Onshore Converter Station

Operational Phase Artificial Lighting Emissions Plan

DCO Requirement 23 (3)

(Applicable to Work Number 67)

Prepared by:	Checked by:	Approved by:
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Revision Summary				
Rev	**Date**	**Prepared by**	**Checked by**	**Approved by**
1	16/12/2020	Kay Griffin	Colin Bryans	David Boyd
2	10/01/22	Kay Griffin	Phil Rew Williamson	Gareth Mills
3	31/03/22	Kay Griffin	Phil Rew Williamson	Gareth Mills

Description of Revisions			
Rev	**Page**	**Section**	**Description**
1	All	All	New Document
2	All	All	Amended in accordance with comments received on the Interim Draft Document from Place Services (19/04/21)
3	4 6 10 11	1.1 3 8.2.1 8.3	Amended in accordance with comments received on the Final Draft Document from Place Services (14/02/22)

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1. INTRODUCTION AND SCOPE

1.1. Project Overview

1. East Anglia Three Limited (EATL) was awarded a Development Consent Order (DCO) by the Secretary of State, Department of Business, Energy & Industrial Strategy (DBEIS) on 7 August 2017 for the East Anglia THREE Offshore Windfarm (EA THREE). The DCO granted consent for the development of a 1,200MW offshore windfarm and associated infrastructure and is live until 28 August 2022. The DCO has now been subject to three non-material variations:

- In March 2019 EATL submitted a non-material change application to DBEIS to amend the consent to increase the maximum generating capacity from 1,200MW to 1,400MW and to limit the maximum number of gravity base foundations to 100. In June 2019 DBEIS authorised the proposed change application and issued an Amendments Order.
- In July 2020 EATL submitted a second non-material change application to DBEIS to amend the parameters of its offshore substations (reducing the number of these to one) and wind turbines (a decrease in the number of turbines and an increase in their hub height and rotor radius). On 15 April 2021 DBEIS authorised this proposed change application and issued an Amendments Order.
- In August 2021 EATL submitted a third non-material change application to DBEIS to amend the consent to remove the maximum generating capacity of 1,400MW and to amend the parameters of its wind turbines (a decrease in the number of turbines and an increase in their hub height and rotor radius). The application is currently in the consultation phase.

2. The onshore construction works associated with EA THREE will have a capacity of 1,400MW and transmission connection of 1,320MW. The construction works will be spread across a 37km corridor between the Suffolk coast at Bawdsey and the converter station at Bramford, passing the northern side of Ipswich. As a result of the strategic approach taken, the cables will be pulled through pre-installed ducts laid during the onshore works for East Anglia ONE Offshore Windfarm (EA ONE), thereby substantially reducing the impacts of connecting to the National Grid (NG) at the same location. The infrastructure to be installed for EA THREE, therefore, comprises:

- The landfall site with one associated transition bay location with two transition bays containing the connection between the offshore and onshore cables;
- Two onshore electrical cables (single core);
- Up to 62 jointing bay locations each with up to two jointing bays;
- One onshore converter station, adjacent to the EA ONE Substation;
- Three cables to link the converter station to the National Grid Bramford Substation;
- Up to three onshore fibre optic cables; and
- Landscaping and tree planting around the onshore converter station location.

3. Since the granting of the DCO, the decision has been made that the electrical connection for EA THREE will comprise a high voltage direct current (HVDC) cable rather than a high voltage alternating current cable and, therefore, the type of substation that will be required is a HVDC converter station. The substation will be referred to here as a 'converter station' and this amended terminology has been agreed with the relevant authorities on 15 October 2020. It has also been determined that only one converter station will be constructed rather than two and that the converter station will be installed in a single construction phase.

1.2. Purpose and Scope

4. This Operational Phase Artificial Lighting Emissions Plan (OPALEP) sets outs mitigation measures to be applied to the operational EA THREE onshore converter station (Work No. 67) to reduce the potential for significant impacts from light emissions. This document has been produced to fulfil DCO Requirements 23 (3) which states:

> **23**. (*1) Work No. 67 must not be commenced until a written scheme for the management and mitigation of artificial light emissions during the operation of Work No. 67, including measures to minimise lighting pollution and the hours of lighting, has been submitted to and approved by the relevant planning authority.*

5. The purpose of this OPALEP is to ensure that the operational lighting of the EA THREE onshore converter station (Work No. 67) (see Figure 1 Site Context Plan) complies with relevant UK legislation, DCO conditions, environmental commitments as set out in the Environmental Statement (ES), and environmental and construction best practice. A separate Construction Artificial Lighting

Emissions Plan (CALEP) (EA3-GRD-CON-PLN-IBR-000111) has been prepared to set out mitigation measures to be applied during the construction of the EA THREE onshore converter station.

6. During the operational phase of the onshore converter station external lighting is required for the following purposes:

- Flood lighting required for the illumination of areas for safe access and egress, repair and maintenance activities, car park areas and security purposes; and
- Lighting for plant and equipment.

7. Lighting from these sources has the following potential impacts:

- Intrusive lighting impacting nearby residents causing disturbance and annoyance, particularly with regard to sleep patterns;
- Impact on ecological sensitive receptors from light spill;
- Impact on visual amenity due to the illumination of the night sky (sky glow); and
- Lighting on surrounding roads distracting passing motorists.

8. The measures contained herein shall be adhered to by the Principal Contractor within their design of the Converter Station lighting. These measures will only be revised with the agreement of Mid Suffolk District Council (MSDC).

2. ABBREVIATIONS

BCT	Bat Conservation Trust
CALEP	Construction Artificial Lighting Emissions Plan
CLO	Community Liaison Officer
DBEIS	Department of Business, Energy and Industrial Strategy
DC	Direct Current
DCO	Development Consent Order
EA ONE	East Anglia ONE Offshore Windfarm
EA THREE	East Anglia THREE Offshore Windfarm
EATL	East Anglia THREE Limited
ES	Environmental Statement
GCN	Great crested newts
HSE	Health and Safety Executive
HVDC	High Voltage Direct Current
ILP	Institution of Lighting Professionals
LED	Light emitting diode
MSDC	Mid Suffolk District Council
MW	Megawatt
NG	National Grid
OFTO	Offshore Transmission Owner
OPALEP	Operational Phase Artificial Lighting Emissions Plan
PRoW	Public Rights of Way
SCC	Suffolk County Council

3. OPERATIONAL PHASE LIGHTING SCHEME DESCRIPTION

9. External lighting of the onshore converter station during the operational phase will be only required for the following purposes:

- access and egress;
- security lighting;
- car park lighting; and
- repair/maintenance.

10. At night lighting will be switched off as the converter station will be unmanned. For emergency works, or work requiring perception of the detail, portable luminaires to suit the work will be used. Lights will only be used during periods where and when work is to be carried out (i.e. maintenance) and lights will be positioned to suit the work.

11. No additional lighting is to be located along Bullen Lane or along the additional access roads leading to or within the converter station.

12. Exterior lighting will allow safe access and egress (including emergency egress) for personnel (including from buildings) and safe operation of equipment, subject to the following minimum requirements:

- Maintained average illuminance 6 lux.
- Minimum maintained point illuminance 2.5 lux.

13. The interior lighting system will be controlled manually via switches within the buildings. Exterior lighting to buildings will be controlled by PIR-based motion detectors (passive infrared), with short (1min) timers. An internal wall override switch for the PIR detectors shall be fitted adjacent to the entrance door to enable constant operation, when needed.

14. Luminaires selected will ensure reduction in spill light, glare and sky glow. Luminaires shall be Light Emitting Diode (LED) type with directable light output to minimise light pollution.

15. A summary of the number, height and type of luminaries that will be installed at the onshore converter station is provided below:

- 40 Pole Mounted (8m) floodlights (29nos. x Lumega LIQ 70N-AB7L-LR/10000-727 12G1 ET; 11nos. x Lumega LIQ 70N-AB7L-LR/8200-727 10G1 ET)
- 28 wall mounted lights as follows:
  - Converter Hall at 8m:
    - 6 x Lumega LIQ 50N-AB2L-LR/4600-727 6G1 ET (4600lm, 2700K), TOC: 7815640
    - 1 x Lumega LIQ 70N-AB7L-LR/10000-727 12G1 ET (9999 lm, 85 W)
    -
  - Storage Building at 6m:
    - 4 Lumega LIQ 70N-AB7L-LR/8200-727 10G1 ET (i.e. 8199 lm, 71 W)
    - 3 LIQ 50N-AB2L-LR/4600-727 6G1 ET (4600lm, 2700K), TOC: 7815640
    - 1 Lumega LIQ 70N-AB7L-LR/10000-727 12G1 ET (9999 lm, 85 W)
  - Control Building at 4.5m:
    - 1 x Lumega LIQ 70N-AB7L-LR/6800-727 8G1 ET (6799 lm, 57 W))
    - 2 x Lumega LIQ 70N-AB7L-LR/10000-727 12G1 ET (9999 lm, 85 W))
    - 8 x Lumega LIQ 50N-AB2L-LR/4600-727 6G1 ET (4600lm, 2700K), TOC: 7815640
  - Transformer wall at 4m
    - 2 x Lumega LIQ 70N-AB7L-LR/6800-727 8G1 ET (6799 lm, 57 W)

16. The location and specification details of the luminaries are presented in Appendix 1 Technical Drawings and Luminaries Specifications.

4. OPERATIONAL PHASE ARTIFICIAL LIGHTING EMISSIONS PLAN GOVERNANCE

17. Ensuring compliance with the OPAELP will be the responsibility of EATL until the divestment of the facility to the Offshore Transmission Owner (OFTO)[1].

5. LOCAL COMMUNITY LIAISON

18. EATL is committed to providing clear communication to local residents and will manage public relations with local residents and businesses. Proactive community liaison will be maintained, keeping local residents informed of the type and timing of works involved. A combination of communication mechanisms such as posters, notices, exhibitions, letters, newsletters, website updates and parish council meetings will be employed to keep local residents and businesses informed.

