LIGHTING SUB PLAN

Moorebank Precinct East Stage 2

03 NOVEMBER 2020

SYDNEY INTERMODAL TERMINAL ALLIANCE MOOREBANK PRECINCT EAST STAGE 2

Lighting Sub Plan

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The lighting design for the shared pathways within Area 1 was completed by Arcadis. The lighting design for Warehouse 1 was completed by Modcol Pty Ltd. The lighting design for Warehouses 3, 4 and 5 was completed by C-Level. The roads and shared pedestrian path lighting for Area 2 was completed by Ultegra.

This consolidated version of the LSP has been prepared by Aspect Environmental.

Author Details

Author Details	Qualifications and Experiences
Shannon Blackmore (B. Env Mgt LLB)	Shannon has over eight years of experience in environmental impact assessment and planning in New South Wales, Queensland and the ACT. Shannon has gained experience in the construction industry and has also managed several environmental impact statements for large scale infrastructure projects. Shannon has also developed environmental impact assessments for several waste infrastructure projects.
Katrina Nestmann (B. Sc. Environmental Engineering)	Katrina is an Environmental Engineer with six years of experience working on infrastructure and environmental projects, in particular with contaminated sites and environmental monitoring. Relevant experience includes preparation of environmental management plans for construction and construction supervision.
Zachary Quintal (B. Plan)	Zachary has 3 years of experience across several infrastructure projects, specifically in reviewing environmental factors and impacts. Zachary has assisted in the delivery of post approvals, consistency assessments, environmental documentation for contractors and environmental impact statements.

Checker Details

Checker Details	Qualifications and Experiences
Bruce Layzell Arcadis Level 16/580 George Street Sydney NSW 2000	Grad Dip Business Management Adv. Dip Mechanical Engineering Adv. Cert. Management Bruce has 20 years of experience in project management, specialising in construction management, planning and scheduling, contract administration, cost control and estimating. Bruce has acted as a project manager on a number of projects involving the provision of building maintenance and infrastructure services in NSW. He has been involved with the Moorebank project for 2 years as a project manager and lead utilities engineer, managing the design of all facilities including electrical services.
Luke Nichols Modcol Pty Ltd 1/80 Box Road Taren Point NSW 2229	Luke has eight years of experience and is currently a Project Manager for Modcol Pty Ltd. Luke has managed a number of industrial distribution centre electrical projects, as well as other projects including the development of multi storey offices, food grade warehousing/processing facilities, helicopter hangers on airport land and emergency services training and operational facilities.
Area 2 Contributor Details	Qualifications and Experience
Brett Whiteford B Eng. Electric and Comp Sys M Lighting REPQ NPER	Brett is an Electrical Engineer with over 20 years of professional experience in installation, planning, design, review and construction supervision of projects on a wide range of electrical projects, especially roads. He has developed specialist tunnel and road lighting skills and has led teams for the design or major road lighting upgrades. He has specialist skills in control systems, electrical reticulation, electrical industrial systems, energy auditing, emergency and road lighting, plant / traffic management and control systems.
Eric Chen M Eng Elec NER C-Level RPEQ VBA	Eric is an Electrical Engineer with 8 years of professional experience. Eric has a range of specific experience in designing full electrical services for large industrial & logistic warehouse installations throughout Australia. He has specialist skills in designing external lighting for large warehouses, carparks, hardstands & aprons.

Consolidated Plan Contributor Details	Qualifications and Experiences
Richard Johnson (BSc, Dip. Law) Megan Kovelis (GradCert EnvPl, BEnvSc) Carolyn Stanley (MSc CRM, BA, BSc) Aspect Environmental P/L	Richard has 28 years environmental planning, assessment and management experience. 15 years public sector; 13 years consulting (water/ resources/ energy/ industrial/ infrastructure). Megan has 13 years environmental planning, assessment and management experience. Carolyn has 12 years environmental planning, assessment and management experience.

REVISIONS

Revision	Date	Description	Prepared by	Approved by
001	24/07/2018	Initial draft to Tactical	KN / SB	BL / SB
002	14/08/2018	Updated for submission to Liverpool City Council (also submitted to DPIE on 09/05/2018)	KN / SB	BL / KP
003	15/05/2019	Updated with DPIE and GANSW comments	KN	KP / JC
004	12/06/2019	Updated to reflect change in OSD 9 design layout	ZQ	KP
005	02/08/2019	Updated based on DPIE comments on version 003 for Area 1	AC/KP	KP
006	28/02/2020	Updated to include Area 2 and MOD2	ZQ	KP
006B	14/05/2020	Updated to include LCC's consultation regarding Area 2	CS/MK	RJ
006C	31/07/2020	Updated to include DPIE's consultation regarding Area 2	CS/MK	RJ
007	26/06/2020	Updated to include all Areas (consolidated plan)	MK/CS	RJ
008	3/11/2020	Updated to include DPIE/GANSW and LCC's consultation regarding the Consolidated UDLP, and to reflect updates to Area 2	CS/MK	RJ

ACRONYMS AND DEFINITIONS

Term	Meaning
Area 1	Warehouse 1 and immediate surrounding area (not including the freight village)
Area 2	Area incorporating Warehouses 3, 4 and 5 between IMEX terminal and eastern boundary of MPE Site.
Area 3	Area incorporating Warehouses 6, 7 and 8 including OSD 2, between IMEX terminal and eastern boundary of MPE Site
Area 4	Area incorporating the freight village, within the northern portion of Area 1
Area 5	Area incorporating Warehouse 2, in the north eastern corner of the MPE Site
Area 6	Area incorporating Moorebank Avenue
CBD	Central Business District
CMM	Commonwealth Mitigation Measures
CoCs	Conditions of Consent
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act* 1979
FCMM	Final Compilation of Mitigation Measures
GFA	Gross floor area
ISCA	Infrastructure Sustainability Council of Australia
K	kelvins
LCC	Liverpool City Council
LED	Light-emitting diode
LGA	Local Government Area
LOR	Light output ratio
LSP	Lighting Sub Plan
lux	Derived unit of illuminance and luminous emittance, measuring luminous flux per unit area
MOD2	The second modification to the MPE Stage 2 Development Consent (SSD 7628), approved on 31 January 2020 by DPIE (SSD 7628-MOD2)
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West

Term	Meaning
Project Site (the)	The construction and operational areas identified within the MPE Stage 2 RtS (previously referred to as the Amended Proposal Site within the MPE S2 RtS) and approved under SSD 7628. The MPE Project Site includes Areas 1 to 6, as described in the UDLP and sub plans.
Project, the	The construction and operational areas identified within the MPE Stage 2 RtS (previously referred to as the Amended Proposal Site within the MPE S2 RtS) and approved under SSD 7628.
RSoC	Revised Statement of Commitments
RtS	Response to Submissions
SIMTA	Sydney Intermodal Terminal Alliance
SSD	State significant development
TfNSW	Transport for NSW
UDLP	Urban Design and Landscape Plan
W	Watt

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1 BACKGROUND

The Project has been assessed by the Department of Planning, Industry and Environment (DPIE) (formerly Department of Planning and Environment under Part 4, Division 4.1 (now Division 4.7 as of 1 March 2018) of the *Environmental Planning and Assessment Act* 1979 (EP&A Act) as State significant development (SSD). The Planning Assessment Commission (now the Independent Planning Commission) granted approval for the Moorebank Precinct East (MPE) Stage 2 Project to the Sydney Intermodal Terminal Alliance (SIMTA) on 31 January 2018 subject to Conditions of Consent (CoC) (SSD 7628). DPIE subsequently approved Modification 2 (MOD2) on 31 January 2020 under Section 4.55(1) of the EP&A Act.

The Lighting Sub-Plan (LSP) has been developed to manage impacts of light spill associated with the Project. This LSP addresses the relevant requirements of the Development Consent, including the Environmental Impact Statement (EIS), Response to Submissions (RtS) and CoC, and all applicable guidelines and standards specific to the management of light spill. This LSP forms part of the Urban Design and Landscape Plan (UDLP).

1.1 Introduction

The MPE Site, including the Project Site, is located approximately 27 km south-west of the Sydney Central Business District (CBD) and approximately 26 km west of Port Botany and includes the former Defence National Storage and Distribution Centre site. The MPE Site is situated within the Liverpool Local Government Area (LGA), in Sydney's south-west subregion, approximately 2.5 km from the Liverpool City Centre.

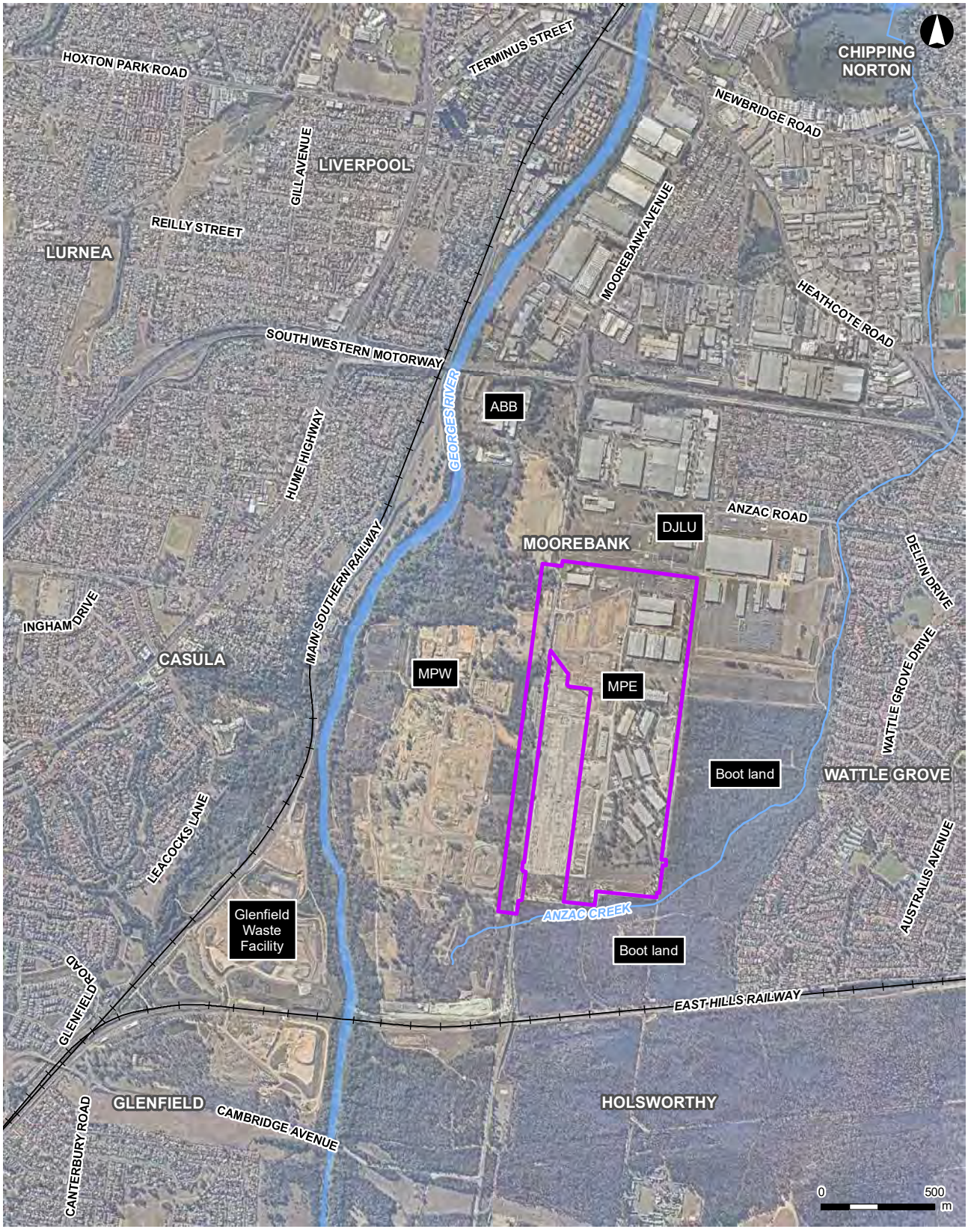
The MPE Project involves the development of an intermodal facility including warehouse and distribution facilities, freight village (ancillary site and operational services), stormwater, landscaping, servicing and associated works on the eastern side of Moorebank Avenue, Moorebank.

Stage 2 of the MPE Project (the Project) involves the construction and operation of warehousing and distribution facilities on the MPE Site and upgrades to approximately 1.5 km of Moorebank Avenue from approximately 35 m south of the northern boundary of the MPE Site to approximately 185 m south of the southern MPE Site boundary. The Project has been assessed by DPIE under Part 4, Division 4.1 (now Division 4.7 as of 1 March 2018) of the *Environmental Planning and Assessment Act* 1979 (EP&A Act) as State significant development (SSD).

Key components of the Project include:

- approximately 300,000 m^2 gross floor area (GFA) of warehousing and ancillary offices
- freight village, 8,000 m^2 GFA of ancillary retail, commercial and light industrial land uses
- internal road network and hardstand across the site
- ancillary supporting infrastructure within the site, including:
  - stormwater, drainage and flooding infrastructure
  - fencing, signage, lighting, remediation and landscaping
- Moorebank Avenue upgrade including:
  - raising by about 2 m and some widening
  - embankments and tie-ins to existing Moorebank Avenue road levels
  - signalling and intersection works.

Refer to Figure 1-1 for site location.



LEGEND

- MPE Stage 2 construction area
- Existing railway
- Watercourse

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Aerial imagery supplied by nearmap (May, 2018)

1:25,000 at A4

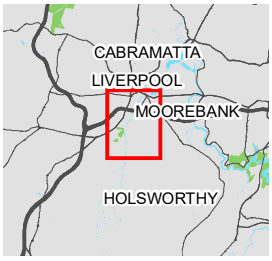


Figure 1-1: Site Location

1.2 Purpose and Application

This LSP has been prepared to provide details of the common and individual lighting for the Project Site to reduce light spill and mitigate visual impact to residents in residential areas within the locality. This LSP has been developed to address the CoC B141(b) and (c) and FCMM 8C.

This LSP requires approval by the Secretary (DPIE) and the approved plan must be implemented prior to occupation of Warehouse 1.

1.3 Staging of this Plan

Delivery of this LSP will be staged (in accordance with CoC A14 and A15) to allow for the commencement of warehouse construction. The proposed staging of the LSP is shown on Figure 1-2 and detailed within Table 1-1. This LSP must be implemented prior to occupation of the warehouses and/or freight village, once approved by the Secretary in consultation with the Government Architect New South Wales (GANSW). Plan staging has been undertaken as per Table 1-1.

Table 1-1: Staged submission of the LSP.

Works Area	Approximate Dates Plan Submission	Operational Area	Approximate Occupation Date
Area 1	Q2 2019	Warehouse 1 including area north of freight village	Interim OC 31/01/18
Area 2	Q2 2020	Warehouse 3, 4 and 5	Warehouse 3: Interim OC 20/03/20 Warehouse 4: Interim OC 22/05/20 Warehouse 5: Q4 2020
Areas 3 – 6	TBC	Warehouses 2, 6, 7 and 8, freight village, Moorebank Avenue Upgrade	TBC[1]

Note:

[1] Construction and occupational timing for Areas 3 – 6 is subject to market demand and future approvals.

1.3.1 Activities for the Stages

The activities associated with the stages include, but are not limited to:

- all ground preparation activities such as earthworks, services, on-site detention construction across the warehouses (managed through the Construction Environmental Management Plan and sub-plans and Stormwater Management Plans)
- upgrade works to Moorebank Avenue
- construction and operation of the warehouses and freight village including:
  - construction and operation of parking facilities
  - construction and operation of internal road network and shared paths
  - installation of temporary solar lighting towers to illuminate roads and shared paths
  - landscaping
  - construction and operation of cycling and pedestrian facilities
  - installation of signage
  - construction and operation of end of trip facilities
  - construction and operation employee outdoor meal break areas.

The activities for the stages include construction activities such as bulk earthworks, landscaping, roads, pavements and carparks, and warehouse construction and fit-out.

Approval from DPIE for staging of development activities has already been granted as a separate process aside from this plan.

1.3.2 Relationship of Stages

Area 1 was the first stage addressed by this LSP and included Warehouse 1 and the immediate area surrounding Warehouse 1 (excluding the freight village).

Area 2 was the second stage of this LSP and included Warehouses 3, 4 and 5 and surrounds.

This final stage of the LSP consolidates all areas into a final UDLP document, in order to demonstrate that the scheme and specific requirements of SSD 7628 are achieved across the MPE Stage 2 Site. At the time of preparing this document, the detailed design and tenanting requirements for Areas 3 to 6 are not finalised, and therefore lighting requirements cannot be confirmed. Once these details are available, at the development application stage, the lighting scheme for each area should be developed based on what has been approved for Area 1 and Area 2, and the requirements of the UDLP and this subplan. Light calculations should be undertaken, and certification obtained prior to construction.

This LSP will be delivered as follows:

- Area 1 details were prepared and approved by DPIE prior to commencement of permanent built surface works and landscaping of Warehouse 1. This allowed the Project to commence construction of Warehouse 1, prior to the finalisation of the design for the remainder of the Project and did not restrict or constrain delivery of a complaint final detailed design across the remainder of the MPE Stage 2 Site.
- Area 2 was prepared and approved by DPIE prior to commencement of landscaping of Warehouses 3, 4 and 5. Again, this allowed the Project to commence construction of warehousing in this Area, prior to the finalisation of the design for the remainder of the Project.
- The final consolidated LSP includes details for Areas 3 to 6. It shall be prepared and approved prior to the commencement of permanent built surface works and/or landscaping of Warehouses 2, 6, 7 and 8, the freight village (Area 4) and upgrade of Moorebank Avenue (Area 6).

1.3.3 Triggers

The trigger for submission of the future updates of this LSP will be one month prior to permanent built surface works and/or landscaping of the next works area.

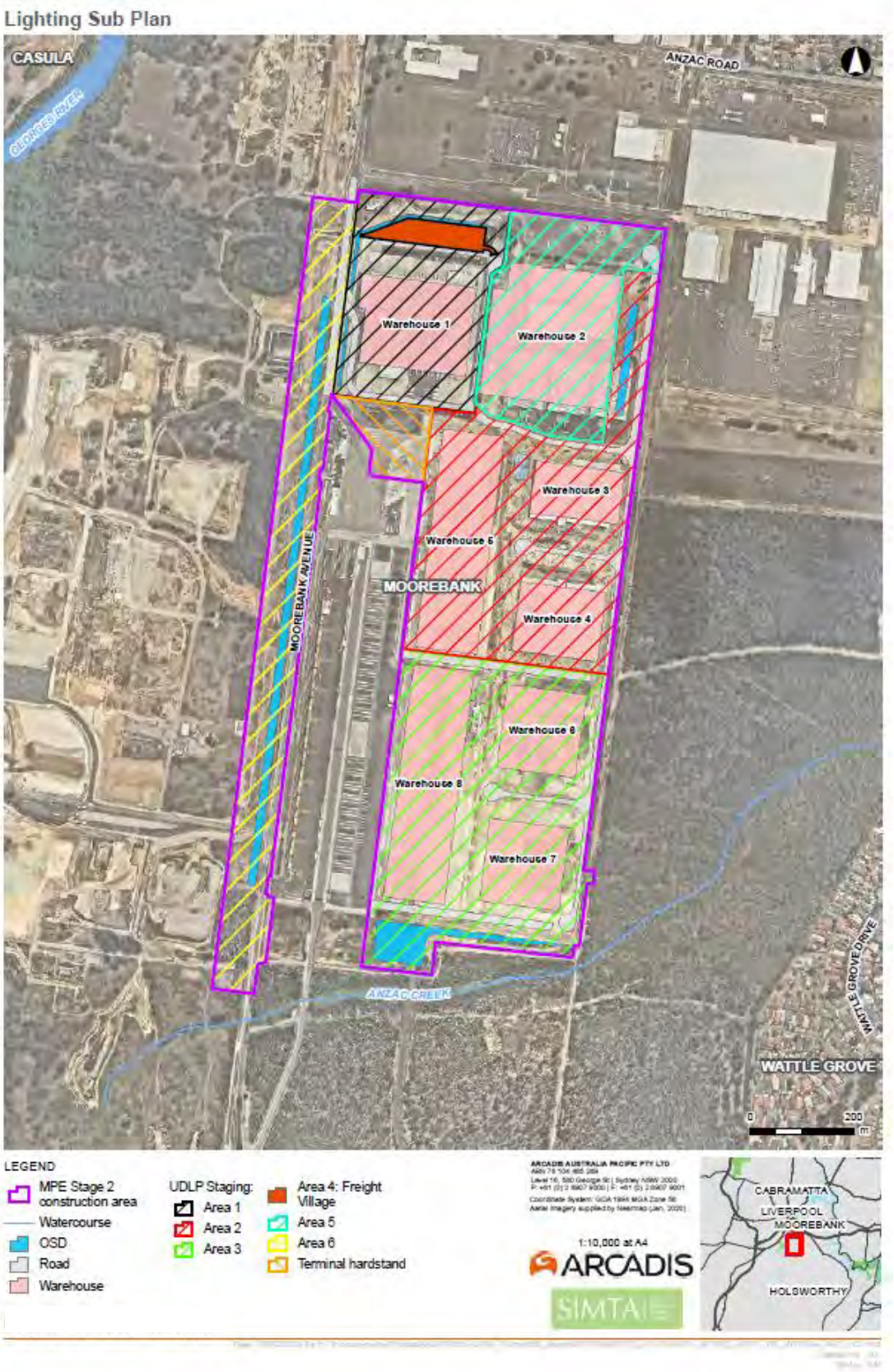


Figure 1-2 UDLP Staging

1.4 Compliance Matrices

The Project is being delivered under Part 4, Division 4.7 (previously Division 4.1 prior to 1 March 2018) of the EP&A Act. The CoC include requirements to be addressed in this LSP. These requirements and how they are addressed are provided within Table 1-2. Note there are no specific CoC from MOD2 relating to this plan.

In Table 1-2, Primary Conditions are specific to the development of the management plans, while Secondary Conditions are conditions which are related to the environmental aspects associated with the plan.

Table 1-2 Conditions of Consent (CoCs)

CoC	Requirement	Document Reference	How Addressed
Primary Condition			
B140	The UDLP must be prepared by a suitably qualified and experienced person(s), in consultation with the relevant council(s). The UDLP must be approved by the Secretary, in consultation with the NSW Government Architect.	Author Details (page ii and iii) Section 1.2 Section 1.5 Appendix 1 Appendix 2	This LSP has been prepared by a suitably qualified professional and in consultation with LCC, DPIE and GANSW, as detailed in Section 1.5 and Appendix 0A.
B141(b)	A Lighting Sub Plan to assist in the control of lighting and reduce the visual impact of the 24 hour operational facility when viewed from residents within residential areas within the locality.	This plan Section 2.1	This LSP has been prepared to assist in the control of lighting and to reduce the visual impact of the Project Site when viewed from residents within residential areas within the locality.
	The Plan must provide an assessment of: the location, design specification and impacts of operational lighting associated with the development and measures proposed to minimise lighting impacts and standardise lighting design within the MPE development.	Section 2.4 Section 2.2 Section 2.3 Appendix 1 Appendix 2	Section 2.4 provides details of the light spill assessment undertaken for the Project Site which identifies the location of lighting at the Project Site and the impact it will have on the surrounding area. Section 2.2 identifies the design specification of lighting at the Project Site Section 2.3 identifies measures to minimise lighting impacts and a standardised lighting design which includes but is not limited to the following: • lighting will be positioned to face downwards to eliminate upward light spill • lighting will use shielded fittings • lighting will be positioned to provide uniform lighting.
	The Plan must be prepared and approved by the Secretary.	Section 1.2	This LSP has been prepared and will be submitted to the Secretary for approval.
	The Applicant must ensure that the lighting associated with the development:		
	(i) complies with the latest version of AS 4282-2019 - Control of the	Section 3.1	The impact of light spill to residential properties from the solar tower lights in Area

CoC	Requirement	Document Reference	How Addressed
	obtrusive effects of outdoor lighting (Standards Australia, 2019);	Appendix 1 Appendix 2	1 is within the acceptable criteria specified in Australian Standard *AS4282-2019 Control of Obtrusive Effects of Outdoor Lighting*. The light calculations detailed in the design for Warehouse 1 are in accordance with AS 4282, as stated in Section 3.1.1 and detailed in Appendix 1. The light calculations detailed in the design for Warehouses 3, 4 and 5 are in accordance with AS 4282, as demonstrated in Section 3.1.2 and detailed in Appendix 2. Light calculations for Areas 3 to 5 will be completed during detailed design and confirmation of warehouse layouts, and will be consistent with Area 1, Area 2 and this LSP.
	(ii) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network; and	Section 2.2 Section 2.3 Appendix 1 Appendix 2	Section 2.2 describes how lighting will be mounted and shielded to be angled in a downward direction to prevent any nuisance to surrounding properties or the public road network. Section 2.3 details the design mitigation measures for each of the individual areas. Appendix 1 shows the light spill assessment for the lighting at Warehouse 1 and the solar tower lights located near the shared paths, demonstrating that lighting associated with the development will not create a nuisance to surrounding properties. Appendix 2 shows the light spill assessment for the lighting of Warehouses 3, 4 and 5 and the road and shared paths within Area 2 which demonstrates that lighting associated with the development will not create a nuisance to surrounding properties. Lighting shall be mounted and shielded consistently with Areas 1 and 2 in Areas 3 to 5 in order to prevent nuisance to surrounding properties. Certification will be obtained confirming design and engineering is in accordance with the relevant provisions of the BCA and Australian Standards – as has been provided for Area 2 (Appendix 2).
	(iii) is designed to reduce light spill and mitigate the visual impact of the 24-hour facility when viewed from the residential areas in the locality and the Boot Land.	Section 2.2 Section 2.4 Appendix 1 Appendix 2	The placement and design of lighting has been designed to reduce light spill and mitigate the visual impact of the 24-hour facility when viewed from residential areas within the locality and the Boot Land. Appendix 1 provides the light spill assessment for the lighting at Warehouse 1 and the solar tower lights located near the shared paths. No adverse effects in the

CoC	Requirement	Document Reference	How Addressed
			form of light spill can be seen on the Boot Land or surrounding residential areas. Appendix 2 provides the light spill assessments for lighting at Warehouses 3, 4 and 5 and shared paths within Area 2. The assessments demonstrate that the measures incorporated into the lighting design will reduce light spill and mitigate visual impacts on surrounding residential areas and the Boot Land. Subsequently these measures will be applied consistently across the site in all Areas to minimise adverse impacts from lighting. Certification will be obtained confirming design and engineering is in accordance with the relevant provisions of the BCA and Australian Standards – as has been provided for Area 2 (Appendix 2).
B141(c)	The Lighting Sub Plan must identify and provide details of the common and individual lighting throughout the development to reduce light spill and mitigate visual impact on the residential areas in the locality by:		
	(i) eliminating upward spill light;	Section 2.3	Upwards light spill is eliminated through use of shields and positioning of lights to face downwards. Light spill modelling determined the Upward Light Output Ratio (LOR) for Area 1 to be close to 0% (i.e. less than both 3% and 5%), which is an ISCA requirement that will be prescriptive for the Construction Contractor. The Design Certificate for Area 2 has certified that the external lighting has been designed to face downwards, using specific cut off luminaires eliminating the upward spill light above the horizontal. External lighting throughout the remainder of the site shall be designed and sited consistently with Area 1 and Area 2 to eliminate upward spill light. Certification will be obtained confirming design and engineering is in accordance with the relevant provisions of the BCA and Australian Standards – as has been provided for Area 2 (Appendix 2).
	(ii) directing light downwards, not upwards;	Section 2.3	The beam angle of the solar light towers in Area 1 will be set at an angle of 40° and 10° for the warehouse yard lights. Also, as detailed in Section 2.3 lighting will be positioned to face downwards which will prevent horizontal light spill outside of the areas intended to be illuminated.

CoC	Requirement	Document Reference	How Addressed
	(iii) using shielded fittings;	Section 2.3	The lights will be shielded to prevent light above the horizontal plane. The fittings selected have controlled optics with downward throw and zero up lighting.
	(iv) avoiding 'over' lighting;	Section 2.3 Appendix 1 Appendix 2	A design combination of positioning, mounting height and shielding to achieve adequate and comprehensive light coverage zones to suit the functional requirements of the area will be implemented. Refer to Appendix 1 for the light spill assessment for Area 1, demonstrating over lighting has been avoided. Refer to Appendix 2 for the light spill assessments for Area 2, demonstrating over lighting has been avoided. The lighting strategy for Area 1 and Area 2 shall be applied consistently across the site, in accordance with this LSP, in order to avoid over lighting.
	(v) switching lights off when not required;	Section 2.3	Lighting will have photoelectric sensors or be on a timer, so lighting is only on when required.
	(vi) using energy efficient bulbs;	Section 2.3	Light-emitting diode (LED) lights will be used for the solar tower lights and warehouse yard lights in Area 1. High quality LED luminaires will be utilised where possible in Areas 2, 3, 4 and 5. Using LED lights for external lighting reduces the energy demand by a factor of 10, providing an efficient lighting system solution.
	(vii) using asymmetric beams, where floodlights are used;	Section 2.3	Area 1 floodlights will be asymmetric beams or LED lights with shields to provide even light distribution over the areas intended to be lighted. Areas 2 to 5 floodlights, where required, will use asymmetric beams to provide an even light distribution over areas intended to be lit.
	(viii) ensuring lights are not directed towards reflective surfaces; and	Section 2.3 Appendix 1 Appendix 2	The position of the lighting and mounting height across the site will be adjusted so as to avoid light being directed towards reflective surfaces. Refer to Appendix 1 for the locations of the lighting at Warehouse 1 and the shared pathways.

CoC	Requirement	Document Reference	How Addressed
			Refer to Appendix 2 for the locations of the lighting at Warehouses 3, 4 and 5 and for the internal roads and shared pathways.
	(ix) using warm white colours.	Section 2.3	Lighting for the solar towers in Area 1 will be fitted with filters to achieve warm white colours. For the warehouse lighting in Area 1, 5,000 Kelvins (k) fittings will be used which are the most efficient lighting for external purposes, and considered warmer in colour than 6000 k lighting. For the warehouse lighting in Area 2, 4000 k fittings will be used which are efficient lighting for external purposes and considered warmer in colour than 6000 k lighting. This will be applied similarly in Areas 3 to 5.
	The approved plan must be implemented prior to occupation of the warehouse and freight village.	Section 1.2	The approved plan will be implemented prior to occupation of warehouses and the freight village.
Secondary Condition			
A14	With the approval of the Secretary, the Applicant may submit any strategy, plan or program required by this consent on a staged basis.	Section 1.3	The Secretary's approval for staging of this plan has already been obtained.
A15	If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program	Section 1.3	This LSP will be updated and completed in stages as described in Section 1.3. This consolidated iteration of the LSP details the common and individual lighting for the MPE Site. As outlined in Section 1.3.3, this LSP will be submitted to DPIE one month prior to permanent built surface works and/or landscaping of the next stage.
B140(j)	Prior to commencement of permanent built surface works and/or landscaping, or as otherwise agreed by the Secretary, an Urban Design and Landscape Plan (UDLP) must be prepared. The UDLP must be prepared by a suitably qualified and experienced person(s), in consultation with the relevant council(s). The UDLP must be approved by the Secretary in consultation with the NSW Government Architect. The UDLP must present an integrated urban and landscape design for the development, and must include, but not be limited to: …	Section 1.5	This LSP has been prepared as part of the UDLP. This LSP has been prepared by suitably qualified and experienced persons as shown on the cover page. This LSP has been prepared in consultation with the relevant council(s), as outlined in Section 1.5. This LSP will also be approved by the Secretary in consultation with the NSW Government Architect.

CoC	Requirement	Document Reference	How Addressed
	(j) the sub-plans identified in condition B141.		

The Final Compilation of Mitigation Measures (FCMMs) were prepared as part of the consolidated assessment clarification responses issued to DPIE on 10 November 2017 (Arcadis 2017). A list of the FCMMs as relevant to the operational lighting and how they have been complied with in this plan are provided in Table 1-3.

Table 1-3 Final Compilation of Mitigation Measures (FCMMs)

FCMM	Requirement	Document Reference
8C	Light for the Amended Proposal would be designed to minimise any direct light spill and would comply with the requirements of *Australian Standard AS4282-2019 – Control of the Obtrusive Effects of Outdoor Lighting*.	Section 3

The Commonwealth Mitigation Measures (CMM) which are relevant to this plan are detailed in Table 1-4.

Table 1-4 Commonwealth Mitigation Measures (CMMs)

Issue	Requirement	Document Reference
Light Spill	Lighting of the Principal proposal will be designed to meet the requirements of the Australian Standards: 1. *AS4282-2019 Control of the Obtrusive Effect of Outdoor Lighting.* 2. *AS1158.3.1 Lighting for roads and public spaces – Pedestrian area (Category P) lighting – Performance and design requirements*	Section 3

The Revised Statement of Commitments (RSoC) includes the most recent compilation of SIMTA commitments to mitigate the environmental impacts, monitor the environmental performance and/or achieve a positive environmentally sustainable outcome. These RSoC (June 2017) were presented in the Moorebank Precinct East – Concept Plan Modification 2 Response to Submissions. The RSoC that are relevant to this plan are identified in Table 1-5.

Table 1-5 Revised Statement of Commitments (RSoC)

RSoC	Requirement	Document Reference
Visual and Urban Design	The Proponent will use lighting which is in accordance with *Australian Standard AS4282-2019 "Control of Obtrusive Effect of Outdoor Lighting".* The height of permanent light poles will be a maximum of 40 metres and reduced in height, where possible, to minimise potential light spill while maintaining appropriate safety standards.	Section 2.2 Section 3.1

1.5 Consultation

This LSP has been prepared in consultation with Liverpool City Council (LCC), DPIE and GANSW as outlined in Table 1-6. Supplementary information to support the consultation undertaken is included in Appendix 0A of this subplan, and Appendix 0F of the UDLP document.

Table 1-6 Consultation summary.

