INFRASTRUCTURE MANAGEMENT PLAN

MURWILLUMBAH EDUCATION CAMPUS

ELECTRICAL, FIRE SERVICES AND WATER MANAGEMENT PLAN

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1 INTRODUCTION

JHA Engineers have been engaged by Built to provide the design of lighting services for the proposed Murwillumbah Campus Redevelopment.

The existing Murwillumbah High School is located on the south side of High School Lane with main entry of Riverview Street (located on the western side of the site, with Nullum Street on the eastern side of the school. Nullum Street is primarily used as bus access road way for the school.

Item 14 of SEARS requests the following items to be addressed:

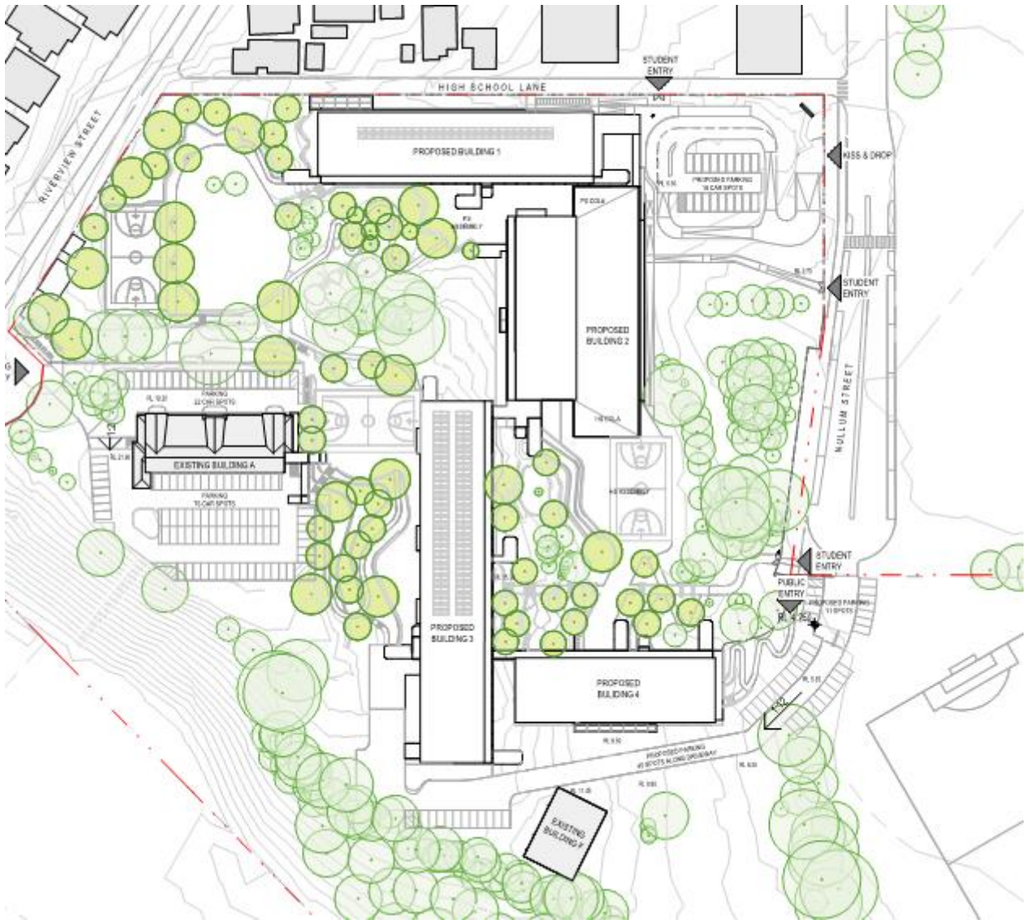
- Assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. – Addressed in section 1.2.
- Identify any infrastructure upgrades required off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. Addressed in section 1.2.3 and 2.2.1.
- Provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development. Addressed in section 2.2.1.

1.1 PROJECT DESCRIPTION

The Murwillumbah Education Campus development, involves the co-location of Murwillumbah Primary School, Murwillumbah East Primary School, Murwillumbah High School, and Wollumbin High School, to establish a new primary school and a new high school as part of the same education campus.

The project will include the following scope of works within the SSD application:

- Demolition of Building E
- All inground slabs, pathways, hardstands and footings including those to buildings B, C, D, G, H, M, P, S, AW and AZ
- Associated ground works required to facilitate the construction of new buildings and landscaped areas
- Construction of new Buildings 1, 2, 3 and 4:
    - Building 1 – New public school building comprising general learning spaces, administration, canteen, School Support Unit (SSU) and library;
    - Building 2 – Hall building including a public school hall, out of school hours care (OSHC) facilities, high school hall/gymnasium and other spaces for physical education and creative and performing arts (CAPA);
    - Building 3 – New high school building including the following facilities; general and specialist learning spaces, SSU, and library.
    - Building 4 - New high school building including the following facilities; science, support, administration and canteen;
- Refurbish Building A for DoE offices and school community health facilities along with associated access requirements. Building A is a locally listed heritage building and will be retained and refurbished;
- Refurbishment of Building F to provide learning space for agricultural education;
- Retention of existing AY.
- Creation of new public school and high school outdoor learning spaces to support future focused learning outcomes;
- New landscaping and embellishment of outdoor playgrounds;
- Civil and infrastructure works; and
- Kiss n drop and parking off Nullum Street



EXISTING ELECTRICAL SERVICES

1.2 ELECTRICAL POWER SUPPLY

1.2.1 INCOMING POWER SUPPLY

The site is currently served via a 250 Amp rated Essential Energy overhead supply from a pole- mounted transformer No 3231 located on Riverview Road. The transformer is installed on Essential energy pole No 59993.

Figure 3: Existing Incoming Supply

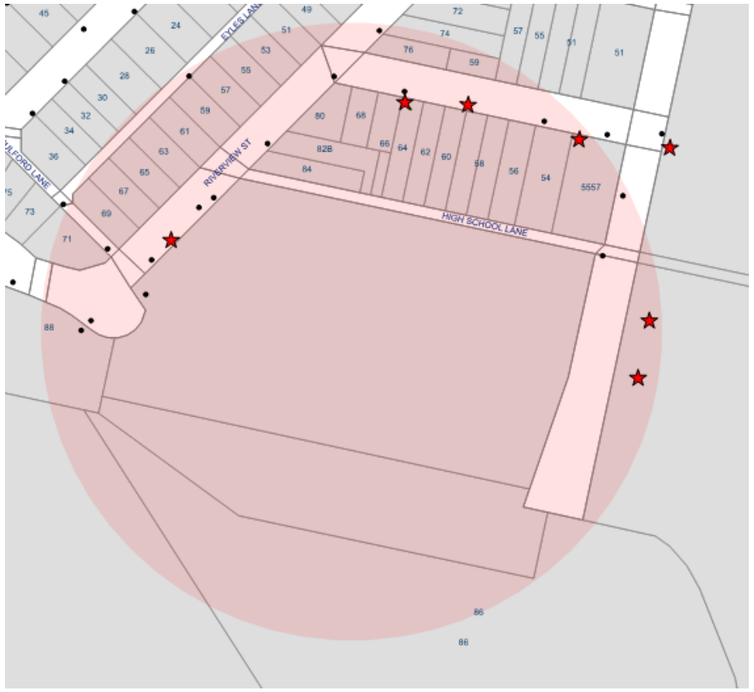


Figure 4: Essential Energy DBYD

1.2.2 EXISTING MAIN SWITCHBOARD

The existing main switch room and switchboard is located in Block E. This switchroom and switchboard will be immediately retained for the Early Works, which is to supply the school until the new electrical supply is established.