19. A designated EA THREE Community Liaison Officer will field and respond to any public concerns, queries or complaints in a professional and diligent manner as set out in the Community Liaison and Public Relations Procedure. The Complaints Procedure will be publicised and complaints will be directed to the EATL Community Liaison Officer. All enquiries will be logged, investigated and rectifying actions taken when deemed appropriate. Enquiries will be dealt with in an expedient and courteous manner. Details of complaints will be reported to MSDC.

6. GUIDELINES AND STANDARDS

20. The operational lighting strategy for the converter station has been developed in accordance with the following guidance and standards:

- Institution of Lighting Professionals (ILP), 2020, Guidance Note for the Reduction of Obtrusive Light, (ILP, 2020).
- British Standard BS EN 12464-2:2014 Light and lighting. Lighting of work places. Outdoor work places;
- British Standard BS 5489-1:2020 Code of practice for the design of road lighting. lighting of roads and public amenity areas;
- Health and Safety and Executive (HSE), Health and Safety Guidance 38 (HSG38) 'Lighting at Work' (HSE, 1997)
- Bat Conservation Trust (BCT), ILP (2018), Guidance Note 08/18 Bats and artificial lighting in the UK, Bats and the Built Environment series, (BCT, ILP, 2018); and
- BCT Interim Guidance: artificial lighting and wildlife (BCT, 2014).

7. POTENTIALLY SENSITIVE RECEPTORS

7.1. Introduction

21. Potentially sensitive receptors that could be affected by operational phase external artificial lighting include visual and ecological receptors.

7.2. Visual receptors

22. The potentially sensitive visual receptors are those in close proximity to the onshore converter station site. These include occupiers of residential properties, users of the outdoors and agricultural workers. A review to identify potentially sensitive receptors that could be affected by operational external artificial lighting has been undertaken.

23. The following viewpoints, presented in Table 7-1, were identified as potential visual receptor viewpoints as part of the Landscape and Visual Amenity Impact assessment (Environmental Statement, Volume 1, Document 6.1.29 Chapter 29 Seascape, Landscape and Visual Amenity and Volume 2, Document 6.2.29 a to h) within 1km distance and with visibility of the converter station. As such, these have been considered as visual receptors. The locations of these viewpoints are shown on the Figure 2 Potentially Sensitive Operational Light Receptors.

[1] Although the EA THREE onshore transmission works will be constructed by EATL, in the UK, separate Offshore Transmission Owners (OFTOs) take responsibility for offshore transmission assets, such as the EA THREE Converter Station under long-term OFTO licences. The converter station will, therefore, be operated following divestment, by an OFTO.

Table 7-1: Viewpoints within 1 km buffer from Landscape and Visual Amenity Impact assessment

No.	Location	Description	Distance and Direction from Converter station construction works (Work No. 67)	Easting	Northing
VP5	Orchard Lands, Near Canes Farm	Residential and outdoor recreation	1.02km, NE	609260	245168
VP6	Near Hill Farm	Residential and outdoor recreation	0.67km, NE	609025	245913
VP10	Near Fidgeon's Farm	Residential and outdoor recreation	1.09km, W	610885	246013
VP11	Near Bullenhall Farm	Residential and outdoor recreation	0.75km, SW	610525	246413
VP12	Near Tye House	Residential and outdoor recreation	0.75km, SW	609920	247058

24. In addition to these viewpoints further visual receptors have been identified in the form of the nearest residential properties to the converter station, which are Woodlands Farm, Bullenhall Farm and Hill Farm, all located at more than 500m from the onshore converter station. The locations of these properties are also presented on Figure 2 Potentially Sensitive Operational Light Receptors.

25. At the identified distances, light intrusion/nuisance and spill light are not considered to be significant. Light control measures with respect to visual receptors will therefore relate to limitation of light from bright luminaries in the field of view and also sky glow.

26. In addition to the above residential and recreation receptors there are Public Rights of Way over 540m to the west, 120m to the south and 480m to the east of the site, as shown on Figure 2 Potentially Sensitive Operational Light Receptors.

7.3. Ecological Receptors

27. Light spill and intrusive lighting from night time works could potentially disturb ecologically sensitive receptors which includes nocturnal species. At the converter station, the key ecologically sensitive receptors from the operational artificial lighting emissions are considered to comprise badgers, bats and birds (breeding and non- breeding birds). In addition, surveys for EA THREE carried out in 2020 confirmed presence of Great Crested Newts (GCN) in the waterbody approximately 140m to the northwest of the proposed EA THREE onshore converter station site.

28. All species of British bat, and their roosts, are protected by the Wildlife and Countryside Act 1981 (as amended) extended by the Countryside and Rights of Way Act 2000. Bats are also European Protected Species listed on the Conservation of Habitats and Species Regulations 2017 (as amended) making it an offence to injure, damage or disturb any individual bat or a roost. Different bat species vary in their sensitivity to lighting. Particularly sensitive species of bats to artificial light disturbance have been recorded within the survey area around the converter station including *Myotis* and *Plecotus* species, and the rarer Barbastelle bat.. The impact of the lighting has the potential to disturb bats whilst within a roost, deter use of a bat roost, reduce available foraging time by delaying roost exit and disrupt the available foraging and commuting flight paths.

29. Trees with potential bat features were identified in the initial 2012 Surveys with the results updated during surveys undertaken in 2020 and 2021. Trees identified as potential bat features are presented on Figure 2, including three mature field boundary trees considered to provide low, moderate and high potential to support roosting bats. However, no roosts have been recorded in these features to date. 16 new bat boxes have been installed as part of EA ONE landscaping on the existing hedges, as shown on Figure 2.

30. Badgers and their setts are protected from damage and disturbance under the Badger Protection Act (1992). Pre-construction badger surveys have been carried out in 2016, with the results updated during surveys undertaken in 2021. Active and inactive outlier setts are present around the field boundaries and within adjacent woodland.. As badger setts locations are sensitive information, there are not shown on in Figure 2.

31. Great crested news are not considered to be a potential receptors to operational lighting impacts due to the distance of the ponds used by this species from the converter station site.

32. Birds may be sensitive to lighting due to illumination of nests and hunting habitats. All wild birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended). Bird species listed on Schedule 1 of the Act are afforded further protection making it an offence to intentionally or recklessly disturb any such bird when it is building its nest or while it is in or near a nest containing dependant young, and / or disturb the dependant young of any such bird. Schedule 1 birds have been recorded in some areas surrounding the onshore development area and as such may be disturbed from light spillage if nesting. As Schedule 1 locations are sensitive information, they are not shown in Figure 2. It is noted that a new barn owl box has also been installed as part of the EA ONE landscaping scheme, this is located on Tree 243, approximately 140 m from the converter station facing eastwards.

33. This information provided in this document does not take into account any potential ecological mitigation measures that could be implemented during the construction of the converter station (i.e. closure of a badger sett or relocation of potential sensitive receptors).

8. LIGHTING SCHEME

8.1. Objectives

34. The operational artificial lighting scheme of the converter station has been designed taking into account the objectives to achieve the required performance outcomes as described in in Table 8-1.

Table 8-1: Objectives and performance outcomes

Objectives	Performance Outcomes
• **Lighting installations are positioned so as to avoid spillage of light directly towards Bullen Road, residences, other potential viewing locations or ecological receptors.** • **Vegetation screens will be utilised, where required, to minimise the impact of any light spillage in the direction of Bullen Road, residences, other viewing locations or ecological receptors.** • **Total night time glow from operational external lighting is minimised.** • **To utilise appropriate mitigation measures to reduce glare**	• Minimum levels of lighting are used which provide sufficient lighting to ensure that safety is not compromised. • External lighting complies with relevant UK legislation, environmental commitments as set out in the ES and best practice. • The safety of external traffic on Bullen Road is not affected by light sources on site. • Light emissions impacts from site on nearby sensitive visual receptors is avoided or minimised where avoidance is not possible. • Light emissions impacts from site on ecological receptors are avoided or minimised where avoidance is not possible.

8.2. Mitigation

35. As described in Section 3, the converter station will be unmanned at night and lights will be switched off. Lights will only be used during periods where maintenance or emergency works is to be carried out. The onshore converser station has been carefully designed to minimise impacts on the environment. The onshore converter station has been carefully sited to the north of the existing

Bramford Substation to gain maximum benefit from the screening effect provided by the NG substation and existing woodland. It is also located to the east of the EA ONE Substation to further gain from screening effects of the building and also the screening provided by the EA ONE landscaping scheme, with in the short term screening provided by the landscaped bund and taller woodland plants and in the longer term, the gradual increase in screening as the woodland blocks and hedges mature. The need for additional vegetation screening to further minimise light spill will be considered in the Landscape Management Plan (EA3-OND-CNS-REP-IBR-000002).

36. A number of mitigation measures will be adopted as part of the project design to avoid or minimise potential impacts from artificial lighting at the operational converter station on the identified sensitive receptors. A competent lighting professional will be employed by the Contractor to design the operational phase lighting.

37. Site lighting shall be positioned and directed to minimise nuisance to public rights of way users and residents, to minimise distractions to drivers on Bullen Lane and to minimise sky glow, so far as reasonably practicable. External lighting will be limited to internal access roads and walkways, security lighting and task related flood lighting. Lighting will be selected and positioned in accordance with guidance and standards provided in Section 6.

38. Light spill will be reduced by directing the light to where it is needed. The design of the luminaire and accessories such as hoods, cowls, louvres will be used achieve this. Where possible asymmetric optics will be used such that the front glazing is kept at or near parallel to the surface being lit. In addition, where possible glare will be minimised by ensuring that the main beam angle directed towards any potential observer is no greater than 70° in accordance with ILP guidance (ILP, 2021). Higher mounting heights allow lower main beam angles, which can assist in reducing glare.