Agency	Date	Person Contacted	Comment	Status
LCC	**AREA 1**			
	14/08/2018	LCC Representative	Draft UDLP and UDLP sub-plans emailed for review and comment	Closed
	14/08/2018	LCC Representative	Email requesting a meeting	Closed
	17/09/2018	LCC Representative	Email requesting a phone call	Closed
	21/09/2018	SIMTA	Email requesting a phone call regarding clarification on CoC A22, A23 and A24, as they relate to the above management plans	Closed
	02/10/2018	LCC Representative	Email requesting an update on progress of review	Closed
	03/10/2018	SIMTA	Email with reviewed plan, requesting feedback before finalisation	Closed
	26/11/2018	LCC Representative	Email with updated UDLP and response to comments	Closed
	30/11/2018	SIMTA	Email confirming UDLP has been received for review	Closed
	23/01/2019	LCC Representative	Email requesting an update on progress of review	Closed
	23/01/2019	SIMTA	Email confirming review to occur within next week	Closed
	19/02/2019	SIMTA	Meeting request for 05/03/2019	Closed
	04/03/2019	LCC Representative	Meeting minutes sent via email	Closed
	06/03/2019	LCC Representative	Email with meeting minutes from 05/03/2019 meeting	Closed
	AREA 2			
	7/02/2020	LCC Representative	Email (from Aspect Environmental) requesting meeting	Closed
	13/02/2020	LCC Representative	LCC phone call requesting a meeting	Closed
	13/02/2020	LCC Representative	LCC provided UDLP documentation, advised that a meeting may not be required	Closed
	3/03/2020	LCC Representative	Aspect Environmental hand-delivered USB containing Area 2 UDLP documents to LCC. Phone call from LCC to confirm receipt of the USB, and to clarify request for comments in relation to Area 2	Closed
	4/03/2020	LCC Representative	Phone call and follow up email requesting an update on progress of review	Closed

Agency	Date	Person Contacted	Comment	Status
	10/03/2020	LCC Representative	Phone call requesting an update on progress of review, meeting suggested	Closed
	18/03/2020	LCC Representative	Phone call requesting an update on progress of review	Closed
	25/03/2020	LCC Representative	Phone call requesting an update on progress of review	Closed
	1/04/2020	LCC Representative	Phone call requesting an update on progress of review	Closed
	2/04/2020	LCC Representative	Council contacted Aspect Environmental to advise that LCC were preparing a compliance matrix table to communicate their concerns or issues, and which would be provided as soon as possible	Closed
	16/04/2020	LCC Representative	LCC provided compliance matrix table to Aspect Environmental regarding concerns and comments	Closed
	1/05/2020	LCC Representative	Aspect Environmental provided response to LCC comments and concerns	Closed
	13/05/2020	LCC Representative	LCC provided email confirmation that Council has assessed all conditions in relation to Area 2 and deem the UDLP to be satisfactory	Closed
	CONSOLIDATED (including AREAS 3 to 6)			
	26/06/2020	LCC Representative	Consolidated UDLP documentation for MPE Site provided to LCC for review and comment in relation to Areas 3 to 6	Closed
	6/07/2020	LCC Representative	LCC email confirming that Consolidated UDLP documentation received for comment	Closed
	7/07/2020	LCC Representative	Follow up email and phone call, to brief on Consolidated UDLP documentation	Closed
	6/08/2020	LCC Representative	Email requesting an update on progress of review	Closed
	7/08/2020	LCC Representative	Email confirmation from LCC that review is in progress	Closed
	27/08/2020	LCC Representative	Phone call and email requesting an update on progress of review	Closed
	9/09/2020	LCC Representative	Phone call and email requesting an update on progress of review	Closed
	11/09/2020	LCC Representative	Email confirmation from LCC that review is in progress	Closed

Agency	Date	Person Contacted	Comment	Status
	28/09/2020	LCC Representative	LCC provided comments regarding the Consolidated UDLP	Closed
	16/10/2020	LCC Representative	Aspect provided response to Council comments	Closed
GANSW	**AREA 1**			
	28/08/2018	DP&E (on behalf of GANSW)	Presentation on UHIMS and UDLP at DP&E office	Closed
	05/09/2018	DP&E (on behalf of GANSW)	Draft plan emailed for review and comment	Closed
	18/10/2018	SIMTA	Email with table of review comments	Closed
	Various	Various	DP&E fortnightly meetings and emails discussing comments	Closed
	6/12/2018	DP&E (on behalf of GANSW)	Email with updated drawings and figures	Closed
	22/01/2019	DP&E (on behalf of GANSW)	Presentation on UDLP	Closed
	18/04/2019	DP&E (on behalf of GANSW)	Email updated UDLP and UDLP sub plans	Closed
	31/03/2020	DPIE (on behalf of GANSW)	Updated UDLP provided to DPIE as a result of amendments to the design of OSD 9 and resulting revisions to landscape design	Closed
	5/06/2020	DPIE (on behalf of GANSW)	DPIE – approval of updated Area 1 UDLP, excluding SSD 7628 CoC B140(e)(vi)	Closed
	20/08/2020	DPIE (on behalf of GANSW)	Show Cause letter received by Qube regarding compliance with SSD 7628 CoC B140(e)(vi) for Area 1	Closed
	8/09/2020	DPIE (on behalf of GANSW)	Aspect lodged SSD 7628 MOD 4 application with DPIE regarding Area 1 exception to CoC B140(e)(vi) – car parking landscaping	Waiting response from DPIE/GANSW
	28/10/2020	DPIE (on behalf of GANSW)	Teams meeting with DPIE to discuss SSD 7628 MOD 4 application	Closed
	AREA 2			
	6/08/2018	DPIE (on behalf of GANSW)	Meeting with DPIE, Aspect Environmental, Arcadis and Tactical Group to discuss issues to progress MPE UDLP	Closed
	27/02/2020	DPIE (on behalf of GANSW)	Meeting between DPIE and Aspect Environmental to update UDLP progress	Closed

Agency	Date	Person Contacted	Comment	Status
	14/05/2020	DPIE (on behalf of GANSW)	UDLP documentation for Area 2 provided to DPIE (on behalf of GANSW)	Closed
	19/06/2020	DPIE (on behalf of GANSW)	DPIE sent RFI providing GANSW/DPIE comments for LVMSP and LSP for Area 2.	Closed
	25/06/2020	DPIE (on behalf of GANSW)	DPIE sent RFI providing GANSW/DPIE comments for SSP for Area 2.	Closed
	7/07/2020	DPIE (on behalf of GANSW)	Email requesting an update on provision of remainder of comments; advised by DPIE that comments forthcoming	Closed
	9/07/2020	DPIE (on behalf of GANSW)	DPIE sent RFI providing GANSW/DPIE comments for UDLP, CPAFSP and EOMBASP for Area 2.	Closed
	31/07/2020	DPIE (on behalf of GANSW)	UDLP documentation for Area 2 updated and/or response provided to address DPIE/GANSW comments	Closed
	3/08/2020	DPIE (on behalf of GANSW)	Follow up phone call to confirm receipt of updated UDLP documentation	Closed
	3/08/2020	DPIE (on behalf of GANSW)	Additional access to UDLP documentation requested by DPIE and provided by Aspect, for DPIE staff	Closed
	12/08/2020	DPIE (on behalf of GANSW)	UDLP, EOMBA and CPAFSP documentation for Area 2 updated and response provided to address DPIE/GANSW comments	Closed
	4/09/2020	DPIE (on behalf of GANSW)	DPIE – approval of updated Area 1 and Area 2 UDLP, excluding SSD 7628 CoC B140(e)(vi) for Area 1	Closed
	CONSOLIDATED (including AREAS 3 to 6)			
	26/06/2020	DPIE (on behalf of GANSW)	Consolidated UDLP documentation for MPE Site provided DPIE (on behalf of GANSW)	Waiting response from DPIE/GANSW
	30/06/2020	DPIE (on behalf of GANSW)	DPIE confirmed by email that Consolidated UDLP documentation received for consultation and comment	Closed
	7/07/2020	DPIE (on behalf of GANSW)	As requested by DPIE, link to documentation sent to GANSW independent reviewer	Closed
	8/07/2020	DPIE (on behalf of GANSW)	Follow up phone call and briefing with GANSW independent reviewer	Closed

Agency	Date	Person Contacted	Comment	Status
	8/10/2020	DPIE (on behalf of GANSW)	Phone call and email requesting an update on progress of review; DPIE advised review process underway	Closed
	21/10/2020	DPIE (on behalf of GANSW)	Phone call and email requesting an update on progress of review	Closed
	21/10/2020	DPIE (on behalf of GANSW)	Comments regarding Consolidated UDLP documentation provided by DPIE/GANSW	Closed
	4/11/2020	DPIE (on behalf of GANSW)	Updated Consolidated UDLP documentation provided to DPIE/GANSW for assessment	Waiting response from DPIE/GANSW

2 LIGHTING DESIGN

The lighting design is to enable vehicle and pedestrian traffic to move around the MPE Site during periods of low light while providing safety and security.

2.1 Site Description

2.1.1 Urban Context

The Project is located approximately 2.5 km south of the Liverpool City Centre, 800 m south of the Moorebank Avenue/M5 Motorway interchange and one kilometre to the east of the Southern Sydney Freight Line providing convenient access to and from the site for rail freight (via a dedicated freight rail line) and for trucks via the Sydney Motorway Network.

A number of residential suburbs are located in proximity to the Project Site including:

- Wattle Grove - 360m to the north-east
- Moorebank - 1300m to the north
- Casula - 820m to the west
- Glenfield - 1830m to the south-west.

The majority of land surrounding the Project is owned and operated by the Commonwealth and comprises:

- the MPW Site, formerly the School of Military Engineering, on the western side of Moorebank Avenue directly adjacent to the MPE Site (subject to the MPW Concept Plan Approval)
- the Holsworthy Military Reserve, to the south of the MPE Site on the southern side of the East Hills Rail Corridor, which is owned and operated by Sydney Trains
- residual Commonwealth Land (known as the Boot Land), to the east of the MPE Site between the site boundary and the Wattle Grove residential area.

The area immediately south of the Project, known as the 'Southern Boot Land', includes an existing rail spur within heavily vegetated remnant bushland. The Southern Boot Land to the south of the Project and forming part of the MPE Stage 1 Site includes a range of vegetation, varying from remnant bushland to the north-east of the Sydney Trains East Hills Rail Corridor.

Refer to Figure 1-1 for relationship between the residential properties and the Project Site.

2.2 Design Specifications

Lighting across the MPE Precinct will be standardised and has been designed and installed to ensure compliance with *AS 4282-2019 - Control of the obtrusive effects of outdoor lighting* and *AS/NZS1158.3.1 Lighting for roads and public spaces – Pedestrian area (Category P) lighting – Performance and design requirements,* meaning that lighting will be mounted, screened and directed in a manner that does not create a nuisance to surrounding properties, the Boot Land or the public road network. Notwithstanding, the following sections provide further details on the types of lighting in each area of the MPE Precinct.

Section 2.2 of the Signage Subplan (SSP) provides the following design specifications in relation to illumination of signage throughout the MPE Stage 2 Project:

- No general advertising and moving or flashing signs will be used
- Illuminated building signage will not be east or south facing, instead they will face the warehouses themselves
- Internally illuminated signs are not permitted.

Relevant signage drawings for Area 1 (PREC-RCG-AR-DWG-ASK-109) and Area 2 (W3W4-NTT-AR-DWG-0101, WHP5-RCG-AR-DWG-UDLP1 and WHP5-RCG-AR-DWG-UDLP2) are provided in Appendices 1 and 2 of the SSP which demonstrate signage locations and corresponding proximity to surrounding features and infrastructure on MPE.

Lighting associated with mobile transitory lighting (such as forklifts and vehicles) will generally have fixed downward facing lighting which is generally close to the ground, unlike the elevated pole mounted and warehouse mounted luminaires. For this reason, mobile transitory lighting is considered to have no additional light spill impacts.

2.2.1 Area 1

2.2.1.1 Internal Roads / Share paths

Lighting for the internal road of Warehouse 1 will be provided in six different locations, and will be provided in three different locations along the north share path, to allow for 24-hour operations (refer to Appendix 1). The lighting will be provided with the use of solar light towers, which have a luminosity of 20,000 lumens and a beam angle of 40°.

The lighting is designed to reduce light spill and mitigate the visual impact when viewed from the residential areas. The pole positions, luminaire mounting heights, luminaire selection, shielding and luminaire aiming angles have been derived to eliminate any direct light spill from Area 1 (refer to Figure 2-1). Light spill modelling determined the Upward LOR to be between 0% and 3%, which is in accordance with Australian Standard *AS4282-2019 Control of Obtrusive Effects of Outdoor Lighting*.

The solar light towers located at the internal roads and share paths will have a height of around 6.5 m and will provide a consistent spread of lighting throughout Area 1. This is the maximum mast height for the solar light towers, which will provide an even lighting spread across Area 1 and is low enough to not cause any light spill issues.

2.2.1.2 Common and Individual Lighting

Lighting will be located on Warehouse 1 and throughout the warehouse yard (including the carpark). The individual lighting for the warehouse yard will align with work health and safety standards for lighting to ensure safety and security for those accessing Warehouse 1. The lighting will be located at the following:

- access – back, driveway and side
- access area – front
- awning - back and front
- carpark
- hardstand - back and front
- landscape area - east
- multi-tenant user road
- weighbridge.

The under-awning lights, building mounted flood lights and pole lights will be controlled by a timed clock, set to come off and on at the scheduled times. The security lights will be illuminated for all hours of darkness. The pole heights generally range from 6 m to 12 m and will be limited to 13.5 m to provide consistent lighting throughout Area 1, including the car park. Lights positioned in the warehouse yard will not exceed 13.5 m in height and will be directed downwards, using shielded fittings. The pole lights will have a beam angle of 10° and will consist of LED lights. Pole heights, pole light fittings and building mount fitting tilt angles are referenced on Drawing E002 found in Appendix 1.

The common and individual lighting for Warehouse 1 will consist of various luminaire schedules and the following types of lighting:

- 12 x Nikkon Hawk 300W FN MID BODY
- 27 x Nikkon Lite-Focus Per 150W 130-100 deg
- 12 x Nikkon Zeal T3 – 130 W r
- 24 x Nikkon Zeal T4 – 230 W – r
- 11 x Nikkon Zeal T3 – 80 W r

- 3 x Nikkon Zeal T3 – 230 W - r
- 2 x Nikkon Zeal FN – 230 W - r
- 1 x Nikkon Zeal T4 – 130 W – r.

The light fitting types nominated are also reflected in Drawing E000 found in Appendix 1. The under-awning fitting (C1) for Warehouse 1 is the Phillips Green perform 155W Wide Beam.

2.2.2 Area 2, Area 3 and Area 5

2.2.2.1 Internal Roads / Share paths

Appendix 2 (Drawing No. PIWE-ULT-EL-DWG-0102) provides details on the location of lighting on the internal roads and share paths within Area 2.

The tenanting requirements or detailed design for Area 3 and Area 5 have not yet been confirmed, however lighting within these Areas will be consistent with Area 1 and Area 2, and in accordance with the requirements of this sub plan.

Lighting for the multi-user tenant access roads and internal roads will be provided in numerous locations to allow for 24-hour operations. The lighting will be pole mounted with a high efficiency LED luminaire.

The lighting has been designed to reduce direct light spill which mitigates the visual impact when viewed from the residential areas and the Boot Land. This is as a result of appropriate selection and implementation of the pole positions, luminaire mounting heights, luminaire selection, shielding and luminaire aiming angles.

2.2.2.2 Common and Individual Lighting

Lighting will be located on Warehouses 2 to 8 and throughout the warehouse yards, including the carparks. The individual lighting for the warehouse yards will align with work health and safety standards for lighting to ensure safety and security for those accessing warehouses. Lighting will be located in the following areas:

- awnings
- carparks
- fire truck access
- hardstand areas
- pedestrian pathways
- perimeter of Warehouses 2, 3, 4, 6 and 7 – east and west.

External lighting will be controlled using a programmable lighting control system which has a timed clock that can turn the lights on and off at scheduled times, a photoelectric sensor and an override switch. The external lighting within the warehouse areas will be mounted at a height ranging from 3 m to 9 m, will be directed downwards and will use specific cut off luminaires which would eliminate upward light spill above the horizontal. The lights will have a tilt of between 0° to 20° and will consist of high efficiency and quality LED luminaires.

Appendix 2 Drawing No. MBP-WH34EX-R05-180719 shows the common and individual lighting for Warehouses 3 and 4 which will comprise various luminaire schedules and the following types of lighting:

- 24 x Nikkon Cervelli S5 FL MP 200W ASY
- 4 x Nikkon Cervelli S5 FL MP 150W ASY
- 3 x Nikkon Cervelli S5 FL MP 300W
- 39 x Nikkon Lite Focus Per 250W 130 – 100 deg
- 18 x Nikkon Zeal T4 – 160 W
- 27 x Nikkon Wallpack 30W (ASY)
- 6 x Campaq – 30W Type 2
- 6 x Campaq – 100W Type 2.

Although common and individual lighting needs for Warehouse 2, 6 and 7 cannot be confirmed at this stage, they are likely to be consistent with the above and will be in accordance with this sub plan.

Appendix 2 Drawing No. MBP-WH5EX-RO1-311019 shows the common and individual lighting for Warehouse 5 which will comprise various luminaire schedules and the following types of lighting:

- 17 x Nikkon Cervelli S5 FL MP 150W ASY
- 60 x Nikkon Lite Focus Vulcan 150W 60 deg
- 12 x Nikkon Zeal T3 – 130 W
- 8 x Nikkon Zeal T4 – 130 W
- 25 x Campaq – 100W Type 4
- 3 x Campaq – 30W Type 2
- 14 x Nikkon Wallpack 30W (ASY).

Although common and individual lighting needs for Warehouse 8 cannot be confirmed at this stage, they are likely to be consistent with that of Warehouse 5.

2.2.3 Area 4

2.2.3.1 Internal Roads / Share paths

The detailed design and tenanting requirements within the freight village are not yet finalised. However, lighting will be designed to be consistent with other areas of the site and minimise light spill and visual impacts to surrounding areas.

As for Area 1, lighting will be provided in locations along the north share path, to allow for 24-hour operations. The lighting will be designed to reduce light spill and mitigate the visual impact when viewed from residential areas. Pole positions, luminaire mounting heights, luminaire selection, shielding and luminaire aiming angles have been derived to eliminate any direct light spill, as per Area 1 (refer to Figure 2-1).

Any solar light towers located at the internal roads and share paths will provide a consistent spread of lighting, consistent with Area 1.

2.2.3.2 Common and Individual Lighting

Common and individual lighting in Area 4 will be subject to the individual needs of future tenants. As for other Areas of the site, individual lighting will align with work health and safety standards for lighting to ensure safety and security for those accessing the freight village. The lighting will be located at minimum at:

- access points – front, back, driveway and side
- awnings - back and front
- carparks
- hardstand areas
- landscape areas
- internal roads and shared paths.

The under-awning lights, building mounted flood lights and pole lights will be controlled by a timed clock, set to come off and on at the scheduled times. The security lights will be illuminated for all hours of darkness. The pole heights generally range from 6 m to 12 m and will be limited to 13.5 m to provide consistent lighting throughout Area 4 car park areas.

Types of lighting at this stage cannot be confirmed, however will be consistent with those for other Areas.

2.2.4 Area 6

Area 6 is the Moorebank Avenue upgrade area. Lighting along the road and associated shared pathways will be designed in accordance with Transport for NSW (TfNSW) requirements and may be subject to their approval.

2.3 Design Management Measures

2.3.1 Area 1

The lighting will be installed and implemented throughout Area 1 to reduce light spill and mitigate visual impact on the residential properties from the Project Site. The following measures will be implemented:

- Lighting will be positioned to face downwards to eliminate upward light spill
- Lighting will use shielded fittings
- Lighting will be positioned to provide uniform lighting across the Project Site
- Lighting will be installed to avoid over lighting
- Lighting will have photoelectric sensors or be on a timer so lighting will only be on during night hours
- Solar light towers will be comprised of four 50 watt (W) LED lights for each solar light tower, which reduces the energy demand by a factor of 10 for external lighting when using LED lights
- Floodlights will be asymmetric beams or LED lights with fitted hoods to provide even light distribution over the areas intended to be lighted
- Position of lighting and mounting height will be adjusted so as to avoid light being directed towards reflective surfaces
- Filters will be applied to achieve warm white colours on the solar lighting.

2.3.2 Area 2, Area 3, Area 4 and Area 5

The lighting will be installed and implemented throughout Areas 2 to 5 to reduce light spill and mitigate visual impact on the residential properties from the Project Site. The following measures will be implemented:

- Lighting will be positioned to face downwards to eliminate upward light spill
- Lighting will use shielded fittings
- Lighting will be positioned to provide uniform lighting across the Project site
- Lighting will be designed and installed to avoid over lighting i.e. the design combines mounting height and shielding to achieve adequate and comprehensive light coverage
- A lighting control system will be implemented with programmable time clocks and a photoelectric sensor so lighting will only be on when required
- Lighting for warehouses/the freight village shall be designed to use high energy efficient LED lights
- Position of lighting and mounting height will be adjusted so as to avoid light being directed towards reflective surfaces
- Main floodlights for warehouses will use asymmetric beams, warm colours will be 4000k, within the industry standard for external lighting at warehouse facilities.

2.3.3 Area 6

Area 6 is the Moorebank Avenue upgrade area. Lighting along the road may be designed in accordance with TfNSW requirements and subject to their approval.

2.4 Light Spill Assessment

In accordance with CoC B141(b), light spill assessments have been conducted to demonstrate the light spill associated with the development.

2.4.1 Area 1

2.4.1.1 Internal Roads / Shared Paths

The light spill of the solar light towers was modelled to demonstrate compliance with the relevant standards discussed in Section 3. As the solar lights are located closest to the perimeter of the Project Site and the Area 1 boundary, compliance of the solar light towers with the standards represents compliance for the broader lighting strategy for Area 1. Each solar light tower consists of four 50 W LED lights. The position of solar light towers around Area 1 is shown in Appendix A2.

An isolux plot for the solar light towers is shown in Figure 2-1. The isolux plot shows the following:

- distance of 10 m results in an approximate lux extent of 50
- distance of 20 m results in an approximate lux extent of 13
- distance of 30 m results in an approximate lux extent of 5
- distance of 40 m results in an approximate lux extent of 2
- distance of 50 m results in an approximate lux extent of 1.

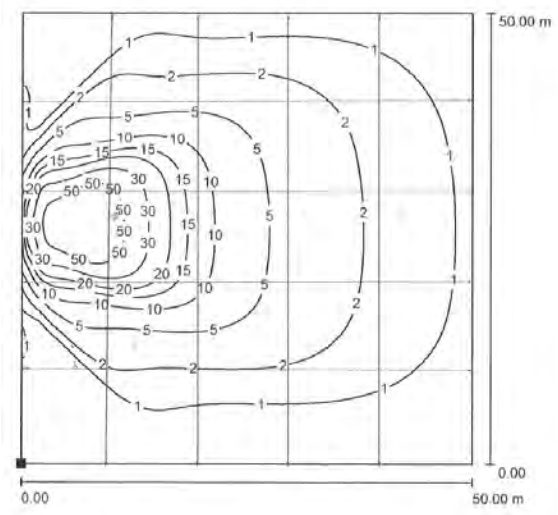


Figure 2-1 Isolux Plot

The solar light towers are the highest intensity lights that have been modelled for Area 1 and show that the lux extent from each solar light tower does not leave the Project Site boundary and is contained within Area 1 (refer to Appendix 1). In addition, the warehouse yard lighting for Warehouse 1 is not anticipated to cause a nuisance to surrounding properties due to landscape screening along the perimeter of Warehouse 1 and Moorebank Avenue, shielding of other site buildings and the orientation of the loading docks in a north-south direction which will limit impacts to Moorebank Avenue to the west and residential areas to the east and west.

As such, the assessment concludes that there will be little to no effect on adjacent properties and the environment through appropriate selection of light source, luminaire make and direction as well as pole positions and height from static site lighting.

2.4.1.2 Common and Individual Lighting

A light spill assessment (refer to Appendix 1) has been conducted for the common and individual lighting associated with Warehouse 1. The light spill assessment, shown as plan view, outlines the overall lighting installation for Warehouse 1 in relation to the Boot Land and residential areas. The light spill simulation does not consider any obstruction in the form of surrounding buildings or trees that may be present. All nearby buildings are industrial and/or commercial in nature and the residential properties are located at a considerable distance away from the development (refer to Appendix 1).

The lighting installation shows light being controlled within the site boundary. As such, considering only the lighting on site, no adverse effect in form of light spill can be seen on Boot Land or residential properties as these areas are completely dark as shown on the light spill assessment (Appendix 1).

The vertical spill light levels on residential boundaries is negligible.

2.4.2 Area 2

2.4.2.1 Internal Roads / Shared Paths

The light spill associated with Area 2 pole mounted lighting within shared paths and internal roads has been modelled to demonstrate compliance with the relevant standards discussed in Section 3.

Appendix 2, Drawing No. PIWE-UTL-EL-DWG-0102 shows the positions of the light towers around Area 2, while Drawing No. 1601, shows the lux extent of the lighting design of Area 2.

These drawings show that the light spill from lighting along the multi-tenant user access road will be mitigated through the appropriate design management measures detailed in Section 2.3 thereby minimising nuisance to surrounding residential properties and the Boot Land.

2.4.2.2 Common and Individual Lighting

A light spill assessment has been conducted for the common and individual lighting associated with Warehouses 3 and 4 (Appendix 2 Drawing No. MBP-WH34EX-R05-170220) and Warehouse 5 (Appendix 2 Drawing No. MBP-WH5EX-R01-311019).

The light spill assessments outline the overall lighting installation for Warehouses 3, 4 and 5, but does not consider any obstruction in the form of surrounding buildings or trees that may be present. All nearby buildings are industrial and/or commercial in nature and the residential properties are located at a considerable distance away from the development (refer to Appendix 2).

The light spill assessment shows that light is being contained within the site boundary. As such, considering only the lighting on site, no adverse effect from light spill can be seen on Boot Land or residential properties as these areas are completely dark as shown on the light spill assessments (Appendix 2).

The vertical spill light levels on residential boundaries is negligible.

2.4.3 Area 3, Area 4 and Area 5

The tenanting needs and detailed design for warehouses within Areas 3 and 5 and the freight village (Area 4) are not finalised at this stage. At the development application stage for these Areas, lighting design for internal roads/shared paths and common lighting, shall be consistent with that for Area 1 and Area 2, and this LSP, to mitigate impacts of light spill on surrounding residential properties and the Boot Land.

As discussed earlier, boundary screen planting will further assist in mitigating any adverse impacts from lighting.

2.4.4 Area 6

Area 6 is the Moorebank Avenue upgrade area. Lighting along the road may be designed in accordance with TfNSW requirements and subject to their approval. Lighting will be designed to mitigate adverse light spill impacts on surrounding sensitive receivers.

3 COMPLIANCE WITH RELEVANT LIGHTING STANDARDS

3.1 Compliance with AS 4282:2019

AS 4282-2019 – Control of the obtrusive effects of outdoor lighting includes recommended limits for the relevant lighting parameters. Table 2.1 in AS 4282-2019 outlines recommended maximum values of illuminance in vertical plane for commercial areas which equal to 25 lux for pre-curfew hours and 4 lux for curfew hours.

3.1.1 Area 1

The lux extent (≥1 lux) from each solar light tower does not leave the Project Site boundary and is generally contained within Area 1. As such, the potential impact of light spill to residential properties is within the acceptable criteria specified in AS 4282.

The obtrusive light calculations for the warehouse lighting are provided in Appendix 1. The obtrusive light calculations have been demonstrated to comply with AS 4282 requirements for post-curfew requirements for an industrial area, given that the development is operational for 24 hours a day, 7 days a week. These calculations are presented for a general spill light evaluation only. As such, the obtrusive light limits set in AS 4282 apply only to nearby residents in the form of properties such as houses, hotels and hospitals, and additionally to users of nearby roads, with obtrusive light calculations required to be assessed on property boundary of the resident being affected by obtrusive light.

The lighting calculations detailed in the design are in accordance with AS 4282 as stated in Appendix 1.

3.1.2 Area 2

Appendix 2 (Drawings No. MBP-WH34EX-R05-180719 and MBP-WH5EX-ROI-311019) provides the obtrusive lighting calculations for Warehouses 3 and 4, and Warehouse 5 respectively.

Whilst the lux extent from some of the pole mounted lights may cause light to leave the Project Site along the multi-tenant user access road adjacent to the boundary of the Project Site, the impact of light spill to residential properties is considered to be within the acceptable criteria specified in AS 4282.

The obtrusive light calculations demonstrate compliance with AS 4282 for post-curfew requirements for an industrial area, given that the development is operational for 24 hours a day, 7 days a week. These calculations are presented for a general spill light evaluation only.

As such, the obtrusive light limits set in AS 4282 apply only to nearby residents in the form of properties such as houses, hotels and hospitals, and additionally to users of nearby roads, with obtrusive light calculations required to be assessed on property boundary of the resident being affected by obtrusive light.

The Warehouse 3, 4 and 5 Design Certificate (Appendix 2) confirms that the lighting calculations detailed in the design are in accordance with AS 4282.

3.1.3 Area 3, Area 4 and Area 5

The tenanting needs and detailed design for warehouses within Area 3 and Area 5 and the freight village (Area 4) are not finalised at this stage. At the development application stage for these Areas, lighting design for internal roads/shared paths and common lighting, shall be consistent with that for Area 1 and Area 2 and this LSP. Lighting design shall be completed in accordance with requirements of AS 4282 to maintain light spill and obtrusive light calculations that are within the acceptable criteria. At the time of the development application stage, this should be supported with a Design Certificate confirming compliance with AS 4282, as has been provided for earlier stages of development.

Provided the lighting design for these areas is consistent with that for Area 1 and Area 2, and this LSP it is anticipated that lighting will have minimal adverse impacts on surrounding sensitive receivers and will predominately be limited to within the bounds of the site.

3.1.4 Area 6

Area 6 is the Moorebank Avenue upgrade area. Lighting along the road may be designed in accordance with TfNSW requirements and subject to their approval. Lighting will be designed to mitigate adverse light spill impacts on surrounding sensitive receivers.

3.2 Compliance with AS/NZS 1158:2005

3.2.1 Area 1

The solar lighting solution is based on Roads and Maritime Services approved light structures, which are not covered under *AS/NZS 1158:2005 Australian and New Zealand Lighting for roads and public spaces, Part 1.1 Lighting for roads and public spaces – Vehicular traffic (Category V) lighting* & *Part 3.1: Pedestrian area (Category P) lighting – Performance and design requirements – for roadways and carpark lighting.*

The external lighting for Warehouse 1 has been designed in accordance with AS 1158.3.1 as stated on the Lighting Drawing for Warehouse 1 (MBP-EXT-R09-230419) in Appendix 1.

3.2.2 Area 2, Area 3, Area 4 and Area 5

The Warehouse 3, 4 and 5 Design Certificate (Appendix 2) confirms that the external lighting for Area 2 (Drawing No. 1601 Rev B) has been designed in accordance with AS1158.3.

The tenanting needs and detailed design for warehouses within Area 3 and Area 5 and the freight village (Area 4) are not finalised at this stage. At the development application stage for these Areas, lighting design shall be consistent with that for Area 1 and Area 2 and this LSP, and hence will be in accordance with AS 1158.3.

At the time of the development application stage, this should be supported with a Design Certificate confirming compliance with AS 4282, as has been provided for earlier stages of development.

3.2.3 Area 6

Area 6 is the Moorebank Avenue upgrade area. Lighting along the road may be designed in accordance with TfNSW requirements and subject to their approval. Lighting will be designed to mitigate adverse light spill impacts on surrounding sensitive receivers.

Appendix 0A – Evidence of Consultation

Planning, Industry & Environment

Mr Michael Yiend
Development Director
Qube Property Development Management Services
Level 27, 45 Clarence Street
Sydney NSW 2000

04/09/2020

Dear Mr Yiend

Moorebank Precinct East – Stage 2 (condition B140, SSI 7628)
Urban Design and Landscape Plan

I refer to your submission dated 14 May 2020 requesting approval of the Urban Design and Landscape Plan (UDLP), Rev 9B dated 12 August 2020, and Sub Plans for Area 1 and Area 2 only in accordance with condition B140 of SSI 7628. I also acknowledge your response to the Department's review comments and requests for additional information. I note that these plans have been staged under condition A14 of SSD 7628.

The UDLP for Area 1 and Area 2 and associated Sub Plans have been reviewed and I note that these plans:

- have been reviewed by SIMTA and no issues have been raised
- have been prepared in consultation with Liverpool City Council
- have been reviewed by the Government Architect of NSW.

As nominee of the Planning Secretary, I approve the following documents under condition B140 and B141 for Area 1 and Area 2 only:

Document	Revision
Urban Design and Landscape Plan	Rev 9C, dated 12 August 2020
Landscape and Vegetation Management Sub Plan	Rev 6C, dated 31 July 2020
Lighting Sub Plan	Rev 6C, dated 31 July 2020
Cycling and Pedestrian Access and Facilities Sub Plan	Rev 5C, dated 12 August 2020
Employee Outdoor Meal Break Area Sub Plan	Rev 5C, dated 12 August 2020
Signage Sub Plan	Rev 5C, dated 31 July 2020

Please note that this approval does not extend to condition B140 (e)(vi) for Area 1, as this matter is still outstanding and has been referred to DPIE Compliance for review. I note that Area 2 meets the requirements of condition B140 (e)(vi).

I also note that the approved development layout plan has been amended (Reference: SSS2-RCG-AR-SKC-159, dated 11-08-2020). I approve the amended development layout under condition A22. I remind you that you must seek approval for any future changes made to the development layout of the site under condition A22.

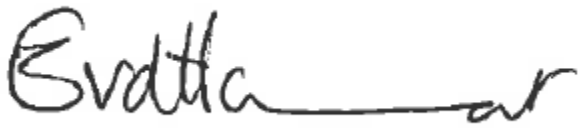
You are also reminded that in my letter dated 24 April 2020, I approved the UDLP for MPE Stage 1 subject to you providing additional compensatory landscaping on MPE Stage 2. You must detail how this will be achieved in future stages of the MPE Stage 2 UDLP.

Further, in the subsequent consolidated UDLP and Sub Plans for the MPE Stage 2 site, you must satisfy all the requirements of condition B140 for the site overall, and must demonstrate that requirements not achieved in Areas 1 and 2 have been achieved overall. A copy of the review table containing outstanding matters will be provided to you for your reference.

Please note, if there are any inconsistencies between the approved documents and the conditions of consent, then the requirements of the conditions of consent prevail.

Please ensure that the approved plan is placed on the project website at the earliest convenience. If you wish to discuss the matter further, please contact Jake Shackleton on 8275 1168 or jake.shackleton@planning.nsw.gov.au.

Yours sincerely



Erica van den Honert
Director
Infrastructure Management

As nominee of the Planning Secretary

From: Carolyn stanley
To: Jake Shackleton
Cc: Richard Johnson
Subject: FW: Carolyn Stanley shared "MPE S2 UDLP Area 2 revisions - July 2020" with you
Date: Monday, 3 August 2020 2:56:00 PM
Attachments: image002.png

Good afternoon Jake,

As per my earlier phone call today, I am just checking that you received the following email on Friday in relation to the MPE Stage 2 UDLP. In accordance with DPIE's RFI, responses to DPIE/GANSW comments, and the updated Lighting Subplan, Signage Subplan and Landscape Vegetation Management Subplan for Area 2 were provided to DPIE. Additionally, the documents were uploaded to the DPIE portal on Friday afternoon.

The remainder of the MPE Stage 2 UDLP documentation and responses to DPIE/GANSW comments will be sent through as soon as possible.

Please let me know if you have any trouble accessing the documentation.

Kind regards,

Carolyn Stanley
Associate
M: 0417 192 199

carolyn@aspectenvironmental.com.au

ASPECT
Suite 117,
25 Solent Circuit
Baulkham Hills
NSW 2153
www.aspectenvironmental.com.au

From: Carolyn Stanley (via Dropbox) <no-reply@dropbox.com>
Sent: Friday, 31 July 2020 5:34 PM
To: Carolyn stanley <Carolyn@aspectenvironmental.com.au>
Subject: Carolyn Stanley shared "MPE S2 UDLP Area 2 revisions - July 2020" with you

Hi Carolyn,

Carolyn Stanley (carolyn@aspectenvironmental.com.au) invited you to edit the folder "**MPE S2 UDLP Area 2 revisions - July 2020**" on Dropbox.

