ABOVE WATER

Infrastructure Capacity Assessment

(3 Waters)

32 – 42 Victoria Street, Cambridge

6th May 2025

ADDRESS: 32 – 42 Victoria Street, Cambridge
JOB NUMBER: 25-102
PROJECT TYPE: Commercial & Residential Development
REPORT PREPARED FOR: Grovic
PRINCIPAL ENGINEER: Josy Cooper

Rev	Date	Details	Prepared by	Reviewed by
0	06/05/25	Issued to client.	Josy Cooper BE, CMEngNZ, CPEng (259163)	Charlie Cooper BSc, PGDipSci
A				

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1.0 General

1.1 Project Scope

This report presents an assessment of the three waters infrastructure requirements for the proposed commercial and residential redevelopment at 32–42 Victoria Street, Cambridge. The assessment has been prepared in accordance with the Waipā District Council Implementation Practice Note – Infrastructure Capacity Assessments (September 2024).

The proposal involves the redevelopment of existing commercial premises on Victoria Street and includes the construction of a new four-storey mixed-use building (~18.0m high) with a basement carpark. The development will comprise ground floor retail and café spaces, first-floor office tenancies, a combination of office or residential apartments on the second floor, and residential apartments on the third floor. The basement level will provide onsite car parking to support the upper levels.

1.2 Site Description

The subject site occupies approximately 2,145 m² and is located within the commercial precinct of central Cambridge. It is bounded by existing commercial developments to the north and south, Victoria Street (State Highway 1B) to the west, and a rear service lane to the east.

Currently, the site contains several commercial buildings fronting Victoria Street, with grassed and metalled open areas toward the rear adjoining the service lane. These rear areas are generally utilised for access and informal parking or loading activities associated with the existing tenancies.

Topographically, the site is predominantly flat and lies outside any flood-prone areas, as confirmed by the Waipā District Council's flood hazard mapping (refer to Figure 1).

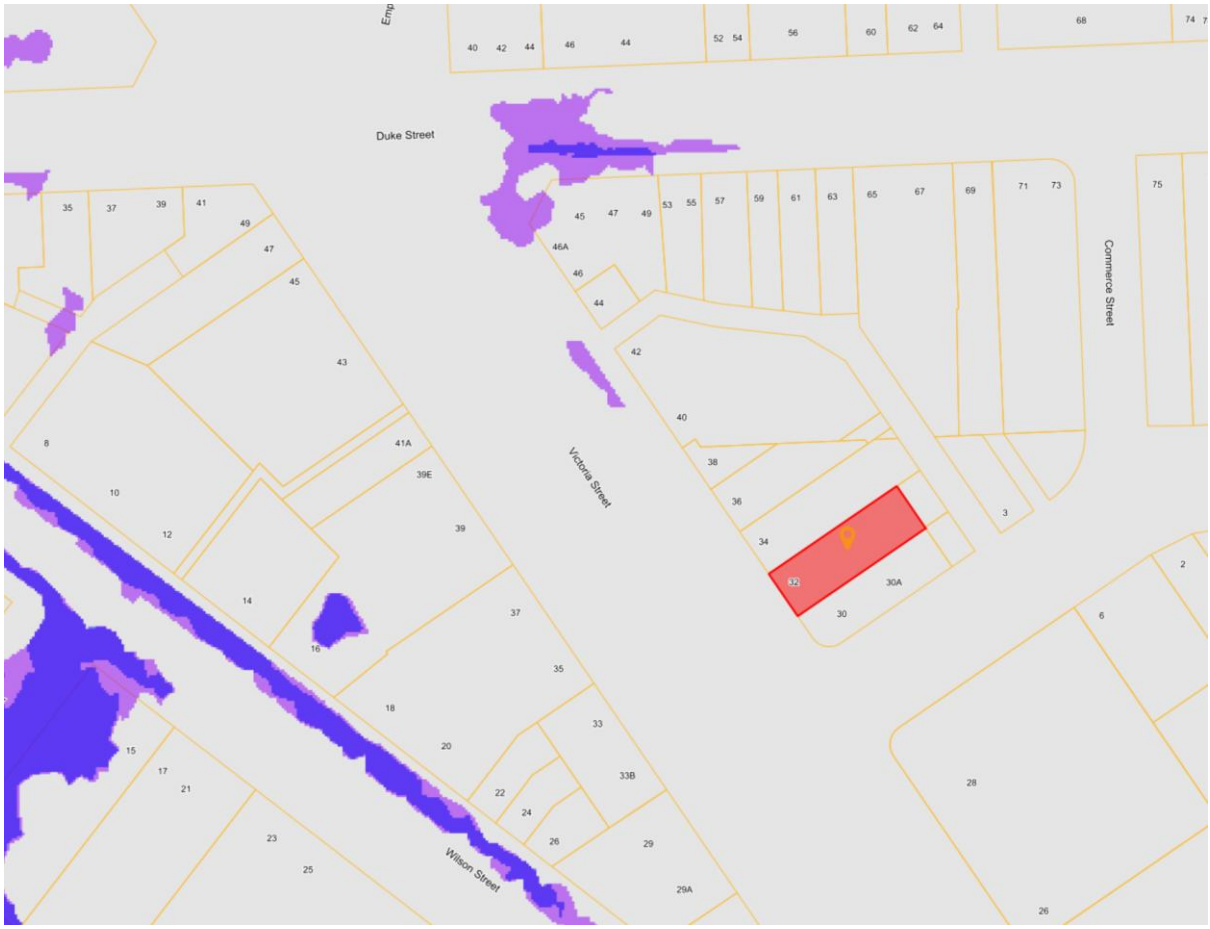


Figure 1: Waipa DC Flood Viewer- Flood Hazards

1.3 Design Codes and Guidelines

This assessment complies with the New Zealand Building Code and the following current standards:

- RITS.
- NZS4404.
- Waipa District Council – ICA Practice Note.

2.0 Infrastructure Capacity Assessment

Item	Information Required by the ICA Practice Note	Above Water Assessment, Commentary
		Water Supply
1	Confirm if all proposed dwellings / lots can be serviced by the fire hydrant.	As per RITS, section 6.2.8.1, there is a hydrant located on the 100mm AC watermain located in the service lane and within 135m of the furthest corner of the development measured along the vehicle path. Please refer to the Fire Engineer's report for further details of the required fire protection for the proposed commercial and residential development. 
2	If connected to a rider main – Does the existing / proposed number of connections comply with RITS Table 6 – 4?	Waipā District Council's GIS indicates that the majority of existing commercial properties within this block are currently serviced by a 50mm PE rider main located within Victoria Street. This main supports approximately 8 existing connections. It is recommended that the proposed development be connected to the 100mm AC main which is available within the rear service lane. It is also noted that Council guarantees a minimum water pressure of 200kPa at the boundary for multistorey developments exceeding 9m in height. As the proposed building is approximately 18.0m tall, with residential apartments located on the 4th floor, on-site pressure mitigation will be necessary. This will likely involve installation of a private booster pump and/or header tank system, to be confirmed during detailed design.
3	Calculate and provide peak daily, peak hourly, and	The proposed mixed-use development at 32–42 Victoria Street, Cambridge comprises a four-storey building with the following configuration:

average demands per RITS 6.2.3	• Ground Floor: Up to 6 retail tenancies and a café • First Floor: Up to 4 office tenancies • Second & Third Floors: 11 residential apartments (2 x 1-bedroom, 7 x 2-bedroom, 2 x 3-bedroom) Water demand estimates for each component of the development have been derived using established benchmarks appropriate to their respective land uses, as outlined below: *Residential Apartments* Water use for the apartments was calculated based on an assumed occupancy of 2.7 persons per dwelling and a demand allowance of 260 L/person/day. This yields: • Average Daily Demand: 7.72 m³/day • Peak Daily Demand: 0.22 L/s • Peak Hourly Demand: 792 L/h *Office Tenancies* Office water demand was based on the Water NZ benchmark of 1.17 m³/m²/year (*Water Performance Benchmarks for NZ*), applied to the total office floor area: • Average Daily Demand: 6.60 m³/day • Peak Daily Demand: 0.19 L/s • Peak Hourly Demand: 689 L/h *Retail Tenancies* Retail tenancy demands were estimated using an intensity of 1.4 m³/m²/year, in accordance with the *Sydney Water Best-Practice Guidelines for Shopping Centres* (2007): • Average Daily Demand: 4.22 m³/day • Peak Daily Demand: 0.12 L/s • Peak Hourly Demand: 439 L/h *Café Tenancy* The café demand was estimated using a conservative intensity of 2.5 m³/m²/year for a 120 m² tenancy, suitable for a small food and beverage operation with a commercial kitchen: • Average Daily Demand: 0.82 m³/day • Peak Daily Demand: 0.024 L/s • Peak Hourly Demand: 86 L/h
	Total Estimated Water Demand – Entire Development Demand Type: Value: Average Daily 19.36 m³/day Peak Daily 0.554 L/s Peak Hourly 2,006 L/h These figures form the basis for assessing infrastructure capacity in accordance with Waipā District Council's ICA guidelines. All peak demand values include application of a 2.5 x peaking factor and assume even diurnal distribution unless further information becomes available at detailed design stage.

7	Calculate and provide head loss calculation for each water main the development is connecting to.	Refer to attached Hazen Williams calculations for the water main the development is connecting to: • 100mm AC in the service lane – 0.121m/km, 117.6kPa residual pressure. Under *NZS 4404:2010 Clause 6.3.5.10*, the minimum design pressure for water supply systems is 250 kPa, intended to ensure at least 200 kPa at the top of a typical two-storey dwelling. For the proposed development at 32–42 Victoria Street, Cambridge, the estimated residual pressure at the top of the 18m high building is only 117.6kPa, which does not meet this requirement. A private pump and/or header tank will be incorporated at the detailed design stage to ensure adequate pressure is maintained throughout the building.
	Wastewater	
6	Detailed Plans / drawings showing: - Location and boundaries of the development site - Proposed connection to Council wastewater network - Location of closest trunk main (300mm or larger), or WW pump station - The determined local catchment - The determined extent of the Infrastructure Capacity Assessment	The site will connect to the existing 150mm EW pipeline shown in the following Figure. Detailed drawings to be provided at detailed design stage. The closest trunk main or WW pump station is the Albert Street PS. 
7	Calculate and provide average daily flow, peak daily flow, and peak wet weather flow for the proposed development.	Refer to attached calculations, development flows estimated as: • ADF – 0.25 L/s • PDF – 0.77 L/s • PWWF – 0.81 L/s
8	Calculate and provided flows for determined local catchment.	Refer to attached calculations, estimated flows for the determined local catchment (upstream of the Albert Street WWSP and including the proposed development): • ADF – 22.0 L/s

		• PDF – 50.2 L/s • PWWF – 83.4 L/s
9	Calculate and provide maximum flow capacity calculations for each pipe within the Infrastructure Capacity Assessment extent.	Refer to attached calculations (Colebrook-White): • Site connection 150mm PVC at 1% – 17.75 L/s • 280mm PE main into Albert Street WWPS inlet at GIS gradient – 117.85 L/s
10	Calculate and provide residual pipe capacity calculations for each pipe within Infrastructure Capacity Assessment extent.	Refer to the attached calculations, residual pipe capacity is estimated as: • Site connection – 16.94 L/s (as per attached assumptions) • Existing main at Albert Street WWPS – 34.49 L/s (as per attached assumptions)
11	Additional Information - Flow calculations – 4+ dwellings.	The catchment calculations have incorporated an allowance of 45 people per hectare for 'residential' areas, as specified in the RITS. This is considered a suitably conservative estimate, as the catchment area also includes roads, and other land uses that do not contribute residential wastewater flows to the pipes.
		Stormwater
12	Identify and provide percentage and area in square metres of impermeable surfaces.	Refer to the designer's plans, which show an existing building coverage of 1,514m² and a proposed building coverage of 1,748m². The area outside the existing building footprint is primarily hardstand, meaning the site is already largely impermeable. The proposed development will increase the roof area by 234m², resulting in a minor overall increase in impermeable surface across the site.
13	Identify and protect overland flow paths.	The Waipā District Council Floodviewer does not identify any overland flow paths traversing the site. Given that the site is already occupied by existing buildings, the proposed redevelopment is not expected to alter or obstruct any overland flow paths.
14	Assess and provide details of soakage tests undertaken.	Not applicable – stormwater disposal via soakage is not considered feasible for this site due to the extent of building coverage and proximity to site boundaries.
15	Provide details of all proposed stormwater devices that are to service the development.	The site currently conveys stormwater via downpipes that discharge to surface grates, kerbs, or unknown connections not identified on Council GIS. These flows enter the existing 225mm (see Figure 2) and 375mm (see Figure 3) concrete stormwater mains located immediately north and south of the site, respectively. An example of a downpipe discharge is shown in Figure 4. These mains direct stormwater southward toward the Waikato River, where they ultimately discharge via a

1200mm diameter outfall (refer to Figure 5). On the assumption that these downstream assets are not currently operating over capacity, the proposed development will incorporate stormwater detention tanks to offset the increase in impervious surface area and to provide a climate change allowance.

Due to spatial constraints and the extent of site coverage, it is anticipated that above-ground detention tanks will be required. These will be integrated into the site layout with consideration for visual and functional outcomes. An example is shown in Figure 6 from the new NZ Blood Service building in Hamilton, where tanks are incorporated within the service areas in an aesthetically sensitive manner.

It is recommended that a sump pump be installed in the basement carpark to manage any surface water ingress. The pump system will be designed and sized during the detailed design stage.

The on-lot stormwater management measures will be designed to accommodate a minimum 10% AEP event, in accordance with RITS Table 4-3.

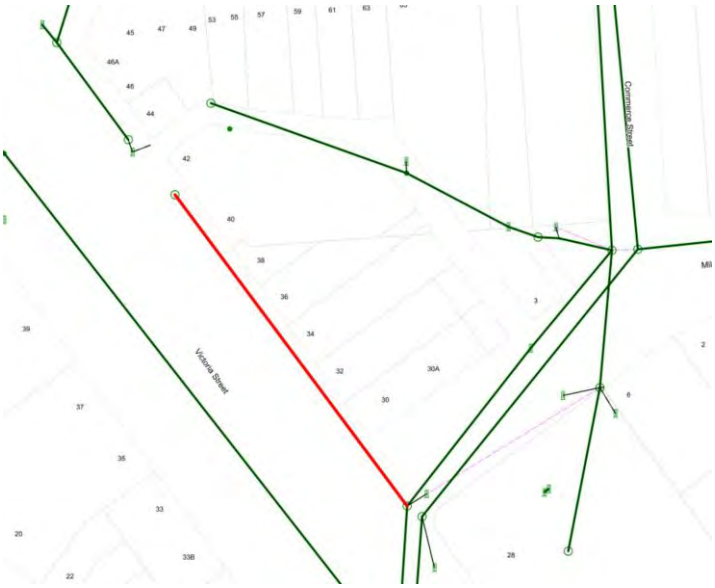


Figure 2: 225mm concrete main (Waipa DC GIS)



Figure 3: 375mm concrete main: (Waipa DC GIS)



Figure 4: Example of downpipes discharging to surface grates on the footpath



Figure 5: Downstream discharge to Waikato River (1200mm dia main)



Figure 6: Example of detention tanks (New NZ Blood Service Building, Hamilton)

3.0 Conclusion

This Infrastructure Capacity Assessment demonstrates that the proposed redevelopment at 32–42 Victoria Street can be serviced by existing water, wastewater, and stormwater infrastructure, subject to the inclusion of site-specific mitigation measures such as detention tanks and private pressure-boosting systems. All proposed services will be designed in accordance with Waipā District Council requirements, the RITS and industry best practice. The development is not anticipated to create adverse effects on downstream infrastructure or require off-site upgrades.

