



2nd Floor, Chancery Exchange
10 Funnival Street, EC4A 1AB

T: +44(0)20 7148 6290
E: info@eb7.co.uk
W: eb7.co.uk

Light Pollution Study

Port Talbot

25 October 2024

1. Executive Summary

The purpose of this report is to present a preliminary study of the baseline and proposed conditions with regards to light spillage from Tata Steel UK Ltd in Port Talbot, Wales.

The study includes the identification of sensitive receptors, the results from a site survey to record illuminance levels, and the expected lighting levels from the proposed lighting scheme.

2. Sensitive receptors

An initial review of the area was undertaken in order to identify areas relevant sensitivity to light pollution.

Three areas were identified due to sensitive wildlife, particularly bats (appendix 1):

- Areas 1: Eglwys Nunydd Reservoir.
- Area 2: Internal reservoir (300 x 400m), operational lagoon.
- Area 3: Green area with fields, trees, bushes, an access road (Heolcae'r Bont') and a path (Lower Mother).

This review also showed that all residential areas in the area are too far from the site to be significantly adversely affected by light spillage.

3. Survey

A night time site survey was undertaken in June 2024 between 11pm on 26th and 2am on the 27th. The weather conditions were overcast and dry, which implies low ambient light in spite of the moon being between the second and third quarters. It is considered that this was a standard operating evening and as such that light levels would be typical.

A number of reading locations were selected (points 1 to 27 in appendix. 1), chiefly along the perimeter of the sensitive areas, but also within Area 3 along Heolcae'r Bont' road (points 4 to 8) and Lower Mother path (points 17 and 18).

4. Baseline Lighting Scenario

The results for Area 1 show an average value is 0.21 lx, with a standard deviation of 0.1 lx and a maximum of 0.45 lx.

Area 2 showed the most relevant recordings in the survey. The average illuminance was 4.8 lx, with a standard deviation of 5.2 lux and a maximum of 18.1 lx. The highest values were recorded along the eastern boundary (Points 19 to 22, and 27) looking primarily east and away from the Area.

Results along the access path in Area 3 (points 4 to 8) showed an average illuminance of 0.31 lux, with a standard deviation of 0.24 lux and a maximum of 1.07 lx. It should be noted that measurements Points 17 and 18 were not possible due to the excessive vegetation.

The perimeter of Area 3 showed low values in general, apart from Point 11. This Point received a maximum of 10.3 lx from the southwest, whilst for the rest of points (9-10 and 12-16) the results show an average of 0.7 lx (0.9 standard deviation).

5. Proposed Lighting Scenario

A night time illuminance study was undertaken considering the proposed lighting scheme. The results can be seen in appendix. 3.

Area 1 will receive no light from the proposed lights.

The majority of the operational lagoon (Area 2) will receive between 0.1 and 5 lux. Levels between 5 and 15 lux, and occasional higher, can be seen on a 50m wide band close to the northern edge of the lagoon, where part of it will be infilled.

The vast majority of Area 3 will receive less than 0.2 lux from the proposed lights, which can be considered as 'complete darkness' (ILP Guidance Note 08/23) (Appendix 3 and 4 show the proposed and indicative lighting layouts). Only a small corner to the north of the area will receive values up to 2.5 lux.

6. Conclusions

The proposed lighting scheme will have no impact on Eglwys Nunydd Reservoir (Area 1).

Area 2 is significantly lit at present, so the proposed lights will only be relevant on the northern edge of the lagoon.

Area 3 currently sees low levels of light at night, mostly within the range of 0.2 to 1.0 lux. Only the northern corner of this area may see a noticeable but limited increment due to the proposed lights.



Appendix 1

Baseline lighting scenario



Fig. 1: Sensitive Areas and Reading Locations

PORT TALBOT EXTERNAL PLANT LIGHTING SURVEY(LUX Levels)								
Carried out by M.Wadling (Tata Steel Projects)								
DATE:	23:00 26-06-24 to 02:00 27-06-24							
WEATHER CONDITIONS			Overcast and dry				Grid Coords	
		Lux Levels						
Point	Time	Horizontal	North	East	West	South	North	West
1	23:00	0.23	0.27	0.07	0.16	0.16	51.33.19	03.44.41
2	23:10	0.2	0.27	0.13	0.24	0.12	51.33.14	03.44.49
3	23:15	0.2	0.35	0.17	0.45	0.19	51.33.11	03.44.48
4	23:40	0.32	0.97	1.07	0.14	0.25	51.33.15	03.45.04
5	23:45	0.21	0.28	0.16	0.14	0.09	51.33.12	03.45.12
6	23:51	0.25	0.29	0.23	0.21	0.19	51.33.10	03.45.22
7	23:57	0.24	0.36	0.35	0.24	0.14	51.33.06	03.45.32
8	00:00	0.24	0.59	0.34	0.41	0.2	51.33.04	03.45.38
9	00:08	0.49	0.95	0.1	0.12	0.79	51.32.57	03.45.32
10	00:45	1.05	1.4	0.14	2.15	0.89	51.33.06	03.45.59
11	00:49	5.25	1.35	0.29	10.27	7.05	51.33.08	03.46.00
12	01:20	0.35	0.31	0.21	0.39	0.46	51.33.14	03.46.00
13	01:22	0.36	0.89	0.67	0.72	0.14	51.33.22	03.45.59
14	01:25	0.38	0.61	0.32	0.45	0.34	51.33.19	03.45.42
15	01:31	0.28	0.71	0.57	0.56	0.11	51.33.19	03.45.31
16	01:28	0.41	1.01	0.52	0.92	0.21	51.33.19	03.45.26
17	Unable to gain access due to excessive vegetation							
18	Unable to gain access due to excessive vegetation							
19	01:10	7.43	5.6	13.14	4.28	4.37	51.33.50	03.46.13
20	01:13	8.49	3.95	18.05	1.25	5.59	51.33.45	03.46.17
21	01:37	9.24	8.87	3.85	18.09	0.98	51.33.43	03.46.20
22	01:39	14.96	1.54	17.65	3.68	2.87	51.33.42	03.46.23
23	01:42	0.65	1.39	0.93	0.41	1.21	51.33.42	03.46.29
24	01:45	0.5	1.64	0.77	1.26	0.66	51.33.48	03.46.36
25	01:00	0.29	3.45	1.03	0.65	0.7	51.33.50	03.46.36
26	01:05	0.75	1.36	1.96	0.56	0.97	51.33.55	03.46.27
27	01:07	3.82	12.32	6.45	10.65	9.75	51.33.54	03.46.16

Fig. 2: Reading Values

NOTE:
Horizontal reading is with sensor facing upwards.
Readings taken approx 1m from ground level



Appendix 2

Proposed lighting scenario

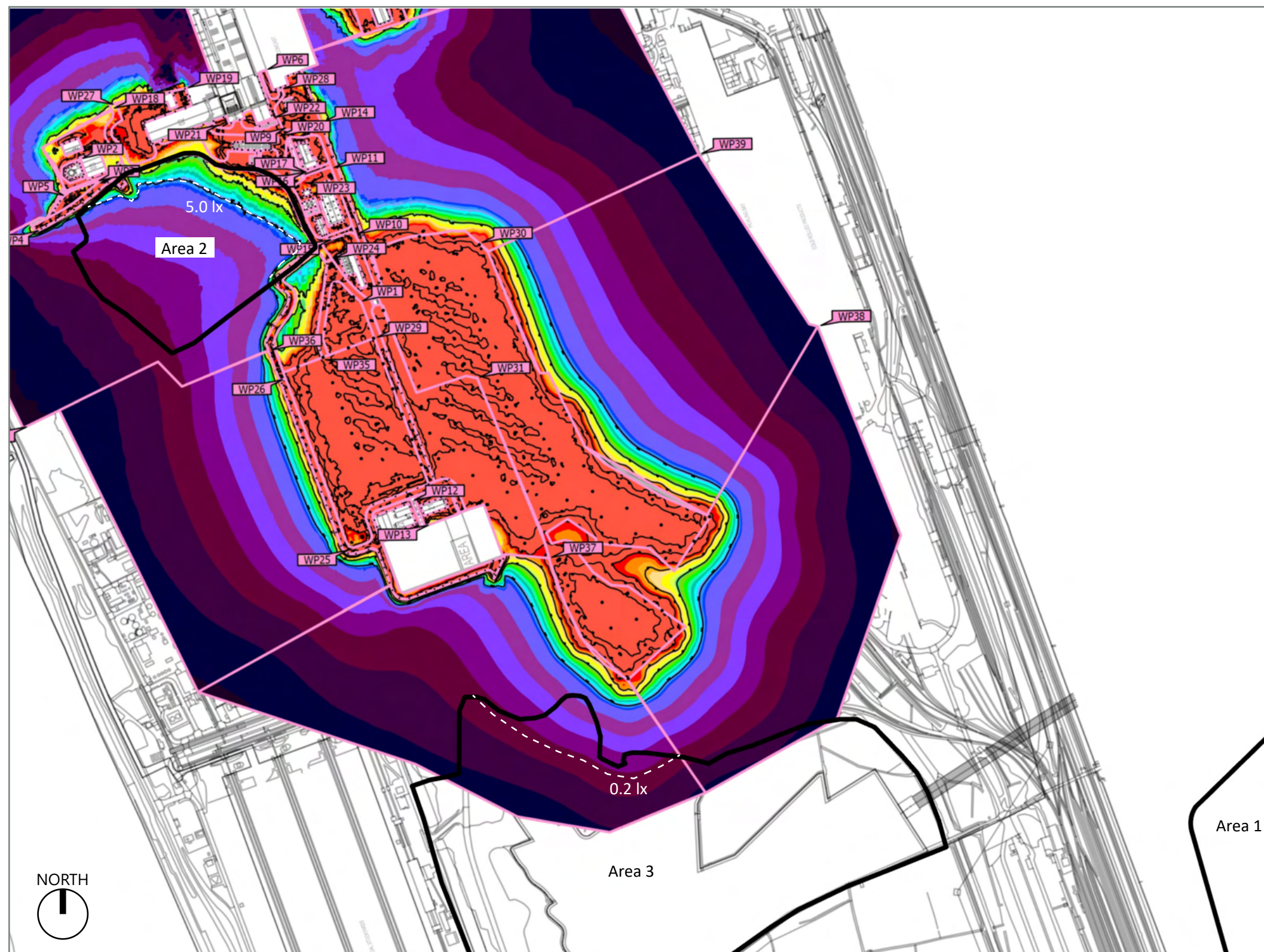
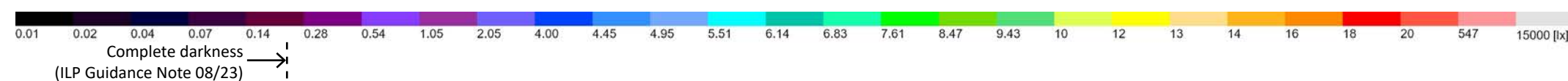


Fig. 3: Illuminance Levels



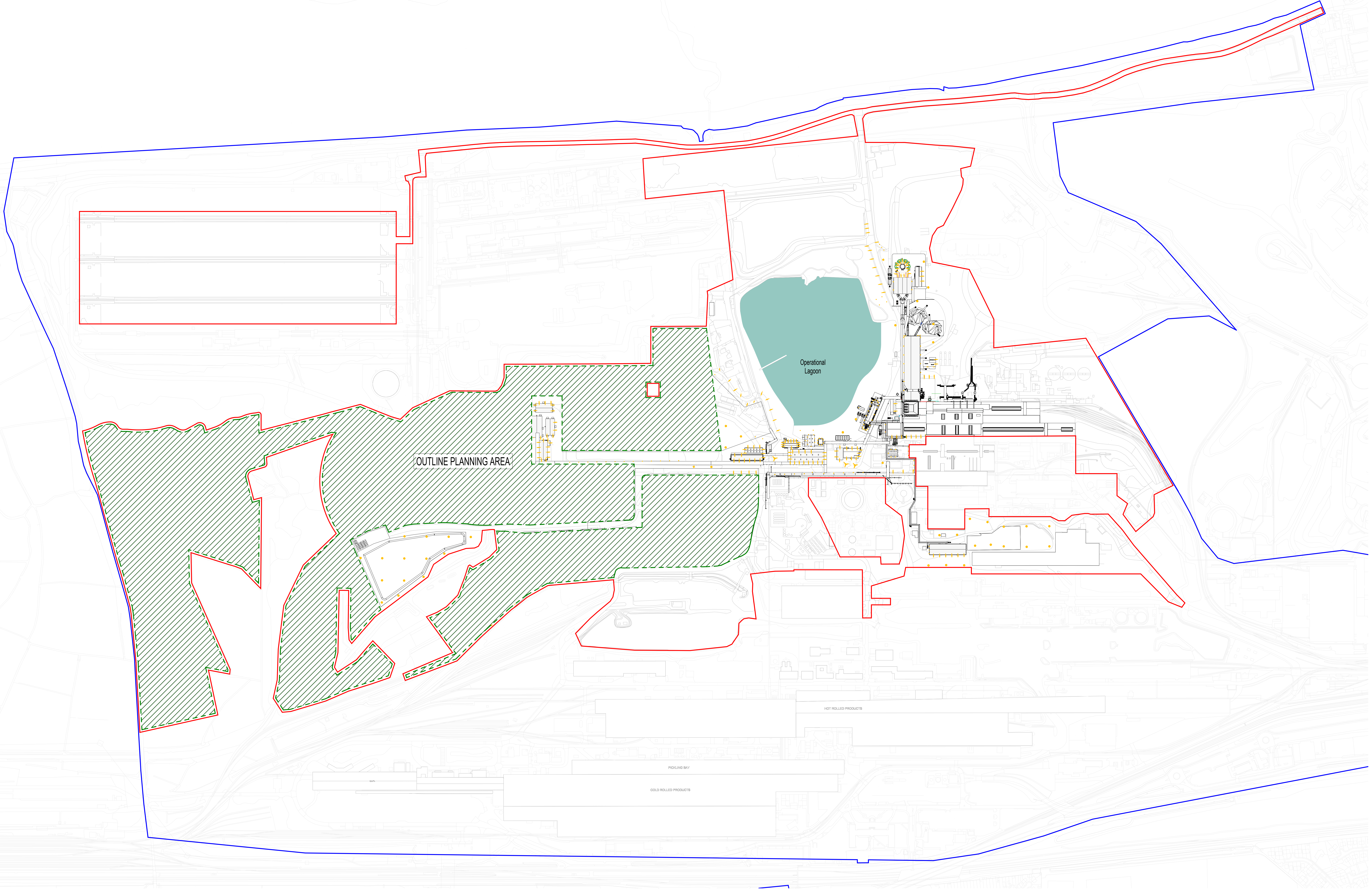


Appendix 3

Proposed indicative lighting layouts

Construction Design and Management Regulations
Design risk assessments are carried out throughout the design stages of the project in accordance with company procedures and standards. These assessments provide an overview of the application to design and use of the construction to be built, and the associated risks to the project. The design is based on the current state of the art and is subject to change as the project progresses. The design is based on the current state of the art and is subject to change as the project progresses. The design is based on the current state of the art and is subject to change as the project progresses.

- Street Light
- High Mast
- Flood Light



PROJ	Initial Issue	01/11/2024
REV	DESCRIPTION DRAWN BY CHECKED BY APPROVED BY	DATE
R01	PLAN OF WORK WORKSTAGE	LEVEL OF MODEL DEFINITION (LOD)
Stage 1	Spatial Coordinate	LOD 1 - Approach Model

PURPOSE OF ISSUE	SUITABLE FOR	STATUS OF SUSTAINABILITY
Information	Information	Status 01 - Delivery Team Information



CARDIFF 029 2052 8140
LONDON 0207 138 3550
WREXHAM 01978 357 887
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CLIENT
Tata Steel UK Ltd.

PROJECT TITLE
EAF PROJECT, PORT TALBOT

DRAWING TITLE
Proposed Lighting Layout - Full

PROJECT No	20007	SCALE @ A0	As Indicated
DRAWING No	029 2052 8140	REVISION	
REV	001	001	001
REV	002	002	002
REV	003	003	003
REV	004	004	004
REV	005	005	005
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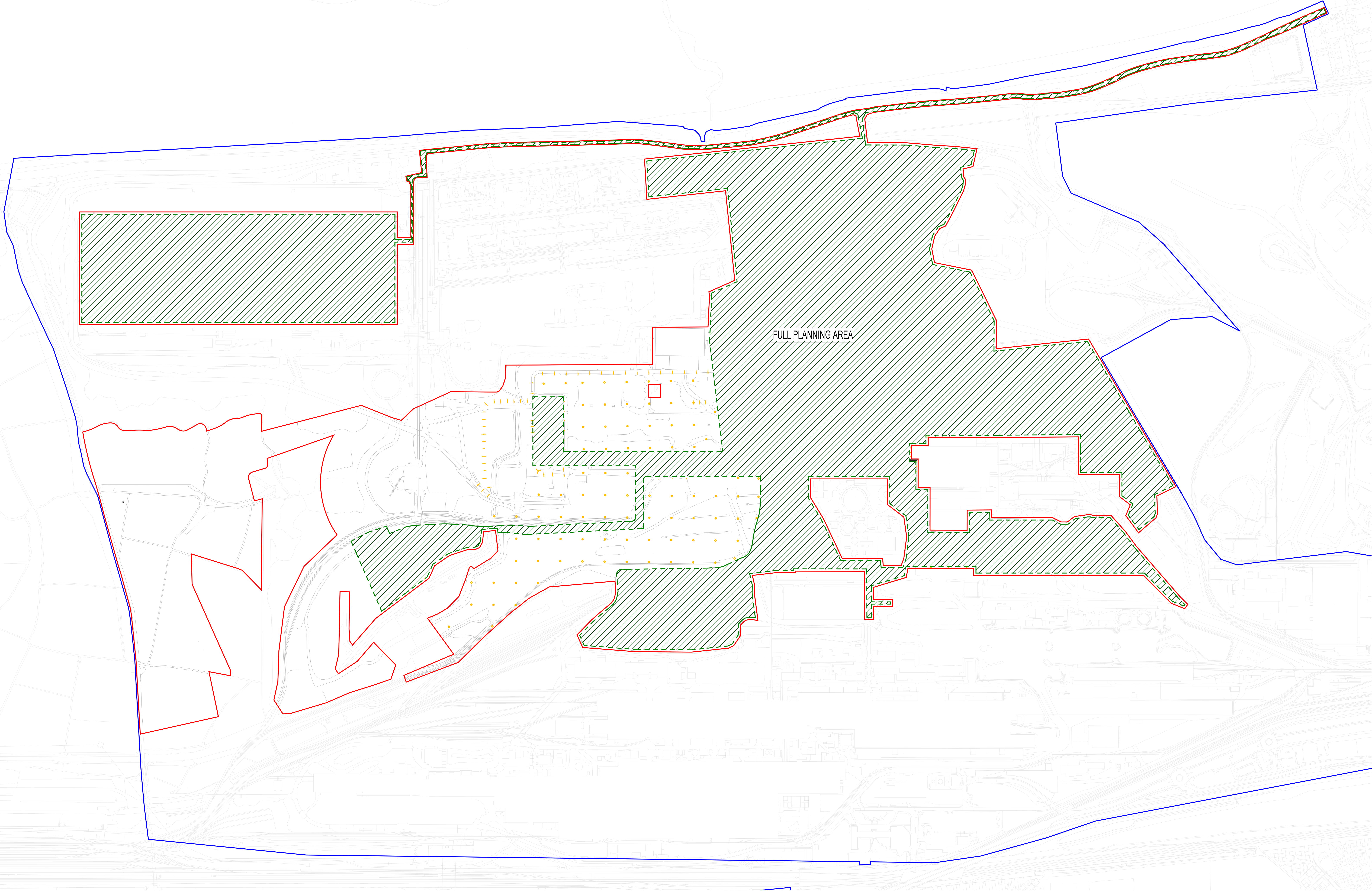


Appendix 4

Indicative lighting layout

Construction Design and Management Regulations
Design risk assessments are carried out throughout the design stages of the project in accordance with company procedures and methods. These assessments provide an overview of the application to design and use of the construction to be built, and the associated risks to the project. The design is to be carried out in accordance with the Construction Design and Management Regulations 2015 and all applicable health and safety legislation as currently amended.

- Street Light
- High Mast
- Flood Light



POD: Initial Review	01/11/2024
REV. DESCRIPTION DRAWN BY CHECKED BY APPROVED BY DATE	
RIBA PLAN OF WORK WORKSTAGE	LEVEL OF MODEL DEFINITION (LOD)
Stage 1 - Spatial Coordination	LOD 2 - Approximate Model

PURPOSE OF ISSUE - SUSTAINABLE FOR	STATUS OF SUSTAINABILITY
Information	Status 02 - Delivery Team Information



CARDIFF 029 2052 8140
LONDON 0207 138 3560
WREXHAM 01978 357 887
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CLIENT
Tata Steel UK Ltd.

PROJECT TITLE
EAF PROJECT, PORT TALBOT

DRAWING TITLE
Indicative Lighting Layout - Outline

PROJECT No	SCALE @ A0
20007	As Indicated

DRAWING No	100	Project Number	1000	Scale	1:300	Revision	01
REVISIONS							
REVISIONS							

REVISIONS							
REVISIONS							
REVISIONS							

DO NOT	Any discrepancy or query concerning this drawing should be referred to the Architect
SCALE	Registered Office: Oswestry, Shropshire, UK. Tel: 01691 500000. Fax: 01691 500001. Email: info@lawray.co.uk

Indicative Lighting Layout - Outline
1 : 3000