Carolyn said:
"RE: MPE Stage 2 UDLP - Area 2 Good afternoon Jake, In accordance with your Requests for Additional information (dated 19 June and 25 June 2020) and in response to comments from DPIE/GANSW, please find attached the revised Lighting Subplan, Landscape Vegetation Management Subplan and Signage Subplan for MPE Stage 2 UDLP for Area 2. Included in this link are pdfs of the revised compiled subplans, as well as responses to DPIE/GANSW comments for each of the subplans, and a tracked changes Word document. Please let me know if you require any further information. Please note that the remaining subplans and UDLP report are currently being updated and will be sent through to DPIE as soon as they are ready. Kind regards, Carolyn Stanley"

Go to folder

Enjoy!
The Dropbox team

B141(b) & (c) – Lighting Sub Plan

- **SSD 7628 Mod 2 was approved on 31 January 2020 which included the removal of the requirement for maximum batters if 1V:4H for OSD 9 UDLP for Area 1 – Rev 8, dated 11/03/20**
- **SSD 7628 Mod 1 includes amendment to allow internally illuminated signs**

Note: Lighting Plan

- **GA didn't comment specifically on Lighting sub-plan (DOC 18/761480) apart from noting that it wasn't provided as part of UDLP (this was their focus)**
- **Most Dwgs in from A2 onwards are upside down**

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
A14	With the approval of the Secretary, the Applicant may submit any strategy, plan or program required by this consent on a staged basis/	Section 1.3	The Lighting Sub Plan (LSP) consists of Warehouse 1 Precinct (W1P) only.	This LSP has been updated in Section 1.3 to include the different stages associated with this plan. The stages of this plan include: • Area 1 – Warehouse 1 including area north of freight village • Area 2 – Warehouse 3, 4 and 5 • Area 3 – Warehouse 6, 7 and 8 • Area 4 – Freight village • Area 5 – Warehouse 2 • Area 6 – Moorebank Avenue Works Section 1.3.2.outlines the following: "Area 1 is the first stage addressed by this LSP and includes Warehouse 1 and the immediate area surrounding Warehouse 1 (excluding the freight village). The detailed plans for future stages of this LSP are anticipated to be provided in multiple submissions as described in Table 1. Each future staged submission will be incremental	Sec 1.3 and Table 1 updated with details of staging of the LSP, noting that the LSP is staged for Area 1. However, there is no formal request for the Secretary's approval to stage the LSP or the UDLP. **1. OUTSTANDING COMMENT:** **Approval to stage the LSP in accordance with condition A14, to be noted in the approval for the UDLP and sub-plans under B140.**	Table 1-2 (Compliance table) states that the Secretary's approval for staging of this plan will be obtained by DPIE through the approval of this plan and will be noted in the approval for the UDLP and sub-plans under B140. Section 1.3 states that this plan will be delivered in stages in accordance with CoC A14 & A15 to allow for the commencement of warehouse construction. Table 1-1 advises of operation commencement as follows: - Area 1 (WH1 and area north of freight village) in Q2 2019, - Area 2 (WH3, WH4 & WH5) in Q2 2020 and - Areas 3-6 are to be confirmed Section 1.3 discusses staging with this Lighting subplan (LSP) with the current version addressing only Areas 1 & 2 that includes warehouses 1 as well as area north of the freight village as well as warehouses 3, 4 & 5. Areas 3 to 6 that includes warehouses 1, 3, 4 & 5 are to be submitted at a future date and include an update of this plan. Section1.3.2 states that this plan was prepared and approved by DPIE prior to commencement of	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
				and present the detailed maintenance and monitoring requirements applicable to that stage." Reference to W1P has also been removed throughout the entire document. As outlined in Section 1.3.3, the trigger for updating this LSP will be submitted one month prior to permanent built surface works and/or landscaping of the next stage.		permanent both Area 1 & 2 which allowed the project to commence construction of warehouses in these areas (warehouses 1, 3, 4 & 5) prior to finalisation of the design for the remainder of the project. **DPIE Comment: Please update - Table 1-1 to reflect accurate operational commencement dates for Areas 1 & 2.** **- Section 1.3.2 to reflect the accurate timing of staged submissions and approvals of this plan.**	Table 1-1 has been updated accordingly and is based on most recent occupation information available. Section 1.3.2 has been updated to accurately reflect the relationship of stages, timing of submissions and approvals of this plan.
A15	If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program.	Section 1.3	The plan is to be staged into Warehouse 1 Precinct, with the LSP – Remainder of the Site will consider the lighting solutions for warehouses in the remainder of the site (including Moorebank Avenue), not previously included in the LSP – W1P. The triggers for updating the LSP are: - Prior to installation of permanent lighting arrangements for the internal roads and sharepaths in W1P, and - Prior to installation of lighting arrangements for the freight village. **Further action required The staging and trigger for this plan are not consistent with what is included in the UDLP. Will the staging of lighting be consistent**	1. See comment above. The staging of this LSP has been updated to be consistent with the UDLP and other UDLP sub-plans. 2. This LSP will be updated following the outcomes of the modification.	Noted as above that stages have been identified in Section 1.3. Section 1.3.2 describes the relationship of stages, noting that the LSP will be updated with a trigger being prior to commencement of permanent built surface works and/or landscaping for each of the remaining warehouses, freight village and Moorebank Avenue works. **2. OUTSTANDING COMMENT:** **Approval letter to note that the plan may need updating following outcomes of modification to the lighting design (backlit signage on site provision).**	Noted as above that stages have been identified in Section 1.3. Section 1.3.2 describes the relationship of stages, noting that the LSP will be updated with a trigger being prior to commencement of permanent built surface works and/or landscaping for each of the remaining warehouses, freight village and Moorebank Avenue works. It is noted that the current Signage subplan (Rev 005B), Section 2.2 states that Illuminated building signage will not be east or south facing, instead they will face the warehouses themselves, resulting minimal expected light spill. This section also commits to internally illuminated signs not being permitted. It is noted that application for SSD 7628 Mod 1 has been submitted to DPIE, includes proposed amendments to signage in MPE to allow internally illuminated signage and is yet to determined.	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
			with the Warehouse 1, Warehouse 1 + Freight Village (update), Remainder of Site proposed? If not, could the relationship to the overall UDLP staging be explained? Further to discussions held in the regular post approvals meeting on 25/02/2019, this plan may need updating following the outcomes of modification to the lighting design (backlit signage on site provision)			**DPIE Comment: Please update this plan to cross reference the Signage subplan (Rev 005B) and relevant sections/drawings including Section 2.2 and Appendix B2 Drawing No. W3W4-NTTAR-DWG-0101)**	Section 2.2 has been updated to include reference to illuminated signage, as detailed within the Signage Subplan. Relevant signage drawings for Areas 1 and 2 have also been referenced within Section 2.2.
B140	Prior to commencement of permanent built surface works and/or landscaping, or as otherwise agreed by the Secretary, and **Urban Design and Landscape Plan (UDLP)** must be prepared. The UDLP must be prepared by a suitably qualified and experienced person(s), in consultation with the relevant council(s). The **UDLP** must be approved by the Secretary in consultation with the NSW Government Architect. The UDLP must present an integrated urban and landscape design for the development, and must include, but not be limited to: … (j) the sub-plans identified in condition B141.	Page ii	The plan has been authored by Shannon Blackmore, and Katrina Nestmann, with checking by Bruce Layzell. It isn't clear what company each author/checker works for, and is assumed to be Arcadis. Bruce Layzell is an experienced lead utilities engineer and has managed the design of electrical services. In the revisions table, the plan has been submitted to Liverpool City Council on the 9/08/2018. Appendix B does not include an evidence of stakeholder consultation with Liverpool City Council (LCC), however the UDLP W1P (Appendix A) includes an email that indicates that the Lighting Sub-Plan was provided to LCC on 14/08/2018. LCC	3. CoC B140(j) has also been added to the compliance matrices in Section 1.4. Section 1.5 has been updated to include the consultation with LCC for the UDLP and UDLP sub plans. Appendix A1 has also been added and includes the evidence of consultation with LCC. The qualifications and experience of the authors, checker and approver are detailed on the cover page. The companies of the authors, checkers and approvers are also detailed on the cover page.	Table 2 has been updated with a reference to B140(j). Section 1.5 has been updated to include consultation with LCC. Evidence of LCC consultation is provided in Appendix A1 and includes LCC full submission, noting that in regard to the CoC B 141 (b) and (c) LCC has requested additional information that includes: - Provide details of how the impact of truck lights on the surrounding area will be mitigated. - Provide details and justification for only installing temporary lighting for share paths and roads at this stage. **3. OUTSTANDING COMMENT:** **- Please update the LSP with evidence of consultation with GANSW and include a discussion about the matters**	Table 1-2 (Compliance table) states that this plan (LSP) has been prepared: - as part of the Urban Design and Landscape Plan (UDLP). - by suitably qualified and experienced persons as shown on the cover page. - in consultation with the relevant council(s), as outlined in Section 1.5. It also states that this LSP will also be approved by the Secretary in consultation with the NSW Government Architect. Section 1.5 states that the LSP has been prepared in consultation with Liverpool City Council per the summary table (Table 1-6) with supplementary information contained in Appendix A1 of this LSP and appendix A1 of the UDLP. Table 1-6 notes consultation was closed with: LCC for: - Area 1 on 6 March 2019 and - Area 2 on 1 May 2020	Area 2 documentation has been reviewed by LCC, and LCC comments have been addressed. Consultation with LCC regarding Area 2 is now deemed closed.

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
			provided comment on the UDLP and Sub-plans but has not indicated any specific concerns with the Lighting Sub-plan. **Further action required Update compliance table to include condition B140 (j), and provide a description of consultation undertaken with Liverpool City Council and the NSW Government Architect. (ensuring that the dates recorded are consistent with the actual consultation undertaken as evidenced in the UDLP). Provide a description of who prepared the plan, their qualifications, and the companies they work for in the table at the front of the document.**		**raised, how they have been addressed and how unresolved matters have been addressed, in accordance with condition A19(c).** **- Please update the LSP to include the responses to the requested information by LCC as mentioned above.**	Government Architect (GANSW) for: - Area 1 on 18 April 2019 and However, Area 2 correspondence is stated as submitted on 5 May 2020 but remains open. Refer Appendix A1 is for Area 1 (WH1) only and comprises: - consultation with GANSW, dated (August 2019), and includes responses to GANSW comments - consultation with LCC (January 2019) includes response to LCC comments. **DPIE Comment: Please update Appendix B2 to include consultation with LCC and include a discussion about the matters raised, how they have been addressed and how unresolved matters have been addressed, in accordance with condition A19(c).**	Appendix B1 has been updated to include the final Area 2 UDLP comments from Council and how the matters raised by Council were addressed, as well as confirmation that LCC has assessed all conditions in relation to Area 2 and deem the UDLP to be satisfactory..
B141(b)	A Lighting Sub Plan to assist in the control of lighting and reduce the visual impact of the 24-hour operational facility when viewed from residents within residential areas within the locality. The Plan must provide an assessment of the location, design specification and impacts of operational lighting associated with the development and measures proposed to	This plan Section 2.1 Section 2.2 Section 2.3	The plan has been prepared to assist in the control of lighting and to reduce the visual impact of the Project site when viewed from residents within residential areas within the locality. **Further action required The plan does not adequately provide an assessment of location, as it doesn't demonstrate the options that were proposed, and why the locations in the plan**	4. Other options were not considered as the lighting needs to be designed in accordance with standards and other lighting options would not located a large distance away to make a difference to the light spill assessment. A light spill assessment has been completed for the shared paths of the warehouses (Appendix A2). A light spill assessment has also been completed for the common and individual lighting for Warehouse 1 (Appendix A2). The light spill assessments	DPIE has reviewed the proponent response and the section 2.4 and notes that Light Spill Assessment has been completed for Internal Roads/Shared Paths and Common and Individual Lighting and the Light Spill Assessments demonstrates show light being controlled within the site boundary. **4. OUTSTANDING COMMENT:** **Include discussion about the relationship of the stage 1 Plan**	Section 1 3 discusses the staging of the plan. It states that it has been staged in accordance with CoCs A14 and A15 to allow for the commencement of warehouse construction. It commits to implementing this plan prior to occupation of Warehouse 1 (WH1) once approved by the Secretary and GANSW within 12 months of the consent. Table 1-1 advises of operation commencement as follows: - Area 1 (WH1 and area north of freight village) in Q2 2019, - Area 2 (WH3, WH4 & WH5) in Q2 2020 and - Areas 3-6 are to be confirmed.	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
	minimise lighting impacts and standardise lighting design within the MPE development. The Plan must be prepared and approved by the Secretary. The Applicant must ensure that the lighting associated with the development:		**were selected. Include a discussion in the plan that addresses each aspect of the condition, with consideration for the whole MPE development, and relationship to future stages (consistent with DPE and GA requests during consultation).**	demonstrate shows light being controlled within the site boundary. Management measures have been proposed in Section 2.3 to minimise lighting impacts and standardise the lighting design. This LSP will be prepared and approved by DP&E as stated in Section 1.2.	**with any future stages of the development (consistent with DPIE and GA), will there be any impact on future stages of the development from current LSP?**	Section 1.3.2 states that this plan was approved by DPIE prior to commencement of surface works and landscaping of Areas 1 & 2 in order for the Project to commence construction of warehouses in these areas. It also states that this allowed the Project to commence construction prior to the finalisation of the design for the remainder of the Project and did not restrict or constrain delivery of a compliant final detailed design across the remainder of the MPE Stage 2 Site. Section 1.3.2 also notes that future staged (for Areas 3-6) is yet to be prepared and submitted with trigger for submission of future updates to this Plan one month prior to permanent built surface works and/or landscaping (Section 1.3.3). Section 2.2 states that the lighting has been designed to comply with *AS4282-2019* and *AS/NZS1158.31* meaning that lighting will be mounted, screened and directed. Section 2.1 details the context of the site and states that the lighting design enables vehicle and pedestrian movement around the Warehouses 1, 3, 4 and 5 during periods of low light while providing safety and security. Compliance Table 1-2 states that lighting assessment is contained in Sections 2.2-2.4 and Appendices A2 & B2. Assessments include Internal roads/shared paths and common and individual lighting and note that the simulation/modelling is worst case scenario as it doesn't consider obstruction surrounds (trees and buildings).	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
						Sections 2.4.1 (Area 1) notes solar lights located closest to property boundary, Boot Land and residential development is considerably distant as shown in Figure 1-1 - which has been omitted. The assessment concludes that there will be little to no effect on adjacent properties and the environment through appropriate selection of light source, luminaire make and direction as well as pole positions and height from static site lighting. Figure 2-1 shows lux levels for solar light towers in an isoplot raning from 50 lux at 10m down to 1 lux at 50m. Appendix A2 drawings details proposed lighting locations and includes MBP-EXT-R14-310719_VIS) PIWE-ARC-EL-SKC-0003 Issue 04 – a lighting simulation shows light being controlled within the site boundary with no adverse impacts on the Boot Land or residential properties. Also drawing PIWE-ARC-EL-SKC-0003-04, currently located in Appendix B2 (for Area 2) shows solar lighting tower positions and light spill is located largely within the boundary apart from the eastern most tower with minimal light spill internally into Area 2. Sections 2.4.2 (Area 2) states the light spill assessment shows that light is being contained within the site boundary with no adverse effect from light spill on Boot Land or residential properties as these areas are completely dark as shown on the light spill assessments (Appendix B2).The vertical spill light levels on residential boundaries is negligible. **DPIE Comment: Please update**	The error in the document compilation as a pdf has been

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
						- Section 1.1 to include Figure 1-1 **- Table 1-1 to reflect accurate operational commencement dates for Areas 1 & 2.** **- Section 1.3.2 to reflect the accurate timing of staged submissions and approvals of this plan.** **- relocate drawing PIWE-ARC-EL-SKC-0003-04 from Appendix B2 to Appendix A2 as it pertains to WH1.**	corrected, and the LSP now includes Figure 1-1. Table 1-1 has been updated to reflect the most recent occupation information available. Section 1.3.2 has been updated to reflect the most recently available information regarding timing and staged submissions and approvals of this plan. Drawing PIWE-ARC-EL-SKC-0003-04 has been relocated to Appendix A1.
(i)	complies with the latest version of AS 4282-1997 – Control of the obtrusive effects of outdoor lighting (Standards Australia, 1997)	Section 2.4	**Further action required** **The plan states that it complies with the Standard, however, it doesn't demonstrate how it has complied with the Standard. Provide a description of the requirements and how the plan meets these requirements.**	5. Section 3.1 demonstrates that lighting towers located on the shared paths are in line with AS 4282. AS 4284 outlines the recommended maximum values of illuminance in vertical plane for commercial areas is equal to 25 lux for pre-curfew hours and 4 lux for curfew hours. The lux extent (≥1 lux) from each solar light tower does not leave the Project site boundary and is generally contained within Area 1. As such, the impact of light spill to residential properties are within the acceptable criteria specified in Australian Standard. The lighting calculations for Warehouse 1 have been designed in accordance with AS4282 as stated on the drawing provided in Appendix A2.	Section 3.1 and notes that The lux extent (≥1 lux) from each solar light tower does not leave the Project site boundary and is generally contained within Area 1. As such, the impact of light spill to residential properties are within the acceptable criteria specified in AS 4282. The obtrusive light calculations for the warehouse lighting are provided in Appendix A2. The lighting calculations detailed in the design are in accordance with AS 4282 as stated in Appendix A2. **5. Outstanding Comment** **DPIE has reviewed the Appendix A2 and notes that Drawing with REF: MBP-EXT-R09-230419 refers to lighting calculations are in accordance with AS 1158.3.1, DPIE request** **- clarification on the standard that's been used for the lighting calculations.** **- To confirm that the lighting associated with the development complies with the latest version of AS 4282-**	Section 2.2 states that the lighting has been designed to comply with *AS4282-2019* and *AS/NZS1158.31* meaning that lighting will be mounted, screened and directed a manner that does not create a nuisance to surrounding properties, the Boot Land or the public road network. Section 3.1.1 (Area 1) states that lighting calculations detailed in the design are in accordance with AS 4282 as stated in Appendix A2. Section 3.1.2 (Area 2) states that Warehouse 3, 4 and 5 Design Certificate (Appendix B2) confirms that the lighting calculations detailed in the design are in accordance with AS 4282. It is noted that Table 1-2 (Compliance table) states that both warehouses in Areas 1 & 2 are in accordance with the AS specified. Appendix A2 drawings for Area 1 note this compliance and Appendix B2 Design certificate confirms compliance for Area 2. However, the drawings referenced in the certificate do not align with the drawing numbers included in Appendix B2.	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
					1997 – Control of the obtrusive effects of outdoor lighting	**Please update:** **- Appendix B2 to ensure consistency between the drawings and the design certificate.**	The drawings as provided by the certifier, in accordance with the Design Certificate for Area 2, have been appended to Appendix B2.
(ii)	is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network; and	Section 2.3	The plan commits to implementing measures to reduce light spill and mitigate visual impact on the residential properties from W1P, such as positioning and mounting so as to avoid light being directed towards reflective surfaces, avoiding over lighting, eliminating upward light spill, and using shielded fittings. Section 2.4 contains a light spill assessment, which concludes that shielding and the orientation of the loading docks in a north-south direction will limits impacts to Moorebank Avenue. **Further action required. To better demonstrate compliance with the condition, clearly describe in the plan how mounting, screening and direction does not create a**	6. Drawing MPB-EXT-R03.1-300718 has been included in Appendix A2 to show the warehouse and carpark lighting. Light spill calculations were also conducted to represent the light impacts along the boundaries from the common and individual lighting (refer to Appendix A2).	**6. Outstanding Comment:** **DPIE has reviewed that Appendix A2 and notes that MPB-EXT-R03.1-300718 is not included. Please update the Appendix A2 to include the relevant drawings and clarify the standard used for the calculations as mentioned above.** **DPIE has reviewed the Appendix A2 and notes that the drawing -MBP-EXT-R09-030519-VIS for visual impacts has been included, DPIE recommends updating the drawing indicating the site boundaries and boot land area/sensitive receivers.**	**OS#6** – Appendix A2 includes - MBP-EXT-R03.1-300718 which provides lux levels, calcs and types of lights and states that calcs are in accordance with AS4282:1997. - MBP-EXT-R09-030519-VIS which provides a lighting simulation for WH1 has not been updated to indicate site boundaries, Boot Land and sensitive receivers. However, Figure 1-1, which had been omitted from this version is referenced as showing this detail. Section 2.2 states that the lighting has been designed to comply with *AS4282-2019* and *AS/NZS1158.31* meaning that lighting will be mounted, screened and directed a manner that does not create a nuisance to surrounding properties, the Boot Land or the public road network. Section 2.2.1.2 (Area 1) lists lighting locations and states that lights (awning lights, mounted building flood lights and pole) will be controlled by a timed clock, set to scheduled times on and off times, with security lights illuminated for all hours of darkness. Pole heights	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
			nuisance to the public road network.			ranging from 6 to 12m and capped at 13.5m including the car park. LED pole lights in the warehouse yard will be directed downwards, using shielded fittings with a beam angle of 10°. Lighting types are listed and luminaire schedules differ. Details are referenced in Appendix A2. Section 2.2.2.2 (Area 2) lists lighting locations and states that control of external lighting will be via a programmable system which with a timed on/off clock, a photoelectric sensor and an override switch. Lighting types are listed together for WHs 3 & 4 and separately for WH5 and luminaire schedules differ. Within the warehouse areas lighting will be mounted at heights of 3 m to 9m, directed downwards and use specific cut off luminaires which would eliminate upward light spill above the horizontal. The high efficiency LED lights will tilt between 0° to 20°. Details are referenced in Appendix B2. **DPIE Comment: Please update plan to include Figure 1-1**.	The LSP has been amended to include Figure 1-1.
(iii)	is designed to reduce light spill and mitigate the visual impact of the 24-hour facility when viewed from the residential areas in the locality and the Boot Land.	Section 2.2 Section 2.4 Appendix A	**Further action required. The plan doesn't demonstrate how the visual impact of the 24-hour facility is mitigated when viewed from the residential areas in the locality and the Boot Land. Provide analysis and demonstrate why the proposed lighting design will not impact on the Bootland and residential areas. This**	7. The light spill assessment in Appendix A2 demonstrates that the solar tower lights used for share paths will not impact nearby residents. This is discussed further in Section 2.4.1. A light spill assessment has also been completed for the common and individual lighting at Warehouse 1 to demonstrate no adverse effects in form of light spill can be seen on Bootland or	DPIE has reviewed the section 2.4 and notes that light spill assessments have been conducted for the common and individual lighting associated with Warehouse 1. The lighting installation shows light being controlled within the site boundary. As such, considering only the lighting on site, no adverse effect in form of light spill can be seen on Bootland or residential properties as these areas are completely dark as	**OS#7** – Refer response to OS#6 Section 2.2 states that the lighting has been designed to comply with *AS4282-2019* and *AS/NZS1158.31* meaning that lighting will be mounted, screened and directed manner that does not create a nuisance to surrounding properties, the Boot Land or the public road network. Section 2.3 discusses a range of design mitigation measures.	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
			could be demonstrated in an aerial map/diagram, or elevation figure (at appropriate scale) that shows the proposed modelling doesn't impact on the surrounding areas outside of the project boundary i.e. Bootland, neighbouring sites, and residential areas.	residential properties (refer to Appendix A2). This is demonstrated by the surrounding areas being dark in the light spill assessment. This is discussed further in Section 2.4.1. In addition, a lighting plan has been included in Appendix A2 to demonstrate locations and types of lighting to be installed on Warehouse 1. The design specifications of the lighting is listed and	shown drawing -MBP-EXT-R09-030519-VIS (Appendix A2). **7. Outstanding Comment:** **As mentioned in the comment 6 DPIE recommends updating the drawing indicating the site boundaries and boot land area.**	**OS#8** –Refer OS#6 Section 2.4 contains light spill assessments for Areas 1 & 2 Appendices A2 (Area 1 and B2 (Area 2) include lighting simulations showing light being controlled within the site boundary and B2 also includes a design certificate for area 2. Section 2.4 also references Figure 1-1 to show the distant location of residential properties. This figure has been omitted from this plan. It is further noted that Appendix B2 (Area 2) contains drawing PIWE-ARC-EL-SKC-0003-04 which pertains to Area 1 and Warehouse 1 light spillage from solar lighting. Section 4 for Area 1 states that there will be little to no effect on adjacent properties from internal road/shared path lighting and there is negligible light spill on residential boundaries from common individual lighting Section 4 for Area 2 states that design mitigation measures in Section 2.3 will be used which mitigate nuisance to surrounding residential properties and the Boot Land from internal roads/share path lighting. This section states that there are no adverse effect from common/individual lighting spill on the Boot Land or residential properties with vertical spill on residential boundaries negligible. Section 3 discusses compliance with the above lighting standards which limit lighting illuminance in the vertical plane in commercial areas to 25 lux (pre-curfew) and 4 lux (curfew hours).	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
						DPIE Comment: Please update plan to: **- include Figure 1-1** **- relocate drawing PIWE-ARC-EL-SKC-0003-04 from Appendix B2 to Appendix A2 as it pertains to WH1.**	The LSP has been amended to include Figure 1-1. Drawing PIWE-ARC-EL-SKC-0003-04 has been relocated to Appendix A1.
B141(c)	The Lighting Sub Plan must identify and provide details of the common and individual lighting throughout the development to reduce light spill and mitigate visual impact on the residential areas in the locality by:	Section 2.	Sections 2.2.1 provides a description of the lighting for the internal roads and sharepaths. **Further action required.** **1. It is unclear in the plan where consideration for common and individual lighting is described, and how the visual impact of each of these on residential areas will be mitigated. Include the W1P figure indicating where the residential areas, and the individual and common lighting areas are in relation to the site, and how the mitigation measures described in conditions (c) i-viii will be implemented to reduce visual impact.**	8. The common and individual lighting for Warehouse 1 has been included in Section 2.2.1.2. A site location drawing (Figure 1-1) has been added to this LSP to outline where the residential areas are in relation to the project site. The mitigation measures described in (c) i-vii will be implemented to reduce visual impact. This will be done through the types of lighting proposed and installation of the lighting. In accordance with the mitigation measures, the lighting will be directed downwards (but not towards reflective surfaces), have shielded fittings, use asymmetric beams, avoid over lighting and use timers (where applicable).	DPIE has reviewed the section 2.2.1.2 and notes that common and individual lighting for Warehouse 1 has been included and section 2.4 addresses the light spill assessment for solar light towers and common and individual lighting associated with Warehouse 1. Light spill assessment showed that the lux extent from each solar light tower does not leave the Project site boundary and is contained within Area 1. DPIE has reviewed the section 2.3.1 and notes that mitigation measures described in (c) i-ix will be implemented in Area 1. **8. Outstanding Comment:** **DPIE has reviewed the Appendix A2 and notes that the drawing -MBP-EXT-R09-030519-VIS for visual impacts for Area 1 has been included and recommends including drawing showing visual impacts of existing lighting on internal roads and shared paths on relevant sensitive receivers.**	Section 2.2 states that the lighting has been designed to comply with *AS4282-2019* and *AS/NZS1158.31* meaning that lighting will be mounted, screened and directed a manner that does not create a nuisance to surrounding properties, the Boot Land or the public road network. Lighting details are provided for both Areas ! & 2 in - Section 2.2 (Design Specifications) - Section 2.3 (Design Management Measures) - drawings are provided in Appendices A2 and B2 for both Areas 1 & 2. This includes lighting simulations for Area 1 shown in A2 drawing (REF: EXT-R14-310719-VIS) and Area 2 six shown in B2 drawing (REF: MBP-WH5EX-R01-311019-REN). Both simulations demonstrate that lighting is maintained within the site but include proposed lighting only and Figure 1-1 referenced in Section 2.4 has been omitted. It is also noted that light spill for the solar towers for WH1 in Area 1 is shown in drawing PIWE-ARC-EL-SKC-0003-04 which is currently located in from Appendix B2 contains drawings for Area 2 **DPIE Comment: Please update this LSP to** **- include Figure 1-1.**	The LSP has been amended to include Figure 1-1.

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
						- relocate drawing PIWE-ARC-EL-SKC-0003-04 from Appendix B2 to Appendix A2 as it pertains to WH1.	Drawing PIWE-ARC-EL-SKC-0003-04 has been relocated to Appendix A1.
(i)	eliminating upward spill light	Section 2.3	Section 2.3 lists the management measures that will be implemented to reduce light spill and mitigate visual impact on the residential properties from W1P. The plan commits to positioning lighting to face downwards to eliminate upward light spill. **See comment 8 above and demonstrate consideration of eliminating upward light spill for common and individual lighting**	9. Light spill assessments have been completed for the lighting at in Area 1, and demonstrate no adverse effects in form of light spill can be seen on Bootland or residential properties.	DPIE has reviewed the response and has no further comments.	Sections 2.2.1.2 and 2.2.2.2 state that lighting is: directed downwards with shielded fittings and a beam angle of 10° for Area 1, and directed downwards include high efficiency LED lights tilted between 0° to 20° and use specific cut off luminaires which would eliminate upward light spill above the horizontal. Sections 2.3.1 and 2.3.2 state that both areas 1 & 2 state that lighting will be positioned to face downwards to eliminate upward light spill and shielding used. CLOSED	
(ii)	directing light downwards, not upwards;	Section 2.3	The plan commits to positioning lights facing downwards to prevent horizontal light sill outside of the areas intended to be illuminated. **See comment 8 above.**	10. Positioning of lights facing downwards will prevent horizontal light spill outside of the areas intended to be illuminated. Refer to Appendix A2 for the light spill assessments, demonstrating no adverse light impacts to the Bootland and surrounding residential areas.	DPIE has reviewed the response and has no further comments.	Sections 2.2.1.2 and 2.2.2.2, 2.3.1. & 2.3.2 state that lighting is directed downward in both Areas 1 & 2. CLOSED	
(iii)	using shielded fittings;	Section 2.3	The lights will be shielded to prevent light above the horizontal plane. **See comment 8 above.**	11. The lights will be shielded to prevent light above the horizontal plane. The fittings selected have controlled optics with downward throw and zero up lighting.	DPIE has reviewed the response and has no further comments.	Sections 2.2.1.2 and 2.2.2.2 state that lighting is: - shielded in Area 1 and - Area 2 uses specific cut off luminaires which would eliminate upward light spill above the horizontal. Sections 2.3.1 & 2.3.2 state that lighting will use shielded fittings CLOSED.	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
(iv)	avoiding 'over' lighting;	Section 2.3	The plan commits to a design that combines positioning, mounting height and shielding to achieve adequate and comprehensive light coverage zones to suit the functional requirements of the area. **See comment 8 above.**	12. A design combination of positioning, mounting height and shielding combining to achieve adequate and comprehensive light coverage zones to suit the functional requirements of the area will be implemented. In addition, refer to Appendix A2 for the light spill assessments, demonstrating over lighting has been avoided.	**Please refer to response in comment 6**	Table 1-2 (Compliance table) states that a design combination of positioning, mounting height and shielding achieves adequate and comprehensive light coverage in zones to suit the functional requirements of the area. Sections 2.3.1 (Area 1) and 2.3.2 (Area 2) include the design management measure that lighting will be installed to avoid over lighting. CLOSED.	
(v)	switching lights off when not required;	Section 2.2 Section 2.3	Lighting will have photoelectric sensors or be on a timer so that lighting is only on when required.	Noted.	DPIE has reviewed the response and has no further comments.	Table 1-2 (Compliance table) states that lighting will have photoelectric sensors or be on a timer so lighting is only on when required. Section 2.3.1 (Area 1) states that lighting will have photoelectric sensors or be on a timer so lighting will only be on during night hours. Section 2.3.2 (Area 2) states that the lighting control system includes programmable time clocks and a photoelectric sensor so lighting will only be on when required. CLOSED.	
(vi)	using energy efficient bulbs	Section 2.3	LEDs will be used for the solar tower lights and warehouse yard lights. **See comment 8 above, and in addition, are there other types of lighting being used on site? What proportion of the lighting will be energy efficient?**	13. LED lights will be used throughout the Project site. LED lights are identified as energy efficient lights.	DPIE has reviewed the response and has no further comments.	Section 2.3.1 (Area 1) states that solar light towers will be comprised of four 50 watt (W) LED lights, which reduces the energy demand by a factor of 10 for external lighting Section 2.3.2 (Area 2) states that WHs 3, 4 and 5 lighting has been designed to use high energy efficient LED lights. CLOSED.	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
(vii)	using asymmetric beams, where floodlights are used;	Section 2.3	DPE notes that floodlights will be asymmetric beams or LED lights with shields to provide even light distribution over the areas intended to be lighted. **See comment 8 above.**	14. Lighting installed at the Project site will be equipped with asymmetric beams or LED lights with shields to provide even light distribution over the areas intended to be lighted.	DPIE has reviewed the response and has no further comments	Table 1-2 (Compliance table) states that floodlights in both Areas 1 & 2 will be asymmetric beams or Area 1 may also use LED lights with shields. Sections 2.3.1 (Area 1) includes a design management measure that floodlights will be asymmetric beams or LED lights with fitted hoods to provide even light distribution over the areas intended to be lighted lighting will be installed to avoid over lighting. 2.3.2 (Area 2) include the design management measure that main floodlights for WHs 3, 4 and 5 will use asymmetric beams, warm colours will be 4000k, within the industry standard for external lighting at warehouse facilities. CLOSED	
(viii)	(ix) ensuring lights are not directed towards reflective surfaces; and	Section 2.3	DPE notes the position of the lighting and mounting height will be adjusted so as to avoid light being directed towards reflective surfaces. **See comment 8 above.**	15. The lights will be directed downwards and not towards any reflective surfaces. Refer to Appendix A2 for the locations of the lighting at Warehouse 1 and the shared pathways.	**Please refer to response in comment 6**	Table 1-2 (Compliance table) states that the position of the lighting and the mounting in both Areas 1 & 2 will be adjusted to avoid light being directed towards reflective surfaces. Section 2.3.1 (Area 1) contains a specific design management measure that states the lighting position and mounting height will be adjusted so as to avoid light being directed towards reflective surfaces. However, Section 2.3.2 (Area 2) doesn't address this requirement. **DPIE Comment: Please update Section 2.3.2 (Area 2) to include design measure that addresses this requirement.**	Section 2.3.2 has been revised to include this design requirement, that the lighting position and mounting height will be adjusted so as to avoid light being directed towards reflective surfaces in Area 2.