4.0 Appendices

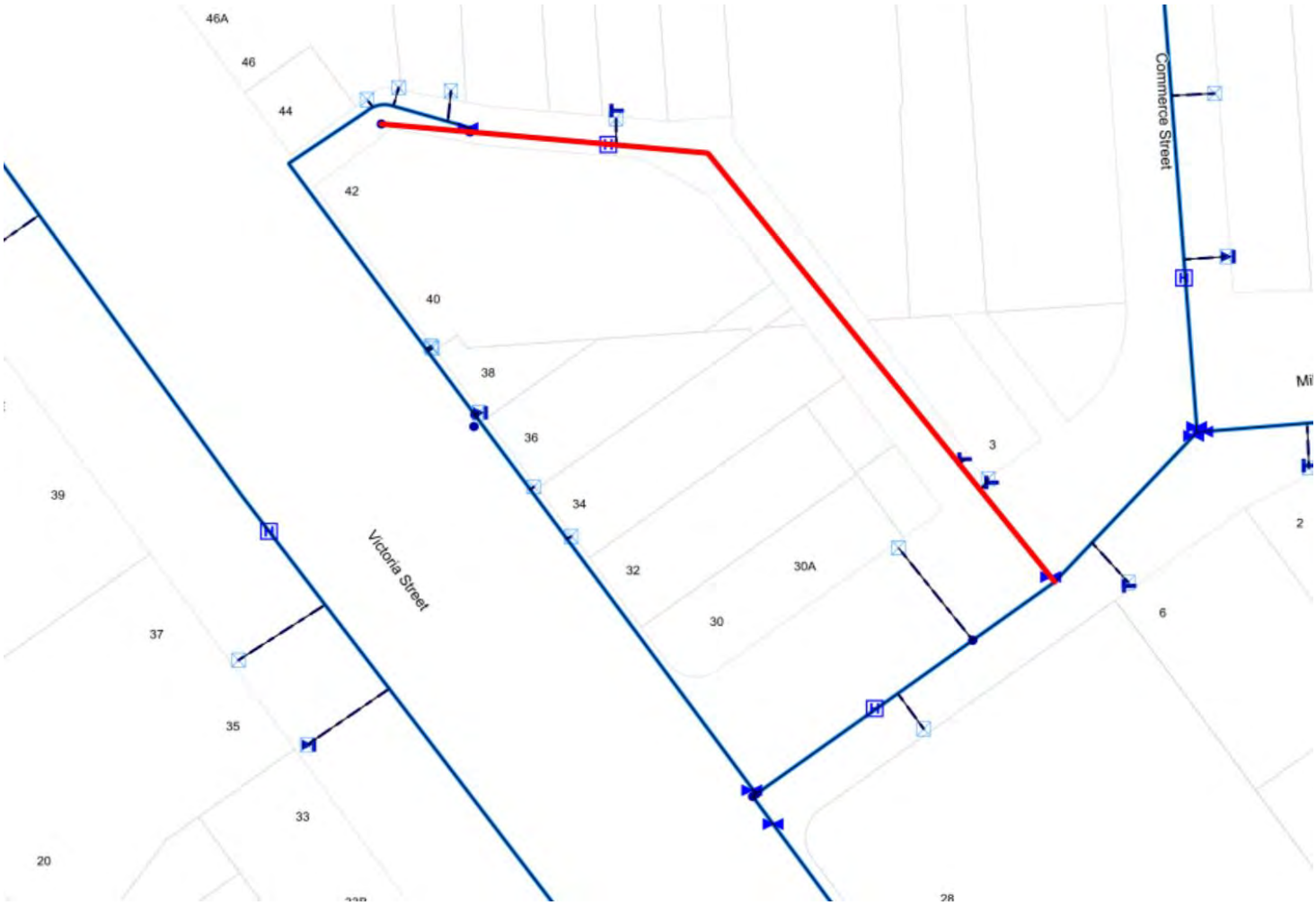
4.1 Water Calculations

4.2 Wastewater Calculations

4.3 Resource Consent Plans

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Pipe Head Losses Calculations

PAGE:	*1 of 4*	
DATE :	*5-May-25*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*3342254*	*Waipa GIS Asset ID*
Pipe Diameter, Material:	*0.1*	*100mm AC*
Pipe Length:	*101*	
No. Existing Connections:	*3*	
Demand per Day (L/d)	*20783.01*	Average L/d
Peak Flow (m^3/s)	*0.00060*	*2.5 Peaking Factor*
Hazen-Williams Coefficient	*120*	*AC main, installed 1985*
Head Loss	*0.012* *12.288*	*m* *mm*
Head Loss (m/km)	*0.121*	*m/km*
NZS4404 Head Loss 6.3.5.4	*5*	*m/km*
Pipe head loss compliance	*Complies*	


46A
46
44
42
40
38
36
34
32
30
30A
3
39
37
35
33
20
Victoria Street
Commerce Street
6
2

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Pressure Assessment

PAGE:	*2 of 4*	
DATE :	*5-May-25*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*3342254*	*Waipa GIS Asset ID*
Pipe Diameter, Material:	*0.1*	*100mm AC*
Base Pressure:	*30*	m
Head Loss:	*0.012*	m
Elevation Change (m):	*18*	*Height of building*
Residual Pressure (m)	*11.99*	
Residual Pressure (kPa)	*117.6*	
Required Pressure (kPa)	*200.00*	
Pressure compliance	*no*	

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Development Flows

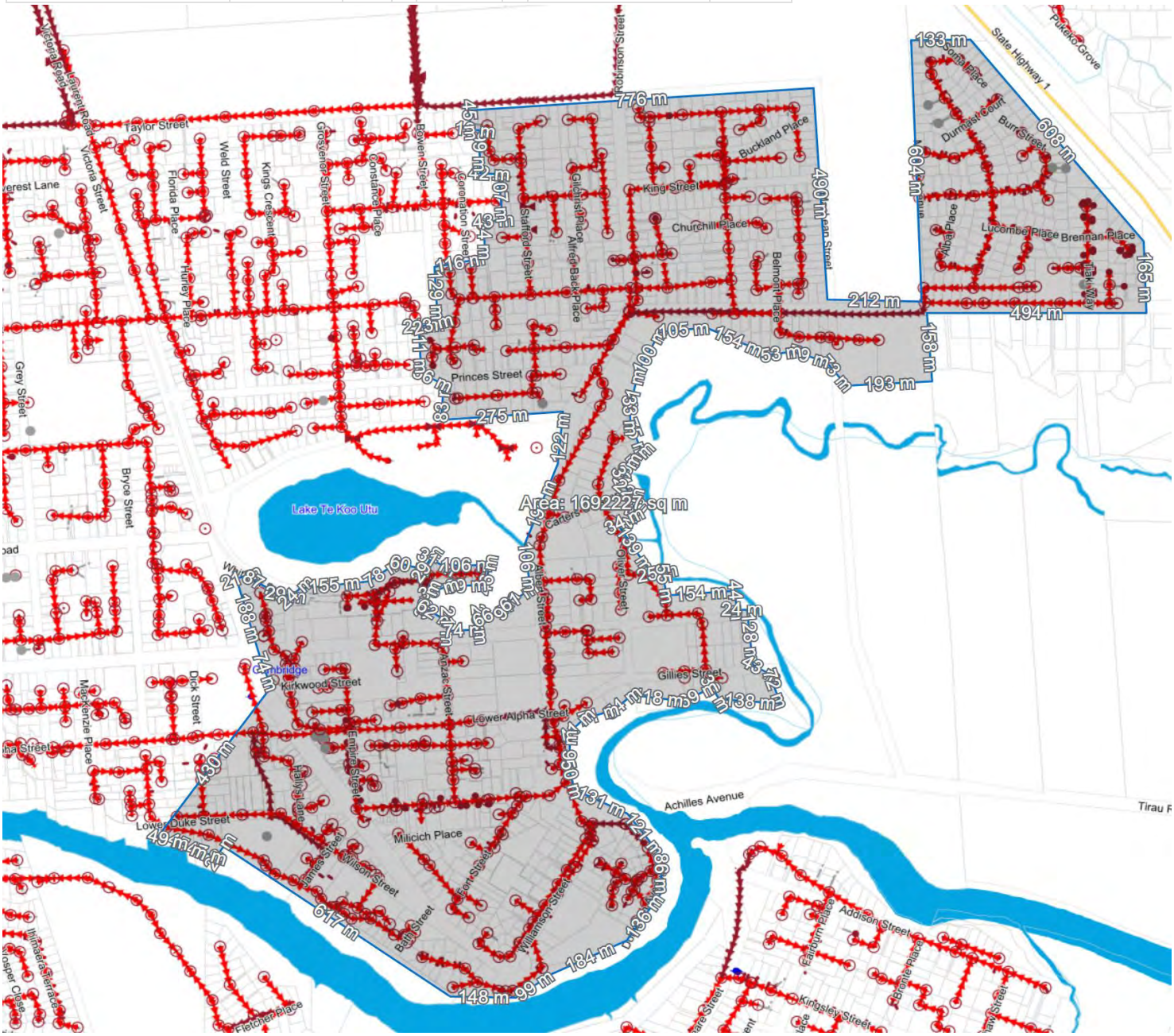
PAGE:	*3 of 4*	
DATE :	*5-May-25*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Catchment, Area (hectare):	*0.21*	
Population Equivalent (p/hectare):	*120*	
Population (residential):	*30*	***2.7 People, 11 new dwellings***
Peaking Factor (Table 5.1):	*8.5*	
Commercial Flows (L/day):	*15392.3*	**applies dry retail (4.3 L/m2/day) to retail and office, and wet retail (15.0 L/m2/day) to café as per Watercare's Wastewater Code of Practice, Section 5.3.5.1*
ADF (l/s):	*0.25*	
PDF (l/s):	*0.77*	
PWWF (l/s):	*0.81*	
Pipe Diameter (m)	*0.15*	***New Connection***
Pipe Gradient (%)	*1.00%*	***Min***
Colebrook-White, K (Table 5-3)	*0.6*	***uPVC***
Pipe Capacity (l/s)	*17.75*	
Residual Capacity (L/s)	*16.94*	

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*4 of 4*	
DATE :	*5-May-25*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*20170306141522*	*To WWPS at Albert Street Waipa GIS Asset ID*
U/S Manhole Reference	*20170306120702*	
D/S Manhole Reference	*WWPS*	*Inlet Pipe*
U/S Catchment, Area (hectare):	*169.22*	*Est to Albert Street WWPS*
Population Equivalent (p/hectare):	*45*	*Residential*
Population:	*7615*	
Peaking Factor (Table 5.1):	*2.6*	*RITS*
ADF (l/s):	*22.03*	
PDF (l/s):	*50.24*	
PWWF (l/s):	*83.36*	*Including development flows*
Pipe Diameter (m)	*0.28*	
Pipe Gradient (%)	*1.62%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*0.6*	*PE*
Pipe Capacity (l/s)	*117.85*	
Residual Capacity (L/s)	*34.49*	

Colebrook White Calculations - Circular Pipes (Pipe Full)						
D (diameter in m)	0.28					
Slope S expressed 1 in	62			*1.61%*		
Viscosity ν	1.01					
Gravity g	9.81					
Hydraulic Radius R	0.07					
roughness k mm	0.6			*PE Pipe*		
Velocity V (m per sec)	1.91	m/s				
Flow Q (m^3 per sec)	0.118	m^3/s		117.85	l/s	

$$\text{Velocity V} = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



WWPS Inlet Pipe

ABOVE WATER

BOON

Cambridge Development

32-42 Victoria St, Cambridge

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July 2023

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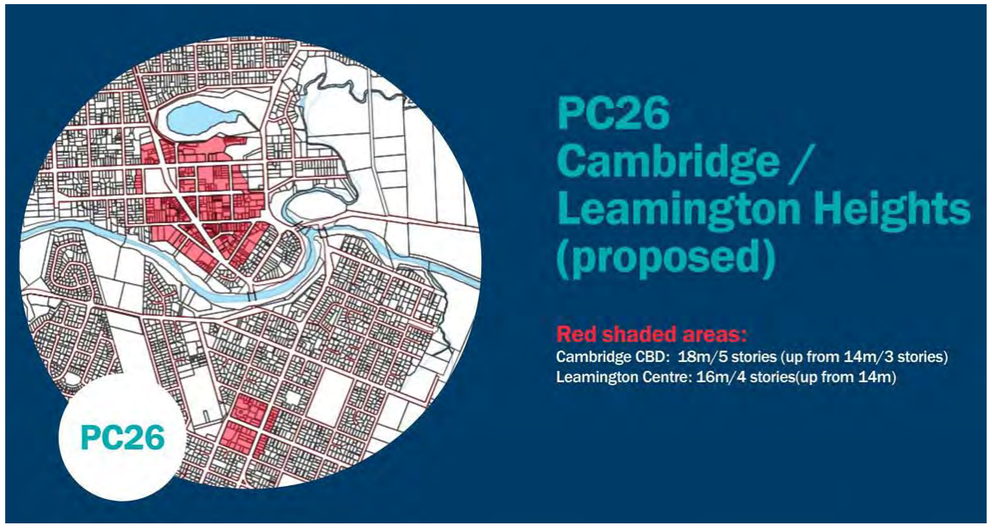
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Contents

Drawing No.	Current Revision	Drawing Name
SK0.01		Cover
SK0.02		Design Criteria & Drawing Register
SK1.01		Location Plan
SK1.02		Site Plan - Existing
SK1.03		Site Analysis
SK1.04		Site Plan - Proposed
SK1.05		3D PHASES
SK1.06		3D PHASES
SK2.00		Plans - Basement
SK2.01		Plans - GF
SK2.02		Plans - L1
SK2.03		Plans - L2
SK2.04		Plans - L2 (Apartments)
SK2.05		Plans - L3

Contents

Drawing No.	Current Revision	Drawing Name
SK3.01		3D Sketch
SK3.02		3D Views
SK3.03		3D Views
SK3.04		3D Views
SK3.05		3D Views
SK3.06		3D Views
SK3.07		3D Views
SK3.08		3D Views
SK3.09		3D Views
SK3.10		3D Views
SK3.11		3D Views
SK3.13		3D Views



DESIGN CRITERIA:
(Key points summarised from Appendix DG2 - Central Cambridge Character Guidelines)

- **Continous building facades**
- **Buildings located on front boundary of street**
- **Create consistant setback along street edge**
- **Suspended awnings by metal stays**
- **Building heights sympathetic to surronding built form**
- **Building width should match adjacent form**
- **Building elements should reflect Cambridge heritage shapes**
- **Repeat windows at regular intervals with attention to design and placement**
- **Aim to maintain the 2-storey shop frontage**
- **Creat large display windoes with transoms in clear glass**
- **Reinforce heritage character**
- **Materials on Victoria st re to be similiar to those used in neighbouring buildings, eg. brick, plaster & reinforced concrete.**

