JHA

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CONSULTANT'S ADVICE

PROJECT NAME: Warrawong Community Health Centre

PROJECT NUMBER: 210332

This consultant's advice shall address relevant electrical services queries regarding the Warrawong Community Health Centre (WCHC) REF scope. The requested information is summarised in the following table:

REF ITEM	Element	Comment	Required Documentation/ Assessment	Responsible	Status Comment
1	External lighting	If external lighting is proposed, requires a lighting assessment.	Lighting assessment (may be part of the Architectural Design Statement or Report if only minor lighting is proposed).	JHA	Addressed in below advice
2	Utilities/ Services	2A Infrastructure design plans (concept level detail).	Infrastructure design plans (concept detail).	JHA, Arup, Cox	Appended to this document, Appendix 1
		2B Provide relevant services design statements (what is proposed, why it is needed, capacities available or needed, connections needed, consultation with service providers, broader headworks, confirm Australian Standards to be complied with, any mitigation measures needed).	Services design statements (water, sewer, comms, electrical, gas)	JHA, Arup, Cox	Addressed in below advice

INTRODUCTION

JHA has been engaged by Health Infrastructure to provide design for the Electrical and ICT related services for the new Warrawong Community Health Centre (WCHC).

This advice notice provides services advice to support the Review of Environmental Factors (REF) for the proposed works package.

The proposed development shall be designed to comply with all other relevant codes, standards, and Authorities requirements.

THE SITE

The Warrawong Community Health Centre project will encompass the following:

- Construction of the new Warrawong Community Health Centre and associated site services
- All onsite and off-site infrastructure and authority works.

The new Warrawong Community Health Centre (WCHC) is planned to be located on the existing Port Kembla Hospital site.

Figure 1 – Current Port Kembla Hospital Site

The WCHC health facilities are planned to deliver the following specific clinical services:

- Child and Family services including PKH Child Development Service, Illawarra Early Childhood Nurses, Domestic Family Violence and Sexual Assault Services and Binji & Boori Child & Family Illawarra Aboriginal Services (AMHICH)*
- Ambulatory and Primary Health Care services including facilities offering Chronic Disease Prevention and Rehab Services such as the Aunty Jeans Program and Healthy Hearts program.
- District Wide Sexual Health Service.
- Drug and Alcohol Services, based in the community including Drug & Alcohol Needle & Syringe Program (First Step), and Counselling & Withdrawal Management.
- Community based Mental Health services.
- Allied Health (including Brain Injury Service).
- Ante-natal
- Equipment Loan Pool.

The development at Warrawong Community Health Centre will also provide the opportunity to relocate selected services from the Port Kembla Hospital (PKH) site and other locations in the Illawarra region.

The NSH will play an important strategic role for ISLHD, including as the District-wide service hub for mental health services and as a high volume, short stay centre for a range of elective surgery specialties. The hospital will also advance the District's digital health capability by including a future-facing digital scope to support the models of care of the future.

LIMITATIONS

This memo is subject to the following limitations:

- The information in this report has been provided based on the survey information of services as provided for the project to date.
- Information provided by third parties and respective Authorities has been utilised in the preparation of this report and have been assumed to be of sufficient accuracy to utilise for the REF process.

ITEM 1 – EXTERNAL LIGHTING

The main purpose to this section is to outline:

- Outline the overall design requirements for external lighting for the WCHC.
- Outline the applicable/relevant client and Australian Standards and compliance requirements for the external lighting design.
- Outline the process and methods for future detailed design to ensure the development minimises or mitigates the unwanted effects of spill lighting into the surrounding areas.
- Refer appendix 2 of this report for external lighting concept sketch for locations of external lighting for the proposed development.

The WCHC is required to contain several external lighting elements to the surrounding building and proposed site. The elements include:

- Building perimeter
- WCHC external car parking spaces
- Roadways within the proposed site boundary
- Pedestrian pathways

External lighting is required to provide sufficient illumination of people and property to maintain functionality, safety (safe movement), and security (reduction of fear, enablement of electronic security) of users (staff, patients and visitors) of the health centre and surrounding connecting elements.

The WCHC external lighting design is required to comply with several key client and Australian standards, these are outlines in the following table. Specific criteria and parameters are outlined in the appended external lighting concept sketch, including the key areas requiring lighting.

Key Design Standards:

Code/Standard	Description	Summary
AS 1158.3.1:2020 (including applicable standards in AS1158 series)	Pedestrian area {Category P) lighting-Performance and design requirements	Sets out design requirements and parameters for category P lighting
AS4485.1:2021 (including applicable standards in AS4485 series)	Security for healthcare facilities - General requirements	Set out minimum requirements for healthcare facilities in relation to security design elements.
AS4282:2019	Control of the obtrusive effects of outdoor lighting.	Sets out requirements for control of the obtrusive effects of outdoor lighting.
Local Council and Authority Requirements	Any applicable general and specific requirements for external lighting from council and relevant authorities.	

The external lighting design and mitigation of spill lighting is achieved through a combination of both experienced engineering and lighting design, together with the requirements outlined in the above prescribed standards.

Lighting Sub-Category Assessment

JHA has preliminarily determined the following selection criteria for the local roads primarily within the property boundary for access to proposed WCHC in provision for future development.

Roads:

The areas are considered as local road primarily used for accessing abutting properties.

- Pedestrian activity: Low
- Risk of crime: Medium
- Need to enhance amenity: Low

Based on the above, the applicable lighting category for the local roads is PR2[1], obtained utilizing Table 2.1 of AS1158.3.1.2020.

Paths:

- Pedestrian/cycle activity: Low
- Fear of crime: Medium

Based on the above, the applicable lighting category for the local paths is PP3[1], obtained utilizing Table 2.1 of AS1158.3.1.2020.

Car Parks:

- Nighttime vehicle and/or pedestrian movements: Low
- Fear of crime: Medium

Based on the above, the applicable lighting category for the outdoor car parks is PC2[1], obtained utilizing Table 2.1 of AS1158.3.1.2020.

Additionally, the following principals will apply to the external lighting design in relation to luminaire selection:

- Be energy efficient (use of LED technology).
- Low maintenance.
- Use of 4000K CCT lamps with higher than 80 colour rendering index.
- Select vandal resistant, weatherproof luminaires.
- Select luminaires with low glare.
- Place luminaires where lighting is needed and where it complements the surrounds with strict adherence to section 3.7 of AS1158.3.1.2020 (Table 3.8 and 3.9).

Spill and obtrusive lighting mitigation

Spill and obtrusive lighting mitigation, including mitigation of upward light, is a primary design consideration of the proposed WCHC development.

The proposed site is currently located in R2: Low Density Residential zone planning area. The development is surrounded by:

- R2: Low Density Residential Zone to the East (Fairfax Road side).
- R2: Low Density Residential Zone to the South (Fairfax & Vermont Road side).
- R2: Low Density Residential Zone to the West (Existing hospital side).
- MU1: Mixed Use Zone to the North (currently Low Density Residential (Cowper Street side)

The following figure represents the planning zones of the proposed development and surrounding developments:

[1] NOTE: At this stage JHA has consulted AS1158 to assess which lighting category the new public lighting scheme should be designed to. Final confirmation shall be sought on the design criteria above from the council and other relevant project stakeholders.