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
(x)	(xi) using warm white colours	Section 2.3	DPE notes that lighting will be fitted with filters to achieve warm white colours. **See comment 8 above.**	16. Lighting installed at the Project site will be equipped with filters to achieve warm white colours. For the warehouse lighting, 5000k fittings will be used which are the most efficient lighting for external purposes, and considered warmer in colour than 6000k lighting.	DPIE has reviewed the response and has no further comments	Table 1-2 (Compliance table) states that states that warm white will be achieved in: - Area 1 by fitting solar towers with filters and - both Areas 1 & 2 by providing warehouse lighting fittings of 5000 Kelvins (k) and 4000k, which is considered warmer in colour than less than 6000k fittings. Section 2.3.1 (Area 1) contains a specific design management measure that states that warm white colours will be achieved by applying filters. Section 2.3.2 (Area 2) includes design measure that states that main floodlights for Warehouses 3, 4 and 5 will be 4000k warm colours. CLOSED.	
	The approved plan must be implemented prior to occupation of the warehouse and freight village.	Section 1.2	The approved plan will be implemented prior to occupation of Warehouse 1. **Satisfactory.**	Noted.	DPIE has reviewed the response and has no further comments		
	FCCM 8 Light for the Amended Proposal would be designed to minimise any direct light spill and would comply with the requirements of *Australian Standard AS4282-1997 – Control of the Obtrusive Effects of Outdoor Lighting*.	Section 2.5.1	DPE notes limited information in the plan demonstrating compliance with AS 4282:1997. **Please provide the requirements for AS4282-1997 and demonstrate how the lighting design meets these requirements.**	17. Section 3.1.1 demonstrates how the lights for the shared paths in Area 1 and the common and individual light for Warehouse 1 are in compliance with AS 4282.	**Please refer to response in comment 5 and 6**	Section 2.2 states that the lighting has been designed to comply with *AS4282-2019* and *AS/NZS1158.31* meaning that lighting will be mounted, screened and directed. Appendix A2 drawings for Area 1 note this compliance in MBP-EXT-R14-310719. Appendix B2 for Area 2 includes design certification dated 26 February 2020 (C--Level Design and Engineering) for Warehouses 3, 4 & 5 (in Area 2) and states that the external lighting has been designed to accord with *AS4282-1997*. However, the drawings referenced in	

CoC	Requirement	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response	DPIE Comment (Rev 003, dated 15 March 2019)	DPIE Comment (Rev 006B, dated 08 March 2020)	Proponent Response July 2020.
						the C-Level Design Certificate, dated 26 February 2020, do not align with the drawing numbers included in Appendix B2. **DPIE Comments: Please clarify alignment of the drawings in Appendix B2 with the C-Level Design Certification dated 26 February 2020.**	The drawings as provided by the certifier, in accordance with the Design Certificate for Area 2, have been appended to Appendix B2.

Mr Michael Yiend
Development Director
Qube Property Management Services
Level 25, 45 Clarence Street
SYDNEY, NSW, 2000
BY EMAIL ONLY: Steve Ryan (sryan@tacticalgroup.com.au)

05/06/2020

Dear Mr Yiend,

Approval of Urban Design and Landscape Plan – Moorebank Logistics Park East (SSD 7628)

I refer to your correspondence requesting the Planning Secretary's approval for the staged Urban Design and Landscape Plan (UDLP) for Area 1 only under condition B140 of SSD 7628. This plan has been staged with the approval of the Planning Secretary in accordance with the requirements of conditions A14 and A15.

The UDLP for Area 1 has been carefully reviewed and I note that the plan:

- has been reviewed by SIMTA and no issues have been raised
- has been prepared in consultation with Liverpool City Council
- has been reviewed by the Government Architect of NSW.

As nominee of the Planning Secretary, I approve the UDLP for Area 1 (Revision 8, dated 11 March 2020) only pursuant to condition B140, excluding condition B140 (e)(vi).

I also approve the amended development layout plan (Reference: SSS2-RCG-AR-SKC-161A), including the amended layout of OSD 9 pursuant to condition A22 of SSD 7628.

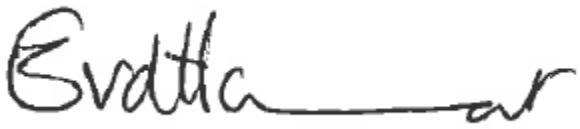
I note that the landscaping for the as-constructed car park within Area 1 does not satisfy the requirements of condition B140(e)(iv) and has therefore not been approved. This matter has been referred to the Department's Compliance team for review.

I note that Area 1 does not achieve all the minimum landscaping requirements of condition B140. However, I note your commitment that future stages will achieve the minimum landscaping requirements of condition B140 for the MPE Stage 2 overall. You are also reminded that in my letter dated 24 April 2020, I approved the changes to the UDLP for MPE Stage 1 subject to you providing additional compensatory landscaping on MPE Stage 2. You must detail how this will be achieved in future stages of the MPE Stage 2 UDLP.

You are reminded that If there is any inconsistency between the approved documents and the conditions of consent, then the requirements of the conditions of consent will prevail.

If you require any further information please contact Jake Shackleton, Team Leader Infrastructure Management at jake.shackleton@planning.nsw.gov.au.

Yours sincerely



Erica van den Honert
Director, Infrastructure Management
Infrastructure Management

As nominee of the Planning Secretary

DPE review comments - Condition B141 (b),(c) UDLP Lighting Sub Plan, Rev 3 dated 15/05/2019

Condition No.	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response
A14 With the approval of the Secretary, the Applicant may submit any strategy, plan or program required by this consent on a staged basis/	Section 1.3	The Lighting Sub Plan (LSP) consists of Warehouse 1 Precinct (W1P) only.	This LSP has been updated in Section 1.3 to include the different stages associated with this plan. The stages of this plan include: • Area 1 – Warehouse 1 including area north of freight village • Area 2 – Warehouse 3, 4 and 5 • Area 3 – Warehouse 6, 7 and 8 • Area 4 – Freight village • Area 5 – Warehouse 2 • Area 6 – Moorebank Avenue Works Section 1.3.2.outlines the following: "Area 1 is the first stage addressed by this LSP and includes Warehouse 1 and the immediate area surrounding Warehouse 1 (excluding the freight village). The detailed plans for future stages of this LSP are anticipated to be provided in multiple submissions as described in Table 1. Each future staged submission will be incremental and present the detailed maintenance and monitoring requirements applicable to that stage." Reference to W1P has also been removed throughout the entire document. As outlined in Section 1.3.3, the trigger for updating this LSP will be submitted one month prior to permanent built surface works and/or landscaping of the next stage.
A15 If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program.	Section 1.3	The plan is to be staged into Warehouse 1 Precinct, with the LSP – Remainder of the Site will consider the lighting solutions for warehouses in the remainder of the site (including Moorebank Avenue), not previously included in the LSP – W1P. The triggers for updating the LSP are: - Prior to installation of permanent lighting arrangements for the internal roads and sharepaths in W1P, and - Prior to installation of lighting arrangements for the freight village. **Further action required** **1. The staging and trigger for this plan are not consistent with what is included in the UDLP. Will the staging of lighting be consistent with the Warehouse 1, Warehouse 1 + Freight Village**	1. See comment above. The staging of this LSP has been updated to be consistent with the UDLP and other UDLP sub-plans. 2. This LSP will be updated following the outcomes of the modification.

Condition No.	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response
		(update), Remainder of Site proposed? If not, could the relationship to the overall UDLP staging be explained? **2. Further to discussions held in the regular post approvals meeting on 25/02/2019, this plan may need updating following the outcomes of modification to the lighting design (backlit signage on site provision)**	
B140 Prior to commencement of permanent built surface works and/or landscaping, or as otherwise agreed by the Secretary, and **Urban Design and Landscape Plan (UDLP)** must be prepared. The UDLP must be prepared by a suitably qualified and experienced person(s), in consultation with the relevant council(s). The **UDLP** must be approved by the Secretary in consultation with the NSW Government Architect. The UDLP must present an integrated urban and landscape design for the development, and must include, but not be limited to: … (j) the sub-plans identified in condition B141.	Page ii	The plan has been authored by Shannon Blackmore, and Katrina Nestmann, with checking by Bruce Layzell. It isn't clear what company each author/checker works for, and is assumed to be Arcadis. Bruce Layzell is an experienced lead utilities engineer and has managed the design of electrical services. In the revisions table, the plan has been submitted to Liverpool City Council on the 9/08/2018. Appendix B does not include an evidence of stakeholder consultation with Liverpool City Council (LCC), however the UDLP W1P (Appendix A) includes an email that indicates that the Lighting Sub-Plan was provided to LCC on 14/08/2018. LCC provided comment on the UDLP and Sub-plans but has not indicated any specific concerns with the Lighting Sub-plan. **Further action required** **3. Update compliance table to include condition B140 (j), and provide a description of consultation undertaken with Liverpool City Council and the NSW Government Architect. (ensuring that the dates recorded are consistent with the actual consultation undertaken as evidenced in the UDLP). Provide a description of who prepared the plan, their qualifications, and the companies they work for in the table at the front of the document.**	3. CoC B140(j) has also been added to the compliance matrices in Section 1.4. Section 1.5 has been updated to include the consultation with LCC for the UDLP and UDLP sub plans. Appendix A1 has also been added and includes the evidence of consultation with LCC. The qualifications and experience of the authors, checker and approver are detailed on the cover page. The companies of the authors, checkers and approvers are also detailed on the cover page.
B141 (b) A Lighting Sub Plan to assist in the control of lighting and reduce the visual impact of the 24- hour operational facility when viewed from residents within residential areas within the locality. The Plan must provide an assessment of the location, design specification and impacts of operational lighting associated with the development and measures proposed to minimise lighting impacts and standardise lighting design within the MPE development. The Plan must be prepared and approved by the Secretary. The Applicant must ensure that the lighting associated with the development:	This plan Section 2.1 Section 2.2 Section 2.3	The plan has been prepared to assist in the control of lighting and to reduce the visual impact of the Project site when viewed from residents within residential areas within the locality. **Further action required** **4. The plan does not adequately provide an assessment of location, as it doesn't demonstrate the options that were proposed, and why the locations in the plan were selected. Include a discussion in the plan that addresses each aspect of the condition, with consideration for the whole MPE development, and relationship to future stages (consistent with DPE and GA requests during consultation).**	4. Other options were not considered as the lighting needs to be designed in accordance with standards and other lighting options would not located a large distance away to make a difference to the light spill assessment. A light spill assessment has been completed for the shared paths of the warehouses (Appendix A2). A light spill assessment has also been completed for the common and individual lighting for Warehouse 1 (Appendix A2). The light spill assessments demonstrate shows light being controlled within the site boundary. Management measures have been proposed in Section 2.3 to minimise lighting impacts and standardise the lighting design.

Condition No.	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response
			This LSP will be prepared and approved by DP&E as stated in Section 1.2.
(i) complies with the latest version of AS 4282-1997 – Control of the obtrusive effects of outdoor lighting (Standards Australia, 1997)	Section 2.4	**Further action required** **5. The plan states that it complies with the Standard, however, it doesn't demonstrate how it has complied with the Standard. Provide a description of the requirements and how the plan meets these requirements.**	5. Section 3.1 demonstrates that lighting towers located on the shared paths are in line with AS 4282. AS 4284 outlines the recommended maximum values of illuminance in vertical plane for commercial areas is equal to 25 lux for pre-curfew hours and 4 lux for curfew hours. The lux extent (≥1 lux) from each solar light tower does not leave the Project site boundary and is generally contained within Area 1. As such, the impact of light spill to residential properties are within the acceptable criteria specified in Australian Standard. The lighting calculations for Warehouse 1 have been designed in accordance with AS4282 as stated on the drawing provided in Appendix A2.
(ii) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network; and	Section 2.3	The plan commits to implementing measures to reduce light spill and mitigate visual impact on the residential properties from W1P, such as positioning and mounting so as to avoid light being directed towards reflective surfaces, avoiding over lighting, eliminating upward light spill, and using shielded fittings. Section 2.4 contains a light spill assessment, which concludes that shielding and the orientation of the loading docks in a north-south direction will limits impacts to Moorebank Avenue. **Further action required.** **6. To better demonstrate compliance with the condition, clearly describe in the plan how mounting, screening and direction does not create a nuisance to the public road network.**	6. Drawing MPB-EXT-R03.1-300718 has been included in Appendix A2 to show the warehouse and carpark lighting. Light spill calculations were also conducted to represent the light impacts along the boundaries from the common and individual lighting (refer to Appendix A2).
(iii) is designed to reduce light spill and mitigate the visual impact of the 24-hour facility when viewed from the residential areas in the locality and the Boot Land.	Section 2.2 Section 2.4 Appendix A	**Further action required.** **7. The plan doesn't demonstrate how the visual impact of the 24-hour facility is mitigated when viewed from the residential areas in the locality and the Boo Land. Provide analysis and demonstrate why the proposed lighting design will not impact on the Bootland and residential areas. This could be demonstrated in an aerial map/diagram, or elevation figure (at appropriate scale) that shows the proposed modelling doesn't impact on the surrounding areas outside of the project boundary i.e. Bootland, neighbouring sites, and residential areas.**	7. The light spill assessment in Appendix A2 demonstrates that the solar tower lights used for share paths will not impact nearby residents. This is discussed further in Section 2.4.1. A light spill assessment has also been completed for the common and individual lighting at Warehouse 1 to demonstrate no adverse effects in form of light spill can be seen on Bootland or residential properties (refer to Appendix A2). This is demonstrated by the surrounding areas being dark in the light spill assessment. This is discussed further in Section 2.4.1. In addition, a lighting plan has been included in Appendix A2 to demonstrate locations and types of lighting to be

Condition No.	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response
			installed on Warehouse 1. The design specifications of the lighting is listed and
(c) The Lighting Sub Plan must identify and provide details of the common and individual lighting throughout the development to reduce light spill and mitigate visual impact on the residential areas in the locality by:	Section 2.	Sections 2.2.1 provides a description of the lighting for the internal roads and sharepaths. **Further action required.** **8. It is unclear in the plan where consideration for common and individual lighting is described, and how the visual impact of each of these on residential areas will be mitigated. Include the W1P figure indicating where the residential areas, and the individual and common lighting areas are in relation to the site, and how the mitigation measures described in conditions (c) i-viii will be implemented to reduce visual impact.**	8. The common and individual lighting for Warehouse 1 has been included in Section 2.2.1.2. A site location drawing (Figure 1-1) has been added to this LSP to outline where the residential areas are in relation to the project site. The mitigation measures described in (c) i-vii will be implemented to reduce visual impact. This will be done through the types of lighting proposed and installation of the lighting. In accordance with the mitigation measures, the lighting will be directed downwards (but not towards reflective surfaces), have shielded fittings, use asymmetric beams, avoid over lighting and use timers (where applicable).
(i) eliminating upward spill light	Section 2.3	Section 2.3 lists the management measures that will be implemented to reduce light spill and mitigate visual impact on the residential properties from W1P. The plan commits to positioning lighting to face downwards to eliminate upward light spill. **9. See comment 8 above and demonstrate consideration of eliminating upward light spill for common and individual lighting**	9. Light spill assessments have been completed for the lighting at in Area 1, and demonstrate no adverse effects in form of light spill can be seen on Bootland or residential properties.
(ii) directing light downwards, not upwards;	Section 2.3	The plan commits to positioning lights facing downwards to prevent horizontal light sill outside of the areas intended to be illuminated. **10. See comment 8 above.**	10. Positioning of lights facing downwards will prevent horizontal light spill outside of the areas intended to be illuminated. Refer to Appendix A2 for the light spill assessments, demonstrating no adverse light impacts to the Bootland and surrounding residential areas.
(iii) using shielded fittings;	Section 2.3	The lights will be shielded to prevent light above the horizontal plane. **11. See comment 8 above.**	11. The lights will be shielded to prevent light above the horizontal plane. The fittings selected have controlled optics with downward throw and zero up lighting.
(iv) avoiding 'over' lighting;	Section 2.3	The plan commits to a design that combines positioning, mounting height and shielding to achieve adequate and comprehensive light coverage zones to suit the functional requirements of the area. **12. See comment 8 above.**	12. A design combination of positioning, mounting height and shielding combining to achieve adequate and comprehensive light coverage zones to suit the functional requirements of the area will be implemented. In addition, refer to Appendix A2 for the light spill assessments, demonstrating over lighting has been avoided.

Condition No.	Section Reference	DPE Comment (Rev 2, dated 9/08/2018)	Proponent Response
(v) switching lights off when not required;	Section 2.2 Section 2.3	Lighting will have photoelectric sensors or be on a timer so that lighting is only on when required.	Noted.
(vi) using energy efficient bulbs	Section 2.3	LEDs will be used for the solar tower lights and warehouse yard lights. **13. See comment 8 above, and in addition, are there other types of lighting being used on site? What proportion of the lighting will be energy efficient?**	13. LED lights will be used throughout the Project site. LED lights are identified as energy efficient lights.
(vii) using asymmetric beams, where floodlights are used;	Section 2.3	DPE notes that floodlights will be asymmetric beams or LED lights with shields to provide even light distribution over the areas intended to be lighted. **14. See comment 8 above.**	14. Lighting installed at the Project site will be equipped with asymmetric beams or LED lights with shields to provide even light distribution over the areas intended to be lighted.
(viii) ensuring lights are not directed towards reflective surfaces; and	Section 2.3	DPE notes the position of the lighting and mounting height will be adjusted so as to avoid light being directed towards reflective surfaces. **15. See comment 8 above.**	15. The lights will be directed downwards and not towards any reflective surfaces. Refer to Appendix A2 for the locations of the lighting at Warehouse 1 and the shared pathways.
(ix) using warm white colours	Section 2.3	DPE notes that lighting will be fitted with filters to achieve warm white colours. **16. See comment 8 above.**	16. Lighting installed at the Project site will be equipped with filters to achieve warm white colours. For the warehouse lighting, 5000k fittings will be used which are the most efficient lighting for external purposes, and considered warmer in colour than 6000k lighting.
The approved plan must be implemented prior to occupation of the warehouse and freight village.	Section 1.2	The approved plan will be implemented prior to occupation of Warehouse 1. **Satisfactory.**	Noted.
FCCM 8 Light for the Amended Proposal would be designed to minimise any direct light spill and would comply with the requirements of *Australian Standard AS4282-1997 – Control of the Obtrusive Effects of Outdoor Lighting.*	Section 2.5.1	DPE notes limited information in the plan demonstrating compliance with AS 4282:1997. **17. Please provide the requirements for AS4282-1997 and demonstrate how the lighting design meets these requirements.**	17. Section 3.1.1 demonstrates how the lights for the shared paths in Area 1 and the common and individual light for Warehouse 1 are in compliance with AS 4282.

UDLP – W1P CONSULTATION WITH LCC 3 OCTOBER 2018

LCC Comment	Response	Updated Response with Current Plans
The UDLP states it has been staged in accordance the CoC A14 and A15 to allow commencement of WP1 which includes construction and operation of Warehouse 1. However, no consideration is given to the freight village in the UDLP analysis. The freight village is co-located with Warehouse 1 within WP1. The documents provided and the discussions therein are limited to deliberation for Warehouse 1.	As stated in Section 1.4, the UDLP – W1P will be updated at a later stage with information regarding the freight village. Presently, the UDLP – W1P only includes information regarding Warehouse 1. It is important to note, that permanent built works for the freight village will not occur before approval by DP&E of the UDLP – W1P including the freight village.	Since the initial submission of the UDLP, a Moorebank Precinct East Stage 2 Landscape Plan incorporating the entire precinct and freight village has been completed. This illustrates the layout and landscape plan of the freight village and warehousing. Drawings and figures are also in the process of being updated to address comments provided by LCC, Government Architect, and Department of Planning and Environment to illustrate additional detail within W1P where available (i.e. pedestrian and cycle paths, and landscaping). All other information will be updated at a later stage and in accordance with the staging plan for the UDLP.
The UDLP should present an integrated urban and landscape design for all development within WP1, but should also include consideration for the larger precinct with respect to design and built form. LCC has not been provided the revised site plan or layout for Stage 2, and therefore is not able to ascertain the full scope of the overall project, including the proposed actions for mitigating impacts (cumulatively) of the development.	The UDLP – W1P is only applicable to the W1P and does not consider the larger precinct. As such, the UDLP – Remainder of Site will address the urban design and landscape plans for the Project, not previously stated in the UDLP – W1P. The UDLP – Remainder of Site will include information on the integration of W1P with the remainder of site. However, Section 1.4 details the staging of the document, details of when the UDLP – W1P will be updated and the relationship to future stages i.e. the Remainder of Site. Please also note that the design, objectives, and principals for the Remainder of Site will be consistent with that presented in the UDLP – W1P.	The Moorebank Precinct East Stage 2 Landscape Plan has been completed and presents an integrated landscape design for the larger precinct.
There is insufficient information presented in the UDLP with regard to how the CoC A22, A23, and A24 are being met, as they relate the requirements under B140(k)(i)(ii)(iii). The documents provided do not afford a comprehensive picture of the urban and architectural form for the overall development under Stage 2.	Section 6 outlines the recommendations from the UDLP – W1P that are to be incorporated into the final development layout plans, architectural plans, WSUD elements as required by CoC B140(k). Please note that the WSUD plans are incorporated into the Stormwater Management Plan which have been provided to LCC previously, these are also available on the project website www.simta.com.au	No change.
It is apparent from the limited site plans within the UDLP that the layout for the Stage 2 development has not sufficiently considered the placement of the warehouses and circulation of vehicular traffic within the larger precinct, and specifically on the eastern boundary which is closest to the established residential areas in Wattle Grove.	This UDLP – W1P only includes W1P which is located in the northwest corner, and not along the eastern boundary of the Project site. The UDLP – Remainder of Site will include the development along the eastern boundary, and will consider the placement of the warehouses and circulation of vehicular traffic for the remainder of site. The UDLP – Remainder of the Site will also include information relating to the integration of W1P with the remainder of site.	Drawings and figures are in the process of being updated as per comments from Department of Planning and Environment and GANSW to illustrate the cycling and pedestrian connectivity through the entire site. Additional detail will be presented in the updated UDLP
The layout of the warehouses and arrangement of the roads within the precinct, as illustrated, would result in a poor design outcome and is likely to impact the nearby residences. The placement of warehousing should be on the perimeter of the site, but with an adequate buffer, including landscaping, tree canopy, and appropriate screening to mitigate any impacts on nearby residences. Primary access should be contained internally and within the innermost areas of the site, so that the individual buildings (and accompanying uses) do not open up towards and impact the nearby residences.	The layout of the warehouses will be consistent with the EIS/RtS. The layout of the freight village and Warehouse 1 do not open up towards the nearby residences. Visual impacts associated with W1P are detailed within Section 3 and Section 4 of the plan. In particular, Section 4.3 details the site screening requirements and Appendix B demonstrating the Landscape Drawings. The site layout has been developed in accordance with Condition of Consent B140 of SSD 7628.	The Moorebank Precinct East Stage 2 Landscape Plan has been completed and illustrates the layout of the freight village and warehouses. The drawing shows that freight village and warehouses do not open up towards the nearby residences and includes an adequate buffer to include landscaping and tree canopies. Drawings for the Visual Impact Assessment (EIS – Appendix R) will be updated to reflect the detailed design of the current layout of the warehouses, as requested by GANSW.
Condition A15 requires that if a plan describes a particular stage of the development, then that plan needs to clearly describe its relationship with any future stages and the triggers for updating that plan. Documents submitted indicate WP1 includes Warehouse 1 and the freight village. Reference is made to section 1.3.3 in the UDLP (p.4) but this is somewhat unclear as to how it relates to the future update to UDLP - WP1 (and the considerations for the freight village). Reference is also made UDLP - Remainder of the Site, but the discussion lacks substance with regard to the future staging and considerations for the UDLP.	Reference to Section 1.3.3 has been changed to Section 1.4.3. The UDLP – W1P will be updated with the urban design and landscape plans for the freight village, prior to commencement of permanent built surface works. Section 1.4.2 updated to state: *The UDLP – Remainder of the Site will be the second stage and will incorporate urban design and landscape plans for the remainder of site consistent with the design, principals and objectives outlined within this document.* The UDLP – Remainder of Site will be submitted to LCC for consultation.	No change.
LLC requests an independent peer review of UDLP, that the matter be referred to Secretary, or the delegate, in consultation with the NSW Government Architect, to determine whether the materials within are in compliance with the CoC. Limiting the scope the UDLP to considerations for Warehouse 1 to identify how urban design and landscape design	Consultation with the NSW Government Architect is currently being undertaken for this UDLP – W1P and the sub-plans and is being managed by the Department of Planning and Environment.	Consultation has been undertaken with GANSW for the UDLP – W1P. Updates to figures and drawings (as discussed in the above comments) are currently being undertaken and will be provided to GANSW.

LCC Comment	Response	Updated Response with Current Plans
features have been integrated does not provide the evidence base to understand the design considerations for the overall development under Stage 2.	The UDLP – Remainder of the Site will include information relating to the integration of W1P with the remainder of site, however, the remainder of the site will be consistent with the design, principals and objectives outlined in the UDLP – W1P.	It is not considered that the scope of the requirements are being limited, but that under CoC A14 and A15 as approved by the DP&E the process has been staged and that each stage will meet the requirements to comply with the CoC for the project.

UDLP AND SUB-PLANS CONSULTATION WITH LCC 24 JANUARY 2019

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
A14. With the approval of the Secretary, the Applicant may submit any strategy, plan or program required by this consent on a staged basis.	The Applicant advises that The Secretary's approval for staging of this plan has been obtained.	Evidence required	Evidence of staging approval will be provided when received by DP&E as staging has now been amended (see below)
A15. If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program.	**The Applicant advises:** The UDLP – W1P addresses the requirements for W1P only. The UDLP – Remainder of Site will consider the urban design and landscape plans for warehouses in the remainder of the Project, not previously included in the UDLP – W1P. A trigger for updating this UDLP – W1P will be prior to the commencement of permanent built surface works for the freight village. The UDLP generally lacks an integrated approach and only deals fleetingly with the rest of Stage 2 site. Connections either physically and operationally are not discussed or proposed. Reference is also made in the UDLP – Remainder of the Site 2, but the discussion lacks substance with regard to the future staging and considerations for the UDLP. Particular concern that no details of the freight village are provided as is the freight village is co-located with Warehouse 1 within WP1 and presumably will be built at the same time.	Require further details of physical and operational connections across the Stage 2 Site and beyond. Require details of the design and operation of the Freight Village and timing of its construction.	The UDLP has been updated significantly since the previous submission. The UDLP now discusses the site as a whole. Sections 1 and 2 provide the narrative to which specific stages of development must adhere; the remaining sections provide a generic overview and then focus on specific details of the stage. The staging of the UDLP has been updated to include the following: • Stage 1 – Warehouse 1 including north of the freight village • Stage 2 – Warehouse 3, 4 and 5 • Stage 3 – Warehouse 6, 7 and 8 • Stage 4 – Freight village • Stage 5 – Warehouse 2 • Stage 6 – Moorebank Avenue Works. Staging figure attached for reference. Section 1.4.2 outlines the following: "Stage 1 is the first stage of this UDLP which includes Warehouse 1 and the immediate area surrounding Warehouse 1. The detailed plans for the UDLP future stages are anticipated to be provided in multiple future stages including Stage 2 to 6. Each future staged submission will be incremental and present the detailed urban design and landscape design documents in a form consistent with the design, principals and objectives outlined in Section 2.8." Future stages will undergo consultation with LCC as required by Condition of Consent B140. Reference to W1P and freight village has also been removed throughout the entire document. As outlined in Section 1.4.3, this UDLP will be submitted to DP&E one month prior to commencement of landscaping of the next stage.
A17. In seeking the Secretary's approval, a clear relationship must be demonstrated between the strategies, plans or programs that are proposed to be combined.	No response received to this condition. With the exception of the road layout, there are no details as to how the remainder of the Stage 2 area will operate.	Require further clarification	See above comment.
A22. Prior to construction, the Applicant must prepare amended Development Layout Plans and Design Plans to the satisfaction of the secretary which achieve the improvements and revisions referred to in conditions B140 and B141, including integration of Water Sensitive Urban design (WDSU) and landscape design.	-	Details of, including integration of Water Sensitive Urban design (WDSU) and landscape design required.	Updated Architectural Plans, WSUD and Development Layout Plans are included as Appendix H of this UDLP.
A23. Prior to commencement of early works and fill importation, the Applicant must prepare amended WSUD plans that incorporate	Applicant has not submitted these details as yet. We note the trigger is "prior to commencement of early	Submission for approval of detailed Stormwater management system consistent with this condition	CoC A23(a) is not applicable to this UDLP.

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
water sensitive urban design principles, be generally in accordance with relevant Council policies, plans and specifications, and address condition B40, to ensure that: (a) the stormwater drainage systems forthe development will operate independently of any works proposed as part of the MPW Stage 2 development (SSD 7709) that have not been incorporated in this development, unless development consent has been granted to those	works and fill importation". These details should be submitted to DP&E, with subsequent review by Council.	prior to commencement of early works and fill importation	There is no requirement to submit the WSUD plans for council approval. However, the Stormwater management Plans have been provided for information.
A24. Prior to commencement of permanent built surface works and/or landscaping, the Applicant must prepare amended architectural plans that reflect updated plans required under the conditions.	Architectural plans submitted lack detail. The only plans submitted attached to the Urban Design and Landscape Plan. Elevations, sections, structural and civil details and photomontages from key vantage points are required. We note that the trigger is "prior to the commencement of permanent built surface works and/or landscaping." These plans should be submitted to DP&E and provided to Council for review.	Prior to the commencement of permanent built surface works and/or landscaping full detailed architectural plans, elevations, sections, civil and structural details and photo montages from key viewpoints are to be submitted for approval. Council would prefer these be submitted as soon as possible, particularly photomontages, to provide a true representation of the proposed Warehouse 1 in the context of the other buildings proposed in Stage 2 and as viewed from the surrounding locality.	Updated Architectural Plans, WSUD and Development Layout Plans are included as Appendix H of this UDLP. The UDLP has been updated to show a visual impacts from various sensitive receivers' locations near MPE S2 (Appendix J). There is no requirement to provide visual impacts of Warehouse 1 in relation to the remainder of the precinct nor are there any sensitive receivers located within the site for this to be applicable.
A31. Prior to the issue of a Construction Certificate, the Applicant must pay a monetary levy of 1% of the development Capital Investment Value (($3,577,900) or other amount agreed to by Liverpool City Council for transport, drainage, community facilities, administration and professional and legal fees pursuant to Section 94B(2) of the EP&A Act 1979.	In their letter to Council dated 3/11/2017, the Applicant advised Council that the Capital Investment Value (CIV) used to calculate the contribution excluded various works, stating the following: "The proposed contributions for these applications have been calculated based on the Capital Investment Value (CIV) submitted to the Department of Planning and Environment (DP&E) on December 2016 (included at Attachment A and Attachment B of this letter). **Linear infrastructure has been excluded from the CIV for the two proposals** as the linear infrastructure has no impact on the public facilities the contributions levied under the Draft Liverpool City Council Contributions Plan could be applied to. In addition, the **upgrades to Moorebank Avenue and the Moorebank Avenue /Anzac Road intersection** would have a net benefit on the road network." The exclusion of linear infrastructure and the upgrades to Moorebank Avenue and the Moorebank Avenue /Anzac Road intersection from the Section 94 calculations is considered irregular and inequitable, as such works are not excluded items under Clause 25J of the Environmental Planning and Assessment Regulation 2000 or Council's Section 94 Plan 2009. Based on the wording of consent condition A31, we recommend that Council request that the cost of the approved 'linear infrastructure works' be included in the calculation of the CIV and the levy revised accordingly. This is on the basis that these works are directly related and required to support Stage 2 of the proposed	**The Section 94 Contributions payable to Council be recalculated to include the costs of linear infrastructure and the upgrades to Moorebank Avenue and the Moorebank Avenue /Anzac Road intersection** on the basis that these works are directly related and required to support Stage 2 of the proposed intermodal facility. We do not believe the reason given that "no impact on the public facilities the contributions levied under the Draft Liverpool City Council Contributions Plan could be applied to" is valid or supportable.	As discussed with LCC the requirements for the removal of the capital investment value associated with Moorebank Avenue is based on the fact that the works are not capital investment. On completion of the works for the road it will be designated an RMS road. The applicant is paying costs associated with design and construction. Therefore the statements first issued in response are considered equitable and that the road does not fall under CIV but is in fact considered to be a development contribution under Part 7 Division 7.1 of the EP&A Act 1979.

