REPORT

Tonkin+Taylor

Devonport Mixed Use Development

Geotechnical Assessment Report for Fast Track Referral

Prepared for
Devonport Property Management Ltd
Prepared by
Tonkin & Taylor Ltd
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Executive summary

Devonport Property Management Ltd is seeking referral of Devonport Mixed Use Development into the Fast Track consenting process under the Fast Track Approvals Act 2024. Tonkin & Taylor Ltd (T+T) has prepared this Geotechnical Assessment Report to support that referral.

The proposed development comprises five buildings arranged across three site areas, with building heights ranging from four to eight storeys, and includes up to two basement levels . The proposed basement arrangement comprises a two-level basement below Buildings 1, 2 and 3, and a single-level basement below Building 4, both extending to approximately 6m below ground level. Building 5 has no basement.

The Site is located in a coastal setting in central Devonport and is inferred to be underlain by reclamation fill and marine sediments, with Auckland Volcanic Field materials comprising ash and basalt, and East Coast Bays Formation (ECBF) soils and rock at depth. Variability in basalt depth and quality is anticipated across the Site, particularly given its proximity to the mapped edge of an Auckland Volcanic Field lava flow.

Based on available information, the key geotechnical considerations for the proposed development are:

- Variable depth to basalt and ECBF materials influencing foundation design;
- Shallow groundwater (approximately 1.5–2 m below ground level)l;
- Basement excavation below the groundwater table requiring groundwater management and retention design; and
- Potential effects of excavation and temporary dewatering on adjacent buildings and services.

Suitable foundation solutions are anticipated to comprise shallow foundations founded on competent basalt where present, and/or piled foundations extending into basalt or ECBF materials.

Groundwater is expected at shallow depth. Basement excavation below the groundwater table is likely to require temporary dewatering and will require a resource consent for groundwater take and diversion. For the permanent condition, the basement is expected to be designed as a sealed ("tanked") structure to manage groundwater inflows and avoid long-term groundwater abstraction.

Basement retention is anticipated to be achievable using conventional systems commonly adopted for urban developments in Auckland. Where excavation occurs adjacent to neighbouring structures, detailed assessment, temporary support measures and construction monitoring would be implemented to manage ground movements and groundwater effects.

The geotechnical matters identified are typical of coastal urban development sites in Auckland. Based on the information reviewed to date, no geotechnical constraints have been identified that would preclude the proposed development in principle. Any adverse geotechnical effects can be mitigated using standard construction methodologies and consent conditions which have been used at similar sites across Central Auckland.

Further site specific investigation and detailed geotechnical assessment will be undertaken during preliminary and developed design stages and will inform the substantive Fast Track application.

1 Introduction

Devonport Property Management Ltd are preparing a referral application to access the Fast Track consenting process under the Fast Track Approvals Act (2024) for the proposed development, Devonport Mixed use Development (the "site") in central Devonport, Auckland.

A Geotechnical and Land Contamination Desktop Assessment was completed by Tonkin & Taylor Ltd (T+T) in March 2024[1], to inform early architectural and planning studies for the project.

T+T has prepared this January 2026 letter report as an update to the T+T 2024 desktop assessment; incorporating an updated bulk and location plan concept, to inform the application for Fast Track referral. This work has been completed in accordance with our variation proposal dated 11 September 2025[2].

2 Site description

The site is located within the main commercial hub of Devonport, shown in Figure 2.1, and is situated directly north of the Devonport Ferry Terminal. Windsor Reserve is located to the east of the site across Victoria Road.

The site includes the following addresses:

- 1-3 Wynyard Street
- 12 Wynyard Street
- 3 Victoria Road
- 5-15 Victoria Road
- 17-19 Victoria Road
- 21 Victoria Road
- 23-25 Victoria Road
- 33 Victoria Road
- 37-39 Victoria Road
- 41 Victoria Road
- 43 Victoria Road
- 14 Wynyard Street
- 45 Victoria Road

[1] T+T, March 2024, *Geotechnical & Land Contamination Desktop Assessment*. Report prepared for Devonport Property Management Ltd.
[2] T+T, September 2025, *Variation Order 01, Project Rioja, Geotechnical & land contamination services to support application for Fast Track referral.* Report prepared for Devonport Property Management Ltd. Reference: 1093341.

The site currently comprises a mix of low-rise residential, commercial, and light industrial buildings. Similar low-rise structures occupy the properties to the north and west. Land Information New Zealand (LINZ) ground surface contours indicate that the site is generally flat and low-lying, gently sloping towards the coast to the south. Ground levels rise steeply further north, beyond the site, up to Takarunga / Mt Victoria, which is located approximately 400 m to the north-east.

Figure 2.1: Site Location. Site boundary shown in red.

2.1 Proposed development

The proposal is for a comprehensive mixed-use urban town centre development located in Devonport, Auckland, within the block bounded by Victoria Road, Clarence Street, and Wynyard Street. The site comprises 14 existing titles and approximately 6,126 m² of brownfield land and includes five Auckland Unitary Plan Category B listed heritage buildings and one Category A listed heritage building.

The development comprises five buildings arranged across three site areas, with building heights ranging from four to eight storeys, and includes up to two basement levels. Buildings 1–3 are located between Victoria Road and Wynyard Street and include a hotel and mixed-use buildings with a two-level basement accessed from Wynyard Street. Building 4 is a mixed-use building located at the corner of Victoria Road and Clarence Street and includes one basement level. Building 5 is a mixed-use building located to the south-west of the site on Wynyard Street with on-grade carparking access.

The proposal includes a commercially activated ground plane comprising a network of laneways and a central courtyard, providing pedestrian connections between Victoria Road and Wynyard Street and supporting active ground-floor uses.

The development includes the adaptive reuse of the Victoria Road heritage buildings, which are integrated into the commercial ground plane.

The development delivers approximately 21,125 m² of total gross floor area and 1,770 m2 of commercial ground plane. This encompasses 12,516 m² of residential floor area, 2,382 m² of commercial space, and 3,004m² of ground floor retail including commercial outdoor ground plane area. The proposal incorporates 2,319m² of adaptively reused heritage and a new 2,095 m² hotel, with the balance comprising building circulation. The proposal provides options for 2,952 m^2 – 6,736 m^2 of basement.

Associated works include carparking and loading facilities potentially ranging between 80 and 200 carparks and loading spaces; earthworks and excavation potentially ranging between 2,000 m^2 and 6,735 m² and 9,380 m³ and 25,000 m³; and all required associated infrastructure including water supply, stormwater (including any required flood mitigation measures), and wastewater services.

The site is located immediately north of the Devonport Ferry Terminal and associated public transport services.

Refer to Appendix A for architectural excerpts.

Figure 2.2: Proposed development. Source: PB&A architectural plans (refer Appendix A).

3 Site overview

3.1 Existing site description

The development sites are located within the main commercial hub of the Devonport area, and comprise a series of low-rise mixed residential, commercial and light industrial buildings. The primary development site is located directly north of the Devonport ferry terminal which extends beyond Devonport beach. Windsor Reserve is located to the east of the site, and similar low-rise structures occupy the sites to the north and west.

