UoA Student Centre & Library

Civil Infrastructure Report

Prepared for University of Auckland
Prepared by Beca Limited
FTAA Substantive Consent Application

13 November 2026



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Revision History

Revision N°	Prepared By	Description	Date
0	Selina Zhu and Luke Cameron	Issued for Draft FTAA Application	28 August 2026
1	Luke Cameron	Issued for Draft Resource Consent FTAA Application	29 September 2026
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Document Acceptance

Action	Name	Signed	Date
Prepared by	Selina Zhu and Luke Cameron		13 November 2026
Reviewed by	Roshanak Rezaee		13 November 2026
Approved by	John Walmsley		13 November 2026
on behalf of	Beca Limited		

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Executive Summary

This report has been prepared in accordance with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. The matters addressed in this report are within the author's area of expertise as a civil engineer. The opinions expressed are based on the information available at the time of assessment, and no material facts known to the author that may alter or detract from those opinions have been omitted.

Roshanak Rezaee is a Senior Associate Civil Engineer at Beca, a Chartered Professional Engineer (CPEng), and an approved Auckland Council Producer Statement Author. As the civil lead for this project, Roshanak Rezaee has overseen the civil infrastructure assessment presented in this report and has extensive experience in stormwater, wastewater, water supply, earthworks, and civil infrastructure design across New Zealand.

This report has been prepared for the University of Auckland as part of the Fast-track Approvals Act 2024 (FTAA) Substantive application for The University of Auckland Student Centre and Library (SC&L) development project, located on the corner of Princes Street and Alfred Street, Auckland Central (the site). It outlines the civil and infrastructure servicing strategy for the SC&L development, based on available survey information, Auckland Council GIS data, and early coordination with The University of Auckland, architect, and the building services engineers. The assessments undertaken to date indicate that the site can be serviced for stormwater, wastewater, potable water, fire water, power, and telecommunications subject to confirmation of existing asset condition and network capacity during subsequent design phases.

Bulk earthworks associated with the development exceed the permitted activity thresholds in Chapter E12 of the Auckland Unitary Plan (AUP) and require consent as a restricted discretionary activity and have been planned with appropriate erosion and sediment control measures to avoid adverse effects on neighbouring properties and existing infrastructure. Stormwater management has been designed to ensure no deterioration of downstream network capacity, with attenuation sized to achieve two Green Star credits. Stormwater catchments have been swapped, with SC&L runoff directed to the existing Hiwa tank and Hiwa runoff directed to the new stormwater detention tank. The detention tank overflow will be diverted to the plaza via overflow pipes, dispersing as sheet flow towards Princes Street. Flow depth and velocity assessments confirm no pedestrian safety risk, and downstream checks demonstrate that the overflow will not worsen flooding or adversely affect downstream properties. A stormwater treatment device has been incorporated to meet the Green Star pollution-reduction target, with supporting technical question provided to New Zealand Green Building Council for justification.

Servicing assessments have been completed for drainage network capacity and water demand based on the latest topographical survey and conservative assumptions, indicating that no upgrades to public drainage networks are anticipated at this stage, subject to the investigations below. Existing utilities, including power, telecommunications, and gas, have been reviewed, with protection or diversion requirements to be confirmed as design progresses.

The servicing strategies presented provide a robust foundation for the FTAA application and will be refined as additional information becomes available. Final design solutions will be confirmed through detailed engineering analysis, continued stakeholder engagement, and coordination with Auckland Council, Watercare, Vector, Chorus, and the University of Auckland to ensure the safe, resilient, and compliant delivery of the SC&L development.

1 Introduction

Beca Ltd (Beca) has prepared this Civil Infrastructure Report for Waipapa Taumata Rau, The University of Auckland (UoA or the University), in support of the Fast-track Approvals Act 2024 (FTAA) application for the SC&L development within the University's City Campus, on the corner of Princes Street and Alfred Street, Auckland Central.

The SC&L development will create a new social and academic hub for the University's City Campus, comprising a modern library, teaching spaces, study spaces, student association offices, student support services, food and retail amenities, and associated plant spaces. The development also includes the expansion and redevelopment of Te Tūātea, the University's central plaza space, strengthening pedestrian connections between the campus and the surrounding city environment.

The building comprises approximately 23,859m²[1] gross floor area (GFA) across eight levels and associated rooftop plant facilities. The building incorporates two basement levels (Lower Ground and Basement) and six levels above ground, accommodating a range of academic, social, commercial, and operational functions, with rooftop plant in addition.

The purpose of this report is to support the FTAA substantive application by outlining the civil infrastructure required to service the development and outline the design basis and rationale. It includes an assessment of the existing site conditions, designed site development works, servicing strategy, stormwater management approach, and other key civil infrastructure considerations relevant to the development. This report should be read in conjunction with the FTAA Civil Engineering drawings included in Appendix A.

The civil engineering scope generally includes:

- Bulk earthworks and erosion and sediment control measures;
- Public and private stormwater services;
- Public and private wastewater services;
- Potable water and fire water supply services;
- Overland flow path management;
- Utility coordination and infrastructure protection requirements.

The project has been developed with consideration of sustainable design principles and the University's broader environmental objectives and is targeting a Green Star rating. As part of this sustainability strategy, the stormwater management design incorporates rainwater harvesting and reuse measures, with tank storage sized to achieve two Green Star credits. The civil infrastructure design promotes efficient water management, reduces potable water demand, minimises adverse effects on the receiving environment and surrounding infrastructure networks, and supports the long-term resilience and sustainability of the University campus.

The design has been developed to a level appropriate for the FTAA process. Due to the ongoing progression of detailed design, some elements described within this report may be refined during subsequent design phases. Any such refinements will be undertaken in accordance with the Auckland Council standards and project-specific design objectives and consent conditions.