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
	intermodal facility.		
B40. (b)(iii) ensure on site detention basins are visually unobtrusive and ensure public safety	Although we have not sighted the Stormwater Management details the Applicant refers to, if OSD 9 is flush with the final design ground levels covered by a mix of native grasses then this condition is satisfied.	Review of the Stormwater Management details to confirm OSD design.	Tactical: Provide Stormwater Management Plan for LCC Drawing "*OSD 09 Typical section and Details"* is included in Appendix A2 and outlines the cross section of OSD09.
B140. Prior to commencement of permanent built surface works and/or landscaping, or as otherwise agreed by the Secretary, an Urban Design and Landscape Plan (UDLP) must be prepared. The UDLP must be prepared by a suitably qualified and experienced person(s), in consultation with the relevant council(s). The UDLP must be approved by the Secretary, in consultation with the NSW Government Architect. The UD LP must present an integrated urban and landscape design for the development, and must include, but not be limited to:	Design principles have been included. We are unable to assess the project's response to a number of the Urban Design Principles provided due to the lack of detail provided with the Amended application documents. Particularly, we cannot assess the accuracy of the Statements: Responsive: the design will be both responsive and sympathetic to the form, colours and textures of the natural and cultural character of the existing landscape. The Project will integrate with and improve the existing site character to form a high performance and quality urban landscape feature. A development of this size cannot be considered to be "responsive and sympathetic" to the surrounding natural and built form character. This justification is inadequate. Community: while the Project will have limited access to the general public, the Project will include a provision for suitable and sufficient amenity which may be accessible by both the occupants and the public (albeit predominantly indirectly). This improved local amenity will incorporate landscaping, open spaces for employees, water sensitive urban design and environmental features, creating a 'sense of place' and conveying a feeling of community. We assume that the general community will be excluded from the Site for security reasons. Therefore this design principle is irrelevant and not met. Considerate: landscape and urban treatments will be considerate of the need to provide visual and acoustic shielding in the form of vegetation, landform and structures. This has not been demonstrated. Require photomontages. Visually Appealing: the urban design will be visually appealing to the public and surrounding areas to ensure continuity between the Project and surrounding areas. This has not been demonstrated. Require photomontages.	Further architectural details, photo montages, mitigation measures and operational details demonstrating consistency with the Design Principles are required. The additional information is necessary as the submitted documents provided do not afford a comprehensive picture of the urban and architectural form or operation for the overall development under Stage 2.	The UDLP has been updated significantly since last revision. Updated Architectural Plans and Development Plans are included in Appendix H of this UDLP. The Visual Impact Assessment (Appendix J) in this UDLP provides viewpoints from various locations near MPE S2. The objectives listed in Table 7 have been linked to drawings and figures within this UDLP.
(a) identification of design objectives, principles and standards based on - (i) local environmental values, (ii) urban design context, (iii) sustainable design and maintenance, (iv) community, visitor and worker safety, amenity and privacy,	-	-	-

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
including 'safer by design' principles where relevant, (v) relevant design standards and guidelines, (vi) addressing the visual amenity and values of adjoining receivers, (vi) minimising and addressing the footprint of the project (including at operational facilities:), and (vii) the urban design principles outlined in the documents referred to in condition A2:			
(b) landscaping and building design opportunities to mitigate the visual impacts of buildings and infrastructure particularly when viewed from Moorebank Avenue, Wattle Grove, and Casula);	-	-	-
(c) details on the location of existing vegetation and proposed landscaping (including use of endemic and advanced trees species: where practicable). Details of species to be replanted/revegetated must be provided, including their appropriateness to the area and habitat for threatened species. Where feasible and reasonable, top soil and vegetation to be removed must be reused;	-	-	-
(d) details of pedestrian movement through the site and to surrounding areas for employees;	-	-	-
(e) incorporate the following:	-	-	-
(i) a minimum landscaped width of 10m within the 18m setback from Moorebank Avenue;	Appears satisfied		
(ii) the footprint of the warehouses along the eastern boundary must be reduced so that the car parking area and warehouse can be setback a minimum of 5m from the eastern internal road to provide visual screening of the building, and adequate landscape width to support canopy trees;	Amended submitted plans not dimensioned so unclear if this sub condition is satisfied	Additional dimensioning of plans required.	Warehouse 1 (Stage 1) is not adjacent to the eastern boundary, as such this condition will be addressed during the futures stages of this UDLP.
(iii) landscaping located around the car parking areas is to supports sufficient canopy trees: to provide visual screening to the warehouse buildings;	Partially met but section along western edge of carpark does not contain screen planting at all	Justification for partial noncompliance required	The purpose of the trees located in the car park are for shade and not for visual impact within Stage 1. Refer to Appendix J for the Visual Impact Assessment for further information. The VIA identifies that the trees located along the western perimeter will provide landscape screening for Warehouse 1.
(iv) 15% of the site landscaped at ground level, 10% of which must include soft landscaping and not include land set aside for future access ways:	Complies	Justification for non-compliance	Refer to Appendix A3 for landscape drawings showing compliance with this condition
(v) minimum rate of 1 canopy tree per 30m2 of landscaped area:	Complies	-	-
(vi) a 2.5 m wide landscaped bay every 6-8 car spaces incorporating canopy trees for shade;	Does not comply	-	The design of the car park in Area 1 was approved by DP&E in the submission of Development Layout Plans (A22) in July 2018. Section 4.5.1 of the UDLP states: “For Warehouse 1, an alternative to CoC B140(e)(vi) is provided that enables the inclusion of an additional 2,500 m2 landscaped strip to the immediate north and west of the car park area.”
(vii) perimeter site screening using advanced shrubs and canopy trees:	Assume will comply	-	-
(viii) perimeter and on site detention and biofiltration/ bioretention basin fences higher than 1.2m must be transparent and dark in	Complies	-	-

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
colour but not constructed of chain wire.			
(f) include a planting schedule including details of the soils specification and depth and irrigation systems as well as tree and shrub species, expected mature height, pot sizes and planting densities) and deep soil areas containing soil (not spoil);	No details of irrigation system included	Provide details of proposed irrigation system	Drip irrigation system can be seen on Warehouse 1 Masterplan in Appendix A2. For further information refer to the Landscape Vegetation Management Sub Plan.
(g) a description of the retaining walls, including the graphics such as sections, perspective views and material details;	Details of retaining walls no supplied with exception of section of OSD tank	Provide details, sections, graphic views and materials of all proposed retaining walls	Retaining wall details, cross sections and perspectives have been included in this UDLP.
(h) details of 1he landscaped areas and solid fencing required to screen waste bin or other outside storage areas;	Bin area not identified on plans	Details of location of bin area and associated screen fencing and landscaping required	No opportunities for landscaping around the waste bins or other outside storage areas have been identified; visual screening through fencing is deemed appropriate given the location of the bins in hardstand away from employee amenity areas. Solid fencing for waste bin screening will be located adjacent to warehouse buildings (generally in areas adjacent to the loading docks). Waste bin screening will be undertaken through slat fencing Colorbond® (or similar).
(i) graffiti management commitments and provisions;	Management measures supplied and acceptable	-	-
(j) the sub-plans identified in condition B141;	Sub plans supplied – additional details required to assess	-	-
(k) details of where and how recommendation from the UDLP and sub plans have been incorporated into the: (i) updated final Development Layout Plan and WSUOD Plans required by conditions A22 and A23: (ii) updated Architectural Plans required by condition A24, including architectural elements to articulate building facades and minimise large expanses of blank walls (iii) updated OEMP required by condition C3:	-	Additional details mentioned above required	Refer to above comments
(l) details of how the principles of Ecologically Sustainable Development listed at condition B143, in particular rainwater capture and reuse and energy efficiency have been incorporated into the UDLP and final Stormwater Management Plan plans required by Condition B40;	-	Engineering details of ESD initiatives required	Solar panel drawing included in Appendix A2 identifies the layout and detail of the solar panels to be installed on the roof of Warehouse 1 for energy efficiency. The landscaping drawings in Appendix A3 identify the rainwater tanks which will be used for rainwater capture.
(m) details how the Heritage Interpretation Plan required by condition B101 has been incorporated into the UDLP;	-	Completed Heritage Interpretation Plan and incorporated into the UDLP required prior to the commencement of permanent built surface works and /or landscaping	A Heritage Interpretation Plan is currently in development. However, it is envisaged that interpretative elements will be included within the freight village area; therefore subject to future stages of the UDLP.
(n) details of how the UHI Mitigation Strategy required by condition B140 has been incorporated into the UDLP and final Development Layout, Stormwater Management Plan and Architectural Details;	-	Further details required to enable assessment	UHIMS is currently being updated. The recommendations from the UHIMs are incorporated into this UDLP (Table 9) and reflected within the architectural drawings and development layout plans included within Appendix H.
(o) details of where and how recommendations from the Flora and Fauna Management Plan for adjoining offset area (condition B108) have been incorporated into the UDLP;	-	UDLP mentions that a comprehensive Biodiversity Offset Strategy that is being prepared for the Project. This must be provided for approval prior to the commencement of permanent built surface works and /or landscaping	The Biodiversity Offset Area is a regulatory requirement under the Biodiversity Conservation Act 2015, administered by the Office of Environment and Heritage (OEH). The only requirement would be that this is a restricted and prohibited area which does not allow

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
			access by unauthorised personnel. This has been managed by security fencing surrounding the site
(p) details of where and howrecommendations from the Bushfire Management Plan (condition B144) have been incorporated into the UDLP,	-	-	-
(q) details of where and how employee facilities including but not limited to secure bicycle parking, pedestrian paths, outdoor eating areas have been incorporated Into the UDLP; and		-	-
(r) evidence of consultation with the Relevant Council(s), prior to finalisation of the UDLP. The UDLP must be implemented prior to occupation of the warehouse and freight village, unless otherwise agreed by the Secretary. Note: The UDLP may be submitted in parts to address the built elements of the development and landscaping aspects of the development.	-	Details of actual consultation undertaken required Require details of design and operation of freight village as directly connects to the Warehouse 1 both physically and operationally.	(r) LCC is determined to be the relevant council and this submission and meetings held are considered to be the consultation process. The freight village is not included in this UDLP under Stage 1. The freight village will be discussed in Stage 4 of the updated UDLP. Staging associated with the project has been agreed to by the Department.
B141. The Urban Design and Landscape Plan must include the following sub- plans:			
(a) a **Landscape Vegetation Management Sub Plan** to assist in the monitoring and maintenance of landscape elements required to be delivered as part of the approval. The Plan must be prepared and approved by the Secretary within twelve months of the date of this approval unless otherwise agreed by the Secretary. The Plan must provide details of the monitoring and maintenance procedures for the landscape vegetation elements, rehabilitated vegetation and landscaping (including weed and pathogen control) including performance indicators, identification of commitments, identification of the responsibilities of each entity involved in the management of the intermodal precinct including the overarching management responsibilities and obligations for common land and tenant responsibilities, timing and duration, as well as contingencies where rehabilitation of vegetation and landscaping measures fail. The approved plan must be implemented prior to occupation of the warehouse and freight village.	(a) Supplied and assessed acceptable.		
(b) **a Lighting Sub Plan** to assist in the control of lighting and reduce the visual impact of the 24 hour operational facility when viewed from residents within residential areas within the locality. The Plan must provide an assessment at the location, design specification and impacts of operational lighting associated with the development and measures proposed to minimise lighting impacts and standardise lighting design within the MPE development. The Plan must be prepared and approved by the Secretary. The Applicant must ensure that the lighting associated with the development: (i) complies with the latest version of AS 4282-1997 - Control of the obtrusive effects of outdoor lighting (Standards Australia, 1997); (ii) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the	(b) Supplied We note the proposed lighting has been designed to avoid light spill to adjoining areas. There is concern with the impact of truck lights on surrounding neighbours from Warehouse 2 as trucks enter and leave from the eastern area of the building fronting the eastern boundary which may impact residents in the Wattle Grove area. The Applicant advises: “Permanent lighting arrangements for share paths and roads will not be installed prior to the commencement of occupation of W1P. Permanent lighting arrangements for the internal roads and share paths will be installed at a later date. This will be included as	Provide details of how the impact of truck lights on the surrounding area will be mitigated. Provide details and justification for only installing temporary lighting for share paths and roads at this stage.	Truck lighting is not the subject of this Lighting Sub-Plan as it relates to the “facility” itself. However, impacts of truck lighting are considered negligible due to the distances from the facility to sensitive receivers in residential areas. Furthermore, views to these areas are obstructed by vegetation and other built forms such as the MPW site. The solar lighting for the shared pathways are relocatable.

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
public road network; and (iii) is designed to reduce lights pill and mitigate the visual impact of the 24hour facility when viewed from the residential areas in the locality and the Boot Land.	an update to this LSP – W1P." The proposed future installation of lighting provides no certainty or review of the lighting proposed and associated impacts.		
(c) **The Lighting Sub Plan** must identify and provide details of the common and individual lighting throughout the development to reduce light spill and mitigate visual impact on the residential areas in the locality by: (i) eliminating upward spill light; (ii) directing light downwards, not upwards; (iii) using shielded fittings; (iv) avoiding 'over lighting; (v) switching lights off when not required; (vi) using energy efficient bulbs; (vii) using asymmetric beams, where floodlights are used; (viii) ensuring lights are not directed towards reflective surfaces; and (ix) using warm white colours. The approved plan must be implemented prior to occupation of the warehouse and freight village.	(c) Supplied see comments above		
(d) **Cycling and Pedestrian Access and Facilities Sub Plan** to assist in safe cycling and pedestrian connectivity through the MPE precinct by providing dedicated linkages between the warehouses, the freight village and Moorebank Avenue that will contribute to the quality and safety at the pedestrian and cyclist environment associated with the development. The Plan must be prepared by a suitably qualified and experienced person(s) and approved the Secretary within twelve months of the date of this approval unless otherwise agreed by the Secretary. The Plan must be prepared by a suitably experienced and qualified person(s) in the design and provision of Cycling and Pedestrian Access and Facilities. The Plan must detail the construction, timing and responsibility for the delivery of Cycling and Pedestrian Access and Facilities and take into account the following considerations: (i) all relevant policies, guidelines and plans; (ii) provide details for the provision of safe and efficient pedestrian and cyclist access connectivity within the development and include integration with the existing and future pedestrian and cycling access in the locality; (iii) provide details of end of trip facilities available on- site at each warehouse which are to include under cover bike storage, showers and change facilities sufficient to accommodate the needs of the forecast number of employee; and (iv) the layout, design and security of bicycle facilities must	(i) Supplied. No details of how the shared pedestrian cycle path connects through the rest of the site	(i) Details of how the pedestrian cycle path proposed connects to the broader area and remainder of the Site are required.	The pedestrian and cyclist access and connectivity for the entire site is shown in Figure 4-1 of this UDLP.

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
comply with the minimum requirements of Australian Standard AS 2890.3- 1993 Parking Facilities Part 3: Bicycle Parking Facilities. The approved plan must be implemented prior to occupation of the warehouse and freight village.			
(e) **Employee Outdoor Meal Break Area sub plan** to provide employee amenity associated with the development. The Plan must identify and facilitate the construction and establishment of employee outdoor meal break area and be prepared by a suitably experienced and qualified person(s) and submitted to the Secretary for approval. The Plan must be prepared by a suitably experienced and qualified person(s) in the design and provision of outdoor open space. The Plan must detail the construction, timing and responsibility for the delivery and maintenance of an individual employee outdoor meal break areas for each warehouse and a communal employee/visitor eating area at the freight village and take into account the following considerations: (i) all relevant policies, guidelines and plans; (ii) the type off facilities to be provided having regard to forecast future employee and visitor needs; (iii) provide detail of the siting and design of outdoor eating areas including seating, lighting, paving, landscaping, screening, shading, vermin proof waste storage and security; and (iv) include details of the maintenance and waste collection responsibilities. Where it can be demonstrated to the satisfaction of the Secretary, that an outdoor break area cannot be accommodated on site for each warehouse, an internal eating/sitting area is to be provided within each warehouse and details: provided within this subplan. The approved plan must be implemented prior to occupation of the warehouse and freight village.	e) supplied. Partial compliance We note that the outdoor eating area is located on the south edge of the offices. Accordingly, it is unlikely to receive significant sunlight. It is therefore recommended that it be relocated to a more northerly position. No landscaping or fixed waste storage is proposed in the employee outdoor meal break area.	(e) consider relocating outdoor eating area to a more north facing position to maximise potential solar access to this space. Also consider providing waste bins and softening landscaping in break area to improve amenity of the space.	Unfortunately, there is limited scope to move the outdoor eating area. Landscaping for the employee outdoor meal break area will include planter boxes and tensile steel wire support systems with climbing plants. Appendix A2 identifies the landscaping incorporated into the employee outdoor meal break area. Large waste bins for collection by waste providers are located in the loading area (see Appendix A2). Bins and recycling facilities will be provided for employees within the meal break area.
(f) Signage Sub Plan to assist in the management of Individual building, wayfinding and common directory signage associated with the development The Plan must be prepared by a suitably experienced and qualified person(s) and submitted to the Secretary for approval. The Plan must detail the design, illumination, construction, timing and responsibility for the delivery and maintenance of individual building and common directory signage and take into account the following considerations: (i) provision of wayfinding signage for internal streets to individual buildings and loading docks; (ii) individual building signage integration within building forms no higher than 3m above the finished ground; (iii) no general advertising; (iv) no form of moving or flashing signs; (v) no east or south facing illuminated building signage; (vi) details of the location and specifications of the common directory board;	(f) supplied and considered satisfactory		

Consent Condition	LCC Assessment of Response by Applicant	LCC Requested Additional Information	Response
(vii) signs are to display corporate logos and company names and must not occupy more than 10%, of any façade or wall or building; and (viii) internally illuminated signs are not permitted The approved common directory board and wayfindings signs plan must be implemented prior to occupation of the warehouse and freight village.			
Relevant approved mitigation measures attached to SSD 7628 consent			
8 Visual Amenity, urban design and landscape			
8A The following mitigation measures would be implemented, where reasonable and feasible, to minimise the visual impacts of the Amended Proposal: > Existing vegetation around the perimeter of construction sites would be retained > The early implementation of landscape planting would be considered in order to provide visual screening during the construction of the Amended Proposal > Elements within construction sites would be located to minimise visual impacts, e.g. setting back large equipment from site boundaries > Construction lighting, on both ancillary facilities and plant and equipment, would be designed and located to minimise the effects of light spill on surrounding sensitive receivers, including residential areas and the proposed conservation area	It appears that no existing landscaping will be retained. Landscape plan proposes replacing with local endemic trees and other vegetation. No measures to protect the adjacent natural bushland have been cited.	Support requirement to plant mature trees to more quickly screen the development. Mitigation measures are required regarding protection of the adjacent natural bushland.	No mitigation measures are included in this UDLP. Refer to Construction Flora and Fauna Management Plan and Bushfire Management Plan for mitigation measures regarding protection of vegetation. Further management measures will be detailed within the Operational Flora and Fauna Management plan currently under development. The plant schedule in the Landscape Drawings (Appendix A3) incorporates plants, shrubs and grasses of all sizes and details pot sizes and mature heights.
8B The following mitigation measures would be implemented, where reasonable and feasible, for the landscaping of the Amended Proposal: > Use of native shrubs and ground covers to form a screening barrier when mature. > A landscaping corridor of screening vegetation to provide informal street character along Moorebank Avenue. Use of local species as understory planting to support and enhance local habitat values	Consistent. Native species proposed in informal arrangement along Moorebank Avenue. However, not as part of this application.		
8C Light for the Amended Proposal would be designed to minimise any direct light spill and would comply with the requirements of Australian Standard AS4282- 1997- Control of the Obtrusive Effects of Outdoor Lighting.	Complies	Justification required for the proposed approach: “Permanent lighting arrangements for share paths and roads will not be installed prior to the commencement of occupation of W1P. Permanent lighting arrangements for the internal roads and share paths will be installed at a later date. This will be included as an update to this LSP – W1P.”	The solar lighting for the shared pathways are relocatable.

Appendix 1 – Area 1 Lighting Drawings and Figures

TARGET OFFICE-WAREHOUSE FACILITY

MOOREBANK LOGISTICS PARK

ELECTRICAL DRAWINGS

DRAWING LIST	
NO.	**DRAWING TITLE**
E-000	COVER & LEGEND
E-001	SITE PLAN & IN GROUND CONDUITS
E-002	EXTERNAL LIGHTING & POWER
E-003	COMMS PLAN FOR TELSTRA
E-100	WAREHOUSE LIGHTING - PART 1
E-101	WAREHOUSE LIGHTING - PART 2
E-102	DETAIL AREAS LIGHTING
E-200	WAREHOUSE POWER - PART 1
E-201	WAREHOUSE POWER - PART 2
E-202	DETAIL AREAS POWER
E-300	OFFICE AREAS LIGHTING
E-400	OFFICE AREAS POWER
E-500	SINGLE LINE DIAGRAM- MSB'S
E-501	SINGLE LINE DIAGRAM- DB'S

LIGHTING

T1 — LED Panel Recessed Low Glare – DALI – 36W 4000K
1200x300mm
NIKKON UGR36 + DALI Driver

T2 — LED Panel Recessed Low Glare DALI 18W 4000K
600x300mm
NIKKON UGR18 + DALI Driver

T3 — Surface Mounted LED Panel T-BAR Low Glare DALI
36W 4000K 1200x300mm
NIKKON UGR36 + DALI Driver

D1 — LED DOWNLIGHT WHITE RECESSED + DALI 14W 4000K
1400–1500lm
Pierlite DOT8218/40+DALI

D2 — LED DOWNLIGHT WHITE RECESSED 13W 4000K 880lm
Pierlite STARCRY5

D3 — LED DOWNLIGHT WHITE RECESSED + DALI 14W + LENS COVER
4000K 1400–1500lm
Pierlite DOT8218/40+DALI+COVER

H1 — HIGHBAY 4000K 160W LED – INTELLIGENT DALI
DIMMABLE
PHILLIPS GREENUP WIDE BEAM – BY550X LED200/NW
HIGHBAY 4000K 160W LED – INTELLIGENT DALI

H2 — DIMMABLE
PHILLIPS GREENUP HIGH RACK OPTIC – BY550X
LED200/NW/PSU/WRG

C1 — LED LOWBAY 155W 4000K SURFACE MOUNT IP65
PHILLIPS – GREENPERFORM 155W – WIDE BEAM

F1 — LED LINEAR OPAL DIFFUSER 40W 1200mm SURFACE
MTD
NIKKON WPLA SERIES 40W

F2 — LINEAR LED BATTEN SURFACE MOUNT WEATHERPROOF
4000K 40W IP65 NIKKON–LM–40

A — 230W TYPE 4 5000K LED FLOOD LIGHT –
WALL/AWNING BRACKET IP65
NIKKON – ZEAL–T4–230–W + WALL BRACKET

B — 300W 5000K LED FLOOD LIGHT – WALL/AWNING
BRACKET IP65
NIKKON – HAWK 300W FN MID BODY

C — 80W TYPE 3 5000K LED FLOOD LIGHT – WALL/AWNING
BRACKET IP65
NIKKON – ZEAL–T3–80–W + WALL BRACKET

D — 130W TYPE 3 5000K LED FLOOD LIGHT –
WALL/AWNING BRACKET IP65
NIKKON – ZEAL–T3–130–W + WALL BRACKET

E — 130W TYPE 4 5000K LED FLOOD LIGHT –
WALL/AWNING BRACKET IP65
NIKKON – ZEAL–T4–130–W + WALL BRACKET

P1 — 230W TYPE 4 5000K LED LIGHT IP65 MOUNTED ON
POLE : NIKKON – ZEAL–T4–230–W (SINGLE/DOUBLE
HEAD QTY'S)

P2 — 160W TYPE 3 5000K LED LIGHT IP65 MOUNTED ON
POLE : NIKKON – ZEAL–T3–130–W (SINGLE/DOUBLE
HEAD QTY'S)

P3 — 230W TYPE 3 5000K LED LIGHT IP65 MOUNTED ON
POLE : NIKKON – ZEAL–T3–230–W (SINGLE/DOUBLE
HEAD QTY'S)

REFER TO EXTERNAL LIGHTING DRAWING FOR
POLE & MOUNTING HEIGHTS.

EMERGENCY LIGHTING

MONITORED SYSTEM BY CLEVETRONICS
ZONEWORK

Ex1 — EXIT SIGN LED BLADE RECESSED 16–27m
VIEWING DISTANCE
CLEVERTRONICS – CUBPRO–ZW

Ex2 — EXIT SIGN LED SURFACE/WALL MOUNT 16–27m
VIEWING DISTANCE
CLEVERTRONICS – ECFLED–ZW

EXJ — EXIT SIGN JUMBO 40m VIEWING DISTANCE
CLEVERTRONICS – CJELED–40–WM–ZW–R

EM1 — LED SPITFIRE RECESSED EMERGENCY BATTERY
D25
CLEVERTRONICS – CLIFE–ZW

E1 — LED SPITFIRE SURFACE MOUNT EMERGENCY
BATTERY D63
CLEVERTRONICS – CLIFE–PRO–SMS–ZW

LIGHTING CONTROL

LIGHT SWITCH –
'SW' LOCAL SWITCH WHITE –
'LSP' SWITCH PANEL MULTIPLE SWITCHES –
'DIM' DIMMABLE

MD / PE — MOTION DETECTOR
OFFICE AREAS – RECESSED 5753PEIRL
EXTERIOR – 57520WPL–GY
'PE' – DAYLIGHT SENSING

MD — MOTION DETECTOR – 240V
INTERIOR – RECESSED SMART SCAN HD PIR
EXTERIOR – 750WPR

\# — LIGHT SWITCHING CHANNEL No.

DALI–C — DALI ZONE CONTROLER
RAPIX – DGOZ–ZONEC–4DA

DALI–P — DALI LINE POWER SUPPLY
RAPIX – DGLMPS01

EHUB — RAPIX DALI EHUB – DGOZ–EHUB–G–2S

DALI–R — 2 CHANNEL DALI RELAY DEVICE
RAPIX – DGOZ–RLY–10A–02

POWER

MSB – MAIN SWITCHBOARD.

DB – DISTRIBUTION BOARD.

OTHER SERVICES CONTROL PANEL

SINGLE GPO 10A – CLIPSAL
C2000 SERIES (Mounted 300mm
AFL unless noted otherwise)

U — 'U' DENOTES USB OUTLET
(Mounted 300mm AFL unless
noted otherwise)

XXA — DOUBLE GPO 10A – CLIPSAL
C2000 SERIES (Mounted 300mm
AFL unless noted otherwise)

XXA — OUTLET 1PH – CLIPSAL
XXA DENOTES CURRENT RATING

XXA — OUTLET 3PH – CLIPSAL
XXA DENOTES CURRENT RATING

XXA — ISOLATOR 1PH – CLIPSAL
XXA DENOTES CURRENT RATING

ISOLATOR 3PH – CLIPSAL
XXA DENOTES CURRENT RATING

COMMUNICATIONS

XX — 'TV' – TV AERIAL OUTLET RG6
'VGA' – VGA OUTLET
'HDMI' – HDMI OUTLET
Style to Match Power Outlets – i.e. Clipsal
C2000/HPM Excel.

XX — DATA POINT 'XX' NOMINATES NUMBER OF POINTS
AT LOCATION
Style to Match Power Outlets – i.e. Clipsal
C2000/HPM Excel.

MDF — MAIN DISTRIBUTION FRAME

CAB — COMMUNICATIONS CABINET

CABLE RETICULATION

DUCTED SKIRTING 2CH 150 X 50mm
Eq. ECD SKIRTING DUCT – COLOUR TO BE
APPROVED BY CLIENT

SWITCHED ACTIVE WIRE

HARD ACTIVE WIRE

ELEC CABLE TRAY — ELECTRICAL CABLE TRAY

COMMS BASKET — COMMUNICATIONS BASKET TRAY

E — ELECTRICAL CONDUIT

C — COMMUNICATIONS CONDUIT

CP1 — PIT – P1 TYPE WITH COMMUNICATIONS LID.

EP1 — PIT – P1 TYPE WITH ELECTRICAL LID.

FB1 — RECESSED FLOOR BOX – SIZE 4 STANDARD
PLATES
Eq ECD FB4 Floor Box

XXA FB2 — RECESSED FLOOR BOX – SIZE 2 STANDARD
PLATES
Eq ECD FB2 Floor Box

FANXX — BIG ASS FAN CONTROL BOX
FANXX DENOTES NUMBER OF THE FAN

SS	STARTER SOCKET FOR WORKSTATIONS SOFT WIRING
AB	ABOVE BENCH
CM	CEILING MOUNTED
SK	MOUNTED ON SKIRTING
CS	CEILING SPACE
FR	FRIDGE OUTLET
DW	DISHWASHER OUTLET
MW	MICROWAVE OUTLET
BWU	BOILING WATER UNIT (ZIP)
HWS	HOT WATER SERVICE UNIT
PE	PE CELL CONTROLLED
TC	TIMECLOCK CONTROLLED
DIM	DIMMABLE
HL	AT HIGH LEVEL
RET	WITH RETRACTABLE CABLES
CL	CLEANER
UF	URINAL FLUSH
U	USB OUTLET
WP	WEATHERPROOF
HD	HAND DRYER
HW	HOT WATER UNIT
RSD	ROLLER SHUTTER DOOR

REV	AMENDMENTS	DATE	DWN
P1	PRELIMINARY ISSUE	16/10/17	JB
P8	PRELIMINARY ISSUE	8/06/18	EC
1	CONSTRUCTION – CC2	24/08/18	LN
2	UPDATED FITTING TYPES	21/09/18	LN
3	UPDATED FITTING TYPES– TYPE D & E	28/03/19	LN

ELECTRICAL — MODCOL.COM.AU

CLIENT — MOOREBANK LOGISTICS PARK · QUBE · TACTICAL GROUP · hansen yuncken · Target

ADDRESS — MOOREBANK LOGISTICS PARK

CONSTRUCTION

PROJECT — TARGET OFFICE-WAREHOUSE FACILITY

SERVICE — ELECTRICAL SERVICES

TITLE — COVER & LEGEND

PROJECT #	1895
DATE	26.10.16
SCALE	NTS
DRAWN	JB

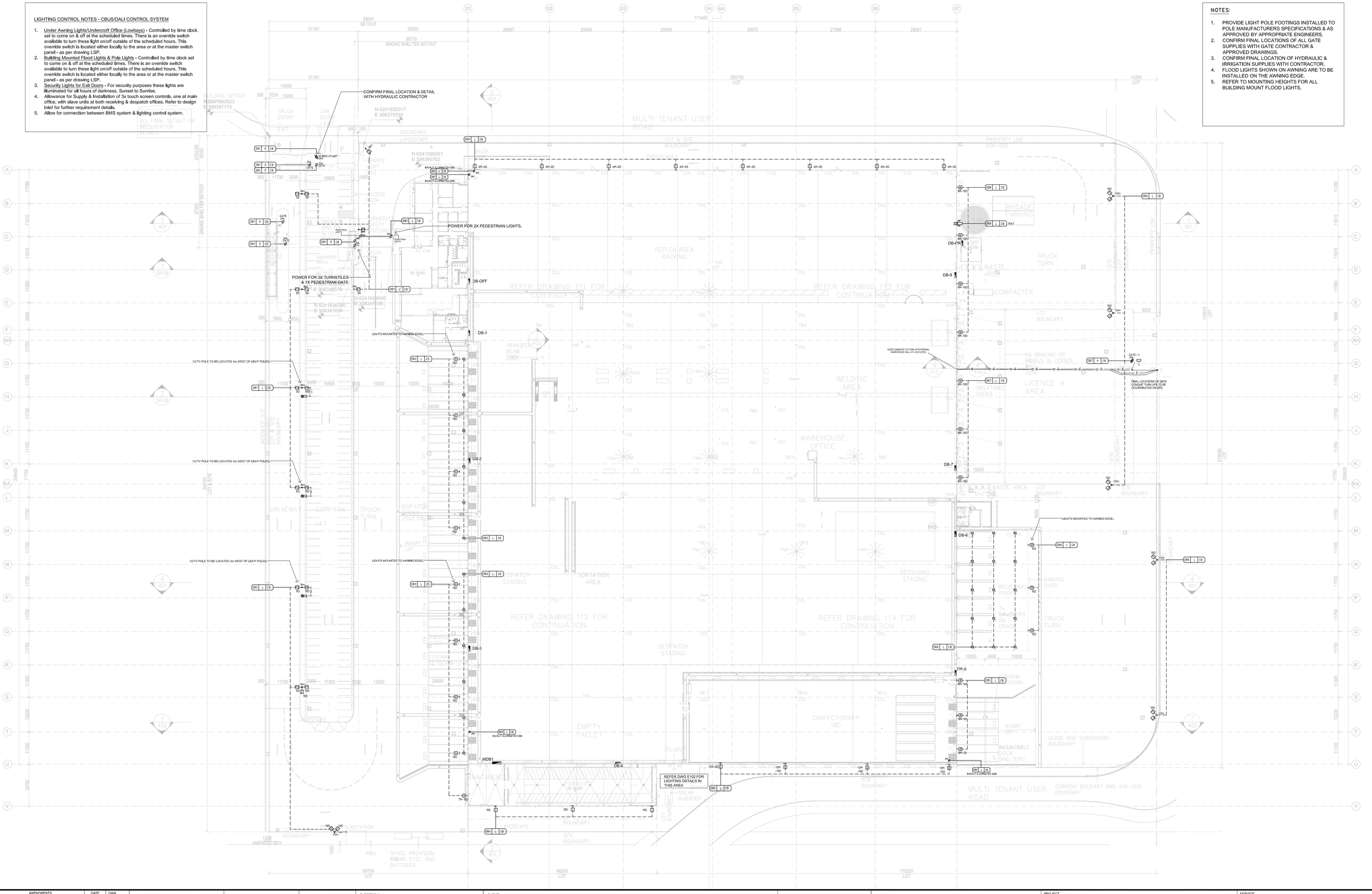
DWG No. E000 — ISSUE 3

LIGHTING CONTROL NOTES - CBUS/DALI CONTROL SYSTEM

1. Under Awning Lights/Undercroft Office (Lowbays) - Controlled by time clock set to come on & off at the scheduled times. There is an override switch available to turn these light on/off outside of the scheduled hours. This override switch is located either locally to the area or at the master switch panel - as per drawing LSP.
2. Building Mounted Flood Lights & Pole Lights - Controlled by time clock set to come on & off at the scheduled times. There is an override switch available to turn these light on/off outside of the scheduled hours. This override switch is located either locally to the area or at the master switch panel - as per drawing LSP.
3. Security Lights for Exit Doors - For security purposes these lights are illuminated for all hours of darkness, Sunset to Sunrise.
4. Allowance for Supply & Installation of 3x touch screen controls. one at main office, with slave units at both receiving & despatch offices. Refer to design brief for further requirement details.
5. Allow for connection between BMS system & lighting control system.

NOTES:

1. PROVIDE LIGHT POLE FOOTINGS INSTALLED TO POLE MANUFACTURERS SPECIFICATIONS & AS APPROVED BY APPROPRIATE ENGINEERS.
2. CONFIRM FINAL LOCATIONS OF ALL GATE SUPPLIES WITH GATE CONTRACTOR & APPROVED DRAWINGS.
3. CONFIRM FINAL LOCATION OF HYDRAULIC & IRRIGATION SUPPLIES WITH CONTRACTOR.
4. FLOOD LIGHTS SHOWN ON AWNING ARE TO BE INSTALLED ON THE AWNING EDGE.
5. REFER TO MOUNTING HEIGHTS FOR ALL BUILDING MOUNT FLOOD LIGHTS.



REV	AMENDMENTS	DATE	DWN
P8	PRELIMINARY – SIGNAGE ADDED	07/09/18	LN
5	WESTERN EXTERNAL FLOOD LIGHTING	28/03/19	LN
6	LIGHT POLE SHIFT – 4m FROM SUB	08/04/19	LN
7	CCTV POLE RELOCATED WITH REF-3m	09/04/19	LN
8	UPDATE	30/04/19	LN

ELECTRICAL
MODCOL.COM.AU

CLIENT
MOOREBANK LOGISTICS PARK
QUBE
TACTICAL GROUP
Target
hansen yuncken

ADDRESS
MOOREBANK LOGISTICS PARK

AS BUILT

PROJECT
TARGET OFFICE-WAREHOUSE FACILITY

SERVICE
ELECTRICAL SERVICES

TITLE
EXTERNAL LIGHTING & POWER

PROJECT #	
DATE	26.10.17
SCALE	1:500@B1
DRAWN	JB

DWG No. E002

ISSUE 8

Moorebank Business Park - Exteriors

NIKKON Lighting Pty Ltd.

