

TEMPORARY CONSTRUCTION COMPOUND AT M62 JUNCTION 19 LIGHTING ASSESSMENT

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Executive Summary

This Environmental Lighting Impact Assessment has been prepared for the proposed temporary construction compound at the M62 Junction 19, Middleton/Heywood (postcode OL10 2LG), to support the construction works of the M60/M62/M66 Simister Island Interchange Scheme.

The Application Site is already connected to the motorway junction, in a location that is already strongly influenced by the M62 to the north and other commercial land uses. The surrounding environment (within 1 km of the site) is a mix of industrial estates, distribution facilities and urban areas, with existing lighting present on the motorway, Junction 19 interchange, local highways, and within private sites. The baseline lighting was assessed and is considered to be consistent with Environmental Zone E3 (suburban), reflecting an area of moderate existing illumination.

The M62 Junction 19 temporary construction compound will function as a workplace and must therefore provide safe lighting in line with the Health and Safety at Work etc. Act 1974. The recommended standard for exterior workplace lighting is BS EN 12464-2. Safe access to and from the public highway will also require suitable lighting, guided by BS 5489-1:2020. Emergency lighting is required in accordance with BS 5266. External emergency lighting is only required to illuminate escape routes from building final exits to the relevant points of safety, such as assembly areas. As the light levels for emergency lighting are comparatively low and its use is infrequent, emergency lighting is not expected to give rise to any direct negative ecological or environmental impacts.

To ensure lighting is both effective and proportionate, a hierarchy of design mitigations are recommended e.g., minimising the need/use of lighting, aiming the luminaires into the Application Site rather than outwards, presence detection.

The ecological surveys did not reveal the presence of any existing or potential for future habitats for any legislatively protected photosensitive receptors (e.g. bats) in proximity to the Application Site's boundary. The closest residential property to the Application Site, that could be considered as a key receptor, is located on Middleton Road (A6046), which is circa 70 m away, with mature hedgerows obscuring direct sight lines.

Whilst the ecological survey showed a lack of photosensitive species in the areas adjacent to the Application Site and therefore removed the legal requirement to limit the site obtrusive light spill, there is still a wider obligation to reduce the M62 Junction 19 temporary construction compound's energy use. This would include the aim to only project light into locations where it is needed, and therefore not light areas outside of the Application Site. As such, careful design and control of the sites lighting can be used to reduce energy use and indirectly minimise the M62 Junction 19 temporary construction compound's impacts on wider 'global' environment.

1. Introduction

1.1 Overview

- 1.1.1 This Environmental Lighting Impact Assessment has been prepared for has been prepared for the proposed temporary construction compound at the M62 Junction 19 (J19) (hereafter the 'J19 Temporary Compound'), Middleton/Heywood (OL10 2LG), to support the construction works of the M60/M62/M66 Simister Island Interchange Scheme (hereafter the 'M60 Simister Scheme').
- 1.1.2 The purpose is to assess the need for artificial lighting, identify how lighting may be deployed safely and efficiently, evaluate any likely significant negative impacts, and propose appropriate mitigation measures. Specifically, the assessment considers:
- Relevant legislation, policy, and guidance;
 - Key receptors sensitive to lighting;
 - Required lighting levels and metrics for safe operation of the J19 Temporary Compound;
 - Methods and technology for providing lighting;
 - Mitigation measures to minimise environmental and ecological impacts; and
 - Other constraints influencing the lighting design.

1.2 Location

- 1.2.1 The J19 Temporary Compound is situated to the east of the M62 J19, with the Application Site's (area within the J19 Temporary Compound's red line boundary) northern boundary situated south of the westbound carriageway. The Application Site is in a mixed urban-industrial and transport corridor and the surrounding environment includes:
- Oaken Bank Road: Located circa 260 metres (m) to the south of the southern edge of the Application Site. Street lighting is present from the junction with the A6046, eastwards to the end of the residential area. The eastern section of the road is unlit, but there may be some private flood lighting around the agricultural building.
 - A6046/Middleton Road: Located immediately adjacent to the west side of the Application Site and provides a connection between the M62 at J19 and Middleton. At the closest point to the Application Site, the road is lit and has residential properties on the western side of the road. The nearest home is circa 70m away from the western extent of the Application Site.
 - Queen Elizabeth II Way: Located circa 200m to the northwest of the Application Site, on the opposite side of the M62 mainline, connecting to the M62 J19 to Heywood. The road is lit for its full length. The area to the south of Heywood adjacent to the Queen Elisabeth II way is a large mixed use development, currently under design/construction.
 - M62 Motorway: Located north of the Application Site, providing regional connectivity. The mainline and J19 are both lit.

1.3 Background and Description

- 1.3.1 The Application Site is approximately 5 hectares and is predominantly comprised of a bell mouth access with access roads, car parking, surface and foul drainage systems, internal access roads, fencing, soil bunds, and utility infrastructure (power and water) associated with the previous compound use. It is surrounded on most sides by established hedgerows and mature trees.
- 1.3.2 The J19 Temporary Compound would operate for a temporary period of up to five years from the date of any planning permission and will accommodate:
- Site offices and welfare facilities.
 - Car parking for staff and visitors.
 - A security hut and access control point.
 - Materials storage areas (structures, lighting, traffic management, drainage materials etc). Note that there will be no storage of earthworks materials or aggregates at the J19 Temporary Compound.
 - Secure compounds for traffic management equipment.
 - Fuel storage
 - Material testing laboratory and stores buildings.
- 1.3.3 The J19 Temporary Compound would only be used during the construction phase for the M60 Simister Scheme and would be returned to its original agricultural use following demobilisation.
- 1.3.4 All lighting and closed-circuit television systems within the Application Site, including perimeter and operational lighting, will be supplied solely from a Distribution Network Operator feed, rather than via site based generators reducing any potential noise and exhaust pollution.
- 1.3.5 Lighting is required throughout the Application Site to ensure safe movement of vehicles and personnel, support security and operational functions, and comply with relevant health and safety standards.

