



# Pineapple Farm

Lighting Impact Assessment –  
Lighting Baseline

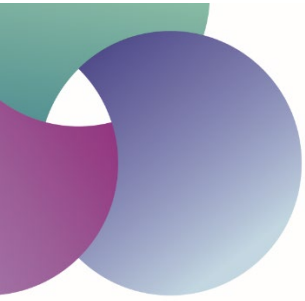
DATE: 21.04.21

PROJECT No. 4206

PREPARED FOR:

M7 Planning Limited





# Pineapple Farm

Lighting Impact Assessment – Lighting Baseline

PROJECT: 4206

CURRENT REVISION: 0.1

DATE OF ISSUE: 21.04.21

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Rev	Date	Details
0.1	21.04.21	First Issue



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# 1 Introduction

## 1.1 General

This Lighting Assessment is provided by Illume Design Ltd, a specialist lighting design consultancy with experience and knowledge in lighting impact assessments, mitigation and lighting design in relation to light sensitive ecological receptors.

The author of this report is a fully qualified Lighting Designer and Chartered Electrical Engineer, with full membership of the Institute of Lighting Professionals, Society of Light and Lighting, and Chartered Institute of Building Services Engineers.

Illume Design Ltd have been commissioned by M7 Planning Limited to undertake a Baseline Lighting Survey for the site at Pineapple Farm, Congresbury.

## 1.2 Scope of the Report

The purpose of the baseline survey is to record existing light levels at the boundaries within the site to inform the Ecological Assessments.

This Baseline Survey report outlines the methodology, summaries the information collected, and measurements taken during the lighting survey.

## 1.3 Site Location

The site is located to the north of Mulberry Road, and east of Park Road in Congresbury, North Somerset. Approximate OS grid reference to the centre of the site is ST 44274 63156.

The site comprises an agricultural field. It is bounded to the south, west and north west by residential properties. To the east and north east is agricultural land.

For further information refer to the Ecological Reports by EAD Ecology.



## 2 Survey Methodology

A day and night-time site visit were undertaken on 9<sup>th</sup> April 2021 to ascertain the levels of illuminance at the boundaries within the site. A record was made of the types of lighting installations present within the Site, and immediate surrounding area.

The weather conditions were dry and cloudy during the day and evening. Night-time measurements were taken between 9pm - midnight.

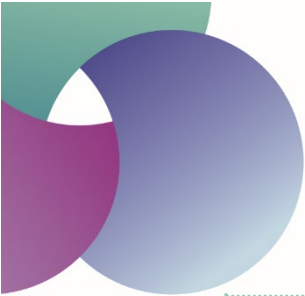
An evening as close to the New Moon phase as possible was selected as 'natural' ambient light levels from the moon will be as low as possible, allowing any 'artificial' ambient lighting levels from surrounding lighting, light aura or sky glow etc. to be measured as accurately as possible. This provides a baseline upon which any new lighting effects will be additive. (The survey was conducted three nights prior to the New Moon phase. The moon phases was a 6% waning crescent.)

Natural ambient light from moon light will have an additive effect to the lighting levels measured during the survey depending on the phase of the moon and sky conditions. The typical level of illuminance at ground level from a full moon on a clear night in the UK is 0.35 lux.

Survey locations were selected in measured intervals along the boundaries of the two fields. Measurements of point illuminance were recorded at each of the survey locations. These were recorded horizontally on the ground, horizontally at 1.5m, and at 1.5m in the vertical plane in the four compass directions, North, South, East and West at each location. A measurement of the worst-case level vertically at 1.5m, or perpendicular to the boundary, was not recorded as it was not applicable for this site. Measurements were taken using a calibrated Konica Minolta T-10A Illuminance Meter (Serial no: 30018095/20016053).

GPS coordinates were recorded at each survey location and are listed in table 2.1. (NB: Measured GPS coordinates generally have an accuracy of within 3m.)