The civil engineering assessment presented in this report is based on the architectural and site information available at the time of writing, including the Warren and Mahoney's (WaM) FTAA Substantive Application package received on 28 October 2026

[1] The building has a GFA of 19,658m² under the Auckland Unitary Plan definition, which excludes plant areas. The figure of 23,859m² is inclusive of plant.

1.1 Site Description and Constraints

The SC&L development is located on the corner of Princes Street and Alfred Street within the University's City Campus and occupies an approximate area of 6,000m². The site contains existing Student Union buildings B311 and B312. It is bounded by the Hiwa Recreation Centre (B310) to the southwest, Kate Edger Information Commons (B315) to the southeast, Alfred Street to the northwest, and Princes Street to the northeast, as shown in Figure 1-1.

Under the AUP, the site is zoned Business – City Centre Zone and located within the Learning Precinct. The landform generally slopes to the southeast, with an approximate 3m fall from RL 45m at the upper portion of the site to RL 42m near Alfred Street. The site sits at the upper end of the local stormwater catchment with flows conveyed downslope towards Alfred Street.

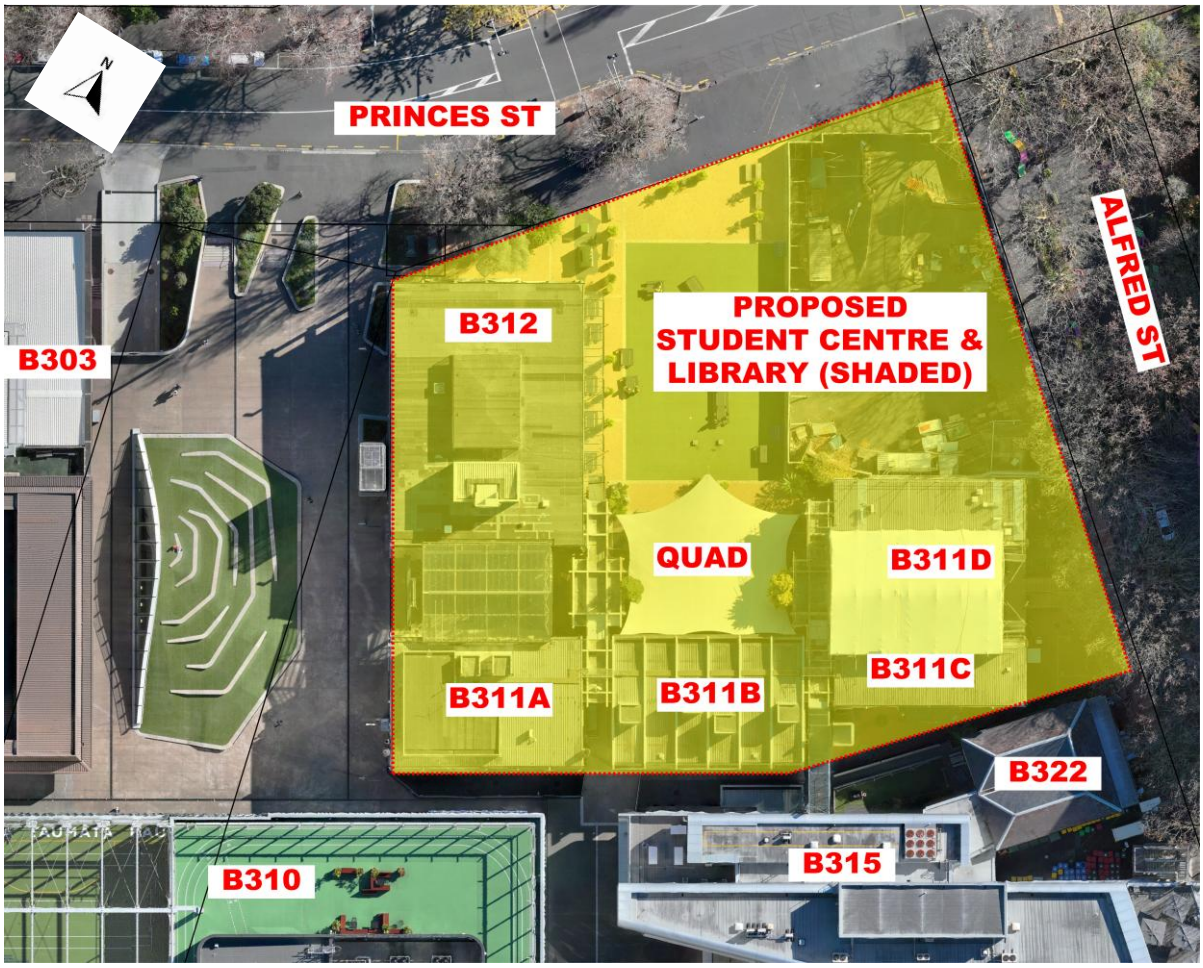

Figure 1-1 Aerial Site Plan (Source: BN Walker received on 30 June 2026)

The key civil engineering constraints associated with the site are outlined below.

Existing Underground Services (B315 Interface)

- Existing underground utility services located between the development and B315 are required to remain operational during construction and continue servicing adjacent campus buildings. Retention of these services constrains opportunities for regrading, resurfacing, and drainage upgrades within the corridor.

Auckland University Students' Association (AUSA) Building

- The heritage Auckland University Students' Association (AUSA) building (B322) is located adjacent to the development footprint and has been taken into account in the ground retention design to avoid adverse effects on the structure and its foundations.

Alfred Street Interface

- Protected notable street trees and associated root protection zones constrain the available development footprint and limit construction and infrastructure installation options.
- Existing public drainage infrastructure within Alfred Street constrains available servicing connection locations, network tie-in opportunities, and design levels. Topographical survey information and available asset records have been reviewed to inform the design.

