

Chapter 13 - Appendix 13.2

Lighting Baseline Survey Technical Note

October 2023

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Chapter 13 - Appendix 13.2

Lighting Baseline Survey Technical Note

October 2023

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1 Introduction

This report should be read in conjunction with Chapter 13 Lighting of the Environmental Statement for the Oxford United Football Club Stadium.

This report details the findings of the survey that took place between the 03/10/2023 and 05/10/2023 to assess the lighting baseline lighting conditions within and surrounding the Site, and those at the receptors locations that do not directly surround the Site.

Table 1.1: Survey dates and environmental conditions

Date	Astronomical Darkness	Moon Phase/ Visibility	Weather Conditions	Temperature
03/10/2023	19:51 - 05:56	Wanning Gibbous (79%)	Mostly dry with some moisture. Some cloud cover with clear skies between. No wind.	12-17°
04/10/2023	19:48 – 05:57	Wanning Gibbous (70%)	Mostly dry with some light rain. Overcast in places, with clear skies between. Light wind.	13-17°
05/10/2023	19:46 – 05:59	Wanning Gibbous (61%)	Dry with no rain. Mixture of light cloud cover with clear skies between. Light wind.	13-18°

2 Methodology

The methodology for the lighting baseline survey is informed by guidance published by the Institution of Lighting Professionals, specifically ILP GN08:2023 and ILP PLG04:2013.

Receptor locations were chosen to allow the identification of baseline lighting conditions, and an assessment of potential impacts on people and the environment in which they live. Refer to Lighting Receptor and Environmental Zone Plans provided within **Figure 13.1** (100111993-MMD-00-XX-GIS-Y-0003) and **Figure 13.2** (100111993-MMD-00-XX-GIS-Y-0004) for further details.

For further details on the methodology used during the baseline lighting survey reference should be made to Chapter 13 of the Environmental Statement.

3 Results

3.1 E01

Receptor Description

This receptor location is located in the northern most accessible section of the Site. Locations north of this area are blocked by wire fencing and dense foliage.

The most northern section of the Site was inaccessible due to the ground conditions, foliage, and the presence of a wire fence. Therefore, this receptor location was used and is intended to provide details of the baseline lighting conditions within the northern area of the Site.

However, it should be noted that light levels closer to the northern boundary are likely to be higher than those recorded in this location due to increased proximity to Kidlington Roundabout and the associated lighting.

Daytime Description

The receptor location topography is predominantly flat with the immediate vicinity being long grass and shrub. Overhead, two sets of power lines run from east to west.

North of the receptor location there is a wire and post fence, approximately 1m high running east to west. Immediately behind the fence is dense deciduous vegetation, approximately 2.5 meters high obscuring views and preventing access beyond. Additionally, in the distance, six tall slim deciduous trees are visible above the vegetation.

Viewing to the east looks along a vehicular track toward the Site boundary. The eastern extent of the Site is bordered by dense predominantly deciduous vegetation, obscuring the A4165 (Oxford Road) from view.

To the south of the receptor location, the view is obscured by dense deciduous vegetation, primarily cultivated willow stalks at a height of approximately 3 meters.

Viewing along the vehicular track to the west, the western extent of the Site is bordered by predominantly deciduous vegetation obscuring onward views.

Visible artificial lighting sources from this receptor location include:

- A single luminaire to the north-by-northeast, assumed to be a sodium based light source, mounted on an approximately 10-meter-high column with a hockey-stick style bracket.
- To the east, six LED luminaires associated with the A4165 are visible above the vegetation bordering the Site. These LED luminaires are also mounted on approximately 10-meter-high columns with hockey-stick style brackets.

Night-time Description

The receptor location is dark with no direct lighting; however, ground features and details remain perceivable. The weather is dry with clear skies allowing for unobscured visibility of a small number of stars.

Viewing to the north of the receptor location, approximately 13 light sources primarily with an orange hue, are visible through the vegetation. Additionally, a white light source is discernible to

the north-by-northeast. The tall trees visible above the vegetation can be seen with illumination on their foliage.

To the east, street lighting along the A4165 is clearly visible above the Site boundary vegetation. These luminaires emit a neutral-warm colour temperature and are arranged in an opposite configuration. Illumination on vegetation either side of the carriageway is apparent with some spill light visible into the Site.

The view to the south is largely obscured by the willow stalks, however, the streetlighting along the A4165 is visible in the eastern peripheral. A faint white skyglow is visible to the south with higher levels of lighting towards the horizon.

Viewing to the west, three sets of orange twin-head light sources are visible running along the A4260. A faint white light source is also discernible through the vegetation, likely to be originating from Stratfield Brake Sports Ground sports lighting.

Table 3.1: Receptor E01 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
03/10/2023 20:48:36	0.02	0.25	0.11	0.05	0.23

Source: Mott MacDonald Ltd. (2023)

Based on the illuminance levels recorded facing north in this location, it is noted that if the most northern section of the Site was accessible then the recorded illuminance level would likely have been higher. This is primarily due to the increase proximity to the existing lighting located on Kidlington Roundabout.

The illuminance results Receptor LR02/H02 (Table 3.5) are beyond the Site boundary, and therefore the illuminance in this northern section of the Site will not be as high as in this location. But this does show the boundary of the Site is well lit from outside, and that some of this lighting is spilling into the Site.

3.2 E02

Receptor Description

This receptor location is located in the southeast most accessible section of the Site.

This receptor location is intended to provide details of the baseline lighting conditions within the southeast area of the Site, specifically the southeast corner.

Daytime Description

The receptor location topography is predominantly flat with a slight incline to the southeast. The locations immediate vicinity consists of long grass and shrub and is directly adjacent to a vehicular track that runs around the inside perimeter of the Site.

The view to the north is largely screened by cultivated willow stalks, approximately 3-4 meters high, with the vehicular track continuing along the eastern perimeter of the Site.

To the east a wire and post fence is visible although screened by heavily overgrown foliage predominantly consisting of deciduous vegetation. Immediately behind the vegetation is a dense copse of predominantly deciduous trees with no view through Site.

Viewing to the south, looks towards the southern boundary of the Site which consists of a wire and post fence, again, heavily overgrown, behind which is a dense woodland of predominantly deciduous trees and vegetation obscuring any onward view.

To the west, the vehicular track can be seen running along the southern perimeter of the Site. To the north of the track are the cultivated willow stalks whose density obscures onward views. To the south of the vehicular track, is a continuation of the dense predominantly deciduous vegetation and trees, described previously, further obscuring onward views.

Visible artificial lighting sources from this receptor location include:

- A single LED luminaire to the north-by-northeast, mounted approximately 12m above the receptor location on a hockey-stick style bracket.

Night-time Description

The receptor location is dark with some faint spill light at ground level apparent. The weather was cool with a small amount of moisture in the air, with light cloud cover making stars appear faint. A faint white coloured skyglow is apparent in all directions.

The view to the north is heavily screened by the willow stalks with no onward views. To the northeast of the receptor location slight visibility glare is observed from a singular luminaire. The luminaire emits a neutral-warm colour temperature. Some faint spill light is visible from this luminaire at the receptor location and on the foliage of the intermediary vegetation and trees.

Viewing to the east, illumination of the A4165 is visible through gaps in the foliage. The carriageway inclines to approximately 2 meters higher than the receptor location. Vehicular lights traversing the A4165 are also visible. Additionally, 2 white sources can be seen, again through gaps in the foliage.

The view to the south is restricted due to the density of the vegetation limiting visibility.

The view to the west is primarily dark with no visible sources of light. Some spill light is apparent on foliage emanating from the A4165.

Table 3.2: Receptor E02 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _v)	Northeast (E _v)	East (E _v)	South (E _v)	West (E _v)
03/10/2023 21:46:01	0.02	0.05	0.06	0.02	0.00	0.00

Source: Mott MacDonald Ltd. (2023)

3.3 E03

Receptor Description

This receptor location is located in the southwest most accessible section of the Site.

This receptor location is intended to provide details of the baseline lighting conditions within the southwest area of the Site, specifically the southwest corner.

Daytime Description

The receptor locations topography is predominantly flat. The locations immediate vicinity consists of long grass and shrub and is on the southwestern corner of the vehicular track that runs around the inside perimeter of the Site.

The view looking north is largely obscured deciduous vegetation predominantly consisting of dense cultivated willow stalks at an approximate height of 3-4 meters. The vehicle track is apparent running along the western extent of the Site.

The view to the east looks along the vehicle track on southern extent of the Site. To the north of the track is deciduous vegetation primarily consisting of the cultivated willow stalks. To the south of the track is a wire and post fence, approximately 1m high which is largely overgrown with predominantly deciduous vegetation and trees.

Viewing to the south, in the foreground is a continuation of the 1m high wire and post fence with overgrown deciduous vegetation, behind which is a dense, mostly deciduous woodland consisting of a mix of species all of which appear well established and mature.

Viewing to the west the woodland continues however the concentration becomes sparser. The carriageway of the A4260 is visible through the vegetation.

Visible artificial lighting sources from this receptor location include:

- No light sources apparent at this location, however, 2 meters east of receptor location viewing northwards a single, assumed to be sodium based, light source is visible.

Night-time Description

The receptor location appears dark with no illumination; ground features and details are very difficult to determine.

Viewing to the north several, light sources can be seen from the western peripheral across to the eastern peripheral. They are predominantly orange light sources, however there are some whiter light sources apparent.

To the northeast the moon is visible with an orange glowing hue. Skyglow is visible to the north and east appearing both orange and white respectively.

Viewing to the east, a single white light source is visible above the vegetation.

The view to the south is intrinsically dark with no light sources visible.

Looking west, vehicular lights along the A4260 can be seen but no fixed light sources are apparent.

Table 3.3: Receptor E03 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
03/10/2023 21:18:38	0.00	0.01	0.00	0.00	0.00

Source: Mott MacDonald Ltd. (2023)

3.4 LR01/L01

Receptor Description

This receptor location is located east of the Site boundary. The location is just outside the only access to the Site.

This receptor location is intended to provide details of the baseline lighting conditions along the section of Oxford Road adjacent to the Site. This shows the existing experience of drivers, pedestrians, and drivers along this traffic route.

Daytime Description

The receptor location topography is flat with an incline visible approximately 100m to the south-by-southeast of the location. The receptor is located on the concrete entrance to the Site, approximately mid-span of a grass verge. 2 sets of overhead powerlines run east to west a few meters north of the receptor location.

Viewing to the north-by-northeast, along the A4165 towards Kidlington Roundabout is a single carriageway, 4 lane road. On the western side of the carriageway is an approximately 3-meter-wide grass verge with a single line of well-spaced deciduous trees. To the west of the grass verge is a shared use foot/cycle way lined by dense predominantly deciduous vegetation along the boundary of the Site and obscuring views into the Site. Several well established and apparently mature trees can be seen on and around the roundabout. Several traffic signs are visible on the nearside and far side of the carriageway as well as directional arrow signs visible on the roundabout central island. 2 keep left signage bollards are apparent on the triangular traffic island at the junction of the A4165 and Kidlington Roundabout.

Looking east-by-northeast, perpendicular across the carriageway, towards the wooden overhead powerline poles; on the far side of the carriageway is a grass verge separating the road from a foot/cycle path. Behind the path is a thicket of predominantly deciduous vegetation obscuring onward views.

Looking south-by-southeast along the A4165 towards Water Eaton Bridge the carriageway veers slightly westwards. On the nearside is a continuation of the grass verge narrowing to a point at the bottom of the incline to the bridge. In the middle distance is the rear of a large 2 pole traffic sign spanning the foot/cycle path. Along the western extent of the view dense, predominantly deciduous vegetation obscures views into the Site. On the far side of the carriageway a single pole with a small bus lane and speed repeater sign are visible as is a large self-illuminated digital traffic display sign. The far side footpath is bordered by further dense deciduous vegetation. In the distance the road inclines as part of the Water Eaton Bridge. From this location the parapets of the bridge are visible and are of rail and mesh construction.

The view to the west-by-southwest looks directly towards the gated entrance to the Site. The entrance consists of an approximately 2.5-meter-wide gap in the dense deciduous vegetation leading to a single steel rail gate. Beyond the gate is a slight grassy opening beyond which cultivated willow stalks, approximately 3 meters high obscure onward views.

Visible artificial lighting sources from this receptor location include:

- Streetlighting along the A4165 consisting of approximately 10-meter-high columns with approximately 0.5-1-meter outreach hockey-stick style brackets fitted with LED luminaires that appear to be from ASD's Diamond range, with the exception of the last column on the western extent of the A4165 on the approach to Kidlington Roundabout which appears to have a sodium-based luminaire. All columns are arranged in an opposite configuration, at the rear of the foot/cycle path along the extent of the road.
- On the eastern extent of the A4165, southeast of the receptor location, is a large self-illuminated road traffic data sign.
- 3 sodium-based luminaires, mounted on approximately 10 or 12 meter high columns with short outreach brackets can be seen on the triangular traffic island at the junction of the A4165 and Kidlington Roundabout all with differing orientations.
- On the roundabout a single illuminated round blue keep left sign is visible.

- To the east of the roundabout a single, approximately 10-12 meter high column with a hockey-stick style bracket fitted with an LED luminaire that appears to be from ASD's Diamond range is visible above the vegetation.

Night-time Description

The receptor location appears well illuminated in a neutral-white colour temperature light with no skyglow apparent likely due to the proximity of multiple light sources.

Viewing north-by-northeast towards the roundabout there appears to be good levels of illumination from columns situated at the back of the foot/cycle path on the nearside and at the back of the foot/cycle path on the far side with the vegetation on either side appearing well illuminated across the entirety of its vertical plane. Lighting appears to have a colour temperature of neutral-white. Uniformity of lighting on the A4165 carriageway appears high with some shadowing from trees in the nearside grass verge present. Orange hue lighting is visible on the northbound approach to the roundabout and on the roundabout itself. The triangular traffic island at the junction of the A4165 and Kidlington roundabout 3 orange colour light sources are apparent as are 2 self-illuminated traffic bollards. On the roundabout a single blue round keep left sign with downward facing sign light is visible. Further light sources, both white and orange, can be seen through the foliage on and behind the roundabout.

Looking to the east-by-northeast, the carriageway appears well illuminated with good uniformity. Vegetation at the rear of the far side footpath appears completely illuminated in the vertical plane. Some rearward light spill is apparent as overhead powerline poles also appear illuminated. There are no onwards views in this direction.

Viewing south-by-southeast, the A4165 street lighting continues in a similar fashion with good levels of illumination from rear of foot/cycle path to rear of foot/cycle path with a neutral-white colour temperature. Incline due to the Water Eaton Bridge makes light sources appear significantly higher in the distance. On the western extent of the carriageway the digital traffic display sign is visible with self-illuminated orange text.

Viewing west-by-southwest into the Site, the site entrance appears well illuminated with the vegetation either side of the entrance having significant illumination on the foliage. Spill light can be seen protruding into the Site.

Table 3.4: Receptor LR01/L01 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
03/10/2023 22:17:20	18.83	8.00	4.58	18.32	5.97

Source: Mott MacDonald Ltd. (2023)

3.5 LR02/L02

Receptor Description

This receptor location is located north of the Site boundary, adjacent to the northern boundary of the Site and Kidlington Roundabout.

This receptor location is intended to provide details of the baseline lighting conditions at Kidlington Roundabout, showing the existing experience of drivers, pedestrians, and drivers along this traffic route.

Daytime Description

The receptor location topography is flat. The locations immediate vicinity is an open short-grass area.

Viewing northward, towards Kidlington Roundabout, the foreground consists of separate foot and cycle paths and a grass verge separating them from the carriageway. The roundabout is two lanes wide with a large mounded central island containing predominantly deciduous vegetation to the western extent and a number of tall, well established, deciduous trees sporadically located across the centre and to the eastern extent blocking the majority of onward views. Additionally, there is a large elephant artwork installation on the central island. Opposite the A4165 approach, on the roundabout central island, is a large black and white arrow directional sign and an illuminated round blue keep left sign.

To the northeast the triangular traffic island at the junction of the A4165 and Kidlington roundabout is apparent with 3 approximately 10-12m high columns with short outreach brackets.

The view to the east is across the A4165 approach to Kidlington Roundabout. In the foreground the segregated foot and cycle paths merge and continue round the corner along the A4165. In the grass verge adjacent to the carriageway are 2 non-illuminated traffic signs. Between the northbound and southbound lanes is a triangular traffic island / crossing refuge on which there are 3 temporary traffic cones with retroreflective banding and 1 keep left self-illuminated traffic bollard. On the far side of the carriageway, directly adjacent is a grass verge with two non-illuminated traffic signs. Beyond the verge is a shared use foot/cycle path beyond which is a dense mix of predominantly deciduous vegetation obscuring most of the onward view, however, through a gap a single overhead power pole can be seen beyond which woodland blocks further views.

Viewing to the south is a dense mix of predominantly deciduous vegetation and tall well-established trees preventing any onward views.

Viewing to the west-by-northwest looks across the A4260 approach to the roundabout. In the foreground on the grass verge are 2 temporary and 1 fixed traffic signs. The A4260 is a 4-lane dual carriageway with central reservation. Central reservation widens on the approach to the roundabout to facilitate a crossing refuge. Within the central reservation are 5 permanent traffic signs and 2 temporary traffic signs all non-illuminated. In the northern extent of this view, on the crossing refuge area. The far side of the carriageway is lined with predominantly deciduous vegetation obscuring onward views.

Visible artificial lighting sources from this receptor location include:

- To the north of the receptor in the near side grass verge is an approximately 10-12 meter high column with a short outreach bracket and an assumed sodium-based luminaire.
- Illuminated, blue keep left signs on the roundabout opposite the A4165 and the A4260 approaches to the roundabout.
- On the traffic island at the junction of the A4165 and Kidlington roundabout are 3 approximately 10-12m high columns with short outreach brackets fitted with assumed sodium-based luminaires of varying orientations (1 aimed towards the roundabout, 1 towards the approach lane of the A4165 and one for the southbound lane of the A4165).
- Self-illuminated keep left bollard on traffic island on A4165 on the approach to Kidlington roundabout.

- To the east-by-southeast, a Single 10-12m high column with hockey stick style bracket and an LED luminaire can be seen on the far side of the A4165 at the rear of the foot/cycle path.
- To the west, along the central reserve of the A4260, a single approximately 10m high column with 2 sodium-based luminaires fitted on a twin-head bracket.
- To the northwest on the central refuge of the A4260 there are 3 columns approximately 10-12 meters high with short outreach brackets, one is fitted with an LED luminaire which appears to be from Holophane's VMax range the other 2 are fitted with sodium-based luminaires.
- 10-12 meter high columns with short outreach brackets with predominantly sodium-based luminaires can be seen continuing at regular spacing around the entirety of the roundabout, including through foliage on the central island.

Night-time Description

The receptor location appears well illuminated in an orange-coloured light. Faint white sky glow is apparent to the north and east above the treeline.

Viewing north towards the roundabout the area appears well illuminated in a predominantly orange coloured hue. Illumination extends from the rear of the footpath encircling the roundabout, to approximately 20m onto the central island. Orange light sources are visible evenly spaced around the roundabout including through the foliage of trees located on the central island. An illuminated, blue keep left sign can be seen on the central island opposite the approach of the A4165.

Viewing to the east, across the A4165 approach to the roundabout, 3 light sources (2 orange, 1 neutral-white) can be observed on the central island. The area appears well illuminated with good uniformity. Illumination of the vegetation at the rear of the far side foot/cycle path can be seen across the entirety of the vertical plane. Through the far side vegetation red communication tower lighting can be seen.

To the east-by-southeast, LED streetlighting, with a neutral-white colour, associated with the A4165 is apparent. Viewing to the south, spill light is apparent from the roundabout lighting, illuminating the foliage of the vegetation across its vertical plane. Due to the density of the foliage and trees no onward views or light sources are visible in this direction. Viewing to the west, orange-coloured twin-head configuration lighting in the A4260 central reservation can be seen.

To the west-by-northwest 3 light sources (2 orange and 1 neutral-white) can be observed on the central refuge. Downward sign light for the blue keep left sign on the roundabout central island opposite the A4260 approach is not operational.

Table 3.5: Receptor LR02/L02 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
03/10/2023 23:43:37	3.11	5.30	3.65	0.52	4.04

Source: Mott MacDonald Ltd. (2023)

3.6 LR03/L03

Receptor Description

This receptor location is located southeast of the Site boundary. The location is on the Water Eaton Bridge and is northwest of Oxford Parkway Station.

This receptor location is intended to provide details of the baseline lighting conditions along Oxford Road. This shows the existing experience of drivers, pedestrians, and drivers along this traffic route, as well as capturing the existing lighting for Oxford Parkway Station.

Daytime Description

The receptor is located on the eastern most footpath of the A4165, approximately mid-span of the Water Eaton Bridge which spans the A34 and the Oxford to Islip railway line. The A4165 runs approximately south-by-southeast to north-by-northwest at this location.

Viewing to the north, well established predominantly deciduous trees and vegetation along the northern most extent of the A34 can be observed. Through a gap in the foliage in the mid-distance overhead power lines can be seen beyond which there is another line of predominantly deciduous trees above the canopy of which the top of a building can be seen. The view to the north-by-northeast overlooks the 5-rail and mesh parapet of the bridge along the A34, a dual carriageway consisting of 4 lanes (2 northbound and 2 southbound) below. Dense deciduous planting is visible either side of the carriageway, with no light sources apparent.

Viewing to the east-by-northeast looks through a large gap in the foliage of the vegetation associated with the A34, towards Oxford Parkway Railway Station and associated car park. Connecting the two platforms is an enclosed stepped foot bridge of which the upper half is largely open with no glazing. Beyond the platforms is a large carpark, approximately 7 acres in size. The further views are of fields interspersed with copses of trees and woodland.

Viewing south-by-southeast, along the A4165, the road rises slightly to the crest of the Water Eaton bridge. In the immediate vicinity of the receptor, mixed vegetation is apparent protruding over the near side parapet. Where the road traverses the railway lines the parapet becomes solid brick, approximately 2 meters high on both sides. Beyond the bridge on the far side a dense mix of predominantly deciduous vegetation and trees runs adjacent to the footpath. In the mid-distance overhead power cables can be seen running approximately east to west as can the associated pylons. In the far distance a mix of evergreen and deciduous trees can be seen, above which the upper floor of a residential property is visible.

To the south a single pole telecommunications mast can be seen above the railway parapet. Viewing to the southwest, looking across the A4165. There is a clear view through the far side, 5-rail and mesh parapet along the A34 below. In the far distance the A34 begins to veer southward. Majority of the view in this direction is an open view of the Oxfordshire landscape consisting primarily of deciduous trees.

Viewing to the north-by-northwest, along the A4165 towards Kidlington Roundabout, the road falls gradually away from the receptor location and veers slightly northward at approximately 180 meters distance. Both sides of the carriageway are lined with dense, predominantly deciduous vegetation and trees. In the mid-distance on the far side, a large two pole directional traffic sign can be seen.

Visible artificial lighting sources from this receptor location include:

- Viewing to the north, through a gap in the foliage associated with the A34, 3 sodium-based luminaires are visible. One mounted on a short outreach bracket and twin mounted in a twin-head configuration.
- Viewing towards Oxford Parkway railway station, on the nearside platform, is a 4 line, self-illuminated, orange text digital information display and several LED luminaires, however, due to the viewing angle and location it is not possible to determine their mounting height. On the far side of the platform are LED luminaires of the same type as on the nearside.
- In the car park beyond Oxford Parkway Railway station, the carpark has several, approximately 10-meter-high columns, all fitted post-top with LED luminaires with a mix of single head and twin-head configurations. The LED luminaires at the far extent of the car park appear to be a different type to those nearest to the receptor location.
- Streetlighting running along the length of the A4165 in a predominantly staggered configuration, becoming single sided on the eastern extent south of the railway crossing. All columns are approximately 10-12 meters high with short outreach bracket, approximately 0.5 meters. All are fitted with LED luminaires which appear to be from ASD's Diamond range.
- Traffic lights at the junction of the A4165 and the entrance to Oxford Parkway Railway Station carpark can be seen to the south-by-southeast.
- Additionally, viewing south-by-southeast, in the far distance above the treeline canopy several columns with twin-head configurations can be seen.

Night-time Description

The receptor location appears well illuminated in a neutral-white colour temperature light. The A4165 appears bright compared to the darkness of the surrounding area, including the unlit A34 dual carriageway below. Some sky glow is apparent to the northeast.

To the north 3 orange-coloured light sources can be observed above the vegetation along the A34.

Looking to the east-by-northeast, through the gap in the vegetation Oxford Parkway Railway Station and associated car park are clearly visible. Station platforms appear well illuminated in a neutral-white colour, with some spill light apparent on nearside vegetation. Pedestrian foot bridge illuminated by liner light fittings in a cooler white temperature, due to the mounting angle relative to the receptor location some glare is experienced at this location. In the mid distance the car park appears well illuminated, likely to a high car park lighting classification of 20lux as per BS5489. No lighting control measures such as shielding, PIR control or dimming observed during the survey. In the north-eastern peripheral of this view, through gaps in the foliage, 4 warm white light sources can be seen.

Facing south-by-southeast, along the A4165, the traffic route appears well lit with a good uniformity. The lighting colour temperature appears neutral-white. There is significant spill light onto the vegetation on either side of the carriageway. In the mid-distance, traffic lights can be clearly observed.

The view to the southwest is the darkest view with the only substantial lighting being the streetlighting for the A4165 the rest of the view appears dark apart from vehicular lights and a single red aviation warning light for a crane in the southern peripheral of the view.

Table 3.6: Receptor LR03/L03 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
05/10/2023 23:17:20	8.85	2.24	6.77	8.15	7.07

Source: Mott MacDonald Ltd. (2023)

3.7 LR04/L04

Receptor Description

This receptor location is located west of the Site boundary on the entrance to Stratfield Brake Sports Ground.

This receptor location is intended to provide details of the baseline lighting conditions along the A4260 (Frieze Way) and the access to Stratfield Brake Sports Ground.

Daytime Description

The receptor location is on a slight downward slope, to the south of the access road to Stratfield Brake Sports Ground.

Viewing north looks across the access road to the sports ground which is bordered on either side by a grass verge. On the far side several reflective bollards are positioned in the grass verge close to the kerb edge. Beyond the grass verge is a 3-rail wooden fence behind which is a growth of well-established predominantly deciduous vegetation and trees obscuring any onward views.

To the north-east, looking towards Kidlington Roundabout, in the foreground is a triangular traffic island separating the two lanes of the access road as it joins the A4260. On the traffic island, at its western most extent is the rear of an illuminated traffic sign. In the middle distance the A4260 can be observed running southwest to northeast with a slight incline towards the northeast. The A4260 is a dual carriageway with 2 running lanes in each direction and a narrow central reserve with crash barriers running along its lengths. The far side of the A4260, which borders the Site, is lined with well-established predominantly deciduous vegetation and trees obscuring further views. In the distance Kidlington Roundabout can be seen. At the junction between the A4260 and the roundabout several traffic signs can be seen both rearward facing and forward facing. The roundabout is a sizable mound with sporadic placement of large well-established trees and vegetation obscuring any onward views. Viewing to the east the A4260 continues as previously described.

To the east-by-southeast a signage bollard and several reflective bollards along the kerb edge can be seen at the southernmost extent of the triangular traffic island at the entrance to the sports ground.

Viewing to the West by southwest there is dense primarily deciduous vegetation obscuring any onward views.

Looking West by northwest towards the entrance of Stratfield Brake sports ground. In the immediate foreground is a grass verge with a slight incline leading to the access road. The access road is lined either side by dense predominantly deciduous vegetation. On the far side of the access road, in the mid-distance, there is a playing field with rugby posts which is surrounded by non-illuminated advertising boards. Beyond the playing field is a line of well-established predominantly deciduous trees obscuring any onward views.

Visible artificial lighting sources from this receptor location include:

- Illuminated traffic sign on the access road traffic island.
- Approximately 10-metre-high columns with twin-head configuration sodium-based luminaires in the central reservation of the A4260. Spaced evenly along the carriageway from Kidlington Roundabout to the sports ground access road.
- Sodium-based luminaires associated with Kidlington roundabout.
- Two illuminated traffic signs on roundabout central island.
- Viewing towards the entrance of the sports ground a low level illuminated bollard is visible through a gap in the foliage.

Night-time Description

The receptor location appears dark in contrast to adjacent A4260; however, spill light is apparent. Some white skyglow is visible from this location in the northwest and southeast.

Viewing to the northeast towards Kidlington roundabout the street lighting along the A4260 is clearly visible. The colour temperature appears warm, approximately 3000K. The uniformity of the lighting on the carriage way is good with no significant dark spots, however, spill light is visible on vegetation bordering the Site along the far side of the carriageway. Light sources for the A4165 and Kidlington Roundabout are visible through the far side vegetation foliage. All light sources appear to be warm/neutral-warm colour temperatures. A single illuminated traffic sign visible on the roundabout. At this location that is no glare from luminaires, however, it is apparent from southbound vehicular headlights.

Viewing towards the southeast looks directly at the last lighting column on the A4260 approach to Killington roundabout. The column is the same configuration and appearance as those previously mentioned for the A4260 which consists of a 10-metre column with twin-head configuration sodium-based light sources. Significant spill light can be observed on the far side vegetation bordering the Site. In the distance of this viewing direction street lighting for the A4165 is visible through the vegetation.

Viewing to the southwest looks directly at dense predominantly deciduous vegetation, approximately 5-meters high. There are no luminaires or light sources visible in this direction however, significant spill light is apparent on the foliage as it is illuminated fully across its vertical plane.

Looking northwest towards the playing fields spill light from sports lighting is visible on the far tree line. In the foreground illuminated sign lighting on the access road traffic island is visible with a cool white light causing some glare at this location. Street lighting associated with Kidlington Roundabout is visible in the north-eastern peripheral of this view.

Table 3.7: Receptor LR04/L04 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
05/10/2023 21:07:18	0.68	0.64	1.52	0.88	0.04

Source: Mott MacDonald Ltd. (2023)

3.8 LR05/L05

Receptor Description

This receptor location is located north-by-northeast of Kidlington Roundabout along Oxford Road between the dwellings in this location and the Site / Kidlington Roundabout.

This receptor location is intended to provide details of the baseline lighting conditions at / near the dwellings in this location.

Daytime Description

The receptor is located in a grass verge to the north of Kidlington roundabout, adjacent to a small copse of trees. The topography of the receptor location is flat.

Viewing towards the north, looking diagonally across the A4260. The A4260 in this view is a dual carriage way narrowing to a single carriageway, running from approximately southeast to northwest. To the east of the A4260, running parallel and separated by a narrow grass verge with evenly spaced deciduous trees along its length, is a single carriage way residential road. Separating the northbound and southbound carriageways of the dualled section is a narrow central reservation with an illuminated traffic sign at its northern most extent. On one of the lanes of the southbound carriage way is a designated bus lane. On the far side of the carriage way there is a supermarket petrol station in the centre of the view to the south of which is a small, assumed commercial, single storey brick building with tiled roof. To the north of the petrol station a fuel price sign can be observed as can a two-storey residential property. At the rear of the far side footpath there is sporadic, approximately one to two metre high, vegetation. Beyond the petrol station in the distance a line of well-established predominantly deciduous trees can be observed above the canopy of which a telephone communication mast can be seen.

Viewing to the east-by-southeast is a view across the A4260 junction with Kidlington roundabout. In the immediate foreground is a short grass verge. In the centre of the A4260 is a narrow central reservation widening to a triangular traffic island on which is a large two pole traffic sign. Opposite the junction with the A4260, on the roundabout central island an illuminated round blue keep left sign and large black and white directional arrow signs can be seen. On the far side of the A4260, in the mid-distance a large open grass verge can be seen between the A4260 and Bicester Road. At the junction of Bicester Road and Kidlington roundabout is a triangular traffic island on which are a number of traffic signs. On the far side of the Bicester Road, and continuing around Kidlington roundabout, is a grass verge behind which sits dense, well-established, predominantly deciduous vegetation and trees; the foliage of which obscures onward views.

The view to the south is largely obscured by the small copse of trees.

Viewing to the south-by-southwest, looking parallel along the residential road. The immediate view is of short grass verge with well-established predominantly deciduous trees. At the curb edge is a single-rail, knee high fence. On the far side of the residential road is a wide footpath behind which is a dense mix of predominantly deciduous trees and vegetation obscuring onward views.

Looking to the northwest, directly at the residential properties which face perpendicular to the A4260. The end of the line of trees and vegetation, which were apparent when viewing to the south-by-southwest is visible in the southwestern peripheral of this view. The residential properties are two storey buildings with tiled roofs and with windows apparent on the extents facing towards the Site. The properties have minimal screening between their boundaries and the roadway.

Visible artificial lighting sources from this receptor location include:

- Approximately 6-metre high columns with LED luminaires mounted, post-top configured in a staggered arrangement along the residential road. These appear to be from ASD's Diamond range of luminaires.
- Approximately 10 to 12-metre high columns with hockey stick style brackets with an approximate outreach of 0.5 to 1 metres. Configured in an opposite arrangement. Fitted with LED luminaires. Again, these luminaires appear to be from ASD's diamond range.
- A single, assumed to be sodium-based luminaire can be observed at the exit of the petrol station on the far side of the A4260. The luminaire is orientated away from the road with a high tilt angle. Similar style luminaires can be seen behind the petrol station at approximately 12 metres high, again with a high degree tilt angle this time configured in a twin head arrangement.
- On the central reserve of the A4260 opposite the exit to the petrol station a single illuminated sign can be seen.
- Several approximately 10-12 meter high columns with approximately 0.5 meter brackets consisting of a mix of twin and single head configurations can be seen on the traffic islands at the junctions of the A4260 and Bicester Road with Kidlington Roundabout and in grass verges around the perimeter of the roundabout.
- Illuminated traffic signs on the central island opposite junctions on Kidlington Roundabout.
- Exterior residential lights on the first three residential properties.

Night-time Description

The receptor is located in a brightly lit area predominantly from the adjacent street lighting. Sky glow is apparent to the east however it appears dim likely due to the contrast with the nearby street lighting.

Viewing to the north both the residential road and the A4260 are well illuminated. The LED street lighting ranges in colour temperature from approximately 3000K to 4000K. In the central reservation of the A4260 a single illuminated traffic sign can be observed. Petrol station canopy lighting is visible as is carpark lighting beyond it, with the visible lighting associated with the petrol station and carpark ranging in colour temperature from approximately 4000K to 6000K, appearing much cooler than the adjacent street lighting. In the distance lighting associated with dwellings is visible but this is predominantly interior lighting with some minor exterior lighting. Through the vegetation on the far side of the A4260 some unidentified sources of light can be seen through the foliage.

Viewing to the east-by-southeast towards the junction of Bicester road and Kidlington Roundabout; the area appears well illuminated with a good uniformity. The light appears to have a warm colour temperature approximately 3000K or less. On the roundabout central island traffic sign lighting is also visible. In the far distance above the vegetation surrounding the roundabout red air traffic navigation lights can be seen. Also, through the vegetation's foliage an unidentified white coloured light source can be observed.

Viewing to the south-by-southwest the residential road access off of Kidlington Roundabout is lit by neutral-warm LED light sources approximately 3000K. The staggered arrangement, the spacing, and presence of tree canopies creates a poor uniformity with visibly dark spots across the roadway. The area also appears significantly darker than the surrounding roads. Luminaries are visible within the tree canopy and spill light is present in this location.

Viewing to the northwest towards the residential properties the residential road street lighting is clearly visible this continues to be neutral warm LED light sources. There is clear spill light/light intrusion onto the residential properties; however, compared to the surrounding area the residential properties do not appear overly bright. PIR sensor exterior lighting on the residential properties with high tilt angles can be observed, causing some glare when activated towards the receptor location.

Table 3.8: Receptor LR05/L05 Illuminance Results in Lux

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
04/10/2023 22:17:56	2.47	2.69	1.15	0.29	0.80

Source: Mott MacDonald Ltd. (2023)

3.9 LR06/H01

Receptor Description

This receptor location is located north-by-northwest of the Site. This receptor location is between the dwelling on Stratfield Brake Farm and the Site.

This receptor location is intended to provided details of the baseline lighting conditions at / near the dwelling on the Stratfield Brake Farm and Stratfield Brake Sports Ground.

Daytime Description

The receptor is located at the northernmost extent of Stratfield Brake sports ground adjacent to a line of well-established predominantly deciduous trees and vegetation running from east to west.

Views ranging from the west-by-northwest through to the east-by-northeast are largely obscured by the line of trees and vegetation running along the northern extent of the sports ground.

Viewing to the southeast, the immediate view is of a flat short-grass playing field with a 2-rail wooden fence with advertising boards encircling a rugby pitch. In the middle distance a grassy knoll running approximately from north to south with sporadically spaced deciduous trees along its length can be observed. Beyond this are further views of predominantly deciduous trees above the canopies of which, the top section of an overhead electricity pylon can be seen. In the southern peripheral of this view, the access road to the sports ground can be seen.

Viewing towards the south, across the rugby pitch a small car park can be seen behind which a dense hedgerow is running from the eastern most extent for approximately 50m westward. Beyond the hedgerow are further playing fields bordered by dense vegetation and trees obscuring onward views.

Viewing to the southwest three more rugby pictures can be observed beyond which is a dense hedgerow obscuring onward views. To the south of the view there is a two-storey clubhouse with a predominantly glass facade on the northern and western extents of the first floor. Beyond the hedgerow a dense line of predominantly deciduous trees can be seen obscuring further views; however, an electrical pylon is visible in the distance.

The view to the northwest is largely obscured by the line of deciduous vegetation and trees; however, through gaps in the foliage a residential property (farmhouse) with two further buildings are visible.

Visible artificial lighting sources from this receptor location include:

- Twin head configured luminaires from the A4260 apparent above tree canopies to the southeast.
- Illuminated bollards visible at the southern extent of the grassy knoll to the southeast of the receptor location.
- Five columns and luminaires apparent to the south on the small car park. Luminaires are a mix of different types and mounting configurations.
- Several circular bulkhead style fittings mounted at approximately 2 metres can be observed on the clubhouse building.
- 6 floodlight towers surrounding the three rugby pitches to the western extent of the sports ground can be seen. The two central floodlight towers have 4 light fittings each whereas the four light towers at either end of the pitches have two luminaires each. All fittings have relatively low tilt angles compared to typical floodlight installations.

Night-time Description

Existing Sports Lighting Off

The receptor location appears dark with no direct illumination with intense white sky glow visible in the far distance to the West.

Views ranging from the west-by-northwest through to the east-by-northeast are largely obscured by the line of trees and vegetation running along the northern extent of the sports ground.

Viewing to the east, warm, orange-hued lighting associated with Kidlington Roundabout and the adjoining roads can be seen.

To the southeast the illuminated bollards adjacent to the knoll can be seen dimly lit with a cool-white colour temperature. Further in the distance the lighting associated with the A4260 can be observed as can vehicular lights along the roadway.

To the south the car park is lit with a mixture of colour temperatures and with apparently poor uniformity.

The view to the west appears dark with the only evidence of illumination being the distant intense skyglow. No lighting associated with the rugby pitches, or the clubhouse was operational.

Table 3.9: Receptor LR06/H01 Illuminance Results in Lux – Existing Sports Lighting Off

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
04/10/2023 21:35:28	0.02	0.00	0.07	0.05 (0.07 aimed at sky glow)	0.00 (0.02 aimed at sky glow)

Source: Mott MacDonald Ltd. (2023)

Existing Sport Lighting on

The only additional lighting originates from the south through to the west of the receptor location. All other sources of light are the same as when the sports ground was not in use.

Viewing south-by-southwest, directly towards the club house there are large areas of glazing on the club house from floor to ceiling on the first floor the internal illumination of which is clearly visible in a warm white colour temperature, however, the light sources are not apparent.

The ground floor has small windows above head height (assumed to be for changing facilities).

The bulkhead style luminaires noted previously on the outside of the building are not operational.

West of the clubhouse is a storage/shipping container in which a white colour linear light source is visible.

To the west-by-southwest, viewing directly towards the illuminated rugby pitches, the lighting appears bright and of a cool colour temperature; approximately 4500-6000K. There is significant light spill beyond the playing fields in all directions, however, this appears worse along the northern and southern extents of the sports ground. From the receptor location there is no glare experienced from the floodlighting, however, it is likely that glare would be experienced at locations closer to the playing fields.

White skyglow is apparent in all directions with the most intense being to the south and west.

Table 3.10: Receptor LR06/H01 Illuminance Results in Lux – Existing Sports Lighting On

Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
05/10/2023 20:27:09	0.08	0.00	0.04	0.17	0.35

Source: Mott MacDonald Ltd. (2023)

3.10 LR07/H02

Receptor Description

This receptor location is located southwest of the Site on Frieze Farm.

This receptor location is intended to provided details of the baseline lighting conditions at / near the dwelling on Frieze Farm and the visibility of sky glow and lighting in the landscape.

Daytime Description

The receptor is located on the northern edge of a concrete track leading from the A44 to Frieze Farm. The path is situated towards the south of a large arable field which is predominantly flat.

Viewing towards the north looks across the arable field which appears to rise slightly towards the mid-distance. In the foreground, wooden electricity poles can be seen with cables running from approximately east to west. At the far side of the field is dense predominantly deciduous trees and vegetation obscuring onward views. Also visible is overhead electricity pylons at the northern extent of the field, with the cables running approximately from east to west. In the far distance above the tree line, the top section of a telecommunications mast can be seen.

Viewing to the northeast, within a small copse of predominantly deciduous trees and vegetation is a two-storey farmhouse; however, only a section of the upper floor and roof is visible through the trees. There are also several smaller outbuildings associated with the farmhouse visible through a gap in the vegetation and trees.

Viewing towards the east looks across the small concrete track on the far side of which is the rear of a traffic sign. In the mid-distance is the south-eastern corner of the arable field which is bordered to the east and south by dense well-established, predominantly deciduous, vegetation and trees obscuring onward views. This line of trees and vegetation continues along the entire length of the southern extent of the arable field obscuring further views to the south.

Viewing towards the west looks along the long narrow concrete track. In the immediate foreground is the rear of a small single pole traffic sign. The arable field appears to fall

downwards from the receptor location in the mid-distance. The extent of the field is lined with dense, well-established, predominantly deciduous trees. The overhead electricity cables can be seen to continue in this direction. In the distance is further woodland and vegetation with majority of onward views obscured. Some residential properties can be seen through gaps in the tree line.

Viewing towards the northwest adjacent to the boundary of the arable field is a small number of residential properties. Further residential properties can be seen in this direction similar to that of a small town however the view still appears predominantly rural. Slightly north of the residential properties some solar panels associated with a nearby solar farm can be seen through gaps in the vegetation.

Visible artificial lighting sources from this receptor location include:

- A single bulkhead luminaire on one of the farmhouse outbuildings to the east-by-northeast.
- Five lighting columns are visible in the west associated with the A44 which runs approximately southeast to northwest, adjacent to the arable field. The column heights are approximately 8 to 10 metres all with brackets approximately 0.5 to 1 metre in length with a tilt of between 5 and 10 degrees. Four of the columns are fitted with LED style luminaires and the other one appears to have a sodium-based luminaire.

Night-time Description

Due to the public right of way being blocked it was not possible to access the same location for the night-time survey. Therefore, readings and notes and photography was taken from the access gate adjacent to the A44.

The receptor location appeared dark with no direct illumination. A white sky glow was visible in all directions however it appeared brighter and of a warmer colour temperature in the West by northwest.

The brightest sky glow was visible towards the northeast in the direction of the Site.

The view to the north is predominantly dark with no visible sources of light. This is the same for the views round to the east and south.

To the southwest lighting on the approach to loop farm roundabout is visible; however, the light sources are largely obscured by the foliage of trees and vegetation. A small amount of faint white spill light is visible in the field.

To the west and northwest further lighting associated with the A44 can be observed in a neutral-white hue. The carriage way appears well illuminated with good uniformity. Vegetation on the far side of the carriageway appears illuminated fully in the vertical plane.

To the northwest road lighting continues and some interior lighting from buildings is apparent.



Table 3.11: Receptor LR07/H02 Illuminance Results in Lux



Date/Time	Ground (E _H)	North (E _V)	East (E _V)	South (E _V)	West (E _V)
05/10/2023 22:01:54	0.00	0.02	0.02	0.03	0.01



Source: Mott MacDonald Ltd. (2023)



4 Viewpoint Photography

Table 4.1: Receptor E01 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
E01	North		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/500 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 8 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	East		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/500 sec ISO Speed: ISO-360 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 8 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	Southeast		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/7.1 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	South		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/320 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	










Receptor Number	View Direction	Day Image	Night Image
	West		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/500 sec ISO Speed: 1/500 sec Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-180 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Table 4.2: Receptor E02 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
E02	North		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Northeast		
	Photo Properties		<p>Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6</p>

Receptor Number	View Direction	Day Image	Night Image
	East		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-180 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	South		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5 Exposure Time: 1/100 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-180 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	









Receptor Number	View Direction	Day Image	Night Image
	West		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/160 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 10 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Table 4.3: Receptor E03 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
E03	North		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	East		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/4.5 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	South		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5 Exposure Time: 1/100 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	






Receptor Number	View Direction	Day Image	Night Image
	West		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Table 4.4: Receptor LR01/L01 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
LR01/L01	North-by-northwest		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/10 Exposure Time: 1/250 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6		Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	East-by-northeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/400 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	South-by-southeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/400 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.6 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

**Receptor
Number**

**View
Direction**

Day Image

Night Image

West-by-
southwest







Photo
Properties

Camera Model: Nikon D3200
F-stop: f/10
Exposure Time: 1/320 sec
ISO Speed: ISO-400
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Camera Model: Nikon D3200
F-stop: f/2.2
Exposure Time: 1/20 sec
ISO Speed: ISO-1600
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Table 4.5: Receptor LR02/L02 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
LR02/L02	North		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.3 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Northeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/500 sec ISO Speed: ISO-360 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.3 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

**Receptor
Number** **View
Direction**

Day Image

Night Image



East



Photo
Properties

Camera Model: Nikon D3200
F-stop: f/11
Exposure Time: 1/400 sec
ISO Speed: ISO-400
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Camera Model: Nikon D3200
F-stop: f/6.3
Exposure Time: 1.3 sec
ISO Speed: ISO-200
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	South		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/125 sec ISO Speed: ISO-140 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.3 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

**Receptor
Number** **View
Direction**

Day Image

Night Image

West-by-
northwest



Photo
Properties

Camera Model: Nikon D3200
F-stop: f/11
Exposure Time: 1/400 sec
ISO Speed: ISO-400
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Camera Model: Nikon D3200
F-stop: f/6.3
Exposure Time: 1.3 sec
ISO Speed: ISO-200
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6










Receptor Number	View Direction	Day Image	Night Image
	Northwest		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/400 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.3 sec ISO Speed: ISO-200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Table 4.6: Receptor LR03/L03 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
LR03/L03	North-by-northwest		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/160 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: ½ sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	North		See above
Photo Properties	<p>Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/250 sec ISO Speed: ISO-160 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6</p>		

Receptor Number	View Direction	Day Image	Night Image
	East-by-northeast		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/125 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/5 Exposure Time: 1/40 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	South-by-southeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/600 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1/20 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	





Receptor Number	View Direction	Day Image	Night Image
	Southwest		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/7.1 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1/20 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Table 4.7: Receptor LR04/L04 Lighting Baseline Survey Photography



Receptor Number	View Direction	Day Image	Night Image
LR04/L04	Northeast		
Photo Properties	<p>Camera Model: Nikon D3200 F-stop: f/8 Exposure Time: 1/250 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6</p>		<p>Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/40 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6</p>



Receptor Number	View Direction	Day Image	Night Image
	Southeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/9 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/4.5 Exposure Time: 1/40 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	Southwest		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-320 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.8 Exposure Time: 1/20 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	Northwest		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/9 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.8 Exposure Time: 1/20 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Table 4.8: Receptor LR05/L05 Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
LR05/L05	North		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/10 Exposure Time: 1/160 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/1.8 Exposure Time: 1/50 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Northeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/11 Exposure Time: 1/500 sec ISO Speed: ISO-250 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/1.8 Exposure Time: 1/50 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

**Receptor
Number** **View
Direction**

Day Image

Night Image



East-by-
southeast



Photo
Properties

Camera Model: Nikon D3200
F-stop: f/10
Exposure Time: 1/250 sec
ISO Speed: ISO-400
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Camera Model: Nikon D3200
F-stop: f/1.8
Exposure Time: 1/50 sec
ISO Speed: ISO-1600
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	South/South-by-southeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 1/60 sec ISO Speed: ISO-400 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.5 Exposure Time: 1/40 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

**Receptor
Number** **View
Direction**

Day Image

Night Image

Northwest




Photo
Properties


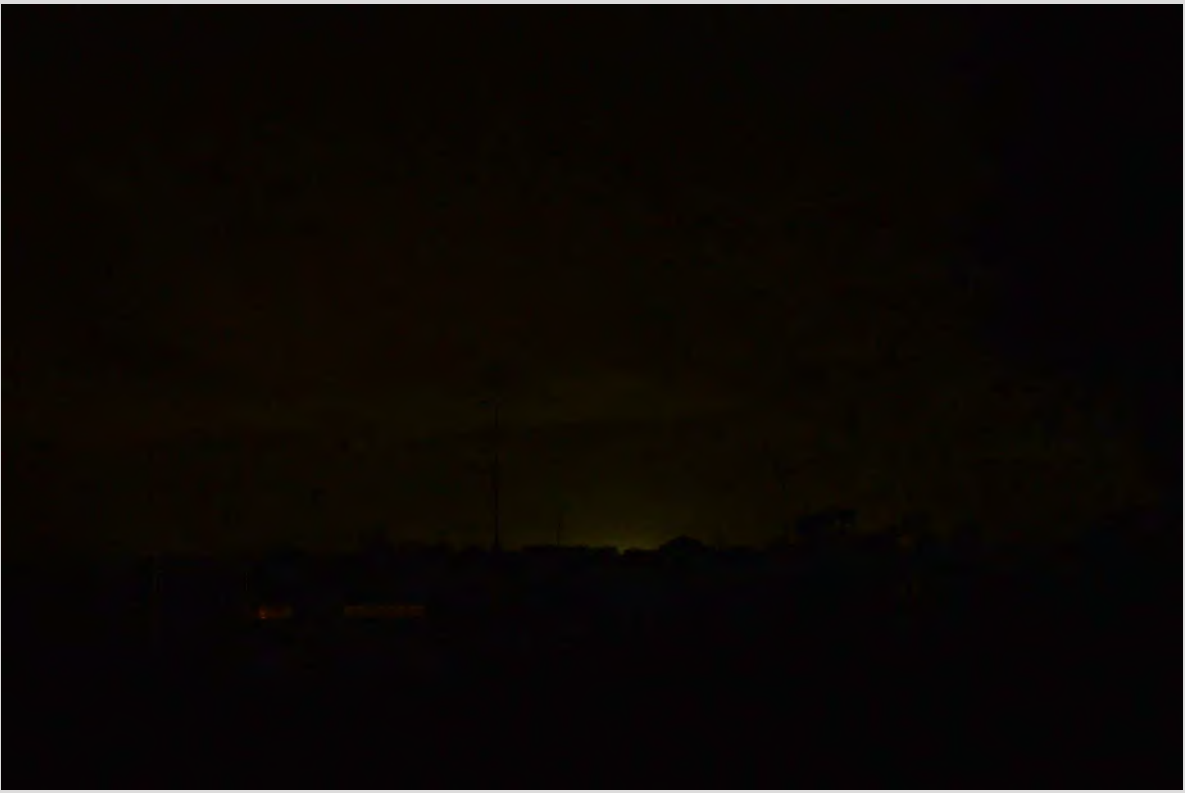
Camera Model: Nikon D3200
F-stop: f/9
Exposure Time: 1/160 sec
ISO Speed: ISO-400
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Camera Model: Nikon D3200
F-stop: f/2
Exposure Time: 1/30 sec
ISO Speed: ISO-1600
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Table 4.9: Receptor LR06/H01 - Lighting Baseline Survey Photography – Sports Lighting Off

Receptor Number	View Direction	Day Image	Night Image
LR06/H01 Sports lighting off	Northeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/250 sec ISO Speed: ISO-110 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 2 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	Southeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/10 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/8 Exposure Time: 0.62 sec ISO Speed: ISO-1600 Exposure Bias: +0.7 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	Southwest		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/8 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/6.3 Exposure Time: 1.3 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6




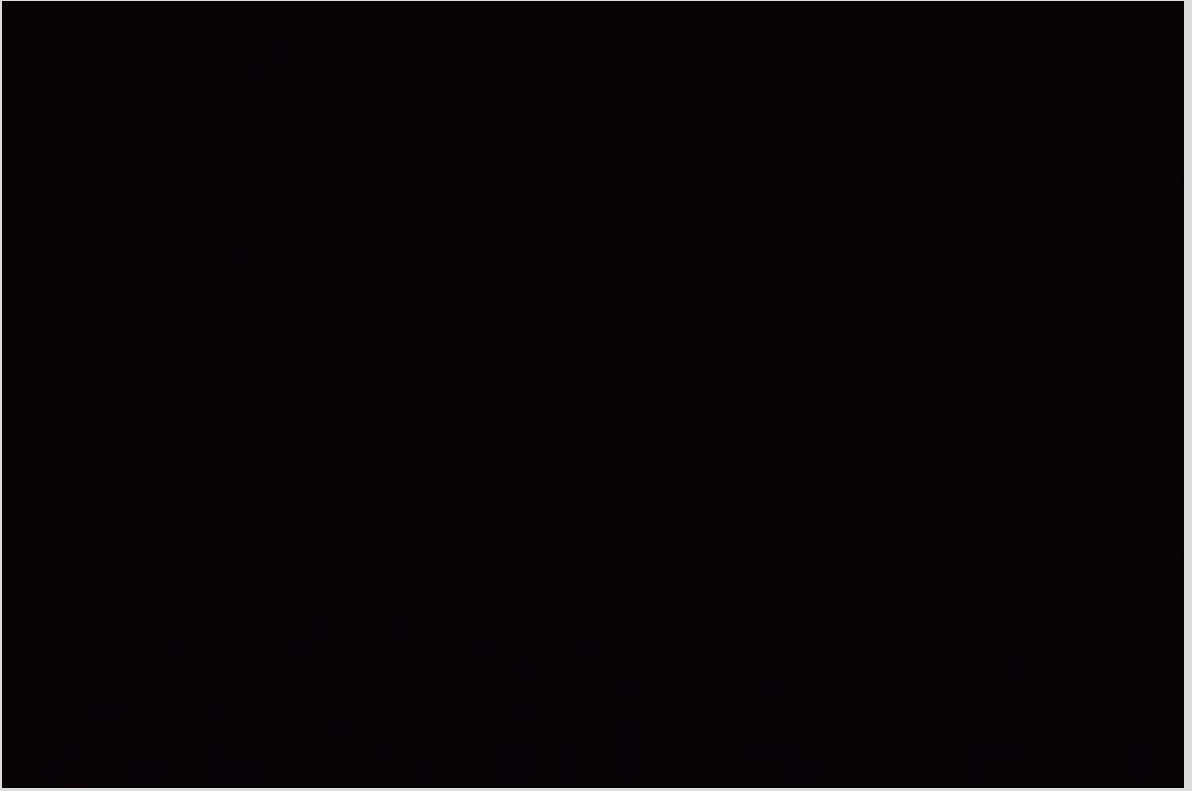
Receptor Number	View Direction	Day Image	Night Image
	Northwest		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-180 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/4 Exposure Time: 2.5 sec ISO Speed: ISO-800 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Table 4.10: Receptor LR06/H01 - Lighting Baseline Survey Photography – Sports Lighting On

Receptor Number	View Direction	Day Image	Night Image
LR06/H01 Sport lighting on	Northeast		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/250 sec ISO Speed: ISO-110 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.2 Exposure Time: 1/15 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Southeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/10 Exposure Time: 1/200 sec ISO Speed: ISO-100 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/4.5 Exposure Time: 1/40 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number **View Direction** **Day Image**

Night Image



Southwest



Photo Properties

Camera Model: Nikon D3200
F-stop: f/8
Exposure Time: 1/200 sec
ISO Speed: ISO-100
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Camera Model: Nikon D3200
F-stop: f/4.5
Exposure Time: 1/40 sec
ISO Speed: ISO-1600
Exposure Bias: 0 step
Focal Length: 35mm
Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Northwest		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/5.6 Exposure Time: 1/125 sec ISO Speed: ISO-180 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.8 Exposure Time: 1/15 sec ISO Speed: ISO-1600 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

For Receptor LR07/H07 two different locations had to be used due to access to the public right of way being block during the night. This means the day and night images are not directly comparable, however information about the condition of the view and the existing lighting provides context to the area.

Table 4.11: Receptor LR07/H02 - Lighting Baseline Survey Photography

Receptor Number	View Direction	Day Image	Night Image
LR07/H02	North		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/ Exposure Time: ISO Speed: ISO- Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.5 Exposure Time: 1/15 sec ISO Speed: ISO-3200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Northeast		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/ Exposure Time: 1/500 sec ISO Speed: ISO-360 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/3.2 Exposure Time: 1/10 sec ISO Speed: ISO-3200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	East		
Photo Properties	Camera Model: Nikon D3200 F-stop: f Exposure Time: ISO Speed: ISO- Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.2 Exposure Time: 1/8 sec ISO Speed: ISO-3200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	South		
Photo Properties	Camera Model: Nikon D3200 F-stop: f/ Exposure Time: ISO Speed: ISO- Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/2.8 Exposure Time: 1/15 sec ISO Speed: ISO-3200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	

Receptor Number	View Direction	Day Image	Night Image
	West		
Photo Properties		Camera Model: Nikon D3200 F-stop: f/ Exposure Time: ISO Speed: ISO- Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6	Camera Model: Nikon D3200 F-stop: f/3.2 Exposure Time: 1/10 sec ISO Speed: ISO-3200 Exposure Bias: 0 step Focal Length: 35mm Max Aperture: 1.6

Receptor Number	View Direction	Day Image	Night Image
	Northwest		
			<p>Camera Model: Nikon D3200 F-stop: f/ 3.2 Exposure Time: 1/10 sec ISO Speed: ISO-3200 Exposure Bias: 0 step Focal Length:35mm Max Aperture: 1.6</p>

5 Additional Contextual Photography

5.1 Stratfield Brake Sports Ground – Sports Lighting



Figure 5.1: Sports lighting luminaires used at Stratfield Brake Sports Ground. Twin head arrangement.

Camera Model: Nikon D3200

F-stop: f/10

Exposure Time: 1/400 sec

ISO Speed: ISO-100

Exposure Bias: 0 step

Focal Length: 35mm

Max Aperture: 1.6



Figure 5.2: Sports lighting luminaires used at Stratfield Brake Sports Ground. Twin head arrangement.

Camera Model: Nikon D3200

F-stop: f/10

Exposure Time: 1/400 sec

ISO Speed: ISO-100

Exposure Bias: 0 step

Focal Length: 35mm

Max Aperture: 1.6



Figure 5.3: Sports lighting luminaires used at Stratfield Brake Sports Ground. Four head arrangement.

Camera Model: Nikon D3200

F-stop: f/8

Exposure Time: 1/250 sec

ISO Speed: ISO-100

Exposure Bias: 0 step

Focal Length:35mm

Max Aperture: 1.6



Figure 5.4: Sports lighting luminaires used at Stratfield Brake Sports Ground. Four head arrangement.

Camera Model: Nikon D3200

F-stop: f/8

Exposure Time: 1/250 sec

ISO Speed: ISO-100

Exposure Bias: 0 step

Focal Length:35mm

Max Aperture: 1.6