31/7/2019 | **REF:** MBP-EXT-R14-310719

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Access - Back	Illuminance	Lux	26.95	101	4	0.15	0.04
Access - driveway - side	Illuminance	Lux	25.16	74	5	0.20	0.07
Access Area - Front	Illuminance	Lux	25.22	176	1	0.04	0.01
Awning - Back 2	Illuminance	Lux	145.13	203	84	0.58	0.41
Awning - Front	Illuminance	Lux	104.66	133	78	0.75	0.59
Carpark	Illuminance	Lux	29.12	144	8	0.27	0.06
Carpark - Accessible	Illuminance	Lux	N.A.	91	56	N.A.	N.A.
Hardstand - Back	Illuminance	Lux	50.19	150	3	0.06	0.02
Hardstand - Back - Vert - 1	Illuminance	Lux	N.A.	100	2	N.A.	N.A.
Hardstand - Back - Vert - 2	Illuminance	Lux	N.A.	98	3	N.A.	N.A.
Hardstand - Front	Illuminance	Lux	53.61	146	8	0.15	0.05
Hardstand - Front - Vert - 1	Illuminance	Lux	N.A.	56	7	N.A.	N.A.
Hardstand - Front - Vert - 2	Illuminance	Lux	N.A.	73	4	N.A.	N.A.
Landscape area - East	Illuminance	Lux	22.17	47	10	0.45	0.21
Multi tenant user road	Illuminance	Lux	19.85	75	5	0.25	0.07
Weighbridge	Illuminance	Lux	51.44	118	16	0.31	0.14

Luminaire Schedule

Label	Symbol	Description	LLF	Qty
H		Nikkon Hawk 300W FN MID BODY	0.800	12
L		Nikkon Lite-Focus Per 150W 130-100 deg	0.800	27
S2		Nikkon Zeal T3 - 130 W r	0.800	12
S3		Nikkon Zeal T4 - 230 W - r	0.800	24
S4		Nikkon Zeal T3 - 80 W r	0.800	12
S6		Nikkon Zeal T3 - 230 W r	0.800	3
Sn		Nikkon Zeal FN - 230 W - r	0.800	2
S7		Nikkon Zeal T4 - 130 W - r	0.800	1

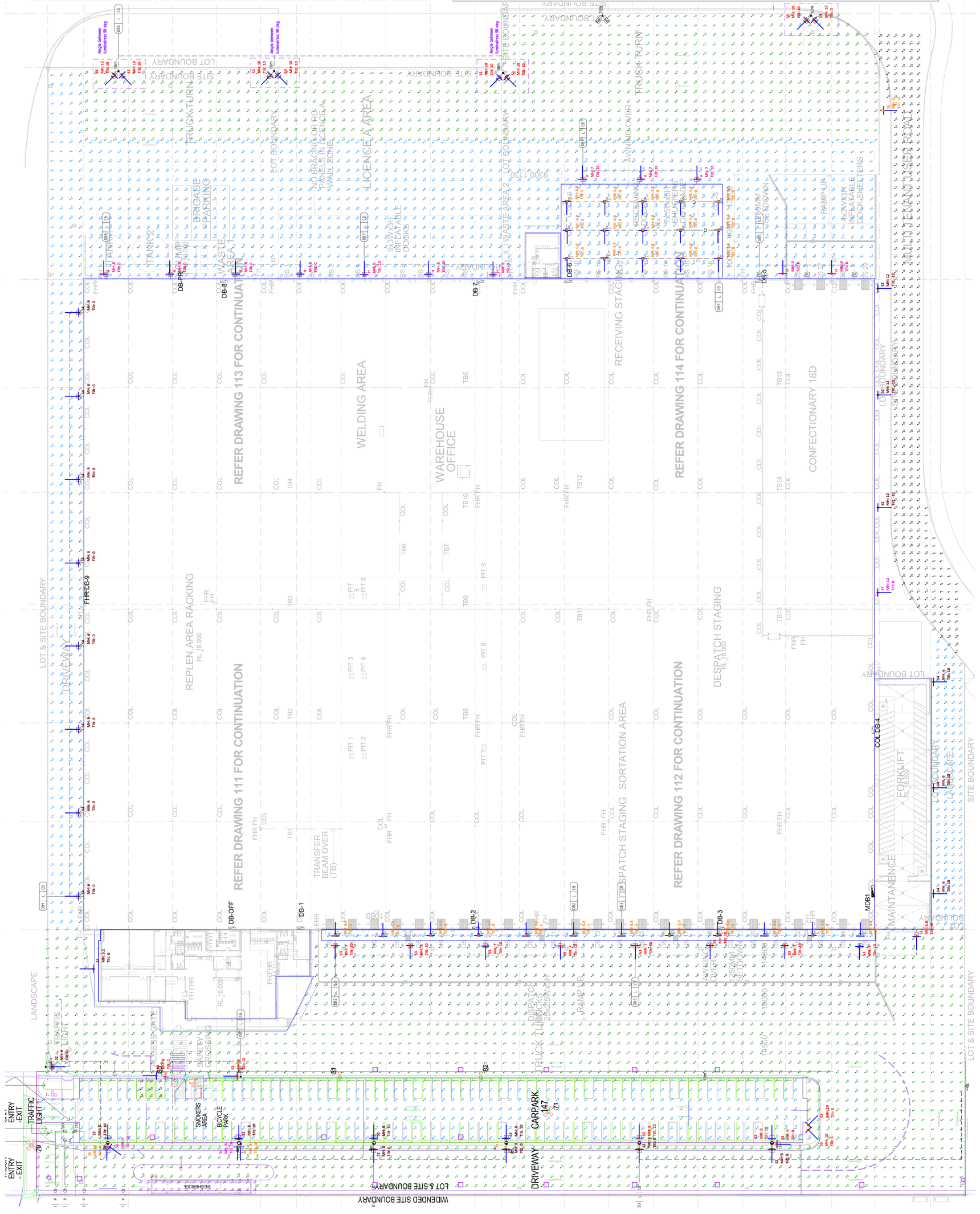
Lighting calculations are according to AS1158.3.1, sub-category:

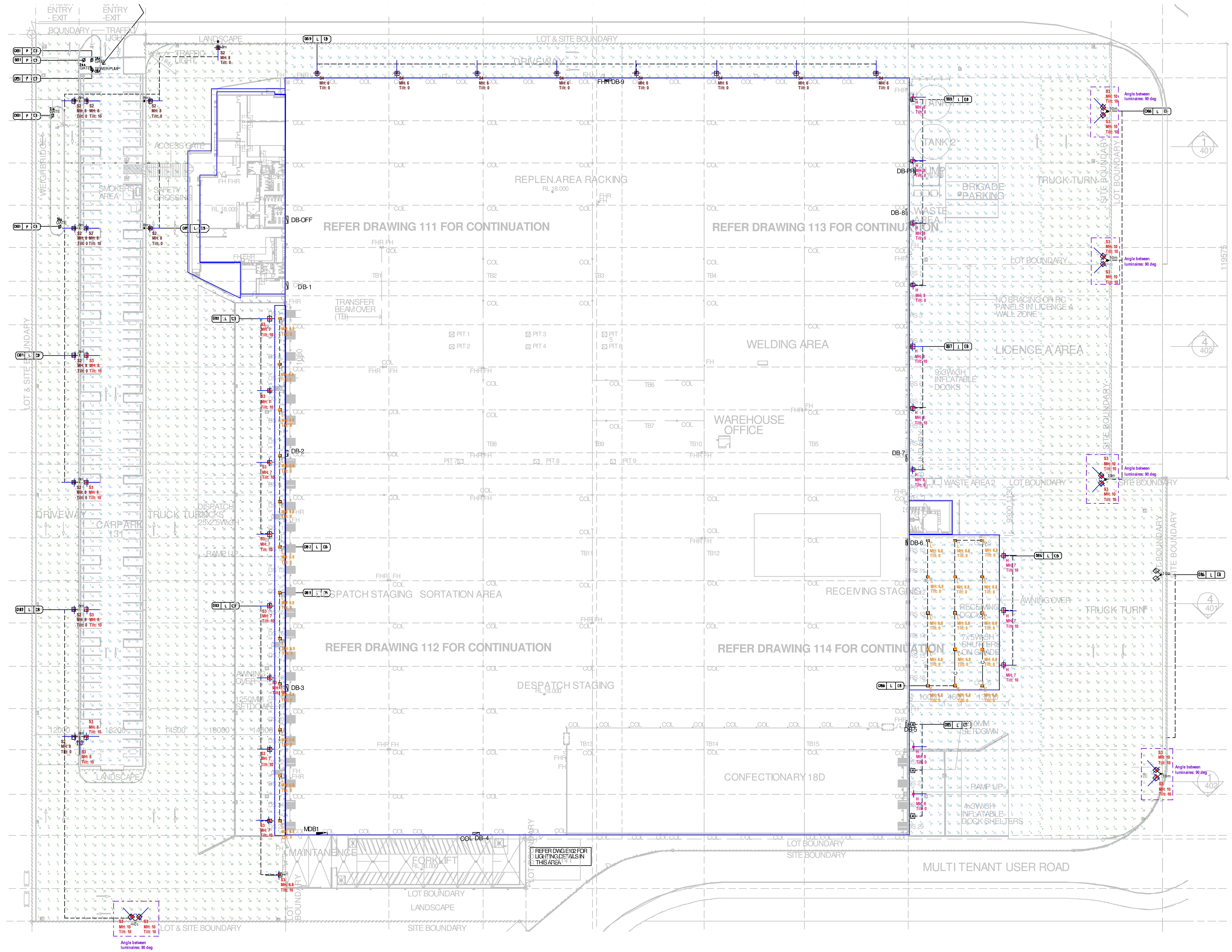
> P3 for driveway areas

> P11C for general carpark areas

> P12 for accessible carpark bays

> P8 for hardstand areas





Luminaire Schedule

Label	Symbol	Description	LLF	Qty
H		Nikkon Hawk 300W FN MID BODY	0.800	12
L		Nikkon Lite-Focus Per 150W 130-100 deg	0.800	27
S2		Nikkon Zeal T3 - 130 W r	0.800	11
S3		Nikkon Zeal T4 - 230 W - r	0.800	24
S4		Nikkon Zeal T3 - 80 W r	0.800	8

Lighting calculations are in accordance to AS4282:1997

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Access - Back	Illuminance	Lux	26.46	101	3	0.11	0.03
Access - driveway - side	Illuminance	Lux	25.21	74	5	0.20	0.07
Access Area - Front	Illuminance	Lux	21.70	110	2	0.09	0.02
Awning - Back 2	Illuminance	Lux	145.13	203	84	0.58	0.41
Awning - Front	Illuminance	Lux	104.83	133	79	0.75	0.59
Carpark	Illuminance	Lux	23.65	114	7	0.30	0.06
Hardstand - Back	Illuminance	Lux	50.16	150	3	0.06	0.02
Hardstand - Front	Illuminance	Lux	54.07	147	11	0.20	0.07

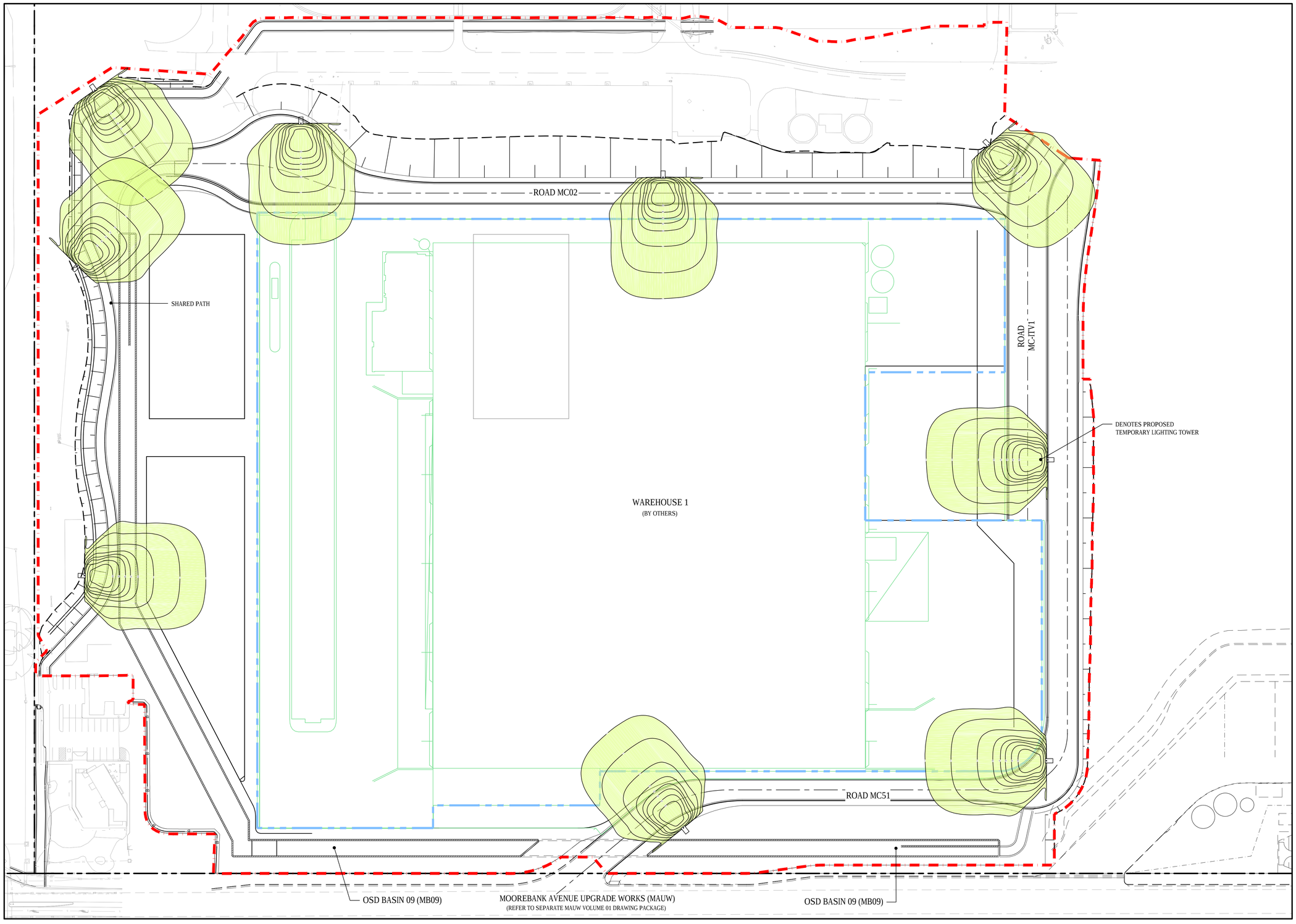
Moorebank Business Park - Exteriors

NIKKON Lighting Pty Ltd.

30/7/2018 | REF: MBP-EXT-R03.1-300718

TOTAL LIGHTING SIMULATION AREA

LIGHTING SIMULATION AREA RENDER

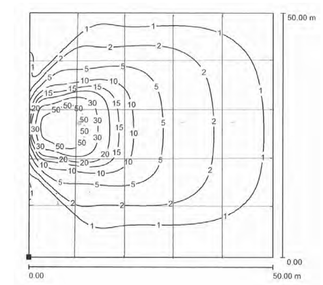


LEGEND

- PIWE PACKAGE 1A LIMIT OF WORKS BOUNDARY
- PROPOSED WAREHOUSE LEASE BOUNDARY
- PROPOSED ULTIMATE WORKS (REFER TO SEPARATE DRAWING PACKAGE)
- SURVEY TITLE BOUNDARIES
- PROPOSED WAREHOUSE 1 DESIGN RECEIVED BY COSTIN ROE DWG:C013455-C30, REV-C ON 19/12/2017
- PROPOSED SOLAR LIGHTING TOWER AND ASSOCIATED LIGHT COVERAGE ZONE

NOTES

1. FOR LUX EXTENTS REFER TO DIAGRAM BELOW:



Issue	Description	Date
04	ISSUE FOR INFORMATION	11/06/2019
03	ISSUE FOR INFORMATION	24/07/2018
02	ISSUE FOR INFORMATION	11/07/2018
01	ISSUE FOR INFORMATION	14/06/2018

0 15 30 45 60 75m

1 : 750

100mm on Original

Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE; TACTICAL GROUP

Status: PRELIMINARY ONLY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 750	Current Issue Signatures	
		Drawn D.WALL	
Original Size	A1	Designed B.LAYZELL	
Height Datum	AHD	Checked -	
Grid	MGA	Approved -	

Filename: PIWE-ARC-EL-SKC-0003-SolarLightingTowerPositionPlan.dwg

Project: MOOREBANK PRECINCT EAST (MPE) - STAGE 2
PRECINCT INFRASTRUCTURE WORKS EAST

Title: SOLAR LIGHTING TOWER POSITION PLAN

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289
Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Volume No. 05
Project No. AA009335
Drawing No. PIWE-ARC-EL-SKC-0003- Issue 04

Appendix 2 – Area 2 Lighting Drawings and Figures

MOOREBANK LOGISTICS PARK WAREHOUSE 3

ELECTRICAL SERVICES

MOOREBANK AVENUE, MOOREBANK NSW

DRAWING LIST

NO.	DRAWING TITLE
0000	COVER & LEGEND W3
0001	SITE PLAN & CONDUITS W3
0002	EXTERNAL SERVICES & PUMP ROOM W3
0003	COMMUNICATIONS LEAD-IN W3
0100	WAREHOUSE LIGHTING & POWER W3A
0101	WAREHOUSE LIGHTING & POWER W3B
0200	OFFICE LIGHTING & POWER W3A
0201	OFFICE LIGHTING & POWER W3B
0300	SINGLE LINE DIAGRAMS 1 W3
0301	SINGLE LINE DIAGRAMS 2 W3
0302	SINGLE LINE DIAGRAMS 3 W3

LIGHTING

- T1 — LED Panel T-BAR Diffused 36W 4000K 1200x300mm NIKKON UGR36
- T2 — LED Panel T-BAR Diffused 18W 4000K 600x300mm NIKKON UGR18
- D1 — LED DOWNLIGHT WHITE RECESSED 20W 4000K PIERLITE DOT9858P/40/A940-01/FP
- D2 — LED DOWNLIGHT WHITE RECESSED 11W 4000K 880lm PIERLITE STARCRY5
- D3 — LED DOWNLIGHT WHITE RECESSED 14W 4000K 1400-1500lm IP54 PIERLITE DOT8218/40+COVER
- H2 — LED HIGHBAY LED 300W 4000K WIDE BEAM FIXED WIRE SUSP LA LUCE TITAN FB-300-WB-90D
- C1 — LED LOWBAY 4000K 250W SURFACE MOUNT IP65 NIKKON LITE-FOCUS PER 250W 130-100 DEG
- F1 — LINEAR LED BATTEN SURFACE MOUNT IP65 4000K 40W IP65 NIKKON-LM-40-50
- W1 — LED FLOOD LIGHT ASYMMETRICAL BEAM 200W 4000K GREY - WALL/AWNING BRACKET IP65 NIKKON - CERVELLI S5 FL MP 200W
- W2 — LED FLOOD LIGHT TYPE 2 30W 4000K GREY- WALL/AWNING BRACKET IP65 NIKKON - CAMPAQ 30W + WALL BRACKET
- W3 — LED FLOOD LIGHT ASYMMETRICAL BEAM 150W 4000K GREY - WALL/AWNING BRACKET IP65 NIKKON - CERVELLI S5 FL MP 150W
- W4 — LED WALLPACK 30W 4000K BLACK - WALL/AWNING BRACKET IP65 NIKKON - WP30-57K-BLK
- W5 — LED FLOOD LIGHT TYPE 2 100W 4000K GREY- WALL/AWNING BRACKET IP65 NIKKON - CAMPAQ 100W + WALL BRACKET
- W6 — LED FLOOD LIGHT ASYMMETRICAL BEAM 300W 4000K GREY - WALL/AWNING BRACKET IP65 NIKKON - CERVELLI S5 FL MP 300W
- W7 — LED WALL FITTING 12W 4000K WHITE -WALL BRACKET IP20 SAL UDS9356 - 12W
- P1 — LED LIGHT 230W TYPE4 4000K BLACK IP65 ON POLE NIKKON - ZEAL-T4-230W CK BLACK (ADAPTOR REQ FOR MULTI HEAD ARRANGEMENTS)

XXM MOUNTING HEIGHT (WALL OR POLE) - ABOVE FINSIHED FLOOR
XXD FITTING TILT IN DEGREES

POLE — LIGHT POLES TO BE GALVANISED OR BLACK PAINT FINISH. TAPERED STYLE, FOOTING DETAIL TO BE APPROVED BY APPROPRIATE CIVIL/STRUCTURAL ENGINEER
REFER TO DRAWINGS FOR DETAILS & SIZES

ALL INTERNAL LIGHTS TO BE 4000K UNLESS SPECIFICALLY NOTED
ALL EXTERNAL LIGHTS TO BE 4000K UNLESS SPECIFICALLY NOTED

LEAD TIMES: MANUFACTURES LEAD TIMES OF 8-11 WEEKS FOR ALL LIGHTING ITEMS. CONTRACTOR TO MANAGE LEAD-TIME & ALL LIGHTING IS ORDERED TO ENSURE DELIVERIES WITHIN THE PROJECT TIMELINES.

GREEN STAR:

- THIS PROJECT IS CURRENTLY COMPLIANT WITH 4 STAR SPECIFICATION. REFER TO FULL GREEN STAR SPECIFICATION FOR FURTHER DETAILS.
- CODE 6,0 = ENERGY METERING TO BE PROVIDED TO ALLOW FOR MONITORING OF THE RELEVANT AREAS.
- CODE 6,1 = MONITORING SYSTEM MUST ACCURATELY AND CLEARLY PRESENT THE METERED DATA
- CODE 11,0 = MINIMUM LIGHTING COMFORT
  - FLICKER - FREE LIGHTING
  - A1&A2 BALLAST
  - HIGH FREQUENCY BALLASTS
  - ELECTRONIC BALLASTS IN HID LIGHTING
- CODE 11,1 = GENERAL ILLUMINANCE & GLARE REDUCTION
  - LIGHTING MEETS THE LEVELS RECOMMENDED IN THE RELEVANT STANDARD,
  - ALL BARE LIGHT SOURCES MUST BE FITTED WITH MEANS THAT OBSCURES THE DIRECT LIGHT SOURCE FROM ALL VIEWING ANGLES OF OCCUPANTS.
- CODE 11,3 = LOCALISED LIGHTING CONTROL - DALI OR OTHER CONTROL FOR OFFICE AREAS.
- CODE 17B3 = LOW EMISSION VEHICLE INFRASTRUCTURE
- CODE 20,3 = PERMANENT CABLES - AT LEAST 90% OF ALL PERMANENT FORM WORK, CABLES, PIPES IS SOURCES FROM MANUFACTURER THAT MEET BEST PRACTICE GUIDELINES.
- CODE 27,0 = LIGHT POLLUTION TO NEIGHBORING BODIES - DEMONSTRATE THAT ALL OUTDOOR LIGHTING ON THE PROJECT COMPLIES WITH AS 4282.1997
- CODE 27,1 = LIGHT POLLUTION TO NIGHT SKY - THE DIRECT ILLUMINANCE FROM EXTERNAL LUMINAIRES ON THE PROJECT PRODUCES A MAXIMUM INITIAL POINT ILLUMINANCE VALUE NO GREATER THAN
  - 0,5 LUX TO THE SITE BOUNDARY
  - 0,1 LUX TO 4,5 METERS BEYOND THE SITE INTO THE NIGHT SKY
  - CALCULATIONS SHOULD BE IN ACCORDANCE WITH AS 4282;1997

EMERGENCY LIGHTING

- Ex1 — EXIT SIGN LED BLADE RECESSED 16-27m VIEWING DISTANCE CLEVERTRONICS - EUBLED
- Ex2 — EXIT SIGN LED SURFACE/WALL MOUNT 16-27m VIEWING DISTANCE CLEVERTRONICS - ECFLED
- EXJ — EXIT SIGN JUMBO 40m VIEWING DISTANCE CLEVERTRONICS - CJELED

DIRECTION ARROWS INSTALLED PER DESIGN & DRAWING REQUIREMENTS

- EM1 — LED SPITFIRE RECESSED EMERGENCY BATTERY D25 CLEVERTRONICS - ELIFE-X
- E1 — LED SPITFIRE SURFACE MOUNT EMERGENCY BATTERY D63 CLEVERTRONICS - CLIFE-SMS-PRO

LIGHTING CONTROL

- SW — LIGHT SWITCH - 'SW' LOCAL SWITCH WHITE - 'LSP' SWITCH PANEL MULTIPLE SWITCHES - 'DIM' DIMMABLE
- MS — MOTION SENSOR - RECESSED ROUND WHITE WP - SURFACE MOUNT IP RATED EXTERIOR AREAS
- MD1 — 230V - RECESSED ROUND WHITE 230V WP - EXTERIOR IP RATED - SURFACE MOUNT
- # — LIGHT SWITCHING CHANNEL No.
- PE — DAYLIGHT PE SENSOR - RECESSED ROUND WHITE WP - SURFACE MOUNT IP RATED EXTERIOR AREAS

POWER

- MSB — MSB - MAIN SWITCHBOARD.
- DB — DB - DISTRIBUTION BOARD.
- OTHER SERVICES CONTROL PANEL
- SINGLE GPO 10A - WHITE 3 PIN CLIPSAL C2000 SERIES
- DOUBLE GPO 10A - WHITE 3 PIN CLIPSAL C2000 SERIES
- OUTLET 1PH 3PIN GREY IP56 - NHP ISO RANGE OR EQ. XXA = CURRENT RATING
- OUTLET 3PH 5PIN GREY IP56 - NHP ISO RANGE OR EQ. XXA = CURRENT RATING 5PIN DEFAULT, 4P=4PIN
- ISOLATOR 1PH - SURFACE MOUNT - NHP ISO OR EQ. XXA DENOTES CURRENT RATING
- ISOLATOR 3PH - SURFACE MOUNT - NHP ISO OR EQ XXA DENOTES CURRENT RATING

COMMUNICATIONS

- XX — DATA POINT 'XX' NOMINATES NUMBER OF POINTS AT LOCATION Style to Match Power GPO Outlets
- MDF — MAIN DISTRIBUTION FRAME Krone - Wall Mounted 27way
- CAB — COMMUNICATIONS CABINET Refer drawings & schedules for further details.
- TV — TV AERIAL OUTLET RG6 Style to Match Power Outlets
- HDMI — AV HDMI CABLING & OUTLET PLATE Style to Match Power Outlets

SWITCHBOARD SCHEMATIC

- SWITCH
- LOAD BREAK ISOLATION SWITCH
- MINIATURE CIRCUIT BREAKER XXA = TRIP SETTING
- MOULDED CASE CIRCUIT BREAKER(MCCB) XXA = TRIP SETTING XXA = MAXIMUM CURRENT RATING
- NUMBER OF PHASES. '1' BAR = SINGLE PHASE '2' BAR = TWO PHASE '3' BAR = THREE PHASE

RETICULATION

- DUCTED SKIRTING 2CH 150 X 50mm NATURAL ANODISED ALUM
- E.CABLE TRAY — ELECTRICAL CABLE TRAY Refer drawings & schedules for style & sizes
- COMMUNICATIONS BASKET TRAY Refer drawings & schedules for style & sizes
- E — ELECTRICAL CONDUIT Refer drawings for sizes & details
- C — COMMUNICATIONS CONDUIT Refer drawings for sizes & details
- SEC — SECURITY CONDUIT Refer drawings for sizes & details
- 2E50 — CONDUIT TAGS
  - SIZE
  - E=ELECTRICAL
  - C=COMMUNICATION
  - S=SECURITY
  - QUANTITY
- CP1 — PIT - P1 TYPE WITH COMMUNICATIONS LID.
- CP2 — PIT - P5 TYPE WITH COMMUNICATIONS LID.
- EP1 — PIT - P1 TYPE WITH ELECTRICAL LID.
- EP2 — PIT - P5 TYPE WITH ELECTRICAL LID.
- FB1 — RECESSED FLOOR BOX
- E1-L-XX — CIRCUIT TAGS
  - CIRCUIT NUMBER
  - CIRCUIT TYPE, P=POWER, L=LIGHT
  - CIRCUIT ORIGIN (DB)

ABBRIEVIATIONS

RSD	ROLLER SHUTTER DOOR
SS	STARTER SOCKET FOR WORKSTATIONS SOFT WIRING
AB	ABOVE BENCH
AD	ABOVE DOOR
BB	BELOW BENCH
CM	CEILING MOUNTED
WM	WALL MOUNTED
AC	AIR CONDITIONING
SK	MOUNTED ON SKIRTING
CS	CEILING SPACE
FR	FRIDGE OUTLET
DW	DISHWASHER OUTLET
MW	MICROWAVE OUTLET
PE	PE CELL CONTROLLED
TC	TIMECLOCK CONTROLLED
DIM	DIMMABLE
HL	AT HIGH LEVEL
RET	WITH RETRACTABLE CABLES
CL	CLEANER
UF	URINAL FLUSH
WP	WEATHERPROOF
HD	HAND DRYER
HW	HOT WATER UNIT
300	MOUNTING HEIGHT
FIP	FIRE INDICATOR PANEL
RCD	RESIDUAL CURRENT DEVICE
SL	SECURITY LIGHTING

GENERAL NOTES:
1. ALL WORKS TO COMPLY WITH THE RELEVANT STANDARDS & CODES INCLUDING BUT NOT LIMITED TO AS2293, AS3000, AS3008,
2. ALL SUBMAIN CABLING TO BE INSTALLED IN UNDERGROUND CONDUITS OR SUPPORTED ON CABLE TRAYS.
3. ALL POWER & COMMUNICATIONS CABLING SHALL BE INSTALLED WITH SEGREGATION IN ACCORDANCE WITH AS3000 & RELEVANT APPLICABLE COMMUNICATIONS STANDARDS.
4. MUST USE APPROVED CONDUIT TYPES FOR ALL COMMUNICATION LEAD IN SERVICES I.E. TELSTRA & NBN SERVICES.
5. MINIMUM SIZE OF 2,5MMSQ CU TO BE USED FOR ALL SUBCIRCUIT CABLING.

LIGHTING NOTES:
1. ALL EMERGENCY & EXIT LIGHTING SHALL BE CERTIFIED TO AS2293 & PROVIDED WITH NATA CERTIFIED TEST CERTIFICATES,
2. ALL EMERGENCY & EXIT LIGHTS TO BE TESTED, LABELED & LOGGED, AFFIX UNIQUE NUMBERING TO FIXTURES CORRESPONDING TO LOG BOOS.
3. PROVIDE RCD'S TO ALL LIGHTING & POWER CIRCUITS PER AS3000.
4. ALL INTERNAL LIGHTS SHALL BE 4000K COLOUR OUTPUT UNLESS SPECIFICALLY NOTED.
5. ALL EXTERNAL LIGHTS SHALL BE 5000K COLOUR OUTPUT UNLESS SPECIFICALLY NOTED.
6. ALL PE, MOTION & PRESENCE SENSORS TO BE TESTED & COMMISSIONED. WITH TIMES SET BE SPECIFICATIONS, TIMES UNIFORMLY MATCHED PER AREA TYPES,
7. ALL HIGHBAY LIGHTING TO BE INSTALLED WITHIN A 1,2M SPACE FROM ROOF STRUCTURES KEEPING MINIMUM DISTANCES AWAY FROM FIRE SPRINKLERS TO BE MAINTAINED AT ALL TIME.
8. ALL CABLE TRAYS & BASKETS TO BE EARTHED PER AS3000.
9. MINIMUM SIZE OF 2,5MMSQ CU TO BE USED FOR ALL SUBCIRCUIT CABLING.
10. ALL SUBCIRCUIT CABLING TO BE SIZED WITH A MAXIMUM OF 2.75% VOLTAGE DROP OR AS REQUIRED TO MAINTAIN STANDARDS PER AS3000.

POWER NOTES:
1. REFER ARCHITECTURAL & JOINERY DETAIL NOTES FOR OUTLET MOUNTING HEIGHTS.
2. SURFACE MOUNTED GPO'S TO BE INSTALLED ON SOLID MOUNTING BLOCKS &/OR BE WEATHERPROOF TYPE IN APPROPRIATE AREAS,
3. ALL ACCESSORIES TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
4. ENSURE PHASE ROTATION AT EACH 3PHASE OUTLET & ISOLATOR IS CORRECT DURING TESTING.
5. MECHANICAL PROTECTION TO BE PROVIDED TO ALL CONDUITS RISING FROM THE GROUND, FLOOR, ENTRIES INTO SWITCHBOARDS & PANELS.
6. PROVIDE SEGREGATED CABLING ACCESS FOR POWER & DATA SERVICES TO SKIRTING DUCTS AT APPROX 5M SPACES OR WHERE PRACTICAL.
7. CABLES SHALL BE GROUPED ON TRAYS & CATENARIES IN MAXIMUM QUANTITIES OF 6X CABLES PER GROUP.
8. ALL CABLING INSTALLED ABOVE CEILINGS SHALL BE SUPPORTED OR FIXED, BE KEPT CLEAR FROM CEILINGS.
9. ALL CABLING SHALL BE INSTALLED PER AS3000. CABLING CONCEALED WHERE PRACTICAL. INSTALLED SQUARE TO BUILDING LINES IN A NEAT & TIDY PROFESSIONAL MANNER. THE ENVIRONMENT TYPE CONSIDERED & MECHANICAL PROTECTION PROVIDED WHERE REQUIRED.
10. HAND DRYER'S SHALL BE HARD WIRED WITH ISOLATING SWITCH INSTALLED DIRECTLY ABOVE HAND DRYER AT 2100MM & LABELED ACCORDINGLY.
11. CONTRACTOR TO ALLOW FOR & PROVIDE THERMO GRAPHIC SCANNING & FULL REPORTS FOR ALL SWITCHBOARDS AT PROJECT HANDOVER.

THESE DRAWINGS ARE FOR D&C SUBCONTRACTOR TO COMPLETE FINAL DESIGN, DESIGN CHECKS AND REVIEW, COORDINATION AND VERIFICATION.

DESIGN & CONSTRUCT DRAWING SET

CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALED DRAWINGS.

KEY

CLIENT: QUBE

ELECTRICAL INSTALLATION: MODCOL.COM.AU

ARCHITECT: nettletontribe

BUILDER: HANSENYUNCKEN

REV	DESCRIPTION	DRAWN BY	DATE
A	90% ISSUE FOR CONSTRUCTION CERTIFICATE	EC	13/05/19
B	100% DESIGN ISSUE	EC	27/05/19
C	100% DESIGN ISSUE	EC	30/05/19
D	MAJOR CHANGES – PRELIMINARY 90% RE-ISSUE	EC	14/06/19
E	100% DESIGN ISSUE	EC	25/06/19
F	100% MINOR NOTES	EC	27/06/19
0	FOR CONSTRUCTION	EC	01/08/19
1	FOR CONSTRUCTION	EC	09/08/19
2	FOR CONSTRUCTION	EC	29/08/19
3	FOR CONSTRUCTION	EC	16/09/19
4	FOR CONSTRUCTION	EC	10/10/19
5	MODCOL SHOP DRAWING	EC	15/10/19

PROJECT: MOOREBANK LOGISTICS PARK WAREHOUSE 3

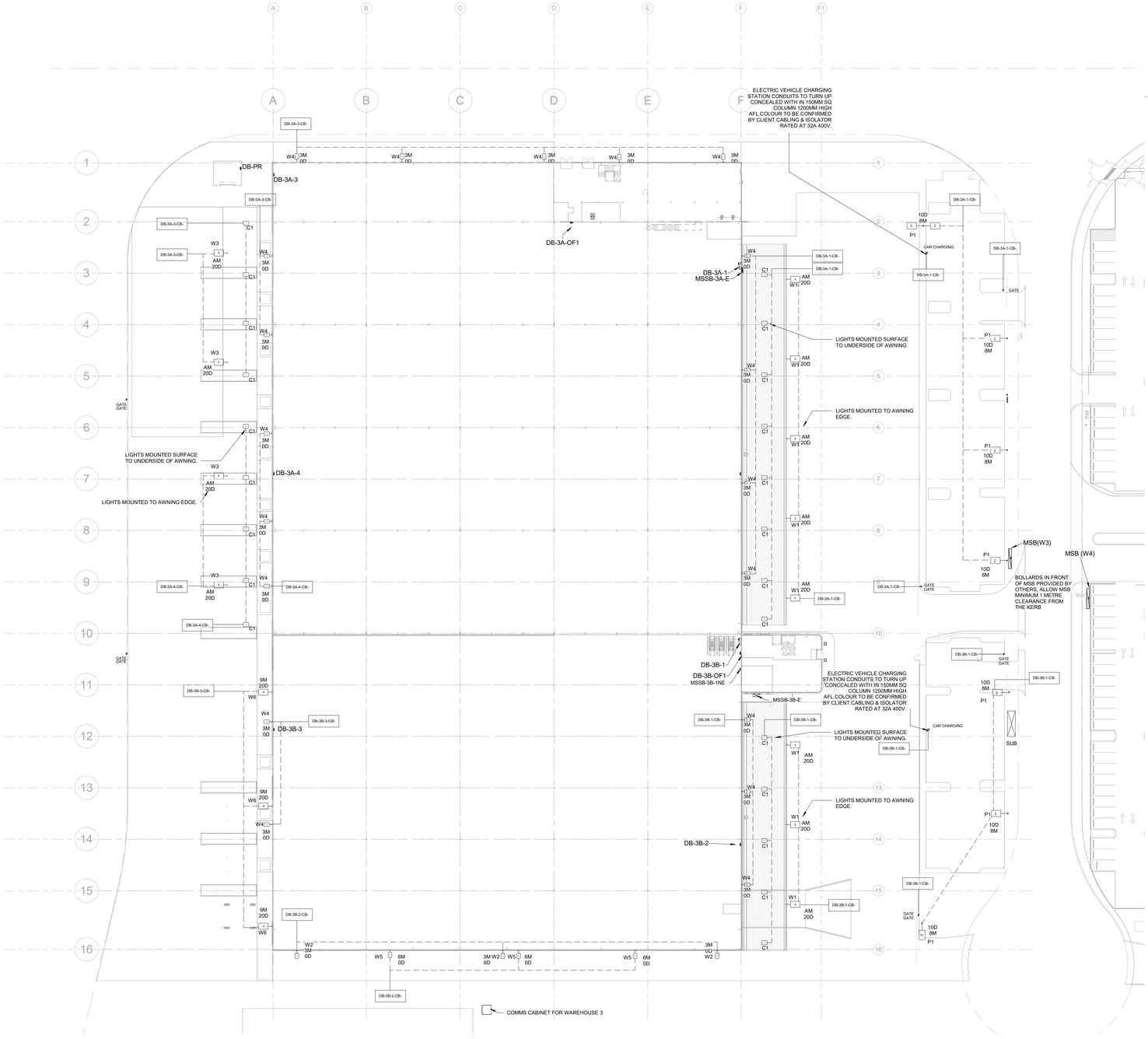
PROJECT ADDRESS: MOOREBANK AVENUE, MOOREBANK NSW

FOR CONSTRUCTION

ELECTRICAL CONSULTANT: C-LEVEL DESIGN & ENGINEERING

TITLE: COVER & LEGEND W3

PAPER SIZE	SCALE	DWG No.	REVISION
B1	NTS	WHP3-MOD-EL-SDW-0000-PDF	5



1 EXTERNAL SERVICES W3
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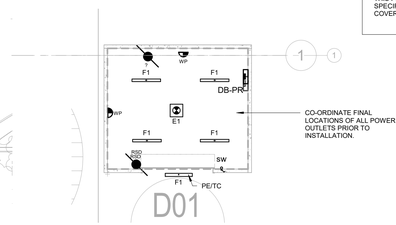

2 PUMP ROOM LIGHTING & POWER
1 : 100

GREEN STAR

THIS PROJECT IS SUBJECTED TO GREEN STAR SUSTAINABILITY SPECIFICATION. FOR FURTHER INFORMATION PLEASE REFER TO COVER & LEGEND AND GREEN STAR SPECIFICATION.