Growth in Cambridge

Industrial/Commercial

C8/C9 and new northern industrial
Carter's Flat

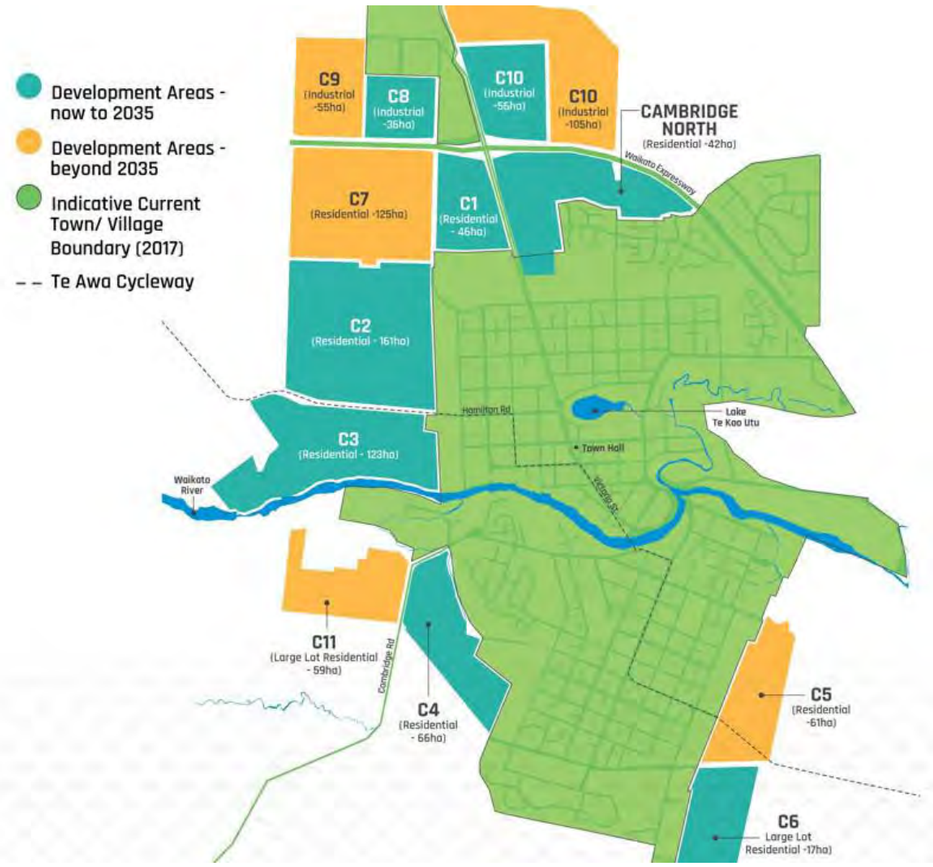
Residential

C1/C2/C3 and Cambridge North
Residential housing C4 progressing

Services / Facilities

New primary school – C2
Active Reserve - C2
New retirement villages
- Summerset - Cambridge North, Ryman - C2

Medical facilities - Cambridge North
Cambridge Connections
Wastewater treatment plant upgrades
Transpower substation
Cambridge pathway

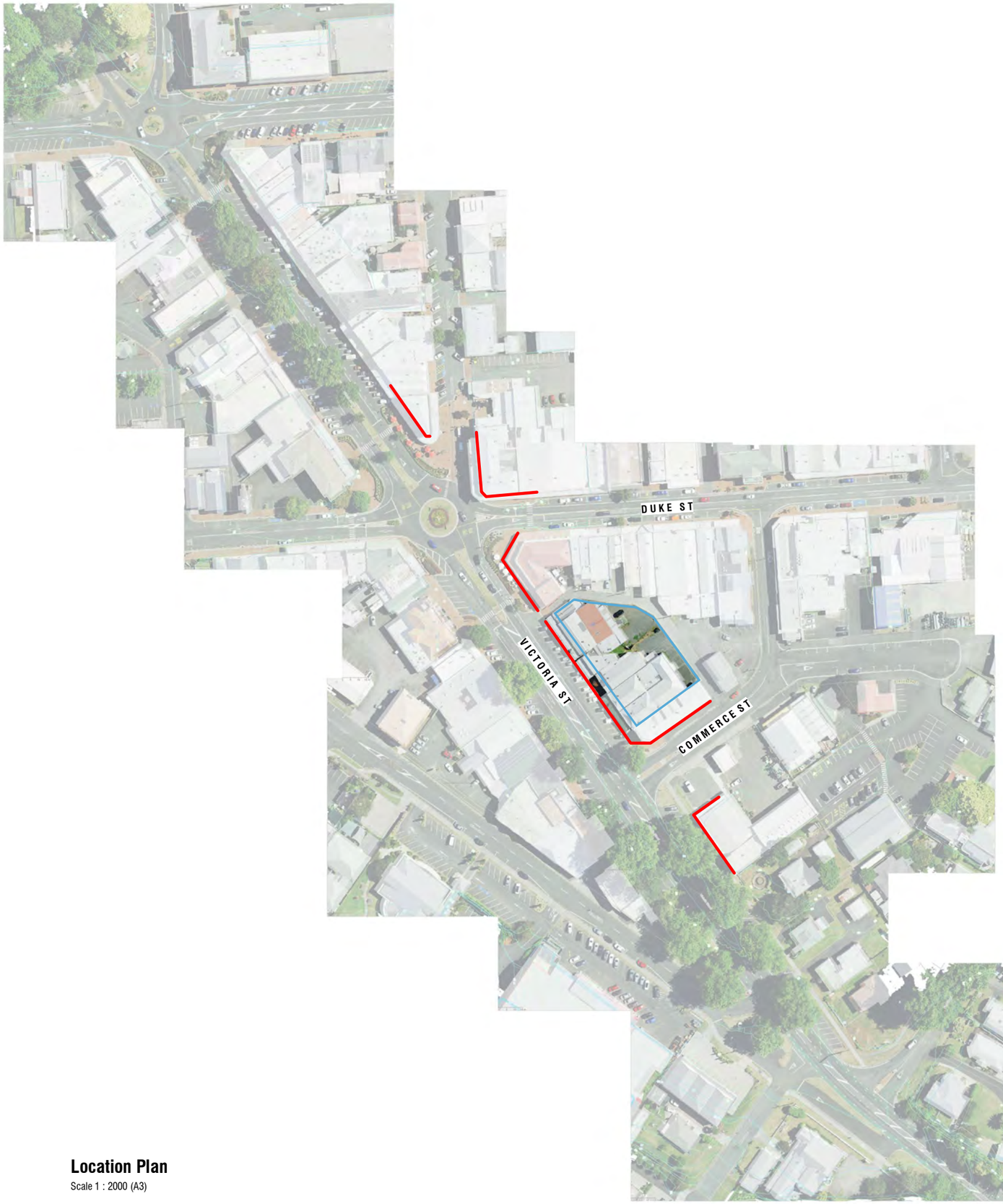


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Location Plan
Scale 1 : 2000 (A3)

Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) = **2145m²**
Existing Building Coverage = 1514m²
Proposed Building Coverage = 1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary



Victoria Street View - Large Scale Context neighbouring potential development



Victoria Street View



Victoria Street View

Cambridge Development
32-42 Victoria St, Cambridge
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Site Boundary

Site Plan - Existing

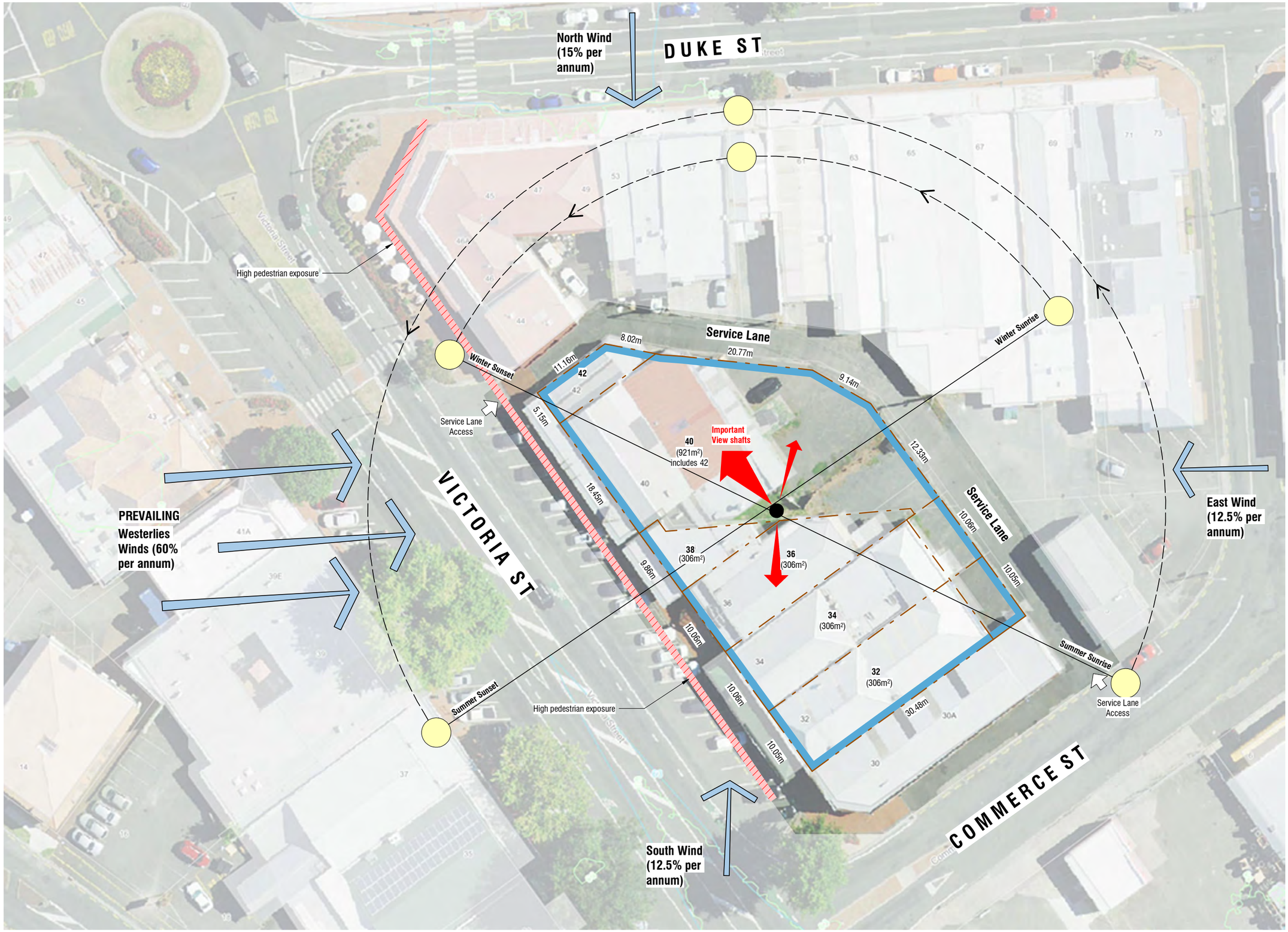
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32-42 Victoria St, Cambridge
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Site Boundary

Site Plan - Site Analysis

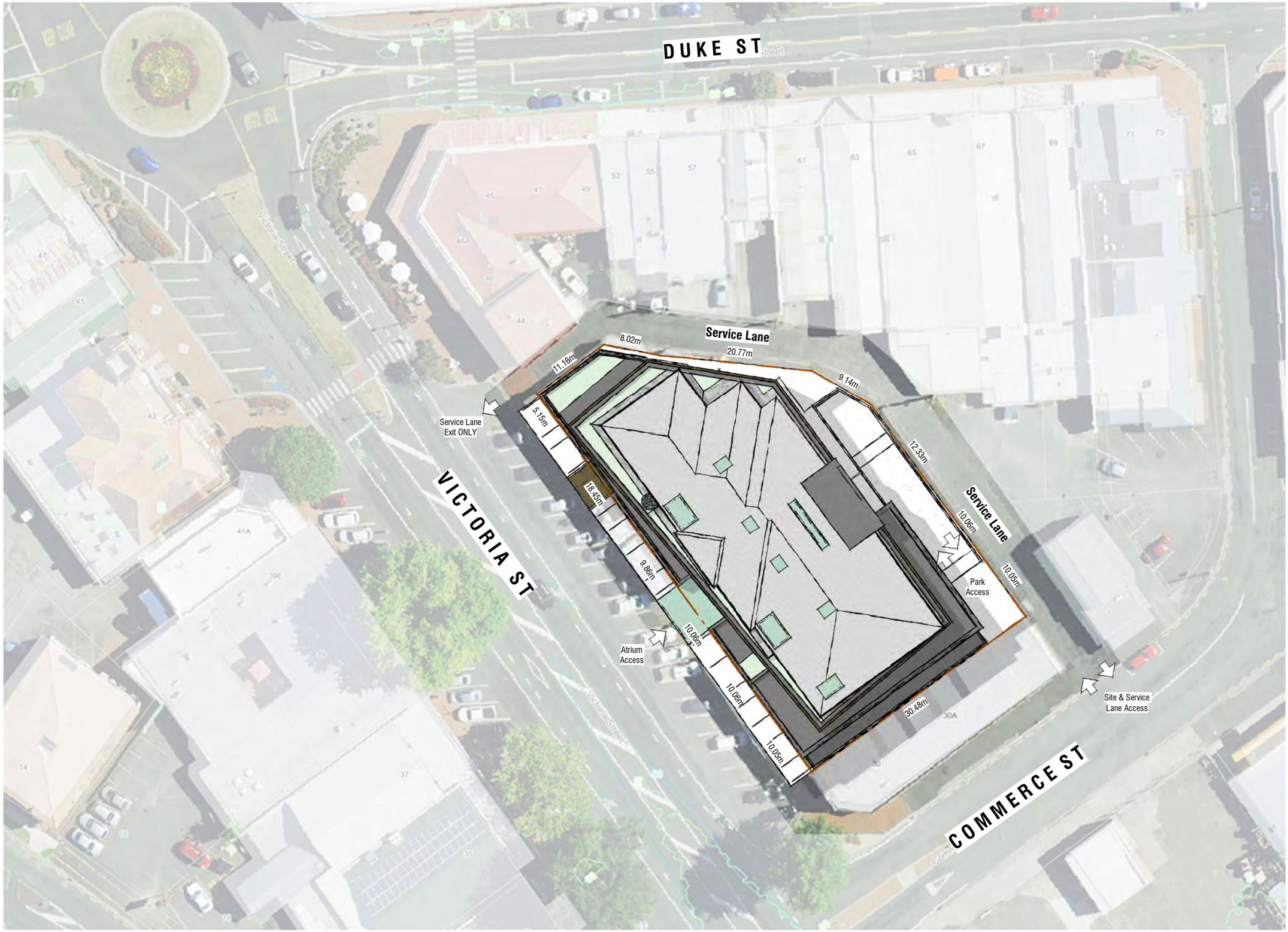
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Site Boundary

Site Plan - Proposed

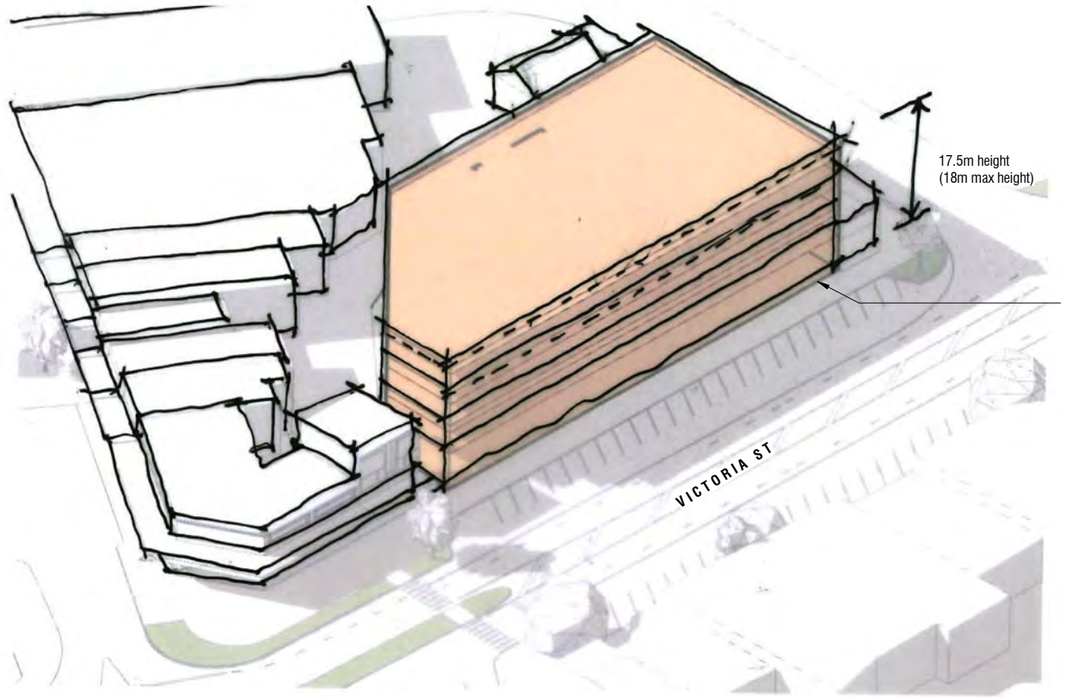
Scale 1 : 500 (A3)