Survey Location Reference	Survey Location GPS Coordinates
E01	ST 44166 63227
E02	ST 44196 63225
E03	ST 44226 63226
E04	ST 44257 63223
E05	ST 44288 63219
E06	ST 44314 63220
E07	ST 44345 63228
E08	ST 44372 63237
E09	ST 44387 63239
E10	ST 44389 63208



E11	ST 44389 63180
E12	ST 44386 63150
E13	ST 44388 63121
E14	ST 44387 63103
E15	ST 44378 63092
E16	ST 44372 63080
E17	ST 44344 63083
E18	ST 44313 63079
E19	ST 44285 63074
E20	ST 44255 63075
E21	ST 44245 63075
E22	ST 44250 63061
E23	ST 44252 63043
E24	ST 44226 63079
E25	ST 44201 63077
E26	ST 44182 63082
E27	ST 44174 63110
E28	ST 44170 63140
E29	ST 44168 63168
E30	ST 44168 63200

Refer to the Baseline Lighting Survey Location Plan in Appendix B.



## 3 Survey Results

### 3.1 Baseline Conditions within the Site and Surrounding Area

The site is currently unlit.

There is 4000K LED street lighting along Mulberry Road and Park Road. One of the street lights in Mulberry Road is directly next to the site access point.

The back gardens of residential properties bound the site to the west, south and north west with varying boundary treatments. The heights and nature of the boundary treatments vary widely, with some sections of boundary vegetation along the southern and western boundaries having been cut back or removed. A number of the neighbouring properties have various types of lighting to their rear elevations including security style floodlighting and wall mounted amenity lighting, most of which was not operational at time of the survey.

Generally, the neighbouring properties are well set back from the site boundary, with approximately 10-30m long gardens which offset the buildings. The houses to the east of Mulberry Road, and to the north of Venus Street, that abut the southern boundary of the site have a wider and taller section of vegetation than the rest of this southern boundary which screens light spill from those properties to the site.

The following images within this section of the report show the site boundaries, and luminaire types and installations within the immediate surroundings of the site.

Section 3.2 details the measurements of illuminance recorded at each survey location.

The measurements recorded show that the site and site boundaries are dark, except for the area where the access lane abuts Mulberry Road. Levels of illuminance  $\geq 0.5$  lux extend approximately 7m into the access lane from the site access point along Mulberry Road. The maximum level of illuminance recorded at the boundaries of the rest of the site was 0.02 lux.

There is potential for there to be higher levels of illuminance along some areas of the site boundary if the external and internal lighting to neighbouring residential properties were switched on, however this will be limited due to the offsets from the site boundary to the neighbouring properties.

Depending on the locations of any proposed dark ecological corridors associated with the proposed development, consideration should be given to enhancing the boundary vegetation/screening in areas where it has been reduced or removed, to ensure the dark corridors can be maintained.





Figures 3.1 – 3.4 – show the western boundary of the site with the neighbouring residential properties, and varying boundary treatments, including sections where there is minimal boundary vegetation or screening.



Figures 3.5 and 3.6 - show the southern site boundary with neighbouring residential properties



Figure 3.7 – shows the eastern boundary of the site, an eastern section of the northern boundary.



Figures 3.8 – 3.11 – show the residential property to the north of the site, along the western section of the site boundary. This property is relatively close to the site boundary with external lighting present, and limited boundary vegetation.





Figures 3.12 and 3.14 – show the eastern section of the southern boundary with an example of the type of wall mounted lighting that is present to the neighbouring residential properties.



Figures 3.15 and 3.16 - show the western section of the southern boundary, showing an example of where the boundary vegetation has been cut back.



Figures 3.17 and 3.18 – show the 4000K LED street lighting in Mulberry Road, which is also the same type of street lighting as to Park Road.