The site is generally very gently sloping towards the shoreline to the south. Ground levels within the site are between RL 4.5 m and RL 5 m. The ground level rises steeply further north beyond the site rising to Takarunga / Mt Victoria which is located approximately 400 m to the north-east.

3.2 Historical aerial photographs

Historical aerial photographs from the Auckland Council GeoMaps[3], Retrolens[4] and Google Earth Pro (as shown in Table 3.1) have been reviewed. Relevant features of the site and surrounding land are summarised from each aerial photograph. Selected aerial photographs, which highlight the primary changes on-site, are provided in Appendix B.

Table 3.1: Historical aerial photograph review

Year	Site	Surrounding landuse
1940 Source: Retrolens	The site is occupied by what appears to be a mix of residential and commercial buildings. Site surfaces appear sealed and consistent with the current layout. Residential properties appear to be present at 24 and 28 Victoria Road and 15-19 Clarence Street. Dwellings with ancillary structures (presumed sheds), and backyard spaces appear present within residential properties. A square building is present at 1-3 Wynyard Street. Larger (presumed commercial buildings) appear present the along Clarence Street and Victoria Road. Given the quality of the aerial image, a low level of confidence is attributed to the types of buildings (e.g. residential/commercial) present at the site.	The land immediately surrounding the site is as follows: • Residential land is present to the west. • Commercial land is present to the north. • Windsor Reserve to the east. • Devonport Ferry Terminal and the Waitemata Harbour to the south.
1959 Source: Retrolens	The building at 28 Victoria Road has been demolished. The residential buildings at 1-3 Wynyard Street have been demolished and replaced with a structure consistent with the Wynyard Street Motors mechanical workshop.	A building has been constructed on the property to the south of 4 Wynyard Street.
1963 Source: Retrolens	A square building is present at 28 Victoria Road consistent with current site layout. Five rectangular buildings have been constructed along Wynyard Street. Multiple commercial buildings are located along the length of Victoria Road consistent with present day layout.	No significant changes other than.

[3] Auckland Council Geomaps: GeoMaps mapping service (aucklandcouncil.govt.nz). Accessed February 2024.
[4] Retrolens: https://retrolens.co.nz/. Accessed February 2024.

Year	Site	Surrounding landuse
1977 Source: Retrolens	The residential buildings at 15-21 Clarence Street have been demolished and replaced with a commercial structure consistent with current site layout. A large rectangular building has been constructed on the corner of 9-11 Clarence Street consistent with current site layout.	No significant changes evident.
1989 Source: Retrolens	No significant changes evident.	No significant changes evident.
2001 Source: Auckland Council Geomaps	No significant changes evident other than the building at 28 Victoria Road has been extended to cover the rear section of the property.	The properties to the northwest of 15-21 Clarence Street have been demolished and replaced with a large commercial building and carpark.
2012 - 2017 Source: Auckland Council Geomaps	No significant changes evident.	No significant changes evident.
2024 Source: Google Earth Pro	No significant changes evident.	No significant changes evident.

4 Subsurface conditions

4.1 Published geology

The published surface geology map of the area[5] is presented in Figure 4.1 below. This indicates that the majority of the site to the south was formed as part of the land reclamation associated with the present-day naval base at Calliope Dock to the west of the site, with the reclamation extending to the edge of Windsor Reserve to the east.

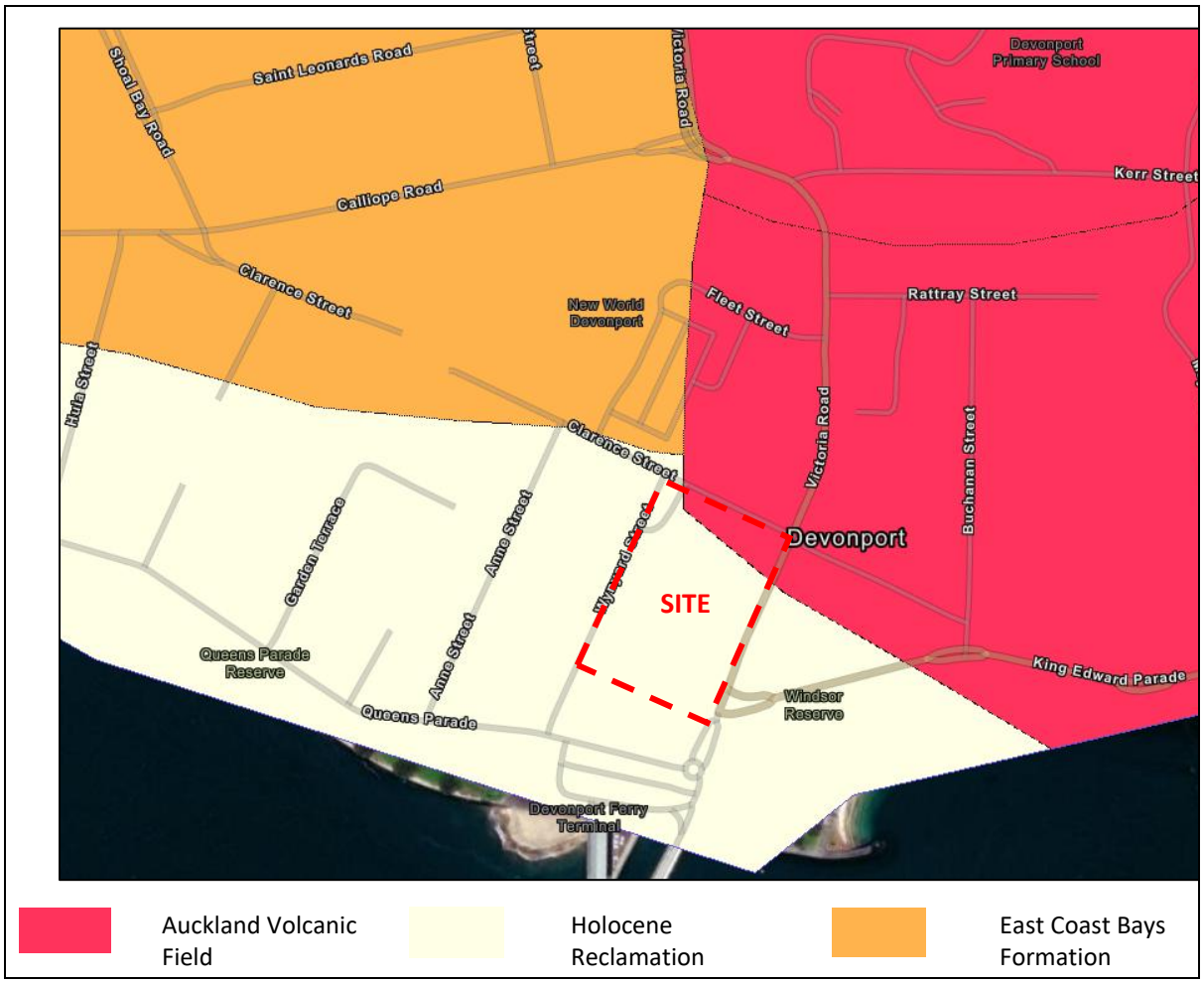

Figure 4.1: Published geological maps.