2. The Need for Lighting

2.1 Key Legislation, Policy, and Guidance

2.1.1 This section outlines the key legislation, policy, and guidance relevant to exterior artificial lighting at the J19 Temporary Compound, including the compound itself, access points, and the adjacent public highway. The framework ensures that lighting design meets safety, operational, and environmental requirements.

Table 2-1 Applicable Legislation, Policy, and Guidance for Exterior Lighting

Document / Guidance	Description
Health and Safety at Work etc. Act 1974	Establishes a legal duty to provide sufficient lighting to allow work to be undertaken safely, including operational and emergency lighting.
Clean Neighbourhoods and Environment Act 2005	Gives local authorities powers to regulate artificial lighting from premises when it constitutes a statutory nuisance.
National Planning Policy Framework 2024	Provides guidance on managing light pollution and its potential impacts on the environment, wildlife, and communities.
BS 5489-1:2020 – Design of Road Lighting	Guidance on the design of lighting for roads, junctions, cycle and pedestrian areas, and open-air car parks.
BS EN 12464-2:2024 – Lighting of Workplaces. Outdoor Workplaces	Defines lighting requirements for exterior workplaces, including operational and marshalling areas; specifies illuminance levels and uniformity metrics.
BS EN 13201 – Road Lighting	Specifies target lighting levels, measurement methods, and quality metrics for exterior lighting; complements BS 5489-1.
BS 7671:2018 + A3:2024 – IET Wiring Regulations	Sets safety standards for all low-voltage electrical installations, including lighting columns, luminaires, and infrastructure.
ILP GN01 – The Reduction of Obtrusive Light, 2021	Guidance on minimising light spill, controlling glare, and protecting sensitive receptors.
ILP PLG02 – Application of Conflict Areas on the Highway	Good practice for lighting at junctions, crossings, and other areas where vehicles and pedestrians interact.
ILP PLG04 – Guidance on Environmental Lighting Impact Assessments	Advises on undertaking environmental lighting impact assessments, including ecological and amenity considerations.
ILP GN08 – Bats and Artificial Lighting at Night	Best practice for minimising impacts of artificial lighting on bats and other nocturnal wildlife.
ILP TR12 – Lighting of Pedestrian Crossings	Guidance for lighting requirements at walking, cycling, and horse-riding crossings on public highways.

Document / Guidance	Description
SLL Code for Lighting	Covers good practice for lighting design in the built environment to protect wildlife and reduce adverse impacts.
LG06 – The Exterior Environment	Guidance on exterior lighting design, including recommended methods and metrics.
Engineering Reports G39 – Electrical Safety for Public Lighting	Guidance on safety near Distribution Network Operator connections, including column locations, heights, and markings.

2.2 Existing Lighting Baseline

2.2.1 The J19 Temporary Compound entrance has direct access from the M62 J19 via a bell mouth junction. The J19 roundabout and its associated slip roads are equipped with 10m to 12m columns. The roundabout is assumed to be lit to C2 class, based on the average annual daily traffic (AADT) for the A6046 and a Risk Assessment in accordance with BS5489-1 Appendices A. The new bell mouth for the J19 Temporary Compound access will be lit to (P2) a comparable standard as indicated in BS5489-1 Table A.1. Providing consistent illumination and safe access during both establishment and operation phases.

2.2.2 The surrounding lighting environment is as follows:

- To the north, there is highways lighting for the M62, the M62 J19, and wider afield urban lighting from Heyworth.
- To the east, is open agricultural land with no lighting, and further afield a golf course which may have some private lighting for car parks and security.
- To the south, is open agricultural land, and wider afield some residential properties with highways lighting and commercial/farm type builds which may have private lighting. The northern extents of Middleton lie circa 650m to the south of the site, with urban lighting.
- To the west, there is highways lighting from the A6046/Middleton Road, and plus its residential and commercial properties, and wider afield agricultural land with no lighting.

2.3 Access

2.3.1 The J19 Temporary Compound is located to the east of the M62 J19 roundabout, with direct access to the roundabout in the southeastern quarter.

2.3.2 Operation traffic will then use the M62 to access the main construction areas for the M60 Simister Scheme.

2.3.3 The J19 Temporary Compound will provide car parking (staff and visitors), site offices and welfare facilities, and materials storage.

2.3.4 The peak private vehicle movements are anticipated to be 374 per 24-hour period. The peak site van and minibus movements are anticipated to be 275 per 24-hour period. The peak heavy duty vehicle movements are anticipated to be 38 per 24-hour period. Given these movements to and from the Application Site, the AADT on the M62 is considered to be within daily variation and unlikely to trigger a need to increase the light level on the roundabout, based on the recommendation of BS5489-1:2020.

2.4 Lighting Environmental Zone

2.4.1 The nearest residential properties are located approximately 70m from the Application Site boundary. The surrounding area is moderately illuminated due to the proximity of the existing highway and urban lighting. This has been assessed and classified as Environmental Zone E3 (Suburban) in accordance with Table 2 in the ILP's GN01, reproduced in Table 2-2.