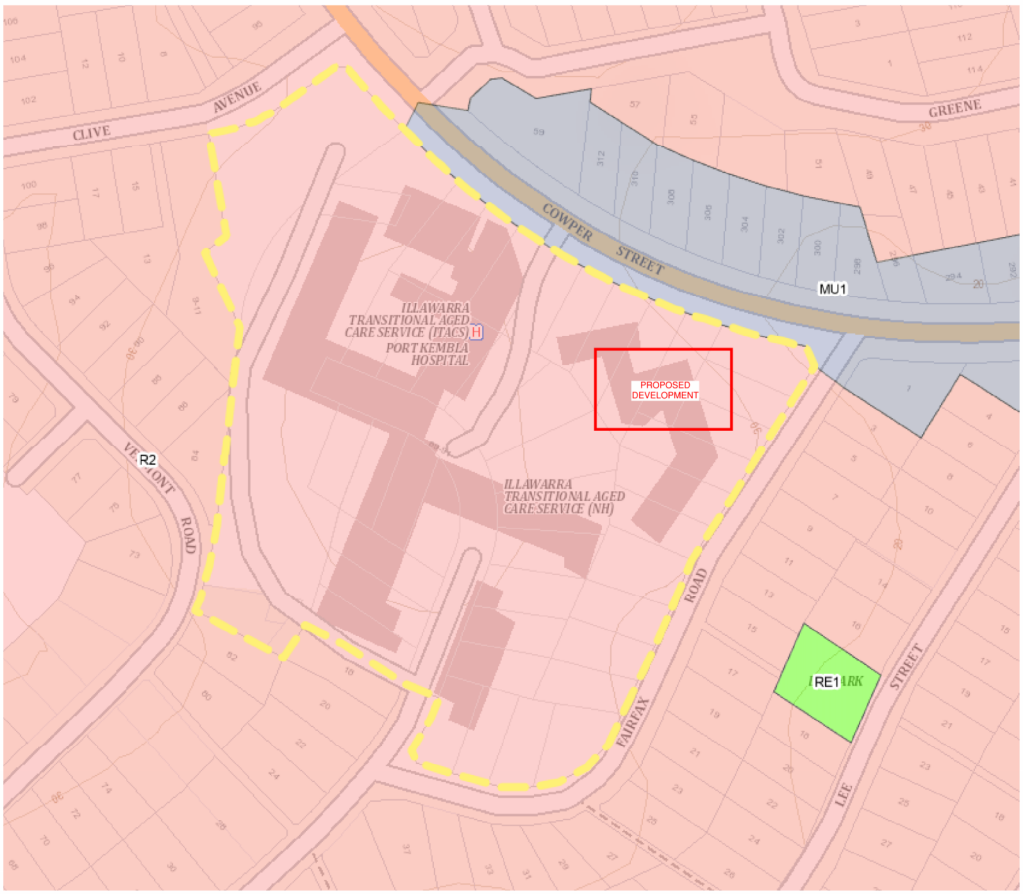


Figure 2 Site Location and Current Land Zoning (Source: NSW Planning Portal Spatial Viewer)

The site is currently surrounded by existing low density residential dwellings, which is of importance design criteria for the mitigation of obtrusive lighting. Such areas require detailed consideration of the adjacent residents for potential lighting causing annoyance, distraction or in some instances discomfort. The design for mitigation of obtrusive lighting considered the surrounding residences and existing low levels of external lighting in the surrounding area.

Specifically, the external lighting design will be undertaken to comply with the following design parameters of AS4282:

TABLE 3.1

ENVIRONMENTAL ZONES

Zones	Description	Examples
A3	Medium district brightness	Suburban areas in towns and cities

TABLE 3.2

MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS

Zones	Vertical illuminance levels (E_v) lx		Threshold increment (TI)		Sky glow
	Non-curfew	Curfew	%	Default adaptation level (L_{ad})	Upward light ratio
A3	10	2	20%	1	0.02

Figure 3 AS4282:2019 Environmental Zones & Maximum Values of Light Technical Parameters

In addition to the impact of external lighting to surrounding residences, an Upward Light Ratio (ULR) calculation will be completed to meet the above maximum ratio.

Furthermore, spill and obtrusive lighting will be further mitigated via:

- Aiming angles and mounting height of luminaires, light shields.
- Aiming of fittings toward the development and not into surrounding environment and other areas.
- Limit spill light and glare to adjoining properties in accordance with the requirements of AS4282:2019 control of the obtrusive effects of outdoor lighting.
- Installation and commissioning by authorised parties.
- Testing, and certification of the completed lighting installation.
- Ongoing maintenance for continual conformance

ITEM 2A - UTILITIES/ SERVICES CONCEPT DESIGN PLANS

For Infrastructure concept design plans, refer Appendix 1 of this document.

ITEM 2B - UTILITIES/ SERVICES CONCEPT DESIGN PLANS

HIGH VOLTAGE SERVICES

The current existing HV infrastructure on site consists of 2-off existing Endeavour Energy 1000kVA external pad mount substations which currently supply the existing hospital site.

Changes to existing HV infrastructure on-site does not form part of the proposed works; nor is it expected to be affected by the proposed works under this package.

An existing HV easement (supply to existing site) exists on the proposed site and is proposed to be retained and protected during works.

LOW VOLTAGE SERVICES

Existing LV infrastructure on site is proposed to be modified to support the new WCHC development. Changes are required to both supply the new development and support the future divestment and demolition of the existing Port Kembla Hospital.

The following summarises the proposed changes:

- Augmentation/modification of existing mains supplies from existing Endeavour Energy pad mount substation (LV section) supplying the existing PKH hospital. Establishment of new site Main Switchboard (MSB), required to support new and existing buildings and services remaining (not subject to future divestment and decommissioning.
- The new MSB is required to back-feed the existing site main switchboard to maintain un-interrupted supply to the existing hospital until it is decommissioned in future.
- Re-supply of existing buildings and services required to be retained for future such as the existing IBIS building, existing car parks, roads, pathways, other services such as pump house, landscaped areas.
- Further information can be found in the appended concept design documentation (appendix 1).

WCHC MAXIMUM DEMAND

An overall initial electrical maximum demand for the Warrawong Community Health Centre (WCHC) development and associated existing site has been completed.

It is anticipated that an additional electrical load (estimated 193kW increase) is anticipated as a result of proposed works. The additional load is primarily related to the increase in WCHC size and demand (compared to existing buildings being demolished) and the introduction of Electric Vehicle Charging on site.

A preliminary assessment existing site information and information made available by the supply authority to date strongly indicate the existing supply arrangement is capable of the increase load for the proposed development.

ELECTRICAL SUPPLY AUTHORITY

An initial application to the supply authority for the proposed development, increase in supply and proposed method of supply has been made. At the time of writing this document, JHA are awaiting feedback from Endeavour Energy.

COMMUNICATIONS SERVICES

Existing communications infrastructure on site is proposed to be modified to support the new WCHC development. Changes are required to both supply the new development and support the future divestment and demolition of the existing Port Kembla Hospital.

The following summarises the proposed changes:

- New NBN and carrier grade communications connections from the street to the new WCHC campus distributor and existing IBIS building.
- Diversion and decommissioning of existing redundant in ground telecommunications services infrastructure such to facilitate clearing the site, ready for construction of the new building and associated external spaces.
- External communications services to the of the new WCHC building perimeter, surrounding areas and paths, roads and car park, landscaped areas and courtyards.
- Provision of new communications and security services to existing roads, paths and carparking spaces to bring the existing site up to the latest standards and requirements.
- New telecommunications pits and conduits linking the new Campus Distributors to the street/authority communications infrastructure.
- Further information can be found in the appended concept design documentation (Appendix 1).

NBN AND TELECOMMUNICATIONS AUTHORITIES

The proposed development will require several new communications connections from both NBN and Principal communications providers. These works require engagement of the relevant communications providers to facilitate this connection to the site.

On behalf of the client, JHA have made an application to NBN for provision of services to the proposed development. The NBN application number is DEV-00209674. An NBN proposal and contract for services has been submitted and signed by the client.