The archaeological report[6] for the site indicates that a naval maintenance workshop and store was erected on Windsor Reserve in the early 1840s, and then replaced by a large two storey building incorporating a barracks, blacksmith's shop and caretakers house. Victoria Road and Clarence Street were formed in the late 1840s or early 1850s, as the land blocks in this area were auctioned off in the 1850s. Timber buildings were erected at the lower end of Victoria Road in the 1860s, including the Flagstaff Hotel in 1864 at the location of the current Esplanade Hotel. It seems likely that that this development of "Block 22" during the 1860s and economic boom of the 1870s and 1880s was carried out upon the natural ground surface without much significant reclamation or filling; and it seems likely that the Calliope Point Naval base reclamation of the late 1880s did not extend to the Project site. On this basis, it seems likely that the geological map is only indicating the likely general

[5] Kermode, L (1992). *Geology of the Auckland Urban Area.* Geological and Nuclear Sciences, Geological Map 2.
[6] Clough & Associates Ltd (October 2023). *Historic Northfleet Precinct, Devonport, Auckland City: Archaeological Values.*

presence of “levelling fill” in the project area, rather than any significant depth or extent of bulk filling of the scale carried out for Calliope Point further to the west.

Beyond the inferred reclamation, the geological maps indicate the edge of the Auckland Volcanic Field (AVF) intersects the site from its north-western to south-eastern corner. This unit typically comprises moderately strong to strong basalt lava flow deposits overlain by a veneer of very stiff volcanic ash / tuff deposits.

The East Coast Bays Formation (ECBF) weathered soils and rock are mapped immediately north-west of the site. ECBF rock typically comprises very weak muddy sandstone and siltstone, typically exposed within the sea cliffs along Auckland’s North Shore and eastern suburbs. This unit typically weathers insitu to form stiff to hard silts and clays. This unit forms the ‘bedrock’ geological unit of the area and will underlie entire site beneath the fill, marine sediments and/or AVF.

4.2 Historical geotechnical investigations

We have reviewed T+T and public geotechnical and ground contamination records within the area. The location of the factual data used to develop our geological model is shown on Figure 4.2, and a summary of the investigation data is presented in Table 4.1.

Figure 4.2: T+T and NZGD site experience in the area (blue/green) surrounding subject site area (red).

Table 4.1: Summary ground conditions from available geotechnical investigations

Site Address	Investigations	Encountered Ground Conditions
11-13 Wynyard Street (T+T, 1996)	4 No. hand auger boreholes + scala penetrometer tests to 3 m depth	**Fill** in one borehole, extending to 0.6 m depth. **Topsoil** extending to 0.6 m depth in the other three boreholes. **Marine sediments** beneath the topsoil and fill, comprising: • Stiff clayey silt deposits typically to 1 to 1.5 m depth, overlying • Loose sand deposits to a depth of 3 m. No refusal was achieved in Scala. **Groundwater** recorded at 1.8 m depth.
Windsor Reserve Playground (Rileys, 2019)	3 No. hand auger boreholes + scala penetrometer tests to refusal	Variable deposits comprising: • **Fill** to a depth of 1 to 1.5 m comprising of very stiff silt with minor clay, gravel and organics. Brown, overlying • **Beach sands**, some organics & shell fragments. • Scala refusal was recorded in all locations between 1.7 m and 2.5 m depth. **Inferred to be the basalt rock surface**. Groundwater recorded at 1.5 to 1.6 m depth.
Windsor Reserve Toilets (T+T, 1989)	1 No. hand auger + 4 No. scala penetrometer tests	**Marine sediments** comprising: • Silty sand / sand beach deposits to a depth of 2.0 m. • Similar deposits were inferred to a maximum depth of 4.5 m in the scala tests.
Marine Square upgrades (T+T, 2010)	3 No. rotary cored machine boreholes	Variable deposits comprising: • **Fill** associated with the seawall construction to 3.7 m depth, overlying • **Volcanic Ash & gravels** to a depth of 5.0m. • **Basalt rock** – highly weathered rubbly basalt overlying competent intact rock. The depth of this unit was not proven beyond 11.5 m.
30 Victoria Road (Worley, 1989)	4 No. hand auger boreholes + scala penetrometer to refusal	Auckland Volcanic Field deposits comprising: • Ash / Tuff deposits, very stiff brown silt / clay, to a depth of between 0.6 to 1.0 m, overlying • Inferred basalt lava flow due to refusal of scala tests.

4.3 Groundwater

Groundwater levels in the historical investigations close to the project area recorded groundwater typically within the fill / marine sediments between 1.5 m and 2 m depth.

Given the proximity of the site to the sea, and likely connectivity to the groundwater, the impact of potential future increase in groundwater levels associated with sea level rise should be considered during the design process.

4.4 Likely ground conditions at the site

Based on our knowledge of adjacent sites and historical investigations within the area, the overall site stratigraphy for the primary development land parcels is summarised below.

It is important to note that basalt flows are typically highly variable in plan extent and depth, particularly near the edge of the flow. The depth, competency and continuity of this unit across the entire site footprint should be expected to vary significantly, and over short distances.

Table 4.2: Summary of subsurface conditions inferred from previous geotechnical investigations

Geological Unit	Typical description	Inferred depth to top of unit (below existing ground level)	Estimated thickness of layer on subject site (m)
Variable fill	Site-won beach sands, basalt and rubble is likely to be present across the majority of the site due to the extensive historical development in the area	0 m	3 to 5 m
Marine Sediments (beach sands)	SAND and silty SAND; brown to grey. Traces of shell fragments and organics. Loose.		
Auckland Volcanic Field [(1)]	Highly to slightly weathered BASALT; grey. Moderately strong. Upper zone may be encountered as highly fractured/rubbly.	3 to 5 m (may not be present across the entire site footprint)	1 to >10 m (may vary significantly across the site)
East Coast Bays Formation soils and rock	Interbedded sandstone and siltstone, weathering in-situ to dense sands and very stiff silts/clays.	5 to > 15 m	Unknown, probably > 50 m

5 Key geotechnical considerations

5.1 General

This geotechnical assessment is based on historical reports and ground investigations in the area of the proposed development. It should be appreciated that the ground model at the site has yet to be confirmed by site-specific investigations, and therefore the actual ground conditions and recommendations are likely to vary from that assumed. Development specific investigation are proposed to be completed and considered as part of a substantial application.

Based on the ground conditions inferred from the historical data, and our understanding of the proposed development, we consider that the key considerations for future development are:

- Foundation options
- Seismic design
- Retaining wall and excavation options
- Groundwater management

Based on the information reviewed to date, no geotechnical constraints have been identified that would preclude the proposed development in principle. The matters identified above are considered typical of urban development in coastal Auckland and can be addressed through detailed investigation and design.