Princes Street Interface

- Existing utility corridors within Princes Street contain water, gas, and telecommunications infrastructure that require protection and coordination throughout design and construction.
- Existing Vector substation infrastructure requires relocation subject to confirmation through further design development and utility provider engagement.
- Existing levels, adjacent building interfaces, and underground infrastructure constrain site grading, access arrangements, and utility connections.

Collectively, these constraints have influenced the development of the civil engineering design and will require careful consideration during detailed design and construction planning to maintain existing infrastructure, protect neighbouring assets and minimise disruption to campus operations.

1.2 Design Assumptions and Limitations

The following assumptions and limitations have been adopted for the civil design assessment:

1. Wastewater from the civil scope is taken only from Lower Ground level and above. The Basement level does not include toilets; however, minor sanitary drainage such as condensate discharge from mechanical plant, the lift pit and subsoil drains will occur and will be managed within the building's internal hydraulics design. Any wastewater pumping requirements will form part of the hydraulics scope and will be confirmed at the next design stage.
2. The stormwater management strategy assumes the development will achieve two Green Star credits through rainwater harvesting and detention storage.
3. A concrete stormwater detention tank is designed to withstand surcharge conditions. The tank has been sized to manage up to the 10-year allowable discharge to the downstream public stormwater network. During a 100-year event, excess flows will be diverted via overflow pipes to the plaza, where it will disperse as sheet flow towards Princes Street. An overland flow path assessment has been undertaken to confirm that the designed arrangement will not adversely affect downstream flooding.
4. The assessment is based on the information available at the time of preparation, including the Warren and Mahoney (WaM) FTAA Substantive Application architectural layout and floor levels dated 28 October 2026 together with existing surface levels and underground services information obtained from the following surveys and investigations:
    - Topographical As-built Survey 7119-700-01, Revision 1, dated 27 August 2026;
    - Service Investigation As-built 7119-600-02, Revision 0, dated 22 September 2026; and
    - Drainage Investigation As-built 7119-600-01, Revision 2, dated 25 September 2026
5. Existing utility locations, capacities and connection requirements are based on available records and will require verification through further investigation and consultation with the relevant utility providers.

6. The civil engineering solutions and pipe sizing are intended to demonstrate the feasibility of the development and may require refinement during detailed design.
7. Further assessment may be required for construction staging, temporary works, earthworks and service protection.
8. Any changes to the development layout, levels, contributing catchments or servicing approach may require the civil engineering assessment to be reviewed and updated.

These assumptions and limitations should be considered when relying on the findings of this report. The civil engineering design may require further review and refinement as additional site information becomes available and the design progresses.

2 Design Summary

The proposal involves redeveloping the existing site to accommodate the new SC&L building, necessitating the demolition and removal of all existing buildings within the site.

The development will comprise a multi-storey academic building of eight levels, which includes two basement levels, six above-ground levels and supporting rooftop plant areas in addition. The development will generally remain in private ownership by UoA, and the civil infrastructure within the site will generally comprise private assets owned and maintained by UoA.

No new public accessways are designed as part of the development. Private internal stormwater, wastewater, and potable water reticulation will be provided within the site. Stormwater will connect to the private stormwater network within the site, while wastewater will discharge to the public network via a new wastewater connection extension across Alfred Street.

The development will require significant excavation to form the Lower Ground and Basement levels. Retaining walls will be incorporated as part of the basement and building foundation structure to retain the required ground levels. Subsoil drainage will be provided below the basement slab and around the building foundations and connected to the designed drainage system. The indicative Lower Ground floor layout is shown in Figure 2-1.



Figure 2-1 Site Layout Plan

(excerpt from Warren and Mahoney's concept design architectural drawing A03.001, revision E)

3 Earthworks

3.1 Earthworks Volume Assessment Methodology

3.1.1 Existing Ground Conditions

Based on the Tonkin & Taylor UoA Waipapa Taumata Rau, Library and Student Hub Geotechnical Interpretive Report (version 2.1 dated 02 November 2026) and contaminated land preliminary site investigation (version 2.1 dated 28 October 2026), the site is generally underlain by Auckland Volcanic Field (AVF) ash over East Coast Bays Formation (ECBF) sandstone/siltstone at depth. The volcanic ash layer is typically 2.5–5 m thick. Beneath this, ECBF residual soil extends approximately 5–6 m before transitioning into ECBF rock. Competent ECBF rock is typically encountered at RL 30–35 m. Groundwater monitoring undertaken adjacent to the site indicates the presence of a shallow perched/percolating groundwater regime. The preliminary site investigation identified trace asbestos and elevated lead within localised areas of shallow fill. Further investigation is recommended following demolition, with site soils to be managed in accordance with the project Contaminated Site Management Plan (CSMP).

3.1.2 Existing Buildings B311 and B312 Demolition Excavation

To quantify the excavation associated with the removal of the existing Buildings B311 and B312, a digital surface model (Civil 3D) was developed representing the anticipated foundation removal extents. The model incorporated the estimated footprint and depth of the existing foundations based on available site information and a topographical survey undertake by B. N. Walker Surveying 2016 Ltd, Revision 1 dated 27 August 2026 and an allowance of approx. 600mm excavation into firm material below the Basement Level.

For the purpose of volume calculations, excavation side slopes were not applied due to the site constraints. Instead, the excavation was modelled with near vertical faces extending from the base of the foundation excavation to the existing ground surface. This approach was adopted to reflect the likely demolition methodology within a constrained site environment and to provide a conservative estimate of excavation volumes associated with foundation removal.

3.1.3 SC&L Building Designed Excavation

SC&L building excavation is based on architectural design layout and elevation plan[2].

The designed building earthworks were based on a Basement Finished Floor Level (FFL) of RL 36.11m.

