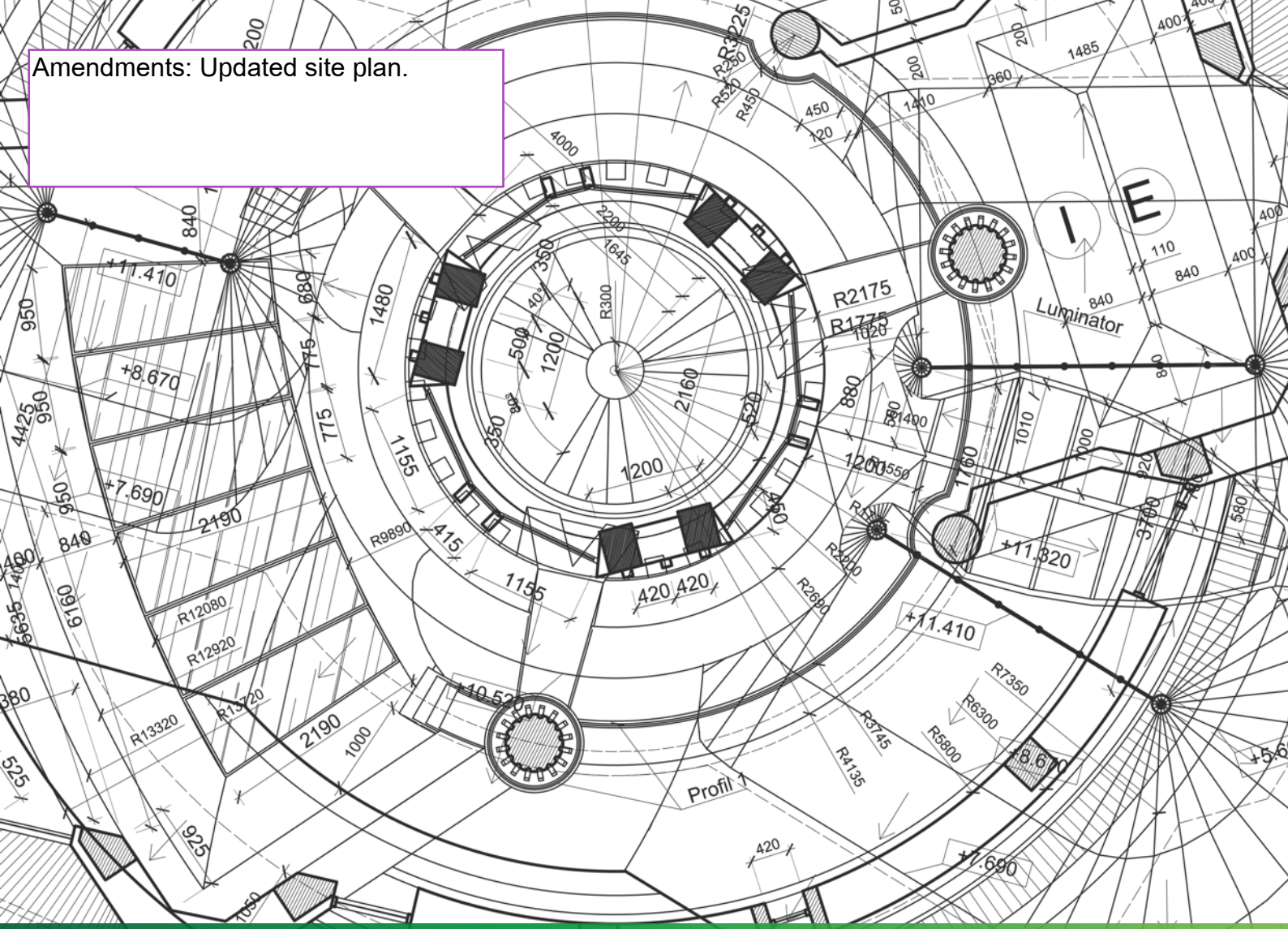
Amendments: Updated site plan.