5.2 Foundation considerations

Based on the preliminary drawings, we understand the above ground development will extend between four and eight storeys. Likewise, a one to two level basement is proposed under portions of buildings one, two, and three.

Published geological maps of the area indicate the site may potentially straddle the edge of a basalt flow which comes down from Takarunga/Mt Victoria. The maps suggest the flow intersects the site from north-west to south-east. The presence of basalt to the west of the site was not able to be confirmed based on available investigation data.

Where present, the basalt is likely to be encountered at a relatively shallow depth estimated between 3 m and 5 m. If the basalt flow terminates somewhere within the site, ECBF soils and rock are likely to underlie the surficial fill/marine sediments.

Where a reasonable thickness of competent basalt rock is encountered (in the order of approximately 3 m), shallow foundations are likely to be a viable foundation option. Based on the inferred ground model, developments with 1-2 basement levels are likely to be founded directly upon (or near) the basalt.

At ground level, the reclamation fill/marine sediments are unlikely to be suitable to support structures of greater than 1-2 levels. Shallow piled foundations (driven or bored) would be required to support larger developments. These may be relatively shallow where founding upon/within basalt, but may extend deeper to ECBF rock in areas where the basalt is thin, unreliable or not present.

Therefore, suitable foundation options across the site may vary based on site specific geotechnical investigations. Targeted geotechnical investigations should be undertaken to examine ground conditions and confirm these options. These investigations will confirm the depth and extent of basalt and ECBF materials and enable refinement of the foundation strategy during detailed design.

5.3 Seismic considerations

5.3.1 Recent updates to seismic hazard understanding

There have been significant developments in the understanding of seismic hazard in New Zealand in recent years, including:

1 The release of the updated New Zealand National Seismic Hazard Model in October 2022.

2 The publication of SNZ TS 1170.5:2025[7] in November 2025.

These updates reflect advances in scientific knowledge of earthquake sources and ground motion characteristics, which have implications for both structural and geotechnical design.

5.3.2 2022 National seismic hazard model

In October 2022, GNS Science released the updated National Seismic Hazard Model (NSHM), which represents the latest scientific understanding of earthquake hazard in New Zealand. The NSHM supports future seismic design standards and informs the assessment of earthquake risk in the built environment.

While the NSHM will inform future design standards and guidance documents, it does not provide information that can be directly applied in design. Consequently, the current minimum compliance pathway under the New Zealand Building Code (NZBC) remains unchanged.

5.3.3 SNZ TS 1170.5:2025

SNZ TS 1170.5:2025 has been developed to incorporate the updated NSHM and current understanding of earthquake risk into design practice.

While NZS 1170.5:2004[8] remains the primary referenced standard for NZBC compliance, SNZ TS 1170.5:2025 may be adopted as an alternative solution to demonstrate compliance using the latest seismic hazard parameters and engineering principles.

For this project, seismic hazard values have been adopted in accordance with MBIE Module 1[9], which is consistent with the seismic hazard values and intent of SNZ TS 1170.5:2025.

5.3.4 Seismic site subsoil class

Seismic accelerations to be resisted by a structure are influenced by the stiffness of the underlying soil and rock profile. Softer soil deposits can amplify ground shaking, resulting in higher seismic demands on structures founded on these materials.

Based on the results of the site-specific geotechnical investigations and our experience in the area, we consider this Site should be classified as “Site Subsoil Class C – Shallow Soil” in accordance with NZS 1170.5:2004.

5.3.5 Liquefaction

The reclamation fill and underlying marine sediments at the Site are inferred to comprise loose sand to silty sand mixture, noting that these materials are expected to be present only in the top few metres. Based on their anticipated density, composition and shallow groundwater conditions

[7] Standards New Zealand (November 2025). *SNZ TS 1170.5:2025. Structural design actions. Part 5: Earthquake actions – New Zealand*
[8] Standards New Zealand (2004). *NZS 1170.5:2004. Structural design actions. Part 5: Earthquake actions – New Zealand*
[9] Ministry of Business, Innovation & Employment (November 2021). *Earthquake geotechnical engineering practice – Module 1. Overview of the guidelines*

(approximately 2 m below ground level), these materials are considered to potentially be susceptible to liquefaction during strong seismic shaking.

The underlying basalt rock and East Coast Bays Formation (ECBF) soils and rock are considered unlikely to be liquefiable.

The proposed development includes 1–2 levels of basement. Construction of the basement would remove a substantial proportion, and potentially all liquefiable material beneath the building footprint, thereby reducing the risk of liquefaction-induced bearing failure beneath the structure. However, liquefaction effects will still require consideration in:

- Basement wall design (including seismic earth pressures);
- Pile design, including reduced lateral capacity; and
- Assessment of differential settlement where shallow foundations are adopted outside the basement footprint.

A detailed liquefaction assessment will be undertaken following geotechnical investigation and preliminary design stages, and considered as part of a substantial application.

Where liquefaction hazard is confirmed, mitigation is expected to be achieved through conventional approaches such as:

- Removal of liquefiable soils within the basement footprint
- Founding piles in non-liquefiable basalt or ECBF materials
- Designing structural elements to accommodate predicted liquefaction induced settlements and loadings
- Localised ground improvement where required

Liquefaction is therefore considered a design matter rather than a constraint to development.

5.4 Retaining wall and excavation considerations

5.4.1 General

The development plans includes a one to two level basement extending approximately 6 m below existing ground levels under portions of building one, two, and three. Bulk earthworks will be required for basement construction. Minor earthworks outside of the basement footprints are expected to be required to facilitate site preparation before construction and service connections.

The key geotechnical considerations for basement and excavation retention are:

- Control of ground movements and potential effects on adjacent buildings and buried services; and
- Groundwater cut-off and management where excavation extends below the groundwater table and management of potential dewatering effects.

The geotechnical matters identified are typical of coastal urban development sites in Auckland. Based on the information reviewed to date, no geotechnical constraints have been identified that would preclude the proposed development in principle. Any adverse geotechnical effects can be mitigated using standard construction methodologies and consent conditions which have been used at similar sites across Central Auckland.

5.4.2 Retention in soils

Within the reclamation fill and underlying marine sediments, conventional retention systems are anticipated to be suitable. These may include:

- Secant pile walls;
- Contiguous bored pile walls (particularly where excavation is near or above the groundwater table); and
- Driven sheet piles.

Where excavation extends below the groundwater table, perimeter cut-off walls extending into the underlying materials will be required to limit groundwater inflow and manage potential dewatering effects.

Driven sheet piles may generate elevated vibration and noise levels and may not be appropriate in all locations, particularly where sensitive structures are present. In such cases, bored pile wall systems may be adopted to reduce vibration effects.