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

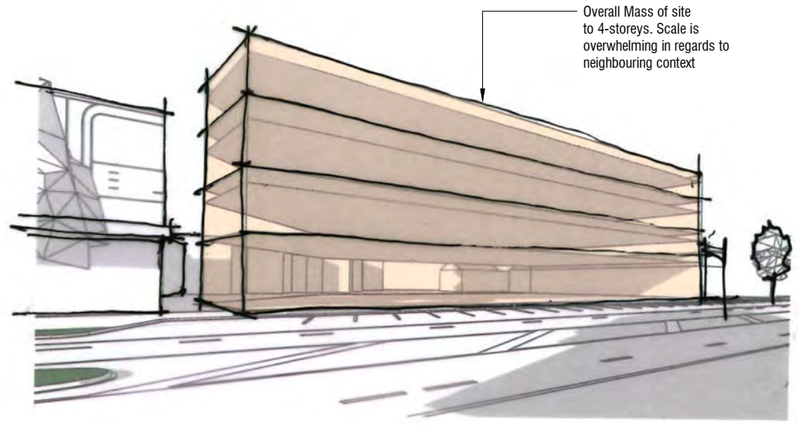
Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK1.04		July 2023	Site Plan - Proposed	16/02/2024 11:39:12 am

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PHASE ONE - Overall Massing



PHASE TWO - Height Scale

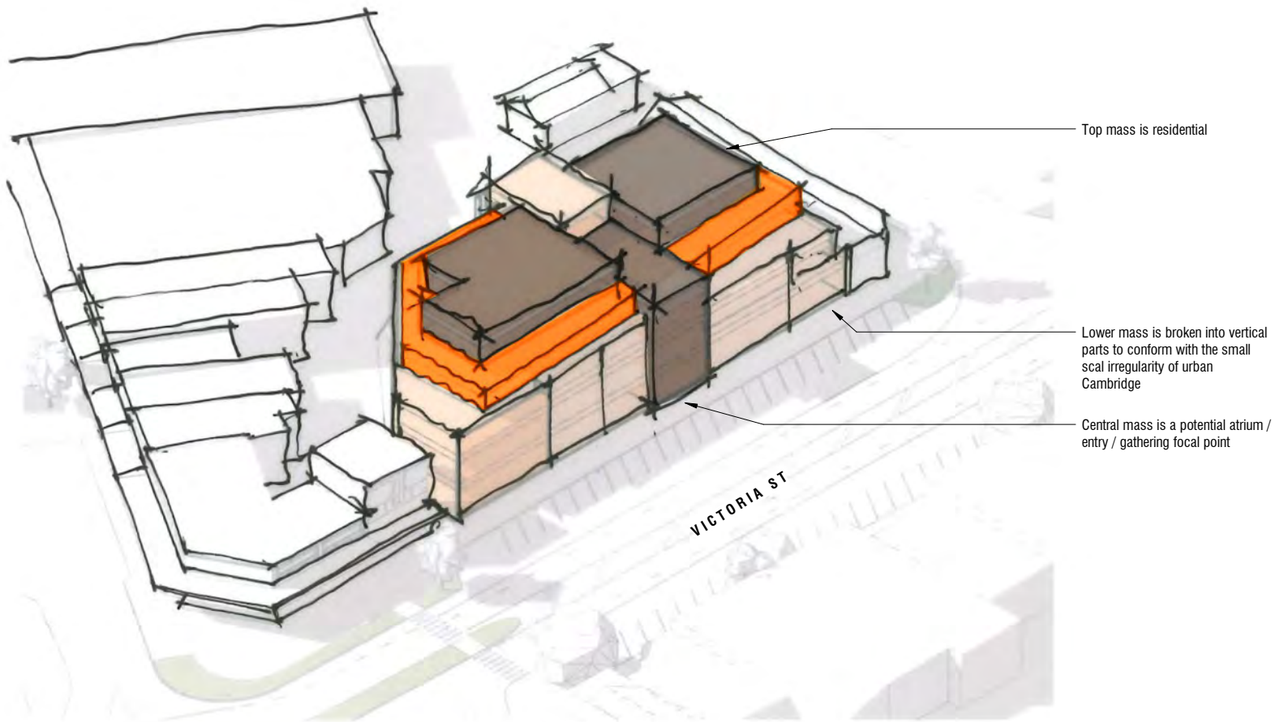


Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

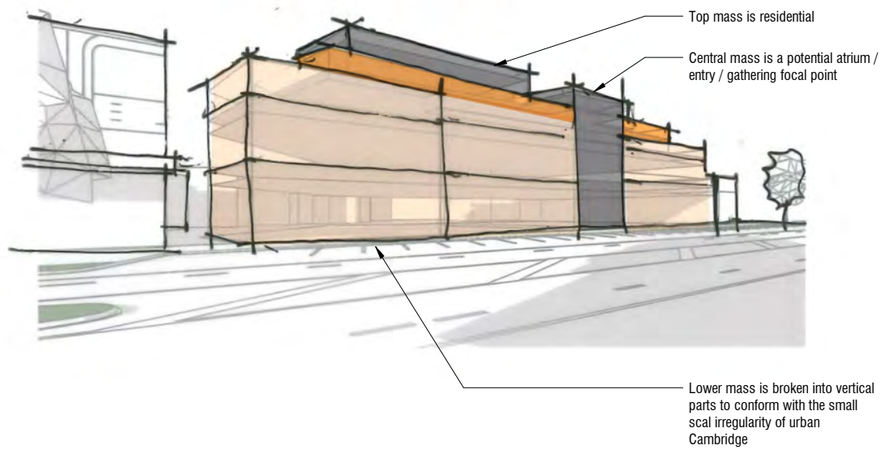
Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968		SK1.05		July 2023	3D PHASES	16/02/2024 11:39:12 am

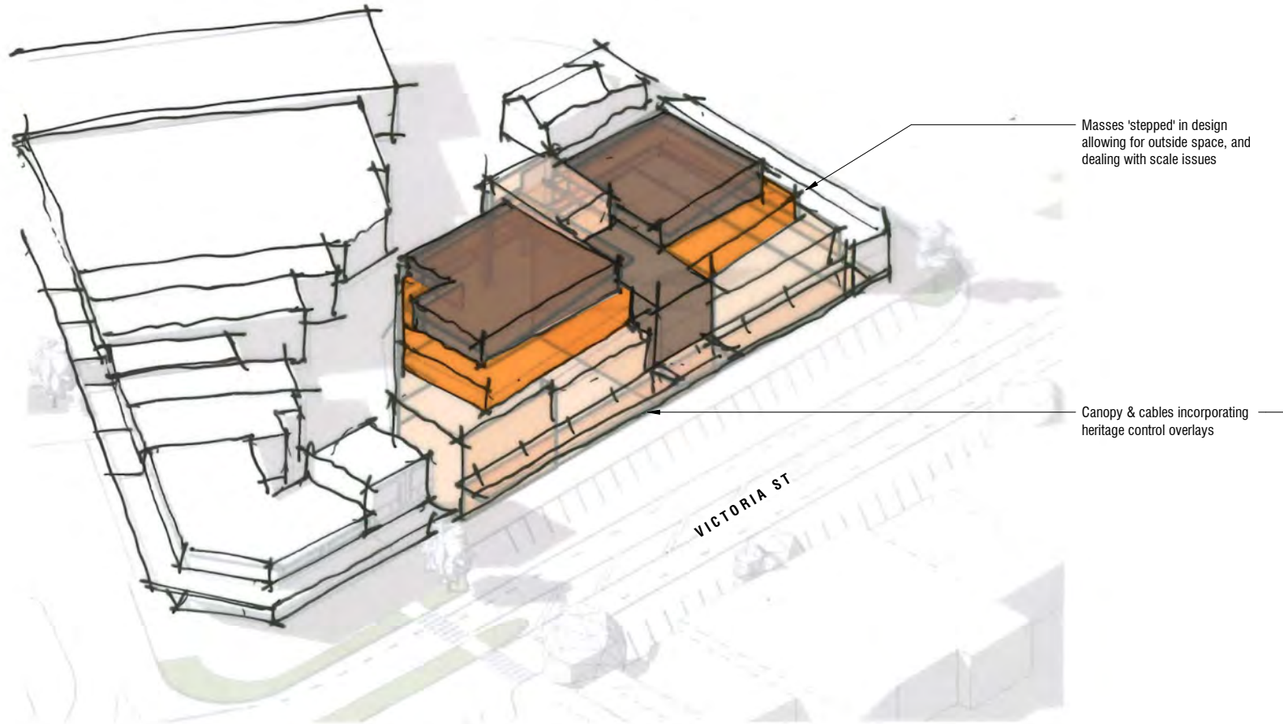
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PHASE Three- Vertical Articulation & Developed Forms





PHASE Four - Heritage Overlays Incorporated



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Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968		SK1.06		July 2023	3D PHASES	16/02/2024 11:39:13 am

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Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) =	**2145m²**
Existing Building Coverage =	1514m²
Proposed Building Coverage =	1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary

Building Areas (Approximate Only)

PROPOSED BUILDINGS

Basement Carpark

Total Area =	**1765m²** *(Gross)*
Parking =	1396m² *(Net)*, 38 Parks
Core (Lobby / Plant & Riser) =	235m² *(Gross)*
Storage =	71m² *(Gross)*

L0 - Ground Floor (Retail & Cafe)

Total Area =	**1387m²** *(Gross)* Excluding Atrium space & Loading Bays
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	110m² *(Gross)*
Good & Services / Loading =	167m² *(Gross)*
Retail Tenancies =	**1076m² *(Net)***
Atrium =	185m² *(Net)*

L1 - First Floor (Office Tenancies)

Total Area =	**1500m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**1158m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	68m² *(Gross)*

L2 - Second Floor (Office Tenancies) OPTION 1

Total Area =	**1133m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**906m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	84m² *(Gross)*

L2 - Second Floor (Apartments) OPTION 2
Apartment Tenancies = 846m² *(Net)*
REFER DRAWINGS FOR APARTMENT AREAS

L3 - Third Floor (Apartments)

Total Area =	**760m²** *(Gross)* Excluding Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Apartment Tenancies =	**730m² *(Net)***
Outdoor Space =	410m² *(Gross)*

REFER DRAWINGS FOR APARTMENT AREAS

Basment (1-200)

Scale 1 : 200 (A3)

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK2.00		July 2023	Plans - Basement	16/02/2024 11:39:13 am

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Ground Floor - Retail (1-200)

Scale 1 : 200 (A3)

Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) = **2145m²**
Existing Building Coverage = 1514m²
Proposed Building Coverage = 1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary

Building Areas (Approximate Only)

PROPOSED BUILDINGS

Basement Carpark
Total Area = **1765m²** *(Gross)*
Parking = 1396m² *(Net)*, 38 Parks
Core (Lobby / Plant & Riser) = 235m² *(Gross)*
Storage = 71m² *(Gross)*

L0 - Ground Floor (Retail & Cafe)
Total Area = **1387m²** *(Gross)* Excluding Atrium space & Loading Bays
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 110m² *(Gross)*
Good & Services / Loading = 167m² *(Gross)*
Retail Tenancies = 1076m² *(Net)*
Atrium = 185m² *(Net)*

L1 - First Floor (Office Tenancies)
Total Area = **1500m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 118m² *(Gross)*
Office Tenancies = 1158m² *(Net)*
Atrium Void = 112m² *(Net)*
Outdoor Space = 68m² *(Gross)*

L2 - Second Floor (Office Tenancies) OPTION 1
Total Area = **1133m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 118m² *(Gross)*
Office Tenancies = 906m² *(Net)*
Atrium Void = 112m² *(Net)*
Outdoor Space = 84m² *(Gross)*

L2 - Second Floor (Apartments) OPTION 2
Apartment Tenancies = 846m² *(Net)*
REFER DRAWINGS FOR APARTMENT AREAS

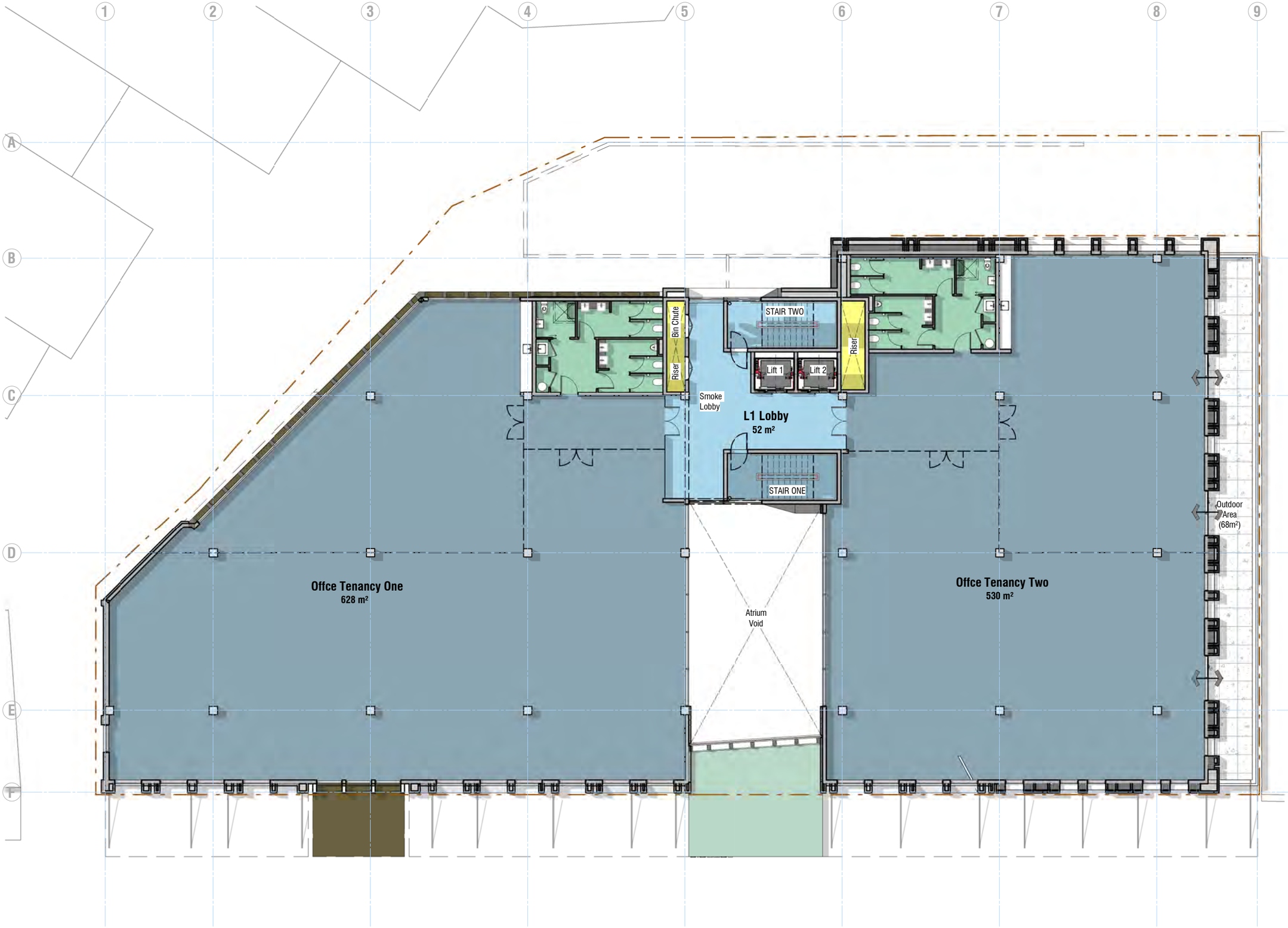
L3 - Third Floor (Apartments)
Total Area = **760m²** *(Gross)* Excluding Outdoor Space
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 118m² *(Gross)*
Apartment Tenancies = 730m² *(Net)*
Outdoor Space = 410m² *(Gross)*
REFER DRAWINGS FOR APARTMENT AREAS