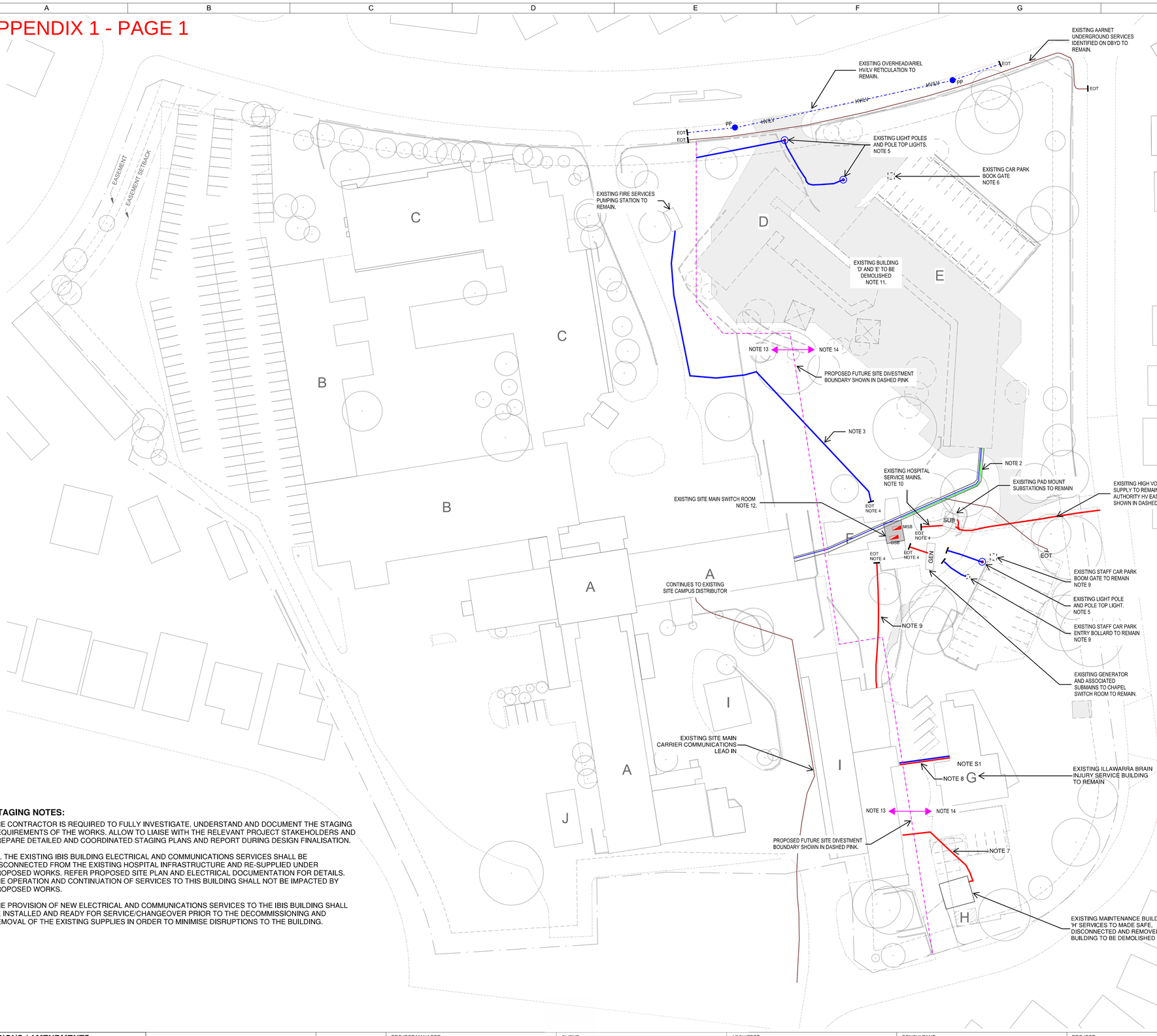
The client will make appropriate applications to other services providers for connection to client communications providers. These additional services will be accommodated in the electrical/communications site wide design.

Yours sincerely,

Andrew Mill

Senior Electrical Engineer

APPENDIX 1 - PAGE 1



EXISTING AND DEMOLITION NOTES

1. EXISTING SERVICES SHOWN ON THIS PLAN ARE NON-EXHAUSTIVE AND BASED ON EXISTING SERVICES SURVEY AND VISUAL INSPECTION ONLY. REFER TO EXISTING SERVICES SURVEY APPENDED TO THE DESIGN REPORT FOR FURTHER DETAILS AND COORDINATION WITH OTHER DISCIPLINE EXISTING SERVICES ACROSS THE ENTIRE SITE.

THE CONTRACTOR IS REQUIRED TO CONFIRM ALL EXISTING ELECTRICAL AND COMMUNICATIONS SERVICES THROUGH DETAILED SITE INVESTIGATION AND DETAILED SERVICES SURVEY. IDENTIFY ALL SERVICES MADE REDUNDANT AS PART OF THE PROPOSED WORKS AND ALLOW TO MAKE SAFE, DISCONNECT AND REMOVE THESE SERVICES UNLESS NOTED OTHERWISE OR DEEMED NON-REDUNDANT AND REQUIRED TO BE RETAINED.

2. EXISTING SERVICES TUNNEL SHOWN INDICATIVELY BASED ON EXISTING SERVICES SURVEY. TUNNEL CONTAINS EXISTING POWER AND COMMUNICATIONS SERVICES FROM EXISTING HOSPITAL BUILDINGS SUPPLYING EXISTING BUILDING E & D (BEING DEMOLISHED). SERVICES IN TUNNEL ARE EXPECTED TO BE MADE REDUNDANT WITH DECOMMISSIONING OF BUILDING 'E' AND 'D'.

ALLOW TO INVESTIGATE EXISTING SERVICES TO CONFIRM REDUNDANCY DURING DESIGN FINALISATION.

ALLOW TO MAKE SAFE, DISCONNECT AND REMOVE EXISTING ELECTRICAL AND COMMUNICATIONS SERVICES BACK TO POINT OF SUPPLY. TUNNEL IS NOT PROPOSED TO BE RE-USED FOR SERVICES.

COORDINATE DECOMMISSIONING OF TUNNEL SECTION IMPACTED BY PROPOSED CIVIL WORKS.

3. EXISTING UNDERGROUND ELECTRICAL SERVICE SUPPLYING EXISTING SITE PUMPING STATION. SERVICE IS TO BE RETAINED.

4. BASED ON SITE INSPECTION CONDUCTED BY JHA, SERVICE CONTINUES TO MAIN SWITCHROOM LOCATED IN EXISTING CHAPEL BUILDING.

5. EXISTING CAR PARK AND ENTRY POLE TOPS AND LUMINARIES TO BE MADE SAFE, DISCONNECTED AND REMOVED. ALLOW TO REMOVE EXISTING CABLING BACK TO POINT OF SUPPLY.

6. EXISTING CAR PARK ENTRY BOOM GATE AND ASSOCIATED SERVICES TO BE MADE SAFE, DISCONNECTED AND REMOVED. ALLOW TO REMOVE CABLING BACK TO POINT OF SUPPLY.

7. EXISTING ELECTRICAL SUPPLY TO BUILDING 'H' DISTRIBUTION BOARD TO BE MADE SAFE, DISCONNECTED AND REMOVED BACK TO POINT OF SUPPLY.

8. EXISTING ELECTRICAL SUPPLY TO BUILDING 'G' DISTRIBUTION BOARD TO BE MADE SAFE, DISCONNECTED AND REMOVED BACK TO POINT OF SUPPLY.
BUILDING TO BE RE-SUPPLIED FROM PROPOSED EXTERNAL SITE MAIN SWITCHBOARD. REFER PROPOSED PLANS AND SCHEMATICS FOR DETAILS.

EXISTING COMMUNICATIONS SUPPLY TO BUILDING 'G' FLOOR DISTRIBUTOR RACK TO BE MADE SAFE, DISCONNECTED AND REMOVED BACK TO POINT OF SUPPLY.
BUILDING TO BE RE-SUPPLIED FROM PROPOSED NEW CAMPUS DISTRIBUTOR LOCATED IN PROPOSED WCHC BUILDING. REFER PROPOSED PLANS AND SCHEMATICS FOR DETAILS.

9. EXISTING STAFF CAR PARK BOOM GATE AND ENTRY BOLLARD. ASSOCIATED CONTROLS AND INTERCOM TO REMAIN. ALLOW TO INVESTIGATE EXISTING ELECTRICAL AND SECURITY/COMMUNICATIONS SUPPLIES. FOR TENDER PURPOSES, ALLOW TO RESUPPLY ELECTRICAL POWER FROM NEW SITE MAIN SWITCHBOARD EXTERNAL MCB DISTRIBUTION SECTION. ALLOW TO RE-SUPPLY EXISTING SECURITY/COMMUNICATIONS FROM NEW WCHC CAMPUS DISTRIBUTOR ROOM. ALLOW TO REMOVE EXISTING SUPPLY PROVISIONS BACK TO POINT OF SUPPLY.