5.4.3 Retention in basalt

Where excavation extends into basalt, installation of conventional sheet pile or secant pile cut-off walls becomes less practical due to the high strength of the rock. In these areas, open-cut excavation within competent basalt is considered feasible, with localised stabilisation (e.g. mesh, shotcrete and/or rock bolts) where the basalt is fractured.

Toe embedment of sheet piles into basalt is likely to be limited. Where sheet piles are adopted adjacent to basalt, multi-level temporary propping or ground anchors would likely be required to control wall deflections, particularly where excavation occurs close to neighbouring structures.

Bored pile walls can be socketed into basalt using core barrel drilling techniques; however, achieving effective groundwater cut-off through fractured basalt may require supplementary measures. These are discussed further in Section 5.4.4.

Excavation within basalt is likely to require mechanical rock breaking where the rock is moderately weathered to intact. Rock breaking using hydraulic or pneumatic breakers has the potential to generate elevated noise and vibration levels. Similarly, installation of bored pile walls socketed into basalt may generate vibration during drilling operations, although typically at lower levels than driven systems.

Where excavation or piling is undertaken in proximity to neighbouring structures or vibration sensitive services, noise and vibration effects will require consideration during detailed design and construction planning. Lower vibration construction methods may be adopted where appropriate, and monitoring may be implemented to confirm that vibration levels remain within acceptable limits.

5.4.4 Groundwater considerations

Desktop assessment indicates that groundwater is likely to be encountered at shallow depth across the Site, with historical investigation data recording groundwater at approximately 2 m below ground level.

Due to this shallow groundwater basement excavation is likely to extend below the groundwater table. The surficial marine sediments (loose sands and silty sands) and underlying fractured basalt are anticipated to be moderately to highly permeable. Accordingly groundwater effects will require careful management. If excavation extends below the groundwater table or temporary dewatering is

required, a resource Consent for groundwater take and diversion is likely to be required. A detailed assessment of groundwater effects would be undertaken as part of any such application.

During construction, groundwater controls can be enacted to manage dewatering effects such as:

- Perimeter cut-off walls through means of a secant pile wall or grout curtains
- Pressure grouting within fractured basalt
- Groundwater recharge measures to limit off-site drawdown.

Conventional cut-off walls alone may not provide full groundwater cut-off alone where highly fractured basalt is present, and supplementary measures may be required to limit drawdown within the overlying marine sediments such as localised recharge. These include both pressure grouting of fractured rock, and the potential for localised groundwater recharge.

For the permanent condition, the basement is expected to be designed as a sealed or “tanked” structure to manage groundwater inflows and avoid the need for long term permanent dewatering.

With appropriate investigation, design and monitoring, we consider that groundwater dewatering effects can be managed such that adverse effects on neighbouring properties and infrastructure are no more than minor, consistent with the Auckland Unitary Plan and the Resource Management Act 1991.

A detailed dewatering and geotechnical effects assessment will be undertaken following geotechnical investigation and preliminary design stages, and considered as part of a substantial application.

5.4.5 Adjacent structures and monitoring

Where excavation occurs adjacent to neighbouring buildings or services, detailed assessment of predicted wall deflections and associated ground settlements will be required to support the resource consent application. Temporary propping, ground anchors and staged excavation methodologies may be required to control ground movements.

For appropriately supported basement excavations in similar ground conditions, resulting settlements in the surrounding ground can typically be limited to the order of 10 mm or less. Movements of this magnitude are generally considered to correspond to a low risk of structural damage, subject to confirmation by a structural engineer based on the specific building type and condition.

Monitoring of ground movement and groundwater levels would typically be implemented during construction where excavation occurs near existing structures. Trigger levels would be established to ensure that movements remain within acceptable limits and that contingency measures can be implemented if required.

6 Applicability

This report has been prepared for the exclusive use of our client Devonport Property Management Ltd, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application for Fast Track referral, and that an Expert Panel as the consenting authority will use this report for the purpose of assessing that application. We understand and agree that this report will be used by the Expert Panel in undertaking its regulatory functions.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:	Review and Authorised for Tonkin & Taylor Ltd by:
	
.....	.....
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Senior Geotechnical Engineer	Project Director

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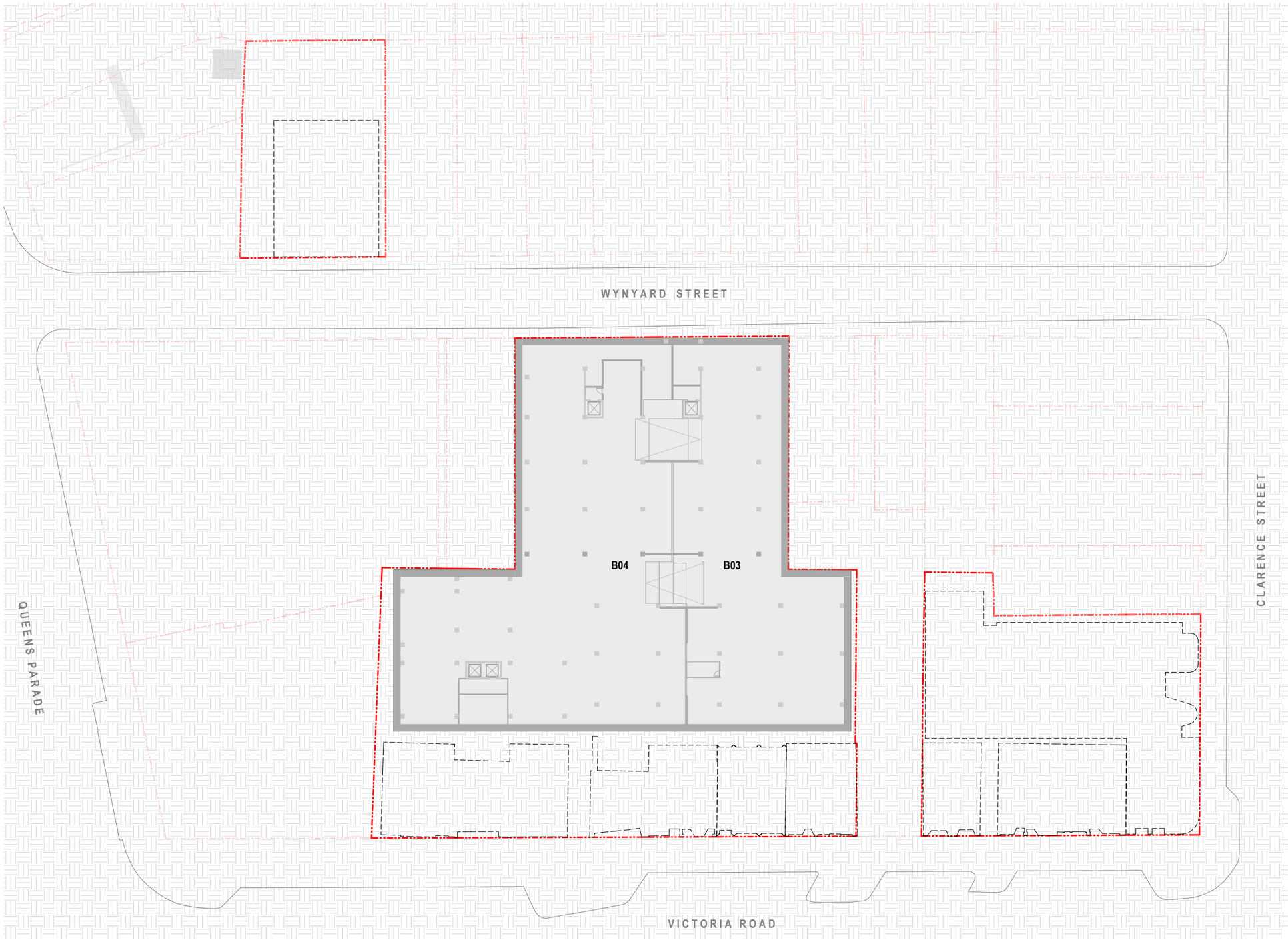
Appendix A Architectural excerpts