The main switchboard will be demolished during the Main Works, after the school's supply is transitioned to the new supply.

The existing main switchboard main switch is rated at 315 Amps per phase, however it is noted that the incoming consumers main cable is limited to 250 Amps per phase. Due consideration has been made with respect to the establishment of temporary demountable classrooms. It has been calculated that the immediate decant of Blocks B, C, M, G and D will ensure there is no shortfall in supply, and that the existing switchboard is capable of supplying 12 x new air conditioned demountable classrooms.

Figure 5: Existing Electrical Main Switchboard

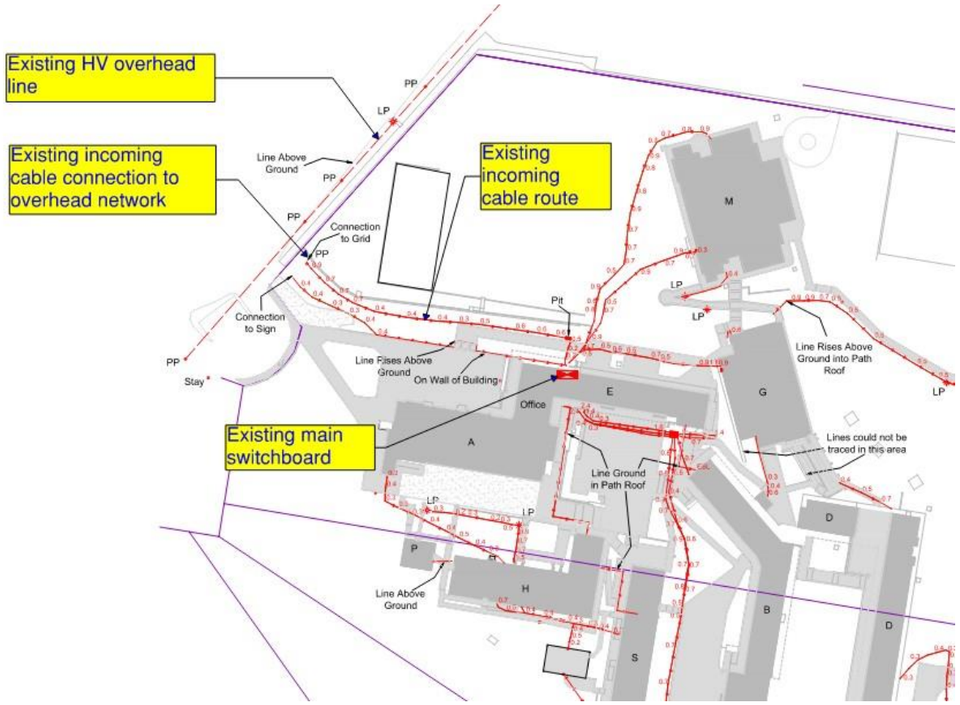


Figure 6 – Location of power connection to grid and existing main switchboard

1.2.3 EXISTING SUBSTATION

In order to facilitate the increased load of the amalgamated schools will connect to an existing 1500kVA private pad mount substation.

Figure 7 – Typical Essential Energy Substation

The location of the existing substation is along Riverview Road as the existing high voltage network cable is available on this road.

The new main switchboard will be located as close to the substation as possible to reduce the length of trenching and cables thus saving on installation cost. The proposed location of the new main switchroom is indicated on the electrical infrastructure plan.

Refer to attached schematic design drawings for existing substation location.

1.2.4 SITE WORKS

It is proposed to construct a common trench encompassing electrical, communications and hydraulic services throughout the site, during the Early Works and during the Main Works. Refer to attached schematic design drawings for site layout plan.

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2 PROPOSED ELECTRICAL SERVICES

2.1 MAXIMUM DEMAND

The preliminary maximum demand for the development is 1,319kVA (or 1912 A/phase). The load calculations were based on the initial accommodation schedules using AS/NZS 3000 Tablc C3 recommended VA/sqm rates. The load calculations will be further revised when more developed building designs are available.

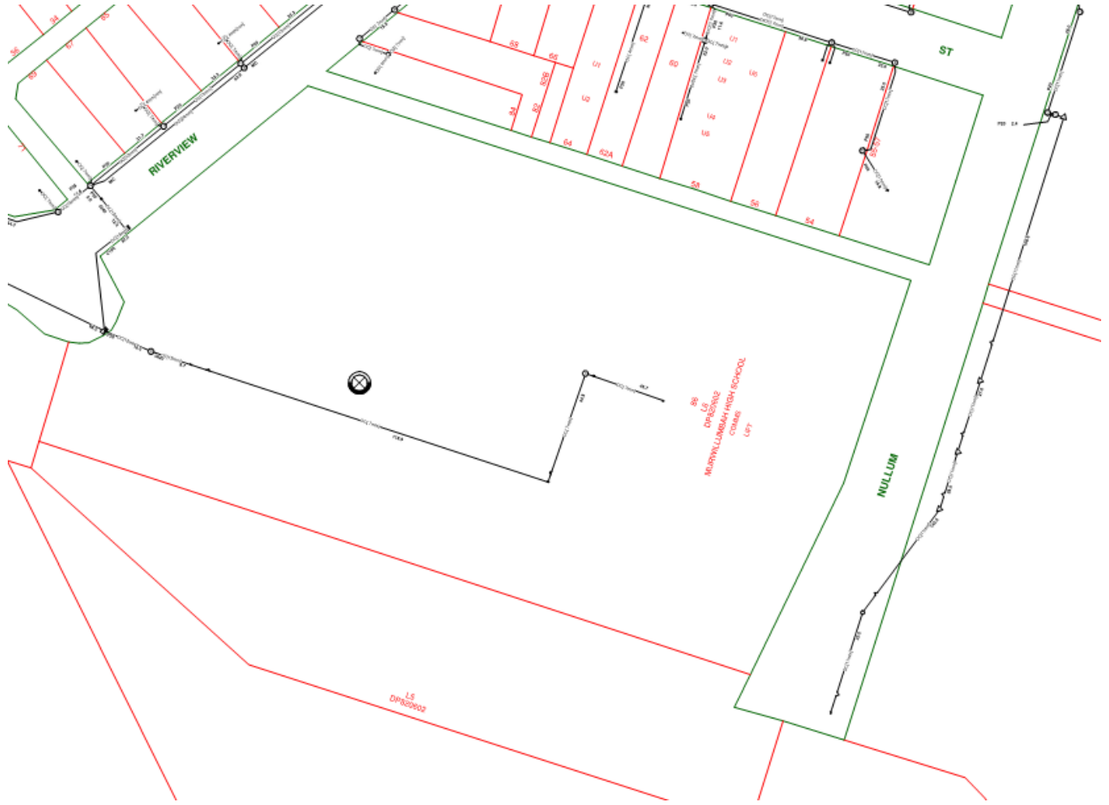
This load includes for fully air conditioning all teaching and learning areas, the administration offices, library and multipurpose hall.

The final load assessment will take into consideration diversity factors that can be applied due to student movements between buildings and facilities, utilisation of the various buildings and rooms and also the energy efficiency measures put in place such as DALI based lighting control, occupancy sensors, master switches and recommendations for energy efficient light sources.

3 EXISTING TELECOMMUNICATIONS SERVICES

3.1 TELECOMMUNICATIONS INCOMING SERVICES

Figure 10(a) – Telstra Connection: Lead-in:



4 PROPOSED TELECOMMUNICATIONS SERVICES

4.1 TELECOMMUNICATIONS EARLY ENABLING WORKS

4.1.1 INCOMING COMMUNICATIONS LEAD-IN

The MEC site is presently serviced by two utility telecommunications lead-ins, refer to Figure 8.

Lead-in (A) off Nullum Street is owned by Telstra Pty Ltd, comprises a fibre optic cable and corresponds to the School's present-day wide area network (DoE WAN) connection. The lead-in traverses the site to terminate in the existing main communications room on the Ground Floor of Block B. This main communications room is proposed to be demolished, and the termination of Lead- in (A) must be re-established.

Lead-in (B) off Riverview Street is owned by NBNCo Ltd and corresponds to the School's present-day voice over IP (VoIP) connection delivered over NBN copper infrastructure. The lead-in traverses the site to terminate in the existing main switch room in Block E. This main switch room is proposed to be demolished, and the termination of Lead-in (B) must be re-established.

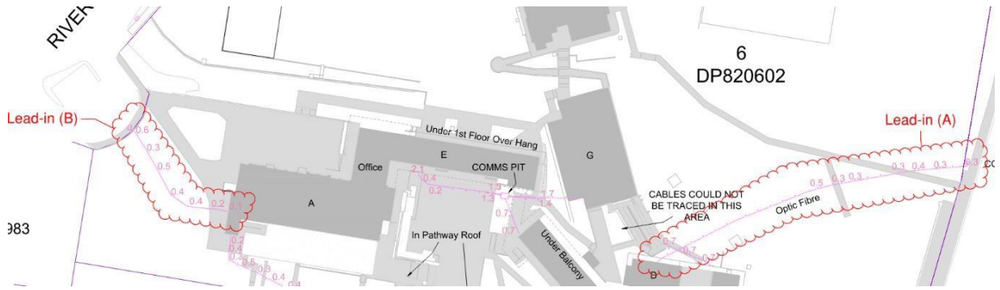


Figure 8 – Locations of Communications Lead-Ins

4.1.2 REQUIRED WORKS

Due to the proposed demolition of both current lead-in termini, the construction of new site infrastructure will be required. It is proposed that a new Campus Distributor will be built and located in an existing space within Block A during the Early Works. This shall be located in the existing Building A – strategically placed to minimise disruption and allow for continuity of operations for staged building construction as well as maintaining temporary school works. The existing 'Lead-in (A)' is

Proposed to be re-used and ownership transferred to Telstra to supply the site with the main communications lead-in.

4.1.3 STAGING

The incoming telecommunications lead-in and associated campus distributor will be required to facilitate service continuity through the school as the new teaching spaces are constructed. Due to the demolition of Building B (which currently houses the present day campus distributor), a staged operation is planned to move the ICT assets from Building B to Building A during the Early Works stage. The operation shall include:

Application by DoE ICT to Telstra to establish new GWIP endpoint in proposed Building A main communications room.

Fit-out of Building A main communications room, including all new racks.

Construction of communications conduit pathways between Building A and all current retained buildings. These are currently documented to be permanent, however may be temporary surface conduit where construction constraints may be evident.

During school holidays, pulling back fibre runs from Building B campus distributor through these new conduits and rediverted to Building A campus distributor. Allowance to supply and install new multi-mode fibre runs and/or joints to facilitate breakages.

Decanting of active ICT assets from Building B campus distributor and relocation to Building A campus distributor.

Testing and commissioning and bringing Building A campus distributor online before Term 1, 2022.

The demountable classrooms erected during the Early Works will be provided with a temporary **'demountable'** building distributor supplied by Building A's campus distributor.

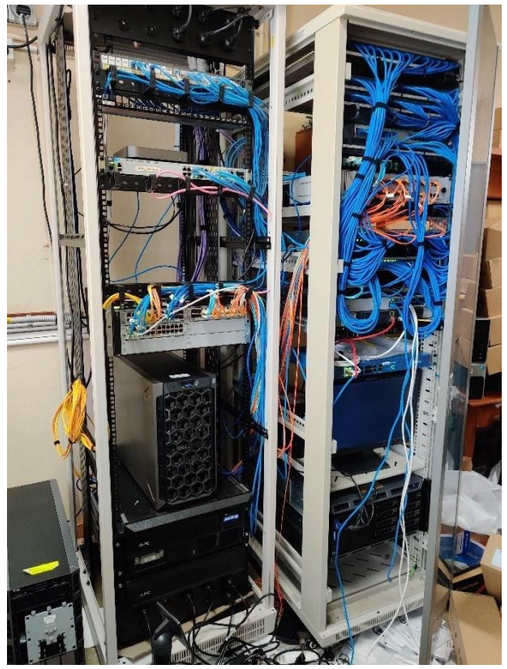


Figure 9: Existing Campus Distributor in Block B

4.2 CAMPUS DISTRIBUTOR / BUILDING DISTRIBUTOR

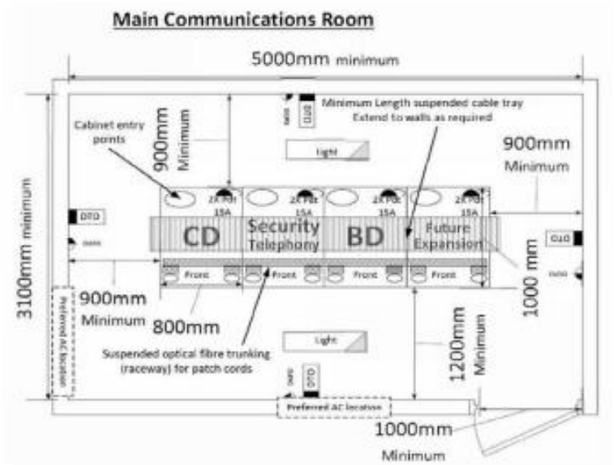
4.2.1 CAMPUS DISTRIBUTOR

A new campus distributor (4-off communications racks) will be installed in the new site main communications room final location TBC. The campus distributor shall be served via a new fibre lead-in cable from Riverview St.