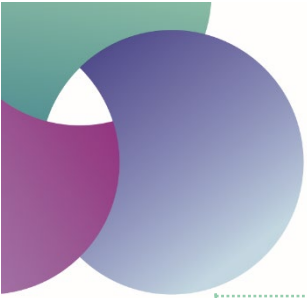
Figure 3.19 – shows a close up of one of the LED street lights in Mulberry Road.

### 3.2 Measurements of Illuminance at Survey Locations

Table 3.1 summarises the levels of illuminance recorded at each survey location. (Levels of illuminance recorded that equal or exceed 0.5 lux have been coloured red, and those that exceed 0.2 lux have been coloured orange.)

TABLE 3.1: ECOLOGICAL RECEPTOR LOCATIONS - LEVELS OF ILLUMINANCE RECORDED

Survey Location Reference	Horizontal Illuminance at Ground level	Vertical Illuminance at 1.5m			
		N	E	S	W
E01	0.01	0.02	0.02	0.01	0.01
E02	0.00	0.00	0.00	0.01	0.02
E03	0.00	0.02	0.00	0.01	0.02
E04	0.00	0.00	0.00	0.01	0.01
E05	0.00	0.00	0.00	0.01	0.01
E06	0.00	0.00	0.01	0.00	0.00
E07	0.00	0.00	0.01	0.00	0.00
E08	0.00	0.00	0.00	0.00	0.00
E09	0.00	0.00	0.00	0.00	0.00
E10	0.00	0.00	0.00	0.00	0.00
E11	0.00	0.01	0.00	0.00	0.01
E12	0.00	0.01	0.00	0.00	0.02
E13	0.00	0.01	0.00	0.00	0.01
E14	0.00	0.01	0.00	0.00	0.01
E15	0.01	0.01	0.01	0.00	0.00
E16	0.00	0.01	0.00	0.00	0.00
E17	0.01	0.01	0.01	0.00	0.00
E18	0.01	0.01	0.02	0.01	0.00
E19	0.00	0.01	0.01	0.00	0.00
E20	0.00	0.01	0.01	0.00	0.00
E21	0.00	0.01	0.00	0.01	0.00
E22	0.00	0.00	0.00	0.01	0.00
E23	3.05	0.16	2.14	0.86	0.31
E24	0.00	0.01	0.00	0.00	0.00
E25	0.00	0.01	0.00	0.00	0.00
E26	0.00	0.00	0.00	0.00	0.00



E27	0.01	0.01	0.01	0.00	0.02
E28	0.01	0.02	0.01	0.00	0.02
E29	0.02	0.01	0.01	0.00	0.00
E30	0.02	0.02	0.01	0.01	0.02



## 4 Conclusion/ Summary

The site is currently unlit.

The measurements recorded show that the site and site boundaries are dark, except for the area where the access lane abuts Mulberry Road. Levels of illuminance  $\geq 0.5$  lux extend approximately 7m into the access lane from the site access point along Mulberry Road. The maximum level of illuminance recorded at the boundaries of the rest of the site was 0.02 lux.

There is potential for there to be higher levels of illuminance along some areas of the site boundary if the external and internal lighting to neighbouring residential properties were switched on, however this will be limited due to the offsets from the site boundary to the neighbouring properties.

Depending on the locations of any proposed dark ecological corridors associated with the proposed development, consideration should be given to enhancing the boundary vegetation/ screening in areas where it has been reduced or removed, to ensure the dark corridors can be maintained.

# APPENDIX A

## Lighting Terminology







## Lighting Terminology and Abbreviations

### Glossary of terms

For the purpose of this report, the definitions given below apply. For further definitions the International Lighting Vocabulary (ILV), published by the CIE, can be found at <http://eilm.cie.co.at/>

**Colour Rendering Index (CRI):** A scale of the colour appearance of an object under a particular light source compared to its colour appearance under a reference light source. Expressed on a scale of 1 to 100 Ra, where 100 Ra represents the colour rendering of natural daylight i.e. perfect colour.