Table 2-2 Lighting Environmental Zones (reproduced from Table 2 in the ILP's GN01:2020)

Zone	Name	Sky Quality Measurements (SQM)	Description
E0	Dark	20.5+	Astronomical observable dark skies, United Nations Educational, Scientific and Cultural Organization Starlight Reserves, International Dark Skies Association (IDA) Dark Sky Places
E1	Natural Dark	20 – 20.5	Relatively uninhabited rural areas, National Parks, National Landscapes (previously Areas of Outstanding Natural Beauty), IDA buffer zones
E2	Rural	~15 – 20	Sparsely inhabited rural areas, villages, or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well-inhabited rural and urban settlements, small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

2.5 Lighting Class Selections

2.5.1 Considering the visual tasks in each area, and the recommendations from standards and guidance, the list of lighting target value has been prepared to guide selection of appropriate luminaires, and their layout.

Table 2-3 Lighting Class Assignments with Standards

Area	Lighting Class/Target ¹	Standard / Guidance	Justification
Middleton Road approach (For Reference)	M3	BS 5489-1:2020 Table A.3	40 miles per hour (mph) Speed Limit, Moderate traffic ² , single carriageway, gives an initial class of M4. Using the risk assessment mentioned as per A.3.1.3, this is increased due to the presence of parked cars ³ and pedestrian crossings.
J19 Roundabout (For reference)	C2	ILP PLG02 / BS 5489-1:2020 Table A.4	Conflict zone, Based on the assumption that the highest lighting class for the approaches is M3 as above.
Application Site roads	10 Lux 0.40 U ₀ min 50 Glare Rating Limits (R _{GL}) >70 Colour Rendering Index (Ra)	BS EN 12464-2:2014 Table 7	General requirements for traffic zones outside buildings; 7.2 Traffic areas for slow moving vehicles (Max. 10 kilometers per hour (kph)) e.g., bicycles, trucks, and excavators
Application Site pedestrian walkways	5 Lux 0.20 U ₀ min 50 R _{GL} >70 Ra	BS EN 12464-2:2014 Table 7	General requirements for traffic zones outside buildings. 7.1 Walkways exclusively for pedestrians
Car park (active periods)	10 Lux 0.25 U ₀ min 50 R _{GL} >70 Ra	BS EN 12464-2:2014 Table 8	Parking areas: 8.2 Medium Traffic, e.g., parking areas of department store, office buildings, plants, sports, and multipurpose building complexes. Suggested for busy times e.g., Shift start/finish times, or when presence is detected
Car park (idle / security)	5 Lux 0.25 U ₀ min 55 R _{GL} >70 Ra	BS EN 12464-2:2014 Table 8	Parking areas: 8.1 Low Traffic, e.g., parking areas of shops, terraced and apartment houses, cycle parks. Suggested for quiet times e.g., mid shift. I.e., a background level for security when no presence is detected
Materials Handling	20-30 Lux 0.25 U ₀ min 55 R _{GL} >70 Ra	BS EN 12464-2:2014 Table 13	Building Sites. 13.1 Clearance, excavation, and loading

Area	Lighting Class/Target ¹	Standard / Guidance	Justification
Storage and Laydown area	50-75 Lux 0.40 U ₀ min 50 R _{GL} >70 Ra	BS EN 12464-2:2014 Table 13	Building Sites. 13.2 Construction areas, drainpipes mounting, transport, auxiliary, and storage tasks
Security gatehouse area	20 Lux 0.25. U ₀ min >80 Ra	Refer to Section 2.5	Supports visual tasks such as ID checking; additional localised task lighting may be required (e.g., torch)

¹ Illuminance values shown (Lux) are the minimum average values to be achieved, and Uniformity values (U₀) and the minimum ratio of the average to minimum illuminance values for a given space, as defined in EN 13201.

² Refer to Appendix A for traffic data for Middleton Road (A6046). AADT from count data taken as double the average annual daily flow (AADF) from the count data. BS5489-1:2020 has three AADT bands; Low: AADT < 7000, Moderate: AADT > 7000 < 40000, or High: AADT > 40000.

³ Parked cars observed as being present on both sides of the road, in the dated views from online street images, but not visible in 2025 image due to resurfacing works being carried out at the time of the image.

Figure 2-1 Compound Layout showing Areas by Lighting recommendations



3. Assessment of Likely Significant Effects

3.1 Overview

- 3.1.1 The following section examines the requirements for, and likely significant effects of artificial lighting of the J19 Temporary Compound.

3.2 Establishment

- 3.2.1 No likely significant effects are anticipated for artificial lighting during establishment, based on the assumption that the majority of works would take place during daylight hours. Any night time works during shorter autumn/winter days would be minimised, and any resultant spill from vehicle head/work lights would be short-lived and transient e.g. vehicle head lights 'sweeping' along a hedgerow whilst a vehicle manoeuvres.

3.3 Operation

- 3.3.1 Artificial lighting for safe operation of the J19 Temporary Compound can be subdivided into the following main functional areas each with its own specific lighting requirements:

- Compound access from the M62 J19 roundabout;
- Application Site roads and pedestrian walkways;
- Laydown and storage area;
- Car park;
- Welfare and office buildings; and
- Security office at the access point.

- 3.3.2 Each of these areas has differing tasks and therefore the lighting requirements, guidance, and/or regulations that are applicable also differ, and as such the areas will now be considered separately, in more detail.