10. EXISTING 2-OFF ELECTRICAL MAINS SERVICING EXISTING HOSPITAL TO BE RETAINED.

11. EXISTING BUILDING 'D' AND 'E' TO BE DEMOLISHED. ALLOW TO FULLY INVESTIGATE EXISTING SERVICES AND DEMOLITION/DECOMMISSIONING EXTENT OF WORKS. ALLOW TO MAKE SAFE, DISCONNECT AND REMOVE ALL EXISTING ELECTRICAL AND ICT SERVICES. COORDINATE HANDBACK OF AND REQUIRED EXISTING SERVICES WITH THE PROJECT MANAGER AND PRINCIPAL.

REFER TO ARCHITECTURAL DEMOLITION PLAN FOR FULL EXTENT OF AREAS TO BE DEMOLISHED AS PART OF THESE WORKS.

12. EXISTING SITE MAIN SWITCH ROOM CONTAINING EXISTING SITE MAIN SWITCH BOARD AND GENERATOR SWITCHBOARD AND ASSOCIATED ELECTRICAL EQUIPMENT.

ALL EXISTING ELECTRICAL AND COMMUNICATIONS IN THIS BUILDING ARE REQUIRED TO REMAIN, UN-INTERRUPTED BY PROPOSED WORK, TO MAINTAIN SERVICES TO THE EXISTING HOSPITAL.

13. ALL EXISTING ELECTRICAL, COMMUNICATIONS AND SECURITY SERVICES OUTSIDE THE PROPOSED SITE BOUNDARY (EXISTING HOSPITAL FOR FUTURE DECOMMISSIONING) ARE REQUIRED TO BE RETAINED AND MAINTAINED UNDER THIS PROPOSED SCOPE OF WORKS. THE EXISTING HOSPITAL SITE IS REQUIRED TO MAINTAIN SUPPLY AND OPERATION.

THE CONTRACTOR SHALL ALLOW FOR ALL REQUIRED IDENTIFICATION AND INVESTIGATIONS OF EXISTING SERVICES AND PROVIDE DESIGN AND DOCUMENTATION FOR ANY INTERFACING OR PROPOSED WORKS REQUIRING SHUTDOWNS TO THE EXISTING SITE TO COMPLETE THE PROPOSED SCOPE OF WORKS.

14. ALL EXISTING ELECTRICAL, COMMUNICATIONS AND SECURITY SERVICES WITHIN THE NEW SITE BOUNDARY TO REMAIN (NON-REDUNDANT) ARE REQUIRED TO BE LOCATED, INVESTIGATED AND RE-SUPPLIED BY NEW INFRASTRUCTURE, SUCH THAT WHEN THE EXISTING HOSPITAL IS DECOMMISSIONED, THOSE SERVICES ARE NOT IMPACTED. GENERALLY THE FOLLOWING STRATEGY SHALL BE APPLIED (IN ORDER OF PROFFERED SUPPLY):
- ELECTRICAL/POWER - ALLOW TO RE-SUPPLY FROM THE EXTERNAL MAIN SWITCHBOARD, NEW WCHC SWITCHBOARDS OR EXISTING IBIS SWITCHBOARDS.
- COMMUNICATIONS - ALLOW TO RE-SUPPLY FROM THE NEW WCHC OR IBIS FLOOR DISTRIBUTORS.
- SECURITY - ALLOW TO RE-SUPPLY FROM THE NEW WCHC SECURITY HEAD END EQUIPMENT.

THE CONTRACTOR IS REQUIRED TO LIAISE WITH THE LHD AND RELEVANT STAKEHOLDERS DURING DETAILED DESIGN TO FINALISE ALL RE-SUPPLY REQUIREMENTS INCLUDING SUPPLY LOCATIONS.

STAGING NOTES:

THE CONTRACTOR IS REQUIRED TO FULLY INVESTIGATE, UNDERSTAND AND DOCUMENT THE STAGING REQUIREMENTS OF THE WORKS. ALLOW TO LIAISE WITH THE RELEVANT PROJECT STAKEHOLDERS AND PREPARE DETAILED AND COORDINATED STAGING PLANS AND REPORT DURING DESIGN FINALISATION.

S1. THE EXISTING IBIS BUILDING ELECTRICAL AND COMMUNICATIONS SERVICES SHALL BE DISCONNECTED FROM THE EXISTING HOSPITAL INFRASTRUCTURE AND RE-SUPPLIED UNDER PROPOSED WORKS. REFER PROPOSED SITE PLAN AND ELECTRICAL DOCUMENTATION FOR DETAILS. THE OPERATION AND CONTINUATION OF SERVICES TO THIS BUILDING SHALL NOT BE IMPACTED BY PROPOSED WORKS.

THE PROVISION OF NEW ELECTRICAL AND COMMUNICATIONS SERVICES TO THE IBIS BUILDING SHALL BE INSTALLED AND READY FOR SERVICE/CHANGEOVER PRIOR TO THE DECOMMISSIONING AND REMOVAL OF THE EXISTING SUPPLIES IN ORDER TO MINIMISE DISRUPTIONS TO THE BUILDING.

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1 : 500-A1 1 : 1000-A3

REVISIONS / AMENDMENTS

Rev	Date	Description	Verified
A	27.09.23	ISSUE FOR TENDER	A.M.

PROJECT MANAGER: savills

CLIENT: NSW GOVERNMENT Health Infrastructure; NSW GOVERNMENT Health Illawarra Shoalhaven Local Health District

ARCHITECT: COX + STH

CONSULTANT: JHA — Level 20, 2 Market Street, Sydney NSW 2000 Australia; +61 (02) 9437 1000; general@jhaengineers.com.au; www.jhaservices.com

PROJECT: **WARRAWONG COMMUNITY HEALTH CENTRE**

91 COPWPER ST, WARRAWONG, NSW 2052

TITLE: **ELECTRICAL SERIVCES** EXISTING AND DEMOLITION SITE PLAN

SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

DRAWN	B.J.	SCALE @ A1
CHECKED	A.M.	1 : 500
APPROVED	B.B.	
CREATED	09/05/23	
JOB No.	210332	

DRAWING No. WC-JHA-EL-DWG-00-00-0002

REV A

APPENDIX 1 - PAGE 2

FILLED REGION LEGEND

CAR PARK
ALLOW TO PROVIDE NEW POLE FLOOD LIGHTING TO MEET THE MINIMUM REQUIRED DESIGN CRITERIA. REFER SCHEMATIC DESIGN REPORT FOR CRITERIA.
ALLOW TO PROVIDE FULL CCTV COVERAGE.
ALLOW TO PROVIDE HELP POINT/S

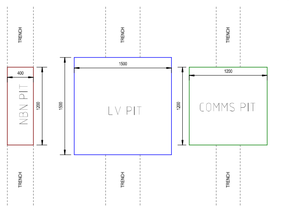
ROADWAY
ALLOW TO PROVIDE NEW POLE FLOOD LIGHTING TO MEET THE MINIMUM REQUIRED DESIGN CRITERIA. REFER SCHEMATIC DESIGN REPORT FOR CRITERIA.
ALLOW TO PROVIDE FULL CCTV COVERAGE.

PEDESTRIAN PATHWAYS
ALLOW TO PROVIDE NEW POLE FLOOR LIGHTING TO MEET THE MINIMUM REQUIRED DESIGN CRITERIA. REFER SCHEMATIC DESIGN REPORT FOR CRITERIA.
ALLOW TO PROVIDE FULL CCTV COVERAGE.

EXISTING CAR PARK
PROVISIONS AS PER CAR PARK ABOVE (BLUE), HOWEVER PROVIDE COST AS A PRICING OPTION (BELOW THE LINE).

EXISTING ROADWAY
PROVISIONS AS PER ROADWAY ABOVE (GREEN), HOWEVER PROVIDE COST AS A PRICING OPTION (BELOW THE LINE).