1 | OVERALL BASEMENT B03 & B04
Scale @ A1 1 : 300

BUILDING KEY

PB&A. ARCHITECTS
Paul Brown & Associates Limited

Client
DEVONPORT PROPERTY MANAGEMENT LTD

Scale
As indicated @A1

VICTORIA RD
DEVONPORT, AUCKLAND

N

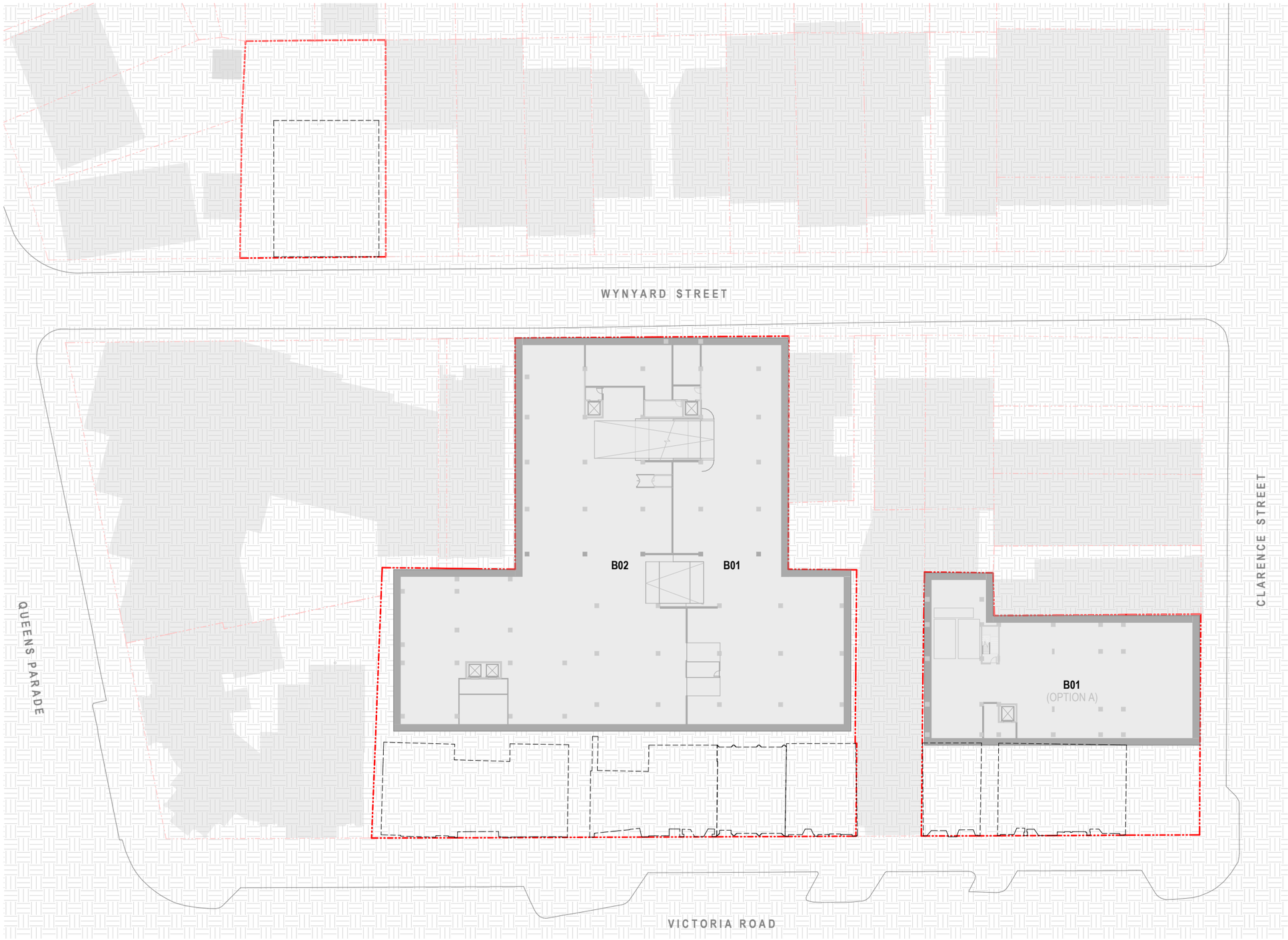
PROJECT RIOJA

FAST TRACK REFERRAL

OVERALL BASMENT FLOOR PLAN B03 & B04

1089-A-FTR-210

Rev



1 | OVERALL B01 & B02 BASEMENT PLAN
Scale @ A1 1 : 300

BUILDING KEY

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FAST TRACK REFERRAL

OVERALL BASMENT FLOOR PLAN B01 & B02

1089-A-FTR-211

Rev

1 | OVERALL L00
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt
5/05/2026 3:54:50 pm

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L00

1089-A-FTR-212

Rev

1 | OVERALL L01
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt
5/05/2026 3:54:53 pm

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L01

1089-A-FTR-213

Rev

1 | OVERALL L02
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt
5/05/2026 3:54:57 pm

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L02

1089-A-FTR-214

Rev

1 | OVERALL L03
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt

5/05/2026 3:55:00 pm

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L03

1089-A-FTR-215

Rev

1 | OVERALL L04
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt

5/05/2026 3:55:02 pm

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L04

1089-A-FTR-216

Rev

1 | OVERALL L05
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt

5/05/2026 3:55:04 pm

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L05

1089-A-FTR-217

Rev

1 | OVERALL L06
Scale @ A1 1 : 300

BUILDING KEY

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FAST TRACK REFERRAL

OVERALL FLOOR PLAN L06

1089-A-FTR-218

Rev

1 | OVERALL L07
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt

5/05/2026 3:55:07 pm

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VICTORIA RD
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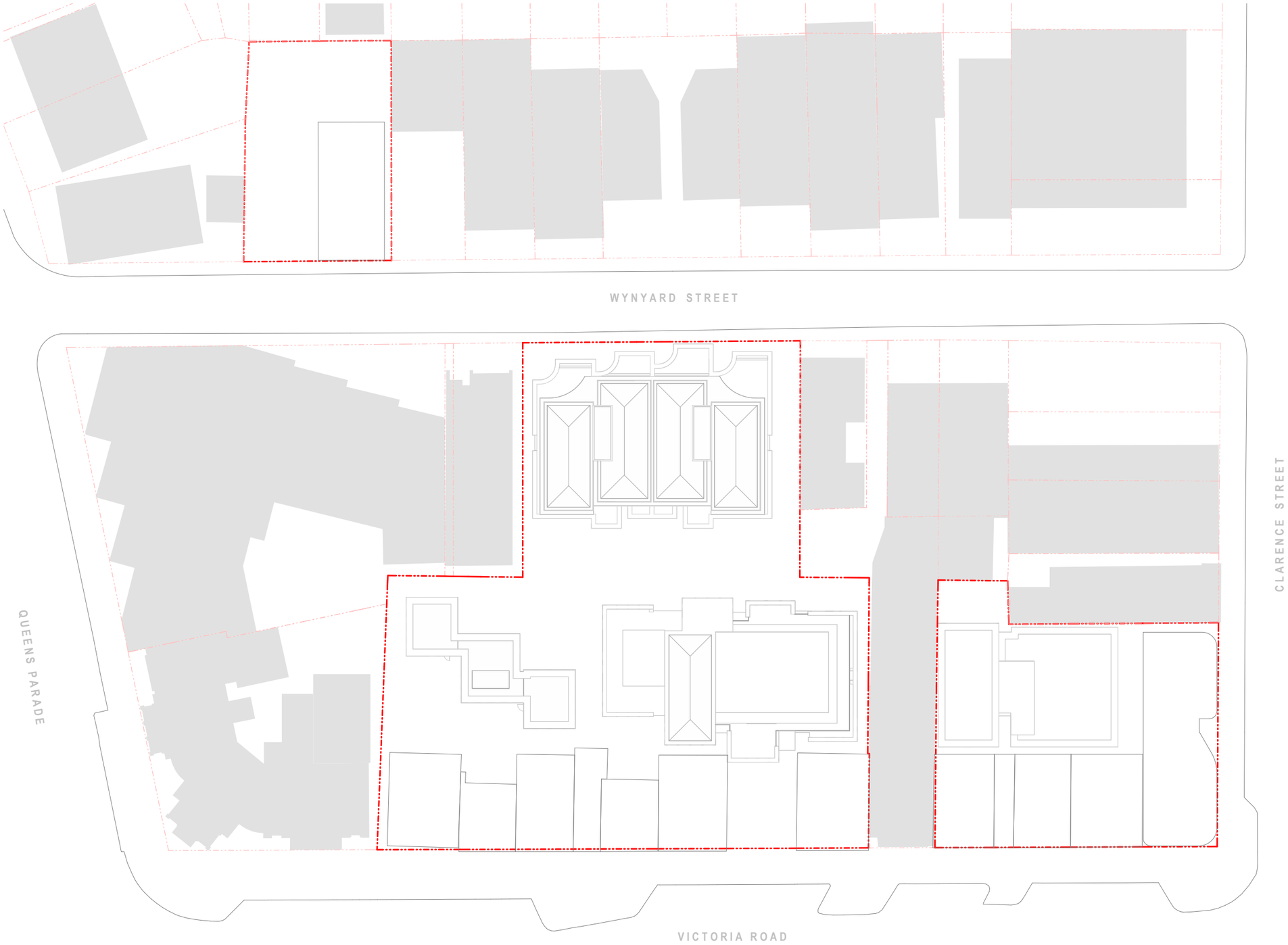
FAST TRACK REFERRAL

OVERALL FLOOR PLAN L07

1089-A-FTR-219

Rev



1 | OVERALL R08
Scale @ A1 1 : 300

BUILDING KEY

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt

5/05/2026 3:55:09 pm

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FAST TRACK REFERRAL

OVERALL ROOF PLAN

1089-A-FTR-220

Rev

1 | VICTORIA ROAD STREET ELEVATION (EAST)
Scale @ A1 1 : 200

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Scale
1 : 200 @A1

VICTORIA RD
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FAST TRACK REFERRAL

OVERALL EAST ELEVATION

1089-A-FTR-300

Rev

1 | WEST STREET ELEVATION
Scale @ A1 1 : 200

Autodesk Docs://1089_Project Rioja/1089_PBA_Project Rioja_Site Model.rvt

5/05/2026 3:56:10 pm

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Scale
1 : 200 @A1

VICTORIA RD
DEVONPORT, AUCKLAND

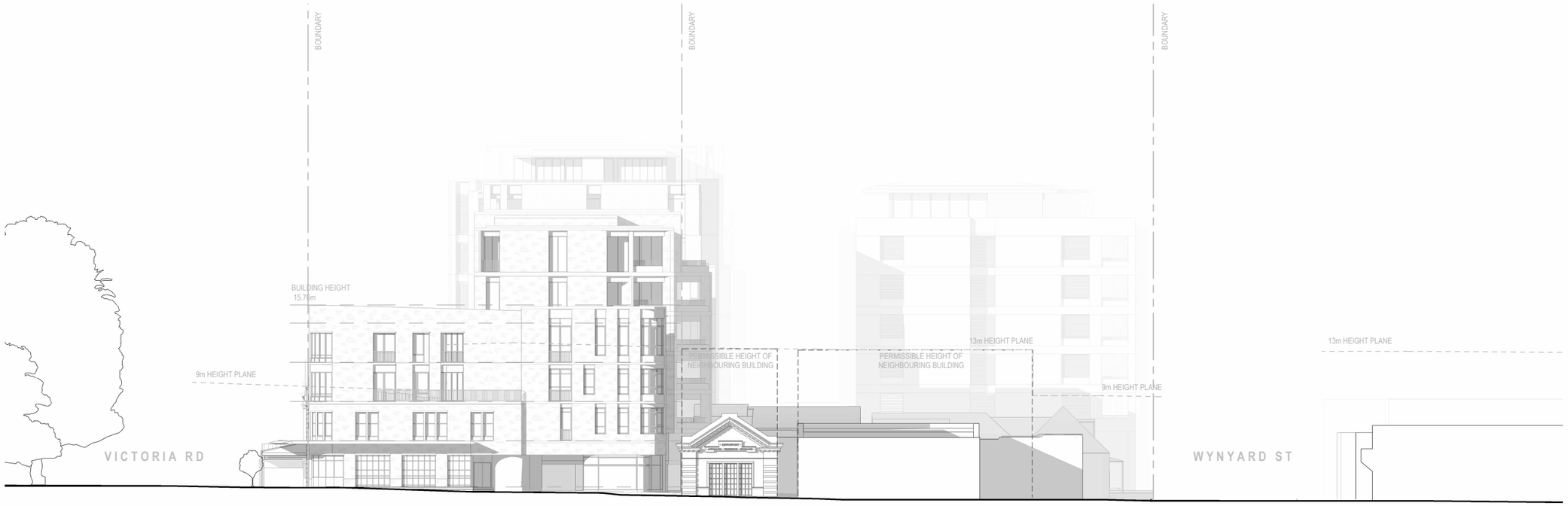
PROJECT RIOJA

FAST TRACK REFERRAL

OVERALL WEST ELEVATION

1089-A-FTR-301

Rev



1 | CLARENCE STREET ELEVATION (NORTH)
Scale @ A1 1 : 200

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DEVONPORT PROPERTY MANAGEMENT LTD

Scale
1 : 200 @A1

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PROJECT RIOJA

FAST TRACK REFERRAL

OVERALL NORTH ELEVATION

1089-A-FTR-302

Rev

1 | SOUTH STREET ELEVATION
Scale @ A1 1 : 200

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Scale
1 : 200 @A1

VICTORIA RD
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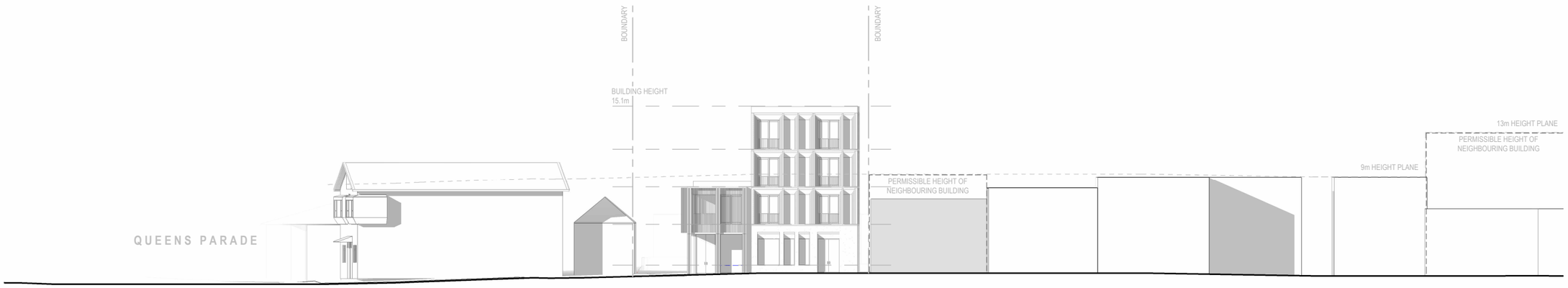
FAST TRACK REFERRAL

OVERALL SOUTH ELEVATION

1089-A-FTR-303

Rev



1 | WYNYARD STREET ELEVATION
Scale @ A1 1 : 200

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Scale
1 : 200 @A1

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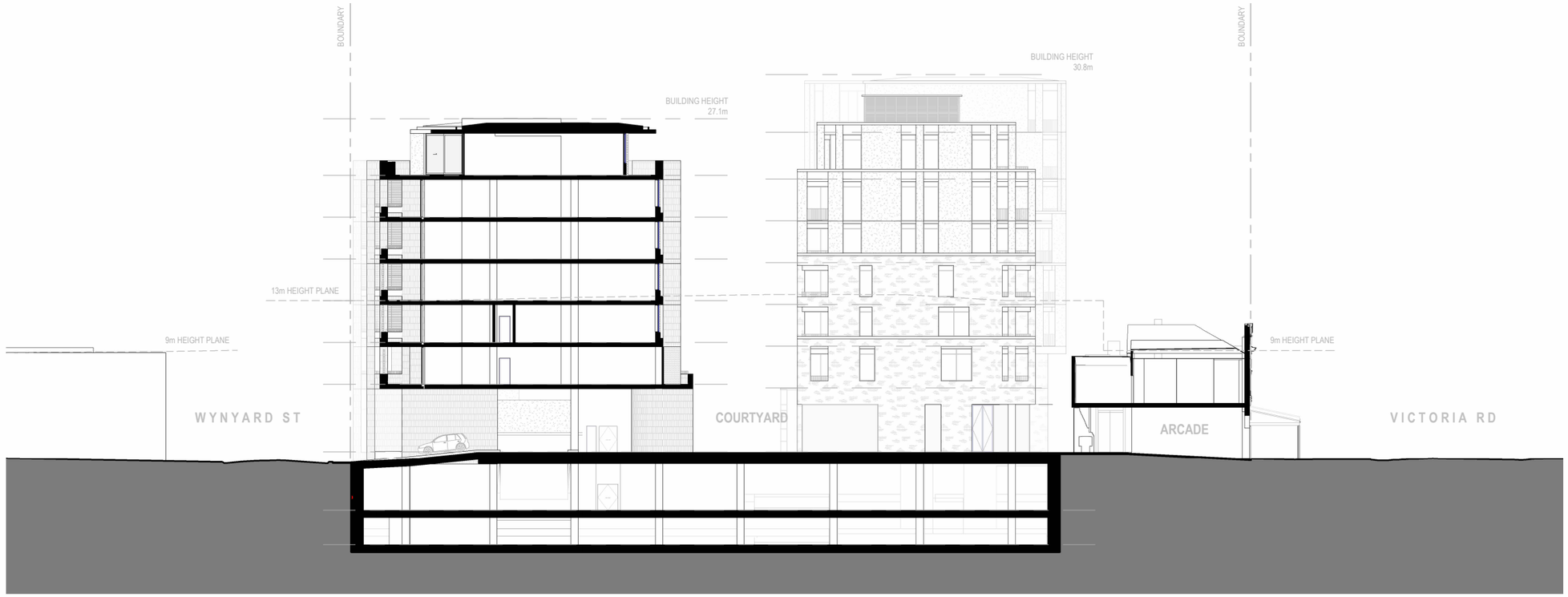
PROJECT RIOJA

FAST TRACK REFERRAL

OVERALL WYNYARD ST ELEVATION

1089-A-FTR-304

Rev



1 | SECTION A - ARCADE
Scale @ A1 1 : 200

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Scale
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PROJECT RIOJA

FAST TRACK REFERRAL

SITE SECTIONS

1089-A-FTR-320

Rev

Appendix B Historical aerial photographs

Photograph Appendix B.1: 1940 aerial photograph (Source: Retrolens)

Photograph Appendix B.2: 1959 aerial photograph (Source: Retrolens)

Photograph Appendix B.3: 1963 aerial photograph (Source: Retrolens)

Photograph Appendix B.4: 1977 aerial photograph (Source: Retrolens)

Photograph Appendix B.5: 1989 aerial photograph (Source: Retrolens)

Photograph Appendix B.6: 2001 aerial photograph (Source: Auckland Council Geomaps)

Photograph Appendix B.7: 2012 aerial photograph (Source: Auckland Council Geomaps)

Photograph Appendix B.8: 2017 aerial photograph (Source: Auckland Council Geomaps)

Photograph Appendix B.9: 2024 aerial photograph (Source: Google Earth Pro)

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