External Lighting Strategy Report

Tweed Valley Hospital

Lendlease

Revision SSD2

12/09/2019

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Revision Information

Project	Tweed Valley Hospital
Title	External Lighting Strategy Report
Client	Lendlease
Revision	SSD2
Revision Date	12 September 2019
Prepared By	LCI Consultants Sydney Office Level 4 73 Walker Street North Sydney 2060
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Revision Schedule

Revision	Date	Issue Name	Author	Authorised
P1	13/5/2019	PRELIMINARY	JLK	SS
P2	28/6/2019	SSD2	JLK	SS
P3	08/08/2019	SSD2	JLK	SS
P4	15/08/2019	SSD2	JLK	SS
P5	12/09/2019	SSD2	JLK	SS

1 Executive Summary

This report addresses the key external lighting design considerations and parameters for the new Tweed Valley Hospital. It has been updated to reflect the Stage 1 SSD Consent – Stage 2 Requirements, the Stage 2 SSD (State Significant Development) application and to address the electrical and communications requirements of the Secretary's Environmental Assessment Requirements (SEARs).

Stage 1 SSD Consent – Stage 2 Requirement: *Part B Schedule 2 B9(e):* *environmental amenity impacts on the surrounding residents, users of agricultural land and other identified sensitive users due to overshadowing, impacts on visual privacy, impacts on visual amenity, wind impacts, light spill and other identified impacts.*

This report establishes the external lighting strategy, including measures to assess and mitigate the impact of external lighting on surrounding users, including:

- documenting the requirement for a light spill assessment – refer to Section 5
- documenting known sensitive receivers to be considered in the light spill assessment – refer to Section 5
- documenting measures to reduce spill into surrounding sensitive receivers – refer Section 6.4

Stage 1 SSD Consent – Stage 2 Requirement: *Part B Schedule 2 B21(h):* *details of a lighting strategy to mitigate impacts on light sensitive fauna (if relevant) due to light spill from the development.*

This report establishes the external lighting strategy, including measures to assess and mitigate the impact of external lighting on light sensitive fauna, including:

- documenting the requirement for a light spill assessment – refer to Section 5
- providing a strategy to reduce the impact on biota – refer to Section 5 and Section 6.5

SEARs: *5. Environmental Amenity:* *Include a lighting strategy and measures to reduce spill into the surrounding sensitive receivers, including digital signage and security lighting.*

This report establishes the external lighting strategy, including measures to assess and mitigate the impact of external lighting on surrounding sensitive receivers, including:

- establishing design performance criteria – refer to Section 4 and Sections 6.6 through 6.20
- documenting the requirement for a light spill assessment – refer to Section 5
- documenting known sensitive receivers to be considered in the light spill assessment – refer to Section 5
- establishing the luminaire and equipment performance criteria – refer to Section 6
- providing a strategy to reduce light spill into surrounding sensitive receivers – refer to Sections 6.4 and 6.5
- define requirements for digital signage – refer to Section 6.14
- define requirements for security lighting – refer to Section 6.20

2 Introduction

2.1 Overview

On the 11th June, 2019 the Minister for Planning and Public Spaces granted approval for the Concept Proposal and Stage 1 Early and Enabling Works for the new Tweed Valley Hospital (SSD 9575) located at 771 Cudgen Road, Cudgen (Lot 11, DP1246853). All documents relating to this consent can be found on the major project website of DPIE at

https://www.planningportal.nsw.gov.au/major-projects/project/10756

The Environmental Impact Statement (EIS) has been prepared to assist in the State Significant Development (SSD) Stage 2 Application for the Tweed Valley Hospital which will be assessed under Part 4 Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This, along with supporting documentation, provides a clear outline of the Stage 2 Application.

The Tweed Valley Hospital Project broadly consists of:

- Construction of a new Level 5 major regional referral hospital to provide the health services required to meet the needs of the growing population of the Tweed-Byron region (in conjunction with the other hospitals and community health facilities across the region);
- Delivery of the supporting infrastructure required for the Tweed Valley Hospital, including green space and other amenities, roads and car parking, external road upgrades and connections, utilities connections and other supporting infrastructure.

2.1.1 Stage 2 Hospital Main Works and Operation

The Stage 2 SSD component seeks consent for the Main Works and Operation of the Tweed Valley Hospital, including:

- **Construction of the Main Hospital Building**
  - Main entry and retail area
  - Administration
  - Community health
  - In-patient units
  - Outpatient clinics and day only units
  - Child and Adolescent Services
  - Intensive Care Unit
  - Mental Health Unit
  - Maternity Unit and Birthing Suites
  - Renal Dialysis
  - Pathology
  - Pharmacy
  - Radiation Oncology as part of integrated Cancer Care
  - Emergency Department
  - Perioperative Services
  - Interventional Cardiology
  - Back of House services
  - Rooftop Helipad
  - Medical Imaging
  - Mortuary
  - Education, Training and Research
- **Construction of Support Building, referred to as the 'Health Hub', containing**:
  - Oral Health
  - Community Health
  - Aboriginal Health
  - Administration
  - Education, Training and Research
- **Internal Roads and carparking, including multi-deck parking for staff, patients and visitors;**