- 3.3.3 Highways lighting classifications fall into three main categories, defined in BS 5489-1 and EN 13201-2:

- M Classes are for traffic routes, such as motorways, dual-carriageways, and trunk roads.
- P Classes are for subsidiary and residential roads where vehicle speeds are generally lower.
- C Classes are for conflict zones, where there is an increased risk in areas where multiple traffic streams intersect such as junctions, roundabout, and pedestrian areas with motorised vehicle access.

- 3.3.4 The relevant 'letter' part of the classification is followed by a numerical part where the lower values correspond to a brighter lighting level, e.g. for a traffic route, the brightest class would be M1, and the darkest M6. The combined classification corresponds to both quantitative and qualitative criteria for the resulting lighting system, e.g. Lighting Class C4 would require a minimum average illuminance of 7.5 Lux, and a minimum uniformity value of 0.4.

- 3.3.5 Uniformity is a comparison of the brightest and darkest points within an area. The human eye adapts to cope with the brightest light level in view, and that can mean that points with lower light level appear darker. This can be demonstrated when walking into a building from a bright summer's day; the building appears dark, but after being in the building the eye adapts, and the space appears well lit, but step outside for a few minutes and the interior again appears dark. For road users, uniformity metrics reduce driver eye strain and ensure drivers are not 'blinded' by bright spots, and that other users do not disappear into perceptually dark spots. For conflict areas, uniformity is calculated as an overall figure for the entire area, but for roadways it is spilt into overall and longitudinal along the centreline for a traffic lane over a distance related to the speed limit.

Access onto M62 J19 Roundabout

- 3.3.6 The access for the J19 Temporary Compound onto the M62 J19 roundabout is a dual direction 2-lane bell mouth, with no splitter island, or existing pedestrian routes crossing the bell mouth. Using online street images, this shows that the bell mouth will provide good visibility to both drivers using the access, and the roundabout. The adjacent roundabout verges are laid to grass with no shrubs/trees.
- 3.3.7 The lit extents will include from the edge of the roundabout, the full width of the bell mouth, and the access road to the gate as a minimum.
- 3.3.8 The roundabout has existing lighting (assessed as likely to be Lighting Class C2 in Table 2-3), which may provide some illumination of the J19 Temporary Compound's access point, and any additional lighting required to achieve a compliant light level at the access will have no significant impacts on the surroundings.
- 3.3.9 In line with best practice, column heights will be kept lower than the existing roundabout lighting, luminaires will be mounted horizontally to reduce glare potential, luminaires will be the same Correlated Colour Temperature (CCT) as the existing luminaires, and will be located far enough away from the boundary fence that the columns cannot be used to aid climbing of the fence.

Site roads and pedestrian walkways

- 3.3.10 The existing access road and car park allows vehicle movements within the Application Site which will have a low vehicle speed and a blanket speed limit of 5 mph (circa 8 kph). The site will also have marked segregated pedestrian only routes would be provided alongside the vehicle routes.
- 3.3.11 As the land adjacent to the Application Site boundaries to the east and south is currently agricultural land, there may be some minor negative impacts from the lighting needed for the J19 Temporary Compound road (which runs close to the boundary), but this will be mitigated by the buffer area formed by the existing earth bunds at the north and east boundaries, and the drainage ditch at the south boundary, which offset the boundary from the hedges and tree at the land boundary.
- 3.3.12 In line with best practice, column heights will be kept low (e.g. <10m), ensuring luminaires are positioned to direct their light into the middle of the compound rather than towards the boundary, using warm CCTs (<3000 Kelvin (K)), and selecting optics that reduce back light spill.

Laydown and storage area

- 3.3.13 The lay down area will be used to store larger materials such as barrier sections, cable drums, and lighting columns, and that these items would be loaded/unloaded in the daytime ahead of moving to the M60 Simister Scheme at the start of any overnight working.
- 3.3.14 As the land adjacent to the Application Site boundaries to the east is currently agricultural land, there may be some minor negative impacts from the lighting needed for the laydown and storage area (the eastern boundary is close to the Application Site boundary), but this will be mitigated by the buffer areas from both the J19 Temporary Compound road, the existing earth bund to the eastern side of the Application Site, and existing drainage ditch to the south, which offset the boundary from the hedges and tree at the land boundary.
- 3.3.15 In line with best practice, column heights will be kept low (e.g. <10m), ensuring luminaires are positioned to direct their light into the middle of the Application Site rather than towards the boundary, using warm CCTs (<3000K), and avoiding flood light luminaires mounted at low level and/or tilted upward more 20° above vertically downward, e.g. on storage containers.
- 3.3.16 Based on the application of the mitigations mentioned in this section, it is considered that the Lay Down and Storage area lighting will have relatively minor negative impacts.

Car park

- 3.3.17 BS EN 12464-2:2024 Table 8 'Parking Areas' row 8.2 lists 'Medium Traffic e.g. parking areas of department stores, office building, plants, sports, and multipurpose building complexes' as requiring 10 Lux minimum average and 0.25 uniformity.
- 3.3.18 As the M62 forms the majority of the northern site boundary and Middleton Road (A6046)/ J19 form the eastern boundary, both of which are currently lit, and the drainage basin, and earth bunds provide a buffer zone offsetting the area boundary from the land boundary, it is considered that the car park lighting will not have any impacts
- 3.3.19 Given the potentially transient traffic flows with quiet periods of low/no movements, interspersed with busy times around shift start/finishes, the car park would be an ideal location to use automatic variable lighting levels. This would mean during quiet periods the lighting could be at a lower level, e.g. 5 Lux (as per row 8.1 'Light Traffic') suitable for security, and then presence detectors trigger higher light levels if/when zones are in use e.g. 10 Lux.
- 3.3.20 Deploying variable lighting levels would offer an increased energy saving, whilst also directly reducing any potential obtrusive light spill.
- 3.3.21 Based on the application of the mitigations mentioned in this section, it is considered that the car park lighting will have relatively minor negative impacts. Automatic variable lighting will be considered for the car park and defined in the Lighting Strategy where implemented.

Welfare and office buildings

- 3.3.22 The design of the interior welfare and office lighting is not directly within the scope of this report, however, light from welfare building windows has the potential to spill beyond the Application Site's boundary and have a small impact on key receptors. The office and welfare buildings will be single-storey, which will reduce the extent of any light spill from un-shuttered windows. The location of the buildings at the centre of the Application Site will also help control and eliminate such spill light.
- 3.3.23 Based on the location of the Welfare and office buildings, its distance from the boundaries, plus that they will be single storey, with minimal floodlighting angled below the horizontal, it is considered that the lighting mounted to the welfare and office buildings will have relatively minor negative impacts.

Security office at the access point

- 3.3.24 The security hut at the main gate will be for checking operative passes and delivery paperwork, rather than for conducting detailed vehicle inspections or similar tasks requiring enhanced visibility.
- 3.3.25 There is no specific requirement within BS EN 12464-2:2024 covering security points or gatehouses (e.g. security points at airports are covered, but gatehouses are not). Taking a holistic approach, the access to the public highway and the J19 Temporary Compound roads approaching the security hut are proposed to be lit to 15 lux and 10 Lux respectively (refer to Table 2-3), and this is not considered to be suitable for detailed work such as reading paperwork. Using the maximum 2-lighting-class step from highways lighting as a guide, the area around the security hut could be lit to an equivalent of class C2 (equivalent of 20 Lux) which would allow basic recognition of text but additional portable light sources might be needed to read small/detailed print. A higher Colour Rendering Index (CRI) may also be required to allow better colour recognition/definition for the checking of photographic ID or coloured text.
- 3.3.26 Based on the location of the Security hut, being near the M62 J19 roundabout which has existing lighting, it is considered that the security hut lighting will not have any negative impacts.

Summary of Potential Impacts

- 3.3.27 The above assessment on the need for lighting in each area of the J19 Temporary Compound shows that without mitigation actions, there is small potential for obtrusive light spill from the Application Site's lighting to have relatively minor negative impacts on the surrounding ecology. However, with mitigation these effects have been reduced to a very low potential risk.

3.4 Decommissioning

- 3.4.1 No significant impact are anticipated for artificial lighting during decommissioning, based on the assumption that the majority of the works would take place during daylight hours. Any nighttime works during shorter autumn/winter days would be minimised, and any resultant spill from vehicle head/work lights would be short lived and transient, e.g., vehicle head lights 'sweeping' along a hedgerow whilst a construction vehicle manoeuvres.

4. Proposed Mitigations and Residual Effects

4.1.1 There are various factors which have a direct impact on obtrusive light spill, but the key items with the largest impacts are as follows.

4.2 Matching the Luminaire Optics to the area to be lit

4.2.1 Wide distribution optics provide good uniformity but can contribute to light spill (refer to Figure 4-1 and 4-2). Asymmetric output optics focus the light in front of the column, but this can lead to an increase in glare. Back light shields shall be used on luminaires located near the Application Site boundary or key receptor areas, to reduce light spill behind the columns.

Figure 4-1 Indication of Light Spill from a Luminaire with Symmetric Optics

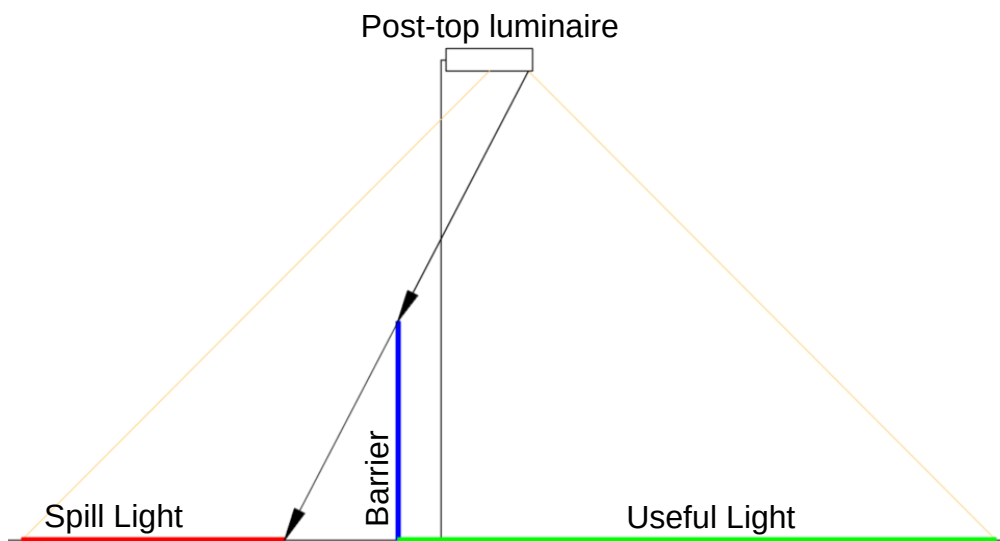


Figure 4-2 Indication of Light Spill from a Luminaire with Asymmetric Optics

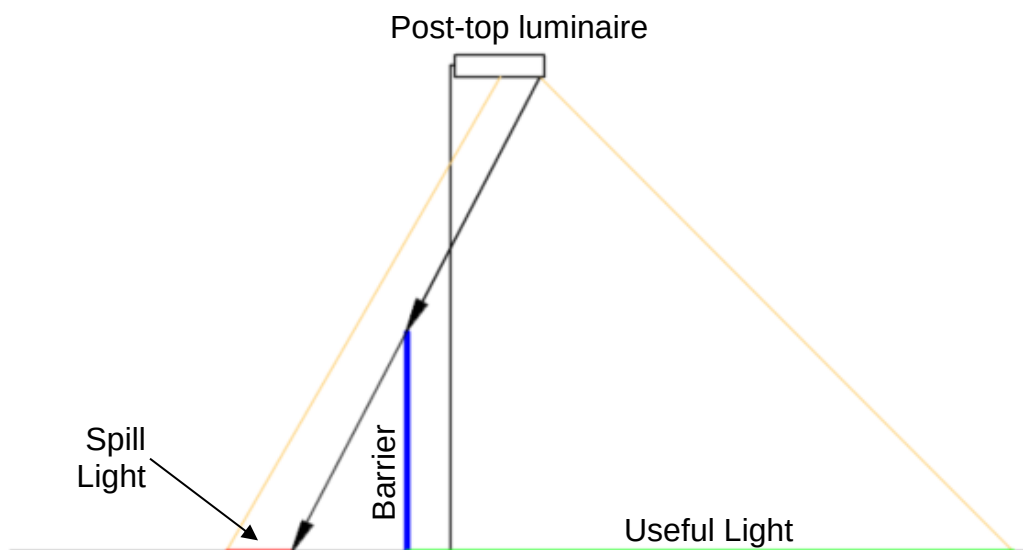
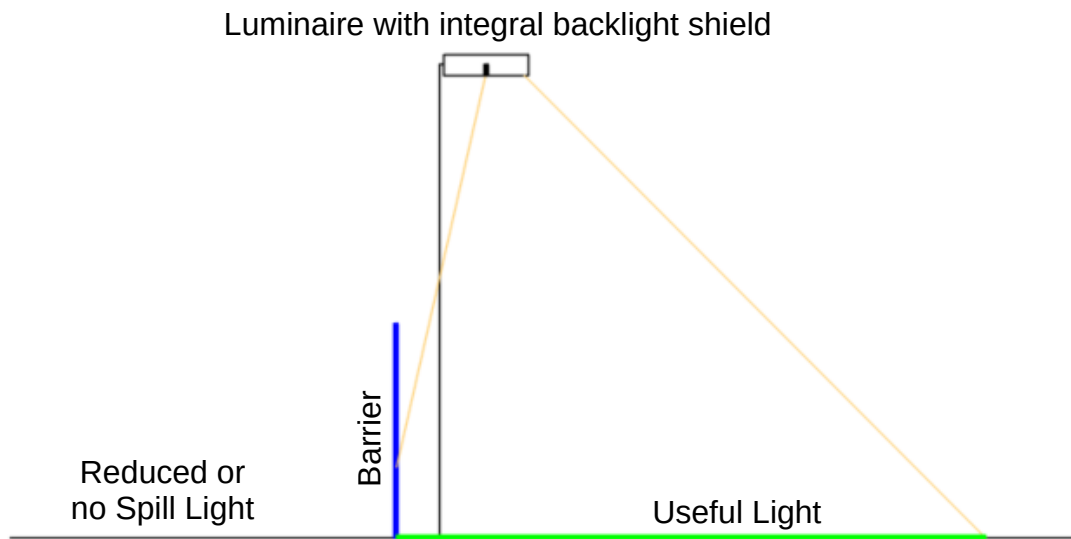


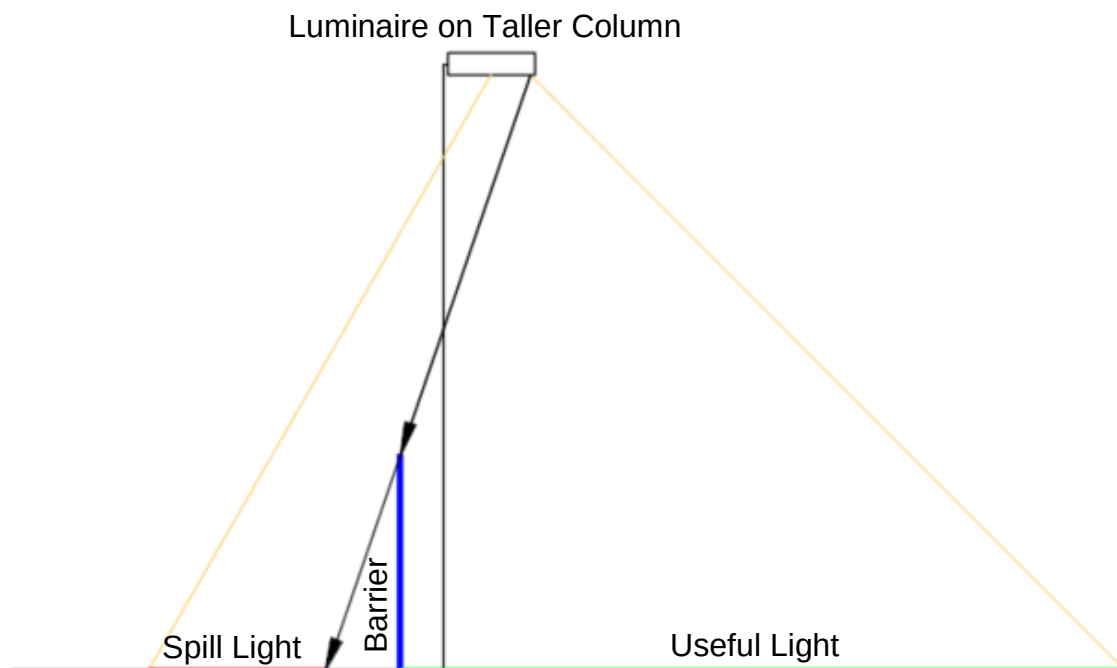
Figure 4-3 Impact on Light Spill of Luminaire with Integral Backlight Shield



4.3 Column Height

- 4.3.1 Increasing the column height would reduce the number of columns needed to provide a compliant lighting solution, but taller columns often result in light spilling further from the site, and also means that the columns have a greater impact on the surrounding views, both in day time and at night (refer to Figure 4-4). There would need to be a balance between the number of columns required, and the extent of any light spill, e.g. keeping the columns as low as possible to reduce light spill, whilst still achieving a compliant and cost-effective lighting solution.

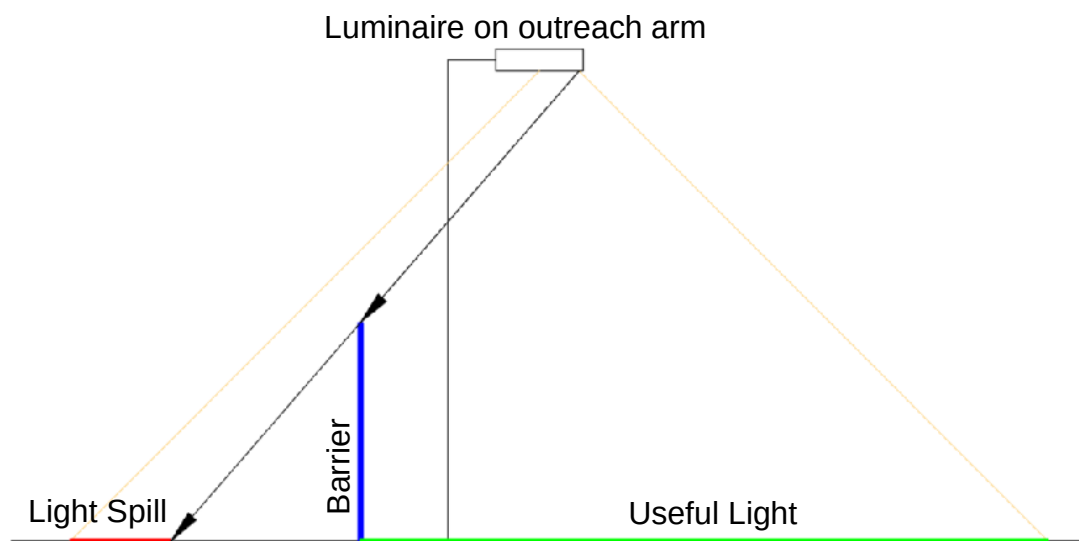
Figure 4-4 Impact of Column Height on Light Spill



4.4 Column/Luminaire Location

- 4.4.1 Luminaires located close to the boundary are more likely to cause obtrusive light spill beyond the boundary, but it may not be practical to move the columns inward from the boundaries. In this instance, out-reach brackets/arms shall be used to allow columns to be mounted close to the boundary whilst the luminaire is offset inside the boundary by the arm. This can be seen by comparing Figure 4-1, which shows a post-top luminaire located close to a vertical barrier, with Figure 4-5 where the column has been moved away from the barrier slightly and the luminaire mounted on a short outreach arm, moving the luminaire further from the barrier.

Figure 4-5 Impact on Light Spill of Column Being Moved Away and Luminaire on an Outreach Arm



4.5 Luminaire Aiming

- 4.5.1 To avoid luminaires projecting light directly into key receptor areas, whilst also directly reducing any spill light, luminaires should be aimed/directed to project their light towards the centre of the Application Site, and away from the boundaries. Equally, luminaires should not be tilted upwards, as this could project light directly upward breaching national Dark Sky policies and guidance (e.g. the ILP's GN19) and impacting on dark corridors for any photosensitive species.

4.6 Corelated Colour Temperature

- 4.6.1 The Bat Conservation Trust lighting Guidance Note¹¹ proposes the use of warmer CCT white light, with reduced blue light content. Blue light can also negatively impact on invertebrates, plant life, and human circadian rhythms (which have impacts on serotonin/melatonin production in the brain and may effect on mental health). It is therefore recommended that the site uses luminaires with warm white light sources, i.e. <3000K.

4.7 Full Cut-Off Luminaires

- 4.7.1 Full cut-off luminaires (i.e. luminaires with no direct upward light, and maximum 65° light emission from the vertical) shall be installed with zero or limited vertical tilt. This is essential to reduce obtrusive light spill into the adjacent areas, reduce sky glow, and to avoid creating nuisance glare sources from further afield.

4.8 Cabin-Mounted Lighting

- 4.8.1 Cabin/container mounted flood lights should be treated as occasional use, task-specific lighting rather than a primary lighting source. These luminaires must be carefully aimed to ensure they only project light downward facing. Traditionally these low level flood lights are tilted more than 20° above vertical, allowing light to be projected directly upward into the sky, where it is not of use (and is therefore wasted energy), and contributes to sky glow. Any low level flood lights shall use fixed mechanical aiming brackets to restrict movement after commissioning.

5. Ecology

- 5.1.1 A Preliminary Ecological Appraisal has been undertaken for the Application Site and is submitted as part of this planning application. Due to its location directly next to the motorway, it being predominantly existing areas of hard surfacing, and the absence of notable natural features such as water bodies, hedgerows, or woodland within the Application Site, it is considered to be of low ecological value. It is subject to frequent noise, artificial lighting from nearby infrastructure, and general human activity, making it unlikely to support protected species or ecologically sensitive habitats. No evidence of bats, light-sensitive invertebrates, or other nocturnal species has been identified during the preliminary site assessment.
- 5.1.2 Although no ecological constraints have been recorded, the lighting design shall be developed with precautionary principles in mind. The lighting layout shall make use of directional, full cut-off luminaires to limit upward and outward light spill, especially towards any adjacent green areas. All luminaires should use LED sources with a CCT not exceeding 3000K, to reduce disruption to any potentially transient nocturnal wildlife. Where possible, lighting shall be timer or presence detection switched or dimmed, during periods of low or no activity to further minimise environmental impact both in terms of energy use and light spill. These measures ensure that the site lighting adheres to lighting industry best practice, including guidance set out in ILP GN01:2020.

6. Landscape and Visual

- 6.1.1 With regard to landscape character, the Application Site is covered by LCA 27: Simister, Slattocks and Healds Green defined by the Greater Manchester Landscape Character and Sensitivity Assessment 2018 (Greater Manchester Combined Authority) which has been assessed as having a medium sensitivity to a commercial/industrial development scenario. The Application Site is also assessed as being within Environmental Zone E3 (Suburban), reflecting moderate existing ambient illumination from surrounding highways and urban lighting. Therefore, the requirements for lighting with are not likely to result in a significant effect on LCA 27: Simister, Slattocks and Healds Green, or undermine the reasons for designation.
- 6.1.2 As described above, the closest residential properties are located along the A6046 Middleton Road, approximately 70m west of the Application Site. These properties extend southward, primarily on the western side of the road, facing towards the Application Site. Although views from the properties become more oblique with increased distance from M62 J19 interchange. Further south, properties on Oaken Bank Road, approximately 260m from the Application Site, generally have views across open fields northwards towards the Application Site.
- 6.1.3 Given the orientation of the properties along the A6046 Middleton Road and Oaken Bank Road, it is anticipated that vehicle headlights from the M62 J19 interchange and A6046, as well as illumination from highway lighting columns, will be visible in nighttime views. However, considering the existing lit environment and the inclusion of design and mitigation measures, lighting from the Application Site is not likely to result in significant effects.
- 6.1.4 Three Public Rights of Way are located near or adjacent to the Application Site: the Rochdale Borough UDP Saved Policy RE/6 route along A6046 Middleton Road; Public Path (RUPP) MidRupp116a along Oaken Bank Road; and footpath HeyFp143 along the eastern boundary of the Application Site. It is likely that these paths are not typically used during nighttime hours and are therefore unlikely to be affected.

7. Summary and Conclusions

- 7.1.1 The lighting strategy for the M62 Junction 19 Temporary Construction Compound has been developed using BS EN 12464-2:2024 (Outdoor Workplaces), BS 5489-1:2020 (Road lighting), BS 5266 (Emergency lighting), and current ILP guidance. The areas adjoining the Application Site were assessed and it was identified that the Application Site lies within Environmental Zone E3 (Suburban), reflecting moderate existing ambient illumination from surrounding highways and urban lighting.
- 7.1.2 The following mitigations shall be implemented in the lighting design to deliver the maximum energy saving (reducing the Application Site's wider environmental impacts), and an exemplary lighting solution;
- LED light sources with full cut-off optics, CCT $\leq$ 3000K.
 - Presence detection for the car park, to dim the area during quiet periods and provide a significant energy savings.
 - Integral back light shielding in locations that are close to the Application Site boundary.
 - Position luminaires to project light inwards across the Application Site, rather than towards the boundary.
 - Avoid any upward tilt on any luminaires and limit the use of low level flood lights.
 - Periodically review/check all lighting performance and orientation.
- 7.1.3 By utilising the mitigations mentioned in this report, the impacts from the construction compounds artificial lighting on the local ecology and environment are considered to be negligible.

Appendix A. Middleton Road (A6045) Traffic Flow Data

Traffic count data from Department for Transport website:
<https://roadtraffic.dft.gov.uk/manualcountpoints/37847>

Manual count points

Site number: 37847

Site details

Region	North West
Local authority	Rochdale
Road name	A6046
Road classification	'A' road
Managed by	Local authority
Road type	Major
Start junction	A664
End junction	M62
Link length	2.50km (1.55 miles)
Easting, northing	386440, 408478
Latitude, longitude	53.57274279, -2.20623954

Location



Year	Count method	Pedal cycles	Two wheeled motor vehicles	Cars and taxis	Buses and coaches	Light goods vehicles	Heavy goods vehicles	All motor vehicles
2024	Estimated using AADF from previous year	86	46	10414	128	2120	228	12936
2023		85	45	10259	128	2083	227	12740
2022		87	45	10069	127	2048	230	12519
2021		97	41	9427	118	1889	221	11697
2020		119	39	8557	114	1733	206	10649
2019		104	53	11265	181	1964	234	13697
2018	Manual count	95	56	11126	179	1981	236	13577

AADF is the flow in one direction, AADT is the flow in both directions. Doubling the AADF gives an indicative AADT to use for lighting class selection.