**Curfew:** The time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by a government controlling authority, usually the local government (CIE, 2003).

**Disability Glare:** Glare which impairs the vision of objects but may not cause discomfort.

**Discomfort Glare:** Glare causing discomfort which may not impair the ability to see objects.

**Environmental Zones:** Area where specific activities take place or are planned and where specific requirements for the restriction of obtrusive light are recommended. Zones are indicated by the zone rating (E1... E4) (CIE, 2003).

**Illuminance:** Illuminance is the quantity of light, or luminous flux, falling on a unit area of a surface. It is designated by the symbol E. The unit is the lux (lx). One lux equals one lumen per square metre (lm/m<sup>2</sup>).

**Horizontal Illuminance:** Illuminance incident on a horizontal surface or calculation plane.

**Vertical Illuminance:** Illuminance incident on a vertical surface or calculation plane.

**Isolux Diagram:** A diagram showing lines joining points of equal illuminance. Sometimes also referred to as Isolines.

**Light Pollution:** The spillage of light into areas where it is not required.

**Light Intrusion:** Light that impacts on a surface outside of the area designed to be lit by a lighting installation.

**Obtrusive Light:** Spill light which because of quantitative, directional or spectral attributes in a given context, gives rise to annoyance, discomfort, distraction or a reduction in the ability to see essential information (CIE, 2003).

**Photocell:** A unit which senses light to control luminaires.

**Residential Property:** Land upon which a dwelling exists (CIE, 2003).



**Sky Glow:** The brightening of the night sky caused by artificial lighting resulting from the reflection of radiation (visible and non-visible), scattered from the constituents of the atmosphere (gas molecules, aerosols and particulate matter), in the direction of observation. It comprises two separate components as follows:

(a) *Natural sky glow* - That part of the sky glow which is attributable to radiation from celestial sources and luminescent processes in the Earth's upper atmosphere.

(b) *Man-made sky glow* - That part of the sky glow which is attributable to man-made sources of radiation (e.g. outdoor electric lighting), including radiation that is emitted directly upwards and radiation that is reflected from the surface of the Earth (CIE, 2003).

**Spill Light (Stray Light):** Light emitted by a lighting installation which falls outside the boundaries of the property for which the lighting installation is designed (CIE, 2003).

**Upward Light Ratio:** The maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.

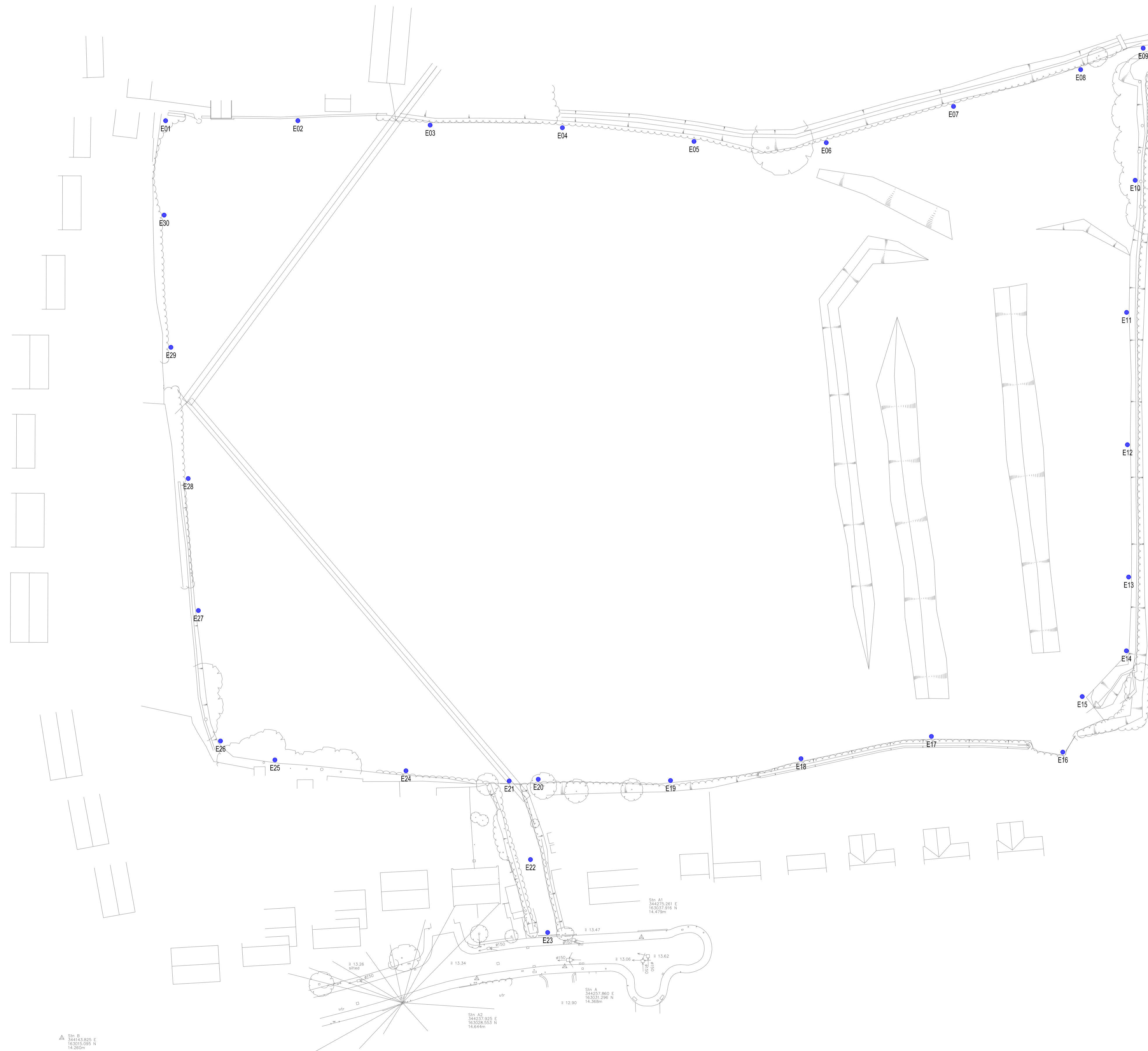
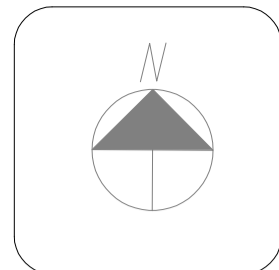
#### Abbreviations

<b>CIBSE</b>	Chartered Institute of Building Services Engineers
<b>CIE</b>	International Commission on Illumination
<b>CNEA</b>	Clean Neighbourhoods and Environment Act
<b>ILP</b>	Institute of Lighting Professionals
<b>SLL</b>	Society of Light and Lighting

# APPENDIX B

## Baseline Survey Location Plan





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LEGEND

- SURVEY LOCATION

NOTES

1. POSITIONS SHOWN ON LOCATION PLAN ARE INDICATIVE.
2. REFER TO BASELINE SURVEY REPORT FOR FULL LIST OF SURVEY MEASUREMENTS RECORDED.

P01	FIRST ISSUE	MB / BB	20/04/21
Rev	Details	Drn / Chkd	Date



Client  
**M7 PLANNING LTD**

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Project  
**PINEAPPLE FARM CONGRESBURY**

Drawing Title  
**BASELINE SURVEY LOCATION PLAN**

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Scale at A1  
**1:500**

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Discipline  
**LIGHTING**

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Job Number <b>4206</b>	Job Status <b>PLANNING</b>	Issue <b>P01</b>
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Drawing Number  
**4206-ID-DR-1001**



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