- **Construction of a temporary building for the 'Tweed Valley Skills Centre'**
- **External road infrastructure upgrades and main site access**
- **Environmental and wetland rehabilitation, including rehabilitation of existing farm dam as outlined in the Biodiversity Development Assessment Report (BDAR) prepared for the Concept Proposal and Stage 1 works**
- **Site landscaping**
- **Signage**
- **Utility and service works**

The works outlined above comprise five key components, which are subject to various funding allocations and may be delivered independently to each other. Stage 2 has therefore been defined in the following sub-stages[1]:

- Stage 2A – Main Hospital Building complete with supporting roads, services infrastructure and landscaping
- Stage 2B – Main Hospital Building incremental expansion areas
- Stage 2C – Health Hub
- Stage 2D – Tweed Valley Skills Centre
- Stage 2E – Multi-deck carpark

Development consent is sought for all five components of Stage 2 under this SSDA.

Plans for Stage 2 Main Works and Operation are attached in Appendix B of the EIS. Approval of Stage 2 will enable the new Tweed Valley Hospital to be built which will provide a much-needed contemporary health service facilities for the surrounding region.

2.1.2 Potential Future Expansions

Any subsequent stages or modifications to the proposal would be subject to separate applications as required including the potential future expansion of the facility.

[1] Stages are not listed in chronological order and may be delivered independently to each other

3 Context

LCI has been engaged by Lendlease to develop the external lighting strategy for the new Tweed Valley Hospital. This report addresses the key design considerations and criteria for the lighting scheme.

The Tweed Valley Hospital is to be built on a greenfield site located at 771 Cudgen Road, Kingscliff NSW: Lot 11, DP 1246853.

Figure 1 – Area map

The development lot rises slightly above Cudgen Rd and slopes significantly down to the north and west.

Figure 2 - Aerial photo

Behind the development is predominantly wooded areas and an existing row of trees provides some shielding from Cudgen Rd.

The nearest airports have been identified as Gold Coast Airport (approximately 11km) and Murwillumbah Airfield (approximately 16km).

The campus comprises a Main Health Building, a Health Hub, multi-deck carpark, on-grade carparking, access roads and services plant.

Refer to Appendix A for the Lighting Strategy Site Plan.

4 Design criteria

External lighting will be provided around the hospital campus to provide a safe and welcoming environment for patients, visitors and staff, with consideration given to:

- safe movements of pedestrians, cyclists and vehicles
- to integrate with the architectural design intent and overall aesthetics of the buildings and campus
- avoidance of dark areas
- minimisation of obtrusive light spill and glare to surrounding properties
- consideration of circadian rhythms of local fauna
- safe operation of the helicopter
- security lighting
- application of the Crime Prevention through Environmental Design (CPTED) strategy
- lighting for facial recognition and correct functioning of CCTV systems

Standards

Lighting will be designed according to the following standards and guidelines:

Standards	
HI Engineering Services Guidelines	
Protecting People and Property	NSW Health Policy and Standards for Security Risk Management in NSW Health Agencies
AS/NZS 1158.3.1	Lighting for roads and public spaces Part 3.1: Pedestrian area (Category P) lighting – performance and design requirements
AS/NZS 1158.4	Lighting for roads and public spaces Part 4: Lighting of pedestrian crossings
AS/NZS 1680.1	Interior and workplace lighting Part 1: General principles and recommendations
AS/NZS 1680.2.1	Interior and workplace lighting Part 2.1: Specific applications – Circulation spaces and other general areas
AS/NZS 1680.2.5	Interior lighting Part 2.5: Hospital and medical tasks
AS/NZS 2890	Parking facilities
AS 4282	Control of the obtrusive effects of outdoor lighting
AS 4485.1	Security for health care facilities Part 1: General requirements
BCA	Building Code of Australia
CASA MOS 139	Obstacle lighting

5 Light spill

A light spill assessment to AS 4282 will be completed as part of the detailed design.

Preliminary investigation into light spill has identified the following factors:

The site is a hospital, operating 24 hours with no curfew lighting period.