YELLOW FILLED REGION NOTE 7.
EXISTING OVERHEAD/ARIEL HV/LV RETICULATION.
EXISTING AARNET UNDERGROUND SERVICES.
PROVIDE POWER SUPPLY TO FIRE SERVICES PUMP.
PROPOSED FUTURE SITE DIVESTMENT BOUNDARY SHOWN IN DASHED PINK
CARRIER/NBN (P) NOTE 5
NEW WCHC BUILDING MAIN DISTRIBUTION BOARD LOCATED ON LEVEL 00. TURN UP CONDUITS BELOW BMSB.
NEW SITE CAMPUS DISTRIBUTOR LOCATED ON LEVEL 00. TURN UP CONDUITS BELOW EQUIPMENT.
CARRIER/NBN (S) NOTE 6
YELLOW FILLED REGION NOTE 9.
PROPOSED RETICULATION FROM NEW SITE MAIN SWITCHBOARD TO BACK FEED EXISTING HOSPITAL MAIN SWITCHBOARD. NOTE 14.
NEW SITE MAIN SWITCHBOARD. NOTE 10
PROVIDE 2-OFF 22kW EVC CHARGERS.
EXISTING STAFF CAR PARK BOOK GATE AND ENTRY BOLLARD. RE-SUPPLY PROVISIONS.
7-OFF CAR SPACES REQUIRING FUTURE EVC PROVISIONS. NOTE 15.
EXISTING SITE MAIN CARRIER COMMUNICATIONS LEAD IN
EXISTING ILLAWARRA BRAIN INJURY SERVICE BUILDING TO REMAIN
NEW ELECTRONIC BOOM GATES FOR STAFF CAR PARK NOTE 1.
CARRIER/NBN (S) NOTE 8
NOTE 2
NOTE 4
NOTE 11
NOTE 12



TYPICAL TRENCH AND PIT DETAIL

NOTES

1. PROVIDE NEW BOOM GATE AND SECURITY BOLLARD TO PROPOSED STAFF CAR PARK. ALLOW TO PROVIDE THE FOLLOWING:
- 2-OFF BOOM GATE CONTROLLERS AND BOOMS
- 1-OFF ENTRY SECURITY SWIPE AND INTERCOM BOLLARD
- 1-OFF EXIT BOLLARD AND ASSOCIATED GROUND LOOPS FOR EXIT
- 3-OFF 10A POWER SUPPLIES (2-OFF BOOM LOCATIONS, 1-OFF PEDESTAL LOCATIONS)
- 3-OFF DATA PROVISION (2-OFF BOOM LOCATIONS, 1-OFF PEDESTAL LOCATIONS) (FROM IBIS FDR)
- POWER AND DATA FOR ELECTRONIC SIGNAGE AND WAYFINDING.
- 1-OFF CARD READERS FOR ENTRY PEDESTAL, CABLED TO LOCAL SECURITY PANEL. PROVIDE INTERFACE TO NEW WCHC SITE SECURITY SYSTEM (THROUGH ICN NETWORK)
- 2-OFF IN GROUND INDUCTIVE LOOPS CHASED INTO GROUND.
- ALL ASSOCIATED CABLING AND RETICULATION AND PATHWAYS FROM RELEVANT DB, FDR, SECURITY PANEL.

2. ALL EXISTING ELECTRICAL, COMMUNICATIONS AND SECURITY SERVICES WITHIN THE NEW SITE BOUNDARY TO REMAIN (NON-REDUNDANT) ARE REQUIRED TO BE LOCATED, INVESTIGATED AND RE-SUPPLIED BY NEW INFRASTRUCTURE, SUCH THAT WHEN THE EXISTING HOSPITAL IS DECOMMISSIONED, THOSE SERVICES ARE NOT IMPACTED. GENERALLY THE FOLLOWING STRATEGY SHALL BE APPLIED (IN ORDER OF PROFFERED SUPPLY):
- ELECTRICAL/POWER - ALLOW TO RE-SUPPLY FROM THE EXTERNAL MAIN SWITCHBOARD, NEW WCHC SWITCHBOARDS OR EXISTING IBIS SWITCHBOARDS.
- COMMUNICATIONS - ALLOW TO RE-SUPPLY FROM THE NEW WCHC OR IBIS FLOOR DISTRIBUTORS.
- SECURITY - ALLOW TO RE-SUPPLY FROM THE NEW WCHC SECURITY HEAD END EQUIPMENT.

THE CONTRACTOR IS REQUIRED TO LIAISE WITH THE LHD AND RELEVANT STAKEHOLDERS DURING DETAILED DESIGN TO FINALISE ALL RE-SUPPLY REQUIREMENTS INCLUDING SUPPLY LOCATIONS.

3. (NOTE NOT USED)

4. IN ADDITION TO THE GENERAL PIT DRAINAGE REQUIREMENTS, PIT SURROUNDING PROPOSED WCHC BUILDING SHALL HAVE DEDICATED DRAINAGE SYSTEM TO NEARBY STORM WATER PITS/SYSTEM TO PREVENT INGRESS OF WATER INTO LEVEL 00 MAIN SWITCH ROOM AND CAMPUS DISTRIBUTOR PLANT ROOMS. STORM WATER PITS SHOWN INDICATIVELY, COORDINATE DRAINAGE WITH CIVIL ENGINEER. REFER CIVIL DOCUMENTATION FOR MORE DETAILS.

5. PROPOSED PRIMARY COMMUNICATIONS LEAD IN PIT AND CONDUIT RETICULATION FROM CARRIER/NBN PIT IN COWPER STREET TO CAMPUS DISTRIBUTOR. COORDINATE FINAL LEAD IN AND LEAD IN PIT LOCATION WITH NBN AND OTHER HEALTH CARRIERS DURING DESIGN FINALISATION.

6. PROPOSED SECONDARY COMMUNICATIONS LEAD IN PIT AND CONDUIT RETICULATION FROM CARRIER/NBN PIT IN FAIRFAX AVE TO CAMPUS DISTRIBUTOR. COORDINATE FINAL LEAD IN AND LEAD IN PIT LOCATION WITH NBN AND OTHER HEALTH CARRIERS DURING DESIGN FINALISATION.

FOR THE SECONDARY LEAD IN RETICULATION, PROVIDE COST AS A BELOW THE LINE PRICING OPTION IN TENDER (BELOW THE LINE). ISLHD TO CONFIRM IF REQUIRED DURING DESIGN FINALISATION.

7. YELLOW FILLED REGION INDICATIVE OF AREA WHERE CIVIL DRIVEWAY WORKS EXPECTED TO IMPACT EXISTING INFRASTRUCTURE ALONG COWPER STREET. ALLOW TO RELOCATE OR PROTECT EXISTING SERVICES IMPACTED BY PROPOSED WORKS.

THE CONTRACTOR SHALL ALLOW TO THOROUGHLY INVESTIGATE EXISTING IN GROUND SERVICES THROUGH USE OF DETAILED POT-HOLING SURVEY IN THE PROPOSED WORKS AREA. ALLOW TO CONTACT RELEVANT AUTHORITIES IMPACTED BY PROPOSED WORKS AND DESIGN AND CONSTRUCT RELOCATION OR PROTECTION WORKS TO EXISTING SERVICES WHERE REQUIRED.

COORDINATE ALL WORKS WITH CIVIL ENGINEER AND OTHER SERVICES.

ALLOW FOR ALL COSTS ASSOCIATED WITH SUPPLY AND TELCO AUTHORITIES, INCLUDING REQUIRED WORKS BY THEIR SUB-CONTRACTORS.

8. PROPOSED SECONDARY COMMUNICATIONS LEAD IN PIT AND CONDUIT RETICULATION FROM CARRIER/NBN PIT IN FAIRFAX AVE TO IBIS BUILDING COMMUNICATIONS RACK. COORDINATE FINAL LEAD IN AND LEAD IN PIT LOCATION WITH NBN AND OTHER HEALTH CARRIERS DURING DESIGN FINALISATION.

THE IBIS BUILDING LEAD IN AND ASSOCIATED TELECOMMUNICATIONS SERVICE SHALL BE ESTABLISHED AND ACTIVE PRIOR TO THE DECOMMISSIONING OF THE EXISTING IBIS BUILDING COMMUNICATIONS SUPPLY FROM EXISTING HOSPITAL COMMUNICATIONS INFRASTRUCTURE.