THESE DRAWINGS ARE FOR D&C SUBCONTRACTOR TO COMPLETE FINAL DESIGN, DESIGN CHECKS AND REVIEW, COORDINATION AND VERIFICATION.

DESIGN & CONSTRUCT DRAWING SET

CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALED DRAWINGS. THE INFORMATION ON THIS DRAWING REMAINS THE PROPERTY OF C-LEVEL PTY LTD DESIGN CONSULTANTS.

KEY

CLIENT caesarstone

CLIENT QUBE

ARCHITECT nettletontribe

ELECTRICAL INSTALLATION MODCOL.COM.AU

BUILDER HANSEN YUNCKEN

REV	DESCRIPTION	DRAWN BY	DATE
4	MODCOL SHOP DRAWING	EC	18/09/19
5	MODCOL SHOP DRAWING	EC	24/09/19
6	MODCOL SHOP DRAWING	EC	10/10/19
7	MODCOL SHOP DRAWING	EC	15/10/19
8	MODCOL SHOP DRAWING	EC	14/11/19
9	MODCOL SHOP DRAWING	EC	26/11/19
10	MODCOL SHOP DRAWING	EC	09/12/19
11	MODCOL SHOP DRAWING	EC	17/01/20
12	MODCOL SHOP DRAWING	EC	29/01/20

Project
MOOREBANK LOGISTICS PARK WAREHOUSE 3

PROJECT ADDRESS
MOOREBANK AVENUE, MOOREBANK NSW

C-LEVEL DESIGN & ENGINEERING

EXTERNAL SERVICES AND PUMP ROOM W3

FOR CONSTRUCTION | B1 | As indicated | WHP3-MOD-EL-SDW-0002-PDF | 12

MOOREBANK LOGISTICS PARK WAREHOUSE 4

ELECTRICAL SERVICES

MOOREBANK AVENUE, MOOREBANK NSW

DRAWING LIST

NO.	DRAWING TITLE
0000	COVER & LEGEND W4
0001	SITE PLAN & CONDUITS W4
0002	EXTERNAL SERVICES & PUMP ROOM W4
0003	COMMUNICATIONS LEAD-IN W4
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- H2 — LED HIGHBAY LED 225W 4000K NARROW BEAM FIXED WIRE SUSP LA LUCE TITAN FB-225-NA-15110D
- H3 — LED HIGHBAY LED 300W 4000K WIDE BEAM FIXED WIRE SUSP LA LUCE TITAN FB-300-LA-3090D
- C1 — LED LOWBAY 4000K 250W SURFACE MOUNT IP65 NIKKON LITE-FOCUS PER 250W 130-100 DEG
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  - HIGH FREQUENCY BALLASTS
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  - 0,1 LUX TO 4,5 METERS BEYOND THE SITE INTO THE NIGHT SKY
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- Ex2 — EXIT SIGN LED SURFACE/WALL MOUNT 16-27m VIEWING DISTANCE CLEVERTRONICS - ECFLED
- EXJ — EXIT SIGN JUMBO 40m VIEWING DISTANCE CLEVERTRONICS - CJELED

DIRECTION ARROWS INSTALLED PER DESIGN & DRAWING REQUIREMENTS

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- E1 — LED SPITFIRE SURFACE MOUNT EMERGENCY BATTERY D63 CLEVERTRONICS - CLIFE-SMS-PRO

LIGHTING CONTROL

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- MS — MOTION SENSOR - RECESSED ROUND WHITE WP - SURFACE MOUNT IP RATED EXTERIOR AREAS
- MD1 — 230V - RECESSED ROUND WHITE 230V WP - EXTERIOR IP RATED - SURFACE MOUNT
- # — LIGHT SWITCHING CHANNEL No.
- PE — DAYLIGHT PE SENSOR - RECESSED ROUND WHITE WP - SURFACE MOUNT IP RATED EXTERIOR AREAS

POWER

- MSB — MSB - MAIN SWITCHBOARD.
- DB — DB - DISTRIBUTION BOARD.
- OTHER SERVICES CONTROL PANEL
- SINGLE GPO 10A - WHITE 3 PIN CLIPSAL C2000 SERIES
- DOUBLE GPO 10A - WHITE 3 PIN CLIPSAL C2000 SERIES
- OUTLET 1PH 3PIN GREY IP56 - NHP ISO RANGE OR EQ. XXA = CURRENT RATING
- OUTLET 3PH 5PIN GREY IP56 - NHP ISO RANGE OR EQ. XXA = CURRENT RATING 5PIN DEFAULT, 4P=4PIN
- ISOLATOR 1PH - SURFACE MOUNT - NHP ISO OR EQ. XXA DENOTES CURRENT RATING
- ISOLATOR 3PH - SURFACE MOUNT - NHP ISO OR EQ XXA DENOTES CURRENT RATING

COMMUNICATIONS

- XX — DATA POINT 'XX' NOMINATES NUMBER OF POINTS AT LOCATION Style to Match Power GPO Outlets
- MDF — MAIN DISTRIBUTION FRAME Krone - Wall Mounted 27way
- CAB — COMMUNICATIONS CABINET Refer drawings & schedules for further details.
- TV — TV AERIAL OUTLET RG6 Style to Match Power Outlets
- HDMI — AV HDMI CABLING & OUTLET PLATE Style to Match Power Outlets

SWITCHBOARD SCHEMATIC

- SWITCH
- LOAD BREAK ISOLATION SWITCH
- MINIATURE CIRCUIT BREAKER XXA = TRIP SETTING
- MOULDED CASE CIRCUIT BREAKER(MCCB) XXA = TRIP SETTING XXA = MAXIMUM CURRENT RATING
- —W— NUMBER OF PHASES. '1' BAR = SINGLE PHASE '2' BAR = TWO PHASE '3' BAR = THREE PHASE

RETICULATION

- DUCTED SKIRTING 2CH 150 X 50mm NATURAL ANODISED ALUM
- ELEC CABLE TRAY — ELECTRICAL CABLE TRAY Refer drawings & schedules for style & sizes
- COMMS BASKET TRAY — COMMUNICATIONS BASKET TRAY Refer drawings & schedules for style & sizes
- E — ELECTRICAL CONDUIT Refer drawings for sizes & details
- C — COMMUNICATIONS CONDUIT Refer drawings for sizes & details
- SEC — SECURITY CONDUIT Refer drawings for sizes & details
- 2E50 — CONDUIT TAGS SIZE E=ELECTRICAL C=COMMUNICATION S=SECURITY QUANTITY
- CP1 — PIT - P1 TYPE WITH COMMUNICATIONS LID.
- CP2 — PIT - P5 TYPE WITH COMMUNICATIONS LID.
- EP1 — PIT - P1 TYPE WITH ELECTRICAL LID.
- EP2 — PIT - P5 TYPE WITH ELECTRICAL LID.
- FB1 — RECESSED FLOOR BOX
- E1-L-XX — CIRCUIT TAGS CIRCUIT NUMBER CIRCUIT TYPE, P=POWER, L=LIGHT CIRCUIT ORIGIN (DB)

ABBREVIATIONS

RSD	ROLLER SHUTTER DOOR
SS	STARTER SOCKET FOR WORKSTATIONS SOFT WIRING
AB	ABOVE BENCH
AD	ABOVE DOOR
BB	BELOW BENCH
CM	CEILING MOUNTED
WM	WALL MOUNTED
AC	AIR CONDITIONING
SK	MOUNTED ON SKIRTING
CS	CEILING SPACE
FR	FRIDGE OUTLET
DW	DISHWASHER OUTLET
MW	MICROWAVE OUTLET
PE	PE CELL CONTROLLED
TC	TIMECLOCK CONTROLLED
DIM	DIMMABLE
HL	AT HIGH LEVEL
RET	WITH RETRACTABLE CABLES
CL	CLEANER
UF	URINAL FLUSH
WP	WEATHERPROOF
HD	HAND DRYER
HW	HOT WATER UNIT
300	MOUNTING HEIGHT
FIP	FIRE INDICATOR PANEL
RCD	RESIDUAL CURRENT DEVICE
SL	SECURITY LIGHTING

GENERAL NOTES:
1. ALL WORKS TO COMPLY WITH THE RELEVANT STANDARDS & CODES INCLUDING BUT NOT LIMITED TO AS2293, AS3000, AS3008,
2. ALL SUBMAIN CABLING TO BE INSTALLED IN UNDERGROUND CONDUITS OR SUPPORTED ON CABLE TRAYS.
3. ALL POWER & COMMUNICATIONS CABLING SHALL BE INSTALLED WITH SEGREGATION IN ACCORDANCE WITH AS3000 & RELEVANT APPLICABLE COMMUNICATIONS STANDARDS.
4. MUST USE APPROVED CONDUIT TYPES FOR ALL COMMUNICATION LEAD IN SERVICES I.E. TELSTRA & NBN SERVICES.
5. MINIMUM SIZE OF 2,5MMSQ CU TO BE USED FOR ALL SUBCIRCUIT CABLING.

LIGHTING NOTES:
1. ALL EMERGENCY & EXIT LIGHTING SHALL BE CERTIFIED TO AS2293 & PROVIDED WITH NATA CERTIFIED TEST CERTIFICATES,
2. ALL EMERGENCY & EXIT LIGHTS TO BE TESTED, LABELED & LOGGED, AFFIX UNIQUE NUMBERING TO FIXTURES CORRESPONDING TO LOG BOOS.
3. PROVIDE RCD'S TO ALL LIGHTING & POWER CIRCUITS PER AS3000.
4. ALL INTERNAL LIGHTS SHALL BE 4000K COLOUR OUTPUT UNLESS SPECIFICALLY NOTED.
5. ALL EXTERNAL LIGHTS SHALL BE 5000K COLOUR OUTPUT UNLESS SPECIFICALLY NOTED.
6. ALL PE, MOTION & PRESENCE SENSORS TO BE TESTED & COMMISSIONED. WITH TIMES SET BE SPECIFICATIONS, TIMES UNIFORMLY MATCHED PER AREA TYPES,
7. ALL HIGHBAY LIGHTING TO BE INSTALLED WITHIN A 1,2M SPACE FROM ROOF STRUCTURES KEEPING MINIMUM DISTANCES AWAY FROM FIRE SPRINKLERS TO BE MAINTAINED AT ALL TIME.
8. ALL CABLE TRAYS & BASKETS TO BE EARTHED PER AS3000.
9. MINIMUM SIZE OF 2,5MMSQ CU TO BE USED FOR ALL SUBCIRCUIT CABLING.
10. ALL SUBCIRCUIT CABLING TO BE SIZED WITH A MAXIMUM OF 2,75% VOLTAGE DROP OR AS REQUIRED TO MAINTAIN STANDARDS PER AS3000.

POWER NOTES:
1. REFER ARCHITECTURAL & JOINERY DETAIL NOTES FOR OUTLET MOUNTING HEIGHTS.
2. SURFACE MOUNTED GPO'S TO BE INSTALLED ON SOLID MOUNTING BLOCKS &/OR BE WEATHERPROOF TYPE IN APPROPRIATE AREAS.
3. ALL ACCESSORIES TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
4. ENSURE PHASE ROTATION AT EACH 3PHASE OUTLET & ISOLATOR IS CORRECT DURING TESTING.
5. MECHANICAL PROTECTION TO BE PROVIDED TO ALL CONDUITS RISING FROM THE GROUND, FLOOR, ENTRIES INTO SWITCHBOARDS & PANELS.
6. PROVIDE SEGREGATED CABLING ACCESS FOR POWER & DATA SERVICES TO SKIRTING DUCTS AT APPROX 5M SPACES OR WHERE PRACTICAL.
7. CABLES SHALL BE GROUPED ON TRAYS & CATENARIES IN MAXIMUM QUANTITIES OF 6X CABLES PER GROUP.
8. ALL CABLING INSTALLED ABOVE CEILINGS SHALL BE SUPPORTED OR FIXED, BE KEPT CLEAR FROM CEILINGS.
9. ALL CABLING SHALL BE INSTALLED PER AS3000, CABLING CONCEALED WHERE PRACTICAL. INSTALLED SQUARE TO BUILDING LINES IN A NEAT & TIDY PROFESSIONAL MANNER. THE ENVIRONMENT TYPE CONSIDERED & MECHANICAL PROTECTION PROVIDED WHERE REQUIRED.
10. HAND DRYER'S SHALL BE HARD WIRED WITH ISOLATING SWITCH INSTALLED DIRECTLY ABOVE HAND DRYER AT 2100MM & LABELED ACCORDINGLY.
11. CONTRACTOR TO ALLOW FOR & PROVIDE THERMO GRAPHIC SCANNING & FULL REPORTS FOR ALL SWITCHBOARDS AT PROJECT HANDOVER.

THESE DRAWINGS ARE FOR D&C SUBCONTRACTOR TO COMPLETE FINAL DESIGN, DESIGN CHECKS AND REVIEW, COORDINATION AND VERIFICATION.

DESIGN & CONSTRUCT DRAWING SET

CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALED DRAWINGS.
THE INFORMATION ON THIS DRAWING REMAINS THE PROPERTY OF C-LEVEL PTY LTD DESIGN CONSULTANTS.

KEY

CLIENT: QUBE

ELECTRICAL INSTALLATION: MODCOL.COM.AU

ARCHITECT: nettletontribe

BUILDER: HANSENYUNCKEN

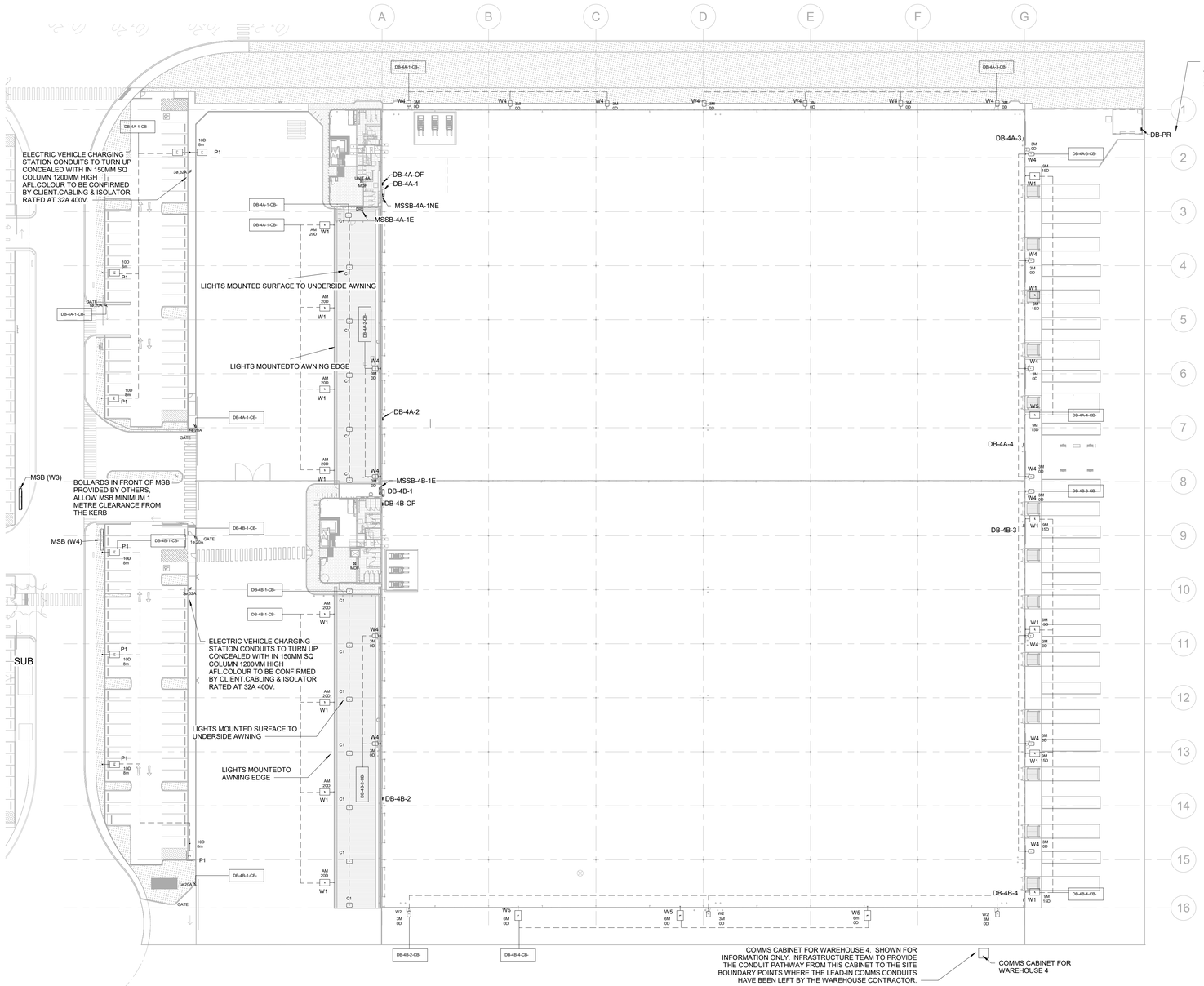
REV	DESCRIPTION	DRAWN BY	DATE
A	90% ISSUE FOR CONSTRUCTION CERTIFICATE	EC	13/05/19
B	100% DESIGN ISSUE	EC	27/05/19
C	100% DESIGN ISSUE	EC	30/05/19
D	100% DESIGN ISSUE	EC	21/06/19
E	100% DESIGN ISSUE	EC	24/06/19
F	100% DESIGN ISSUE	EC	25/06/19
G	100% MINOR NOTES	EC	27/06/19
O	FOR CONSTRUCTION	EC	01/08/19
1	FOR CONSTRUCTION	EC	09/08/19
2	MODCOL SHOP DRAWING	EC	10/10/19
3	MODCOL SHOP DRAWING	EC	15/10/19
4	MODCOL SHOP DRAWING	EC	07/02/20

PROJECT: MOOREBANK LOGISTICS PARK WAREHOUSE 4
PROJECT ADDRESS: MOOREBANK AVENUE, MOOREBANK NSW
FOR CONSTRUCTION

ELECTRICAL CONSULTANT: C-LEVEL DESIGN & ENGINEERING

TITLE: COVER & LEGEND W4

PAPER SIZE	SCALE	DWG No.	REVISION
B1	NTS	WHP3-MOD-EL-SDW-0000-PDF	4



1 EXTERNAL SERVICES W4
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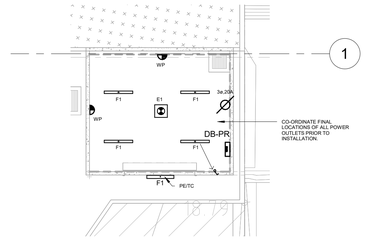

2 CLE-EL-DWG-E001-W4-P3
1 : 100

GREEN STAR

THIS PROJECT IS SUBJECTED TO GREEN STAR SUSTAINABILITY SPECIFICATION. FOR FURTHER INFORMATION PLEASE REFER TO COVER & LEGEND AND GREEN STAR SPECIFICATION.

THESE DRAWINGS ARE FOR D&C SUBCONTRACTOR TO COMPLETE FINAL DESIGN, DESIGN CHECKS AND REVIEW, COORDINATION AND VERIFICATION.

DESIGN & CONSTRUCT DRAWING SET

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KEY

CLIENT: QUBE

ARCHITECT: nettletontribe

ELECTRICAL INSTALLATION: MODCOL.COM.AU

BUILDER: HANSEN YUNCKEN

REV	DESCRIPTION	DRAWN BY	DATE
3	MODCOL SHOP DRAWING	EC	16/09/19
4	MODCOL SHOP DRAWING	EC	10/10/19
5	MODCOL SHOP DRAWING	EC	15/10/19
6	MODCOL SHOP DRAWING	EC	14/11/19
7	MODCOL SHOP DRAWING	EC	26/11/19
8	MODCOL SHOP DRAWING	EC	09/12/19
9	MODCOL SHOP DRAWING	EC	20/01/20
10	MODCOL SHOP DRAWING	EC	29/01/20

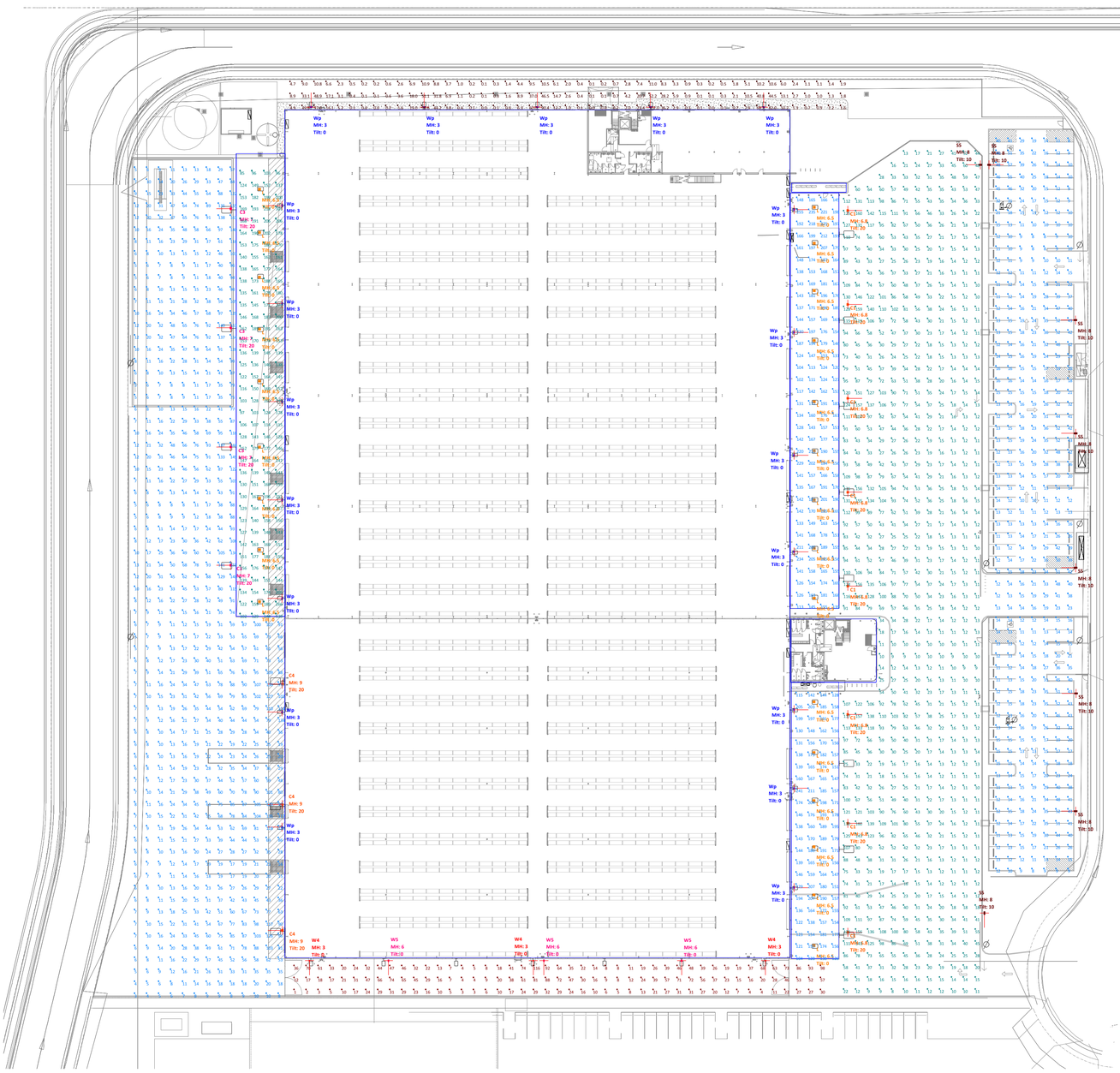
Project: MOOREBANK LOGISTICS PARK WAREHOUSE 4

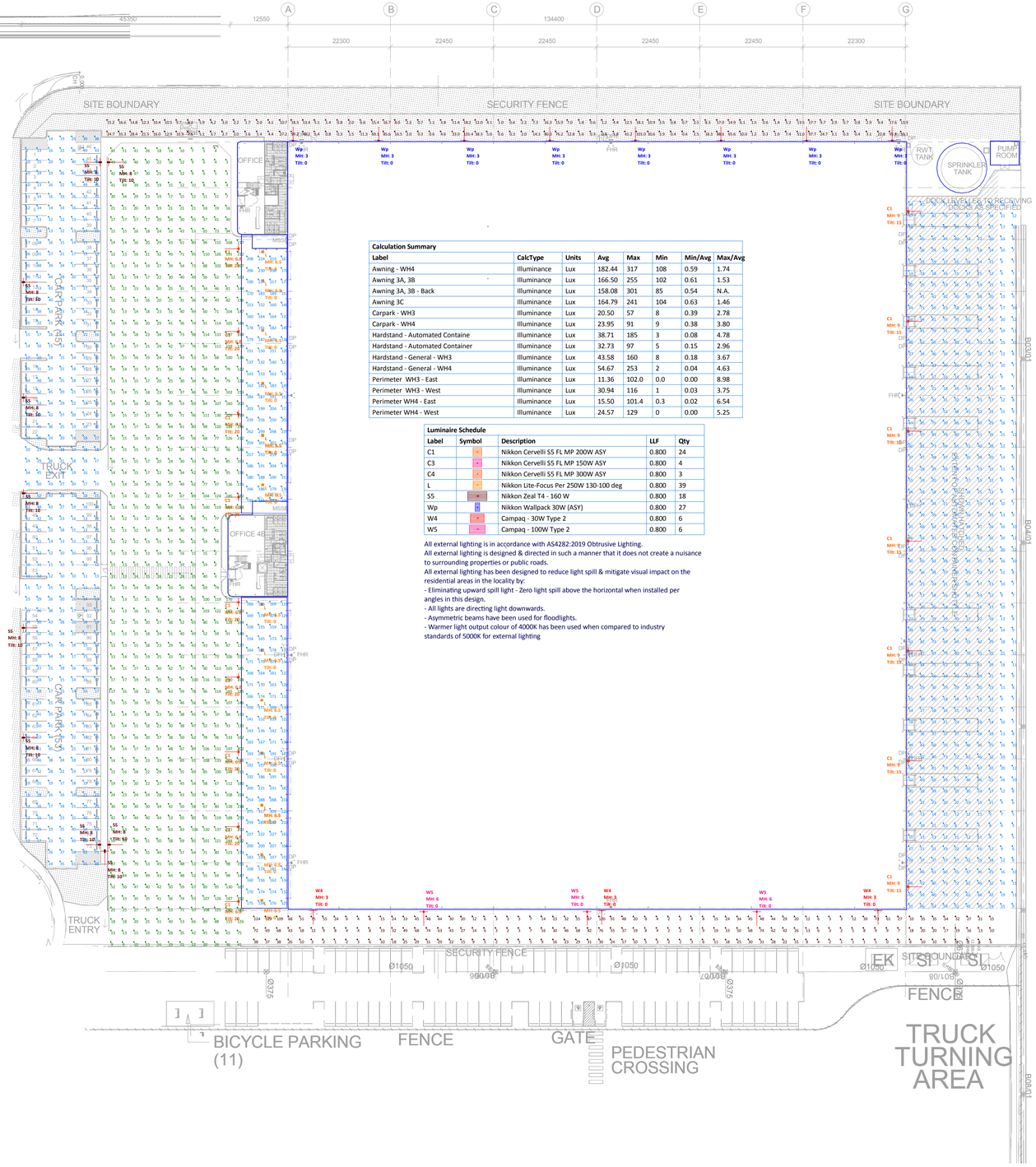
PROJECT ADDRESS: MOOREBANK AVENUE, MOOREBANK NSW

C-LEVEL DESIGN & ENGINEERING

EXTERNAL SERVICES AND PUMP ROOM W4

FOR CONSTRUCTION | B1 | As indicated | WHP4-MOD-EL-SDW-0002-PDF | 10





Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Max/Avg
Awning - WH4	Illuminance	Lux	182.44	317	108	0.59	1.74
Awning 3A, 3B	Illuminance	Lux	166.50	255	102	0.61	1.53
Awning 3A, 3B - Back	Illuminance	Lux	158.08	301	85	0.54	N.A.
Awning 3C	Illuminance	Lux	164.79	241	104	0.63	1.46
Carpark - WH3	Illuminance	Lux	20.50	57	8	0.39	2.78
Carpark - WH4	Illuminance	Lux	23.95	91	9	0.38	3.80
Hardstand - Automated Containe	Illuminance	Lux	38.71	185	3	0.08	4.78
Hardstand - Automated Container	Illuminance	Lux	32.73	97	5	0.15	2.96
Hardstand - General - WH3	Illuminance	Lux	43.58	160	8	0.18	3.67
Hardstand - General - WH4	Illuminance	Lux	54.67	253	2	0.04	4.63
Perimeter WH3 - East	Illuminance	Lux	11.36	102.0	0.0	0.00	8.98
Perimeter WH3 - West	Illuminance	Lux	30.94	116	1	0.03	3.75
Perimeter WH4 - East	Illuminance	Lux	15.50	101.4	0.3	0.02	6.54
Perimeter WH4 - West	Illuminance	Lux	24.57	129	0	0.00	5.25

Luminaire Schedule

Label	Symbol	Description	LLF	Qty
C1		Nikkon Cervelli S5 FL MP 200W ASY	0.800	24
C3		Nikkon Cervelli S5 FL MP 150W ASY	0.800	4
C4		Nikkon Cervelli S5 FL MP 300W ASY	0.800	3
L		Nikkon Lite-Focus Per 250W 130-100 deg	0.800	39
S5		Nikkon Zeal T4 - 160 W	0.800	18
Wp		Nikkon Wallpack 30W (ASY)	0.800	27
W4		Campaq - 30W Type 2	0.800	6
W5		Campaq - 100W Type 2	0.800	6

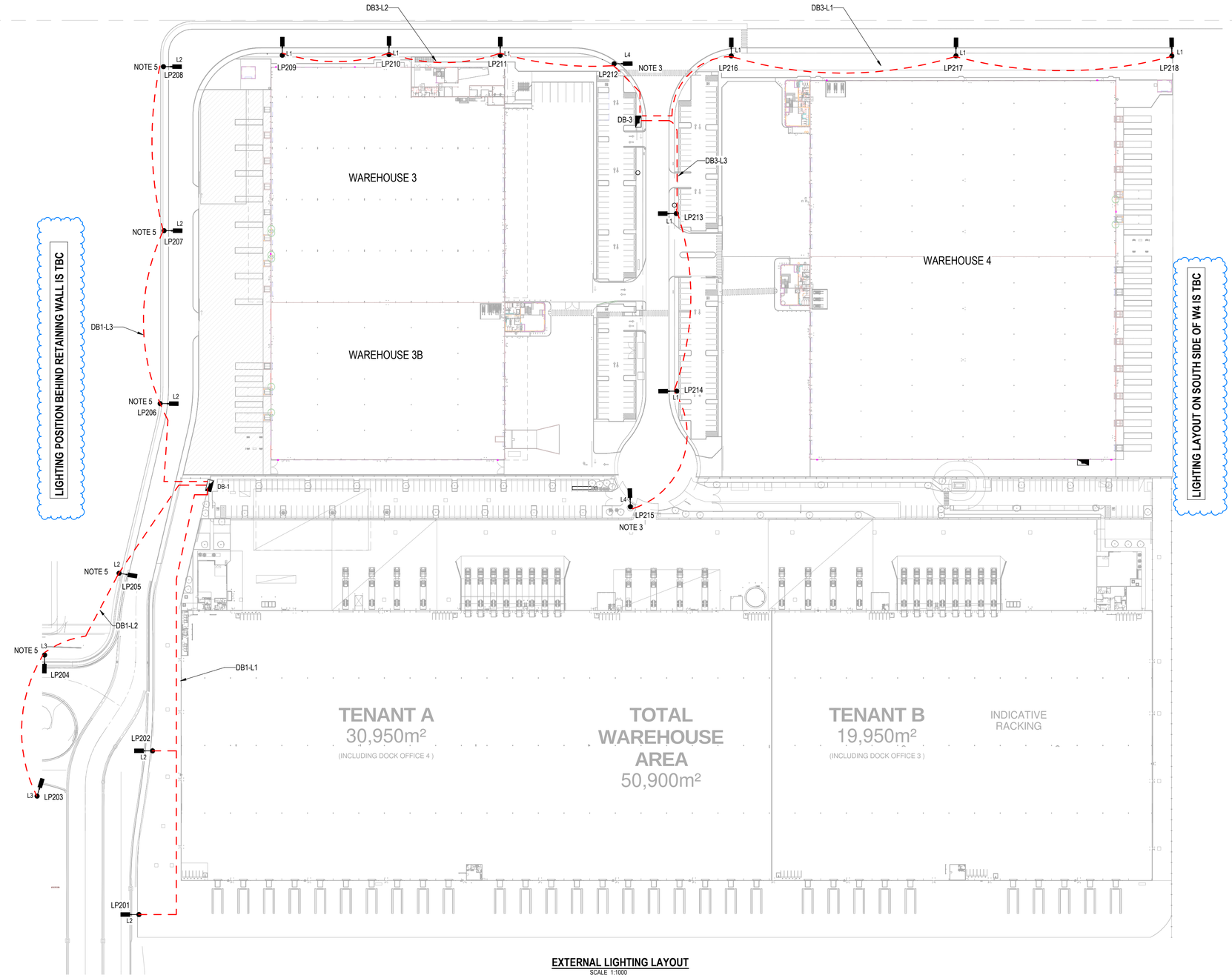
All external lighting is in accordance with AS4282:2019 Obtrusive Lighting.
All external lighting is designed & directed in such a manner that it does not create a nuisance to surrounding properties or public roads.
All external lighting has been designed to reduce light spill & mitigate visual impact on the residential areas in the locality by:
- Eliminating upward spill light - Zero light spill above the horizontal when installed per angles in this design.
- All lights are directing light downwards.
- Asymmetric beams have been used for floodlights.
- Warmer light output colour of 4000K has been used when compared to industry standards of 5000K for external lighting

AK

Moorebank Business Park - WH3, WH4 - EXT

18/7/2019 | REF: MBP-WH34EX-R05-180719

NIKKON Lighting Pty Ltd.