Effects on residents

The hospital site is located in a predominantly rural area and lighting within the campus is not anticipated to impact on surrounding residential areas. Residences are located on the far side of Cudgen Rd, which is anticipated feature new street lighting to provide safety for vehicle movements into the hospital. The light spill assessment conducted during detailed design will consider the impact on nearby residences.

Adjacent properties

Adjacent properties include farms, residences and the TAFE NSW Kingscliff campus. No criteria in addition to the standard have been identified at this stage.

Effects on transport system users

Selection and placement of luminaires will be designed to minimise the impact on traffic travelling along Cudgen Rd, Turnock St and McPhail Ave and the associated intersections and roundabouts.

The site is more than 6km from the nearest airfield.

Effects on transport signalling systems

Helicopters will operate from the roof level of the hospital. No other transport signalling systems have been identified at this stage.

Effects on biota

The ecologically sensitive receivers include native vegetation and wildlife adjacent to the project construction and operational activities, including:

- coastal wetlands vegetation on the northern part of the site mapped under the Coastal Management SEPP
- two threatened ecological communities (TEC), namely:
    - swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions endangered ecological community (EEC)
    - lowland rainforest on floodplain in the NSW North Coast Bioregion endangered ecological community (EEC)
- vegetation buffers across the site which will provide important stepping-stone and refuge habitat for wildlife
- the sediment/bioretention basins or 'moist corridors' across the site
- the preferred koala *Phascolarctos cinereus* habitat (eg. food source trees Tallowwood *Eucalyptus microcorys*) located in the north-east corner of the site.

Effects on astronomical observations

Review of the Astronomical Society of Australia list of designated observatories (8/5/2019) has not identified any observatories nearby the development site.

6 Lighting strategy

Detailed design of the external lighting for the new hospital and campus will adopt the following lighting strategy. Refer to lighting strategy site plan Appendix A for the locations of each design category.

6.1 Luminaires

Luminaires will be selected during detailed design. The selected luminaires will be suitable for use in the location in which they are installed. Outdoor luminaires will have a minimum ingress protection rating of IP 54.

Luminaires will be high-quality, efficient, LED type to minimise energy consumption.Accessible luminaires will be vandal proof.

A consistent colour temperature (3000K) will be adopted across the campus for external lighting.

Maintenance requirements will be minimised by the selection of high-quality LED luminaires with a design life exceeding L70 B50 (to 50,000 hours) and backed by a minimum 5 year warranty. A six monthly cleaning interval is assumed in order to comply with NSW Health – Protecting People and Property requirements.

Due to the helicopter activity associated with the hospital, luminaires will generally be low-cutoff aeroscreen style to minimise uplight.

6.2 Pole mounted lighting

Luminaires serving access roads, carparks and pathways will generally be pole mounted. Poles will be located to provide efficient, compliant lighting and to be sympathetic with the architectural design intent.

Along access roads and in carparks, luminaires will generally be mounted below 8.5m, while luminaires for pedestrian walkways will generally be mounted below 6m.

Consideration will be given to sharing poles with security CCTV, duress and location systems during detailed design.

Photovoltaic cells for supplying lighting systems may be provided where it is economical to do so.

Access for maintenance will be by cherry picker.

6.3 Switching and control

As this is a 24 hour facility, external lighting will generally operate between dusk and dawn and be controlled by time-clock/light level sensors with a manual override located in central location. Lighting control will integrated into the Main Health Building lighting control and building management systems.

6.4 Strategy to reduce light spill

Measures adopted to minimise the effects of obtrusive lighting and light spill into surrounding sensitive receivers will include:

- conducting formal light spill assessment as part of the detailed design
- mounting heights and luminaires shall be selected to minimise spillage and provide good control over the lighting distribution
- quality luminaires will be selected with good glare control
- luminaires will be set-back from the property boundary to reduce light spill where possible
- luminaires shall feature narrow beams and sharp cut-off angles
- luminaires shall have low vertical aiming angles

6.5 Strategy to reduce the impact on biota

Measures adopted to reduce the impact of potential disruption to threatened wildlife species or reduced viability of adjacent habitat due to light spill will include:

- Construction and operational activities will be restricted to the project footprint in the southern portion of the site where the project footprint is at least 67m from the remnant native EEC vegetation. This provides a natural buffer zone to dissipate light spill impacts.
- Lighting shall be positioned in consideration with the local environment and ensure upward waste light ratios do not exceed the standard requirements.
- The local government will be consulted to determine any restrictions on the frequency of use and hours of operation of the external lighting.
- Consideration will be given to applicable safeguards and management measures including daily timing of activities and directing lights away from remnant vegetation.
- Lighting in and adjacent to the native vegetation areas should incorporate low impact lighting design considerations where possible, such as:
    - Avoid installing lighting in or around native vegetation areas unless necessary. If lights cannot be avoided, use lower impact globes or lights with protective shields.
    - Install shields on streetlights to direct illumination downwards, reducing the spill over into adjacent habitat
    - Use timers, sensors or motion detectors to switch lights on and off at appropriate times, reducing the length of time native vegetation is exposed to unnatural light levels.
    - Use of warm white (3000K) LED luminaires to provide lighting with a longer wavelength
    - Fluorescent lighting, and lights with significant ultraviolet emissions will not be used
    - Install lights as low to the ground as possible, reducing light spill into adjacent areas
    - Increased tree and shrub cover in bushland and corridors will reduce light penetration and improve the habitat values of these areas.

6.6 Entrance signage

Signage will be illuminated to identify entrances to the campus and to assist in locating buildings and building entrances.

6.7 Roadway and intersection lighting

Road lighting along Cudgen Rd shall be designed and installed to meet Council and Essential Energy requirements.

6.8 Access roads

Primary access roads

The primary entrance to the hospital and reticulation have been classified to AS/NZS 1158.3.1 as follows:

Category	Classification
Type of road or pathway	Common area, forecourts or cluster housing
Basic operating characteristics	Mixed vehicle and pedestrian traffic
Pedestrian/cycle activity	Medium
Risk of crime	Low
Need to enhance prestige	Medium
Applicable lighting subcategory	P3

Primary access roads will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	1.75 lx
Point horizontal illuminance	0.3 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	0.3 lx

Secondary access and maintenance roads

Secondary maintenance roads around the facility have been classified to AS/NZS 1158.3.1 as follows:

Category	Classification
Type of road or pathway	Common area, forecourts or cluster housing
Basic operating characteristics	Mixed vehicle and pedestrian traffic
Pedestrian/cycle activity	Medium
Risk of crimet	Low
Need to enhance prestige	Medium
Applicable lighting subcategory	P3

Secondary access roads will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	1.75 lx
Point horizontal illuminance	0.3 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	0.3 lx

6.9 On-grade carparks

AS/NZS 1158.3.1 and AS 4485.1 define lighting classifications and parameters in public and staff outdoor carparks – the following are applicable on this project:

Category	Classification
Type of road or pathway	Parking spaces, aisles and circulation roadways
Night time vehicle or pedestrian movements	Medium
Night time occupancy rates	≥25%, ≤75%
Risk of crime	Medium
Applicable lighting subcategory	P11b
Parking spaces intended for people with disabilities	P12
Situation (AS 4485.1)	Car parks (outdoor)

Public and staff outdoor carparks will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	20 lx
Point horizontal illuminance	10 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	1.5 lx
Point horizontal illuminance (parking spaces intended for people with disabilities)	20 lx

6.10 Pedestrian crossings

Pedestrian crossings on have been classified to AS/NZS 1158.4 as follows:

Category	Classification
Local road	PX 3

Pedestrian crossings will adopt the following lighting parameters:

Parameter	Value
Point vertical illuminance	16 lx
Glare control at 90°	170 cd
Glare control at 70°	4000 cd
UWLR	2%

Because AS 4485 stipulates higher lighting levels than AS 1158, where pedestrian crossings lead to carparks a higher lighting level is required to be adopted in order for the crossings to be visible against the background. In these areas the next higher category in AS 1158 (PX 2) will be adopted.

Pedestrian crossings leading to carparks will adopt the following lighting parameters:

Parameter	Value
Point vertical illuminance	32 lx
Glare control at 90°	250 cd
Glare control at 70°	6000 cd
UWLR	2%

6.11 Pedestrian pathways (walkways)

AS/NZS 1158.3.1 and AS 4485.1 define lighting classifications and parameters for pedestrian pathways (walkways) – the following are applicable on this project:

Category	Classification
Type of road or pathway	Pedestrian or cycle oriented pathway
Basic operating characteristics	Pedestrian/cycle traffic only
Pedestrian/cycle activity	High
Risk of crime	Medium
Need to enhance prestige	High
Applicable lighting subcategory	P2
Situation (AS 4485.1)	Walkways

Pedestrian pathways will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	20 lx
Point horizontal illuminance	10 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	0.7 lx

6.12 Landscape lighting

Luminaire selection and placement shall be developed in consultation with the landscape architect as the landscaping design develops. It shall be selected to achieve the performance requirements of the facility and be sympathetic to the landscape design.