9. YELLOW FILLED REGION INDICATIVE OF AREA WHERE PROPOSED CIVIL WORKS, INCLUDING NEW ELECTRICAL AND COMMUNICATIONS RETICULATION, MAY IMPACT EXISTING ENDEAVOUR ENERGY HV CABLE EASEMENT.

THE CONTRACTOR SHALL ALLOW TO THOROUGHLY INVESTIGATE EXISTING IN GROUND SERVICES THROUGH USE OF DETAILED POT-HOLING SURVEY IN THE PROPOSED WORKS AREA.

CONTRACTOR SHALL LIAISE WITH ENDEAVOUR ENERGY FOR ALL WORKS, INCLUDING BUT NOT LIMITED TO GAINING PERMISSION TO CROSS EXISTING HIGH VOLTAGE EASEMENT WITH PROPOSED ELECTRICAL AND COMMUNICATIONS ASSETS.

10. PROPOSED NEW EXTERNAL SITE MAIN SWITCHBOARD TO SERVE NEW AND EXISTING SERVICES WITHIN PROPOSED SITE BOUNDARY. REFER SINGLE LINE SCHEMATIC FOR ADDITIONAL DETAILS.

COORDINATE GROUND MODIFICATIONS AND CONCRETE PLINTH WITH ARCHITECTURAL, CIVIL AND STRUCTURAL CONSULTANTS DURING DETAILED DESIGN.

11. CONTINUE RETICULATION IN BUILDING TO EXISTING IBIS BUILDING COMMUNICATIONS RACKS/EQUIPMENT.

12. CONTINUE PROPOSED POWER AND COMMUNICATIONS RETICULATION AND ASSOCIATED CABLING TO EXISTING IBIS BUILDING SWITCHBOARD AND COMMUNICATIONS RACK/EQUIPMENT RESPECTIVELY.

THE IBIS BUILDING POWER AND COMMUNICATIONS SERVICES ARE REQUIRED TO BE ESTABLISHED AND ACTIVE PRIOR TO THE DECOMMISSIONING AND REMOVAL OF EXISTING SUPPLIES FROM THE MAIN HOSPITAL INFRASTRUCTURE.

13. ALLOW TO COORDINATE AND FINALISE ALL PROPOSED RETICULATION ROUTES DURING DESIGN FINALISATION. MAKE REFERENCE TO ALL RELEVANT INFORMATION INCLUDING BUT NOT LIMITED TO ARBORIST REPORT, CIVIL, ARCHITECTURAL AND OTHER SERVICES DESIGNS.

14. ONE OF THE EXISTING TWO MAIN SUPPLIES TO THE EXISTING MAIN SWITCHBOARD FROM EXISTING SUBSTATIONS IS PROPOSED TO BE MADE SAFE, DISCONNECTED AND BE REPLACED WITH A NEW SUPPLY, FROM THE PROPOSED NEW SITE MAIN SWITCHBOARD. THE NEW SUPPLY SHALL BE ESTABLISHED AND READY FOR CONNECTION PRIOR TO DISCONNECTION AND CHANGEOVER OF EXISTING SUPPLY. REFER ELECTRICAL SCHEMATICS FOR DETAILS.

15. DASHED OUTLINE HIGHLIGHTS LOCATION OF 7-OFF FUTURE EVC CHARGING STATIONS. PROVIDE SPARE CONDUIT PROVISIONS FROM NEARBY POWER AND COMMUNICATIONS PITS TO FUTURE EVC CHARGER LOCATIONS SHOWN ON PLAN. TURN UP AND CAP POWER AND COMMUNICATIONS CONDUITS. ENSURE CONDUITS HAVE DRAW WIRE. PROVIDE PERMANENT MARKER AT EACH EVC TURN UP LOCATION CLEARLY LABELLED FUTURE EVC.

10 5 0 10 20 30 40 m

1 : 500-A1 1 : 1000-A3

REVISIONS / AMENDMENTS

Rev	Date	Description	Verified
A	29.09.23	ISSUE FOR TENDER	A.M.

PROJECT MANAGER: savills

CLIENT: NSW Government Health Infrastructure; NSW Government Health Illawarra Shoalhaven Local Health District

ARCHITECT: COX+STH

CONSULTANT: JHA
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PROJECT
WARRAWONG COMMUNITY HEALTH CENTRE
91 COPWPER ST, WARRAWONG, NSW 2052

TITLE
ELECTRICAL SERIVCES
SITE PLAN & TYPICAL TRENCH DETAIL

SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

DRAWN	B.J.	SCALE @ A1
CHECKED	A.M.	1 : 500
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CREATED	09/05/23	
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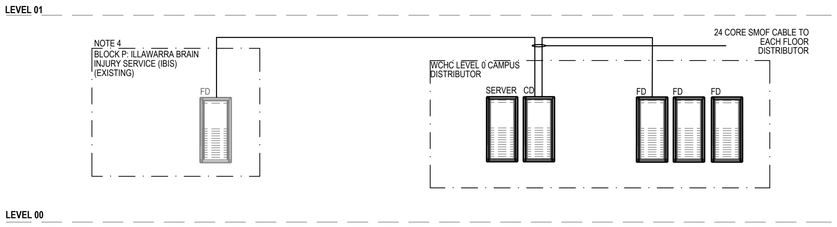
REV A

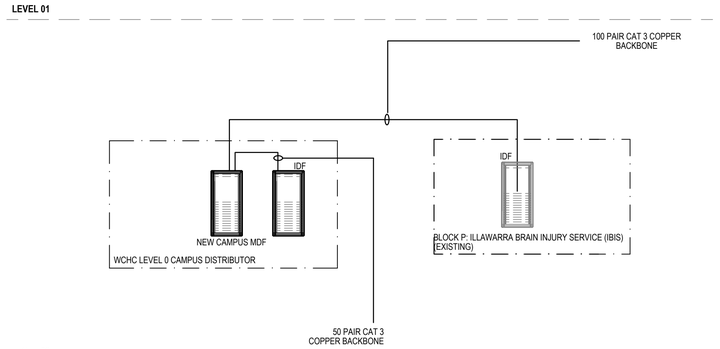
APPENDIX 1 - PAGE 3



FIBRE COMMUNICATIONS SCHEMATIC

NOTES:

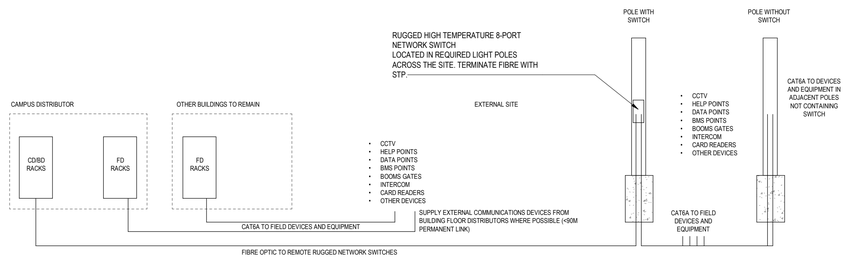
1. ICT CABLING TO BE IN ACCORDANCE WITH HEALTH NSW LATEST ICT STANDARD UNLESS DEVIATION IS AGREED WITH THE BUILDING ENTITY
2. NEW FLOOR DISTRIBUTOR TO BE STRATEGICALLY PLACED SO THAT NO FIELD OUTLET REQUIRES MORE THAN 90m IN CABLE LENGTH.
3. NBN LEAD-IN CABLING TO BE PART OF BUILDER'S SCOPE AS GROUP 1 ITEM. ALLOW FOR A FTTP CONNECTION AND 20 LOCK IDS PER LEAD-IN NOTED
4. PROVISIONS FOR EXISTING CDs IN EXISITNG BUILDINGS FOR ILLUSTRATIVE PURPOSES ONLY. ALLOW FOR SPECIFIED CONNECTION BETWEEN EXISTING CDs AND NEW CB.
5. ALLOW TO RE-SUPPLY EXISTING SERVICES WITHIN PROPOSED SITE BOUNDARY REQUIRED TO BE RETAINED, THAT ARE CURRENTLY SUPPLIED BY EXISTING PKH HOSPITAL (SUBJECT TO FUTURE DECOMMISSIONING)