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK2.01		July 2023	Plans - GF	16/02/2024 11:39:16 am

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Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) = **2145m²**
Existing Building Coverage = 1514m²
Proposed Building Coverage = 1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary

Building Areas (Approximate Only)

PROPOSED BUILDINGS

Basement Carpark
Total Area = **1765m²** *(Gross)*
Parking = 1396m² *(Net)*, 38 Parks
Core (Lobby / Plant & Riser) = 235m² *(Gross)*
Storage = 71m² *(Gross)*

L0 - Ground Floor (Retail & Cafe)
Total Area = **1387m²** *(Gross)* Excluding Atrium space & Loading Bays
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 110m² *(Gross)*
Good & Services / Loading = 167m² *(Gross)*
Retail Tenancies = 1076m² *(Net)*
Atrium = 185m² *(Net)*

L1 - First Floor (Office Tenancies)
Total Area = **1500m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 118m² *(Gross)*
Office Tenancies = 1158m² *(Net)*
Atrium Void = 112m² *(Net)*
Outdoor Space = 68m² *(Gross)*

L2 - Second Floor (Office Tenancies) OPTION 1
Total Area = **1133m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 118m² *(Gross)*
Office Tenancies = 906m² *(Net)*
Atrium Void = 112m² *(Net)*
Outdoor Space = 84m² *(Gross)*

L2 - Second Floor (Apartments) OPTION 2
Apartment Tenancies = 846m² *(Net)*
REFER DRAWINGS FOR APARTMENT AREAS

L3 - Third Floor (Apartments)
Total Area = **760m²** *(Gross)* Excluding Outdoor Space
WC (Toilets) = 18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) = 118m² *(Gross)*
Apartment Tenancies = 730m² *(Net)*
Outdoor Space = 410m² *(Gross)*
REFER DRAWINGS FOR APARTMENT AREAS

Level 1 - Office (1-200)

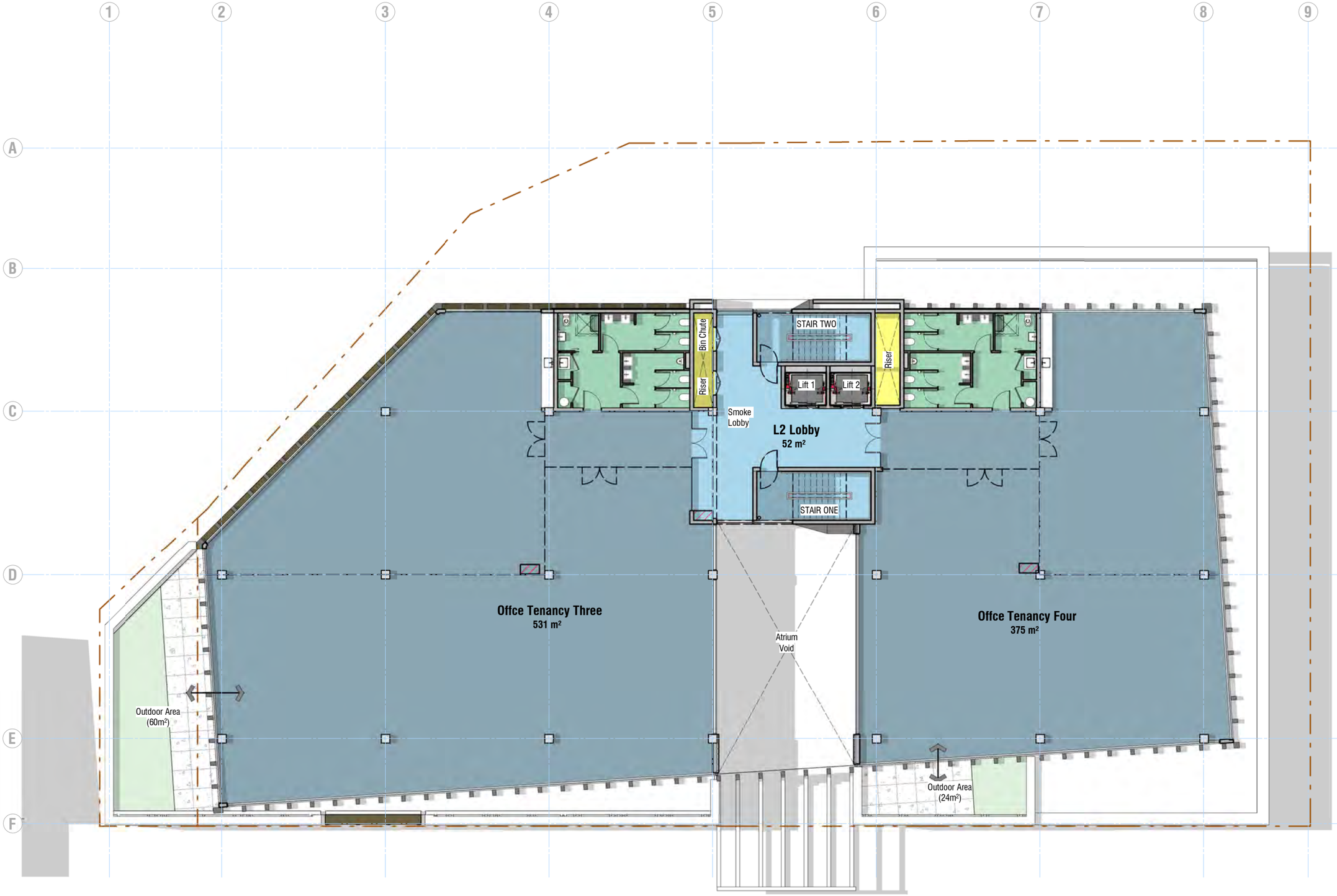
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Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK2.02		July 2023	Plans - L1	16/02/2024 11:39:18 am

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Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) =	**2145m²**
Existing Building Coverage =	1514m²
Proposed Building Coverage =	1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary

Building Areas (Approximate Only)

PROPOSED BUILDINGS

Basement Carpark

Total Area =	**1765m²** *(Gross)*
Parking =	1396m² *(Net)*, 38 Parks
Core (Lobby / Plant & Riser) =	235m² *(Gross)*
Storage =	71m² *(Gross)*

L0 - Ground Floor (Retail & Cafe)

Total Area =	**1387m²** *(Gross)* Excluding Atrium space & Loading Bays
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	110m² *(Gross)*
Good & Services / Loading =	167m² *(Gross)*
Retail Tenancies =	**1076m² *(Net)***
Atrium =	185m² *(Net)*

L1 - First Floor (Office Tenancies)

Total Area =	**1500m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**1158m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	68m² *(Gross)*

L2 - Second Floor (Office Tenancies) OPTION 1

Total Area =	**1133m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**906m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	84m² *(Gross)*

L2 - Second Floor (Apartments) OPTION 2
Apartment Tenancies = 846m² *(Net)*
REFER DRAWINGS FOR APARTMENT AREAS

L3 - Third Floor (Apartments)

Total Area =	**760m²** *(Gross)* Excluding Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Apartment Tenancies =	**730m² *(Net)***
Outdoor Space =	410m² *(Gross)*

REFER DRAWINGS FOR APARTMENT AREAS

Level 2 - Office (1-200)
Scale 1 : 200 (A3)

OPTION 1 - Level 2 Office Tenancies

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK2.03		July 2023	Plans - L2	16/02/2024 11:39:19 am

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Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) =	**2145m²**
Existing Building Coverage =	1514m²
Proposed Building Coverage =	1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary

Building Areas (Approximate Only)

PROPOSED BUILDINGS

Basement Carpark

Total Area =	**1765m²** *(Gross)*
Parking =	1396m² *(Net)*, 38 Parks
Core (Lobby / Plant & Riser) =	235m² *(Gross)*
Storage =	71m² *(Gross)*

L0 - Ground Floor (Retail & Cafe)

Total Area =	**1387m²** *(Gross)* Excluding Atrium space & Loading Bays
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	110m² *(Gross)*
Good & Services / Loading =	167m² *(Gross)*
Retail Tenancies =	**1076m² *(Net)***
Atrium =	185m² *(Net)*

L1 - First Floor (Office Tenancies)

Total Area =	**1500m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**1158m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	68m² *(Gross)*

L2 - Second Floor (Office Tenancies) OPTION 1

Total Area =	**1133m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**906m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	84m² *(Gross)*

L2 - Second Floor (Apartments) OPTION 2

Apartment Tenancies =	**846m² *(Net)***

REFER DRAWINGS FOR APARTMENT AREAS

L3 - Third Floor (Apartments)

Total Area =	**760m²** *(Gross)* Excluding Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Apartment Tenancies =	**730m² *(Net)***
Outdoor Space =	410m² *(Gross)*

REFER DRAWINGS FOR APARTMENT AREAS

Level 2 - Apartments (1-200)

Scale 1 : 200 (A3)

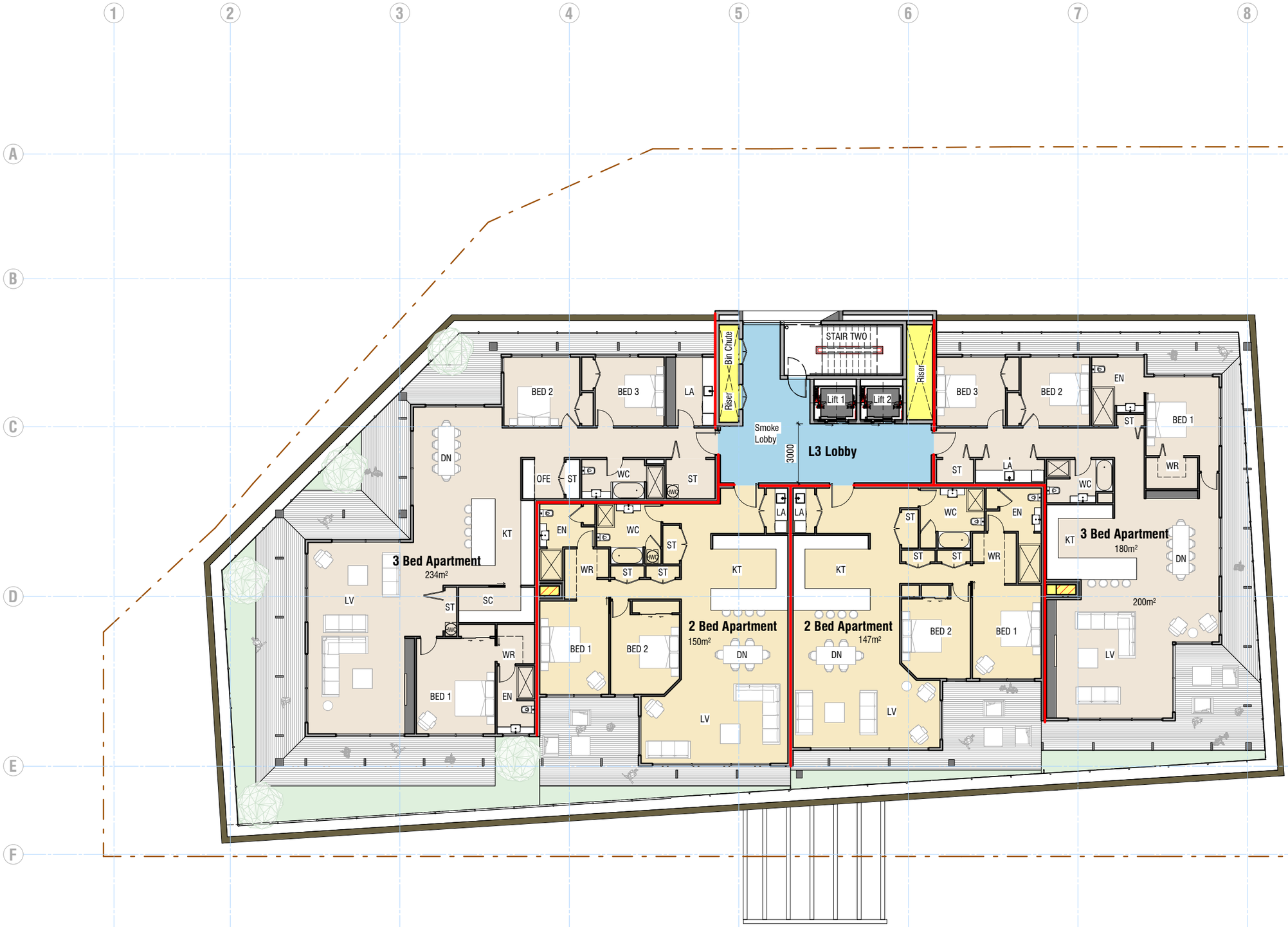
OPTION 2 - Level 2 Apartments

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK2.04		July 2023	Plans - L2 (Apartments)	16/02/2024 11:39:26 am

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Site Description

Cambridge, New Zealand
Waipa District

40-42 Victoria St - LOT 1 DPS 13401, LOT 2 DPS 13401, LOT 4 DPS 13401
38 Victoria Street - LOT 1 DPS 77837
36 Victoria Street - LOT 9 DP 4011
34 Victoria Street - LOT 3 DP 364495, LOT 8 DP 4011
32 Victoria Street - LOT 7 DP 4011

Zone: Commercial, with '*Character precincts overlay*'
Wind Zone: Medium
(branz inforamation inidcative ONLY)
Earthquake Zone: 1
Exposure Zone: B
Rainfall Range: 80-90mm

Site Coverage / Area (Approx. only)

Site area (Total) =	**2145m²**
Existing Building Coverage =	1514m²
Proposed Building Coverage =	1748m²

Line to perimeter of site indicates construction demarcation line. Construction confined to within this area.