6.13 Architectural lighting

Luminaire selection and placement shall be developed in consultation with the project architect as the facilities design develops. It shall be selected to achieve the performance requirements of the facility and be sympathetic to the architectural design, and may include architectural feature lighting.

6.14 Digital signage and wayfinding

The strategy around digital signage is currently under development, but may include digital signs to indicate the availability of free car spaces, notice boards, digital outdoor displays, information kiosks and the like. All outdoor signs will be designed with consideration of the impact on road users, pedestrians and adjoining properties. The luminance levels and guidance in the Department of Planning and Environment document "Transport Corridor Outdoor Advertising and Signage Guidelines" and AS4282 - Control of the obtrusive effects of outdoor lighting, shall be referenced when assessing the impact of any proposed digital signage.

Refer to the Wayfinding & Signage Design Report (Urbanite) for further details.

6.15 Passenger set down and drop off areas

AS/NZS 1158.3.1 and AS 4485.1 define lighting classifications that are applicable for passenger set down and drop off areas – the following are applicable to this project:

Category	Classification
Type of area	Parking spaces, aisles and circulation roadways
Night time vehicle or pedestrian movements	High
Night time occupancy rates (NTOR)	> 75%
Risk of crime	High
Applicable lighting subcategory	P11a
Situation (AS 4485.1)	Walkways

Areas adjacent building entries and exits will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	20 lx
Point horizontal illuminance	10 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	3 lx

6.16 Areas adjacent to building entries/exits

AS 4485.1 defines lighting classifications that are applicable in areas adjacent building entries and exits – the following are applicable to this project:

Category	Classification
Situation (AS 4485.1)	Areas adjacent to entry/exit

Areas adjacent building entries and exits will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	50 lx
Point horizontal illuminance	30 lx

AS/NZS 1158.3.1 and AS 4485.1 define lighting classifications that are applicable in areas adjacent building entries and exits – the following are applicable to this project:

Category	Classification
Type of area	Parking spaces, aisles and circulation roadways
Night time vehicle or pedestrian movements	High
Night time occupancy rates (NTOR)	> 75%
Risk of crime	High
Applicable lighting subcategory	P11a
Situation (AS 4485.1)	Areas adjacent to entry/exit

Areas adjacent building entries and exits will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	50 lx
Point horizontal illuminance	30 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	3 lx

6.17 Ambulance bays

Lighting will be provided at the ambulance bay to facilitate safe movement of pedestrians and vehicles in high pressure situations. AS/NZS 1158.3.1 and AS 4485.1 define lighting classifications that are applicable for ambulance bays. Where the ambulance bay is under-cover, the requirements of AS/NZS 1680.2.1 apply. The following categories are applicable to this project:

Category	Classification
Type of area	Parking spaces, aisles and circulation roadways
Night time vehicle or pedestrian movements	High
Night time occupancy rates (NTOR)	> 75%
Risk of crime	High
Applicable lighting subcategory	P11a
Situation (AS 4485.1)	Car parks (outdoor)
Type of activity (AS 1680.2.5)	Patient transit area - General
Lighting purpose	Circulation space

Ambulance bays will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	160 lx
Uniformity	≥ 0.3
Point horizontal illuminance	10 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	3 lx

6.18 Helipad lighting

Lighting will be provided at roof level to support helicopter activities and the transfer of patients into the hospital. The building will also be fitted with red, flashing aviation warning lights to CASA MOS 139 requirements.

Aviation lighting will be controlled via radio signal from the helicopter and manually from an agreed point. Lighting for landing and wind sock will be supported by UPS.

Lighting, including testing and commissioning, will comply with the requirements of the helipad/aviation consultant.

6.19 General groups

The following classification from AS 4485.1 is applicable in areas such as courtyards and other general areas that are used for night activities:

Category	Classification
Situation (AS 4485.1)	General grounds used for night activity

These areas will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	20 lx
Point horizontal illuminance	10 lx

6.20 Security and building perimeter lighting

Lighting will be provided to provide a visual deterrent around buildings and plant areas and to facilitate the operation of security staff and CCTV monitoring.

Lighting is one element in creating a safe and secure environment for patients, visitors and staff and will be considered in the Crime Prevention through Environmental Design (CPTED) strategy.