[2] FTAA Substantive Application Architectural Drawings by Warren and Mahoney Architects dated 28 October 2026

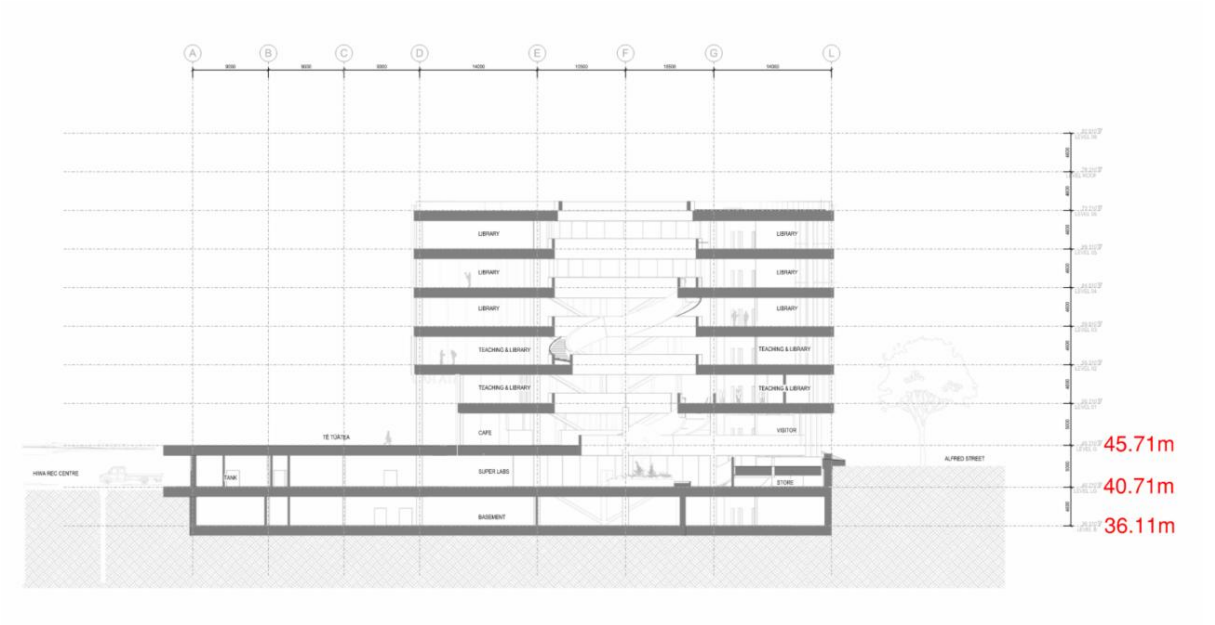

Figure 3-1: Elevation Plan by WaM

To establish the excavation formation level, the following assumptions were adopted:

- 250 mm reinforced concrete floor slab;
- 350 mm subgrade preparation and sub-excavation beneath the slab;
- Total excavation into firm material approx. 600mm below the basement floor level

Accordingly, the excavation formation level for the building was set at RL 35.51m (NZVD2016).

A digital design excavation surface (Civil 3D) was generated across the building footprint (Basement level) at RL 35.51m. Consistent with the foundation removal assessment, near vertical excavation faces were assumed from the formation level to the existing ground surface, with no allowance made for temporary batter slopes or shoring requirements. These elements will be subject to detailed construction methodology and geotechnical design.

The designed finished ground surface on the laneway, accesses and Plaza have been modelled to provide a coordinated tie-in with the existing levels. The plaza has been graded to connect with HIWA Plaza while maintaining positive drainage towards Princes Street. Laneway levels have been adjusted to comply with WaM requirements and provide appropriate integration with adjacent public realm areas.

3.1.4 Volume Calculation Method

Earthworks volumes were determined by using a surface-to-surface comparison.

For areas within the new building footprint, cut and fill volumes were calculated using a surface-to-surface comparison between:

- The temporary surface comprising existing ground levels outside the Building B311 and B312 footprints and the underside of existing foundations within the existing building footprints; and
- The design excavation surface at RL 35.51m (NZVD2016).
- For areas outside the new building footprint, a 300 mm pavement thickness has been assumed beneath all designed paved areas. Cut and fill volumes for these areas have been calculated using a surface-to-surface comparison between the designed formation level (finished level less 300 mm); and the existing surveyed ground levels. (Where the designed SC&L building footprint extends into areas currently occupied by an existing building, existing laneway levels have been

assumed to continue through the building footprint. This assumption is not expected to materially affect the estimated earthworks volumes.

- Whilst laneway access to Kate Edger and the Student Centre is designed to be lowered, the ramp adjacent to the Heritage AUSA Building will remain at a level similar to the existing arrangement. Prior to undertaking any excavation works associated with the laneway, the existing foundation and footing levels of the Heritage AUSA Building will be verified to inform the detailed construction methodology and minimise the potential risk of ground movement or settlement. Construction activities in the vicinity of the building will be carefully managed, and a monitoring regime will be implemented during the work to identify any movement at an early stage. This approach is consistent with the procedures successfully adopted for previous works undertaken adjacent to University of Auckland heritage buildings.

The resulting volume assessment underneath the existing building represents the net excavation required to achieve the building formation level and excludes any allowance for temporary works, over-excavation, settlement contingency, shoring systems, or construction tolerances.

The calculated quantities summarised in Table 3-1 are indicative estimates suitable for planning and early design purposes.

Table 3-1 Summary of Designed Earthworks Volumes

Summary of Designed Earthworks Volumes	
Earthworks Area	5,565m^2
Cut Volume (New Building Basement)	34232m^3
Cut Volume (New Plaza, Accesses, and Laneway)	291 m^3
Fill Volume (New Plaza, Accesses, and Laneway)	241m^3
Net	34,282m^3 (cut)

The volumes above exclude service trenching, temporary batter slopes, bulking and compaction allowances, and removal of any contaminated or unsuitable material. Actual earthworks quantities will be confirmed following detailed geotechnical investigations and may vary from these estimates. Refer to drawing 5013381-CA-2000 for earthworks layout.