Site Boundary

Building Areas (Approximate Only)

PROPOSED BUILDINGS

Basement Carpark

Total Area =	**1765m²** *(Gross)*
Parking =	1396m² *(Net)*, 38 Parks
Core (Lobby / Plant & Riser) =	235m² *(Gross)*
Storage =	71m² *(Gross)*

L0 - Ground Floor (Retail & Cafe)

Total Area =	**1387m²** *(Gross)* Excluding Atrium space & Loading Bays
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	110m² *(Gross)*
Good & Services / Loading =	167m² *(Gross)*
Retail Tenancies =	**1076m² *(Net)***
Atrium =	185m² *(Net)*

L1 - First Floor (Office Tenancies)

Total Area =	**1500m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**1158m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	68m² *(Gross)*

L2 - Second Floor (Office Tenancies) OPTION 1

Total Area =	**1133m²** *(Gross)* Excluding Atrium space & Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Office Tenancies =	**906m² *(Net)***
Atrium Void =	112m² *(Net)*
Outdoor Space =	84m² *(Gross)*

L2 - Second Floor (Apartments) OPTION 2
Apartment Tenancies = 846m² *(Net)*
REFER DRAWINGS FOR APARTMENT AREAS

L3 - Third Floor (Apartments)

Total Area =	**760m²** *(Gross)* Excluding Outdoor Space
WC (Toilets) =	18.8m² *(Net)*
Core (Lobby / Stairs & Lifts) =	118m² *(Gross)*
Apartment Tenancies =	**730m² *(Net)***
Outdoor Space =	410m² *(Gross)*

REFER DRAWINGS FOR APARTMENT AREAS

Level 3 - Residential (1-200)

Scale 1 : 200 (A3)

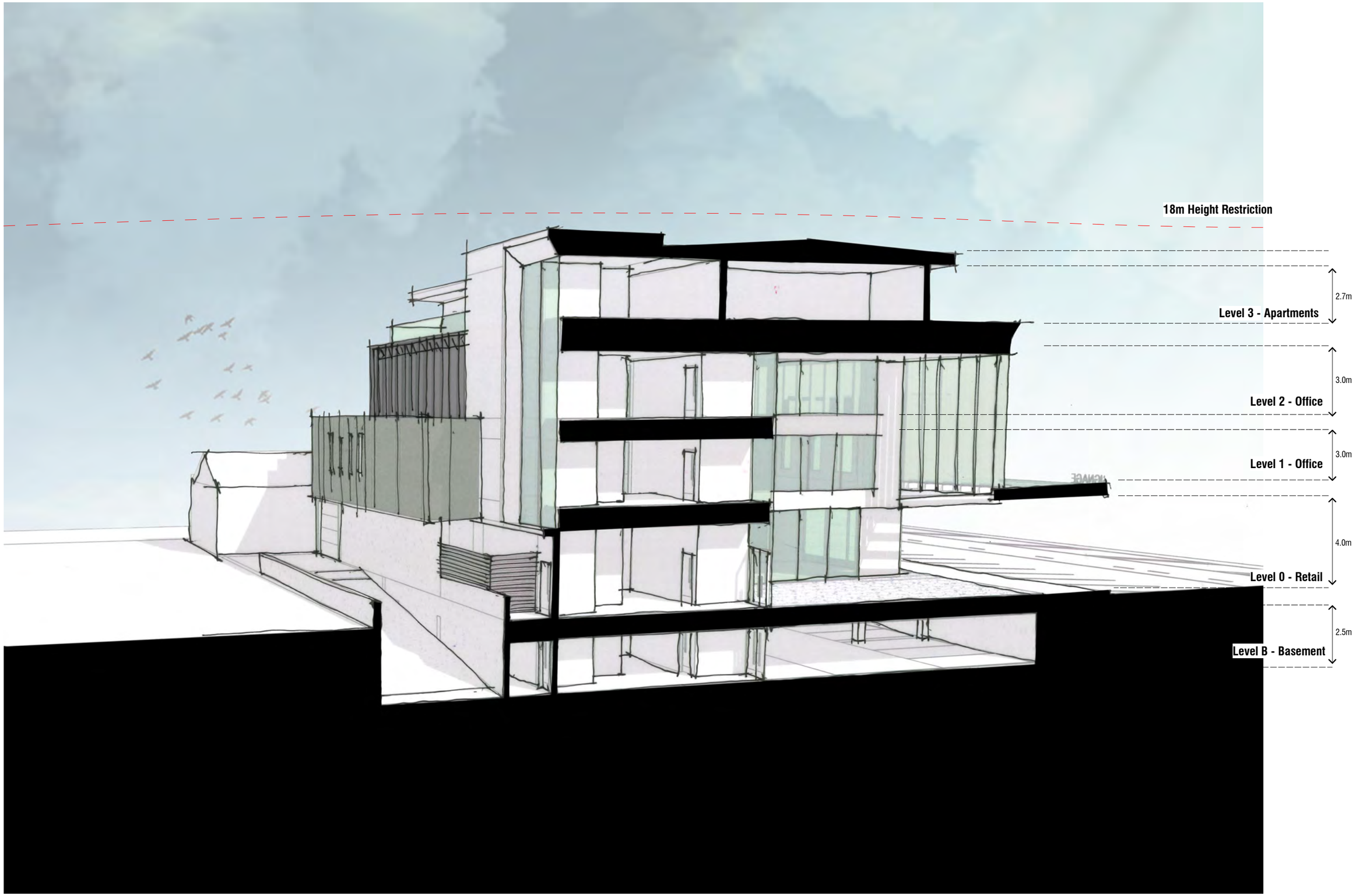
Cambridge Development

32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	As indicated	SK2.05		July 2023	Plans - L3	16/02/2024 11:39:30 am

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Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 100	SK3.01		July 2023	3D Sketch	16/02/2024 11:39:30 am

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VIEW 1 - OPTION 1
Not to Scale

OPTION 1 - Level 2 Office Tenancies

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

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Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.02		July 2023	3D Views	16/02/2024 11:39:31 am

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VIEW 1 - OPTION 2

Not to Scale

OPTION 2 - Level 2 Apartments

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.03		July 2023	3D Views	16/02/2024 11:39:31 am

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VIEW 2 - OPTION 1
Not to Scale

OPTION 1 - Level 2 Office Tenancies

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.04		July 2023	3D Views	16/02/2024 11:39:31 am

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VIEW 2 - OPTION 2
Not to Scale

OPTION 2 - Level 2 Apartments

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.05		July 2023	3D Views	16/02/2024 11:39:31 am

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VIEW 3 - OPTION 1
Not to Scale

OPTION 1 - Level 2 Office Tenancies

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.06		July 2023	3D Views	16/02/2024 11:39:31 am

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VIEW 3 - OPTION 2
Not to Scale

OPTION 2 - Level 2 Apartments

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.07		July 2023	3D Views	16/02/2024 11:39:32 am

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VIEW 4 - OPTION 1
Not to Scale

OPTION 1 - Level 2 Office Tenancies

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.08		July 2023	3D Views	16/02/2024 11:39:32 am

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VIEW 4 - OPTION 2
Not to Scale

OPTION 2 - Level 2 Apartments

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.09		July 2023	3D Views	16/02/2024 11:39:32 am

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VIEW 5 - OPTION 2
Not to Scale

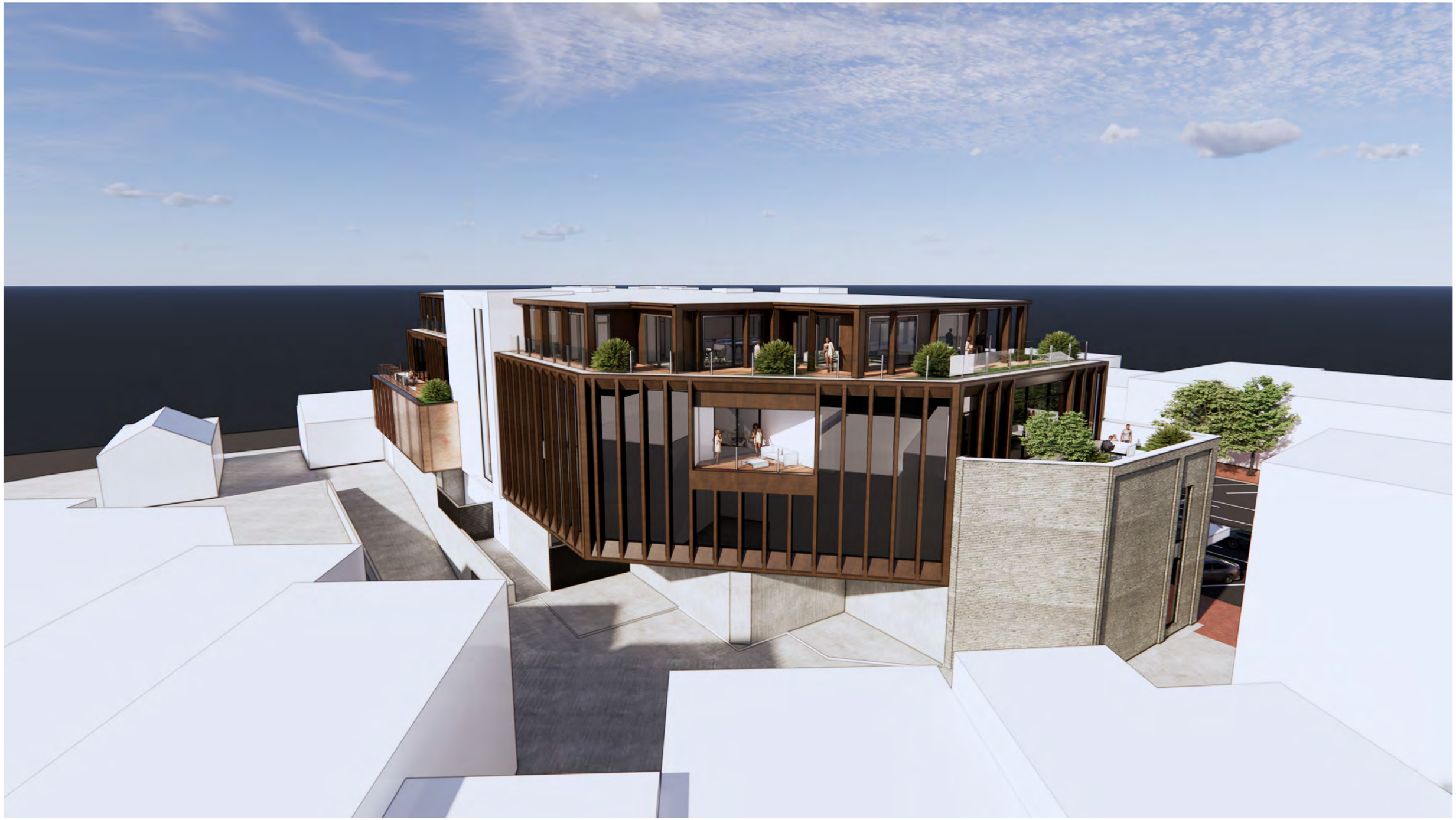
OPTION 1 - Level 2 Office Tenancies

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.10		July 2023	3D Views	16/02/2024 11:39:32 am

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VIEW 5 - OPTION 1
Not to Scale

OPTION 2 - Level 2 Apartments

Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968	1 : 1	SK3.11		July 2023	3D Views	16/02/2024 11:39:32 am

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Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968		**SK3.12**		**July 2023**	**3D Views**	**16/02/2024 11:39:33 am**

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Cambridge Development
32-42 Victoria St, Cambridge
Feasiblity

Job No.	Scale [A3]	Drawing No.	Rev	Issue Date	Drawing Title	Print Date
6968		**SK3.13**		**July 2023**	**3D Views**	**16/02/2024 11:39:33 am**

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ABOVE WATER

Waipa District Council
101 Bank Street
Te Awamutu 3800

12th September 2025

25-152: 32 - 42 Victoria Street - S92 Response

Further to the S92 received for this project, we have provided the following responses to each point raised:

5.	Water Conservation and Demand Management Plan.	My opinion is that this is best suited to the next stage and should be a condition of consent. Here is some suggested wording of the consent condition: **Water Conservation & Demand Management Plan** Prior to approval of engineering plans for water supply (and before any application for service connection), the Consent Holder must submit a **Water Conservation & Demand Management Plan** to the Waipā District Council (Water Services) for certification. The plan must: *(a) quantify baseline ADD/PDD/PH by end-use;* *(b) set measurable reduction targets;* *(c) specify minimum fixture/appliance performance, sub-metering layout, leak detection and response, irrigation controls (if any), operational triggers aligned with Council water alert levels;* *(d) specify KPIs, monitoring and reporting (including initial 24-month reporting).* The certified plan must be implemented prior to giving effect to the consent.

6.	a) Details of operational storage for water supply to suit the needs of the development in accordance with RITS 6.2.10.1 prepared by a suitably qualified professional;	In the Water Supply section, RITS 6.2.10.1 (Connections—General) advises commercial/industrial and any sites that rely on continuous supply to "have operational storage to suit their needs (e.g. at least 24 hours)." In my view this can be adequality covered by way of a consent condition.
	b) Confirmation of the use or otherwise of the existing water meters supplying the site; and	This work can be undertaken at detailed design phase.
	c) Details of the proposed water supply connection location/s.	Again, the connection location can be confirmed at detailed design stage. We've recommended connection to the AC main in the service lane in the ICA.
7.	a) Wastewater – provision of design plans and details.	Again this could be at EPA stage, the ICA shows the location of the wastewater reticulation for connection.
	b) Details of the wastewater flow calculations to demonstrate how these have been calculated for the commercial spaces.	These are already included in the ICA.
	c) Details of the wastewater flow and capacity calculations for each pipe downstream of the development to the nearest trunk main.	These are already included in the ICA.

8.	A Stormwater Management Plan for the site and development prepared by a suitably qualified professional	This should be at detailed design stage, we have already noted: *Refer to the designer's plans, which show an existing building coverage of 1,514m² and a proposed building coverage of 1,748m².* *The area outside the existing building footprint is primarily hardstand, meaning the site is already largely impermeable. The proposed development will increase the roof area by 234m², resulting in a minor overall increase in impermeable surface across the site.*
9.	Plans and details demonstrating how the existing stormwater infrastructure will be managed through development (i.e. removal, realignment, etc).	Agree this should be at detailed design stage. The increase in stormwater runoff is not expected to be large as the site is already largely impermeable. Any increase would be managed by detention tanks, therefore effects on the downstream pipework will be mitigated.

Please don't hesitate to contact me if you require any further information.

Yours sincerely,



Josy Cooper
BE, CMEngNZ, CPEng (259163)
Principal Engineer Above Water Engineering Ltd

ABOVE WATER

Waipa District Council
101 Bank Street
Te Awamutu 3800

19th February 2026

25-152: 32 - 42 Victoria Street - S92 Response No. 2

Further to the S92 received for this project, we have provided the following responses to each point raised:

4.	Fire Engineer's report	The Infrastructure Capacity Assessment (ICA) addresses compliance with external fire hydrant spacing and setbacks in accordance with RITS requirements. The comment relating to the Fire Engineer pertains to the detailed building design stage, which will incorporate internal fire protection systems and fixtures as required under the Building Code and as determined by the Fire Engineer's design.

7. a	Build Over Provide details outlining how a potential build over of the existing wastewater pipe will be managed. This can be an indicative sketch, with commentary outlining the reasoning considering the options outlined under RITS 5.2.9.	It is considered unlikely that a build-over arrangement would be appropriate at this location, given the scale of the proposed structure and the presence of an existing AC wastewater main. In this context, relocation of the existing wastewater pipeline outside the building footprint is considered the more appropriate and practicable solution. Any relocation would be designed to maintain network functionality and comply with Council requirements, conceptually as shown overleaf. 
7. b	Commercial Wastewater Provide working and assumptions for the commercial component of the wastewater calculation.	The commercial wastewater flows for the proposed development at 32–42 Victoria Street have been calculated in accordance with Watercare's Wastewater Code of Practice (Section 5.3.5.1) and RITS Section 5.0. The development includes ground floor retail tenancies and a café, together with office tenancies on Levels 1 and 2. Commercial wastewater generation rates have been applied based on the proposed land uses and net floor areas derived from the architectural plans. Dry retail and office areas have been assessed using a wastewater generation rate of 4.3 L/m²/day, while the café tenancy has been assessed using a higher "wet retail" rate of 15.0 L/m²/day, reflecting food preparation and increased water use. These rates have

		been applied conservatively to the relevant tenancy areas to estimate total commercial wastewater flows. The resulting total commercial wastewater contribution is 15,392 L/day, which has been combined with the residential component to determine overall development flows. Using RITS peaking factors, the combined development flows equate to an Average Dry Weather Flow (ADF) of 0.25 L/s, a Peak Dry Weather Flow (PDF) of 0.77 L/s, and a Peak Wet Weather Flow (PWWF) of 0.81 L/s. These flows have been assessed against the proposed new 150mm wastewater connection and the downstream network, confirming that there is substantial residual capacity available and that the commercial component does not create any adverse capacity effects within the existing wastewater network
7. c	Flow & Capacity Provide flow and capacity calculations for each pipe from the development to the Albert Street wastewater pump station.	The attached calculations include capacity assessments for the key downstream wastewater pipes conveying flows from the proposed development to the Albert Street WWPS. The following pipes have been assessed: ● 1331585 ● 1331687 ● 1331690 ● 1332502 ● 20170306130433 ● 20170306141522 These pipes represent the primary downstream conveyance path to the pump station. A full assessment of every individual pipe within the wider catchment was not undertaken, as this would extend beyond what is necessary to determine the effects of the additional development flows. The calculations demonstrate that each pipe assessed has sufficient residual capacity to accommodate the additional flows generated by the development.

9. a	Build Over Provide details outlining how a potential build over of the existing stormwater pipe will be managed. This can be an indicative sketch, with commentary outlining the reasoning considering the options outlined under RITS 4.2.9.	If it is determined that the existing 300 mm stormwater pipe is located too close to the proposed building footprint, the pipe can be relocated to maintain appropriate clearances. Any relocation would be designed around the building, conceptually as shown in the sketch below. 

Please don't hesitate to contact me if you require any further information.

Yours sincerely,

Josy Cooper
BE, CMEngNZ, CPEng (259163)
Principal Engineer Above Water Engineering Ltd

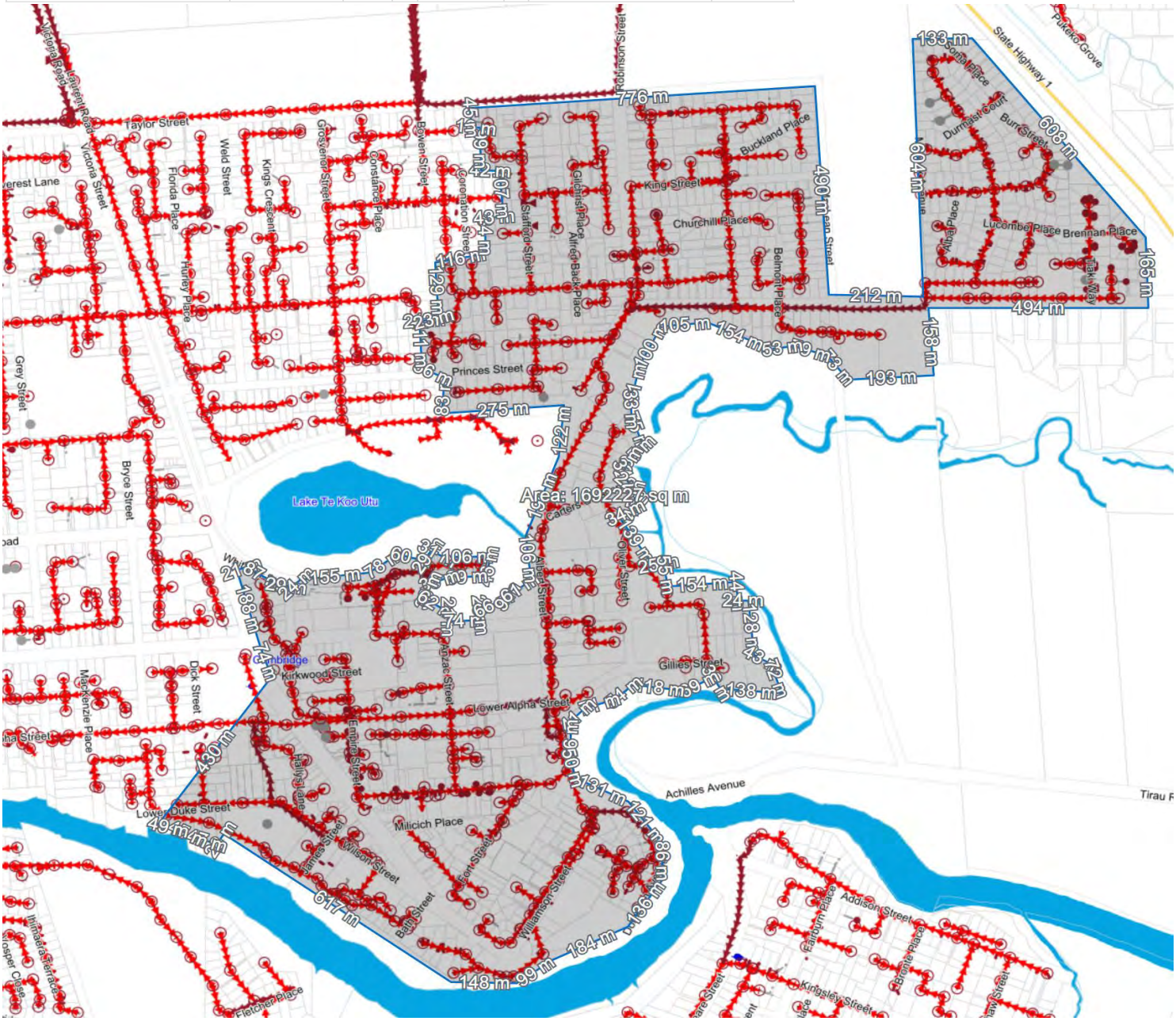
Attachments

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*4 of 4*	
DATE :	*5-May-25*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*20170306141522*	*To WWPS at Albert Street Waipa GIS Asset ID*
U/S Manhole Reference	*20170306120702*	
D/S Manhole Reference	*WWPS*	*Inlet Pipe*
U/S Catchment, Area (hectare):	*169.22*	*Est to Albert Street WWPS*
Population Equivalent (p/hectare):	*45*	*Residential*
Population:	*7615*	
Peaking Factor (Table 5.1):	*2.6*	*RITS*
ADF (l/s):	*22.03*	
PDF (l/s):	*50.24*	
PWWF (l/s):	*83.36*	*Including development flows*
Pipe Diameter (m)	*0.28*	
Pipe Gradient (%)	*1.62%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*0.6*	*PE*
Pipe Capacity (l/s)	*117.85*	
Residual Capacity (L/s)	*34.49*	

Colebrook White Calculations - Circular Pipes (Pipe Full)						
D (diameter in m)	0.28					
Slope S expressed 1 in	62		*1.61%*			
Viscosity ν	1.01					
Gravity g	9.81					
Hydraulic Radius R	0.07					
roughness k mm	0.6		*PE Pipe*			
Velocity V (m per sec)	1.91	m/s				
Flow Q (m^3 per sec)	0.118	m^3/s	117.85		l/s	

$$\text{Velocity } V = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



WWPS Inlet Pipe

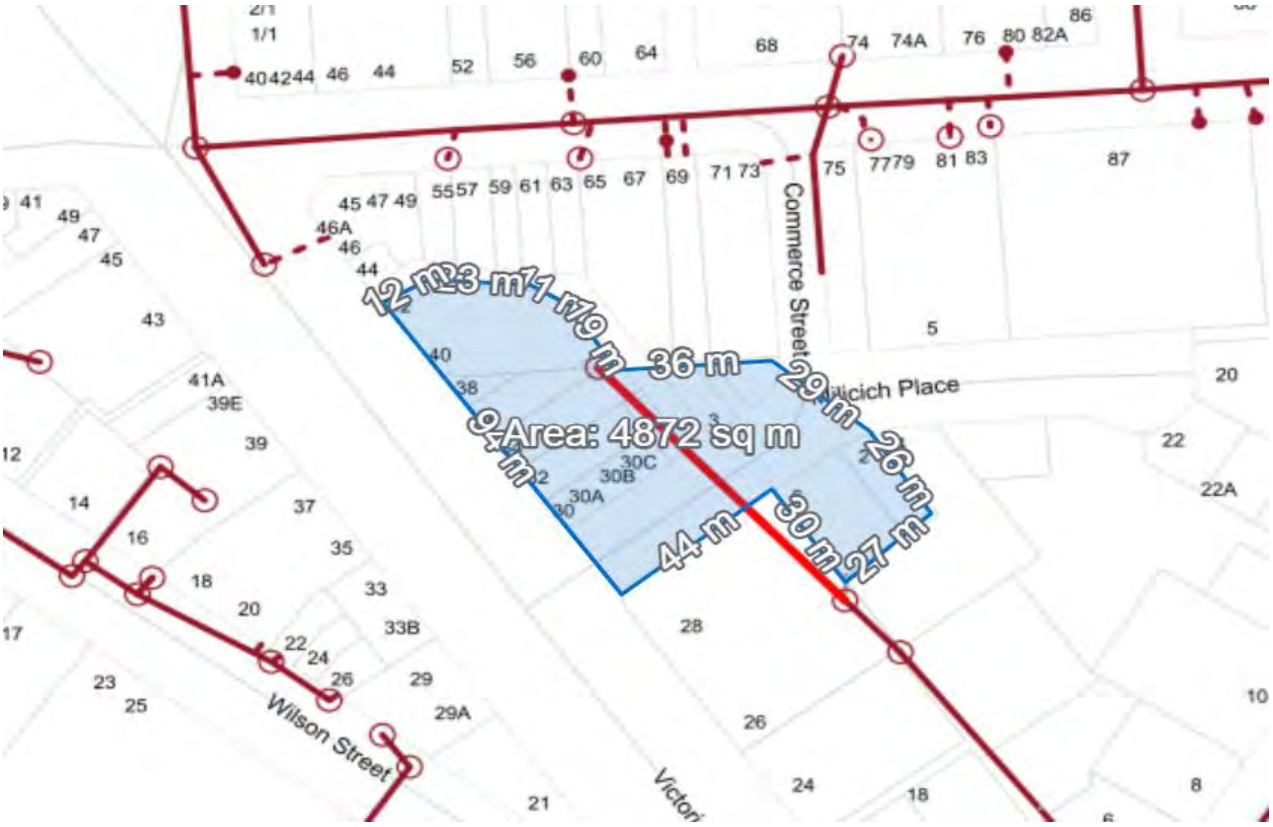
ABOVE WATER

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*A*	
DATE :	*19-Feb-26*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*1331585*	*Waipa GIS Asset ID*
U/S Manhole Reference	-	
D/S Manhole Reference	-	
U/S Catchment, Area (hectare):	*0.49*	
Population Equivalent (p/hectare):	*30*	*Commercial*
Population:	*15*	
Peaking Factor (Table 5.1):	*11*	*RITS*
ADF (l/s):	*0.05*	
PDF (l/s):	*0.38*	
PWWF (l/s):	*1.29*	*Including development flows*
Pipe Diameter (m)	*0.15*	
Pipe Gradient (%)	*0.72%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*1.5*	*EW*
Pipe Capacity (l/s)	*13.16*	
Residual Capacity (L/s)	*11.87*	

Colebrook White Calculations - Circular Pipes (Pipe Full)						
D (diameter in m)	0.15					
Slope S expressed 1 in	138			*0.72%*		
Viscosity ν	1.01					
Gravity g	9.81					
Hydraulic Radius R	0.0375					
roughness k mm	1.5			*EW*		
Velocity V (m per sec)	0.74	m/s				
Flow Q (m^3 per sec)	0.013	m^3/s		13.16	l/s	

$$\text{Velocity } V = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



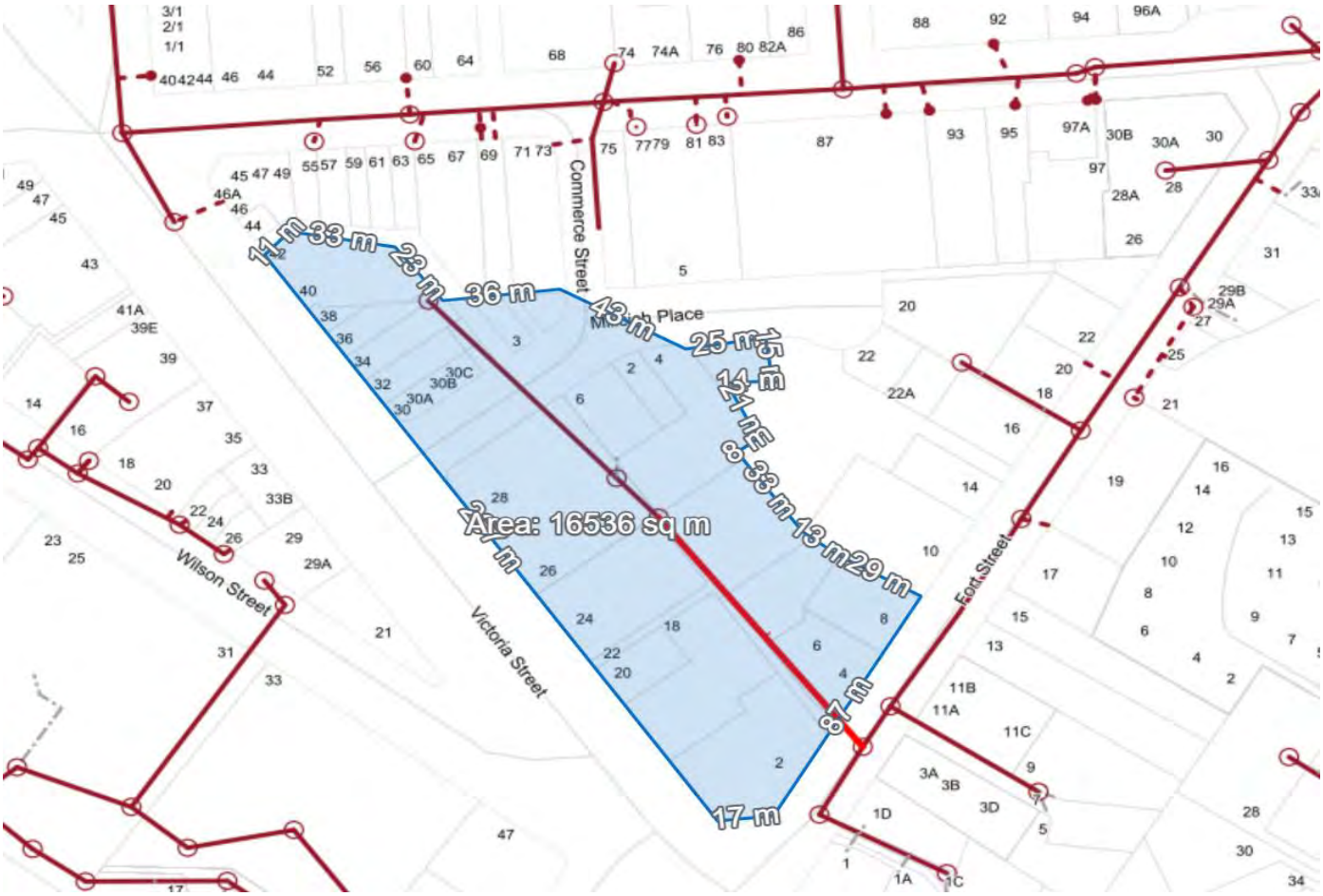
Catchment

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*B*	
DATE :	*19-Feb-26*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*1331687*	*Waipa GIS Asset ID*
U/S Manhole Reference	-	
D/S Manhole Reference	-	
U/S Catchment, Area (hectare):	*1.65*	
Population Equivalent (p/hectare):	*30*	*Commercial*
Population:	*50*	
Peaking Factor (Table 5.1):	*6.3*	*RITS*
ADF (l/s):	*0.16*	
PDF (l/s):	*0.77*	
PWWF (l/s):	*1.89*	*Including development flows*
Pipe Diameter (m)	*0.15*	
Pipe Gradient (%)	*0.38%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*1.5*	*EW*
Pipe Capacity (l/s)	*9.56*	
Residual Capacity (L/s)	*7.67*	

Colebrook White Calculations - Circular Pipes (Pipe Full)							
D (diameter in m)	0.15						
Slope S expressed 1 in	260			*0.38%*			
Viscosity ν	1.01						
Gravity g	9.81						
Hydraulic Radius R	0.0375						
roughness k mm	1.5			*EW*			
Velocity V (m per sec)	0.54	m/s					
Flow Q (m^3 per sec)	0.010	m^3/s		9.56		l/s	

$$\text{Velocity } V = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



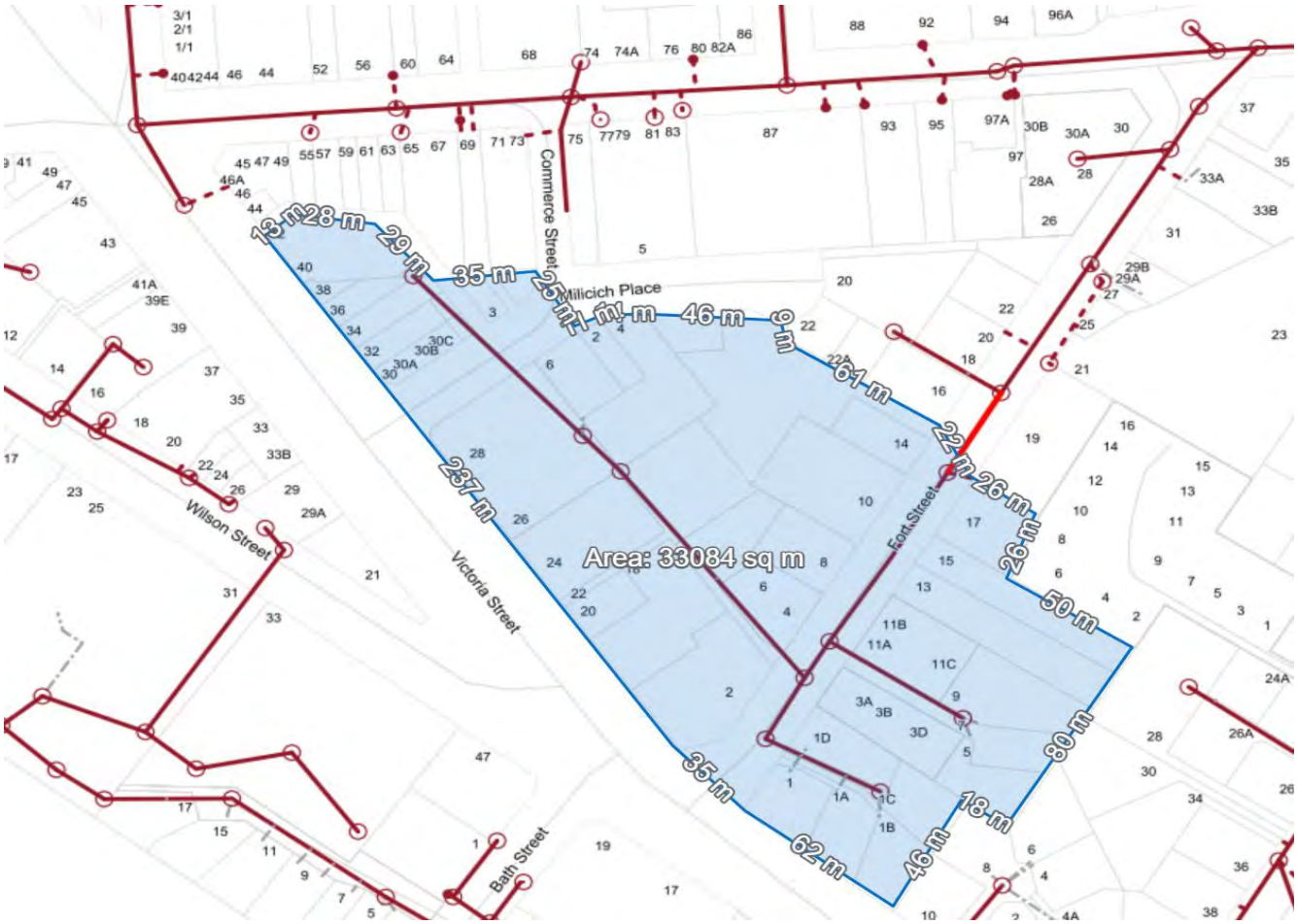
Catchment

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*C*	
DATE :	*19-Feb-26*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*1331690*	*Waipa GIS Asset ID*
U/S Manhole Reference	*-*	
D/S Manhole Reference	*-*	
U/S Catchment, Area (hectare):	*3.31*	
Population Equivalent (p/hectare):	*45*	*Commercial/Residential*
Population:	*149*	
Peaking Factor (Table 5.1):	*4.8*	*RITS*
ADF (l/s):	*0.43*	
PDF (l/s):	*1.74*	
PWWF (l/s):	*3.18*	*Including development flows*
Pipe Diameter (m)	*0.15*	
Pipe Gradient (%)	*0.68%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*1.5*	*EW*
Pipe Capacity (l/s)	*12.79*	
Residual Capacity (L/s)	*9.61*	

Colebrook White Calculations - Circular Pipes (Pipe Full)							
D (diameter in m)	0.15						
Slope S expressed 1 in	146			*0.68%*			
Viscosity ν	1.01						
Gravity g	9.81						
Hydraulic Radius R	0.0375						
roughness k mm	1.5			*EW*			
Velocity V (m per sec)	0.72	m/s					
Flow Q (m^3 per sec)	0.013	m^3/s		12.79		l/s	

$$\text{Velocity } V = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



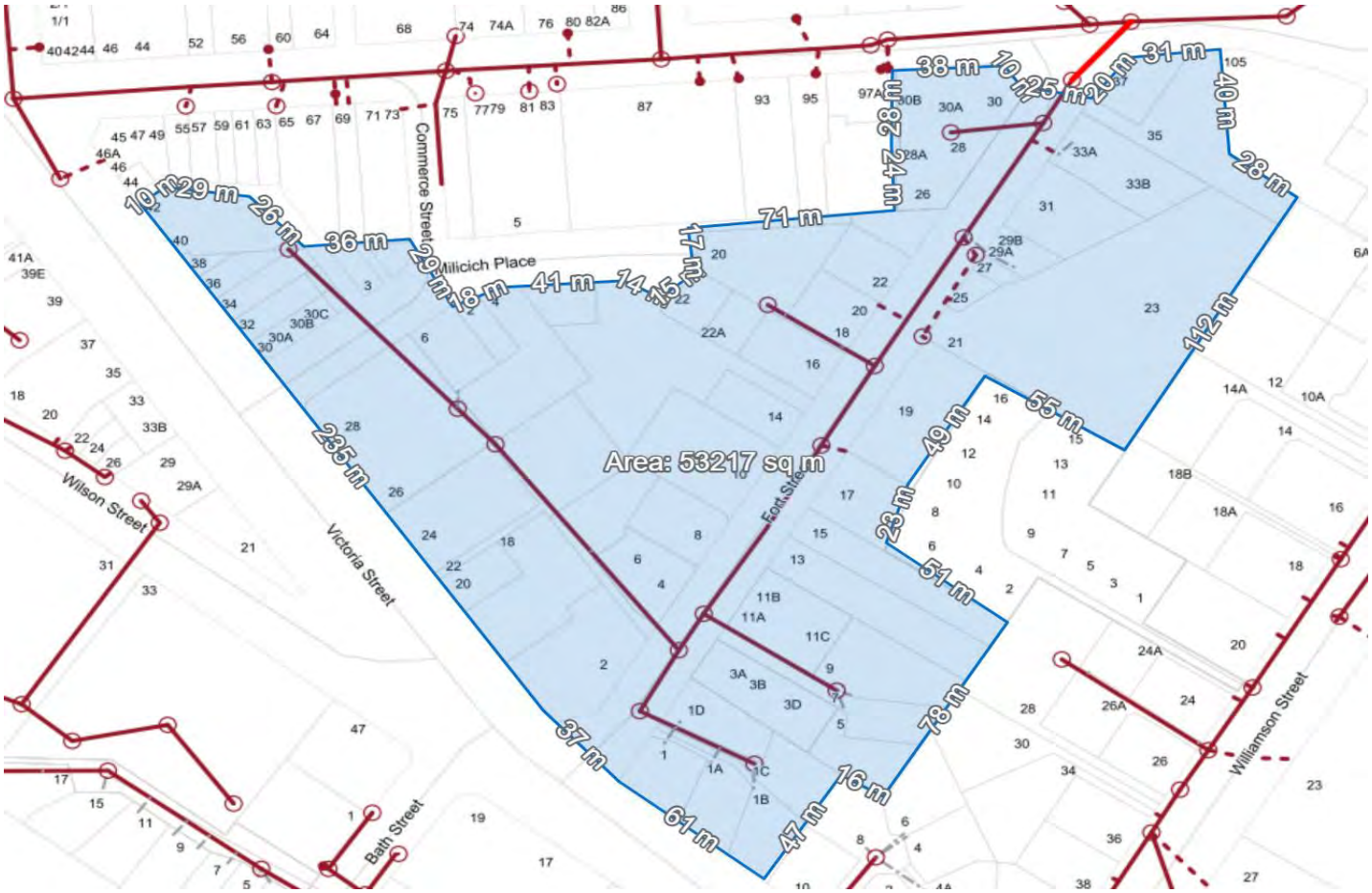
Catchment

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*D*	
DATE :	*19-Feb-26*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*1332502*	*Waipa GIS Asset ID*
U/S Manhole Reference	*-*	
D/S Manhole Reference	*-*	
U/S Catchment, Area (hectare):	*5.32*	
Population Equivalent (p/hectare):	*45*	*Commercial/Residential*
Population:	*239*	
Peaking Factor (Table 5.1):	*4*	*RITS*
ADF (l/s):	*0.69*	
PDF (l/s):	*2.36*	
PWWF (l/s):	*4.18*	*Including development flows*
Pipe Diameter (m)	*0.15*	
Pipe Gradient (%)	*4.95%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*1.5*	*EW*
Pipe Capacity (l/s)	*34.55*	
Residual Capacity (L/s)	*30.37*	

Colebrook White Calculations - Circular Pipes (Pipe Full)						
D (diameter in m)	0.15					
Slope S expressed 1 in	20.2			*4.95%*		
Viscosity ν	1.01					
Gravity g	9.81					
Hydraulic Radius R	0.0375					
roughness k mm	1.5			*EW*		
Velocity V (m per sec)	1.96	m/s				
Flow Q (m^3 per sec)	0.035	m^3/s		34.55	l/s	

$$\text{Velocity } V = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



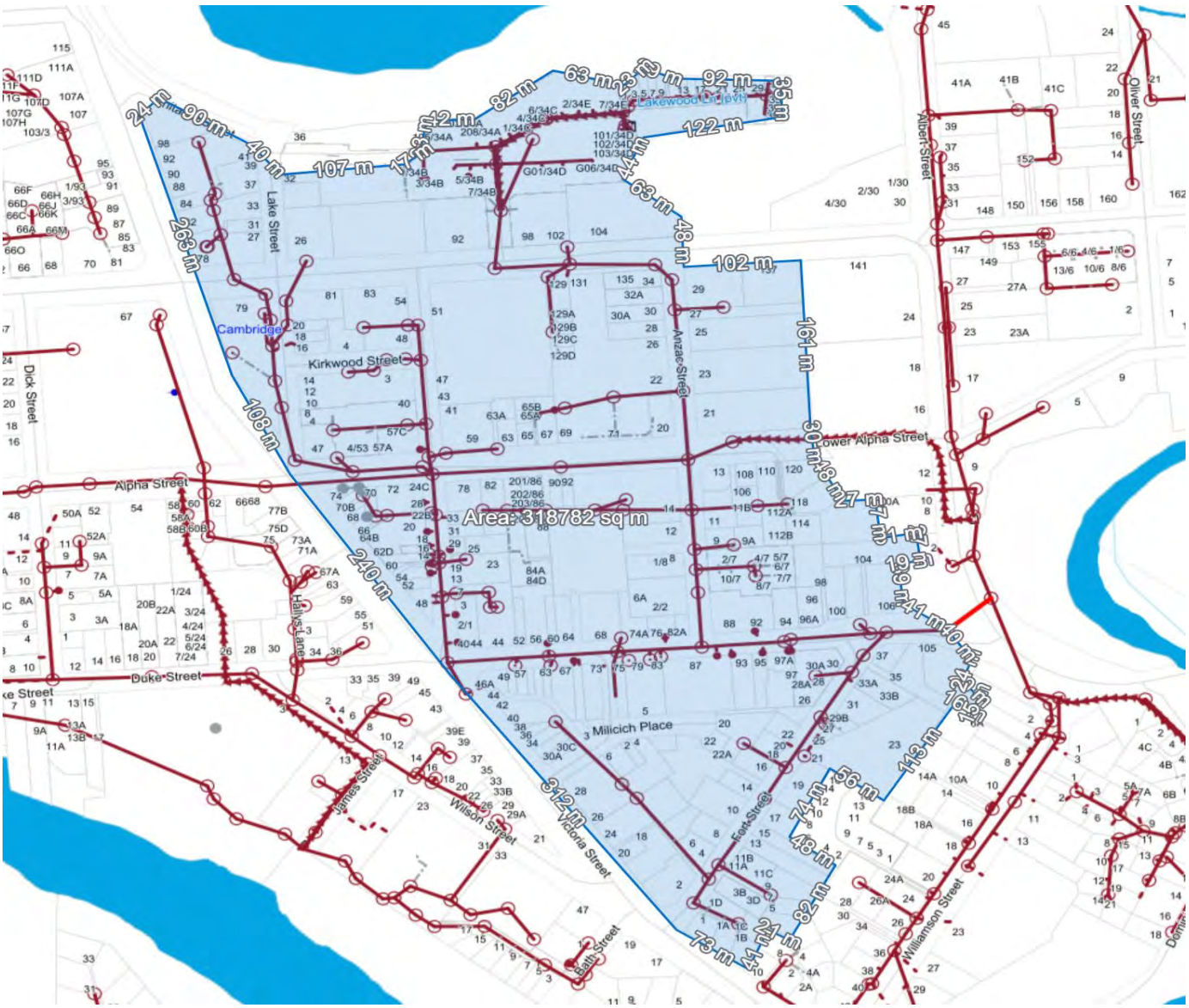
Catchment

PROJECT:	*25-152: 32 - 42 Victoria Street, Cambridge*
	Local Catchment Flows & Capacity

PAGE:	*E*	
DATE :	*19-Feb-26*	
BY:	*Above Water*	
Development:	*Commercial/Residential*	
Pipe Reference:	*20170306130433*	*Waipa GIS Asset ID*
U/S Manhole Reference	-	
D/S Manhole Reference	-	
U/S Catchment, Area (hectare):	*31.88*	
Population Equivalent (p/hectare):	*45*	*Commercial/Residential*
Population:	*1435*	
Peaking Factor (Table 5.1):	*2.9*	*RITS*
ADF (l/s):	*4.15*	
PDF (l/s):	*10.46*	
PWWF (l/s):	*17.36*	*Including development flows*
Pipe Diameter (m)	*0.18*	
Pipe Gradient (%)	*14.29%*	*As per GIS*
Colebrook-White, K (Table 5-3)	*0.6*	*PE*
Pipe Capacity (l/s)	*68.68*	
Residual Capacity (L/s)	*51.32*	

Colebrook White Calculations - Circular Pipes (Pipe Full)						
D (diameter in m)	0.159				PE SDR 17	
Slope S expressed 1 in	7			*14.29%*		
Viscosity ν	1.01					
Gravity g	9.81					
Hydraulic Radius R	0.03975					
roughness k mm	1.5			*EW*		
Velocity V (m per sec)	3.46	m/s				
Flow Q (m^3 per sec)	0.069	m^3/s		68.65	l/s	

$$\text{Velocity } V = -2(2gDS)^{0.5} \log \left\{ \frac{k}{3.7D} + \frac{2.51\nu}{D(2gDS)^{0.5}} \right\}$$



Catchment