The Main communication room shall be sized to house 3 cabinets as per the EFSG, based on the arrangement and size of the cabinet, the proposed size of the main communication room is: 5m (W) x 3.1m (D). Refer to figure below for details.

The campus distributor shall then feed all other Building Distributors throughout the school via the school backbone fibre.

Figure 11(a) –Site Main Communications Room Spatial Requirement

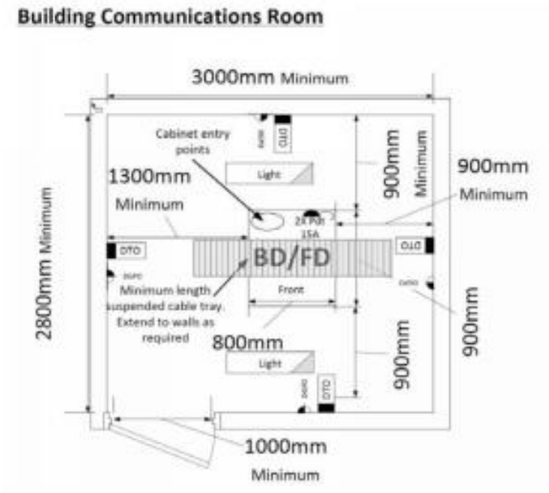


4.2.2 BUILDING DISTRIBUTOR

According to Education NSW Structured Cabling System Specification, multi-level building requires minimum 1-off building communications room per level. The building communications room shall be located centrally with a 70m radius cabling length requirement (additional building communications room shall be provided if cabling length exceeds 70m radius).

The building communications room shall be sized to house 2 cabinets as per the EFSG, based on the arrangement and size of the cabinet, the proposed size of the building communications room is: 3m (W) x 2.8m (D). Refer to figure below for details.

Figure 11(b) –Building Communications Room Spatial Requirement



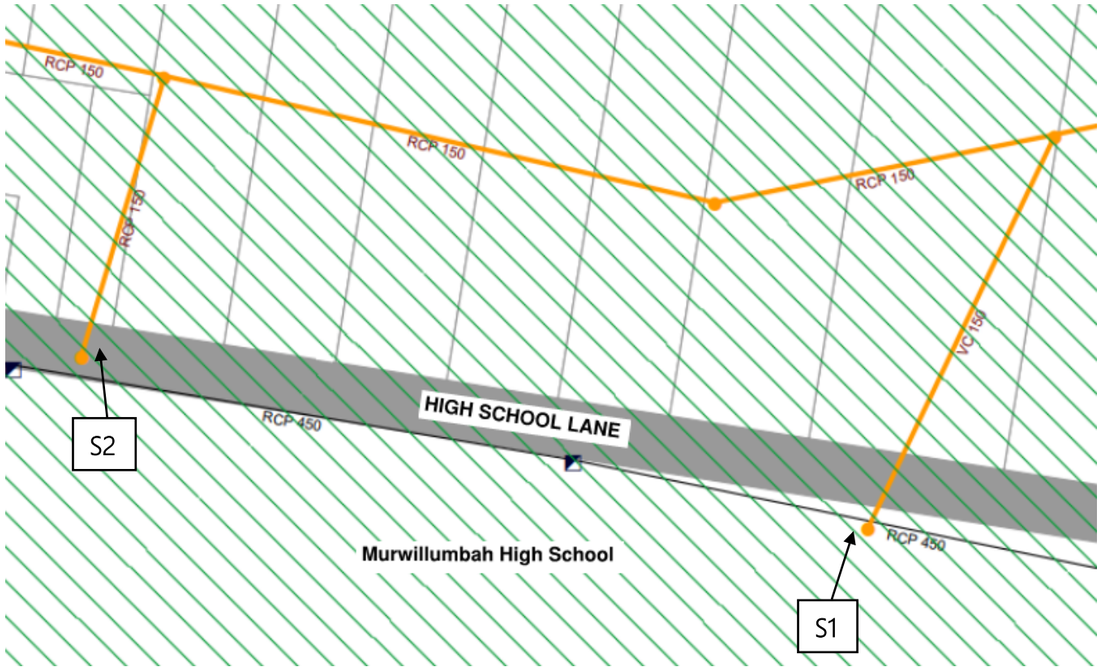
5 HYDARULIC SERVICES

5.1 EXISTING HYDRAULIC SERVICES

5.1.1 SEWER DRAINAGE

The Murwillumbah Education Precinct is surrounded by the following sewerage infrastructure for possible connection to the site:

- S1 – 150mm VC pipeline in High School Lane
- S2 – 150mm RCP pipeline in High School Lane
- Figure 5.1 below, illustrates the surrounding authority sewer mains.



Sewer Infrastructure Map

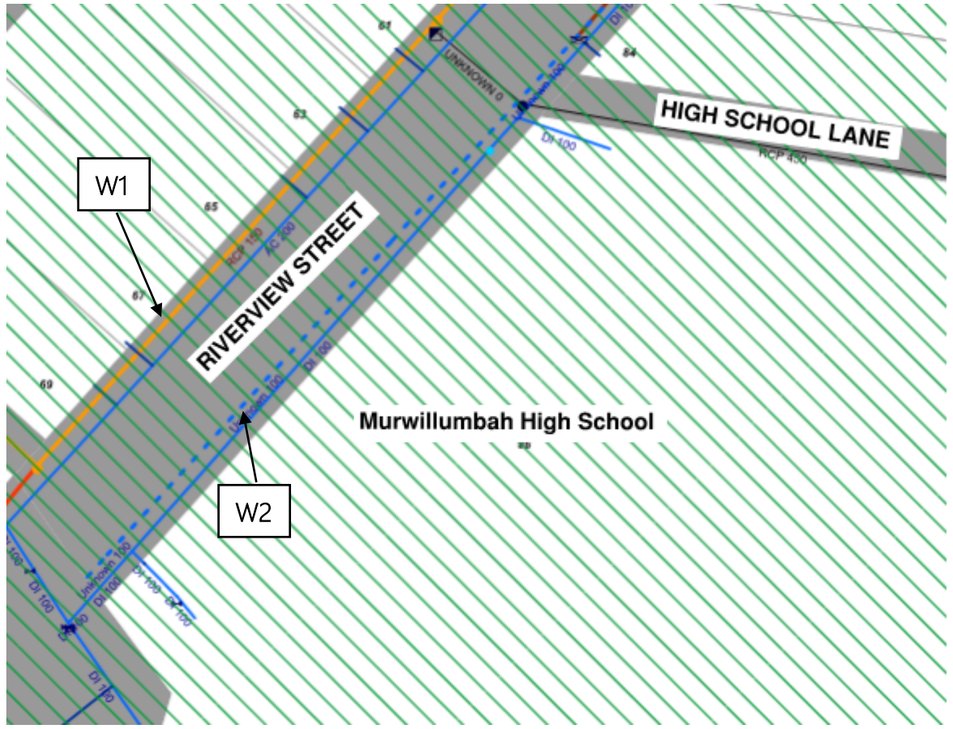
5.1.2 POTABLE WATER

The Murwillumbah Education Precinct has frontage to the following authority water mains:

- W1: 200mm AC water main in Riverview Street
- W2: 100mm DI water main in Riverview Street

At this stage, the performance of both portable water mains is unclear and subject to further investigation and lodgement of Pressure and Flow Enquiry with Tweed Shire Council.

Figure 5.2 below illustrates the surrounding authority water mains.



Water Infrastructure Map

As illustrated in the above infrastructure map, there is two 100mm DI connections from the 100mm main which service the current site. It is unclear as to the size of the meter kit up-stream of each connection and to what service they supply (portable water or fire services). This will be further investigated following visual site inspection and obtainment of survey/works as executed documentation.

5.1.3 GAS SERVICE

There is no natural gas authority infrastructure available for connection. The current facility is supported by an LPG tank which primarily supplies hot water plants throughout the site and science labs.

The current state of infrastructure and its serviceability will be assessed following a more detailed site inspection and obtainment of survey/works as executed documentation.

5.2 PROPOSED HYDRAULIC SERVICES

5.2.1 SEWER DRAINAGE & TRADE WASTE

5.2.1.1 CONNECTION POINT

It is envisaged that both existing 150mm sewer connections located in High School Lane (noted in Figure 5.1) on the north eastern side of the site have sufficient capacity to service the proposed development. In order to confirm if this sewer main has sufficient capacity to accommodate the increase of load from the proposed development, an application will be lodged with Tweed Shire Council.

It is envisaged that a grease arrestor will be required as a pre-treatment device for the grease discharged from the proposed canteen in the new building.

All new portions of the development can drain via gravity to council infrastructure. Existing sewer pump station servicing building F is to be retained and connected into the new drainage system.

5.2.2 WATER SUPPLY

5.2.2.1 CONNECTION POINTS

It is envisaged that either of the two connections (noted in Figure 5.2) servicing the site from Riverview Street have the capacity to supply portable water to the site. At this stage, the size of the meter kit currently servicing the site is unclear, although considerations to upgrade the current meter kit should be made…. further unpacking by JHA required to determine maximum demand.

Fire hydrants will be required to provide coverage for the proposed development along with the need a fire hydrant booster assembly and a fire hydrant pump-set. It is anticipated that the Fire Hydrant system will be supplied via the existing 200mm water main on Riverview Street. Based on the results obtained from a Tweed Shire Council Pressure and Flow Enquiry, it has indicated the 200mm AC water main has sufficient capacity for this service.

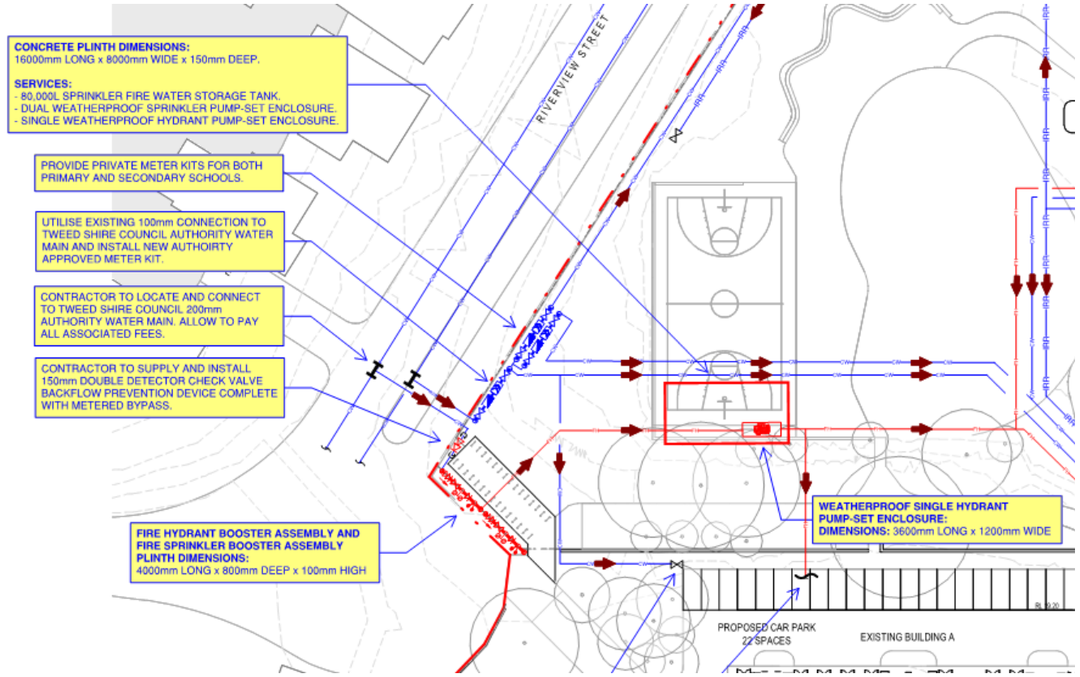


Figure 5.3: Fire Hydrant Service Connection Point *(Work in Progress)*

5.2.3 GAS SUPPLY

It not envisaged that authority natural gas will be supplied to the site in the future. It is proposed that the current site LPG storage tank be removed and made redundant. Four 210kg tanks have been proposed to satisfy site demand which is to serve science labs, hospitality kitchen and metalwork rooms.

6 FIRE SPRINKLER SERVICES

6.1 GENERAL

The Fire Services design and installation will be incorporated into proposed module timber pre-package construction buildings as per the NCC C1.13 requirements.

Fire sprinklers would not be required for any buildings that are concrete / steel construction where not required by the NCC / BCA.

6.2 STANDARDS & REGULATIONS

The Fire Services design and installation will conform to the latest requirements of:

- Fire services to comply with the NCC & Building Code of Australia 2019 clause C1.13, where the fire sprinkler systems are required for buildings that have timber construction.
- Fire services to comply with all current statutory requirements and guidelines including Council, Water Authority, Fire and Emergency Services Authority and Department of Environmental Protection.
- Fire Services to comply with current Australian Standards where applicable and particularly the following (unless alternative solutions are provided as a departure to the deemed to satisfy provisions of the BCA):

System	National Construction Code (NCC) Clause Reference	Applicable Australian Standards
Fire Sprinklers	Spec E1.5 & C1.13	AS 2118.1 – 2017
Portable Fire Extinguishers	Spec E1.6	AS 2444-2001

6.3 FIRE ENGINEERING ISSUES

- Fire sprinklers would not be required for any buildings that are concrete / steel construction where not required by the NCC / BCA. This would need to be confirmed by the PCA and Fire Engineer.
- External walkways canopies and roof overhangs are required to be sprinkler protected if goods will be stored or handled under them or if the fire rating of the dividing wall construction between the canopy and the building is less than -/30/30. It may be possible for a Fire Engineer to obtain approval to omit these sprinklers. These requirements do not apply to non-combustible canopy constructions over pedestrian walkways that do not exceed 2.5m in width.
- Preliminary indications from Holmes Fire who are the proposed Fire Engineer is that fire sprinklers will not be required to walkways, balconies, stairs and lift core areas as part of a performance solution.
- The fire sprinkler system is proposed to be a Pre-action system to reduce false sprinkler activation from possible vandalization as requested by the Fire Engineer.

6.4 DESIGN CRITERIA

- The project will be designed to satisfy the above mentioned Australian Standards and the National Construction Code (NCC).
- Fire Services system requirements have been established on the premise that the building is classified as Class 5, 7b, 8 and 9a as per the NCC Part A3.

Information provided in this brief is subject to change on the finalization of a Fire Engineering Report or per the determinations of a Building Certifier.

The fire sprinkler design criteria will be based on the fire design hazards.

Schools are generally categorized as Light hazard with the following area clarifications

- Light Hazard: Module Classrooms, Staff / Administration, Library & associated school equipment areas.
- Ordinary Hazard 2: Woodwork & Metal Working areas,
- Ordinary Hazard 3: Public Assemble areas, Indoor Sports areas, Science Labs & Storage areas

Each building will be served by separate pre-action sprinkler valves located in adjacent services enclosures with buildings 1-4 requiring 4 off sprinkler valves to serve the adjoining building.

6.5 WATER SERVICES – EXISTING FIRE HYDRANT SYSTEM

The existing water main in Riverview Street does not provide sufficient combined fire hydrant water supply flows based on a pressure & flow test carried out on 16 April 2021 by Fire Testing (firetestinging.com.au) for Planet Plumbing. Refer to Appendix 1 Fire System Flow Test.

- These results are insufficient for the combined fire hydrant 20 L/s and fire sprinkler system 18L/s = 38 L/s
- Backflow prevention will need to be installed to meet the Authority requirements (provided by hydraulic contractor).
- The fire sprinkler booster assembly will meet all current codes and standards.
- Each building will be served by separate pre-action sprinkler control valve assemblies.

Note: Our commission for the project allows for the design of wet fire services nominated in accordance with the "Deemed to Satisfy" requirements of the BCA. Any move away from the "Deemed to Satisfy" provisions will require the input from a certified Fire Engineer under an "Alternate Solution" commission.

6.6 WATER SERVICES – PROPOSED FIRE SYSTEMS

The existing water main in Riverview Street does not provide sufficient combined fire hydrant and fire sprinkler water supply flows.

It is proposed to provide a new 100mm new water main from the existing Riverview Street 200mm water main near the existing Site Entry to Building A, that will be connected to supply water to the new 80,000 litre sprinkler water storage tank & dual fire sprinkler pump enclosures required to be located near the fire booster assemblies. Fire sprinkler connection main will extend from the dual fire sprinkler pumps to supply the separate building sprinkler valve enclosures.

The fire sprinkler & hydrant boosters, fire water tank and pump infrastructure systems are required to be located more than 10.0m from the proposed Electrical Substation & Main Switchboard Buildings.

The existing site entry location will also be provided with fire hydrant and fire sprinkler fire brigade booster points to allow for Fire Brigade operations. A performance solution will need to be added to the Fire Engineering Report as the fire sprinkler & hydrant boosters will not be located at the new site entry point and within sight of all the buildings on site.

A separate 150mm tank suction pipework will extend back to the supply water to the fire sprinkler booster assembly located adjacent to the hydrant fire booster points to supply water for Fire Brigade operations

Refer to Schematic Design fire series layout for the proposed Fire sprinkler Infrastructure layout.

The new fire hydrant system will interconnect with the new water main extension & extend to interconnect with a modified existing fire hydrant system.

Refer to the Hydraulic Package Description for further Fire Hydrant System details

6.6.1 FIRE SPRINKLER WATER SUPPLY INFRASTRUCTURE

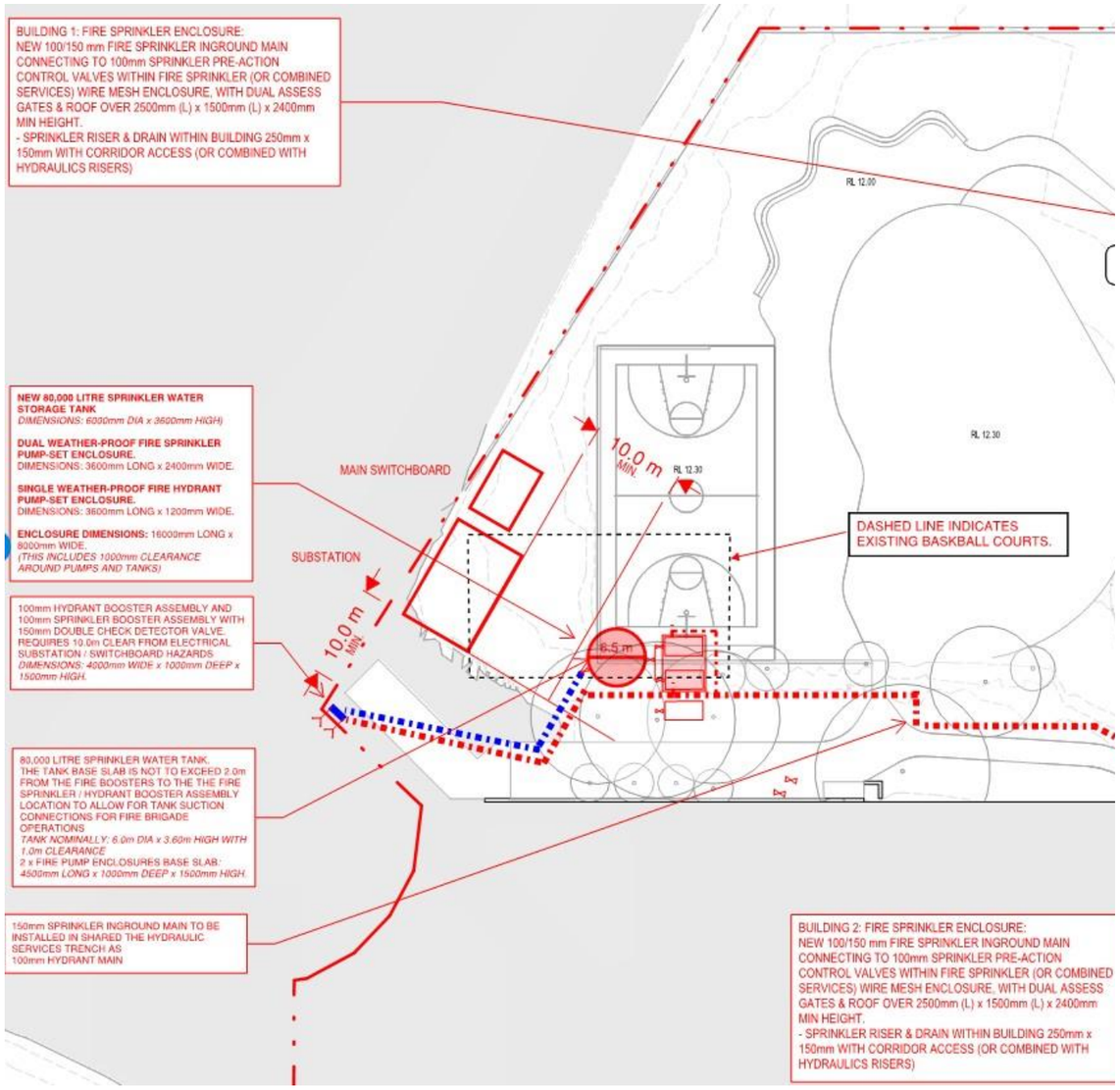
The fire sprinkler system will require a separate 80, 000 Litre water storage tank and dual fire sprinkler booster pumps pending on the final fire sprinkler hazard classification and to be located near the incoming water supply and fire sprinkler boosters and is proposed to be as follows.

Ordinary Hazard 3 Water Supply

- 80,000 Litre circular metal water storage tank sized 6.0 m dia x 3.60 m high.
- 2 off (or dual) fire enclosures containing 2 off fire sprinkler diesel pumps. Approx. 4.0m x 2.5m for each pump enclosure.
- The Ordinary hazard 3 infrastructure also supplies the Light Hazard and Ordinary Hazard 2 requirements.

Fire Infrastructure

- Located near the fire booster valves and fire water tank / fire pump enclosures adjoining road/path to allow for direct egress for the Fire Brigade access.
- Fire Sprinkler booster assembly is to be located adjacent to the fire hydrant booster assembly and external hard stand for Fire Brigade operations and access.
- The sprinkler system will extend with 150mm inground fire sprinkler mains to each of the Building's services enclosures which will contain the fire sprinkler pre-action control valves.



Proposed Fire Water Main Connections

6.7 FIRE SPRINKLERS

An Automatic Fire Sprinkler System will be provided throughout all areas of the building. Protection will be in accordance with the AS 2118.1-2017 and modified Fire Engineering alternative solution requirements.

The hazard classification will be

- Light Hazard for school class rooms and Staff/administration areas.
- Ordinary Hazard 2 Metal Working areas,
- Ordinary Hazard 3 for Public Assembly areas, Sports hall, Woodwork, Science Labs & Storage areas.

Each buildings fire sprinkler system will extend from the adjoining services enclosures and consist of

- 100mm sprinkler pre-action control valve sets with adjoining air compressors.
- Located in separate fire enclosures located next to the buildings and connected directly from a sprinkler ring main or connection main.

Isolation valves will be incorporated to ensure the disruption to service that occurs when tests or alterations are required is minimised.

Sprinkler heads will be selected to take advantage of the latest fast/quick response and extended coverage technology.

The proposed sprinkler pendent and sidewall sprinkler system is proposed to be located in services bulkheads to allow for minimal obstructions to the sprinkler discharge patten within classrooms.

The sprinkler systems will extend to all buildings that incorporate timber structure constructions requirements as per the NCC and expected to the below list or other areas nominated by the Building Certifier and Fire Engineer.

- Include Classrooms, Staff/Administration areas,
- Metal & Wood working areas,
- Science labs and storage / equipment areas
- Public assembly area and sports hall pending construction. (to be confirmed by the PCA & Fire Engineers)

No sprinkler system is proposed for walkways, balconies, stairs and lift core areas, except where required to interconnect between buildings for sprinkler main connections.

The proposed sprinkler pipework and sprinklers fitout would not be possible to fully install within the factory. The sprinkler pipework fittings an hanger would need to be installed by registered fire sprinkler installers to verify that the pipework joints and pipework hangers meet the AS2118.1 – 2017 installation requirements. This will be required the fire system to be installed after the modules are unloaded/unpacked and during the erection process and services installation process.

6.7.1 TYPE OF PRE-ACTION SPRINKLER SYSTEMS

Fire sprinkler pre-action systems are a sprinkler control valve that incorporates pre-action valve that is double interlocked and configured for operation requiring a solenoid activation from both the fire detection system and a separate solenoid when the pipework air or nitrogen air supply is depressurised (ie when a sprinkler head has activated)

The sprinkler pipework is proposed to be an air pressurised system with normal air by the compressor or an alternative Nitrogen gas charge system.

- The normal air charged system with galvanised pipework reticulation are the minimum required systems. This can lead to possible pipework corrosion in the pipework developing over the life time of the installation, where a system has activated and the is difficult to remove all the water within the pipework before recharging the pre-action system.

  This system is cheaper to install as it only utilises an air compressor to charge the pipework with normal air pressure.
- Alternatively, Nitrogen gas system can be incorporated that improve the life of the galvanised pipework reticulation by reducing the opportunities for any corrosion development if systems are activated. This reduces long term inspection & maintenance of installed reticulation and maybe considered.

This is more expensive to install as it still utilises an air compressor but charges with nitrogen gas from a separate gas cylinder to charge the pipework. This would also need the Nitrogen gas cylinder to be replaced after any pre-action system activation of the water supply, which will lose the nitrogen gas from the pipework.

- We are currently not proposing the Nitrogen gas charged systems due to the additional 4 off separate pre-actions systems and additional costs involved at each Pre-action sprinkler valve assemblies, this can be further reviewed if required.

6.7.2 PIPEWORK

Fire sprinkler pipework to be installed in the following materials:

- Reticulated inground pipe and fittings to be 125mm (100 Nom.) or 180mm (150 Nom.) HDPE
- Rough- in pipe and fittings to be AS1074 medium steel galvanised pipework. Where normal air is used to charge the pipework.
- Rough- in pipe and fittings to be stainless steel pipework. Where nitrogen charge air is used to charge the pipework.

6.8 PORTABLE FIRE EXTINGUISHERS

Provide portable fire extinguishers to satisfy the requirements of the Building Code of Australia, Fire & Rescue NSW and the local authorities.

Portable fire extinguishers shall be provided at all building levels as per the Education Guidelines recommendations and Aust. Code requirements

Fire blankets shall be provided in kitchens and mounted in a readily accessible location.

7 WATER MANAGEMENT PLAN

7.1 SCOPE

This section has been prepared to describe and document JHA's proposed integrated water management plan for the Murwillumbah Education campus. The preparation of this strategy has involved several interdependent technical considerations as follows:

- Proposed water supplies to buildings and external areas
- Opportunities for rainwater harvesting and re-use infrastructure
- Proposed end uses of potable and non-potable water

The development site does not have any alternative authority water supply infrastructure available to supply the development and hence are not proposed.

7.2 POTABLE WATER

A life cycle analysis of the reuse plant equipment and considering the nature of the facility in relation to ongoing maintenance, potable water systems for human consumption, hygiene purposes and cistern flushing for the site is to be supplied from the primary water supply from the authority potable cold-water main nominated by Tweed Shire Council.

7.3 NON-POTABLE WATER

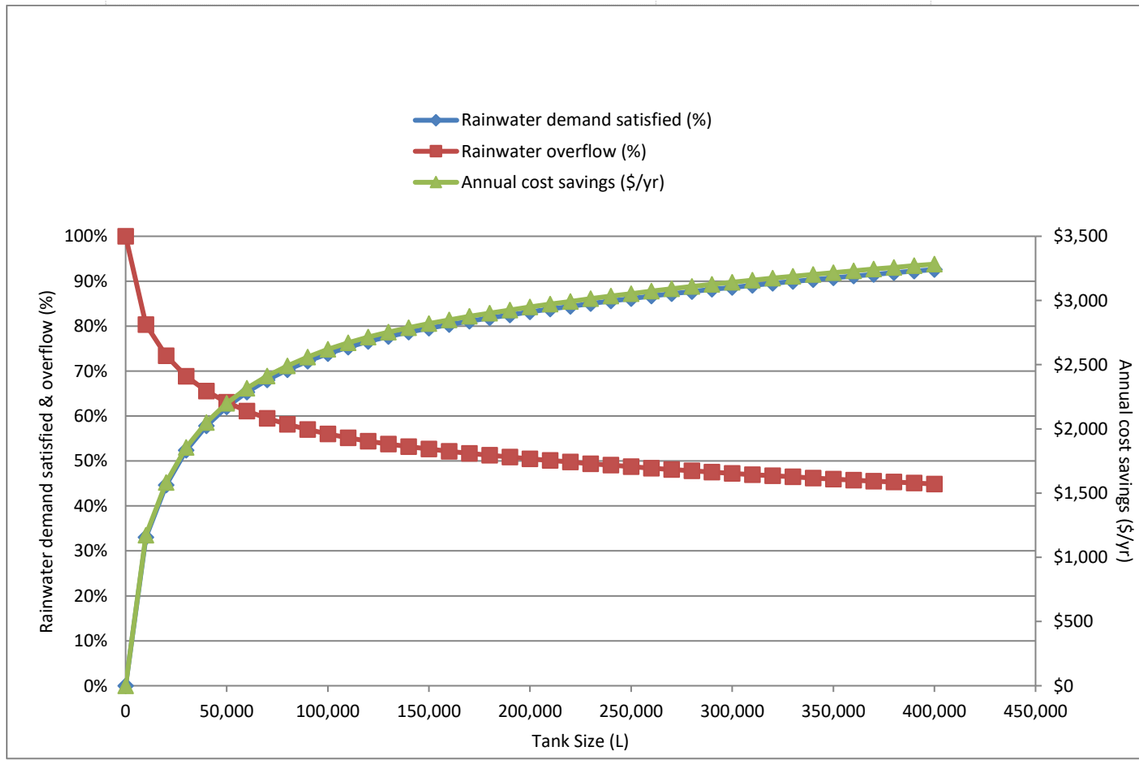
An alternative non-potable water supply is provided to the site via a new rainwater tank supplementing the supply for landscape drip irrigation.

Calculations undertaken from the available historical rainfall data, available roof collection area for the new Building 3 while taking into consideration the project limitations indicated the project will benefit by implementing a site wide reuse system. Through coordination with the landscape consultant on the total site area to be irrigated and undertaking of the water balance, it was determined that capturing Building 3 only was sufficient to meet the necessary demand and the most cost-effective solution.

A new 100kL rainwater tank is intended to be provided to collect the roof water from the lightweight metal roof via a conventional stormwater drainage system and discharged into an in-ground rainwater tank via a first flush system

A water balance study has been conducted based on the 2000m^2 of roof area and a 100kL tank which will be installed to maximise rainwater capture.

Description	Value
Size of rainwater tank	100,000 L
Landscape area to be Irrigated	8200sqm
Rainwater + reuse water captured (annually)	1,240 kL
Total reuse demand	1,680 kL



The non-potable water supply will include pre-treatment via automatic backwash filtration prior to supplying landscape drip irrigation.

In the event of significant storms, overflow from the rainwater tank will discharge into the civil stormwater infrastructure to permit safe management of this water to downstream areas.

Reuse water collection and distribution to other non-potable applications such as toilet flushing have been discounted due to risks associated with maintenance and infection control measures within this type of project.

7.4 PROPOSED END USERS (POTABLE WATER)

Potable cold water is proposed to be used for the following applications:

- Sanitary fixtures in staff and student areas
- Appliances and equipment
- Fire hydrant services
- Fire hose reel services

7.4.1 HIGH EFFICIENCY FIXTURES

To reduce the sites potable water demand, high efficiency rated by WELS fixtures and fittings shall be used throughout the facility as per the ESD report and EFSG DG53 requirements which area listed below. Final selections are to be confirmed.

Fixture	WELS Star Rating
Showerheads	4 stars
Toilets	4 stars
Urinals	5 stars
Basins	5 stars
Sink	5 stars
Washing Machines	5 stars
Dishwashers	5 stars
Taps and flow controllers	5 stars

7.4.2 METERING

To reduce the site's potable water consumption, effective metering strategy is considered to clearly identify leaks, poor operational performance and to assist in water management of specific floors/departments to meet the overall targets for the site.

Metering is supplied to major water uses on the site which include:

- Potable water backup supply for rainwater reuse
- Irrigation system
- Each building
- Canteen

7.5 NON-POTABLE WATER

As stated in **Section 7.3**, the non-potable water supply is proposed to supplement landscape irrigation via collection of roof water.

A moisture sensor override is being considered to mitigate unnecessary watering.

8 APPENDIX 1: FIRE SYSTEM FLOW TEST

9 APPENDIX 2: ELECTRICAL SITE SERVICE LAYOUT