39. If any additional temporary external lights are required during periods where work is to be carried out, lights will be positioned to suit the work and luminaires selected will ensure reduction in spill light and glare and sky glow. So far as is practicable, all power to temporary lighting will be taken from mains supplies rather than from portable generators. Where portable generators are used, industry best practice will be followed to minimise noise and pollution from such generators.

8.2.1. Mitigation Specific to Ecology

40. Additional mitigation specific to ecology, in accordance with the Bat Conservation Trust (2018) guidelines will be included as follows:

- Column heights will be carefully considered to minimise light spill;
- Metal halide, fluorescent sources will not be used;
- Narrow spectrum light sources will be used to lower the range of species affected by lighting;
- Light sources that emit minimal ultra-violet light will be selected;
- Lights will peak higher than 550nm;
- White and blue wavelengths of the light spectrum will be avoided to reduce insect attraction and where white light sources are required in order to manage the blue short-wave length content, they will be of a warm / neutral colour temperature, ideally <2,700Kelvin;
- Only luminaires with an upward light ratio of 0% and with good optical control will be used; and
- External security lighting will be set on motion-sensors with short (1 minute) timers.

41. Directional beams and non-reflective surfaces will be used to ensure light spill and nuisance does not encroach onto adjacent areas including:

- Woodland, so as not to disturb emerging or foraging bats, badgers or other nocturnal species. Flood lighting will be directed away from any potential roost identified and 30m disturbance zone around badger setts.
- Other high value foraging habitats and potential flight paths, such as connecting hedgerows and standalone trees.

8.3. Light Spill

42. The predicted spill lighting levels for the proposed lighting scheme described in Section 8 have been estimated, as shown in the horizontal illuminance contours on Figure 3 (prepared in accordance with the Bat Conservation Trust (2018) guidelines). Figure 3 shows the isolux contours at spill level gradients: 0.01, 0.5, 1.1, 2.1 isolux, calculated at a 1.5m reference point. These levels can be compared to the following natural light conditions (Green Business Light UK).

Table 8.2 Typical Lux Levels of Natural Light Conditions

Natural Light Condition	Typical Lux
Moonlight (Full moon)	1
Night (No moon)	< 0.01

43. A predicted spill light level of zero lux at a 1.5m high reference point on a horizontal plane is reached at approximately 149m from the converter station.

44. The closest properties and Public Rights of Way are located at approximately 680m and 120m respectively from the converter station and therefore these will not be affected by any spill lighting as shown on Figure 3.

45. There are some potential ecological receptors close to the onshore converter station area as described in Section 7.3. The closest tree to the converter station is considered to have 'high potential for bats, however this is over 140m from the converter station and would experience zero lux due to the operational lighting. It is also recognised that there is potential for wider foraging and commuting activities of bats in the surrounding area, and impacts to these, have been considered. The proposed scheme has therefore taken into account the Bat Conservation Trust (2018) guideline to remove/minimise any potential impacts to bats within the locality. Furthermore, the converter station will be only lit during periods where maintenance or emergency works are carried out.

46. Provided all mitigation measures described in this document are in place, the residual impact of the operational artificial lighting emissions on the nearby sensitive receptors will be not significant.

9. REFERENCES

BCT, 2014, *Interim Guidance: artificial lighting and wildlife,* https://cdn.bats.org.uk/pdf/BCT_Interim_Guidance_Artificial_Lighting_June_2014.pdf?mtime=20181101151319&focal=none.

BCT, ILP, 2018, *Guidance Note 08/18 Bats and artificial lighting in the UK, Bats and the Built Environment series,* London, https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229;

British Standard BS EN 12464-2:2014 *Light and lighting. Lighting of work places. Outdoor work places*;

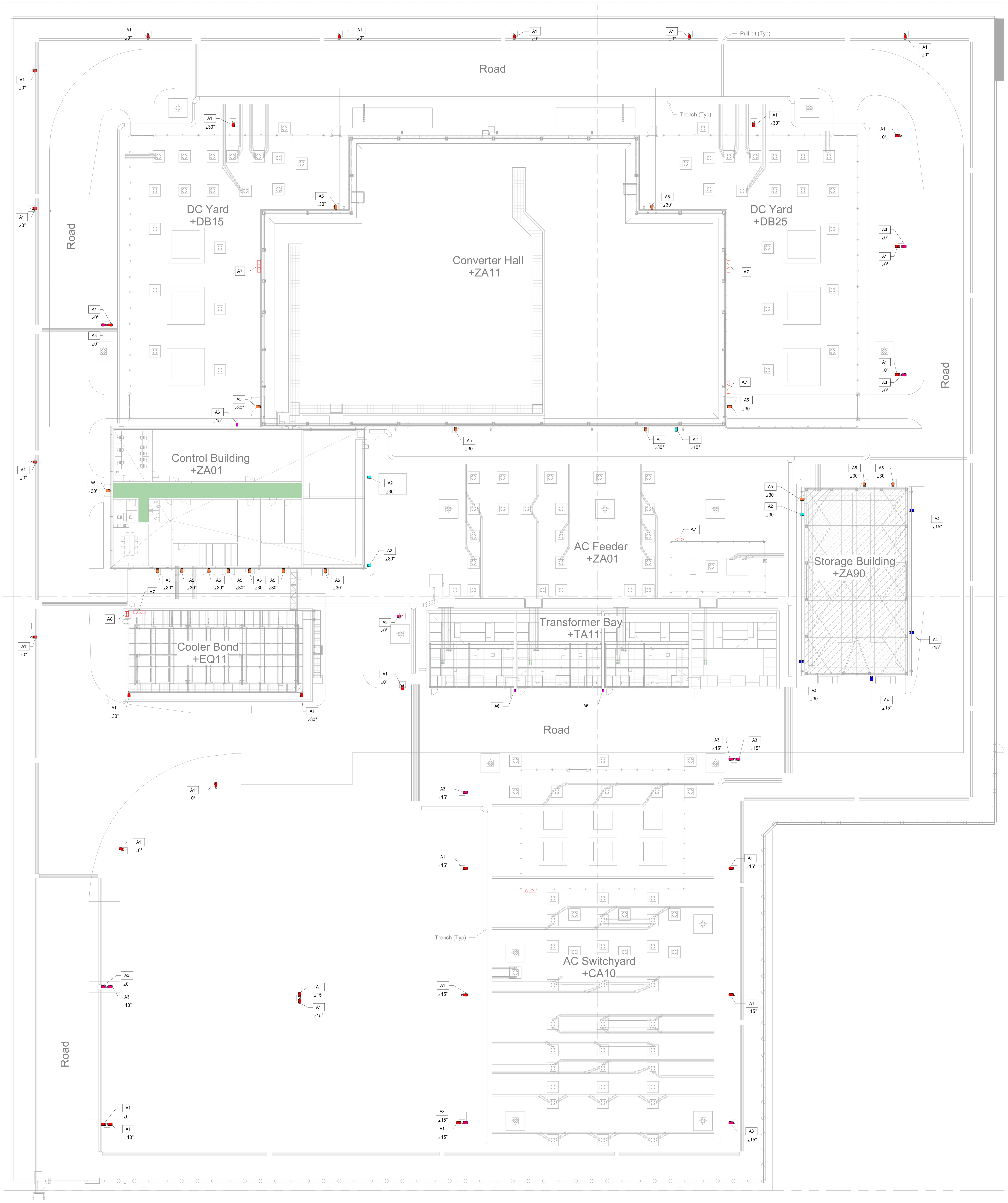
British Standard BS 5489-1:2020 *Code of practice for the design of road lighting. lighting of roads and public amenity areas*;

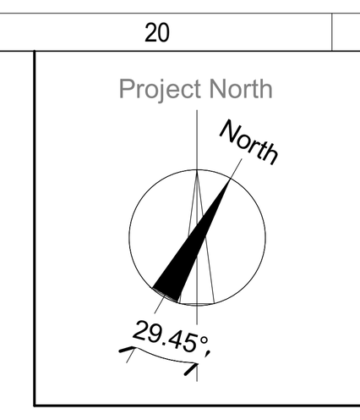
Green Business Light UK website- Lux, Lumens & Watts Guide (https://greenbusinesslight.com/resources/lighting-lux-lumens-watts/) [accessed 27/11/21]

HSE, 1997 *Health and Safety Guidance 38 (HSG38) 'Lighting at Work'*, Second Edition, https://www.hse.gov.uk/pubns/priced/hsg38.pdf

ILP, 2021, *Guidance Note 01/21, Guidance Note for the Reduction of Obtrusive Light*, London, https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021.

APPENDIX 1 TECHNICAL DRAWINGS AND LUMINARIES SPECIFICATIONS





Luminaire Schedule			
Mark	Fixing Type	Type	Count
A1	Pole Mounted	Lumega LIQ 70N-AB7L-LR/10000-727 12G1 ET TOC 7835440	29
A2	Wall Mounted	Lumega LIQ 70N-AB7L-LR/10000-727 12G1 ET TOC 7835440	4
A3	Pole Mounted	Lumega LIQ 70N-AB7L-LR/8200-727 10G1 ET TOC 7834840	11
A4	Wall Mounted	Lumega LIQ 70N-AB7L-LR/8200-727 10G1 ET TOC 7834840	4
A5	Wall Mounted	Lumega LIQ 50N-AB2L- LR/4600-727 6G1 ET TOC 7815640	17
A6	Wall Mounted	Lumega LIQ 70N-AB7L-LR/6800-727 8G1 ET TOC 7834240	3

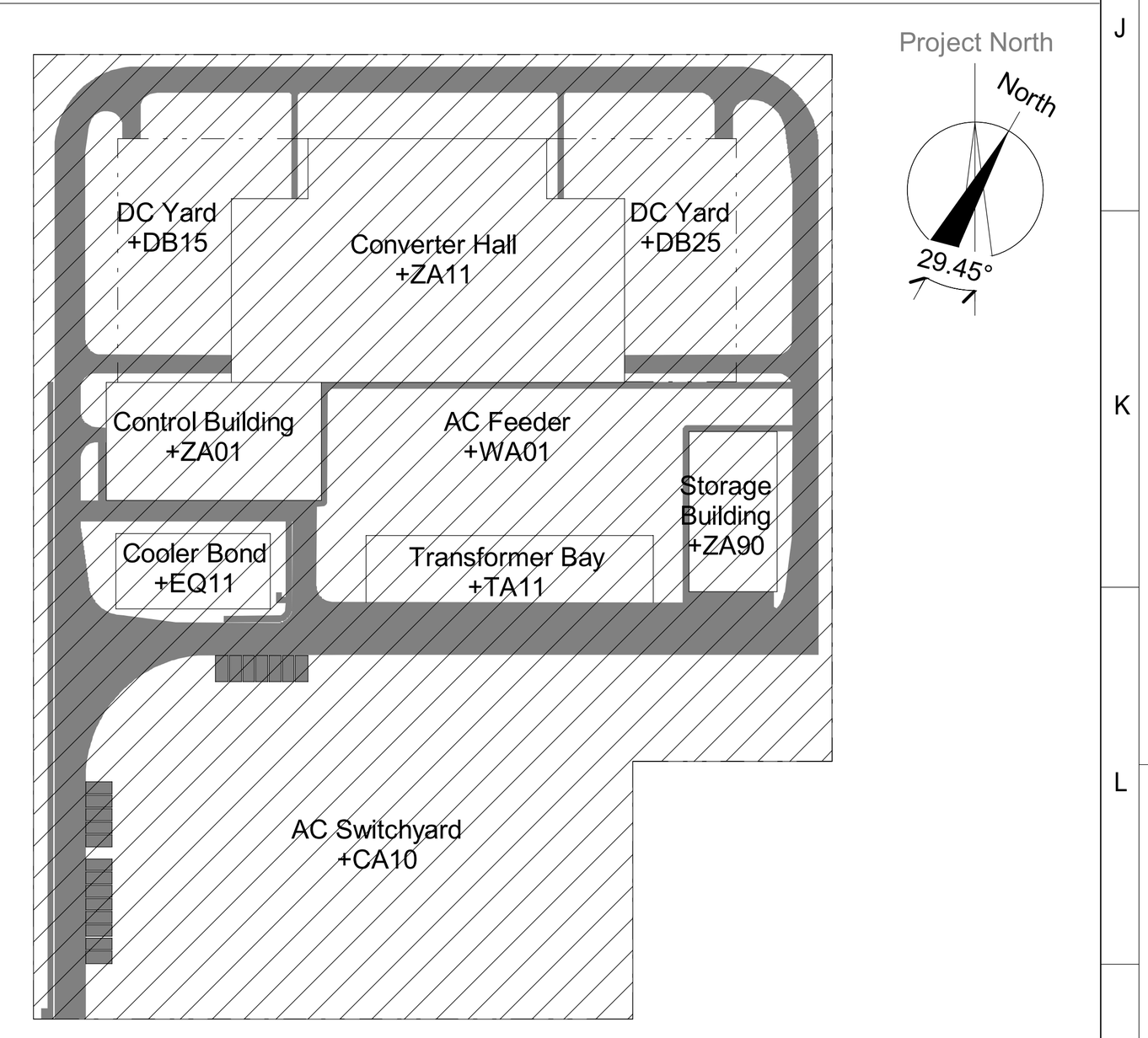
Grand total: 68

Electrical Fixture Schedule		
Mark	Description	Count
A7	Socket Combination (32A)	6

Electrical Equipment Schedule		
Mark	Description	Count
A8	Bund Pumps	1

Notes:

1. All dimensions are in mm and levels are in meters unless noted otherwise.
2. Levels
   Building floor level = ±0.000m = 54.75m AOD
   Road level = -0.100m = 54.65m AOD
   Finished ground level = -0.200m = 54.55m AOD
3. Lighting arrangement shown is based on Outdoor Lighting calculation, Document No. EA3-OND-CAL-SAS-000004.



Scale:

0 1 2 3 4 5 10

1:100

IFA

IFA = Issued for approval
IFI = Issued for information
IFC = Issued for construction
IFIM = Issued for implementation (Design input)
IFM = Issued for manufacture
AB = As built (Documentation)

Project ID	Doc. Key	Aspect	Customer Document Number	Plant Type / Voltage
P-017961	E	C	EA3-OND-ELC-DRG-SAS-000001	HVDC Plus 1320 MW 320 kV DC / 400 kV AC

Customer: East Anglia Three Ltd.

Project: East Anglia Three

Location(s): East Anglia 3 - Onshore Station

Scale: 1:250

Export Control Classification: ECCN: N AL: N

Responsible Dept.	Technical Reference	Document Designation		Paper Size
GP EPC TS LTS	Y. Gurram	EA711# EA32	&CLD020-001	A0

Sub-Contractor:

Created By: K. Singh

Document Type: Lighting Drawing

Document ID: E4A000000999062

SIEMENS energy

Approved By: M. Schönhut

Title, Supplementary Title: External Lighting Plan - Other ONCS

Rev.	Release Date	Language	Page
4	2022-03-24	EN	1

Rev.	Rev. Date	Revision Description	Drawn	Checked	Approved
4	2022-03-24	Revised as per Client Comments	D. Sharma	Y. Gurram	M. Schönhut
3	2022-03-09	Revised as per Client Comments	D. Sharma	Y. Gurram	M. Schönhut
2	2021-10-21	Key plan revised	K. Singh	Y. Gurram	M. Schönhut
1	2021-08-12	First Issue	K. Singh	Y. Gurram	M. Schönhut

SCOTTISHPOWER RENEWABLES

ONCS EAST ANGLIA THREE

Drg Title: External Lighting Plan - Other ONCS

Drg No: EA3-OND-ELC-DRG-SAS-000001

Size: A0

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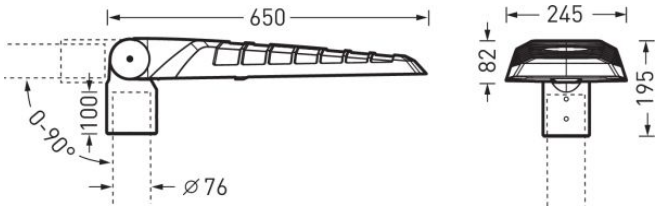
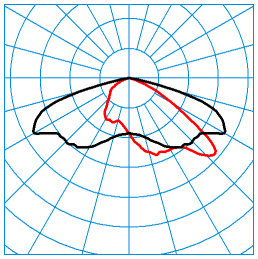
TOC: 7835440



Product features and key data

Luminaire type	Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette.	
Light sources	LED system consists of 12 MLT LED modules each with 4 LEDs.	
Mounting method	Bracket-mounting outdoor|Post-top outdoor	
Luminaire optic	As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations.	
LED-System	CLO initial value	CLO end value
Connected load	81 W	85 W
Power factor	0,95	
Connected load, reduced	42,5 W	
Colour temperature	2.700 K	2.700 K
Rated luminous flux	10.000 lm	10.000 lm
Luminous efficacy	123 lm/W	117 lm/W
Service life	Lclo (25 °C) = 100.000 h	
Colour rendering index	70	
Colour tolerance	5 SDCM	
Photobiological class	Group 2 - no risk	
Luminaire colour	DB703 micaceous iron oxide	
Luminaire body	Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA.	
Electrical version	With electronic transformer, switchable.	
DALI-2-Standard EN 62386	Yes	
Surge voltage resistance (differential mode)	6 kV	
Surge voltage resistance (common mode)	10 kV	
Connection method	Connection cable	
Dimming range	50 %	
Mains frequency	50/60 Hz	
Mains voltage	220 - 240 V	
Total harmonic distortion < %	10 %	
Ingress Protection (IP) rating	IP66	
Protection class	II	
Impact resistance (IK)	IK09	
Hot wire resistance	960 °C	
Ambient temperature	25 °C	
Max. Luminaires B10	7	
Max. Luminaires B16	11	
Max. Luminaires C10	11	
Max. Luminaires C16	19	
Weight	7,9 kg	

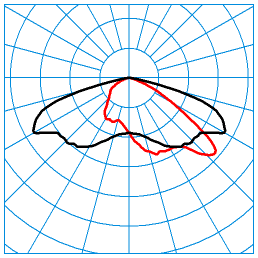
light distribution curve



LIQ 70N-AB7L-LR/10000-727 12G1 ET(CLO end value)
TX278264

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 35 73 98 100 100 0 0 0 0



LIQ 70N-AB7L-LR/10000-727 12G1 ET(CLO initial value)
TX277808

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 35 73 98 100 100 0 0 0 0

Available accessories

	Material	Description
	**0970/42 Reduction Piece** 2223200	Reduction piece, for post spigot Ø 42 mm.
	**0970/48 reduc.pce** 2223300	Reduction piece, for post spigot Ø 48 mm.
	**0970/60 Reduction Piece** 2223400	Reduction piece, for post spigot Ø 60 mm.
	**MLT ZAH p4** 6818500	Rear shielding for MLT IQ lens systems. Accessory for retrofitting into suitable outdoor luminaires with 4-fold configurations of ABxL, SB3L or RB5L lens optics.
	0803/2/60-200-60 6824400	Post mounting element for twin arrangement, post spigot 60 mm, support 60 mm x 200 mm.
	0803/2/76-200-60 6824500	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 200 mm.
	0803/2/76-500-60 6824600	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 500 mm.
	0803/3/76-350-60 6824900	Post mounting element for triple arrangement, post spigot 76 mm, support 60 mm x 350 mm.
	**0803WB-R/100-76 26** 7353100	Decorative wall mounting made of cast aluminium. Suitable for luminaires of the Lumega IQ and Cuvia series without using additional reduction pieces.
	Scheibe LIQ 70N Ersatz vp 7845900	Replacement cover for luminaires from series: Lumega IQ 70N
	**MLT ZAS G4 p4** 7851000	Lateral shielding for MLT IQ lens systems. Accessories for retrofitting in technical and decorative outdoor luminaires with lens optics ABxL, AMxL, SB3L, RBxL.
	0803EMB/100-42 Eck-Mastbefg kpl 26 7022700	

Offer text

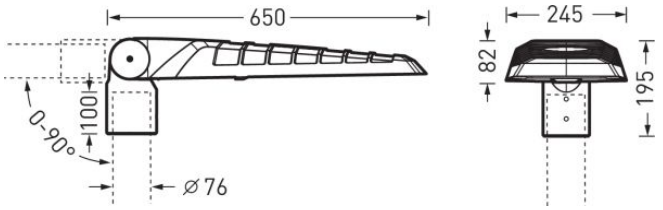
Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette. Post-top and bracket-mounted on or to post spigot Ø 76 mm. Inclination angle of 0° to 90°, can be set in 5° steps, scaled. Simple and rapid conversion from post-top to bracket-mounted luminaire via one screw accessible from outside.. Walls installation is possible via accessories to be ordered separately. Mast mounting via two stainless steel fixing screws in accordance with EN 60598-2-3. Also suitable for mounting to masts with spigot Ø 42, 48 and 60 mm via reduction pieces to be ordered separately. As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations. With asymmetrical wide light intensity distribution. Further beam characteristics are available for flexible adaptation to customer-specific lighting tasks. Retrofitting a rear / side shield is possible as an accessory to be ordered separately. LED system consists of 12 MLT LED modules each with 4 LEDs. Luminaire luminous flux 10000 lm, connected load 81,00 W, luminous efficiency of luminaire 123 lm/W. Light colour warm white, correlated colour temperature (CCT) 2700 K, general colour rendering index (CRI) R_a > 70. Mean rated service life L_{clo} (t_q 25 °C) = 100,000 h. Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA. Luminaire body powder-coated anthracite, similar to DB 703. With metal effect, highly weather resistant, powder-coated. Swivel unit silver-grey offset, similar to RAL 9006. The fastening elements are coated in the housing colour. CG chamber cover of die-cast aluminium, opens without tools via draw catch. The E-block can be removed without tools. The replaceable cover made of heat-treated non-laminated safety glass is securely fastened to the luminaire housing with four stainless steel fastening elements. The cover is equipped with a durable, UV-resistant polyurethane sealing. Sea weather- suitable coating on request. Weight: 7,9 kg. Windage area F_w = . Safety class (EN 61140): II, protection rating (DIN EN 60529): IP66, impact resistance level in accordance with IEC 62262: IK09. With connected cable, length 10,000 mm. With electronic transformer, switchable. Control gear unit according to DALI-2 standard (EN 62386). Surge voltage resistance 6/10 KV (Differrential Mode / Common Mode). Configurable ballast with luminous flux stabilising (CLO). Connected load at the end of service life: 85,00 W. The luminaire complies with fundamental requirements of applicable EU regulations and product safety legislation and bears the CE symbol. With power reduction via control phase. Switching off one control phase implements reduction of luminaire luminous flux to 50%.

Installation information:
With installation to or on electrically insulating mounting systems (e.g. plastic, wood or concrete posts, isolated integrated metal posts, wire suspensions, wall fixing) the LED luminaire housing must be connected on-site to a functional electrically conducting earth connection. Please note that conductors with yellow/green conductor insulation must not be used for conductor connection between the mast terminal box and luminaire.

Note on accessory: shielding MLT ZAH vp/4 pcs. (TOC 6818500) / MLT ZAS G4 p4 (TOC 7851000) :
Number of required shieldings / number of packaging units with 4 pieces each: 12 / 3.
Planning information:
The luminaire is compliant to the requirements of EN 60598 and is designed for the effects of wind compliant to EN 1991 (Eurocode) with basic wind velocity of up to 30m/s (corresponding to wind zone 4 in Germany) in terrain category 1. A snow load (up to 1kN/m^2) and icing (up to 2 cm) at a mounting height in accordance with the mounting instructions are taken into account. Not considered are exposed locations (e.g. bridges, installation on buildings or directly adjacent to railway tracks). Impact loads are not considered.

LIQ 70N-AB7L-LR/8200-727 10G1 ET

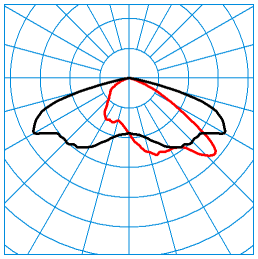
TOC: 7834840



Product features and key data

Luminaire type	Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette.	
Light sources	LED system consisting of 10 MLT LED modules with 4 LEDs each.	
Mounting method	Bracket-mounting outdoor|Post-top outdoor	
Luminaire optic	As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations.	
LED-System	CLO initial value	CLO end value
Connected load	68 W	71 W
Power factor	0,95	
Connected load, reduced	35,5 W	
Colour temperature	2.700 K	2.700 K
Rated luminous flux	8.200 lm	8.200 lm
Luminous efficacy	120 lm/W	115 lm/W
Service life	Lclo (25 °C) = 100.000 h	
Colour rendering index	70	
Colour tolerance	5 SDCM	
Photobiological class	Group 2 - no risk	
Luminaire colour	DB703 micaceous iron oxide	
Luminaire body	Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA.	
Electrical version	With electronic transformer, switchable.	
DALI-2-Standard EN 62386	Yes	
Surge voltage resistance (differential mode)	6 kV	
Surge voltage resistance (common mode)	10 kV	
Connection method	Connection cable	
Dimming range	50 %	
Mains frequency	50/60 Hz	
Mains voltage	220 - 240 V	
Total harmonic distortion < %	10 %	
Ingress Protection (IP) rating	IP66	
Protection class	II	
Impact resistance (IK)	IK09	
Hot wire resistance	960 °C	
Ambient temperature	25 °C	
Max. Luminaires B10	7	
Max. Luminaires B16	11	
Max. Luminaires C10	11	
Max. Luminaires C16	19	
Weight	7,9 kg	

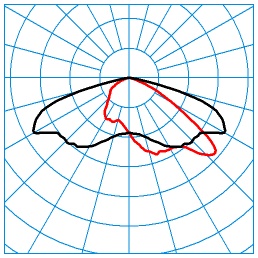
light distribution curve



LIQ 70N-AB7L-LR/8200-727 10G1 ET(CLO end value)
TX278250

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 35 73 98 100 100 0 0 0 0



LIQ 70N-AB7L-LR/8200-727 10G1 ET(CLO initial value)
TX277862

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 35 73 98 100 100 0 0 0 0

Available accessories

Material	Description
 **0970/42 Reduction Piece** 2223200	Reduction piece, for post spigot Ø 42 mm.
 **0970/48 reduc.pce** 2223300	Reduction piece, for post spigot Ø 48 mm.
 **0970/60 Reduction Piece** 2223400	Reduction piece, for post spigot Ø 60 mm.
 **MLT ZAH p4** 6818500	Rear shielding for MLT IQ lens systems. Accessory for retrofitting into suitable outdoor luminaires with 4-fold configurations of ABxL, SB3L or RB5L lens optics.
0803/2/60-200-60 6824400	Post mounting element for twin arrangement, post spigot 60 mm, support 60 mm x 200 mm.
0803/2/76-200-60 6824500	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 200 mm.
0803/2/76-500-60 6824600	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 500 mm.
0803/3/76-350-60 6824900	Post mounting element for triple arrangement, post spigot 76 mm, support 60 mm x 350 mm.
 **0803WB-R/100-76 26** 7353100	Decorative wall mounting made of cast aluminium. Suitable for luminaires of the Lumega IQ and Cuvia series without using additional reduction pieces.
Scheibe LIQ 70N Ersatz vp 7845900	Replacement cover for luminaires from series: Lumega IQ 70N
 **MLT ZAS G4 p4** 7851000	Lateral shielding for MLT IQ lens systems. Accessories for retrofitting in technical and decorative outdoor luminaires with lens optics ABxL, AMxL, SB3L, RBxL.
0803EMB/100-42 Eck-Mastbefg kpl 26 7022700	

Offer text

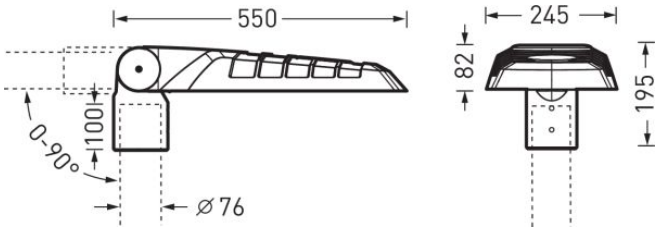
Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette. Post-top and bracket-mounted on or to post spigot Ø 76 mm. Inclination angle of 0° to 90°, can be set in 5° steps, scaled. Simple and rapid conversion from post-top to bracket-mounted luminaire via one screw accessible from outside.. Walls installation is possible via accessories to be ordered separately. Mast mounting via two stainless steel fixing screws in accordance with EN 60598-2-3. Also suitable for mounting to masts with spigot Ø 42, 48 and 60 mm via reduction pieces to be ordered separately. As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations. With asymmetrical wide light intensity distribution. Further beam characteristics are available for flexible adaptation to customer-specific lighting tasks. Retrofitting a rear / side shield is possible as an accessory to be ordered separately. LED system consisting of 10 MLT LED modules with 4 LEDs each. Luminaire luminous flux 8200 lm, connected load 68,00 W, luminous efficiency of luminaire 120 lm/W. Light colour warm white, correlated colour temperature (CCT) 2700 K, general colour rendering index (CRI) R_a > 70. Mean rated service life L_{clo} (t_q 25 °C) = 100,000 h. Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA. Luminaire body powder-coated anthracite, similar to DB 703. With metal effect, highly weather resistant, powder-coated. Swivel unit silver-grey offset, similar to RAL 9006. The fastening elements are coated in the housing colour. CG chamber cover of die-cast aluminium, opens without tools via draw catch. The E-block can be removed without tools. The replaceable cover made of heat-treated non-laminated safety glass is securely fastened to the luminaire housing with four stainless steel fastening elements. The cover is equipped with a durable, UV-resistant polyurethane sealing. Sea weather- suitable coating on request. Weight: 7,9 kg. Windage area F_w = . Safety class (EN 61140): II, protection rating (DIN EN 60529): IP66, impact resistance level in accordance with IEC 62262: IK09. With connected cable, length 10,000 mm. With electronic transformer, switchable. Control gear unit according to DALI-2 standard (EN 62386). Surge voltage resistance 6/10 KV (Differrential Mode / Common Mode). Configurable ballast with luminous flux stabilising (CLO). Connected load at the end of service life: 71,00 W. The luminaire complies with fundamental requirements of applicable EU regulations and product safety legislation and bears the CE symbol. With power reduction via control phase. Switching off one control phase implements reduction of luminaire luminous flux to 50%.

Installation information:
With installation to or on electrically insulating mounting systems (e.g. plastic, wood or concrete posts, isolated integrated metal posts, wire suspensions, wall fixing) the LED luminaire housing must be connected on-site to a functional electrically conducting earth connection. Please note that conductors with yellow/green conductor insulation must not be used for conductor connection between the mast terminal box and luminaire.

Note on accessory: shielding MLT ZAH vp/4 pcs. (TOC 6818500) / MLT ZAS G4 p4 (TOC 7851000) :
Number of required shieldings / number of packaging units with 4 pieces each: 10 / 3.
Planning information:
The luminaire is compliant to the requirements of EN 60598 and is designed for the effects of wind compliant to EN 1991 (Eurocode) with basic wind velocity of up to 30m/s (corresponding to wind zone 4 in Germany) in terrain category 1. A snow load (up to 1kN/m^2) and icing (up to 2 cm) at a mounting height in accordance with the mounting instructions are taken into account. Not considered are exposed locations (e.g. bridges, installation on buildings or directly adjacent to railway tracks). Impact loads are not considered.

LIQ 50N-AB2L-LR/4600-727 6G1 ET

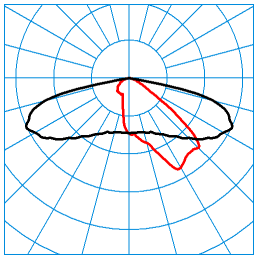
TOC: 7815640



Product features and key data

Luminaire type	Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette.	
Light sources	LED system consists of 6 MLT LED modules each with 4 LEDs.	
Mounting method	Bracket-mounting outdoor|Post-top outdoor	
Luminaire optic	As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations.	
LED-System	CLO initial value	CLO end value
Connected load	38 W	40 W
Power factor	0,95	
Connected load, reduced	20,0 W	
Colour temperature	2.700 K	2.700 K
Rated luminous flux	4.600 lm	4.600 lm
Luminous efficacy	121 lm/W	115 lm/W
Interchangeability lightsource	Yes - interchangeable	
Service life	Lclo (25 °C) = 100.000 h	
Colour rendering index	70	
Colour tolerance	5 SDCM	
Photobiological class	Group 2 - no risk	
Luminaire colour	DB703 micaceous iron oxide	
Luminaire body	Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA.	
Electrical version	With electronic transformer, switchable.	
DALI-2-Standard EN 62386	Yes	
Surge voltage resistance (differential mode)	6 kV	
Surge voltage resistance (common mode)	10 kV	
Connection method	Connection cable	
Mains frequency	50/60 Hz	
Mains voltage	220 - 240 V	
Total harmonic distortion < %	10 %	
Ingress Protection (IP) rating	IP66	
Protection class	II	
Impact resistance (IK)	IK08	
Hot wire resistance	960 °C	
Ambient temperature	25 °C	
Max. Luminaires B10	8	
Max. Luminaires B16	12	
Max. Luminaires C10	12	
Max. Luminaires C16	20	
Net length	705 mm	
Net width	260 mm	
Net height	123 mm	
Weight	6,9 kg	

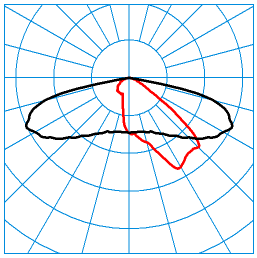
light distribution curve



LIQ 50N-AB2L-LR/4600-727 6G1 ET(CLO end value)
TX278006

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 34 71 96 100 100 0 0 0 0



LIQ 50N-AB2L-LR/4600-727 6G1 ET(CLO initial value)
TX277723

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 34 71 96 100 100 0 0 0 0

Available accessories

Material	Description
 **0970/42 Reduction Piece** 2223200	Reduction piece, for post spigot Ø 42 mm.
 **0970/48 reduc.pce** 2223300	Reduction piece, for post spigot Ø 48 mm.
 **0970/60 Reduction Piece** 2223400	Reduction piece, for post spigot Ø 60 mm.
 **MLT ZAH p4** 6818500	Rear shielding for MLT IQ lens systems. Accessory for retrofitting into suitable outdoor luminaires with 4-fold configurations of ABxL, SB3L or RB5L lens optics.
0803/2/60-200-60 6824400	Post mounting element for twin arrangement, post spigot 60 mm, support 60 mm x 200 mm.
0803/2/76-200-60 6824500	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 200 mm.
0803/2/76-500-60 6824600	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 500 mm.
0803/3/76-350-60 6824900	Post mounting element for triple arrangement, post spigot 76 mm, support 60 mm x 350 mm.
 **0803WB-R/100-76 26** 7353100	Decorative wall mounting made of cast aluminium. Suitable for luminaires of the Lumega IQ and Cuvia series without using additional reduction pieces.
 **Scheibe LIQ 50N Ersatz vp** 7845800	Replacement cover for luminaires from series: Lumega IQ 50N
 **MLT ZAS G4 p4** 7851000	Lateral shielding for MLT IQ lens systems. Accessories for retrofitting in technical and decorative outdoor luminaires with lens optics ABxL, AMxL, SB3L, RBxL.
0803EMB/100-42 Eck-Mastbefg kpl 26 7022700	

Offer text

Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette. Post-top and bracket-mounted on or to post spigot Ø 76 mm. Inclination angle of 0° to 90°, can be set in 5° steps, scaled. Simple and rapid conversion from post-top to bracket-mounted luminaire via one screw accessible from outside.. Walls installation is possible via accessories to be ordered separately. Mast mounting via two stainless steel fixing screws in accordance with EN 60598-2-3. Also suitable for mounting to masts with spigot Ø 42, 48 and 60 mm via reduction pieces to be ordered separately. As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations. With asymmetrical wide light intensity distribution. Further beam characteristics are available for flexible adaptation to customer-specific lighting tasks. Retrofitting a rear / side shield is possible as an accessory to be ordered separately. LED system consists of 6 MLT LED modules each with 4 LEDs. Luminaire luminous flux 4600 lm, connected load 38,00 W, luminous efficiency of luminaire 121 lm/W. Light colour warm white, correlated colour temperature (CCT) 2700 K, general colour rendering index (CRI) R_a > 70. Mean rated service life L_{clo} (t_q 25 °C) = 100,000 h. Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA. Luminaire body powder-coated anthracite, similar to DB 703. With metal effect, highly weather resistant, powder-coated. Swivel unit silver-grey offset, similar to RAL 9006. The fastening elements are coated in the housing colour. CG chamber cover of die-cast aluminium, opens without tools via draw catch. The E-block can be removed without tools. The replaceable cover made of heat-treated non-laminated safety glass is securely fastened to the luminaire housing with four stainless steel fastening elements. The cover is equipped with a durable, UV-resistant polyurethane sealing. Sea weather-suitable coating on request. Weight: 6,9 kg. Windage area F_w = . Safety class (EN 61140): II, protection rating (DIN EN 60529): IP66, impact resistance level in accordance with IEC 62262: IK08. With connected 8,000 mm connection cable. With electronic transformer, switchable. Control gear unit according to DALI-2 standard (EN 62386). Surge voltage resistance 6/10 KV (Differential Mode / Common Mode). Luminaire with adjustable luminaire luminous flux via an app and NFC (Near Field Communication). Configurable ballast with luminous flux stabilising (CLO). Connected load at the end of service life: 40,00 W. The luminaire complies with fundamental requirements of applicable EU regulations and product safety legislation and bears the CE symbol. With power reduction via control phase. Switching off one control phase implements reduction of luminaire luminous flux to 50%.

Installation information:
With installation to or on electrically insulating mounting systems (e.g. plastic, wood or concrete posts, isolated integrated metal posts, wire suspensions, wall fixing) the LED luminaire housing must be connected on-site to a functional electrically conducting earth connection. Please note that conductors with yellow/green conductor insulation must not be used for conductor connection between the mast terminal box and luminaire.

Note on accessory: shielding MLT ZAH vp/4 pcs. (TOC 6818500) / MLT ZAS G4 p4 (TOC 7851000) :
Number of required shieldings / number of packaging units with 4 pieces each: 6 / 2.
Planning information:
The luminaire is compliant to the requirements of EN 60598 and is designed for the effects of wind compliant to EN 1991 (Eurocode) with basic wind velocity of up to 30m/s (corresponding to wind zone 4 in Germany) in terrain category 1. A snow load (up to 1kN/m^2) and icing (up to 2 cm) at a mounting height in accordance with the mounting instructions are taken into account. Not considered are exposed locations (e.g. bridges, installation on buildings or directly adjacent to railway tracks). Impact loads are not considered.

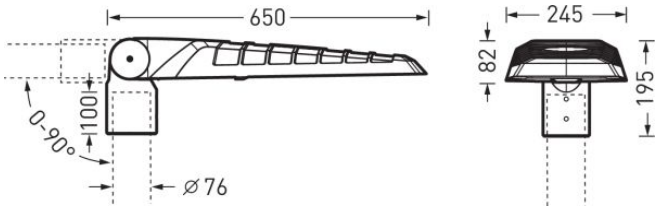
EPREL ID

E: 4062172036252 (LS_TRV_285540)

85401594-00

LIQ 70N-AB7L-LR/6800-727 8G1 ET

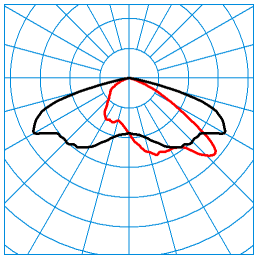
TOC: 7834240



Product features and key data

Luminaire type	Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette.	
Light sources	LED system consisting of 8 MLT LED modules with 4 LEDs each.	
Mounting method	Bracket-mounting outdoor|Post-top outdoor	
Luminaire optic	As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations.	
LED-System	CLO initial value	CLO end value
Connected load	54 W	57 W
Power factor	0,95	
Connected load, reduced	28,5 W	
Colour temperature	2.700 K	2.700 K
Rated luminous flux	6.800 lm	6.800 lm
Luminous efficacy	125 lm/W	119 lm/W
Service life	Lclo (25 °C) = 100.000 h	
Colour rendering index	70	
Colour tolerance	5 SDCM	
Photobiological class	Group 2 - no risk	
Luminaire colour	DB703 micaceous iron oxide	
Luminaire body	Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA.	
Electrical version	With electronic transformer, switchable.	
DALI-2-Standard EN 62386	Yes	
Surge voltage resistance (differential mode)	6 kV	
Surge voltage resistance (common mode)	10 kV	
Connection method	Connection cable	
Dimming range	50 %	
Mains frequency	50/60 Hz	
Mains voltage	220 - 240 V	
Total harmonic distortion < %	10 %	
Ingress Protection (IP) rating	IP66	
Protection class	II	
Impact resistance (IK)	IK09	
Hot wire resistance	960 °C	
Ambient temperature	25 °C	
Max. Luminaires B10	8	
Max. Luminaires B16	12	
Max. Luminaires C10	12	
Max. Luminaires C16	20	
Weight	7,9 kg	

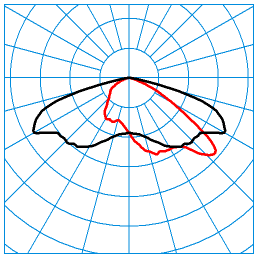
light distribution curve



LIQ 70N-AB7L-LR/6800-727 8G1 ET(CLO end value)
TX277774

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 35 73 98 100 100 0 0 0 0



LIQ 70N-AB7L-LR/6800-727 8G1 ET(CLO initial value)
TX278049

C0 - C180
C90 - C270

DIN 5040: A30
UTE: 1,00 G
CEN Flux Code: 35 73 98 100 100 0 0 0 0

Available accessories

Material	Description
 **0970/42 Reduction Piece** 2223200	Reduction piece, for post spigot Ø 42 mm.
 **0970/48 reduc.pce** 2223300	Reduction piece, for post spigot Ø 48 mm.
 **0970/60 Reduction Piece** 2223400	Reduction piece, for post spigot Ø 60 mm.
 **MLT ZAH p4** 6818500	Rear shielding for MLT IQ lens systems. Accessory for retrofitting into suitable outdoor luminaires with 4-fold configurations of ABxL, SB3L or RB5L lens optics.
0803/2/60-200-60 6824400	Post mounting element for twin arrangement, post spigot 60 mm, support 60 mm x 200 mm.
0803/2/76-200-60 6824500	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 200 mm.
0803/2/76-500-60 6824600	Post mounting element for twin arrangement, post spigot 76 mm, support 60 mm x 500 mm.
0803/3/76-350-60 6824900	Post mounting element for triple arrangement, post spigot 76 mm, support 60 mm x 350 mm.
 **0803WB-R/100-76 26** 7353100	Decorative wall mounting made of cast aluminium. Suitable for luminaires of the Lumega IQ and Cuvia series without using additional reduction pieces.
Scheibe LIQ 70N Ersatz vp 7845900	Replacement cover for luminaires from series: Lumega IQ 70N
 **MLT ZAS G4 p4** 7851000	Lateral shielding for MLT IQ lens systems. Accessories for retrofitting in technical and decorative outdoor luminaires with lens optics ABxL, AMxL, SB3L, RBxL.
0803EMB/100-42 Eck-Mastbefg kpl 26 7022700	

Offer text

Next-generation post-top and bracket-mounted LED luminaire with clear lines and an attractive silhouette. Post-top and bracket-mounted on or to post spigot Ø 76 mm. Inclination angle of 0° to 90°, can be set in 5° steps, scaled. Simple and rapid conversion from post-top to bracket-mounted luminaire via one screw accessible from outside.. Walls installation is possible via accessories to be ordered separately. Mast mounting via two stainless steel fixing screws in accordance with EN 60598-2-3. Also suitable for mounting to masts with spigot Ø 42, 48 and 60 mm via reduction pieces to be ordered separately. As MLT version (Multi-Lens Technology), consisting of highly efficient UV and temperature-resistant lens systems in 4-fold configurations. With asymmetrical wide light intensity distribution. Further beam characteristics are available for flexible adaptation to customer-specific lighting tasks. Retrofitting a rear / side shield is possible as an accessory to be ordered separately. LED system consisting of 8 MLT LED modules with 4 LEDs each. Luminaire luminous flux 6800 lm, connected load 54,00 W, luminous efficiency of luminaire 125 lm/W. Light colour warm white, correlated colour temperature (CCT) 2700 K, general colour rendering index (CRI) R_a > 70. Mean rated service life L_{clo} (t_q 25 °C) = 100,000 h. Luminaire body of die-cast aluminium. Swivel unit made of UV and weather resistant ASA. Luminaire body powder-coated anthracite, similar to DB 703. With metal effect, highly weather resistant, powder-coated. Swivel unit silver-grey offset, similar to RAL 9006. The fastening elements are coated in the housing colour. CG chamber cover of die-cast aluminium, opens without tools via draw catch. The E-block can be removed without tools. The replaceable cover made of heat-treated non-laminated safety glass is securely fastened to the luminaire housing with four stainless steel fastening elements. The cover is equipped with a durable, UV-resistant polyurethane sealing. Sea weather- suitable coating on request. Weight: 7,9 kg. Windage area F_w = . Safety class (EN 61140): II, protection rating (DIN EN 60529): IP66, impact resistance level in accordance with IEC 62262: IK09. With connected cable, length 10,000 mm. With electronic transformer, switchable. Control gear unit according to DALI-2 standard (EN 62386). Surge voltage resistance 6/10 KV (Differrential Mode / Common Mode). Configurable ballast with luminous flux stabilising (CLO). Connected load at the end of service life: 57,00 W. The luminaire complies with fundamental requirements of applicable EU regulations and product safety legislation and bears the CE symbol. With power reduction via control phase. Switching off one control phase implements reduction of luminaire luminous flux to 50%.

Installation information:
With installation to or on electrically insulating mounting systems (e.g. plastic, wood or concrete posts, isolated integrated metal posts, wire suspensions, wall fixing) the LED luminaire housing must be connected on-site to a functional electrically conducting earth connection. Please note that conductors with yellow/green conductor insulation must not be used for conductor connection between the mast terminal box and luminaire.

Note on accessory: shielding MLT ZAH vp/4 pcs. (TOC 6818500) / MLT ZAS G4 p4 (TOC 7851000) :
Number of required shieldings / number of packaging units with 4 pieces each: 8 / 2.
Planning information:
The luminaire is compliant to the requirements of EN 60598 and is designed for the effects of wind compliant to EN 1991 (Eurocode) with basic wind velocity of up to 30m/s (corresponding to wind zone 4 in Germany) in terrain category 1. A snow load (up to 1kN/m^2) and icing (up to 2 cm) at a mounting height in accordance with the mounting instructions are taken into account. Not considered are exposed locations (e.g. bridges, installation on buildings or directly adjacent to railway tracks). Impact loads are not considered.

609000 609500 610000 610500

246500 246000

Track Track Track BULLEN LANE BULLEN LANE Track Track

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Works No.s Overview

Tye Lane Woodlands Farm Black Cottage Tye Lane Bullen Hall Farm Channel Hill Farm Burstallhill

69 65 64 67 62 63 66 68

EA THREE DCO Corridor
EA THREE Onshore Converter Station Layout Detail
EA THREE Onshore Converter Station Temporary Site Facilities Detail

EA THREE Converter Substation to National Grid Substation Cable Route
400kV AC Cable - Open Cut Section
400kV AC Cable - Ducted Section

EA THREE Onshore Converter Station Access Roads
Permanent
Temporary

EA THREE Cable Access Road
Haul Road
EA THREE Onshore Converter Station SUDs Pond
EA THREE Area to be Reprofiled

EA ONE Onshore Converter Station Access Road

Works No.s
65 62 66 63 67 64 68 69

GoBe consultants

Rev	Date	By	Comment
B	04/04/2022	PW	Second Issue
A	31/03/2022	JRS	First Issue

Original A3 Plot Scale 1:5,000

0 100 200 Metres

Onshore Converter Station Stage

Figure 1: Site Context Plan

Drg No	05356.00006.12.0001.1 ONCS Site Context Plan
Rev	2
Date	04/04/2022
Layout	N/A

Document Path: P:\05356 - GoBe Consultants Ltd\00006 East Anglia Three\Tech\GIS\Dwgs\Wking\EA3\Onshore Substation\ONCS and Commencement Master\5356.00006.12.0020.1 ONCS Site Context.mxd

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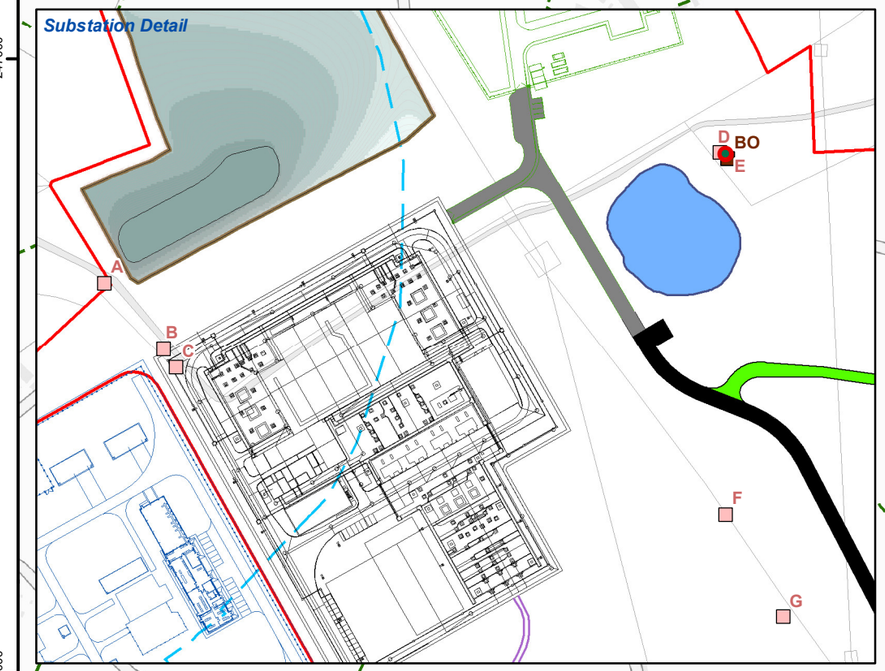
247000 246000



Tye Farm
TYE LANE
VP12
Oxen Covert
Miller's Wood
RD1
Woodlands Farm
Bramford Ha
West Wing
RD2
Bushey Grove
Gobert's Grove
VP11
Bullen Gree
Fore Grove
BULLEN LANE
VP10
VP6
Bullen Wood
Camperdown Cottage
FLOWTON ROAD
THE CHANNEL
RD3
Hill Farm
Burstallhill
Round Wood
Elms Grove
CHURCH HILL
VP5
Sheepyard Barn
Burstall Long Wood

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Visual Receptors (as per EA3 LVIA)

VP5 - Orchard Lands, Near Canes Farm
VP6 - Near Hill Farm
VP10 - Near Fidgeon's Farm
VP11 - Near Bullenhall Farm
VP12 - Near Tye House

Additional Residential Receptors

RD1 - Woodlands Farm
RD2 - Bullenhall Farm
RD3 - Hill Farm

EA THREE DCO Corridor
EA THREE Onshore Converter Station Layout Detail
EA THREE Onshore Converter Station Temporary Site Facilities Detail

EA THREE Converter Substation to National Grid Substation Cable Route
400kV AC Cable - Open Cut Section
400kV AC Cable - Ducted Section

EA THREE Onshore Converter Station Access Roads
Permanent
Temporary

EA THREE Cable Access Road
Haul Road

EA THREE Area to be Reprofiled
EA THREE Onshore Converter Station SUDs Pond
EA ONE Onshore Converter Station Access Road

Potentially Sensitive Receptors
Additional Residential Receptor Location
Visual Receptor Viewpoint Location
Public Right of Way

High Bat Potential Tree
Moderate Bat Potential Tree
Low Bat Potential Tree
Group with Bat Potential
Barn Owl Box
Bat Box

GCN Positive Pond
Positive GCN Pond 250m Buffer

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Rev	Date	By	Comment
B	12/04/2022	PW	Second Issue
A	06/01/2022	PW	First Issue

Original A3 Plot Scale 1:10,000

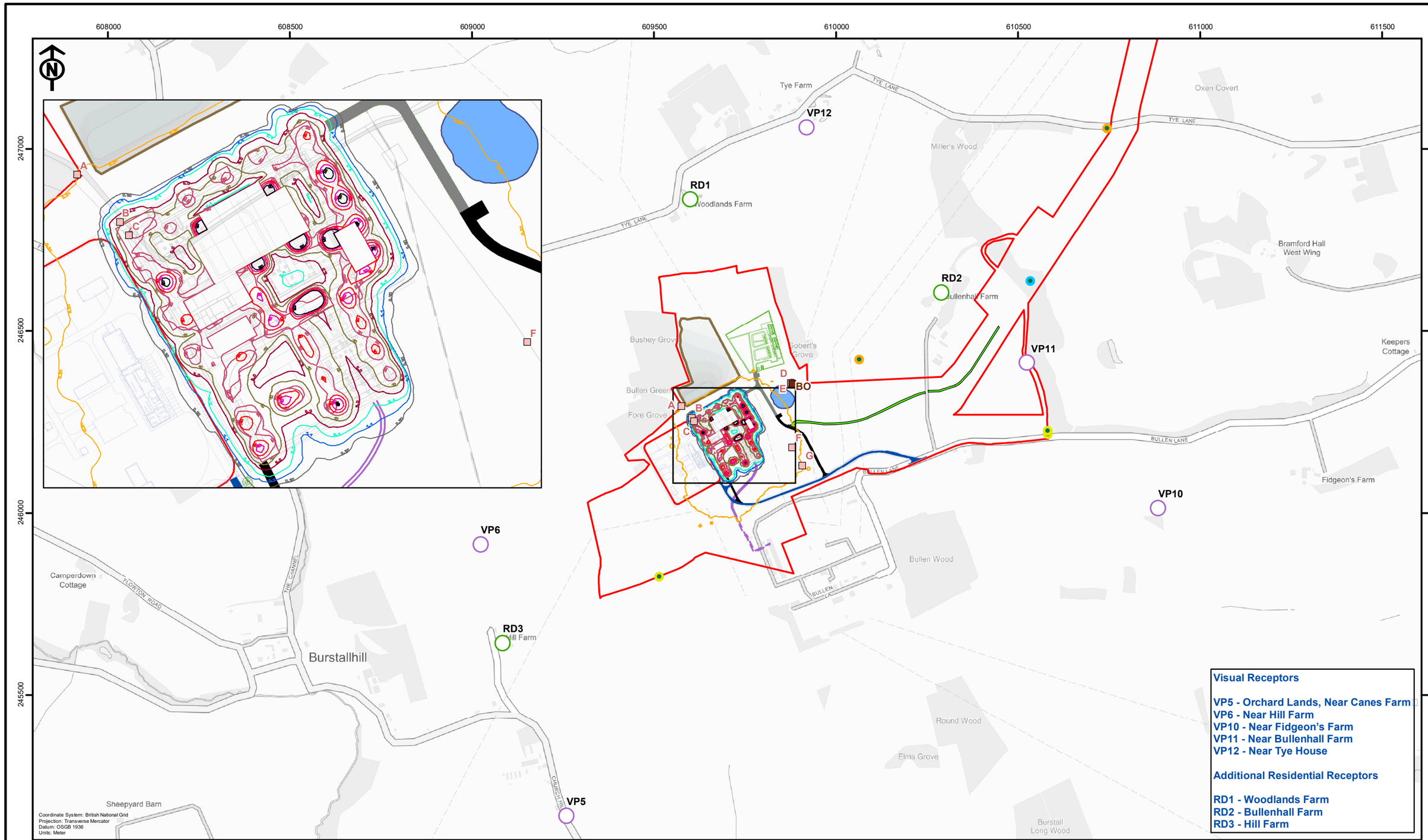
0 200 400 Metres

Onshore Converter Station Stage

Figure 2: Potentially Sensitive Operational Light Receptors

Drg No	05356.00006.12.00054.1 Sensitive Receptors
Rev	2
Date	12/04/2022
Layout	N/A

Document Path: P:\05356 - GoBe Consultants Ltd\00006 East Anglia Three\Tech\GIS\Dwgs\Wking\EA3\Onshore Substation\Doc Ref EA3-GRD-CON-PLN-IBR-000112\5356.00006.12.00054.1 Potentially Sensitive Receptors.mxd



EA THREE DCO Corridor

EA THREE Onshore Converter Station Layout Detail

EA THREE Onshore Converter Station Temporary Site Facilities Detail

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EA THREE Converter Substation to National Grid Substation Cable Route

400kV AC Cable - Open Cut Section

400kV AC Cable - Ducted Section

EA THREE Onshore Converter Station Access Roads

Permanent

Temporary

EA THREE Cable Access Road

Haul Road

EA THREE Onshore Converter Station SUDs Pond

EA THREE Area to be Reprofiled

EA ONE Onshore Converter Station Access Road

Potentially Sensitive Operational Light Receptors

Additional Residential Receptor Location

Visual Receptor Viewpoint Location

High Bat Potential Tree

Moderate Bat Potential Tree

Low Bat Potential Tree

Group with Bat Potential

Barn Owl Box

Bat Box

Isolux Contours Showing Illumination Levels at Ground Floor in LUX

0.01 LUX

0.5 LUX

1.1 LUX

2.1 LUX

10 LUX

20 LUX

30 LUX

40 LUX

50 LUX

GoBe consultants

Rev	Date	By	Comment
B	12/04/2022	PW	Second Issue
A	06/01/2022	PW	First Issue

Original A3 Plot Scale 1:10,000

0 200 400 Metres

Onshore Converter Station Stage

Figure 3: Operational Lighting – Lux Plan

Drg No	05356.00006.12.00053.1 Lux Plan
Rev	2
Date	12/04/2022
Layout	N/A

Document Path: P:\05356 - GoBe Consultants Ltd\00006 East Anglia Three\Tech\GIS\Dwgs\Wking\EA3\Onshore Substation\Doc Ref EA3-GRD-CON-PLN-IBR-000112\5356.00006.12.00053.1 Lux Plan.mxd