The earthworks volumes presented in this report exclude the removal of the existing basement and any other demolition-related volumes associated with existing structures. Accordingly, the reported cut and fill volumes represent only the earthworks required for the designed excavation works.

3.2 Erosion and Sediment Control

Erosion and sediment control measures for the designed earthworks have been developed in accordance with Auckland Council Guideline Document 05 (GD05). A standalone Erosion and Sediment Control Management Plan (ESCMP) has been prepared for the project, outlining the designed control measures, monitoring requirements, and management procedures to minimise sediment discharge and adverse environmental effects during construction. The ESCP is attached to the Civil Infrastructure Report as Appendix D and should be referred to for further details.

4 Infrastructure Servicing Assessment

The following documents were reviewed and used as part of the design:

- Topographical survey provided by B. N. Walker Surveying 2016 Ltd, Revision 1 dated 27 August 2026.
- Existing services information database provided by UoA.
- Existing UoA S300 Recreational Centre Topographical & Drainage Survey Revision A dated 22 March 2017.
- Background information incorporated from previous UoA projects Beca was involved in.
- Auckland Council (AC) GIS information.
- BeforeUdig enquiries.
- Architectural plans provided by Warren and Mahoney dated October 2026.
- B310 Hiwa Recreation Centre As-builts provided by Hawkins dated February 2024.

The available information has been reviewed and collated to establish a combined record of existing services. Some services may have been relocated, removed or abandoned during the recent B310 Hiwa development and other previous projects. Accordingly, service alignments, connections and in-ground conditions remain subject to verification through further investigation.

The assessment has been based on the available project documentation, survey information and engineering judgement. A site walkover was undertaken on 28 May 2026 to validate key site observations. The existing services layout is shown on Drawing 5013381-CA-1100, included in Appendix A.

4.1 Stormwater Management

The stormwater management strategy for the SC&L development has been developed in accordance with the requirements of Schedule 4 of the Auckland Regionwide Network Discharge Consent and is detailed in the accompanying Stormwater Management Plan (SMP), which has been prepared as a standalone document and included as part of the FTAA application.

The strategy incorporates stormwater detention, retention, controlled discharge and overland flow path management to minimise adverse effects on the downstream public stormwater network while supporting the project's sustainability objectives and targeted two Green Star stormwater credits.

A summary of the designed stormwater management measures is provided in Table 4-1.

Table 4-1 Summary of Stormwater Management Strategy

Item	Description
Development classification	Large brownfield development (>5,000 m²)
Primary stormwater strategy	Reuse of existing Hiwa stormwater tank for attenuation of the SC&L catchment and provision of a new detention and retention tank within the SC&L development for the Hiwa catchment
Existing Hiwa tank	45 m³ detention storage and 90 m³ retention storage
New SC&L tank	135 m³ detention storage (three times the detention volume currently provided by the existing Hiwa tank) and 90 m³ retention storage

Item	Description
Green Star target	Two Green Star stormwater credits
Stormwater quality treatment	Gross pollutant traps (GPTs) in the form of catchpit filter baskets, together with a proprietary stormwater treatment device as a treatment train approach to achieve the stormwater quality objectives associated with the targeted two Green Star credits.
SC&L discharge location	Existing Hiwa stormwater system discharging to the public network in Princes Street
Hiwa discharge location	Existing private network discharging to the public stormwater network in Alfred Street
10% AEP flooding assessment	Downstream network capacity assessment indicates sufficient capacity within the receiving public stormwater networks
1% AEP flooding assessment	Excess flows managed via controlled surcharge and secondary flow paths
Overland flow path strategy	Overflow from the detention system discharged onto Te Tūātea Plaza and conveyed towards Princes Street
Asset ownership	Stormwater infrastructure within the site to remain private assets owned and maintained by UoA

The hydraulic assessment indicates that the designed stormwater management strategy will not increase peak discharge to the downstream public stormwater networks in Alfred Street and Princes Street. The designed overflow route across Te Tūātea Plaza has also been assessed and is not expected to result in adverse flooding effects on the development, adjoining properties or downstream infrastructure.

Further details of the stormwater assessment, including water quality, stream hydrology, flooding and overland flow path assessments, are provided in the Stormwater Management Plan Report prepared in support of this application.

4.2 Wastewater Network

4.2.1 Existing Services and Peak Flow

The existing wastewater network in the vicinity of the SC&L development has been reviewed based on Auckland Council GIS and the available topographical survey from the B310 Hiwa project, as shown in drawing 5013381-CA-1100 Existing Site and Services Layout in Appendix A. The topographical survey for the SC&L has been received and incorporated into the assessment.

Auckland Council GIS indicates a DN2300 concrete public wastewater transmission main (part of the Eastern Interceptor system) running along the western boundary of the site. This is a critical Watercare asset, located at significant depth (invert approximately RL 2.3m, ~40m below ground level). As the SC&L building piling may be located above this asset, the design must demonstrate no adverse effects on the interceptor. A Works Over (WO) approval for the Eastern Interceptor may not be required, this will be confirmed with Watercare at detailed design.

Existing private DN225 wastewater pipes run along the south-eastern boundary between SC&L and the Kate Edger Building, connecting to the public DN225 wastewater main in Alfred Street. The downstream

wastewater manhole invert levels are surveyed and pipe capacity checks have been completed on the private pipes in the laneway and public DN225 line on Alfred St.

High-level peak wet weather flow (PWWF) calculations have been completed based on estimated existing building floor areas, with the existing site PWWF assessed at approximately 2.4 L/s in accordance with the Watercare Wastewater Code of Practice (WWCoP), refer to Table 4-2 and Appendix B for detailed calculations.

Table 4-2 Summary of Existing Site Peak Wastewater Flow

Existing Site Building Area Types	Net Floor Area (m^2)	People	Design WW Flow L/person/day	Design WW Flow L/m^2	PWWF (L/s)	Total Peak Wastewater Flow (L/s)
Office	7,001	467	65	-	1.76	2.40
Wet Retail	556	-	-	15	0.65	

4.2.2 Design Services and Peak Flow

The SC&L building includes multiple wastewater discharge points at both ground and lower-ground levels. Discharges on the south-eastern side are designed to connect to the existing private manhole and DN225 wastewater pipe adjacent to the Kate Edger Building, which ultimately discharges to the public DN225 main in Alfred Street. The northeastern discharge points are designed to connect directly to the public wastewater manhole across Alfred Street (invert level 37.69m). Establishing a new wastewater connection in Alfred Street may be constrained by existing trees and associated root protection zones.

The latest topographical survey and CCTV investigation indicate that the nearby public WWMH connections are currently full of water and obstructed by roots. The measured invert level (assessed manually due to limited access) suggests insufficient fall to achieve a compliant wastewater connection from the SC&L LG level. As a result, the designed wastewater strategy is to collect lower ground level discharges and convey them along Alfred Street, crossing the road to connect into the existing public WWMH located near the General Library (B109). The designed wastewater layout is shown on drawing 5013381-CA-5000 Wastewater Layout in Appendix A.

Based on current building levels and available survey information, local wastewater pumping systems are not required to service lower-ground discharges, including food and beverage tenancies, end-of-trip facilities, and other below-ground amenities.

The architectural concept design indicates a gross floor area (GFA) of 19,568 m² for the SC&L development. In accordance with the WWCoP Table 5.1.3, all areas shown on the architectural plans are classified as 'office', except for the café, which is classified as 'wet retail'. The estimated PWWF for SC&L is approximately 7.69 L/s, refer to Table 4-3. Because the Superlabs are new installation without baseline discharge data, wastewater demands have been estimated using the Heavy Water Usage Industry classification; these assumptions will be reviewed and updated once specific water consumption and peak flow data become available.

Table 4-3 Summary of SC&L Peak Wastewater Flow

SC&L Building Area Types	Net Floor Area (m^2)	People	Design WW Flow L/person/day	Design WW Flow L/m^2	PWWF (L/s)	Total Peak Wastewater Demand (L/s)
Office	17,554	1,170	65	-	4.40	6.11
Superlabs	1,832	-	11	-	1.50	
Wet Retail	182	-	-	15	0.21	

A downstream wastewater capacity assessment was previously undertaken as part of the B310 Hiwa Civil Infrastructure Report (refer Appendix B). The assessment adopted an PWWF contribution from the exiting SC&L site of 2.403 L/s. Based on the estimated post-development SC&L PWWF of 6.11 L/s, an additional 3.71 L/s has been applied to the assessed network flows. The updated assessment results, presented in Appendix B, indicate that peak flows remain below the full-flow capacity of all assessed wastewater pipes. Accordingly, the downstream network is considered capable of accommodating the additional wastewater discharge associated with the new development. It is also noted that the gradients of pipes SS07 and SS08 were subsequently confirmed to be steeper than those adopted in the original assessment, based on the latest Auckland Council GIS information. As steeper pipe gradients increase hydraulic capacity, the assessment is considered conservative and the actual downstream network performance is expected to be more favorable than indicated by the original modelling

Watercare's wastewater network capacity mapping (Figure 4-1) indicates that the SC&L site is located within an area with available network capacity. On this basis, no significant capacity constraints or upgrades are anticipated. This will be confirmed during the next design phase through review of DN225 pipe levels, condition, and available capacity, and through engagement with Watercare.