EXTERNAL LIGHTING LAYOUT
SCALE 1:1000

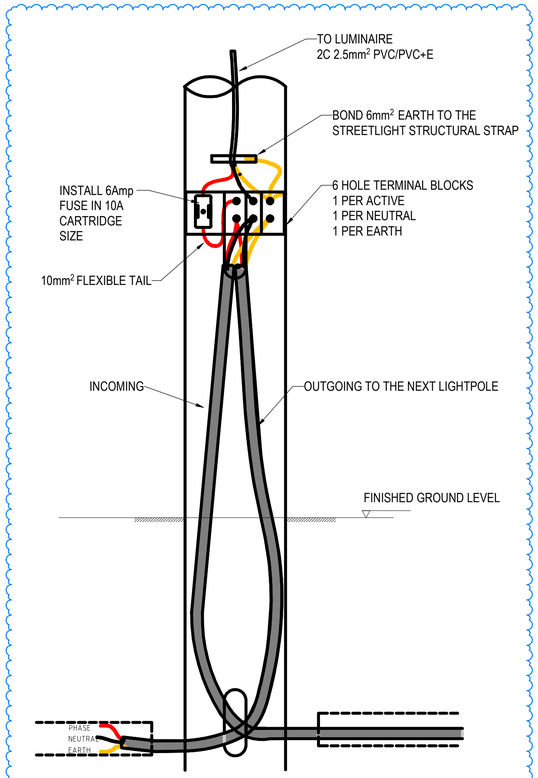
BOM LIGHT SCHEDULE									
ITEM	LUMINAIRE		COLUMN			BRACKET/OUTREACH		UPCAST	QTY
	LED WATTAGE	PRODUCT CODE	DESCRIPTION	PRODUCT CODE	FOOTING	DESCRIPTION	PRODUCT CODE		
L1	138w	Sylvania AT2 4B10R201L138	12m	GM Pole PIWE-FB-12-S-R 3.0 O/R	2700mm	3m	REFER TO MANUFACTURE DRAWING	5°	8
L2	138w	Sylvania AT2 4B10R201L138	15m	GM Pole PIWE-FB-15-S-R 3.0 O/R	2700mm OR (NOTE 5)	3m		5°	6
L3	138w	Sylvania AT2 4B10R201L138	15m	GM Pole PIWE-FB-15-S-R 4.5 O/R	2700mm OR NOTE 5	4.5m		5°	2
L4	138w	Sylvania AT2 4B10R201L138	12m	MFP_007 MFC_001 (TYPICAL)	3300mm MFC_001 (TYPICAL)	3m	MFL_004 (LUMINAIRE) MFL-005 (CCTV)	5°	2

NOTES:

1. REFER TO MANUFACTURER'S POLE COLUMN OUTREACH AND FOOTING DETAILS.
2. EACH POLE TOP LUMINAIRE SHALL BE CONTROLLED VIA CENTRALISED DYNALITE LIGHTING CONTROL.
3. SUPPLY AND INSTALL 1-OFF CCTV AT 7m AFFL.
4. POWER SUPPLY TO EACH POLE TO BE FED BY NEAREST LV DISTRIBUTION BOARD.
5. STREETLIGHTS ARE TO BE INSTALLED BEHIND RETAINING WALL, CONTRACTOR TO COORDINATE ON SITE. REFER TO FLATTER FOOTING DETAIL.
6. ALL STREETLIGHTING ALONG ITV ROAD IS SHOWN AS INDICATIVE LOCATION. FINAL LOCATION TO BE COORDINATED ON SITE.

LEGEND

INSTALL 1x16mm² 2C CU+E CABLE



TYPICAL GM POLE WIRING

IMPORTANT NOTE:

VERIFY DIMENSIONS IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS.

THE INFORMATION IN THIS DRAWING REMAINS THE PROPERTY OF ULTEGRA PTY LTD.

MOOREBANK LOGISTICS PARK

CLIENT: QUBE

HANSEN YUNCKEN

FOR CONSTRUCTION

PREPARED BY: Ultegra
UTILITIES & INFRASTRUCTURE SPECIALISTS
www.ultegra.com.au

REV	DATE	DESCRIPTION	DRAWN BY
A	01/05/19	50% COORDINATION	ME
B	05/06/19	50% REVISED COORDINATION	ME
C	21/06/19	75% ISSUE	ME
D	12/07/19	90% ISSUE	ME
E	02/08/19	95% ISSUE	ME
F	09/09/19	95% ISSUE	ME
G	24/09/19	100% ISSUE FDD	ME
0	23/10/19	ISSUED FOR CONSTRUCTION	ME
1	08/01/20	STANDARD FOOTING DEPTH UPDATED	ME

DRAWN	ME	DATE	25/11/19
DESIGN	AZ	SCALE	As indicated @A1
CHECKED	JZ	PLOT RATIO	1 / A1
APPROVED	JZ	PROJECT No	PIWE

MOOREBANK LOGISTICS PARK PRECINCT INFRASTRUCTURE (PIWE) STAGE 2
EXTERNAL LIGHTING LAYOUT

PIWE-ULT-EL-DWG-0102 | 1

MOOREBANK LOGISTICS PARK WAREHOUSE 5

ELECTRICAL SERVICES

MOOREBANK AVENUE, MOOREBANK NSW

DRAWING LIST

NO.	DRAWING TITLE
0000	COVER & LEGEND
0001	SITE PLAN & CONDUITS
0002	EXTERNAL SERVICES
0003	COMMUNICATIONS LEAD-IN
0100	WAREHOUSE LIGHTING & POWER W5A
0101	WAREHOUSE LIGHTING & POWER W5B
0200	OFFICE LIGHTING & POWER W5A
0201	OFFICE LIGHTING & POWER W5B
0300	SINGLE LINE DIAGRAMS 1
0301	SINGLE LINE DIAGRAMS 2

LIGHTING

- T1 — LED Panel T-BAR Diffused 36W 4000K 1200x300mm NIKKON UGR36
- T2 — LED Panel T-BAR Diffused 18W 4000K 600x300mm NIKKON UGR18
- D1 — LED DOWNLIGHT WHITE RECESSED 20W 4000K PIERLITE DOT9858P/40/A940-01/FP
- D2 — LED DOWNLIGHT WHITE RECESSED 11W 4000K 880lm PIERLITE STARCRY5
- D3 — LED DOWNLIGHT WHITE RECESSED 14W 4000K 1400-1500lm IP54 PIERLITE DOT8218/40+COVER
- H1 — LED HIGHBAY LED 250W 4000K T1 FIXED WIRE SUSP NOT USE
- H2 — LED HIGHBAY LED 200W 4000K WIDE BEAM FIXED WIRE SUSP NOT USE
- C1 — LED LOWBAY 4000K 150W SURFACE MOUNT IP65 NIKKON LITE-FOCUS PER 150W 130-100 DEG
- F1 — LINEAR LED BATTEN SURFACE MOUNT IP65 5000K 40W IP65 NIKKON-LM-40-50
- W1 — LED FLOOD LIGHT 150W 4000K BLACK - WALL/AWNING BRACKET IP65 NIKKON - CERVELLI S5 150-W BLACK + WALL BRACKET
- W2 — LED FLOOD LIGHT 150W 4000K BLACK - WALL/AWNING BRACKET IP65 NIKKON - CERVELLI S5 150-W BLACK + WALL BRACKET
- P1 — LED LIGHT 130W TYPE3 5000K BLACK IP65 ON POLE NIKKON - ZEAL-T3-130W CK BLACK (ADAPTOR REQ FOR MULTI HEAD ARRANGEMENTS)

XXM — MOUNTING HEIGHT (WALL OR POLE) - ABOVE FINSIHED FLOOR
XXD — FITTING TILT IN DEGREES

POLE — LIGHT POLES TO BE GALVANISED OR BLACK PAINT FINISH, TAPERED STYLE, FOOTING DETAIL TO BE APPROVED BY APPROPRIATE CIVIL/STRUCTURAL ENGINEER
REFER TO DRAWINGS FOR DETAILS & SIZES

ALL INTERNAL LIGHTS TO BE 4000K UNLESS SPECIFICALLY NOTED
ALL EXTERNAL LIGHTS TO BE 5000K UNLESS SPECIFICALLY NOTED

EMERGENCY LIGHTING

- Ex1 — EXIT SIGN LED BLADE RECESSED 16-27m VIEWING DISTANCE CLEVERTRONICS - EUBLED
- Ex2 — EXIT SIGN LED SURFACE/WALL MOUNT 16-27m VIEWING DISTANCE CLEVERTRONICS - ECFLED
- EXJ — EXIT SIGN JUMBO 40m VIEWING DISTANCE CLEVERTRONICS - CJELED
- EM1 — LED SPITFIRE RECESSED EMERGENCY BATTERY D25 CLEVERTRONICS - ELIFE-X
- E1 — LED SPITFIRE SURFACE MOUNT EMERGENCY BATTERY D63 CLEVERTRONICS - CLIFE-SMS-PRO

LIGHTING CONTROL

- LSP — LIGHT SWITCH - 'SW' LOCAL SWITCH WHITE - 'LSP' SWITCH PANEL MULTIPLE SWITCHES - 'DIM' DIMMABLE
- MS — MOTION SENSOR - RECESSED ROUND WHITE WP - SURFACE MOUNT IP RATED EXTERIOR AREAS DALI CONTROLLED.
- MS1 — 230V - RECESSED ROUND WHITE 230V WP - EXTERIOR IP RATED - SURFACE MOUNT
- # — LIGHT SWITCHING CHANNEL No.
- PE — DAYLIGHT PE SENSOR - RECESSED ROUND WHITE WP - SURFACE MOUNT IP RATED EXTERIOR AREAS DALI CONTROLLED

POWER

- MSB — MSB - MAIN SWITCHBOARD.
- DB — DB - DISTRIBUTION BOARD.
- OTHER SERVICES CONTROL PANEL
- SINGLE GPO 10A - WHITE 3 PIN CLIPSAL C2000 SERIES
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  - C=COMMUNICATION
  - S=SECURITY
  - QUANTITY
- CP1 — PIT - P1 TYPE WITH COMMUNICATIONS LID.
- CP2 — PIT - P5 TYPE WITH COMMUNICATIONS LID.
- EP1 — PIT - P1 TYPE WITH ELECTRICAL LID.
- EP2 — PIT - P5 TYPE WITH ELECTRICAL LID.
- FB1 — RECESSED FLOOR BOX
- 01-L-XX — CIRCUIT TAGS
  - CIRCUIT NUMBER
  - CIRCUIT TYPE, P=POWER, L=LIGHT
  - CIRCUIT ORIGIN (DB)

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2. ALL SUBMAIN CABLING TO BE INSTALLED IN UNDERGROUND CONDUITS OR SUPPORTED ON CABLE TRAYS.
3. ALL POWER & COMMUNICATIONS CABLING SHALL BE INSTALLED WITH SEGREGATION IN ACCORDANCE WITH AS3000 & RELEVANT APPLICABLE COMMUNICATIONS STANDARDS.
4. MUST USE APPROVED CONDUIT TYPES FOR ALL COMMUNICATION LEAD IN SERVICES I.E. TELSTRA & NBN SERVICES.
5. MINIMUM SIZE OF 2.5MMSQ CU TO BE USED FOR ALL SUBCIRCUIT CABLING.

LIGHTING NOTES:
1. ALL EMERGENCY & EXIT LIGHTING SHALL BE CERTIFIED TO AS2293 & PROVIDED WITH NATA CERTIFIED TEST CERTIFICATES.
2. ALL EMERGENCY & EXIT LIGHTS TO BE TESTED, LABELED & LOGGED, AFFIX UNIQUE NUMBERING TO FIXTURES CORRESPONDING TO LOG BOOS.
3. PROVIDE RCD'S TO ALL LIGHTING & POWER CIRCUITS PER AS3000.
4. ALL INTERNAL LIGHTS SHALL BE 4000K COLOUR OUTPUT UNLESS SPECIFICALLY NOTED.
5. ALL EXTERNAL LIGHTS SHALL BE 5000K COLOUR OUTPUT UNLESS SPECIFICALLY NOTED.
6. ALL PE, MOTION & PRESENCE SENSORS TO BE TESTED & COMMISSIONED, WITH TIMES SET BE SPECIFICATIONS, TIMES UNIFORMLY MATCHED PER AREA TYPES.
7. ALL HIGHBAY LIGHTING TO BE INSTALLED WITHIN A 1.2M SPACE FROM ROOF STRUCTURES KEEPING MINIMUM DISTANCES AWAY FROM FIRE SPRINKLERS TO BE MAINTAINED AT ALL TIME.
8. ALL CABLE TRAYS & BASKETS TO BE EARTHED PER AS3000.
9. MINIMUM SIZE OF 2.5MMSQ CU TO BE USED FOR ALL SUBCIRCUIT CABLING.
10. ALL SUBCIRCUIT CABLING TO BE SIZED WITH A MAXIMUM OF 2.75% VOLTAGE DROP OR AS REQUIRED TO MAINTAIN STANDARDS PER AS3000.

POWER NOTES:
1. REFER ARCHITECTURAL & JOINERY DETAIL NOTES FOR OUTLET MOUNTING HEIGHTS.
2. SURFACE MOUNTED GPO'S TO BE INSTALLED ON SOLID MOUNTING BLOCKS &/OR BE WEATHERPROOF TYPE IN APPROPRIATE AREAS.
3. ALL ACCESSORIES TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
4. ENSURE PHASE ROTATION AT EACH 3PHASE OUTLET & ISOLATOR IS CORRECT DURING TESTING.
5. MECHANICAL PROTECTION TO BE PROVIDED TO ALL CONDUITS RISING FROM THE GROUND, FLOOR, ENTRIES INTO SWITCHBOARDS & PANELS.
6. PROVIDE SEGREGATED CABLING ACCESS FOR POWER & DATA SERVICES TO SKIRTING DUCTS AT APPROX 6M SPACES OR WHERE PRACTICAL.
7. CABLES SHALL BE GROUPED ON TRAYS & CATENARIES IN MAXIMUM QUANTITIES OF 6X CABLES PER GROUP.
8. ALL CABLING INSTALLED ABOVE CEILINGS SHALL BE SUPPORTED OR FIXED, BE KEPT CLEAR FROM CEILINGS.
9. ALL CABLING SHALL BE INSTALLED PER AS3000, CABLING CONCEALED WHERE PRACTICAL INSTALLED SQUARE TO BUILDING LINES IN A NEAT & TIDY PROFESSIONAL MANNER. THE ENVIRONMENT TYPE CONSIDERED & MECHANICAL PROTECTION PROVIDED WHERE REQUIRED.
10. HAND DRYER'S SHALL BE HARD WIRED WITH ISOLATING SWITCH INSTALLED DIRECTLY ABOVE HAND DRYER AT 2100MM & LABELED ACCORDINGLY.

GREEN STAR:

- THIS PROJECT IS CURRENTLY COMPLIANT WITH 4 STAR SPECIFICATION. REFER TO FULL GREEN STAR SPECIFICATION FOR FURTHER DETAILS.
- CODE 6.0 = ENERGY METERING TO BE PROVIDED TO ALLOW FOR MONITORING OF THE RELEVANT AREAS.
- CODE 6.1 = MONITORING SYSTEM MUST ACCURATELY AND CLEARLY PRESENT THE METERED DATA
- CODE 11.0 = MINIMUM LIGHTING COMFORT
  - •• FLICKER - FREE LIGHTING
  - •• A1&A2 BALLAST
  - •• HIGH FREQUENCY BALLASTS
  - •• ELECTRONIC BALLASTS IN HID LIGHTING
- CODE 11.1 = GENERAL ILLUMINANCE & GLARE REDUCTION
  - •• LIGHTING MEETS THE LEVELS RECOMMENDED IN THE RELEVANT STANDARD,
  - •• ALL BARE LIGHT SOURCES MUST BE FITTED WITH MEANS THAT OBSCURES THE DIRECT LIGHT SOURCE FROM ALL VIEWING ANGLES OF OCCUPANTS,
- CODE 11.3 = LOCALISED LIGHTING CONTROL - DALI OR OTHER CONTROL FOR OFFICE AREAS.
- CODE 1783 = LOW EMISSION VEHICLE INFRASTRUCTURE
- CODE 20.3 = PERMANENT CABLES - AT LEAST 90% OF ALL PERMANENT FORM WORK, CABLES, PIPES IS SOURCES FROM MANUFACTURER THAT MEET BEST PRACTICE GUIDELINES.
- CODE 27.0 = LIGHT POLLUTION TO NEIGHBORING BODIES - DEMONSTRATE THAT ALL OUTDOOR LIGHTING ON THE PROJECT COMPLIES WITH AS 4282.1997
- CODE 27.1 = LIGHT POLLUTION TO NIGHT SKY - THE DIRECT ILLUMINANCE FROM EXTERNAL LUMINAIRES ON THE PROJECT PRODUCES A MAXIMUM INITIAL POINT ILLUMINANCE VALUE NO GREATER THAN
  - •• 0.5 LUX TO THE SITE BOUNDARY
  - •• 0.1 LUX TO 4.5 METERS BEYOND THE SITE INTO THE NIGHT SKY
  - •• CALCULATIONS SHOULD BE IN ACCORDANCE WITH AS 4282:1997

CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALED DRAWINGS.

KEY

CLIENT: QUBE

ARCHITECT: nettletontribe

BUILDER

REV	DESCRIPTION	DRAWN BY	DATE
P1	PRELIMINARY 90%	EC	22/01/20

PROJECT: MOOREBANK LOGISTICS PARK WAREHOUSE 5
PROJECT ADDRESS: MOOREBANK AVENUE, MOOREBANK NSW

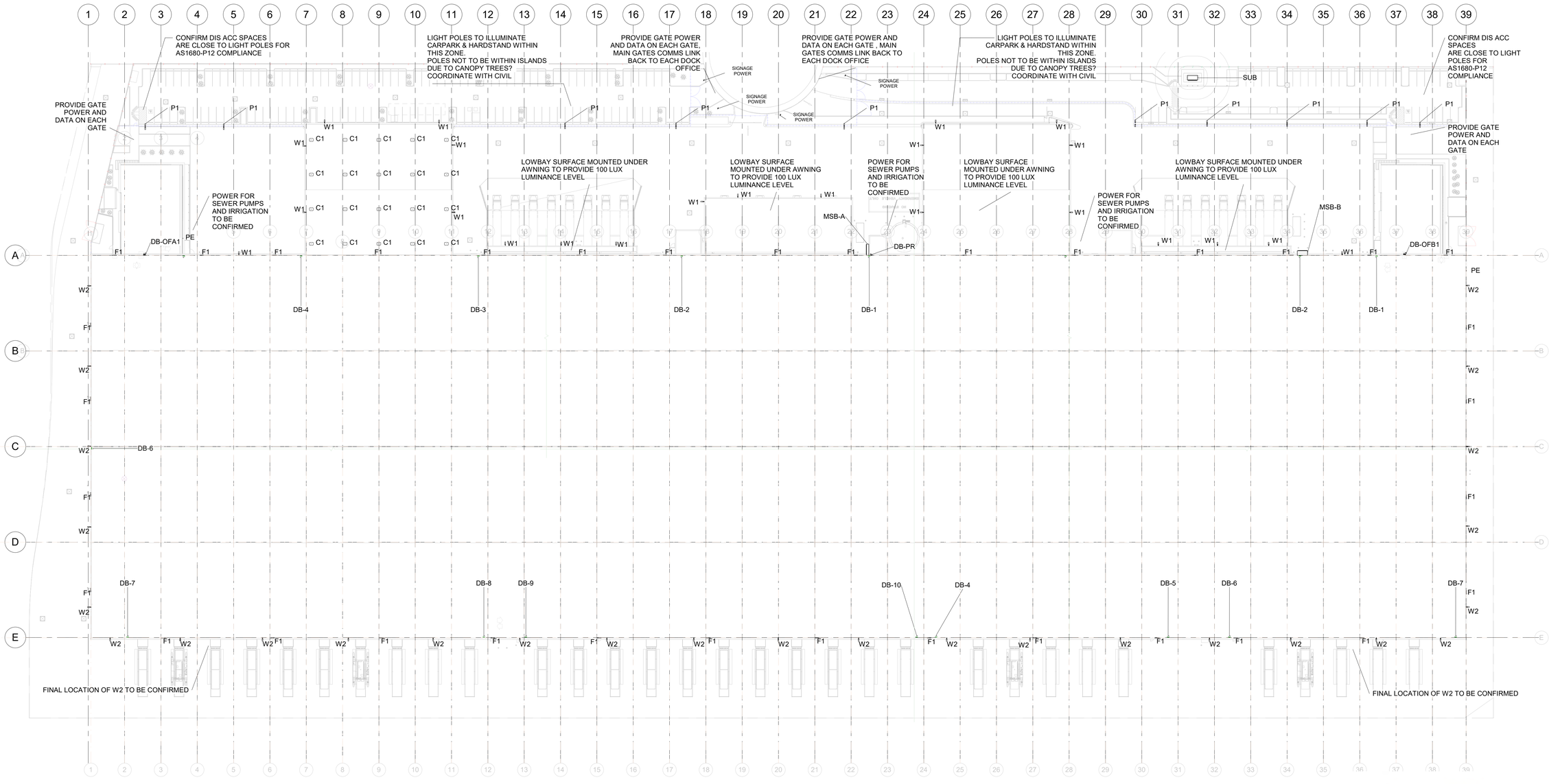
DATE: MAR-19 STATUS: PRELIMINARY

ELECTRICAL CONSULTANT: C-LEVEL DESIGN & ENGINEERING

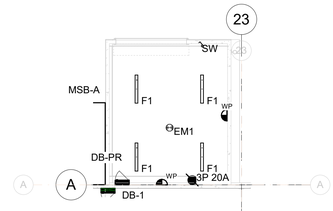
TITLE: COVER & LEGEND W5

PAPER SIZE: B1 SCALE: 00
DWG No.: WHP5-CLE-EL-DWG-0000
REVISION: P1

1 EXTERNAL SERVICES
1 : 500



2 PR LIGHTING & POWER
1 : 100



CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALED DRAWINGS. THE INFORMATION ON THIS DRAWING REMAINS THE PROPERTY OF C-LEVEL PTY LTD DESIGN CONSULTANTS.

KEY

CLIENT: QUBE

ARCHITECT: ARCHILE PROJECTS

BUILDER: Qanstruct Partner of choice

REV	DESCRIPTION	DRAWN BY	DATE
P1	PRELIMINARY	EC	09/10/19
P2	PRELIMINARY	EC	22/10/19
P3	PRELIMINARY	EC	24/10/19
P4	PRELIMINARY	EC	22/01/20

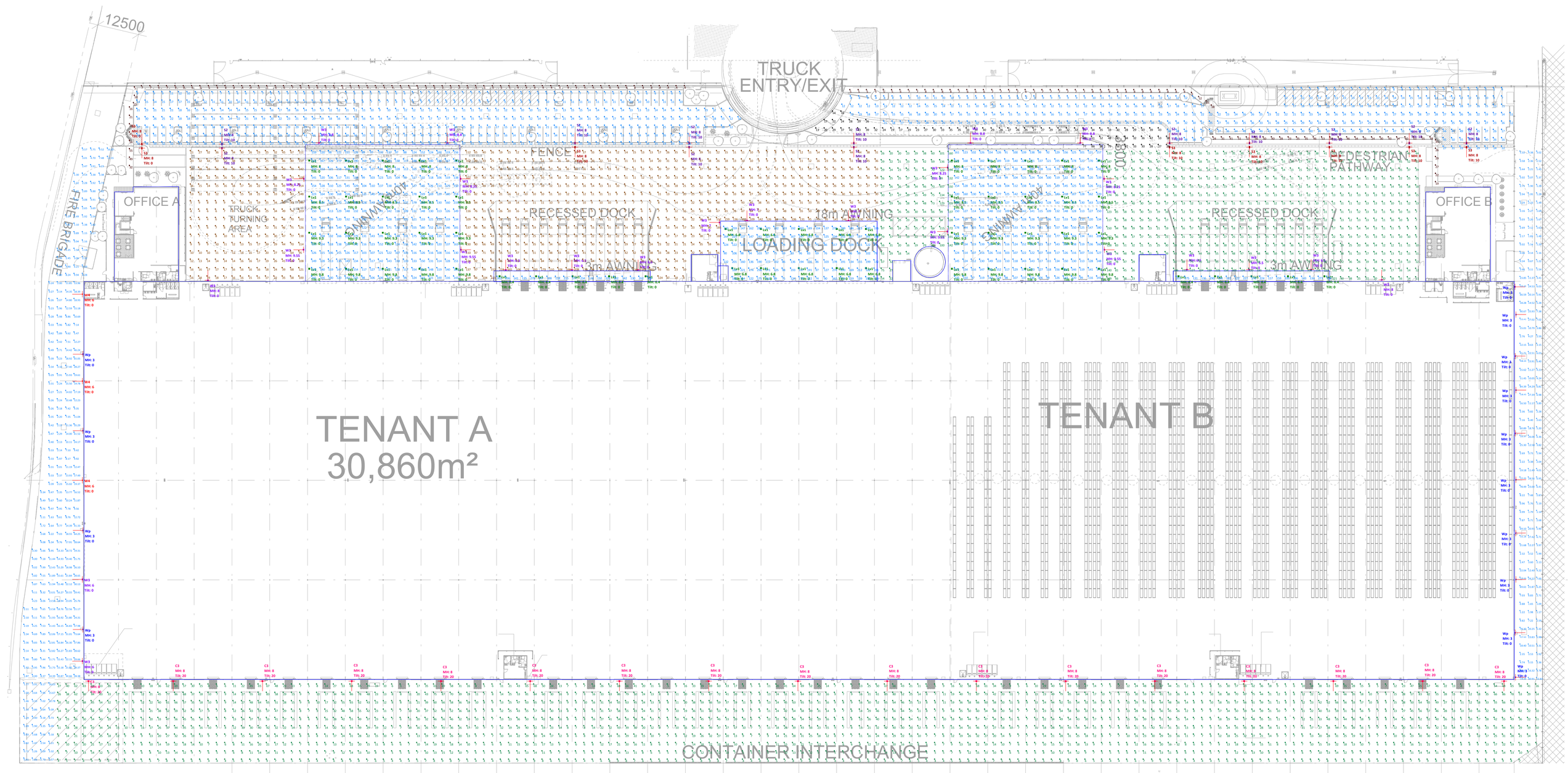
Project: MOOREBANK LOGISTICS PARK WAREHOUSE 5

PROJECT ADDRESS: MOOREBANK AVENUE, MOOREBANK NSW

ELECTRICAL CONSULTANT: C-LEVEL DESIGN & ENGINEERING

EXTERNAL SERVICES

PRELIMINARY | B1 | As indicated | WHP5-CLE-EL-DWG-0002 | P4



Luminaire Schedule				
Label	**Symbol**	**Description**	**LLF**	**Qty**
C3		Nikkon Cervelli S5 FL MP 150W ASY	0.800	17
Lv1		Nikkon Lite Focus Vulcan 150W 60deg	0.800	60
S2		Nikkon Zeal T3 - 130 W	0.800	12
S3		Nikkon Zeal T4 - 130 W	0.800	8
W3		Campaq - 100W Type 4	0.800	25
W4		Campaq - 30W Type 2	0.800	3
Wp		Nikkon Wallpack 30W (ASY)	0.800	14

Calculation Summary							
Label	**CalcType**	**Units**	**Avg**	**Max**	**Min**	**Min/Avg**	**Max/Avg**
Awning A - 18m	Illuminance	Lux	156.49	322	69	0.44	2.06
Awning A - 3m	Illuminance	Lux	234.84	377	118	0.50	1.61
Awning A - 40m	Illuminance	Lux	142.24	252	88	0.62	1.77
Awning B - 3m	Illuminance	Lux	234.47	378	117	0.50	1.61
Awning B - 40m	Illuminance	Lux	142.54	253	91	0.64	1.77
Carpark A	Illuminance	Lux	21.01	77	5	0.24	3.66
Carpark B	Illuminance	Lux	20.99	58	4	0.19	2.76
Fire truck access - A	Illuminance	Lux	9.22	73.64	0.17	0.02	7.99
Fire truck access - B	Illuminance	Lux	16.99	138.98	0.02	0.00	8.18
Hardstand - IMEX terminal	Illuminance	Lux	22.19	98	4	0.18	4.42
Hardstand A	Illuminance	Lux	37.28	221	4	0.11	5.93
Hardstand B	Illuminance	Lux	39.21	242	7	0.18	6.17
Ped pathway - A	Illuminance	Lux	8.56	55	4	0.47	6.43
Ped pathway - B	Illuminance	Lux	21.26	61	5	0.24	2.87
Truck - Entry Exit driveway - B	Illuminance	Lux	34.90	96	13	0.37	2.75

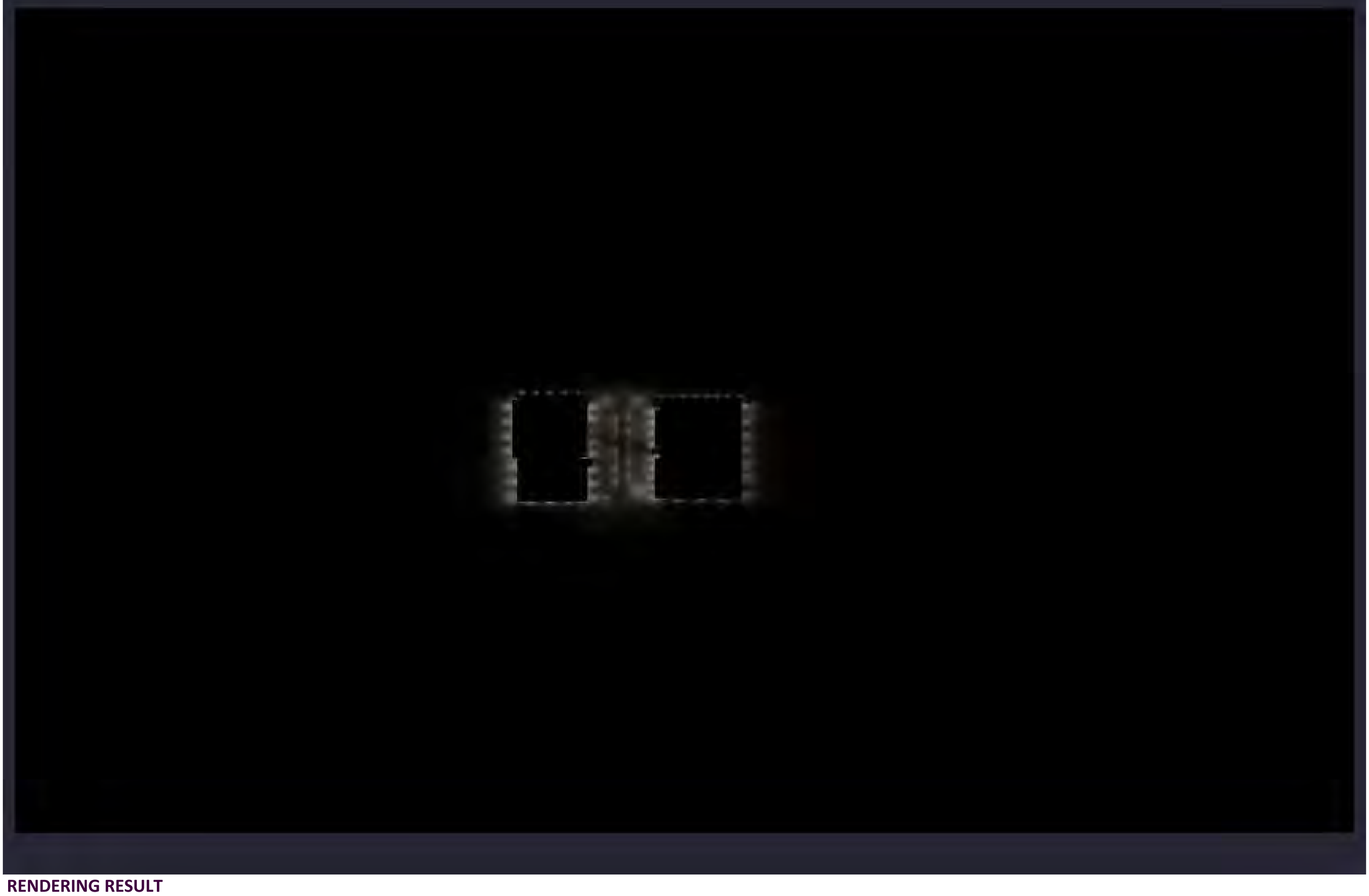
AK

Moorebank Business Park - WH5 - EXT

31/10/2019 REF: MBP-WH5EX-R01-311019

DNS Lighting Pty Ltd.

SITE AREA RENDERED



RENDERING RESULT

NOTE:

This lighting render model is approximate only and presented only for the purpose of spill lighting light study. Site boundary overlayed on site satellite imagery is approximate only. For the light study lighting pertaining only to this lighting design are considered.

SITE AREA RENDERED

RENDERING RESULT

NOTE:
This lighting render model is approximate only and presented only for the purpose of spill lighting light study. Site boundary overlayed on site satellite imagery is approximate only. For the light study lighting pertaining only to this lighting design are considered.

Design Certificate

Wednesday, 26th February 2020

To:

Client Name:	Qube Holdings
Address:	L27, 45 Clarence St
	Sydney NSW 2000

2/852 Old Princes Hwy,
Sutherland NSW 2232
Telephone 0295452348
admin@c-level.com.au
www.c-level.com.au

ABN 17 627 581 837

Attn: Mino Howard

Re: **Warehouse 3,4, 5 Moorebank Logistics Park,**
400 Moorebank Ave, Moorebank NSW 2170.

We hereby certify that the electrical design & engineering, external lighting for the project as detailed on plans noted below has been designed per requirements of the Building Code of Australia & relevant Australian Standards. In particular, in accordance with:

- Relevant Australian Standards:
  - AS1158.3-2005
  - AS1680-2009
  - AS4282-1997

- Relevant clauses of the Building Code of Australia:
  - Part J6 of BCA 2016 Amendment 1
  - Part J8.3 of BCA 2016 Amendment 1

- DA Conditions & UDLP : AS4282-2019,
  - External lighting designed facing downwards, using specific cut off luminaires, eliminating upward spill light above the horizontal.
  - Main floodlights using asymmetric beams & using warm colours (4000k & below)
  - High efficiency & high quality LED luminaires used for external lighting, installed on programmable lighting control systems inc, timeclocks, PE Cell & over-ride switches.
  - installed in a manner that does not create a nuisance to surrounding properties & or public roads.

- Engineering Plan Drawings: Warehouse 3.
  - 0000-5
  - 0002-12
  - AGI32 Modelling & Calculations.

- Engineering Plan Drawings: Warehouse 4.
  - 0000-4
  - 0002-10
  - AGI32 Modelling & Calculations.

- Engineering Plan Drawings: Warehouse 5.
  - 0000-P1
  - 0002-P4
  - AGI32 Modelling & Calculations.

Full Name of Certifier:	Yongqi (Eric) Chen
Position & Qualifications:	Electrical Engineer, NER MIEaust.
Address of Certifier:	2/852 Old Princes Highway, Sutherland NSW 2232
Phone Numbers:	(02) 9545 2348
Date:	26th February 2020
Signature: