NSW GOVERNMENT Education

NDY
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Electrical & Mechanical Services
Schematic Design Report

UPGRADES TO NORTHMEAD PUBLIC SCHOOL

NPS-NDY-XX-XX-RP-N-0001

Revision 3 – 26/02/2025

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INTRODUCTION

Introduction

This Mechanical, Electrical technical report has been prepared to accompany a Review of Environmental Factors (REF) prepared for the Department of Education (DoE) relating to upgrades to Northmead Public School (the activity) under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI).

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure.

This report examines and takes into account the relevant environmental factors in the Guidelines and Environmental Planning and Assessment Regulations 2021 under Section 170, Section 171 and Section 171A of the EP&A Regulation.

Proposed Activity Description

The proposed activity for upgrades to Northmead Public School includes:

- One (1) new single storey classroom building comprising of four (4) general learning spaces (GLS), two (2) special program spaces, a singular learning commons space and a singular multi-purpose space;
- Minor internal alterations to an existing Admin Building (known as Building A); and
- Removal of existing portable classroom buildings containing six (6) classrooms.

Activity Site

The project site is located at 52A Moxhams Road, Northmead and is legally described as:

- Lot 1 DP 366405;
- Lot 1 DP 176742;
- Lot 1 DP 20061; and
- Lot 1 DP 209810.

Northmead Public School is located on the southern side of Moxhams Road and on the western side of Kleins Road.

The image below is an aerial photograph of the site.

MITIGATION MEASURES

Mitigation Measures			
Mitigation Number/ Name	When is Mitigation Measure to be complied with	Mitigation Measure	Reason for Mitigation Measure
Noise	During Works During normal operations	Refer to NDY Noise and Vibration Impact Assessment	Minimise noise impacts to nearby sensitive receivers.

Evaluation of Environmental Impacts

We note that the Noise impact can be adequately mitigated though the proposed measures and will not have a significant affect on the environment.

SCOPE

This report has been provided by Norman Disney & Young (NDY) to provide recommended actions and observations in relation to the Electrical, AV, Communications, Security and Mechanical systems to accommodate the upgrades to Northmead Public School.

Recommendations and observations in relation to the Electrical, AV, Communications, Security and Mechanical services are provided herein. This schematic design has been developed in line with the SINSW Standard Hub Layout and the Pattern Book.

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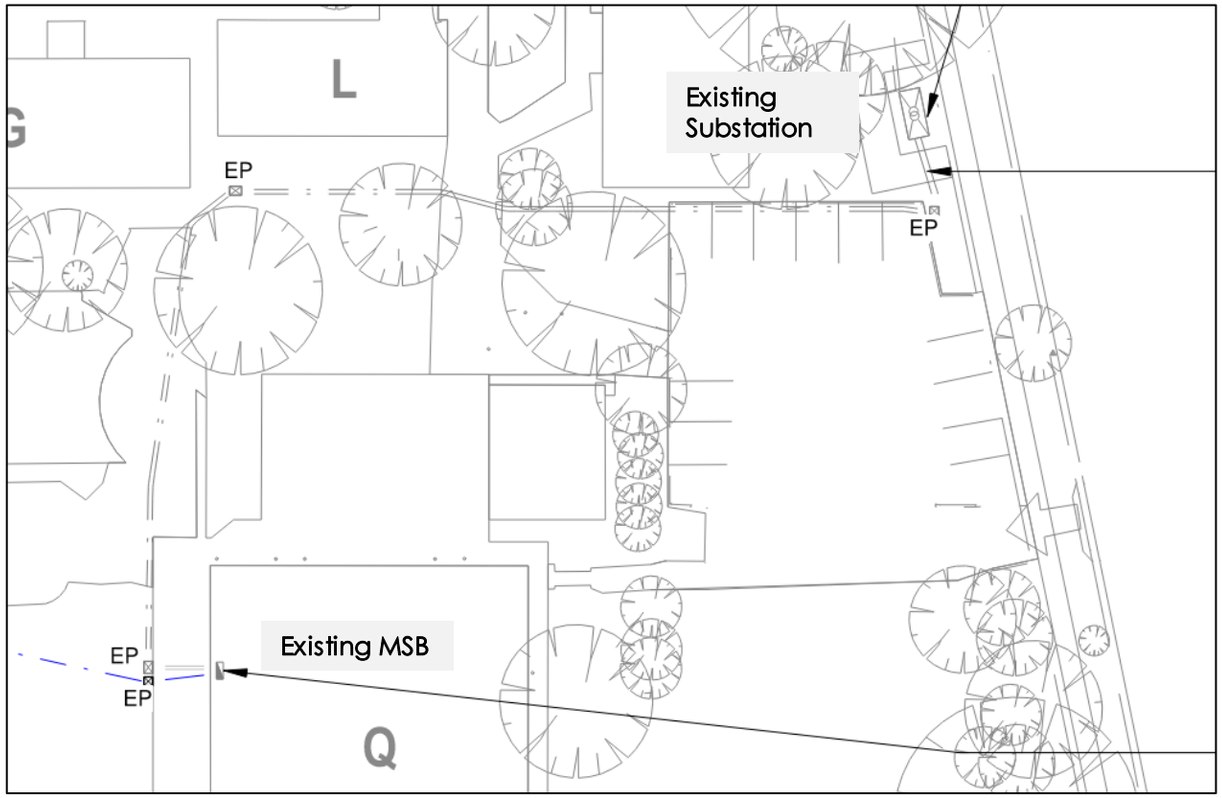
ELECTRICAL SERVICES

Electrical Services

EXISTING ELECTRICAL SUPPLY



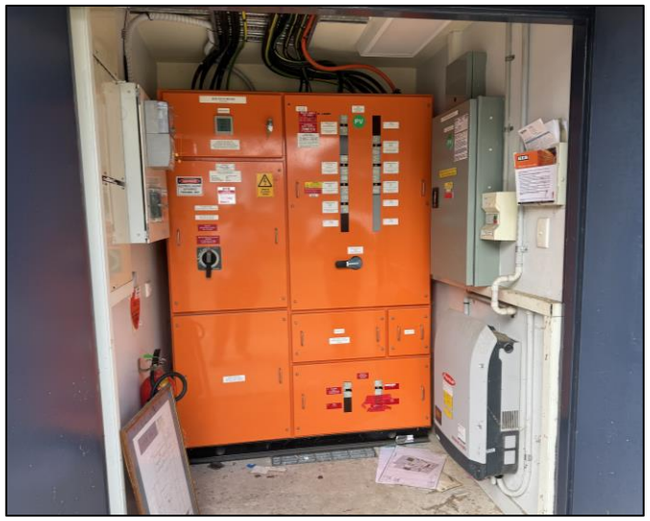
Northmead Public School (NPS) is currently supplied by a low voltage connection at padmount substation 28210 located on Kleins Road. This substation has a 315kVA transformer and two (2x) LV feeders. The first LV feeder is dedicated to the School. The second feeder is a back-up for a pole on Klein's Road and is not currently in use.

The School contains one (1x) main switchboard located in Block Q, which supplies all sub-distribution boards throughout the site via a network of pits and conduits. The board has the following characteristics:

- Built to AS3439.1
- Form 2bi Separation
- 36kA fault rating
- 400A service protection device

Maximum demand for the site is 249A based on meter data.

There are currently 2 x existing solar arrays. The first is a 7kW system on Block S. The second is a 6.3kW system on Block Q.



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ELECTRICAL LOAD ANALYSIS

Applicable Standards & Guidelines
The services concepts have been developed on the basis of the following:

- NCC 2022
- EFSG v1 & 2
- AS3000
- AS/NZS 1680
- AS/NZS 2293.1
- AS/NZS 1158
- NSW Department of Education Patternbook

Demand Component	Load (A)
Existing School Maximum Demand	249A
Removal of Demountable Spaces	-22A
New Works (Block T, A/C upgrades etc.)	72 A
Spare Capacity	45 A
Estimated New Maximum Demand with Spare Capacity	**344 A**

Capacity/Demand	Load (A)
Substation Capacity	455 A
Existing Maximum Demand	249 A
Substation Spare Capacity Before Works	**206 A**
Estimated New Maximum Demand with Spare Capacity	344 A
Substation Spare Capacity After Works	110 A

Based on the latest maximum demand calculation for the school, following the proposed works, the school will need an increase in supply capacity from Endeavour Energy.

The existing MSB is also suitable for re-use for the following reasons:

- The main switch is rated to 400A, which can accommodate the increased load and spare future capacity.
- There are sufficient spare poles to connect a new outgoing submain to the new Block T. Whilst there are not enough spare poles to meet the EFSG requirements, we note that the MSB is fit-for-purpose and have raised this an EFSG departure.

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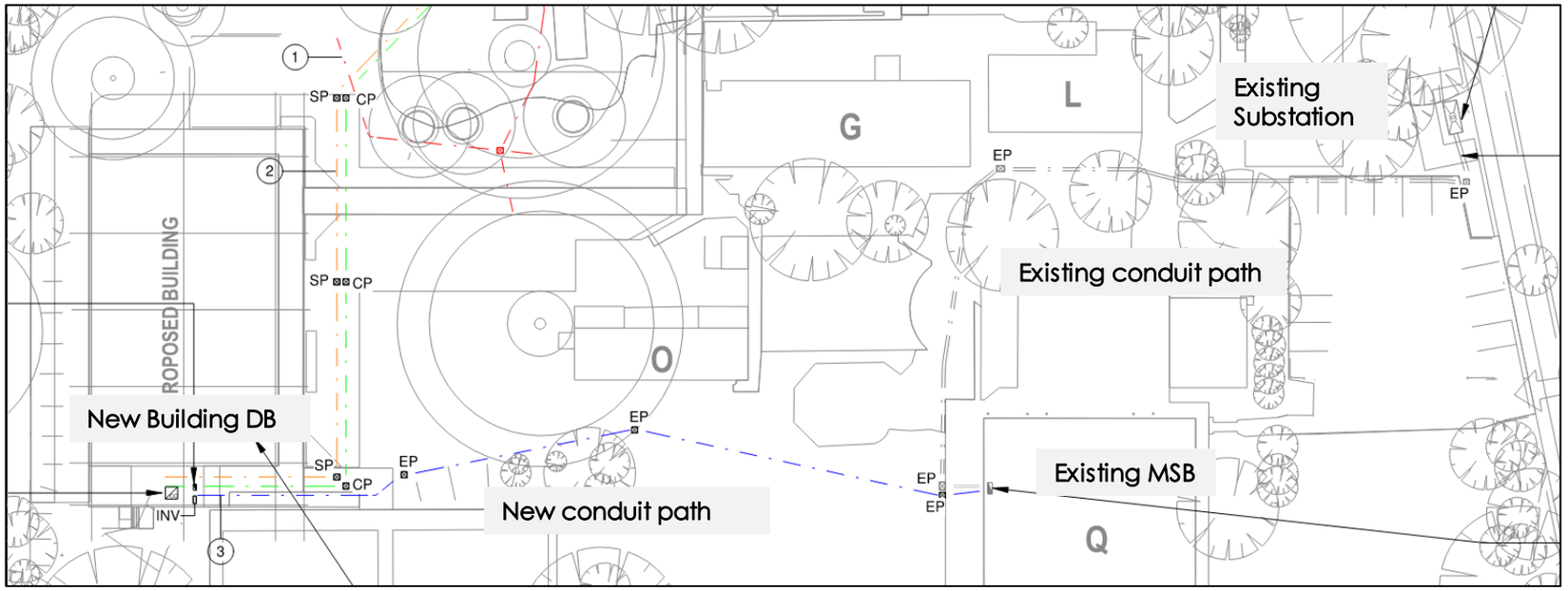
PROPOSED SUPPLY MODIFICATIONS



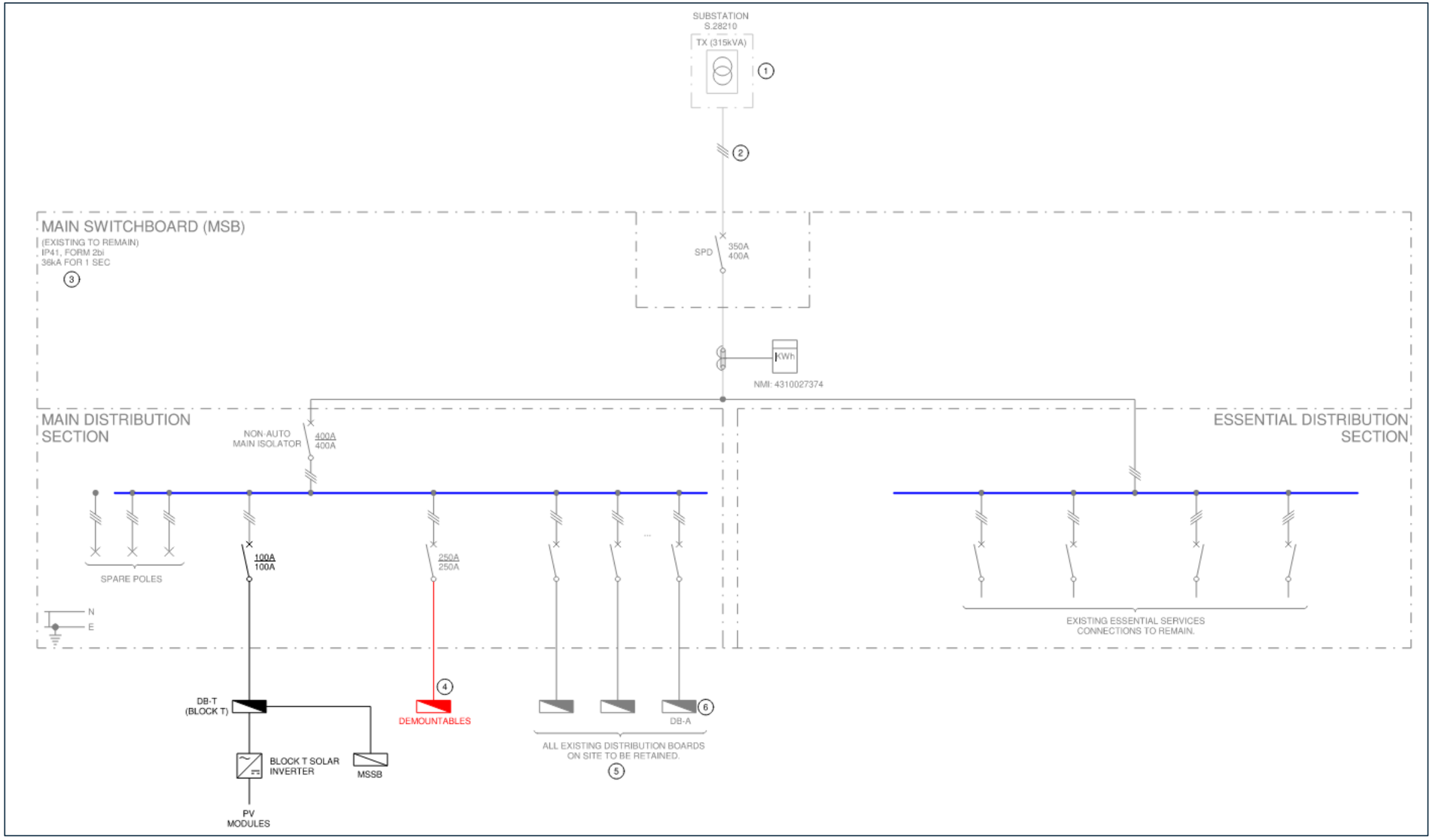
A load application was submitted to Endeavour Energy on 15/11/2024 for the new proposed load of 344A. Permission to Connect based on the new maximum demand was received from Endeavour Energy on 25/11/2024. This permission to connect gives approval for a restricted supply with the total approved load of 344A per phase and the MSB SPD is to be adjusted to be set at no greater than 344A. No upgrade or replacement of the existing substation is required prior to the connection being made. This connection offer is valid for a period of 12 months from the date it was received, 25/11/2024.

The existing MSB will be retained and used to supply the proposed Block T. New submains cabling will be provided from the existing MSB to the new EDB with Block T.

The existing consumer mains cabling between the substation and MSB is sufficiently sized to accommodate the increased load and spare. No upgrades are required.

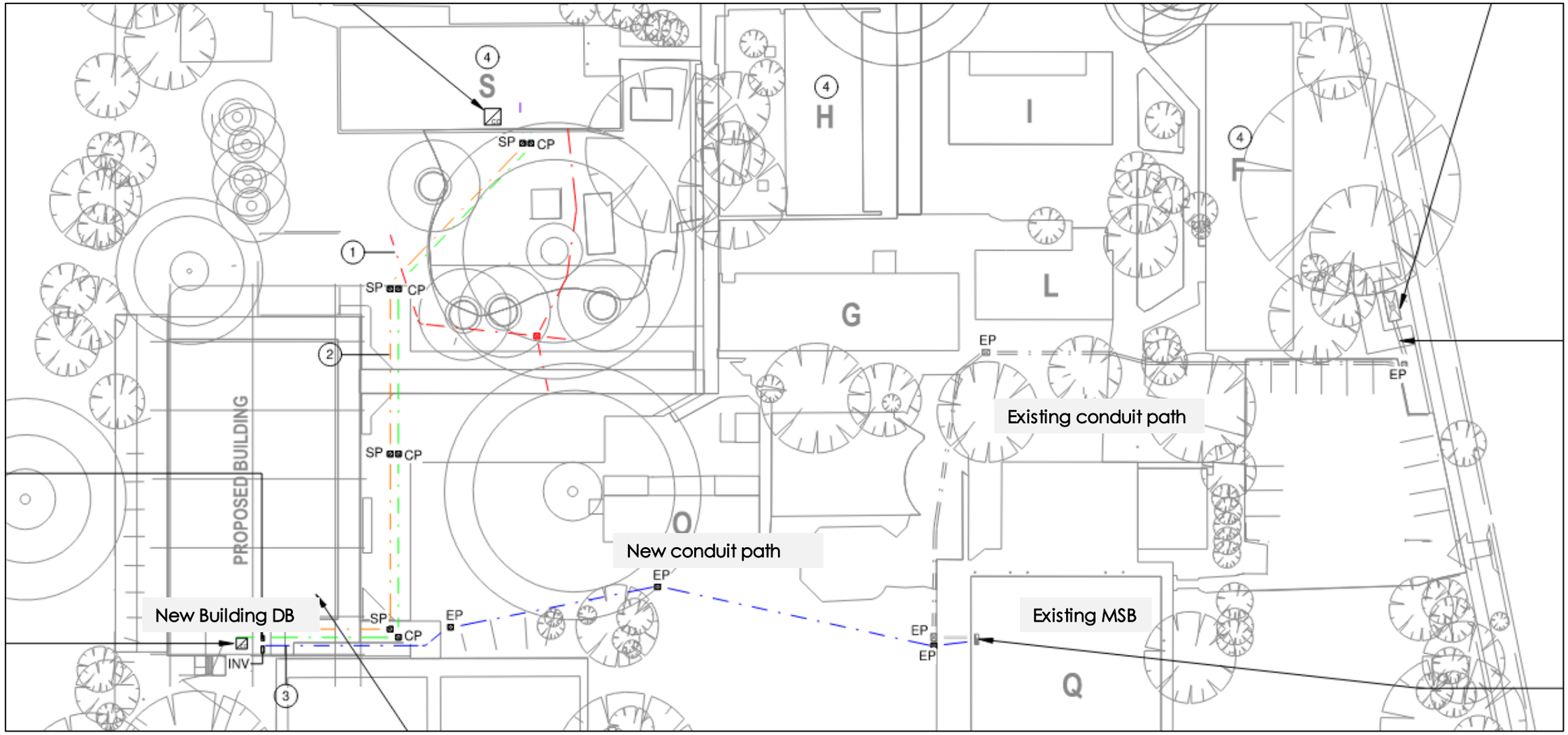
ELECTRICAL DISTRIBUTION – SITE LEVEL

Northmead Public School Single Line Diagram



ELECTRICAL DISTRIBUTION

The existing pit and conduit network will need to be expanded and extended to allow for the new cable pathway to the new building. This pathway will require new in-ground conduit to be installed with cable pits at 30M intervals and at changes in direction. All new in-ground conduit will include spare capacity as required by the EFSG to facilitate future upgrade works if required.

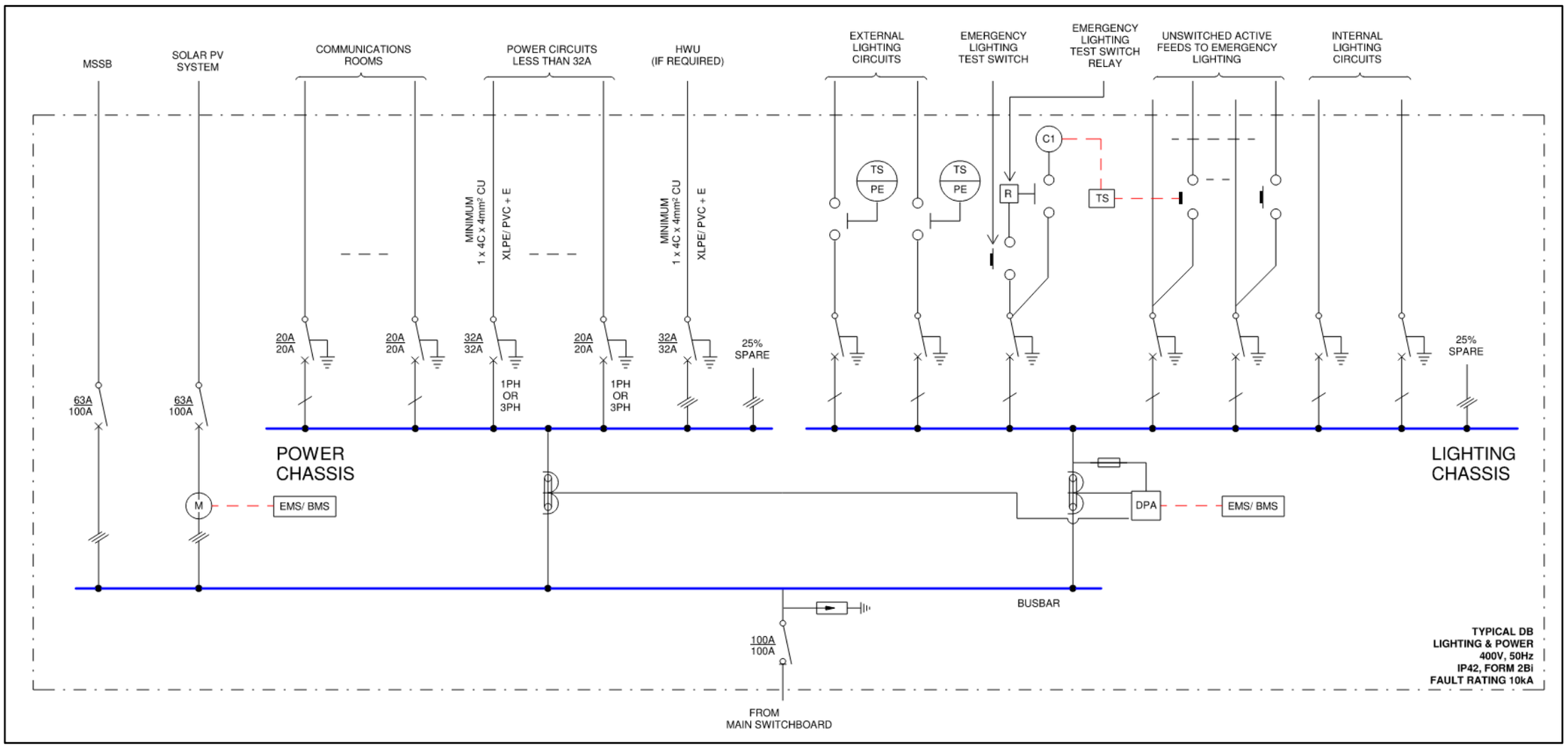


ELECTRICAL DISTRIBUTION PROPOSED NEW BUILDING – BLOCK T

The proposed new building, Block T, will include a new Electrical Distribution Board (EDB) contained in an appropriately designed cupboard. This cupboard will be 60-minute fire rated, and smoke sealed.

Ground Floor

The ground floor electrical cupboard will be located adjacent the General Learning Space and ventilated using intumescent door grilles at high level to prevent heat and moisture build up. The electrical cupboard will include one EDB and one inverter. The EDB will include separate sections for power and lighting as well as surge protection. This EDB will include separate sections for power and lighting as well as surge protection. The EDB will supply all spaces within Block T, including the MSSB and the Inverter system.



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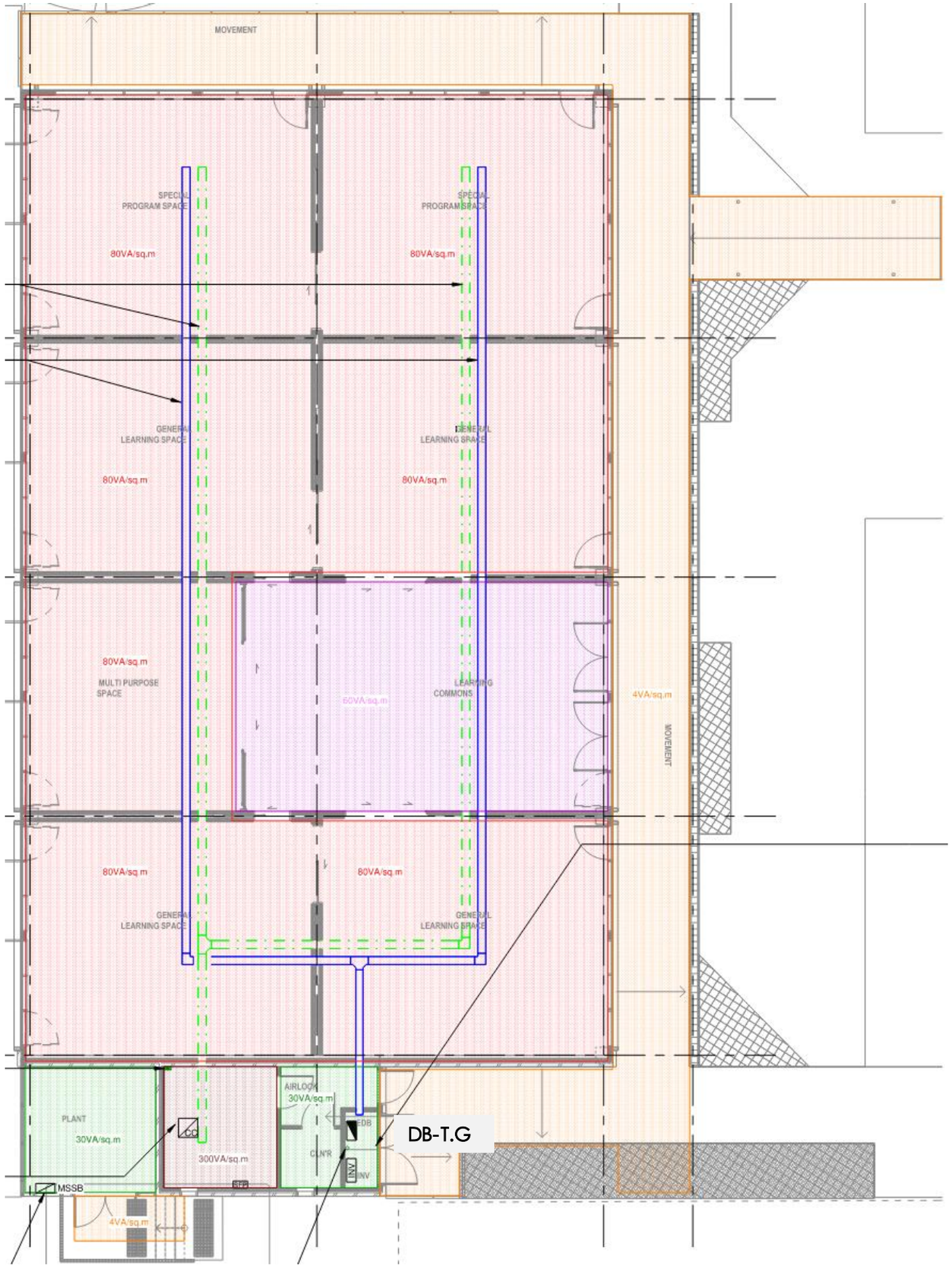
POWER ARRANGEMENT – BLOCK T GROUND FLOOR

Cable tray to reticulate cabling from the ground floor EDB to other building spaces will be provided, with final reticulation to outlets achieved using catenary wire. Cable tray is also to be provided for submains to other boards including mechanical services boards. Cable tray will be sized based on the final number of circuits required as per the DoE Patternbook and include spare capacity requirements in the EFSG for future additions. Cable tray will be reticulated within the ceiling void.



Electrical Services

POWER & COMMUNICATIONS OUTLETS

INDICATIVE POWER AND TELECOMMUNICATIONS OUTLETS QUANTITIES BY LOCATION

ROOM TYPE	ROOM QUANTITY	GPO	DGPO	DTO	CAPTIVE OUTLETS	STO
CLEANER ROOMS	1	-	1 (WP)	-	-	-
AIRLOCK	1	1	-	-	-	-
DB+INVERTER CUPBOARDS	1	-	2	2	-	-
BCR	1	-	4	2	2	-
LEARNING COMMONS	1	1	4	4	-	2
MULTIPURPOSE SPACE	1	1	3	3	-	-
GENERAL LEARNING SPACE	4	3	4	3	-	2
SPECIAL PROGRAM SPACE	2	-	7	5	-	-
PLANT	1	1 (WP)	-	-	-	-

The proposed electrical design includes power outlets, telecommunications outlets and ceiling fans. Indicative quantities have been provided for each area of the proposed new building to align with requirements of each space as documented in the existing EFSG. These quantities are to assist with tendering and for indicative pricing. Final quantities and design are to be based on the allowances as documented in the DoE Pattern book.

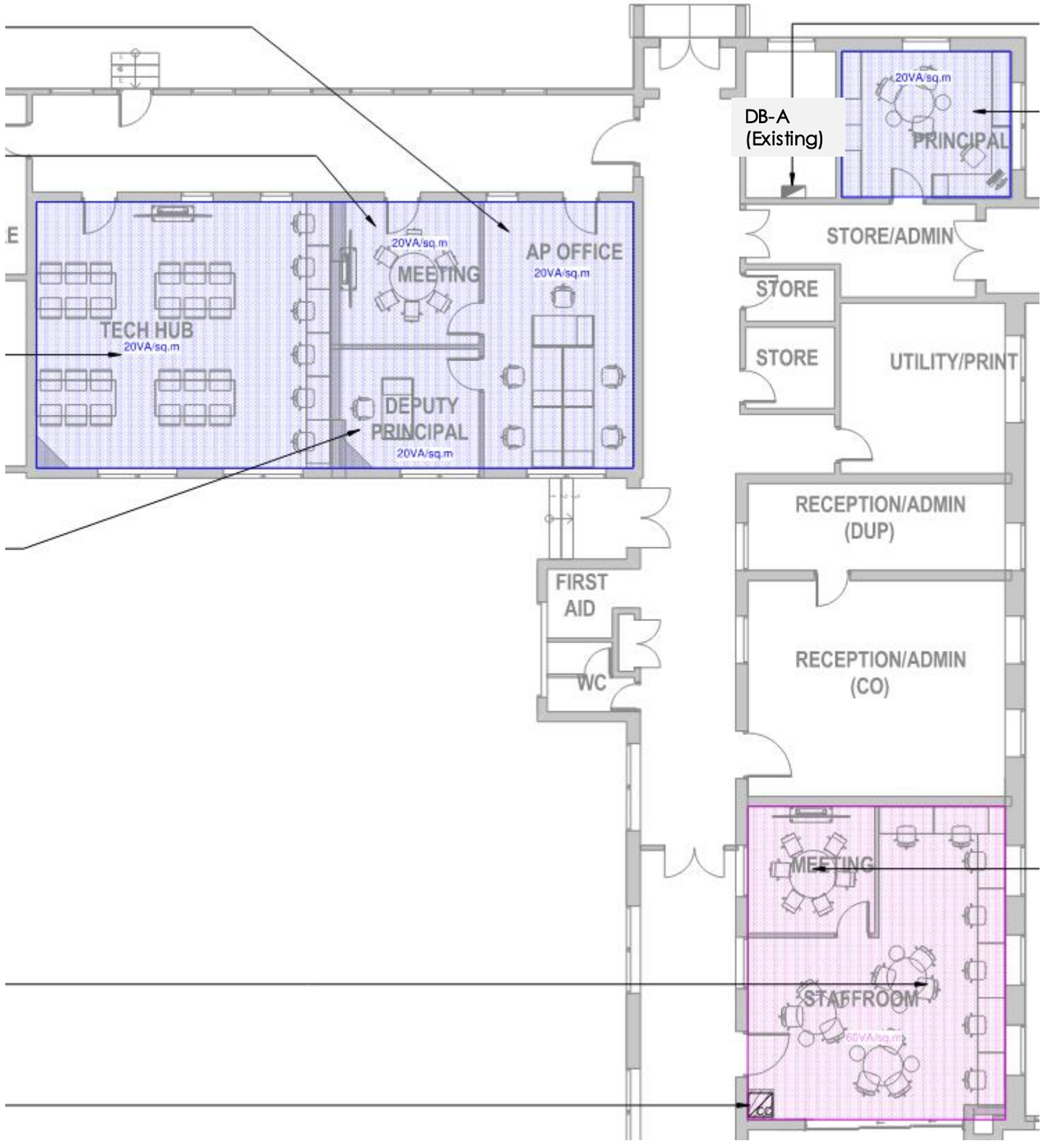
Electrical Services

POWER ARRANGEMENT – BLOCK A REFURBISHMENT

Minor refurbishment works are proposed in Block A to suit the revised scheme.

New power and telecommunications outlets will be provided to suit each of the refurbished spaces.

The existing Block A distribution board (DB-A) will be retained and re-used for the works.



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SOLAR ARRANGEMENT

There are currently 2 x existing solar arrays at Northmead Public School. The first is a 7 kWp system on Block S which is connected to DB-L. The second is a 6.3 kWp system on Block Q which feeds into DB-Q.

As per EFSG v2, it is intended that a new PV system is sized to offset the power consumption of the proposed new building. In this instance, the proposed development would need a 21 kWp system.

When placed on the roof of Building T the estimated payback period would be 7.6 years. It should be noted that this exceeds the EFSG requirement for a maximum payback period of 7 years and will necessitate a departure.

No shading issues are expected for an array installed on the roof of the new Block T.

A preliminary layout has been designed based on 330W panels with Solar PV Inverters located in the Ground Floor Electrical Cupboard. A mounting system is to provide a minimum 10 degree tilt to the PV panels to enable self-cleaning as per the EFSG. A roof penetration is to proposed to route DC cabling from rooftop solar PV array to Inverters located within the Electrical Room.

Minimum 500mm clearance is provided around the perimeter of PV array and minimum 700mm gap every fourth row to create sufficient maintenance access pathways.

Final PV panel and inverter selection is to occur during detailed design in order to match system and site requirements. Spatial arrangement of the electrical cupboard is based on 1 x 25kW inverters. Final number and size of inverter(s) to be determined during detailed design. Inverter(s) shall be Fronius or SMA as per EFSG requirements.

School system shall be retrofitted with central protection as sitewide inverter capacity will exceed 30kW. Central Protection device must have at minimum Vector Shift, Rate of Change Frequency and Phase Balance Current as per EFSG, DNSP requirements and AS4777.

Estimated consumption based on similar building*	Building area (Interior)	Predicted power consumption	Size of proposed solar array	Payback period
130 Wh/sqm/day	594 sqm	77 kWh/day	21 kWp	4.5-6 years

*Value derived from energy modelling of a previous public-school project with similar room layouts.

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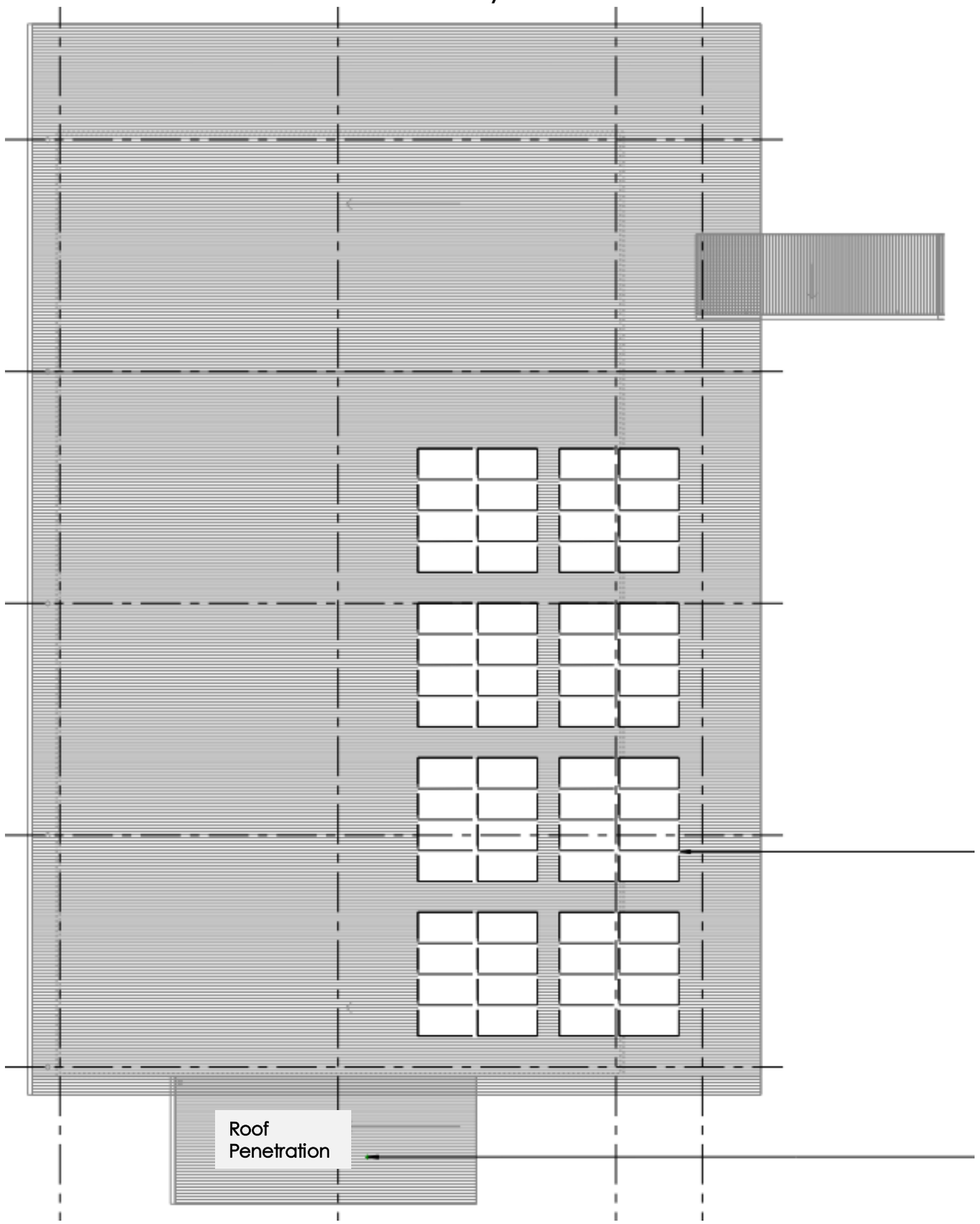
SOLAR ARRANGEMENT

Block T Roof Layout



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LIGHTING

General

All lighting will comply with all relevant Australian Standards, including AS1680 and AS1158 recommended illumination levels, the EFSG, Patternbook and NCC 2022.

New LED luminaires will be provided for general lighting throughout the school. No specialist or feature lighting has been considered. Luminaires will be concealed and integrated within architectural details wherever possible to simplify the appearance of the ceiling and promote visual acuity. The lighting colour temperature to be used throughout the areas shall be 4000K unless noted otherwise.

Type of luminaires shall be coordinated with the Patternbook and EFSG, indicatively:

- LED panels shall be used in general areas, such as general learning classrooms, admin and staff and enclosed corridors where possible.
- LED downlights are to be used in common areas, corridors, amenities and cleaners' rooms.
- LED downlights and infrared heat lamps are to be used in accessible amenities.
- LED battens shall be used in storerooms, electrical cupboard, communications and all plant rooms.
- Weatherproof, vandal resistant LED troffers shall be provided for all external areas including COLA, stairs and external corridors.

Emergency & Exit

Emergency luminaires and exit signs are to be provided in accordance with the NCC and AS/NZS 2293.1-2018. An emergency lighting test switch is to be provided at each EDB.

Control

Lighting in the new building is to be controlled via a programmable and addressable DALI based lighting control system such as Dynalite or KNX. All luminaires are to be DALI dimmable.

An indicative lighting control strategy is:

- Internal luminaires shall be controlled via motion sensors and switch plates with timer shutoff.
- External luminaires shall be controlled via motion sensors and photocells with timer shutoff.

Internal areas such as general learning spaces shall offer dimming and scene-setting where appropriate.

Electrical Services

LIGHTING – BLOCK T GROUND

LIGHTING DESIGN LEGEND

80 LUX AVERAGE HORIZONTAL ILLUMINANCE AS PER EFSG AND AS/NZ AS1680.2.1-2008 TABLE D1
UGR AS PER EFSG AND AS/NZS AS1680.1-2006 TABLE 8.2
LIGHTING UNIFORMITY AS PER EFSGH AND AS/NZS AS1680.1-2006 TABLE 3.2

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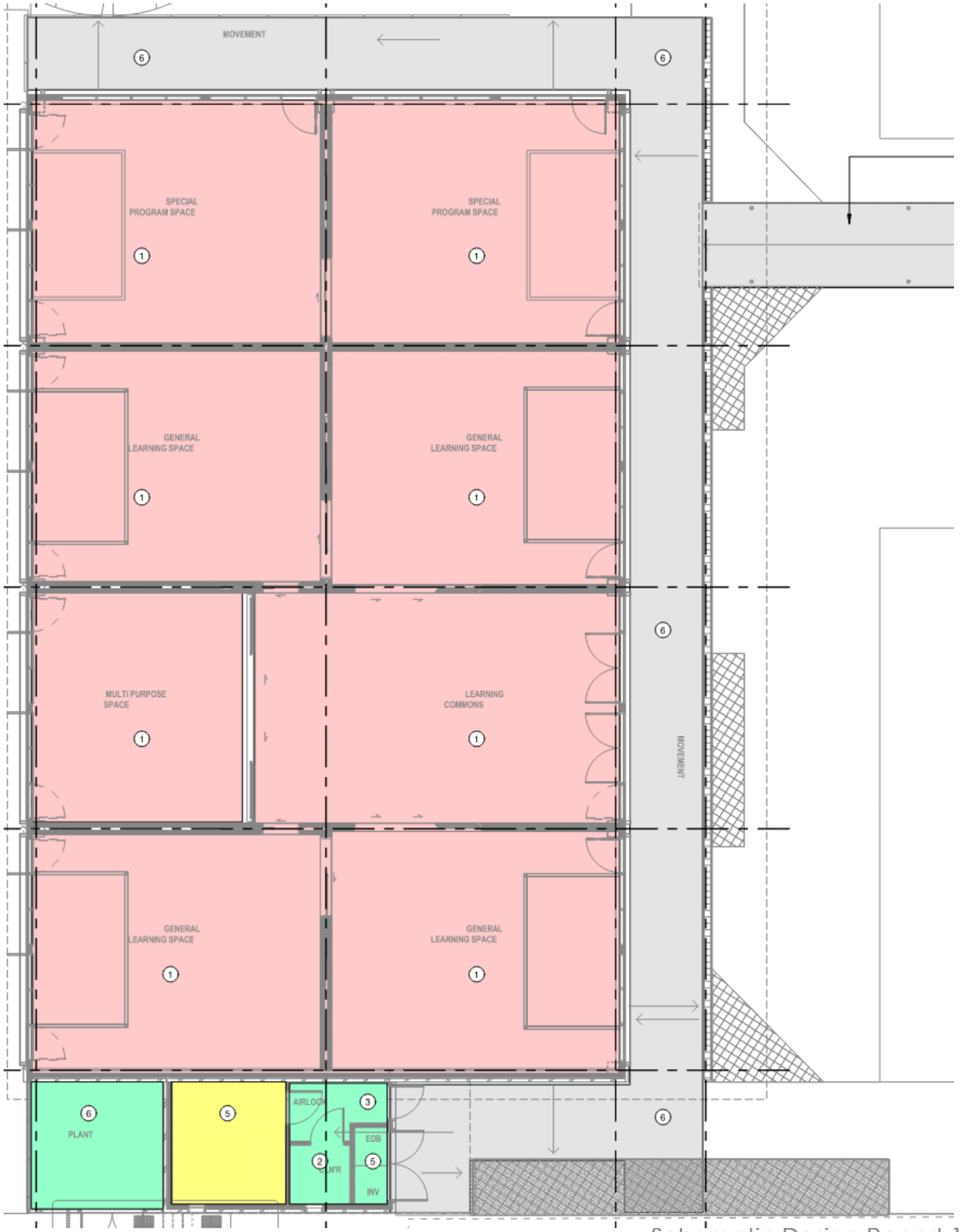
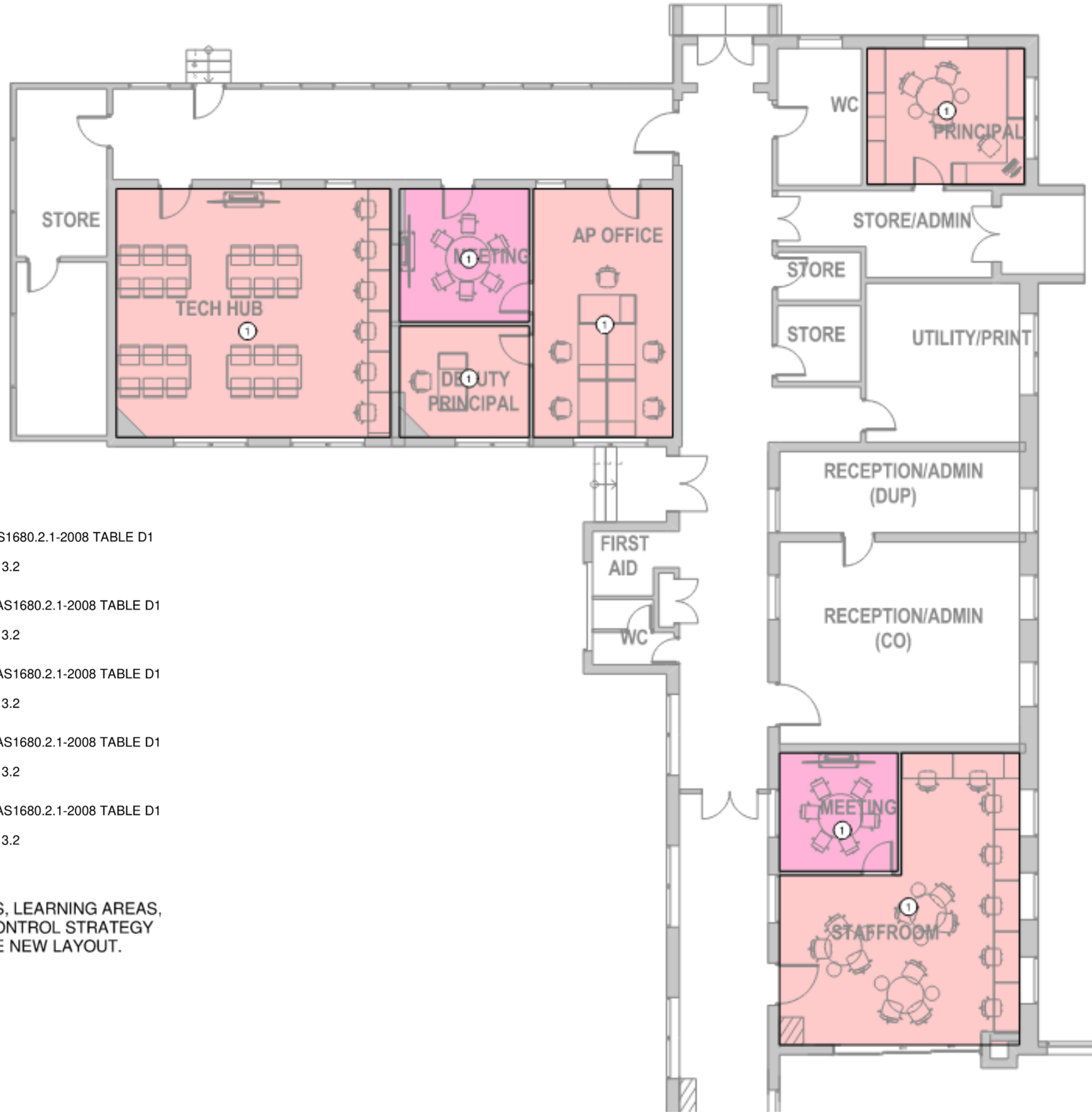


LIGHTING – BLOCK A GROUND



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(1) ALLOW FOR GENERAL LIGHTING WITHIN STAFF AREAS, LEARNING AREAS, INTERVIEW ROOMS ETC. EXISTING LUMINAIRE AND CONTROL STRATEGY WITHIN THE SPACES IS TO BE EXTENDED TO SUIT THE NEW LAYOUT.

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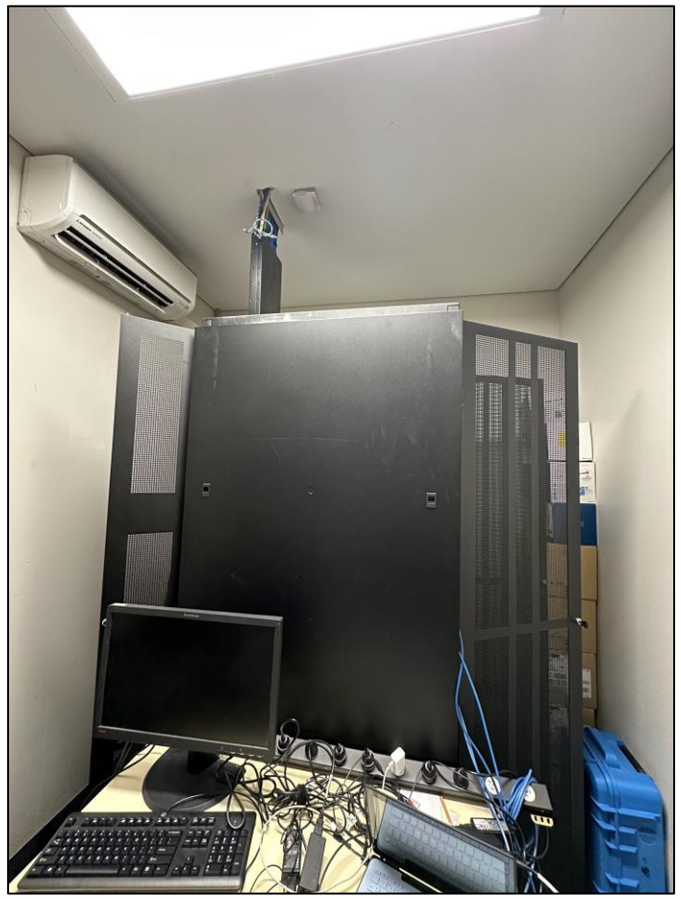
COMMUNICATIONS NETWORK



Existing

The existing communications network at Nothmead Public School is serviced by Telstra and NBN lead-ins. The Network Termination Device (NTD) is located in the MCR within Block S. The existing MCR consists of a single communications cabinet, which does not have capacity for an additional outgoing fibre connection to serve the new Block T. However, there is capacity for a new FOBOT within this cabinet to serve the new BCR in Block T.

It is noted that the existing communications room does not strictly comply with the EFSG.

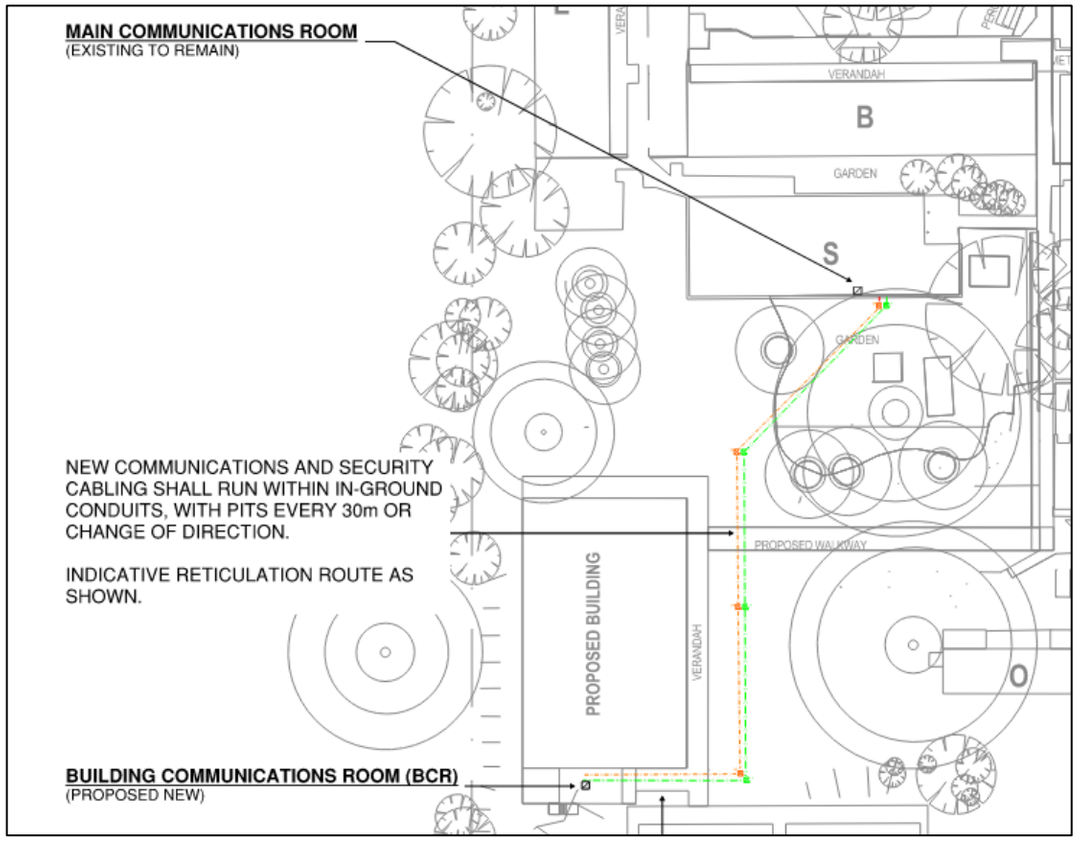
The School utilises fibre backbones between the MCR and other buildings. These are reticulated around the site using a network of pits and conduits.

Proposed

The existing MCR is to be retained in its current location for this scope of works. However, modifications may be required, which will align with the recommended upgrades documented in the Northmead ICT audit. New fibre is to be reticulated from a new FOBOT in the existing campus distributor to the new BCR in Block T.

The new BCR will be located within the services core of Block T, with the plan area dimensions of 2.8m x 3.0m. This BCR will house a security field panel and communication rack(s) – the quantity of which will be determined in coordination with ITD at a later stage.

A new system of pits and conduits will be utilised to reticulate communications cabling from Block S to Block T.



PROPOSED COMMUNICATIONS, AV & SECURITY

Site Communications Upgrades

The existing communications rack with Block A is not large enough for the proposed works. A new 45RU rack is to be provided. The existing racks with the Block S MCR is to remain, however new switches are required due to the WAP upgrade. A new Head End Switch is to be provided in Block A and the MCR as per the latest ICT Audit. Smaller switches within Blocks B, C, E, D, H and D are also to be replaced.

The existing 44 Aruba 100/200 series WAPs on site are to be replaced with new 500 series WAPs. The existing communications cabling is to be reused.

Telephony

The existing 40 telephone handsets shall be replaced with new TIPT handsets. Outlets for phone connections are to be reviewed and new communications outlets are to be provided if required.

PA

The existing PA system on site is to be expanded to suit the new building. New speakers, interconnecting cabling and amplifiers are to be provided. Confirmation on the suitability of this proposed expansion is pending.

AV

The final AV design shall be completed by the contractor is consultation with the EFSG and Pattern Book.

Indicatively, this will involve:

- Interactive Learning Displays
- Mounting Hardware/ Mobile Trolleys
- Portable Hearing Augmentation

Security

A new Security Field Panel (SFP) is to be provided within the new BCR in Block T. New RS-485 LAN cabling is to be extended from the MCR to the new BCR in a star topology.

Indicatively, this will involve:

- PIR sensors throughout all new rooms.
- All perimeter doors leading will have reed switches to monitor door status.
- All electrical cupboards will be lockable with a master PWD “E” key.
- A sounder/screamer within each floor.

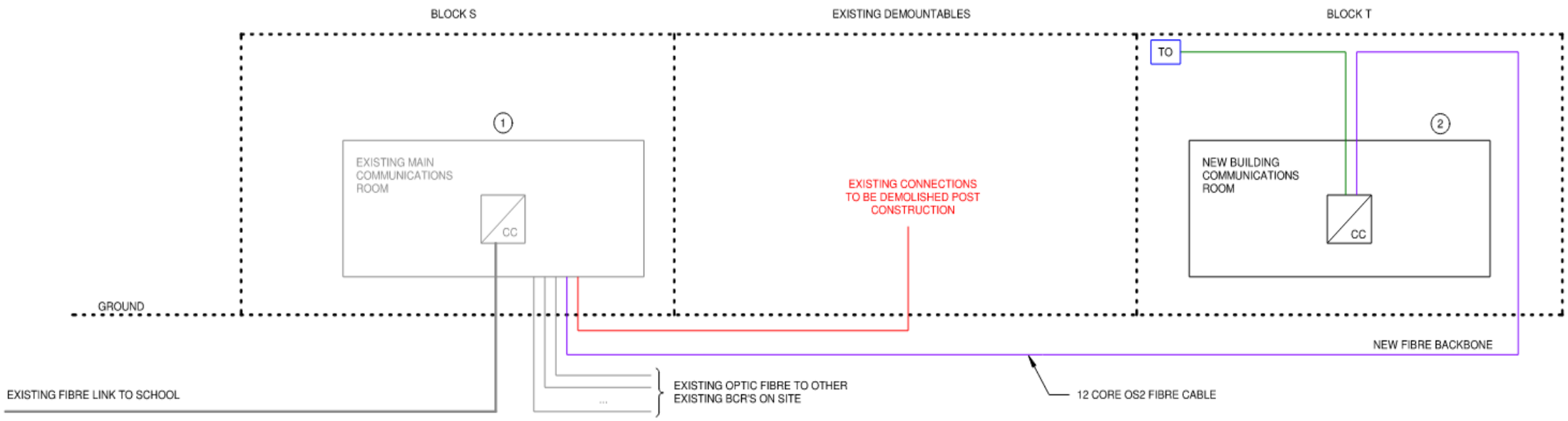
The final security design shall be based on the SSU brief.

Video Security

A video security system shall be provided as per the SSU Brief. Indicatively this will involve:

- Minimum 6MP POE Camera
- NVR upgrades to enable recording for 42 days at 20 frames per second.
- Cat6A cabling.

COMMUNICATIONS NETWORK

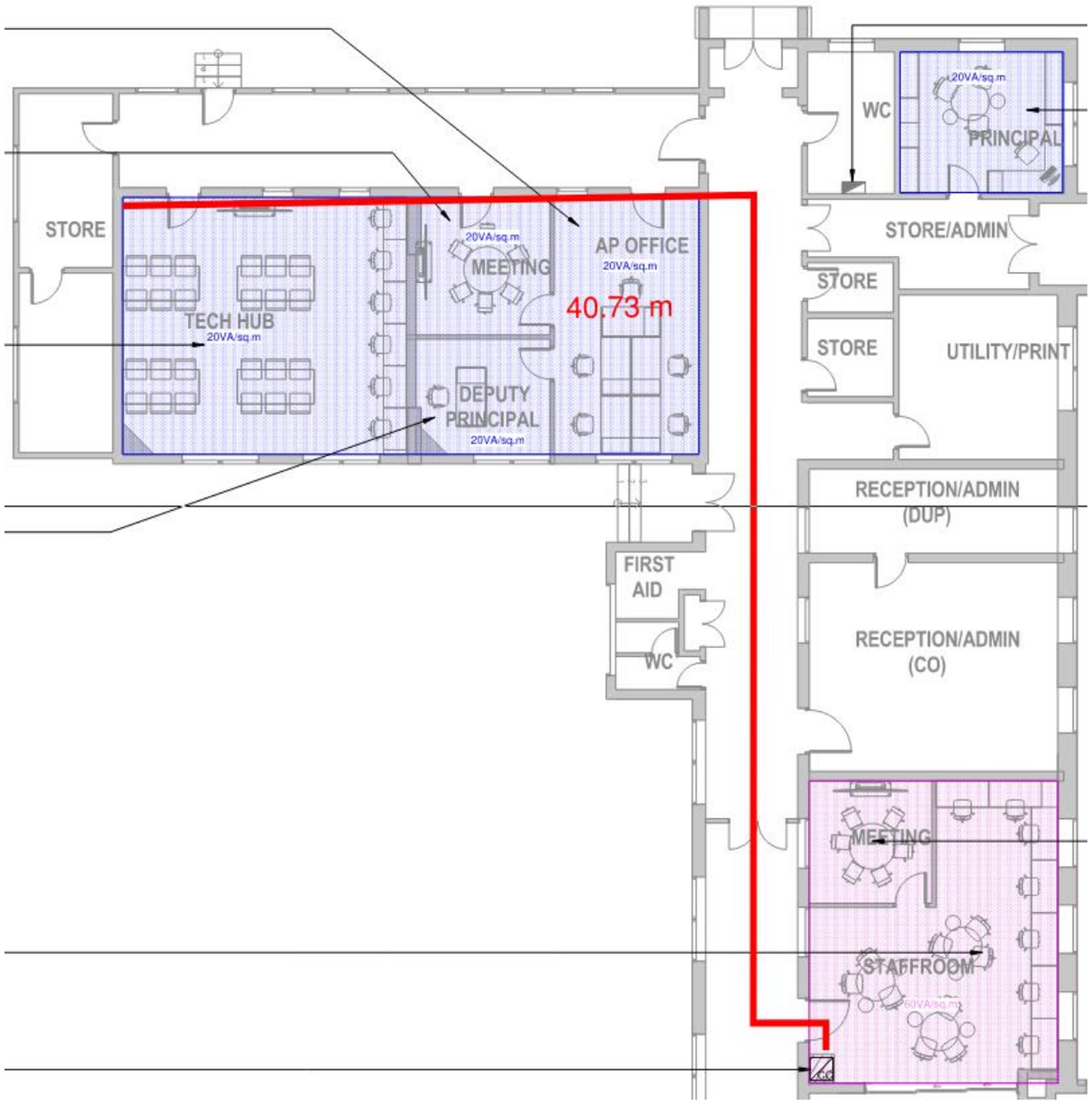


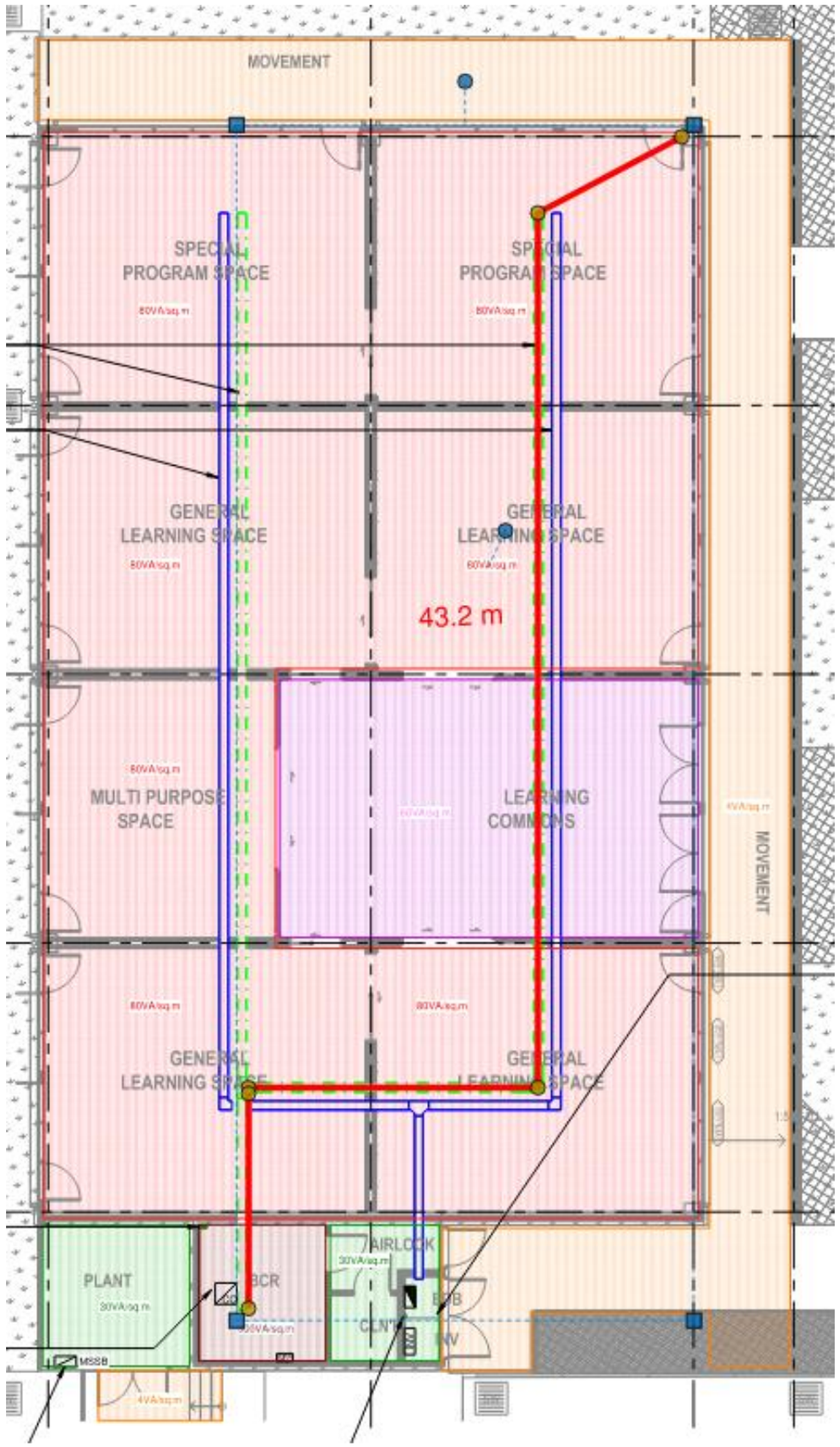
Northmead Public School Communications Schematic

Electrical Services

COMMUNICATIONS NETWORK

The placement of the new BCR is such that the maximum length of horizontal structured cabling will be less than 75m as per the ESFG.





RISKS & OPPORTUNITIES

SSU Audits & Briefs

SSU audits and brief, to date, have not been provided. These audits conducted by Schools Information Technology Directorate and School Security Unit are intended to provide the full scope of works required for the proposed new building as well as required upgrades to existing security infrastructure at the site, to ensure that one combined network is in place for security. Current design's have omitted any upgrade works to existing security infrastructure and included general security requirements as per the existing EFSG. Reassessment of the required works should occur once the audits are received.

Pattern Book Development and Release

The school infrastructure pattern book is currently being developed with portions released to date. The current designs have been based on the available sections of the pattern book, with the existing EFSG utilised where the relevant sections of the pattern book have not yet been released. Subsequent issue of the pattern book may result in the current designs varying from requirements documented in the pattern book. This may result in further design work being required if the plans are to be updated to the new requirements.

Connection Offer Time Limit

A connection offer for the required supply capacity of 344A per phase from the existing substation at Northmead PS has been received from Endeavour Energy. This connection offer is valid for a period of 12 months. Delays in the connection for the increased supply capacity could result in the connection offer expiring and a reassessment being required by Endeavour Energy. Any future works in the vicinity of the school may result in a reassessment indicating that the required supply capacity is no longer available and resulting in the additional expense of upgrading the substation.

Spare Capacity of Existing Electrical Reticulation System

The existing electrical reticulation system includes existing conduit in the vicinity of the proposed new works including the proposed new main switchboard and proposed new building. The site utility survey indicated the presence of spare capacity in the existing communication and security conduits near the proposed new building. Use of this existing conduit will reduce the disruption and damage to landscaping that results from trenching for the installation of new conduit as well as reducing project costs. Further investigation of the existing conduits will be required to confirm the viability of this spare capacity and may include a camera inspection of the conduits.

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MECHANICAL SERVICES

Mechanical Services

CLIMATIC CONDITION & DESIGN CRITERIA

NORTHMEAD PUBLIC SCHOOL

Ambient condition:
- Summer: 36.5°C DB, 24.9°C WB
- Winter: 5.5°C

(temperatures based on Parramatta North weather station)

Locations of proposed new teaching spaces is outside of areas classified as bushfire prone land. It is understood that no considerations for bush fire apply, hence no impact on services in the new building. Note that as Building A is located close to the bush fire zone, it is deemed that mechanical requirements associated for bush fire protection will apply.

Internal design condition for new buildings per EFSG DG 55.02:
- Cooling: 24 ~25.5 °C
- Heating: 19.5 ~ 21°C

Occupancy density:
- 2 sqm/person in accordance with EFSG for GLS
- Per architectural seating chart for staff offices

Internal equipment gains:
- 30 W/person in classroom, which allows for 1 laptop/person
- 15 W/sqm in staff offices

Lighting heat gains: 4.5 W/m2 in accordance with NCC 2022

Fresh air provision:
- 12 L/s/person in classrooms
- 10 L/s person for staff offices in Block A

AIR-CONDITIONING PROVISION REQUIREMENT

The following is noted from the SINSW Design Guidelines 55 on the provision of air conditioning:

Avg Mean Max Jan Temperature	New/Major Upgrade/Redevelopments Areas
≥33°C	**Provide to permanent learning spaces, staff, and administration areas.**
<33°C	**Provide to permanent learning spaces and libraries only.** Administration and staff areas to be conditioned ONLY when included in the project upgrade scope and inclusion is required to achieve compliance with the relevant standards. When not included, school can source their own fundings

Avg Mean Max Jan Temperature	Existing Areas
≥33°C	**Provide to permanent learning spaces and libraries only.** Admin and staff areas sourced by school own funding only.
≥30°C	**Provide to permanent learning spaces and libraries only.** No requirement for admin and staff areas
<30°C	**Schools may apply to SINSW for A/C to be installed in permanent learning spaces and libraries**

As Northmead Public School is 36.5 C, which is >33°C isotherm, AC is required to be provided to the followings per the EFSG:

- New Building: learning spaces, admin/staff offices, and communications rooms.
- Existing Building: learning spaces and libraries only. Admin and staff areas sourced by school own funding only.

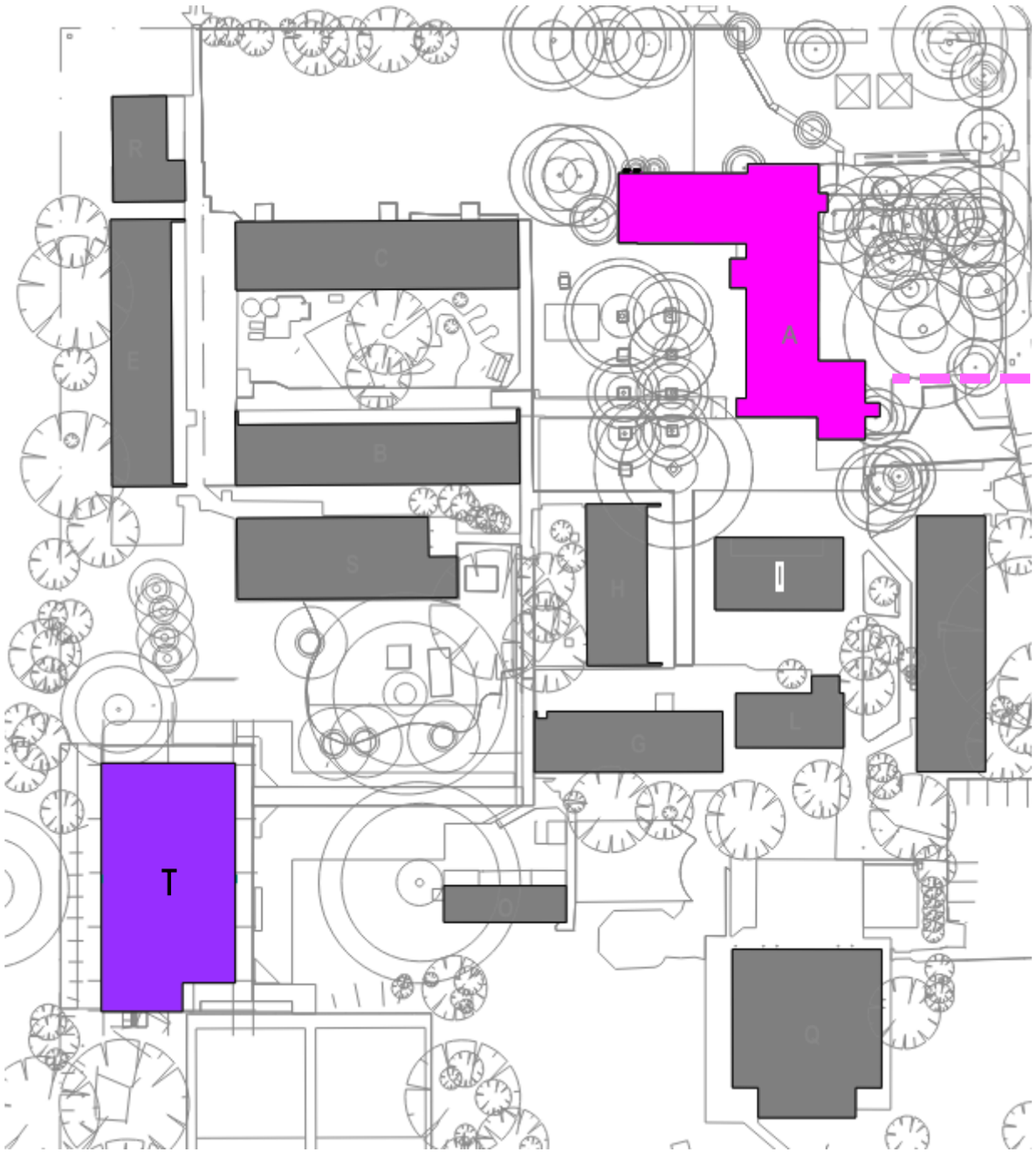
EFSG Cooler Classroom Program (CCP) Guideline defines the followings existing spaces as learning spaces:

Primary School	Secondary Schools
Home Base HB and associated Practical Activity Areas PAA (normally one space). Where separated by wall, PAA requires separate A/C	General Learning Spaces
Libraries and associated areas (reading, study, seminar rooms), provided the area is >17sqm. No A/C, fresh air, or controls for spaces <17sqm	
Withdrawal rooms (generally shared with Home Base and will share A/C and fresh air system with HB via vents/louvres or opening the door, unless separated and larger than 17sqm).	Practical rooms, including laboratories, kitchens & hospitality spaces, and performance and fitness workshops (but not gyms.)

Not Considered as Learning Spaces per CCP Guideline
• Preparation rooms (food & science) • Library workrooms and library offices • Storerooms • Any eligible rooms <15 sqm adjacent to air-conditioned space • Any room with open or meshed walls • Workshops • Hot metal area • Tin sheds • Craft room (if not learning space or PAA) • Seminar rooms (which are not part of library) • Study spaces • Darkrooms • Any spaces not used for learning by students

Northmead Public School

Existing Site Plan and Existing A/C Provision



Existing building A to be refurbished. Modifications to existing services are proposed to suit modified architectural layout

LEGEND

NO UPGRADES PROPOSED WITHIN THE BLOCK. BUILDING IS GENERALLY ALREADY PROVIDED WITH A/C OR A/C IS NOT REQUIRED FOR THE SPACES AS PER EFSG COOLER CLASSROOM PROGRAMS

UPGRADES WORKS PROPOSED WITHIN THE EXISTING BLOCK

NEW BLOCK TO BE PROVIDED WITH A/C AND VENTILATION AS REQUIRED. REFER TO ASSOCIATED DRAWINGS OF THE BLOCK FOR FURTHER DETAILS

Mechanical Services

TYPICAL COOLING & HEATING INFRASTRUCTURE SYSTEMS

From EFSG DG 55.02:

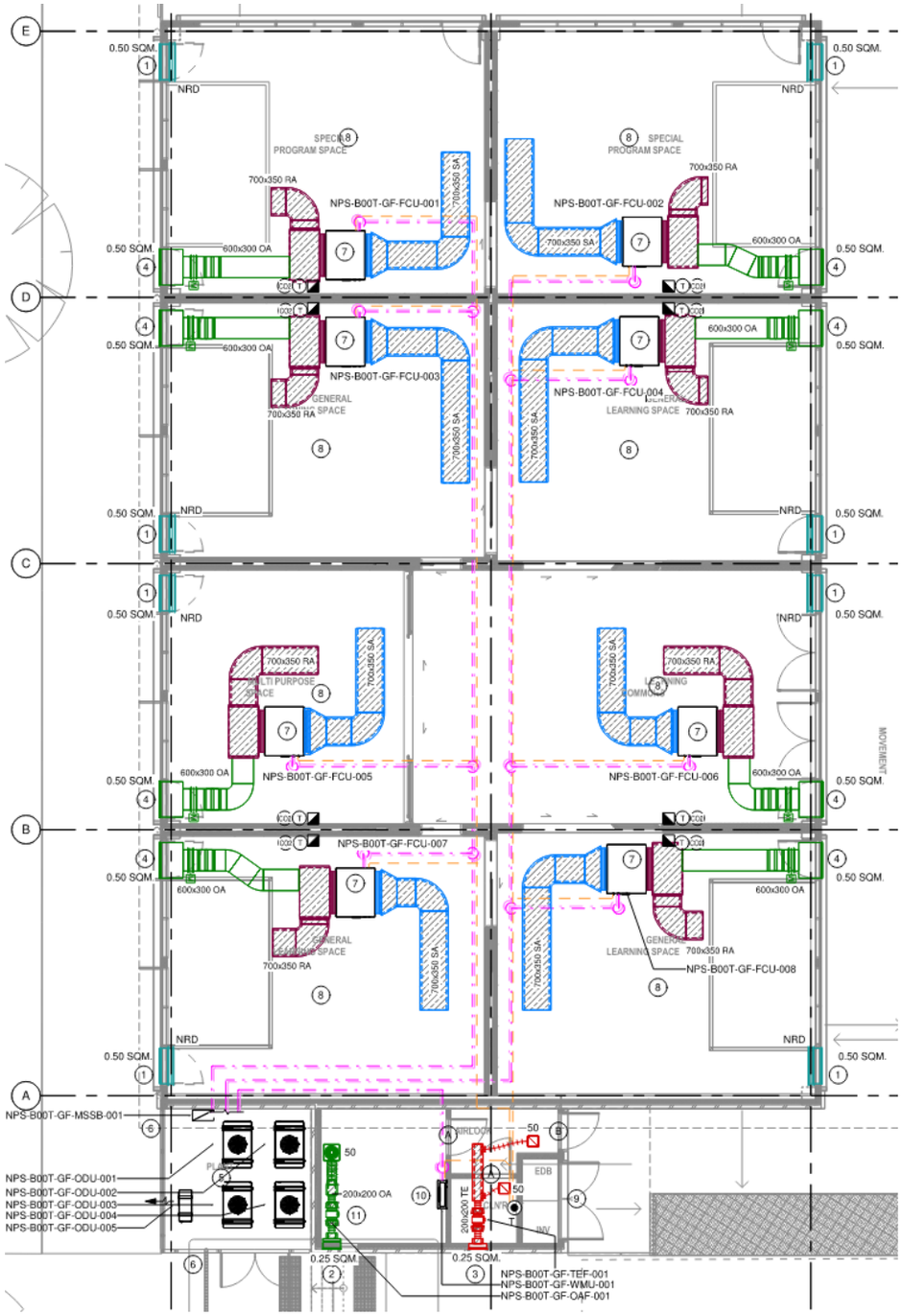
School Type	Air Conditioning System	Ventilation	Design Considerations
Cooling system capacity below 900 kW	Centralised ducted VRF	Ducted fresh air	• Refrigerant Charge • Energy Recovery Ventilator requirements due to specific conditions
Cooling system above 900 kW in a single building	Centralised ducted VRF Or Chilled/Heated Water System	Ducted fresh air	• Refrigerant Charge • Energy Recovery Ventilator requirements due to specific conditions • Centralised energy recovery ventilator to be considered • Chilled water system should be considered

For Northmead Public School, it is expected that the cooling system capacity load will be <900 kW and thus a centralised ducted VRF system shall be applied

Mechanical Services

AIR-CONDITIONING STRATEGY

NEW LEARNING BLOCK T



- GLS shall be air-conditioned in accordance with EFSG DG 55, i.e., in-ceiling ducted fan coil unit (FCU) with fresh air intake and relief air discharge louvres on façade. Condensers located on a dedicated external plant space.
- Cleaner and airlock spaces to be mechanically ventilated, with discharge to external passing via louvres at high level
- EDB cupboard is naturally ventilated via low- and high-level intumescent grilles
- BCR room shall be air-conditioned via wall-mounted split A/C complete with fresh air provision via in-line fan and intake from facade

AIR-CONDITIONING PLANT SPATIAL

OUTDOOR PLANT

New Learning Building

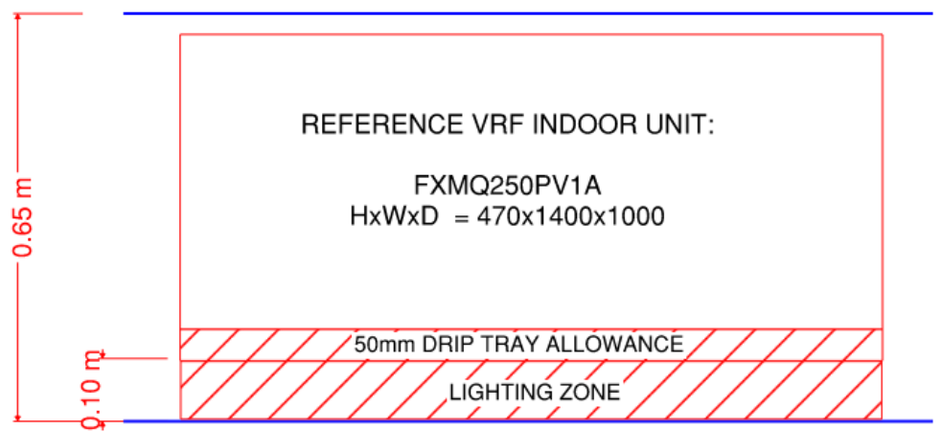
The A/C condensers for the new learning building will be located at Ground Level with the min size of 16 sqm.

Space will be open to sky with louvred façade.

INDOOR CEILING SPACE

The indoor ceiling space required to accommodate the new ducted VRF unit in the new building space is estimated to be:

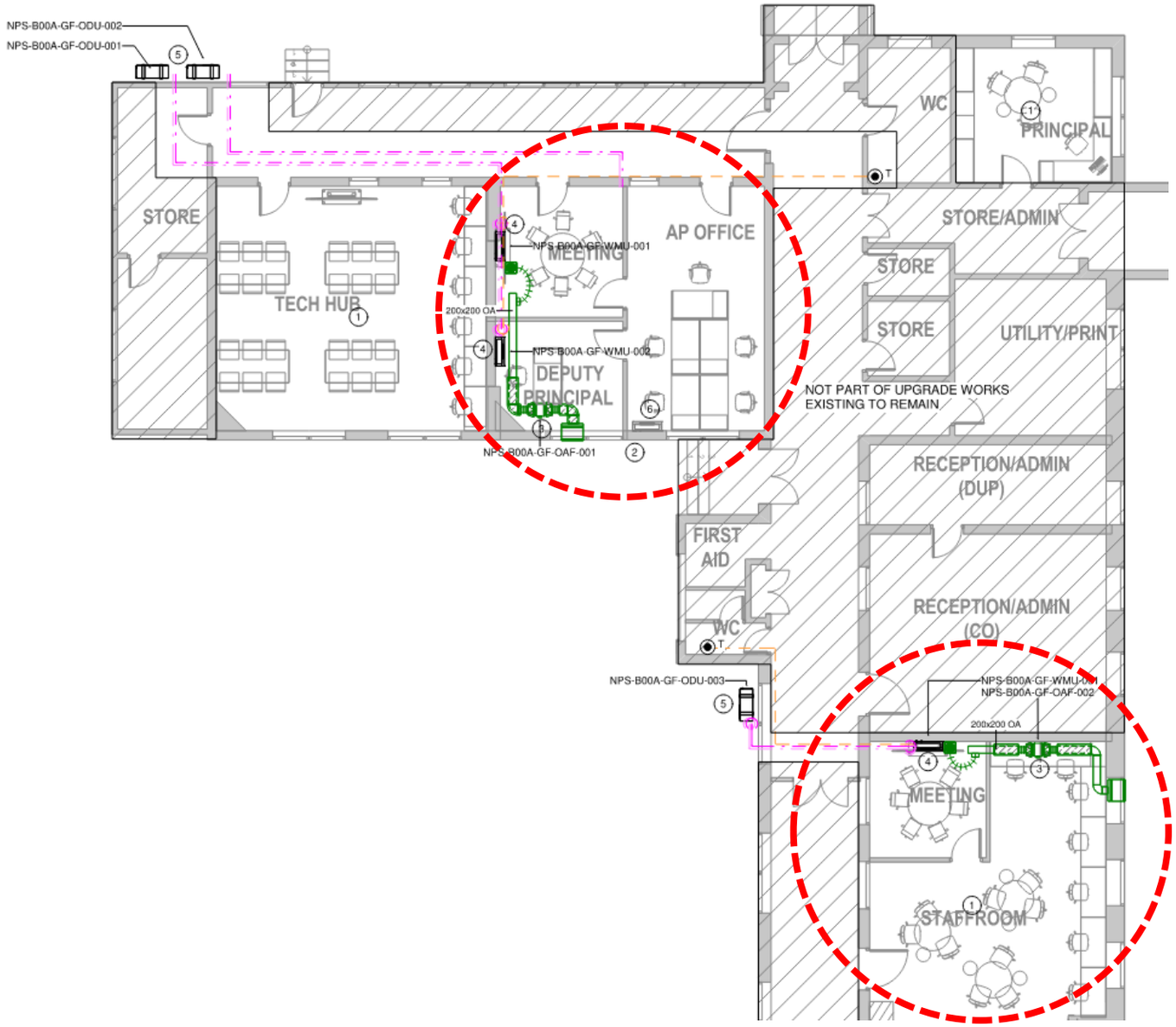
650 mm (clear) high minimum.



Mechanical Services

AIR-CONDITIONING STRATEGY

EXISTING BLOCK A



- There are already existing A/C provision within the block, i.e., wall-mounted split A/C with openable windows.
- Where there are no changes in architectural partition layout and occupancy, existing A/C system is proposed to remain
- For the particular spaces circled above, the previously one space is divided to include multiple spaces. As there is only 1 existing A/C each within the space, only one of the space can be air-conditioned via existing means. For the new spaces, the followings are proposed:

    1. Provision of new wall-mounted split unit to serve the new space, matching existing strategy
    2. Provision of new mechanical ventilation system to the 6P meeting rooms as to allow fresh air provision. this will involve replacing part of the existing window with louvre for outside air intake
    3. Fresh air provision to spaces located on the perimeter shall be via openable windows as existing

MECHANICAL CONTROL STRATEGY

Currently there is no Building Management Control System (BMCS) available in Northmead Public School.

NEW BUILDING

Building Management Control System (BMCS) is proposed to be installed for the **new building** to ensure fully integrated and operational mechanical services system, including:

- Automatic A/C shutdown when the spaces are not in used for greater than 10 minutes (except in specific cases such as designated computer rooms)
- Room temperature measurement will be used to limit the operation of outdoor air provision during higher indoor conditions
- Enthalpy measurement will be used to determine favorable ambient conditions
- Dedicated space temperature sensor and CO2 sensor shall be provided to each general learning space
- User interface for operation of the systems via a Local Control Point incorporating pushbutton & Blue, Green and Yellow mode LED indication lights
- Central touch screen controller to control the A/C in the new building

For Rooms with A/C, CO2 and Enthalpy Indication