In areas of security concern infra-red lighting may be used to facilitate security camera where no visual illumination is required or desired.

The following classification from AS 4485.1 is applicable in these areas:

Category	Classification
Situation (AS 4485.1)	General grounds adjacent to areas used at night

General security lighting will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	5 lx
Point horizontal illuminance	3 lx

6.21 Loading bays

Lighting will be provided at loading bays to facilitate the safe movement of vehicles, people and equipment.

AS/NZS 1158.3.1, AS 4485.1 and AS 1680.2.1 define lighting classifications that are applicable for loading bays – the following are applicable to this project:

Category	Classification
Type of area	Parking spaces, aisles and circulation roadways
Night time vehicle or pedestrian movements	Medium
Night time occupancy rates (NTOR)	≥25%, ≤75%
Risk of crime	Medium
Applicable lighting subcategory	P11b
Situation (AS 4485.1)	General grounds used for night activity
Type of activity (AS 1680.2.1)	Loading bays

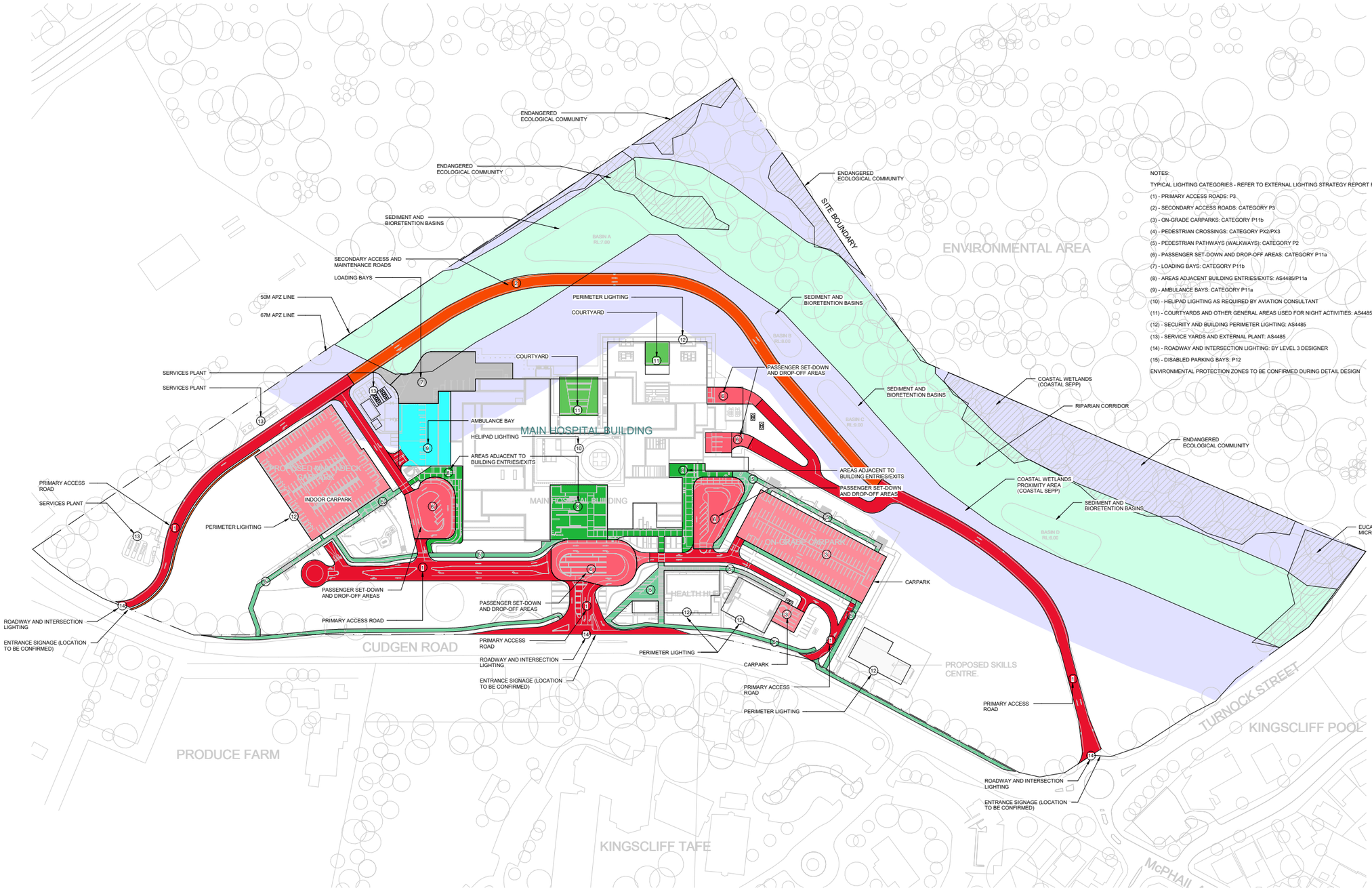
Loading bays will adopt the following lighting parameters:

Parameter	Value
Average horizontal illuminance	20 lx
Point horizontal illuminance	10 lx
Illuminance (horizontal) uniformity Cat. P	10
Point vertical illuminance	1.5 lx
Loading face	80 lx with provision for adequate vertical illuminance

6.22 Service yards and external plant

Lighting will be provided to facilitate safe access, security and maintenance of external plant. This lighting will generally be provided by weatherproof LED batten luminaires mounted adjacent the plant. Lighting provided for security purposes will operate between dusk and dawn and meet the criteria “Security and building perimeter lighting”, but other lighting will only be utilised when required.

Appendix A **Lighting strategy site plan**



NOTES:

TYPICAL LIGHTING CATEGORIES - REFER TO EXTERNAL LIGHTING STRATEGY REPORT FOR FURTHER DETAILS:

(1) - PRIMARY ACCESS ROADS: P3

(2) - SECONDARY ACCESS ROADS: CATEGORY P3

(3) - ON-GRADE CARPARKS: CATEGORY P11b

(4) - PEDESTRIAN CROSSINGS: CATEGORY PX2/PX3

(5) - PEDESTRIAN PATHWAYS (WALKWAYS): CATEGORY P2

(6) - PASSENGER SET-DOWN AND DROP-OFF AREAS: CATEGORY P11a

(7) - LOADING BAYS: CATEGORY P11b

(8) - AREAS ADJACENT BUILDING ENTRIES/EXITS: AS4485/P11a

(9) - AMBULANCE BAYS: CATEGORY P11a

(10) - HELIPAD LIGHTING AS REQUIRED BY AVIATION CONSULTANT

(11) - COURTYARDS AND OTHER GENERAL AREAS USED FOR NIGHT ACTIVITIES: AS4485

(12) - SECURITY AND BUILDING PERIMETER LIGHTING: AS4485

(13) - SERVICE YARDS AND EXTERNAL PLANT: AS4485

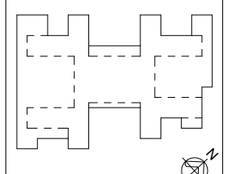
(14) - ROADWAY AND INTERSECTION LIGHTING: BY LEVEL 3 DESIGNER

(15) - DISABLED PARKING BAYS: P12

ENVIRONMENTAL PROTECTION ZONES TO BE CONFIRMED DURING DETAIL DESIGN

DRAWING TO BE PRINTED IN COLOUR

KEY PLAN



REV	DESCRIPTION	DRN	DATE
01	PRELIMINARY DRAWING	DC	28.05.19
02	100% SCHEMATIC DEVELOPMENT	BH	10.07.19
03	SSD 2	BH	09.09.19
04	SSD 2	BH	12.09.19

DIMENSIONS

USE FIGURED DIMENSIONS, DO NOT SCALE. CONTRACTORS MUST VERIFY ALL DIMENSIONS ON THE SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING WHICH MUST BE SUBMITTED AND REVIEWED BEFORE MANUFACTURE.

100% SCHEMATIC DEVELOPMENT

MAIN CONTRACTOR

lendlease

SERVICES CONSULTANTS

LCI

LCI CONSULTANTS (AUSTRALIA) PTY LTD

LEVEL 4, 73 WALKER STREET, NORTH SYDNEY, NSW, 2060
ABN: 92 124 107 973

PROJECT MANAGER

TSA MANAGEMENT

CLIENT

NSW GOVERNMENT Health Infrastructure | Health Northern NSW Local Health District

PROJECT

TWEED VALLEY HOSPITAL

DRAWING TITLE

ELECTRICAL SERVICES LIGHTING STRATEGY SITE PLAN

SCALE	DATE	DRAWN BY	CHECKED
1 : 1000@A0	10.07.19	BH	MM

PROJECT No	DRAWING No	REVISION
18202	LCI-EL-DWG-SSI-1000002	04