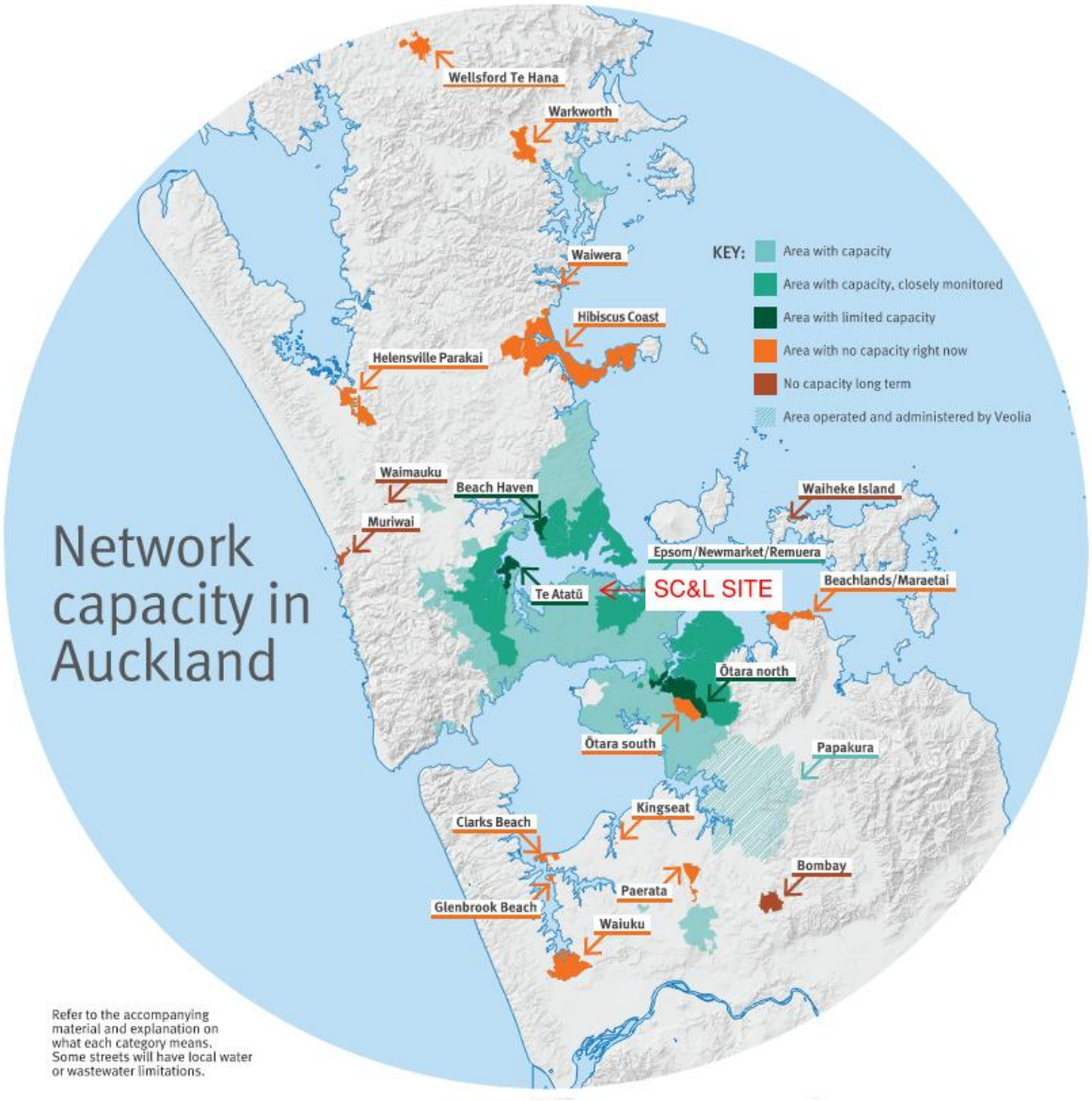

Figure 4-1: Wastewater network capacity in Auckland

4.3 Potable and Fire Water Network

4.3.1 Existing Services and Peak Water Demand

The existing potable water network in the vicinity of the SC&L development has been reviewed based on Auckland Council GIS data and the available topographical survey from the B310 Hiwa project. As shown on drawing 5013381-CA-1100 Existing Site and Services Layout in Appendix A, public water mains are located within Alfred Street and Princes Street. UoA also owns and operates a private water ring main that reticulates supply across the wider campus.

High-level potable water demand calculations for the existing site, based on estimated floor areas of existing buildings, indicate a peak water demand of approximately 2.24 L/s in accordance with the Watercare Water Code of Practice (WCoP) (refer to Table 4-4 and Appendix B for detailed calculations). The size, condition, pressure, and available capacity of the adjacent private water network will be confirmed at the next design stage.

Table 4-4 Summary of Existing Site Peak Water Demand

Existing Site Building Area Types	Net Floor Area (m^2)	People	Design Water Flow L/person/day	Design WW Flow L/m^2	Peak Water Demand (L/s)	Total Peak Water Demand (L/s)
Office	7001	467	65	-	1.76	2.24
Wet Retail	556	-	-	15	0.48	

The existing fire water connection serving B312 conflicts with the SC&L building piles and will be isolated and removed to enable construction. Potential re-use of this connection for the new building will be reviewed at the next design stage, subject to condition/capacity checks, alignment feasibility, and necessary approvals.

4.3.2 Potable Water Connection and Design Peak Water Demand

A new DN90 potable water connection is designed for SC&L to be supplied from the UoA's private ring main located within the laneway between the SC&L and Kate Edger buildings. Hydraulic engineer anticipates a peak potable water demand of approximately 9.5 L/s. The estimated Peak Wet Weather Flow (PWWF) for the SC&L development is approximately 5.13 L/s, as presented in Table 4-5. Wastewater demands associated with the designed Superlabs and other development components have been assessed using the adopted design criteria and form the basis of the wastewater servicing strategy presented in this report.

Table 4-5 Summary of SC&L Peak Water Demand

SC&L Building Area Types	Net Floor Area (m^2)	People	Design Water Flow L/person/day	Design WW Flow $L/m^2/d$	Peak Water Demand (L/s)	Total Peak Water Demand (L/s)
Office	17,554	1,170	65	-	4.40	5.73
Superlabs	1,832			11	1.17	
Wet Retail	182	-	-	15	0.16	

Confirmation of public water main capacity to serve the domestic water supply will be advised by Watercare, based on their network modelling and asset performance data. The water servicing strategy will be further developed during the next design stage in consultation with the UoA and the hydraulic engineers. This will include confirming the preferred connection location, connection methodology, pipe sizing, isolation valve requirements, metering arrangements, and backflow prevention measures in accordance with Watercare and UoA standards.

The condition, configuration, and capacity of existing private water assets in the vicinity of the site will also be reviewed to identify any constraints or infrastructure protection requirements. Where existing water supply infrastructure is affected by the development, appropriate diversion, protection, or replacement works will be incorporated to maintain continuity of service to existing buildings and facilities.

4.3.3 Fire Water Connection

The designed development will be protected by an automatic fire sprinkler system designed in accordance with NZS 4541:2020. Based on the current building design and intended use, the highest anticipated sprinkler classification is Ordinary Hazard Group 3 (OH3). Preliminary assessments indicate a sprinkler system demand of approximately 1,600 L/min. The final sprinkler system flow and pressure

requirements will be confirmed by the appointed Fire Protection Contractor following completion of detailed hydraulic calculations.

In accordance with SNZ PAS 4509:2008 – New Zealand Fire Service Firefighting Water Supplies Code of Practice, a sprinkler-protected building of this nature is expected to require an FW2 firefighting water supply classification. An FW2 supply requires a minimum of 750 L/min (12.5L/s) to be available from hydrants within 135 m of the Fire and Emergency New Zealand (FENZ) attendance point, together with an additional 750 L/min (12.5L/s) available from hydrants within 270 m.

To assess the suitability of the existing reticulated water network, flow and pressure testing was undertaken by Novaflowtec on 16 October 2026, with the test report appended in Appendix E to this assessment. The testing confirmed that the required FW2 firefighting water supply flows were available from the surrounding hydrant network within the distances prescribed by SNZ PAS 4509:2008. Accordingly, the site satisfies the firefighting water supply requirements applicable to the designed development.

The testing further demonstrated that a combined demand of approximately 3,100 L/min, comprising the FW2 hydrant demand of 1,500 L/min and the estimated sprinkler demand of 1,600 L/min, could be achieved while maintaining a residual pressure of ~230kPa at the test location. This exceeds the minimum residual pressure requirement of 100 kPa specified by NZS 4541:2020 and indicates that the adjacent Watercare water main is hydraulically capable of supporting the anticipated firefighting flow requirements of the development.

While the available network flow capacity is considered favourable, the designed building height is expected to require local pressure boosting to satisfy sprinkler system pressure requirements at the upper levels of the building. Provision of a dedicated fire sprinkler pump is therefore anticipated as part of the building fire protection system.

Based on the information available at the time of writing, including the flow and pressure testing undertaken, it is considered that the existing Watercare reticulation network adjacent to the site is capable of providing the firefighting water flows required to support the designed development. The existing water supply infrastructure is therefore considered suitable for the designed building, subject to confirmation of final sprinkler system demands during detailed design.

A new DN160 fire water connection is currently designed from the north-western corner of the SC&L building to the existing water network on Princes Street to service the building's fire protection system. The connection is intended to be to the public water main. The existing fire water connection conflicts with the new building footprint and therefore is anticipated to be removed. Reuse of the existing connection may still be feasible and will be confirmed through further coordination with the hydraulics team at the next design stage, with the location and configuration of any required BFP devices to be developed in consultation with the hydraulic design team during that stage.

4.4 Utilities

4.4.1 Power

Existing Vector High Voltage (HV) and Low Voltage (LV) cables are located along Princes Street and Alfred Street. Civil works required for power servicing include trenching, duct installation, and associated underground infrastructure to support the SC&L development. The final power connection arrangement will be confirmed as part of the wider UoA electrical infrastructure programme and the building services design.

A private 2m × 2m HV pit is currently designed at the south-eastern corner of the building within the laneway. Existing power infrastructure within or adjacent to the building footprint will require further investigation and coordination during subsequent design phases to determine any protection, relocation,

or diversion requirements. Vector will be contacted to confirm any required relocation or modification of their public assets.

4.4.2 Telecommunications

Existing private telecommunications services are present within and adjacent to the site along Princes Street and Alfred Street. Telecommunications servicing for the SC&L development will be designed by the ICT consultant. Existing telecommunications infrastructure within or near the building footprint will require further investigation and coordination to confirm any protection, relocation, or diversion requirements. Civil works may include trenching, duct installation, and relocation works where required. Chorus will be contacted to confirm any required relocation or modification of their public assets.

4.4.3 Gas

Existing public and private gas mains are located along Princes Street and Alfred Street. Based on the current building footprint, the private gas main is understood to be clear of the building by approximately 1m. No gas main diversion is currently identified as a design requirement; however, the proximity of the asset will be reviewed during the next design phase and considered during construction planning. Vector will be contacted to confirm any required relocation or modification of their public assets.

Refer to drawing 5013381-CA-9000 Combined Services Layout in Appendix A for existing utilities alignment in relation to the SC&L building layout.

5 Conclusions

This report provides the civil and infrastructure servicing strategy for the SC&L development, demonstrating that stormwater, wastewater, potable water, fire water, power, and telecommunications can be accommodated on site, subject to verification of existing asset condition and network capacity during detailed design. Bulk earthworks fall within AUP restricted discretionary activity thresholds, and stormwater management has been designed to ensure that the capacity of the downstream network is not adversely affected by the designed development. The designed overland flow path arrangement, including the controlled diversion of 100-year exceedance flows via Te Tūātea Plaza towards Princes Street, has been assessed and is not expected to result in adverse flooding effects on the development, neighbouring properties or downstream infrastructure.

Further coordination with Watercare, Vector, Chorus, and the University of Auckland will refine connection locations, pipe sizing, protection measures, and any required upgrades. These next steps will support the development of final and compliant design solutions.

The strategies presented form a robust foundation for the FTAA substantive application and will be advanced through ongoing technical coordination, stakeholder engagement, and detailed engineering analysis in accordance with the consent conditions to ensure the safe, resilient, and compliant delivery of the SC&L development.

6 Limitations

The assessments and servicing strategies presented in this report are based on the information available at the time of preparation, including Auckland Council GIS data, topographical survey information, early coordination with the UoA, and concept-level building design inputs. As the project is currently at a preliminary design stage, several elements of the civil and infrastructure servicing strategy remain subject to further investigation and confirmation.

Key limitations include:

- Survey and Asset Data: Some existing public and private infrastructure assets could not be fully accessed or verified (e.g., wastewater manhole lids unable to be opened). Invert levels, condition, and alignment will be confirmed through future physical investigation, CCTV, and detailed survey.
- Network Capacity: Potable water, and wastewater capacity assessments rely on high-level demand estimates and assumed network performance.
- Design Development: Building layouts, discharge points, and servicing requirements may evolve as architectural and building services design progresses. Final pipe sizing, connection locations, protection measures, and construction methodologies will be refined during detailed design.
- Construction Impacts: Potential impacts on existing utilities, including protection, diversion, or relocation requirements, will be confirmed once detailed design, construction sequencing, and contractor methodologies are developed.

This report should therefore be read as a preliminary-level assessment intended to support the FTAA application. All servicing strategies and assumptions will be validated and refined through subsequent design phases, detailed investigations, and continued engagement with Auckland Council, Watercare, Vector, Chorus, and the University of Auckland.