VOICE COPPER COMMUNICATIONS SCHEMATIC

NOTES:

1. ALLOW TO RE-SUPPLY EXISTING SERVICES WITHIN PROPOSED SITE BOUNDARY REQUIRED TO BE RETAINED, THAT ARE CURRENTLY SUPPLIED BY EXISTING PKH HOSPITAL (SUBJECT TO FUTURE DECOMMISSIONING)



EXTERNAL COMMUNICATIONS SCHEMATIC

SCALE: NTS

NOTES

1. CONTRACTOR SHALL PROVIDE REMOTE NETWORK SWITCHES LOCATED IN REQUIRED LIGHT POLES FOR EXTERNAL COMMUNICATIONS REQUIREMENTS WHERE CABLING CANNOT BE SUPPLIED FROM AN IN-BUILDING FLOOR DISTRIBUTOR.
2. EXTERNAL REMOTE SWITCHES SHALL BE CISCO RUGGED IE3200 8-PORT POE+ SERIES OR APPROVED EQUAL AND ARE GROUP 1 SUPPLY AND INSTALL BY THE CONTRACTOR. ALLOW TO LIASE WITH LHD ICT FOR FINAL NETWORK SWITCH PRODUCT SELECTION AND SUBMIT ALL RELEVANT DETAILS FOR REVIEW AND APPROVAL.
3. CONTRACTOR SHALL DETERMINE FINAL LOCATIONS AND QTY'S OF POLES REQUIRING REMOTE NETWORK SWITCHES AND FINAL NETWORK SWITCH QTY'S BASED ON THE EXTERNAL COMMUNICATIONS REQUIREMENTS. 30% SPARE PORT CAPACITY SHALL BE INCLUDED IN FINAL DESIGN AND QTY'S OF COMMUNICATIONS ENABLES POLES AND NETWORK SWITCHES REQUIRED FOR FUTURE CLIENT USE.
4. EACH POLE CONTAINING NETWORK SWITCH TO HAVE DEDICATED FIBRE FROM THE CAMPUS DISTRIBUTOR. PROVIDE SFP MODULES
5. FINAL CONFIGURATION OF EXTERNAL SWITCHES TO BE BY LHD ICT. LIAISE AND COORDINATE WITH LHD ICT.

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PROJECT MANAGER

savills

CLIENT

NSW GOVERNMENT Health Infrastructure

NSW GOVERNMENT Health Illawarra Shoalhaven Local Health District

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PROJECT

WARRAWONG COMMUNITY HEALTH CENTRE

91 COPWPER ST, WARRAWONG, NSW 2052

TITLE

ELECTRICAL SERIVCES
COMMUNICATIONS

SCHEMATIC DESIGN
NOT TO BE USED FOR CONSTRUCTION

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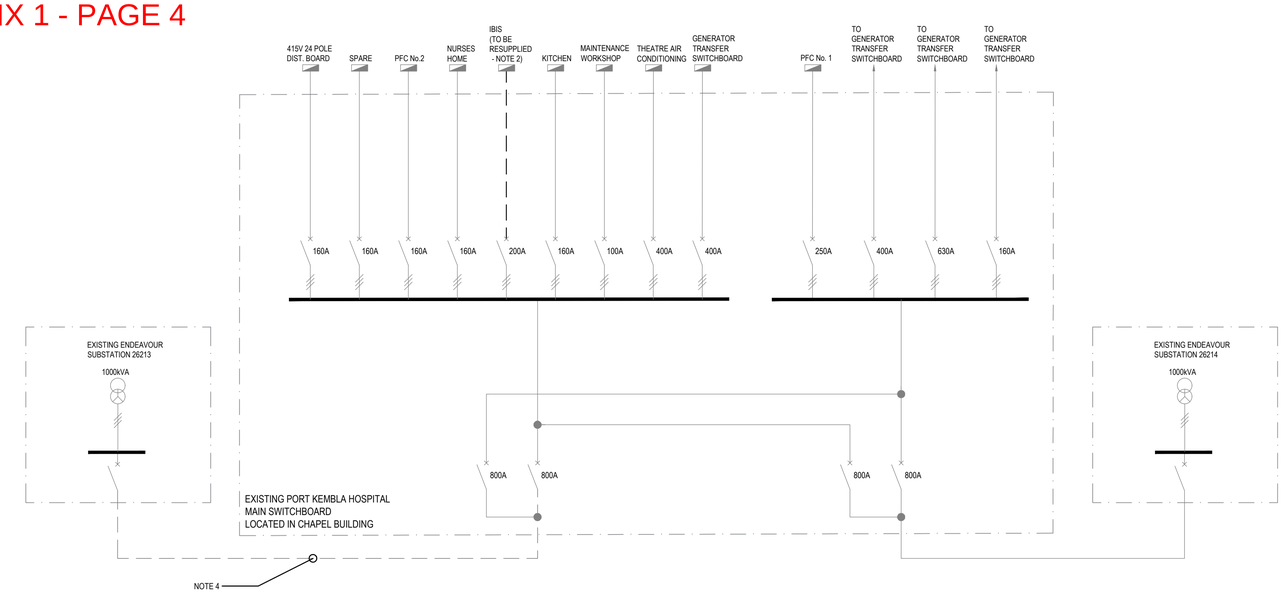
APPENDIX 1 - PAGE 4



EXISTING ELECTRICAL SITE SINGLE LINE DIAGRAM

NOTES:

1. THE EXISTING SINGLE LINE ARRANGEMENT AND DETAILS ARE BASED ON EXISTING (UN-CONFIRMED) AS-BUILT INFORMATION PROVIDED TO JHA AT TIME OF DOCUMENTATION. THE CONTRACTOR IS REQUIRED TO INVESTIGATE AND CONFIRM ALL DETAILS, AND ALLOW FOR ALL COST ASSOCIATED WITH ANY DIFFERENCES BETWEEN THIS SINGLE LINE AND AS-INSTALLED CONDITIONS.
2. EXISTING IBIS BUILDING IS TO BE RE-SUPPLIED UNDER PROPOSED WORKS FROM THE SITE MAIN SWITCHBOARD. ALLOW TO MAKE SAFE, DISCONNECT AND REMOVE EXISTING SUPPLY. THESE WORKS SHALL BE UNDERTAKEN ONCE THE NEW SUPPLY IS ESTABLISHED, TO MITIGATE DISRUPTION TO THE IBIS BUILDING. COORDINATE ALL REQUIRED SHUT-DOWNS WITH THE PRINCIPAL.
3. REFER EXISTING AND DEMOLITION SITE PLAN FOR INDICATIVE LOCATIONS OF EQUIPMENT.
4. EXISTING LV MAINS FEED FROM EXISTING SUBSTATION 26213 TO EXISTING PORT KEMBLA HOSPITAL MSB TO BE MADE SAFE, DISCONNECTED AND BE REPLACED WITH A NEW SUPPLY (BACKFEED) FROM THE NEW MSB. ALLOW TO MAKE ALL REQUIRED MODIFICATIONS TO EXISTING SWITCHBOARD, INCLUDING DECOMMISSIONING OF ASSOCIATED RETAIL METERING.
5. THE NEW SUPPLY SHALL BE ESTABLISHED AND READY FOR CONNECTION PRIOR TO DISCONNECTION AND CHANGEOVER OF EXISTING SUPPLY TO MITIGATE DISRUPTION OF SERVICE TO THE EXISTING HOSPITAL. COORDINATE ALL REQUIRED SHUT-DOWNS WITH THE PRINCIPAL.
6. THE CONTRACTOR IS REQUIRED TO ALLOW FOR AND MAKE ALL APPLICATIONS AND REQUIRED DESIGN'S FOR THE SUPPLY AUTHORITY WORKS.

LEVEL 02 (ROOF)

LEVEL 01

PROPOSED ELECTRICAL MAIN SINGLE LINE DIAGRAM

NOTES:

1. PROVIDE GRID RELAY PROTECTION IN ACCORDANCE WITH NSW SERVICE INSTALLATION RULES AND RELEVANT AUSTRALIAN STANDARDS. ALLOW FOR SPACE AND EQUIPMENT IN MAIN SWITCHBOARD TO MEET REQUIREMENTS.
2. REFER PROPOSED PLANS FOR INDICATIVE LOCATIONS OF EQUIPMENT.
3. ALLOW FOR ALL SUPPLY AUTHORITY APPLICATIONS, WORKS AND FEES, INCLUDING PROVISION OF NEW SUPPLY AUTHORITY RETAIL METER.
4. CONFIRM SPD RATING WITH SUPPLY AUTHORITY
5. PROVIDE THE FOLLOWING LED INDICATOR LAMPS
(1) NORMAL SUPPLY AVAILABLE (GREEN)
(2) NORMAL SUPPLY ENERGISED (RED)
(3) MOBILE GENERATOR SUPPLY CONNECTED (GREEN)
(4) MOBILE GENERATOR SUPPLY ENERGISED (RED)

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PROJECT MANAGER: savills

CLIENT: NSW GOVERNMENT Health Infrastructure; NSW GOVERNMENT Health Illawarra Shoalhaven Local Health District

ARCHITECT: COX+STH

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PROJECT: **WARRAWONG COMMUNITY HEALTH CENTRE**
91 COPWPER ST, WARRAWONG, NSW 2052

TITLE: **ELECTRICAL SERIVCES**
ELECTRICAL SINGLE LINE DIAGRAMS

SCHEMATIC DESIGN
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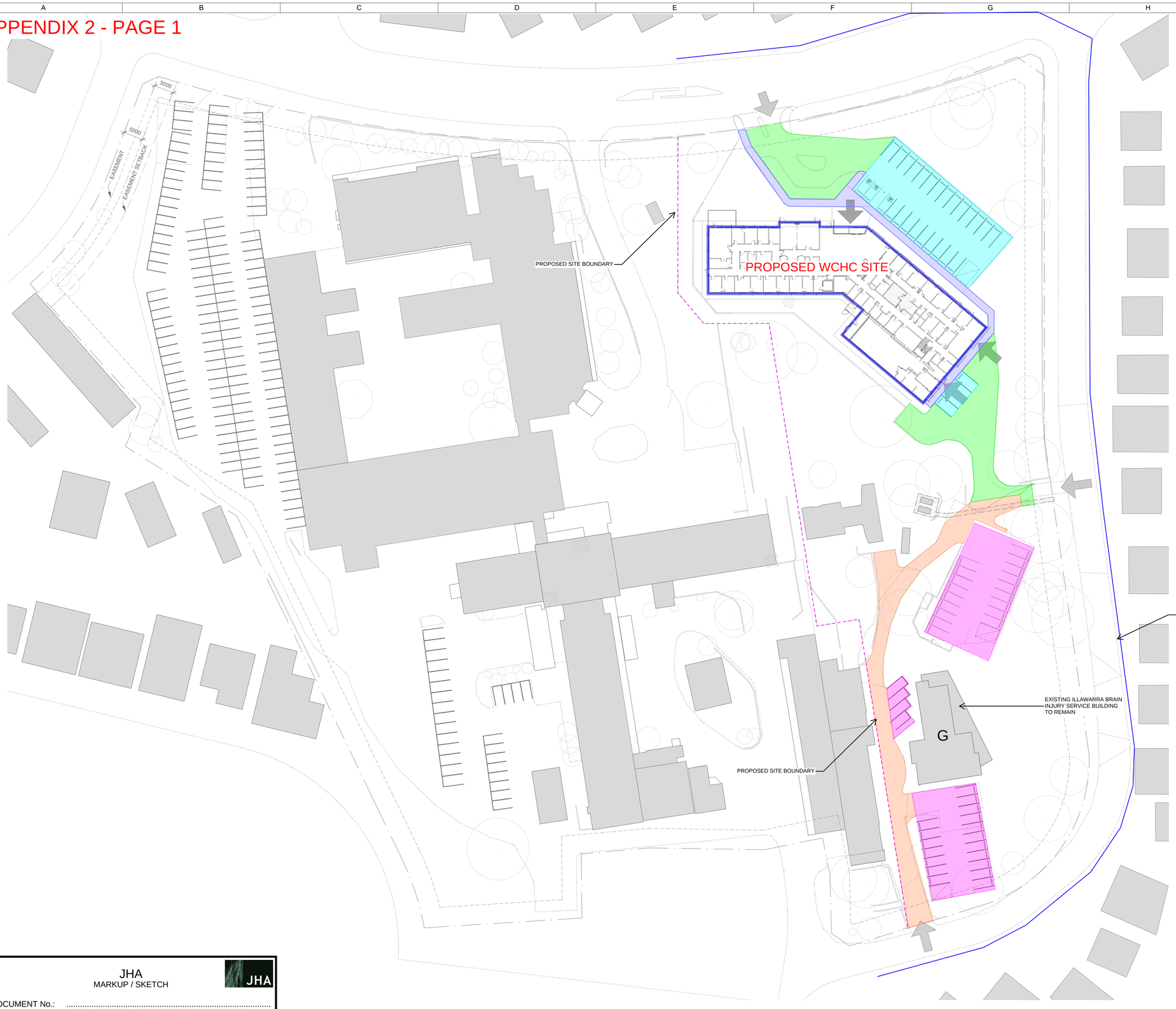
APPENDIX 2 - PAGE 1



FILLED REGION LEGEND

CAR PARK
NEW POLE FLOOD LIGHTING TO MEET THE MINIMUM REQUIRED DESIGN CRITERIA. COMPLIANCE TO:
AS 1158 SERIES.2020 LIGHTING FOR ROADS AND PUBLIC SPACE S - **CATEGORY PC2**
AS 1158 SERIES.2020 - CATEGORY **PCD & PCX** (DISABLED SPACES AND CROSSINGS)
AS 4485.1.2021 SECURITY FOR HEALTHCARE FACILITIES - **AVG. LUX 20, MIN. LUX 10.**
AS 4282 - CONTROL OF OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING

ROADWAY
ROVIDE NEW POLE FLOOD LIGHTING TO MEET THE MINIMUM REQUIRED DESIGN CRITERIA. COMPLIANCE TO:
AS 1158 SERIES.2020 LIGHTING FOR ROADS AND PUBLIC SPACE S - CATEGORY **PR2**
AS 4282 - CONTROL OF OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING

PEDESTRIAN PATHWAYS
ALLOW TO PROVIDE NEW POLE FLOOR LIGHTING TO MEET THE MINIMUM REQUIRED DESIGN CRITERIA. COMPLIANCE TO:
AS 1158 SERIES.2020 LIGHTING FOR ROADS AND PUBLIC SPACE S - **CATEGORY PP3**
AS 4282 - CONTROL OF OBTRUSIVE EFFECTS OF OUTDOOR LIGHTING

EXISTING CAR PARK
PROVISIONS AS PER CAR PARK ABOVE (BLUE)

EXISTING ROADWAY
PROVISIONS AS PER ROADWAY ABOVE (GREEN)

AS 4482 COMPLIANCE - NEIGHBOURING BOUNDARY LINE.
- ZONE A3 - MEDIUM DISTRICT BRIGHTNESS - SUBURBAN AREA IN TOWN AND CITY

TABLE 3.2
MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS

Zones	Vertical illuminance levels (E_v) lx		Threshold increment (TI)		Sky glow
	Non-curfew	Curfew	%	Default adaptation level (L_{ad})	Upward light ratio
A3	10	2	20%	1	0.02

10 5 0 10 20 30 40 m

1 : 500-A1 1 : 1000-A3

JHA
MARKUP / SKETCH

DOCUMENT No.: .....
DOCUMENT TITLE: REF - EXTERNAL LIGHTING CONCEPT AND REQUIREMENTS - WCHC
DOCUMENT REV: 1
DOCUMENT BY: AM DATE: 20/11/2023

1 : 500 @ A1