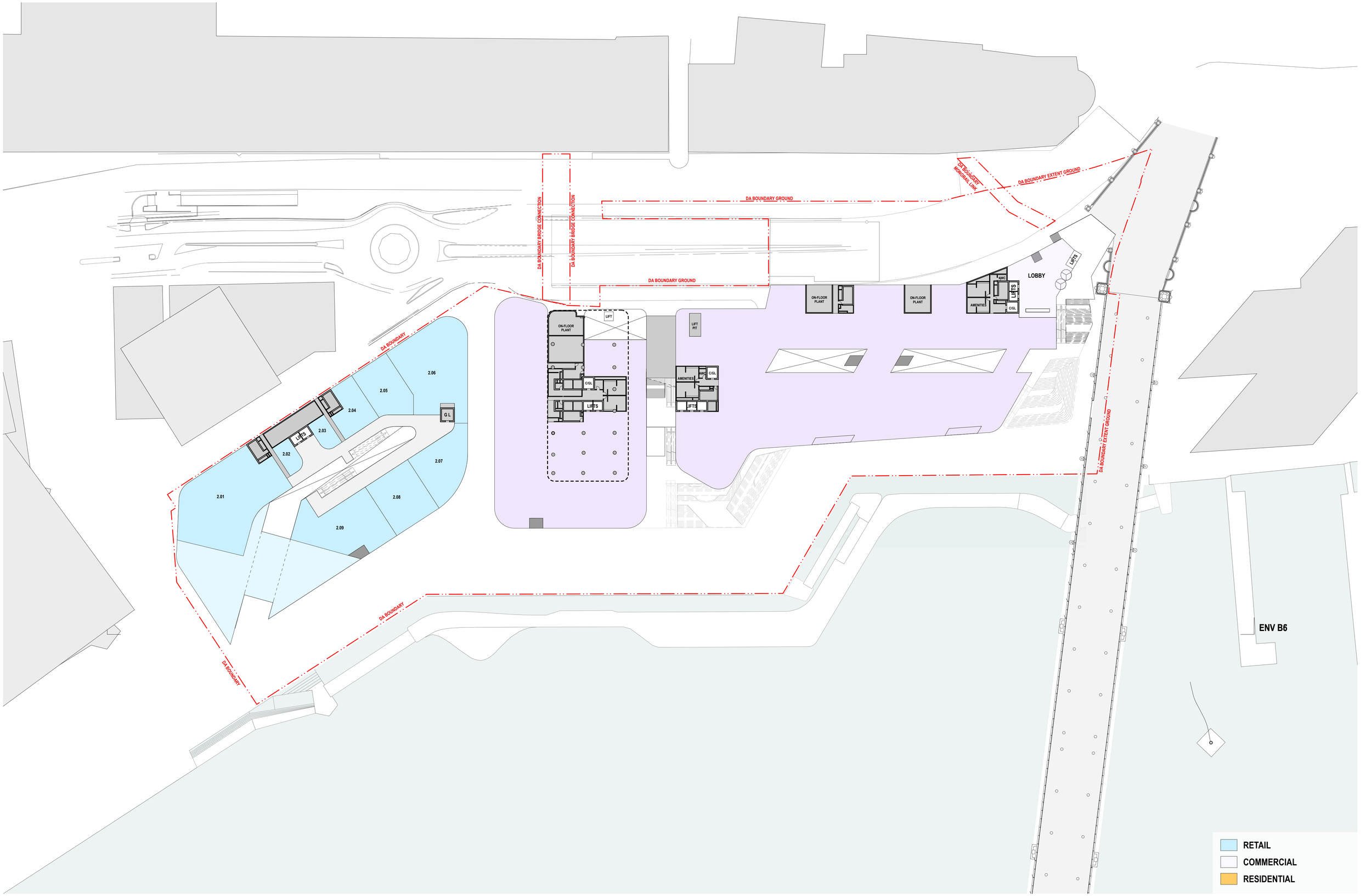
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-304**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - Level 2 Retail / Commercial

Mirvac - Harbourside

0 5 10 20m

1:500 @ A1

29/1/20

For Information

SSDA1-305

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)

fjmt

Indicative Plan Only - Level 3 Commercial

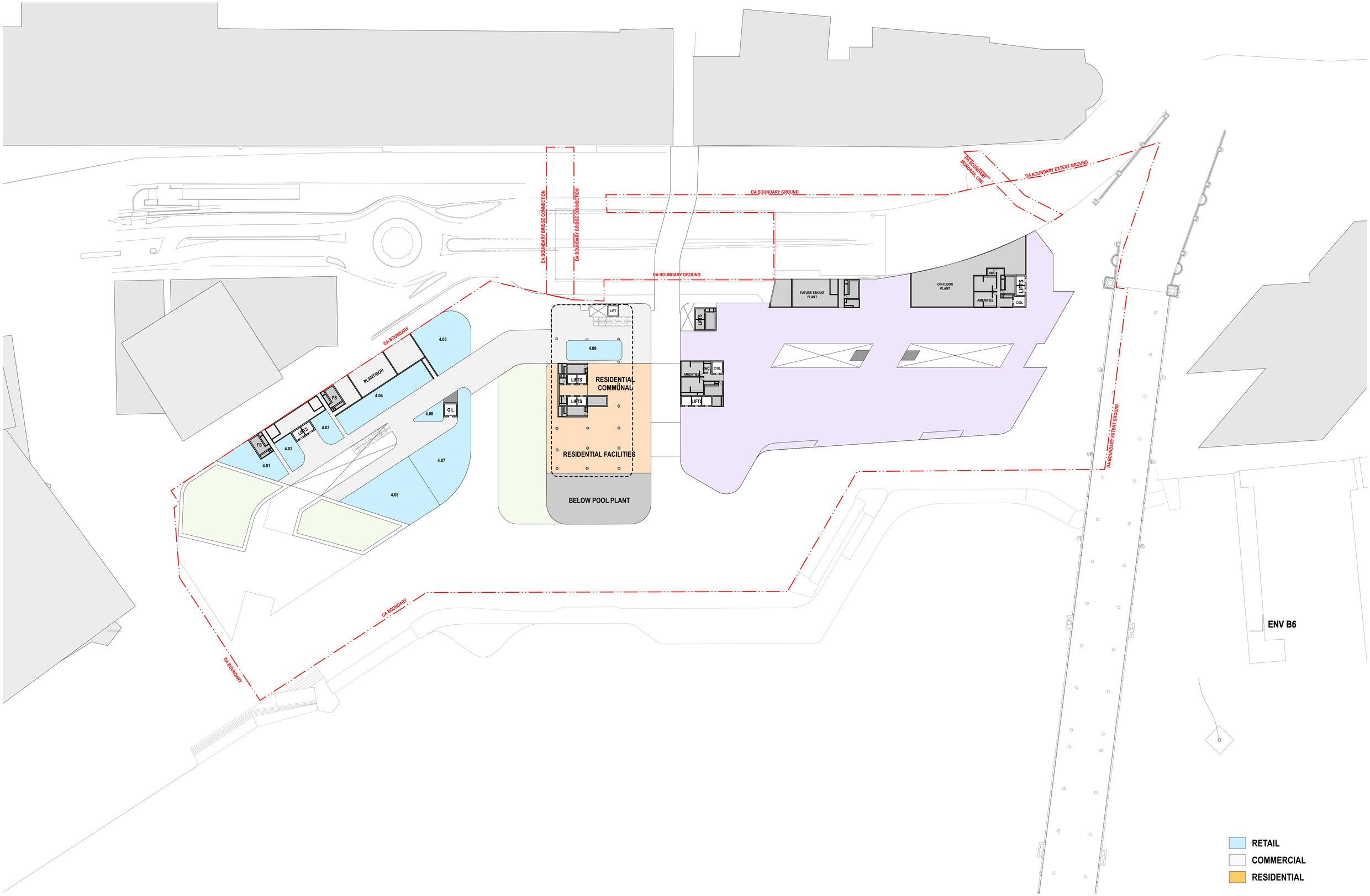
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-306**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - Level 4 Retail / Commercial / Resi

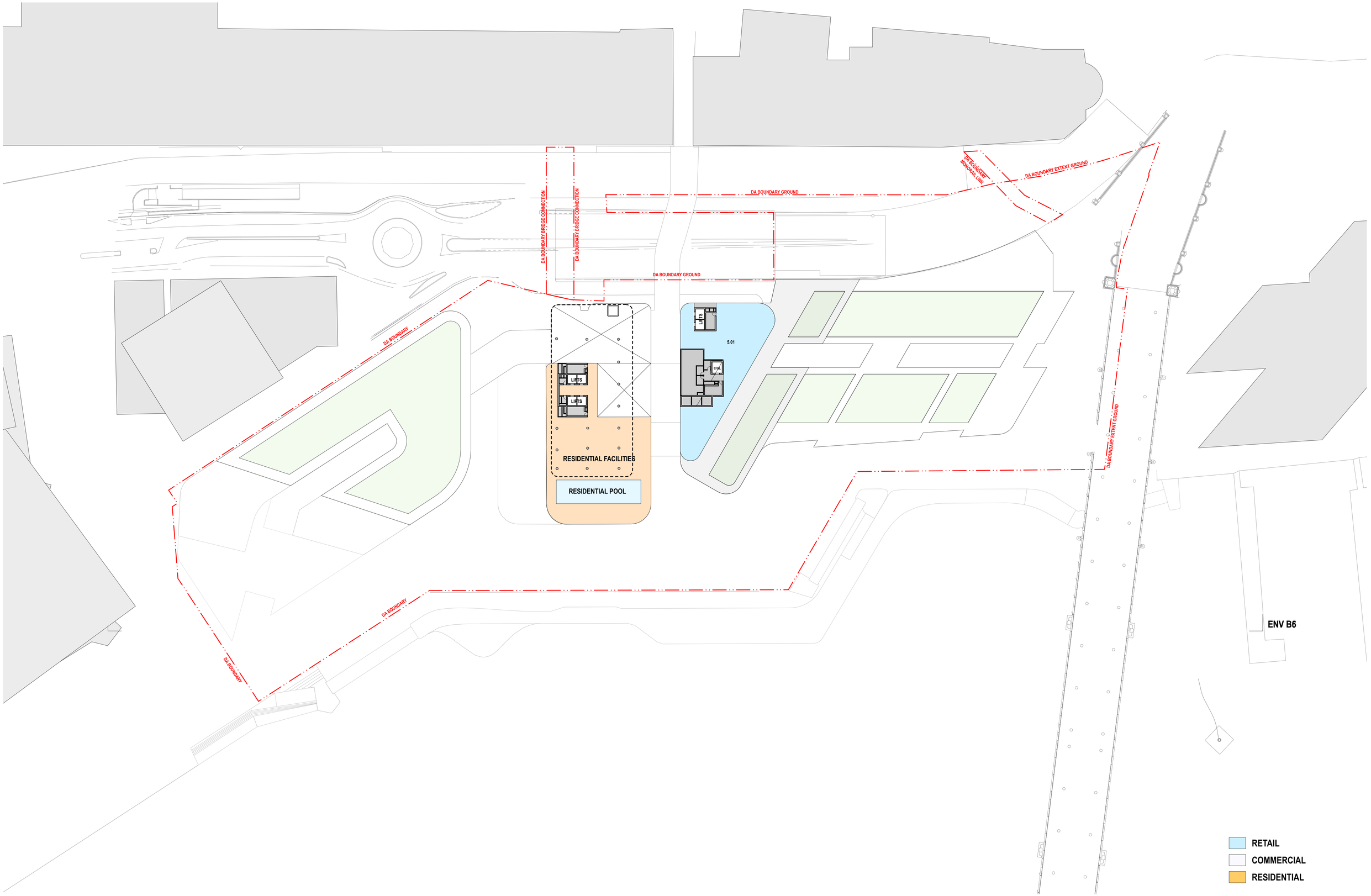
Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-307**

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



fjmt

Indicative Plan Only - Level 5 Retail / Resi / Podium Roof Plan

Mirvac - Harbourside

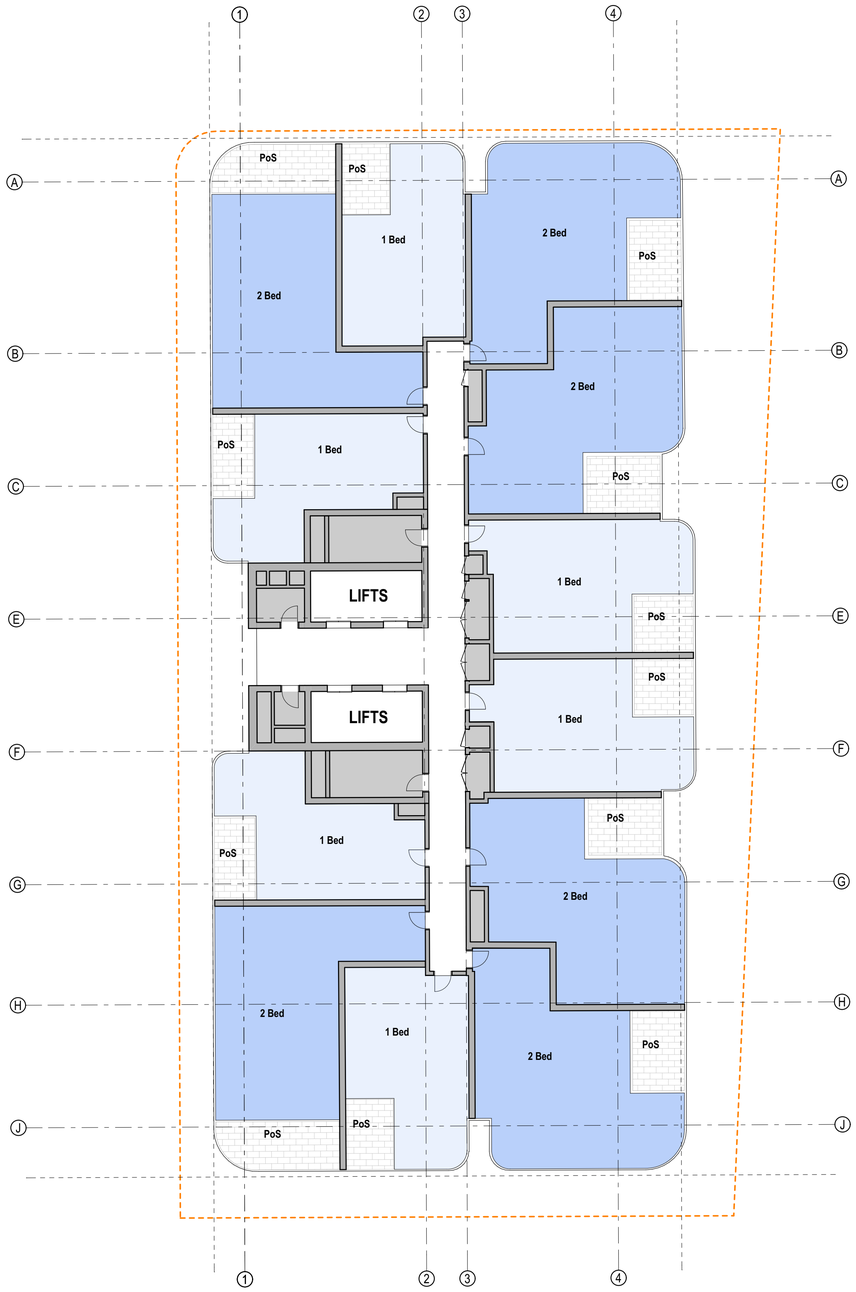
1:150 @ A1

29/1/20

For Information

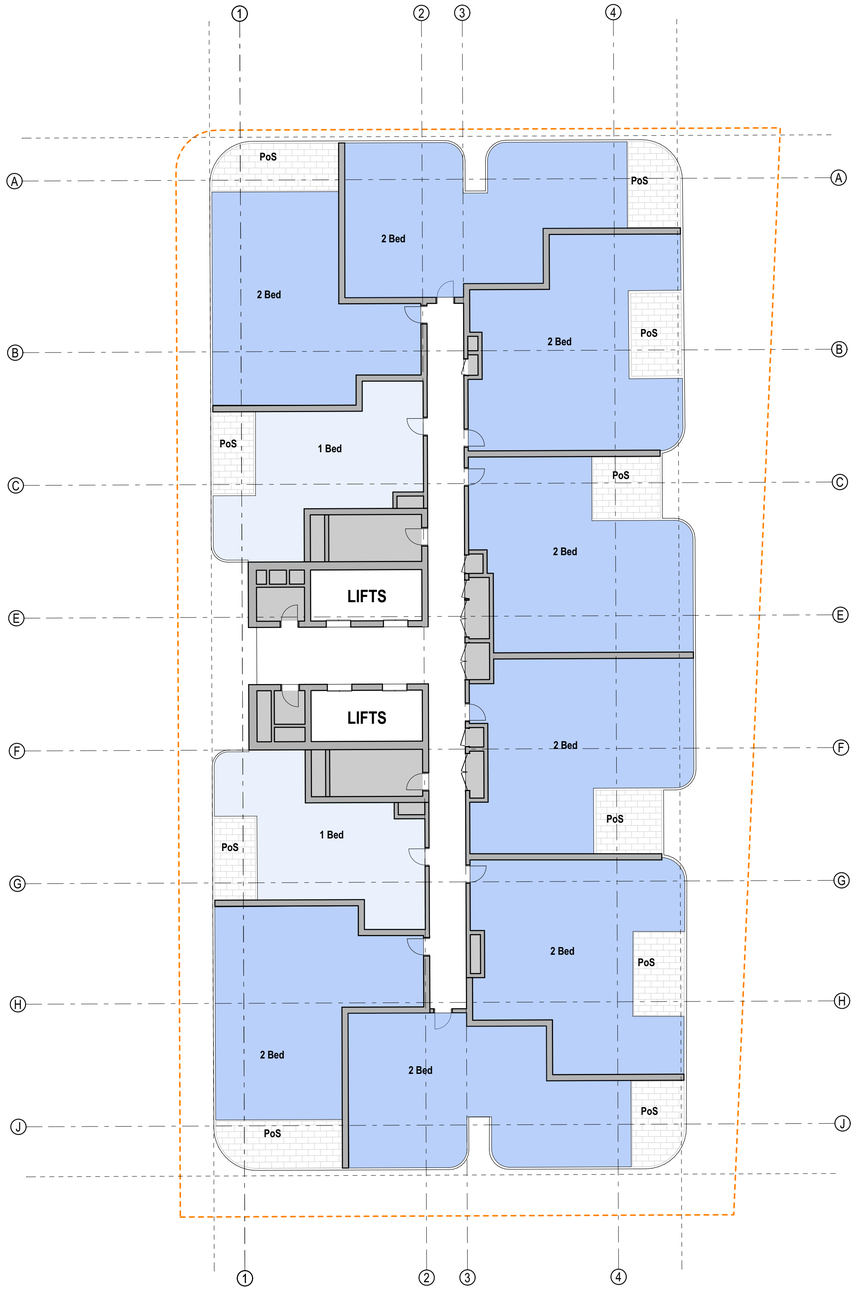
SSDA1-308

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



1 PLAN 1B Typical
1:150

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



1 PLAN 2B Typical
1:150

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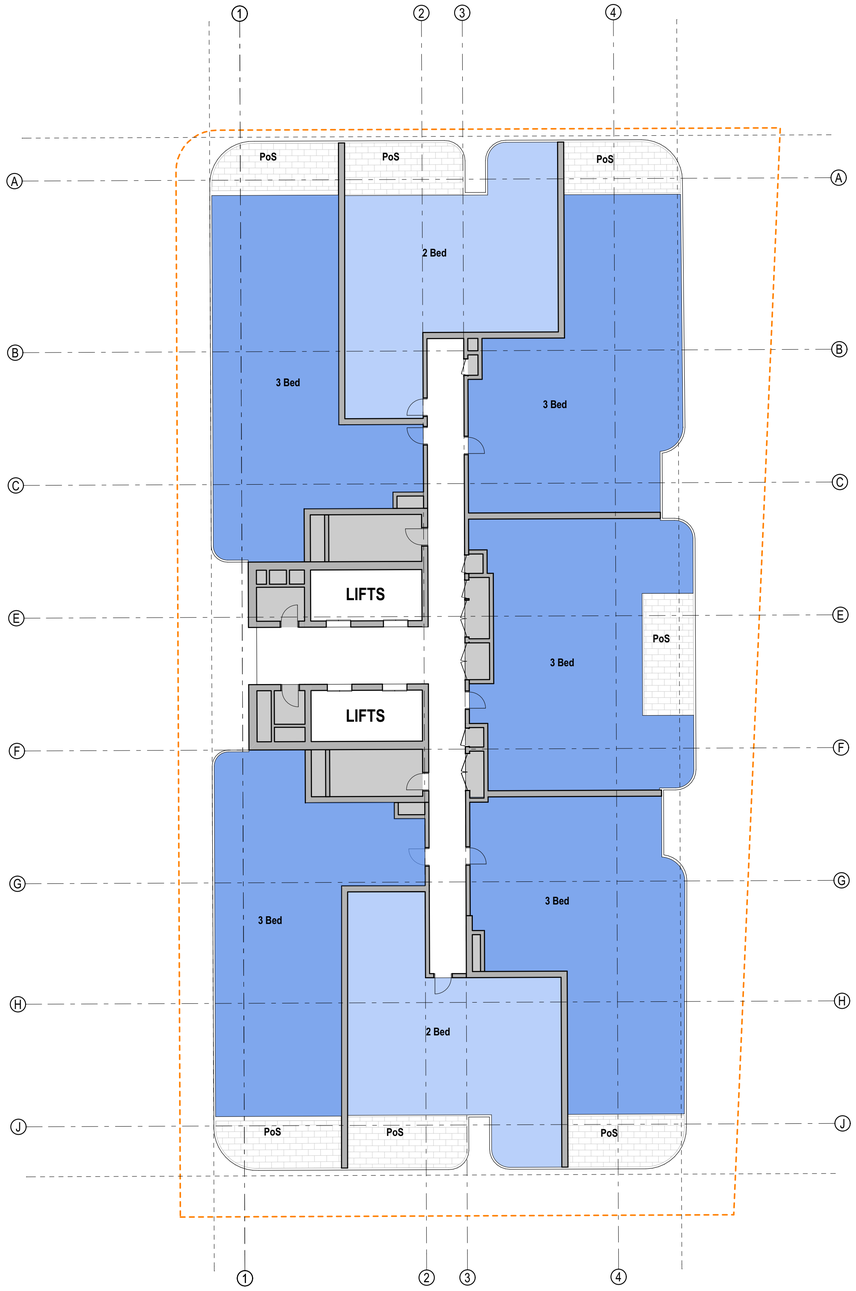

1 PLAN 3B Typical
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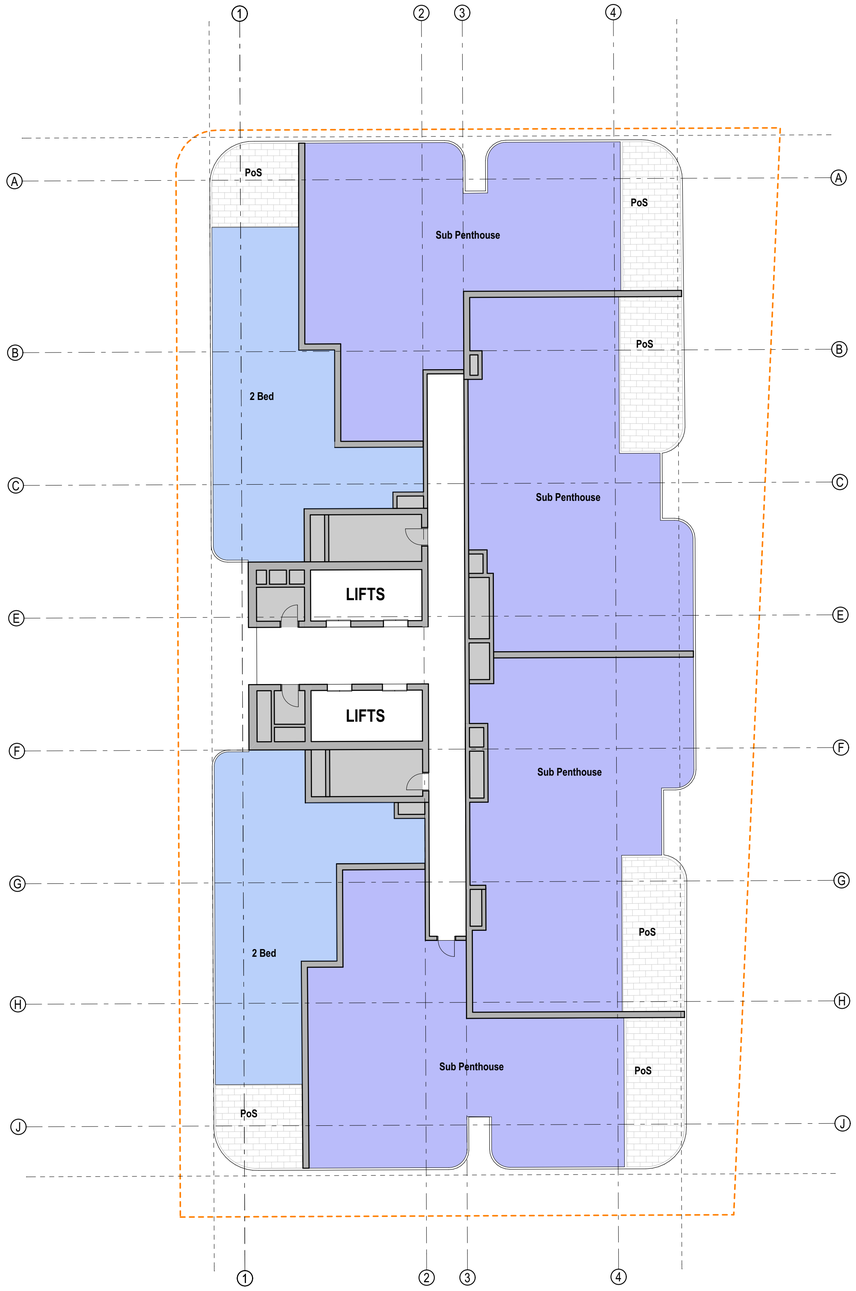
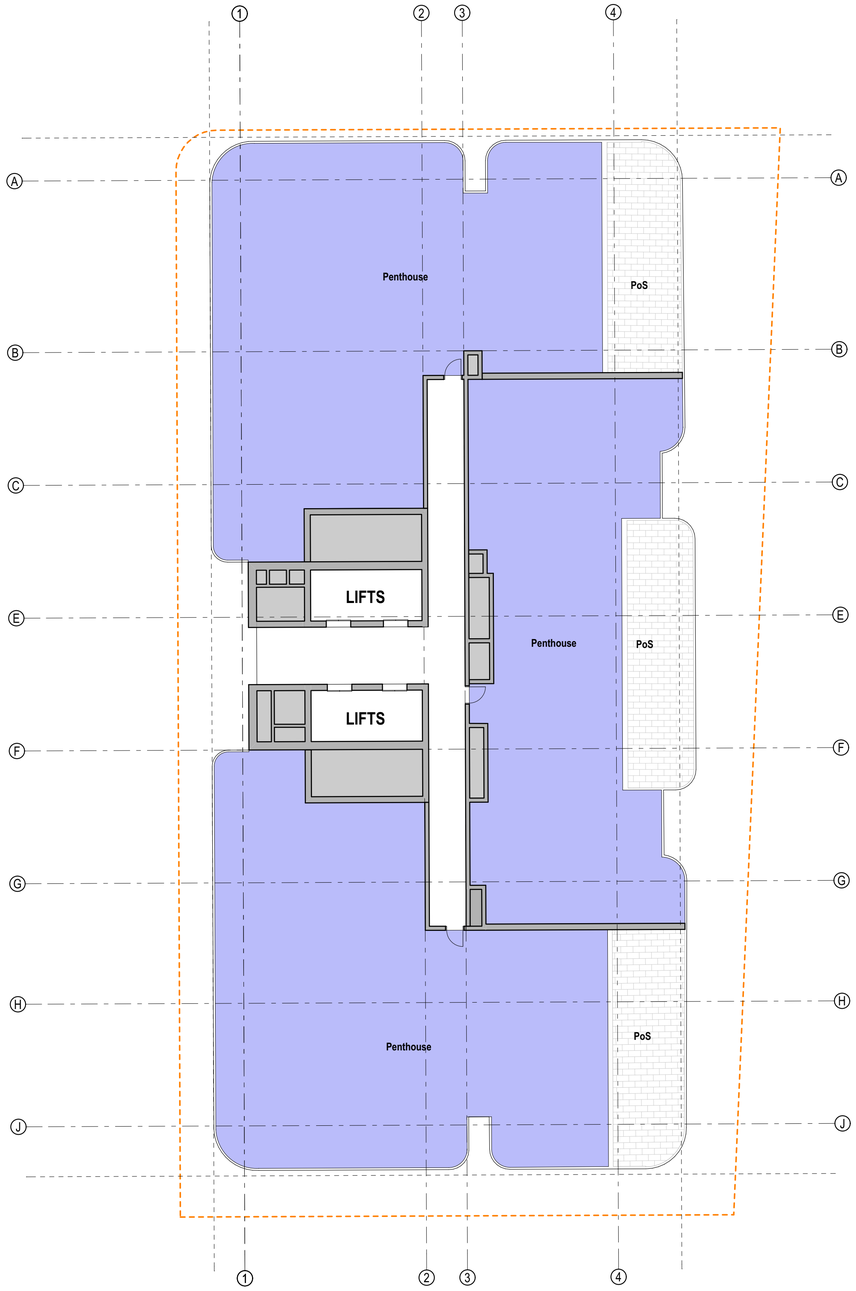


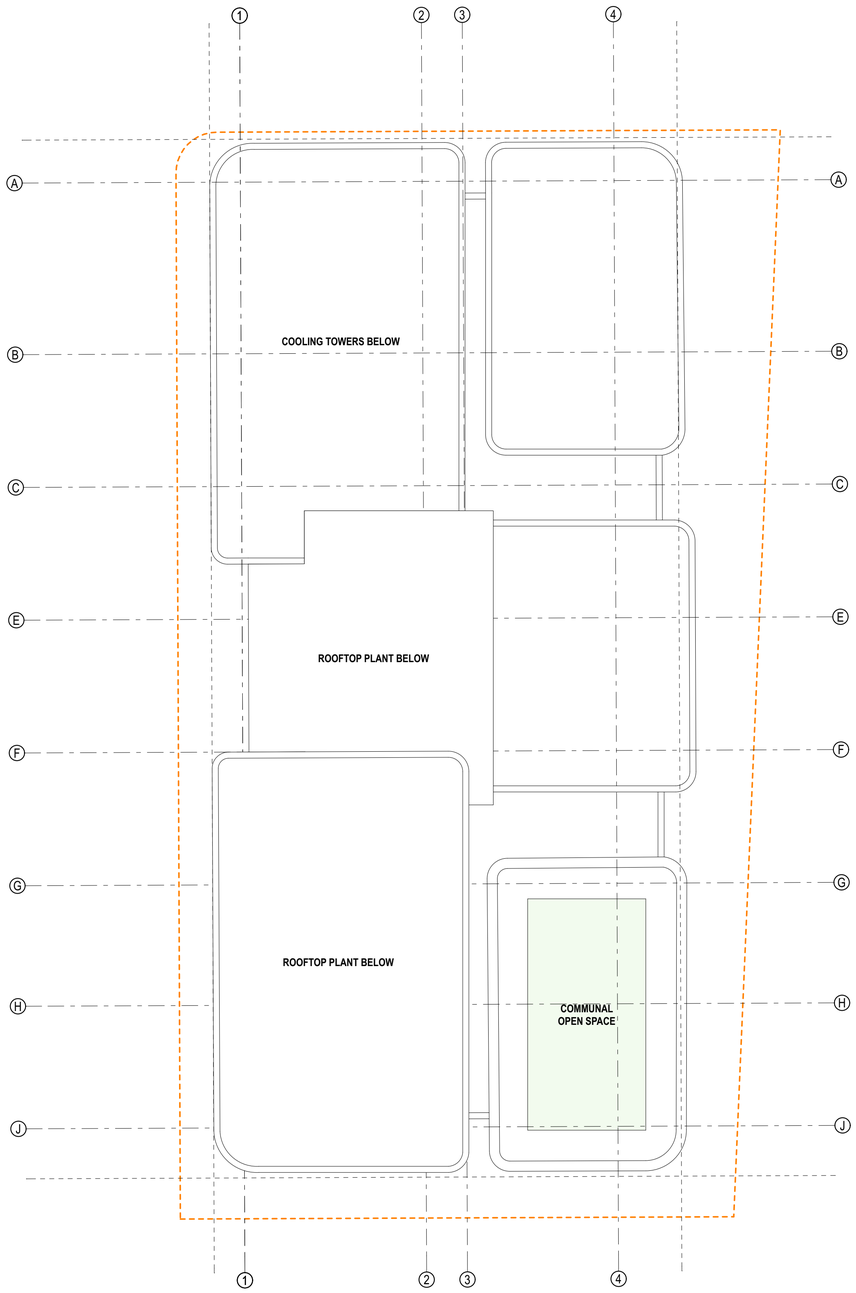
1 PLAN Sub Penthouse
1:150

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



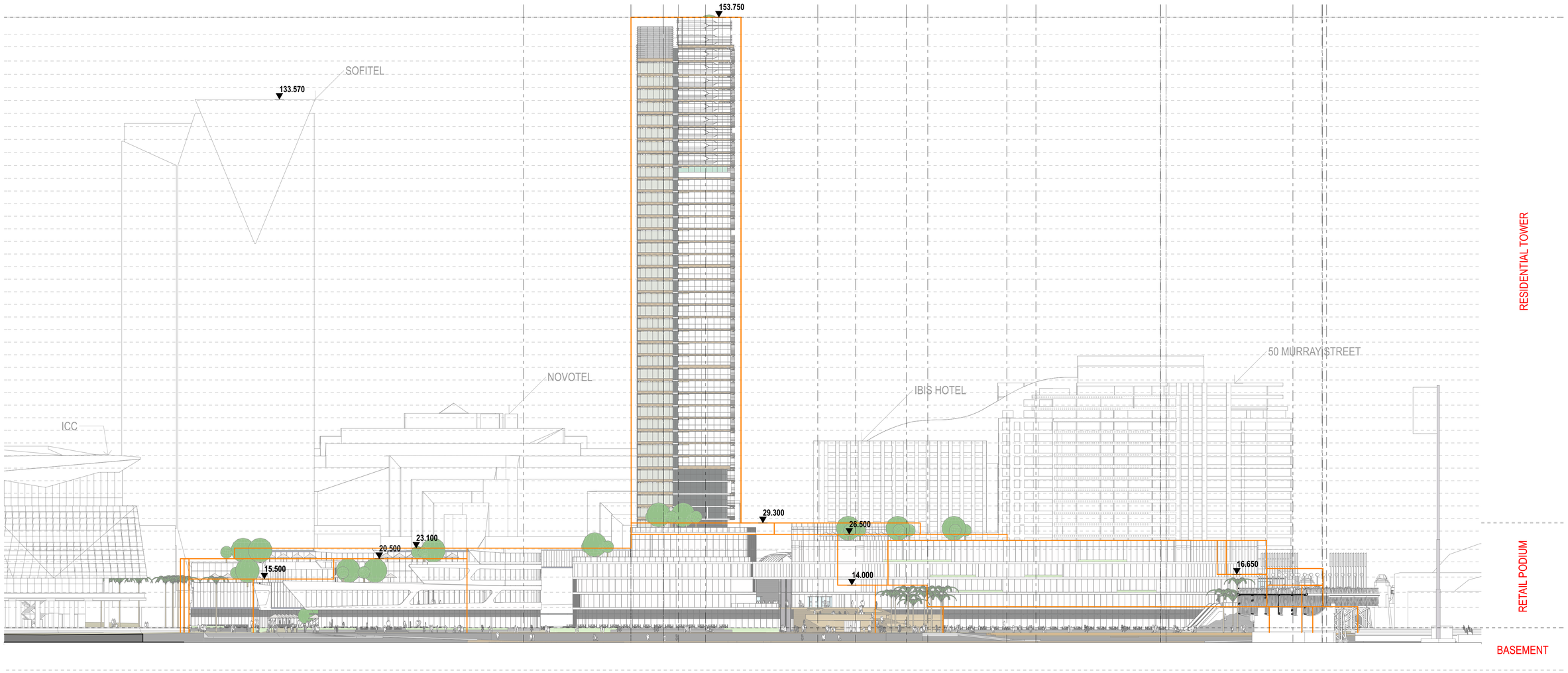
1 PLAN Penthouse
1:150

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



1 PLAN Roof Plan
1:150

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



BOUNDARY LEGEND

ENVELOPE EXTENT

fjmt

Indicative Elevation Only - East

Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-315**

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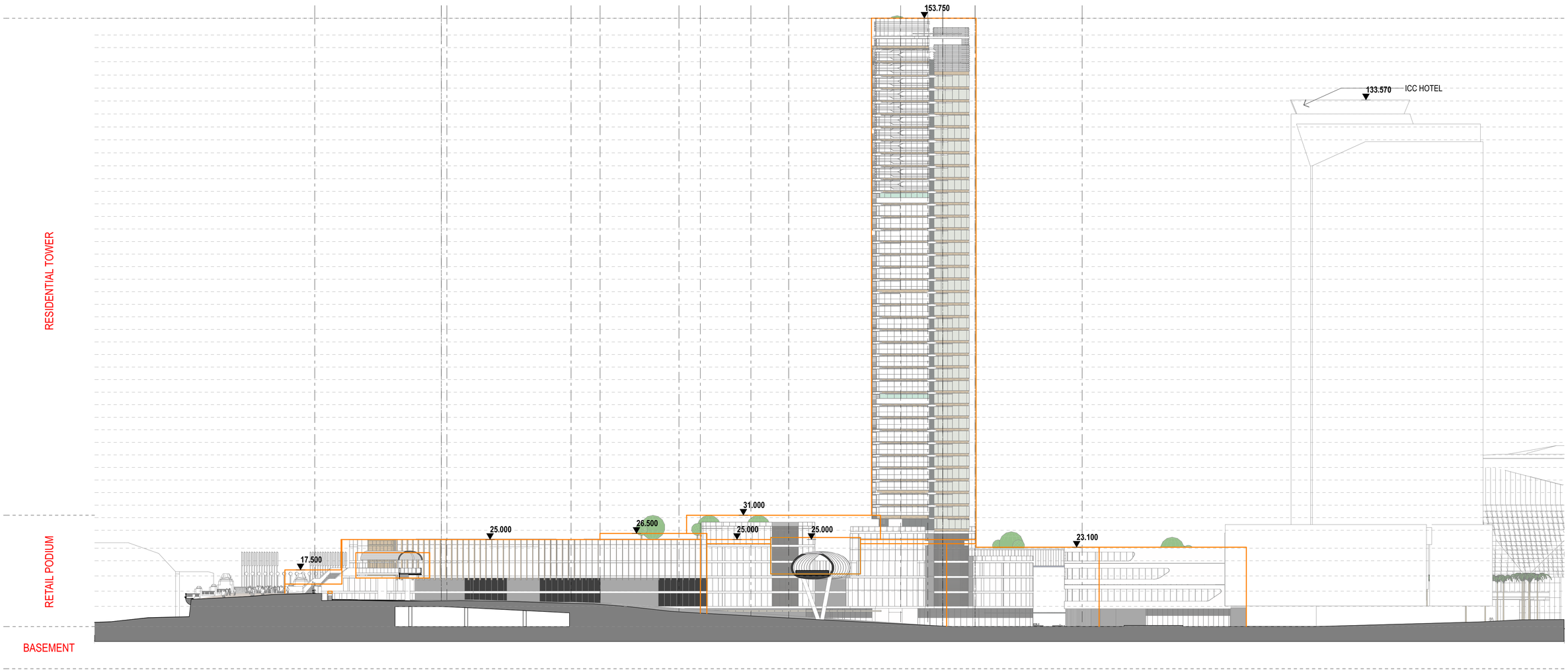


BOUNDARY LEGEND

ENVELOPE EXTENT

fjmt

Indicative Elevation Only - West

Mirvac - Harbourside

0 5 10 20m

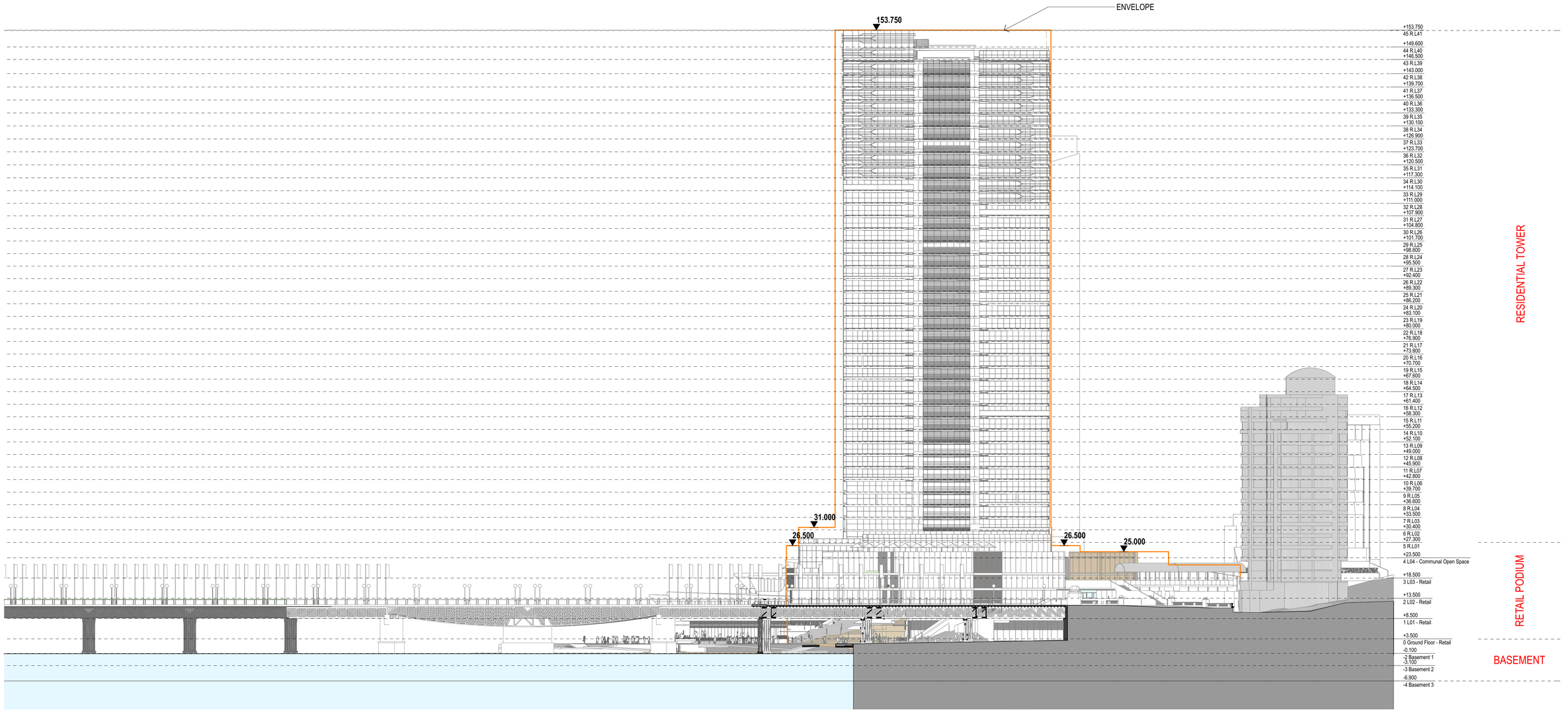
1:500 @ A1

29/1/20

For Information

SSDA1-316

© FRANCIS-JONES MOREHEN THORP PTY LTD 2020 ABN 28 101 197 219 NOMINATED ARCHITECT: RICHARD FRANCIS-JONES (REG NO 5301)



BOUNDARY LEGEND

ENVELOPE EXTENT

fjmt

Indicative Elevation Only - North

Mirvac - Harbourside

0 5 10 20m

1:500 @ A1 29/1/20

For Information **SSDA1-317**

Appendix B - Site Photographs

Refer to Figure 2 which illustrates the location and direction each photograph was taken from.

Photograph 1: View southwest from Pyrmont Bridge across Cockle Bay showing the eastern façade of the Harbourside Shopping Centre.

Photograph 2: View of the southern entrance to the Harbourside Shopping Centre

Photograph 3: View of the northern entrance to the Harbourside Shopping Centre

Photograph 4: View of the loading dock in northwestern part of the site showing gas bottle and putrescible waste storage areas.

Photograph 5: View south of the loading dock, showing various shipping containers used as storage by store holders within the Harbourside Shopping Centre.

Photograph 6: View east showing the main loading dock of the Harbourside Shopping Centre.

Photograph 7: Waste oil AST located within the northwestern corner of the site.

Photograph 8: View south along the western façade of the Harbourside Shopping Centre.

Photograph 9: Public realm situated between the Harbourside Shopping Centre and Cockle Bay.

Photograph 10: View north within the Harbourside Shopping Centre

Appendix C - Licences to Store Dangerous Goods

NSW GOVERNMENT | SafeWork NSW

SafeWork NSW
92-100 Donnison Street, Gosford, NSW, 2250
Locked Bag 2906, Lisarow, NSW, 2252 |
Customer Service Centre 13 10 50
licensing@safework.nsw.gov.au | www.safework.nsw.gov.au

Our Ref: D16/520149
Your Ref: Matthew Locke

17 February 2016

Attention: Matthew Locke
Coffey Environments
Level 19
799 Pacific Hwy
Chatswood NSW 2067

Dear Mr Locke,

RE SITE: Lot 1 DP 776815 Darling Dr Darling Harbour NSW

I refer to your site search request received by SafeWork NSW on 9 February 2016 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above mentioned premises.

For further information or if you have any questions, please call our Customer Service Centre on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely,

Brent Jones
Customer Service Officer
Customer Service Centre - Operations
SafeWork NSW

Appendix D – Geological Sections

coffey

Computations

project no: GEOTLCOV25340AA sheet 1 of 3

client:

principal:

project: HARBOURSIDE

location:

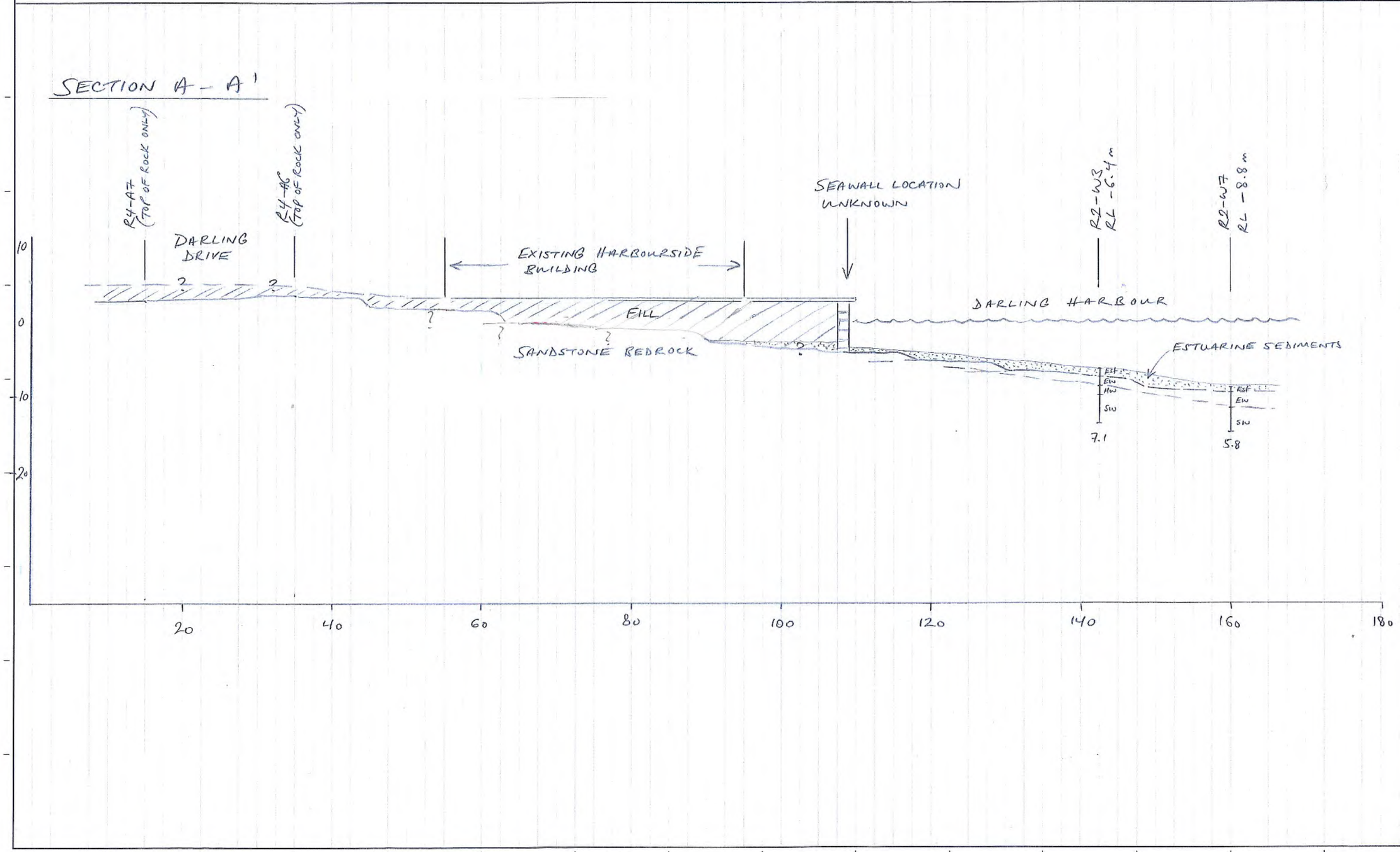
office: CHATS

date: 18/02/2016

by: MF

checked:

SECTION A - A'



64210/07-06

coffey

Computations

project no: GEOTLCOV25240AA sheet 2 of 3

client:

principal:

project: HARBOURSIDE

location:

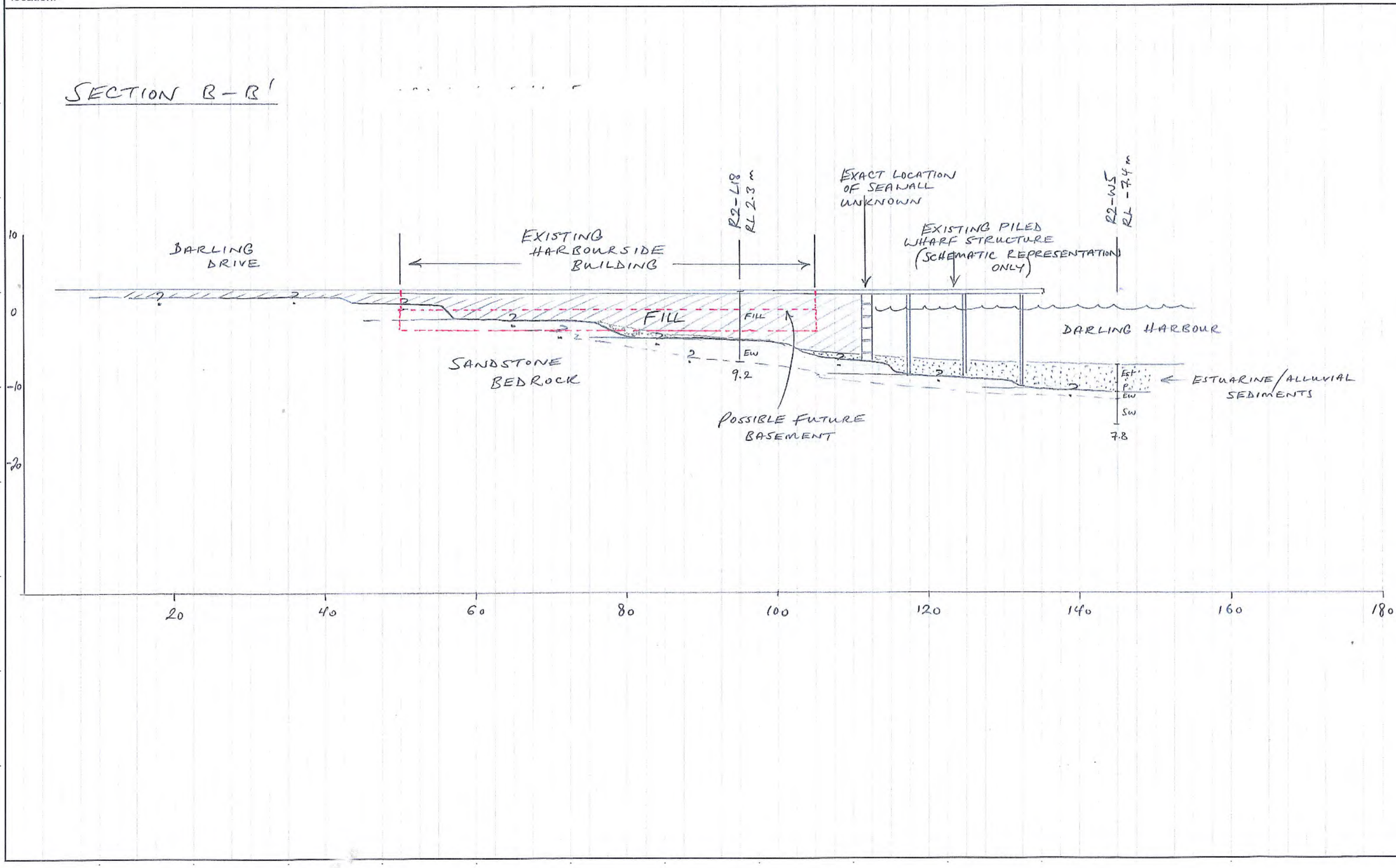
office: CHATS

date: 18/02/2016

by: MF

checked:

SECTION B-B'



64210 / 07-06

coffey

Computations

project no: GEOTLCOV25340AA sheet 3 of 3

client:

principal:

project: HARBOURSIDE

location:

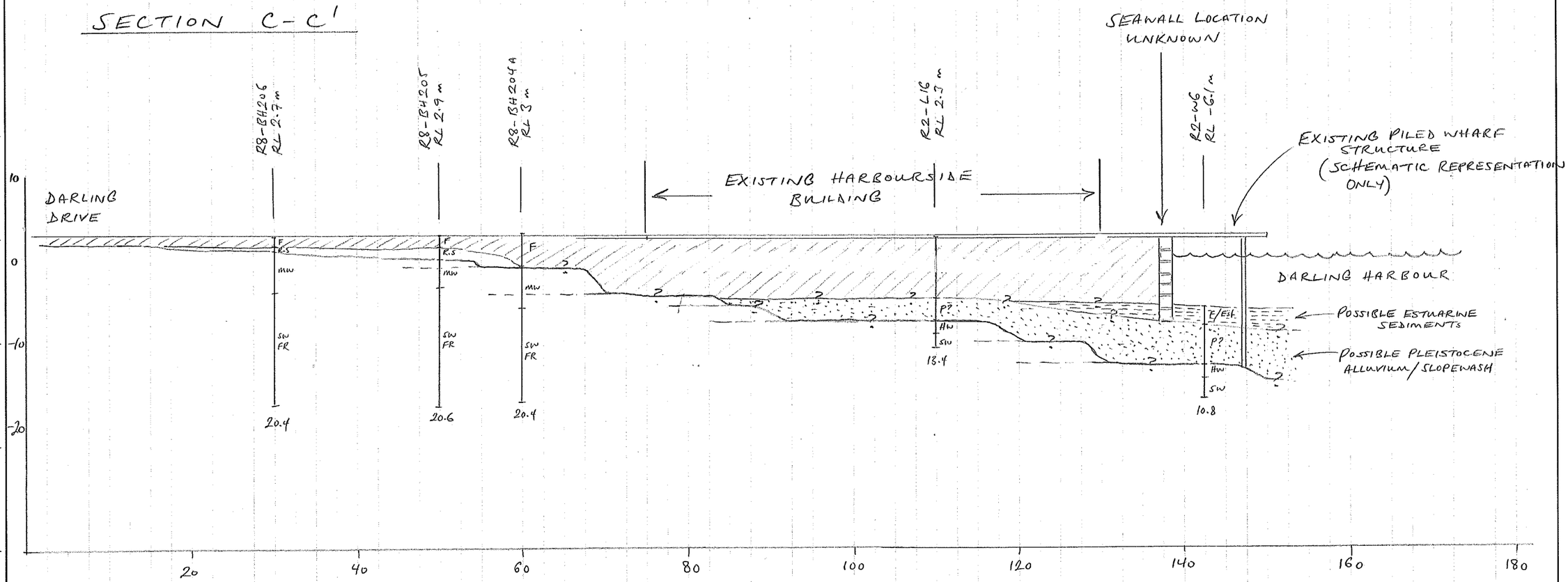
office: CHATS

date: 18/02/2016

by: MF

checked:

SECTION C-C'



64210 / 07-06

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