

# Southampton to London Pipeline Project

## Deadline 6

Appendix G: Outline Lighting Management Plan  
(tracked change)

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## Acronyms

<u>Term</u>	<u>Meaning</u>
<u>CEMP</u>	<u>Construction Environmental Management Plan</u>
<u>CoCP</u>	<u>Code of Construction Practice</u>
<u>DCO</u>	<u>Development Consent Order</u>
<u>ECoW</u>	<u>Environmental Clerk of Works</u>
<u>ES</u>	<u>Environmental Statement</u>
<u>Esso</u>	<u>Esso Petroleum Company, Limited</u>
<u>ILP</u>	<u>Institute of Lighting Professionals</u>
<u>Light pollution</u>	<u>The spillage of light into areas where it is not required. Also known as obtrusive light.</u>
<u>LMP</u>	<u>Lighting Management Plan</u>
<u>Lux (lx)</u>	<u>Illuminance is the quantity of light or luminous flux, falling on a unit area of a surface in the environment. It is designated by the symbol E. The unit is lux (lx).</u>
<u>SDNP</u>	<u>South Downs National Park</u>
<u>SDNPA</u>	<u>South Downs National Park Authority</u>
<u>SSSI</u>	<u>Sites of Special Scientific Interest</u>



# 1 Introduction

## 1.1 Overview of Project

- 1.1.1 Esso Petroleum Company, Limited (Esso) is making an application for development consent to replace 90km (56 miles) of an existing pipeline to transport aviation fuel between Boorley Green in Hampshire and the Esso West London Terminal storage facility in Hounslow. The replacement pipeline is 97km long taking into account that it cannot follow the line of the existing pipeline along its whole length due to new developments and environmental constraints.
- 1.1.2 Esso has already replaced 10km of pipeline between Hamble and Boorley Green in Hampshire. The replacement pipeline starts near Boorley Green at the end point of the previously replaced pipeline. The route runs generally in a northeast direction via Esso's Pumping Station in Alton. It terminates at the Esso West London Terminal storage facility. The areas of land to be permanently or temporarily used for the project are known as the Order Limits.
- 1.1.3 Works to install and commission the pipeline are expected to start from grant of Development Consent Order (DCO) and be completed by early 2023. Certain advance works may take place prior to development consent where consented under alternative regimes, for example, the Town and Country Planning Act 1990.
- 1.1.4 The development authorised by the DCO must be undertaken in accordance with the Construction Environmental Management Plan (CEMP) pursuant to Requirement 6 of the DCO.

## 1.2 Purpose of the Lighting Management Plan

- 1.2.1 This Lighting Management Plan (LMP) applies to the construction phase of the project and does not apply to any post construction operations as the above ground infrastructure does not require any permanent installed lighting. The final LMP(s) will be included as Appendix G to the final CEMP and would be developed in accordance with the Outline LMP. The final CEMP and appendices will be produced prior to construction and will be submitted and approved by the relevant planning authorities in accordance with Requirement 6 in the DCO. Esso and its supply chain of contractor(s) would adopt the control measures set out in the final LMP(s) when undertaking the construction of the project.

## 1.3 Aims and Objectives

- 1.3.1 The overarching aim of the LMP is to reduce lighting impacts at local receptors during the construction of the pipeline and to maintain positive working relationships with local communities and the relevant planning authorities.
- 1.3.2 The objectives of the Outline LMP are to define:
- the contents and scope of the final LMP(s);
  - existing good practice measures in relation to lighting set ~~out within Register of Environmental Actions and Commitments in Environmental Statement (ES) Chapter 16 (Application Document APP-056)~~; and
  - details that will be set out in the final LMP(s).



## 1.4 LMP Roles and Responsibilities

1.4.1 Overall roles and responsibilities for the project will be presented in the final CEMP. The main roles and responsibilities specific to the Outline LMP are set out in Table 1.1 along with the specification for the roles where applicable. The final LMP(s) will include further details in relation to organisational structure and the individuals with specific responsibilities.

**Table 1.1: Roles and Responsibilities**

Roles and Specification	Responsibilities
Environmental Manager	Responsible for producing the final LMP(s) and for producing the methodologies for managing lighting on the project. Also responsible for obtaining the approval of the relevant planning authority.
Environmental Clerk of Works	Responsible for ensuring the mitigation set out in the final LMP(s) is implemented, for undertaking periodic checks on site, and for investigating lighting issues or complaints.

## 1.5 Document Structure

1.5.1 The Outline LMP includes:

- Section 2: This contains a summary of the geographical context based on the details set out in ES Chapter 10 (**Application Document [APP-050](#)**).
- Section 3: This includes the main body of the LMP, with good practice measures and details about methods that would be employed to prevent or reduce lighting impact during construction, with specific reference to dark night skies within the South Downs National Park (SDNP).
- Section 4: This outlines the site checks and reporting that would be undertaken in respect of lighting impact.

## 2 Geographical Context

### 2.1 Introduction

- 2.1.1 The Order Limits pass through predominantly rural areas to the south in Hampshire and in the SDNP. The northern parts are generally more suburban and urban, with the Order Limits passing through Farnborough, Frimley, Lightwater and Chertsey.
- 2.1.2 Therefore, in line with the rural and urban areas, the installation works passes through areas with different levels of light pollution, with the highest light pollution in the urban (northern) areas and the lowest when passing through the rural areas in the SDNP.
- 2.1.3 Based on zoning under the UK Guidance Notes for the Reduction of Obtrusive Light GN01:~~2011~~2020 (see Appendix A), the Order Limits pass through Zones E1 to E4.
- 2.1.4 Within the SDNP, based on the SDNP Dark Skies Technical Advice Note April 2018 (see Appendix B), the Order Limits pass through Zone E1b: Transition and Zone E1a: Intrinsic Rural Darkness.
- 2.1.5 The landscape chapter assessed the impacts of lighting on dark skies (see paragraph 10.5.71 in ES Chapter 10 (**Application Document APP-050**)). There could also be localised, short-term effects of lighting on human receptors and ecological receptors.
- 2.1.6 In summary, for the purposes of the LMP there are four different elements of the works to consider:
- normal pipe laying operations;
  - exceptional working requirements with specific, occasional and short-term extended working hours;
  - temporary construction compounds; and
  - logistics hubs.

### 2.2 Receptors

- 2.2.1 Human receptors include residential properties and community receptors including schools, shops, hotels, places of work, places of worship and recreational areas (such as golf courses, parks and footpaths). Residential properties are located within the suburban and urban areas. Other examples of receptors within the Order Limits include schools and public parks.
- 2.2.2 Ecological receptors include the following:
- protected species for example bats; and
  - general sensitive wildlife e.g. fish
- 2.2.3 Landscape receptors include the following:
- the South Downs National Park (SDNP).



### 3 Control Measures

#### 3.1 Introduction: Lighting Standards and Guidance

- 3.1.1 The concept of ‘Environmental Zones’ has informed this Outline LMP. This concept was introduced by the Commission Internationale de l’Eclairage and updated by the Institute of Lighting Professionals (ILP) in its publication Guidance Notes for the Reduction of Obtrusive Light GN01:~~2011~~2020 for the UK, and was modified by the South Downs National Park Authority (SDNPA) in its policy publication: SDNP Dark Night Skies Technical Note (April 2018) for application to the South Downs National Park (SDNP).
- 3.1.2 The existing lighting context of the area surrounding the proposed pipeline will be considered against the system of lighting classification identified in these two documents to develop appropriate levels of lighting performance.
- 3.1.3 The following lighting standards and guidance documents, in addition to providing zoning data, provide minimum requirements for the construction lighting for the works:
  - British Standards:
    - BS EN 12464-2:2014 – Light and lighting. Lighting of work places. Part 2 Outdoor work places.
  - Local policy:
    - SDNPA’s Dark Night Skies Technical Note (April 2018).
  - Institution of Lighting Professionals (ILP):
    - ILP. GN01: ~~2011~~2020 Guidance Notes for the Reduction of Obtrusive Light GN01:~~2011~~2020; and
    - ILP Bats and Lighting in the UK.

#### 3.2 Good Practice Measures

- 3.2.1 Esso has made a number of good practice measures which would reduce lighting impacts. These were set out in the Register of Environmental Actions and Commitments in ES Chapter 16 (**Application Document [APP-056](#)**). The measures are indicated by a reference number, for example ‘G25’. The ones relating to methods that would reduce lighting impacts are listed in Table 3.1 and would be included in the final LMP(s). This section also includes further detail as appropriate.

**Table 3.1: Good Practice Measures Relevant to the Outline LMP**

Commitment Number	Commitment
G25	Any activity carried out or equipment located within a logistics hub or construction compound that may produce a noticeable nuisance from dust, noise, lighting etc would be located away from sensitive receptors such as residential properties or ecological sites where practicable
G28	Construction workers would undergo training to increase their awareness of environmental issues. Topics would include but not be limited to ... location and protection of sensitive environmental sites and features.

Commitment Number	Commitment
G45	Lighting would be of the lowest luminosity necessary for safe delivery of each task. It would be designed, positioned and directed to reduce the intrusion into adjacent properties and habitats.
G46	Relevant guidance on mitigating the impact of artificial lighting on bats would be applied. This includes good practice measures that would: <ul style="list-style-type: none"> <li>• limit illumination of confirmed bat roosts, or trees with moderate or high potential to support bat roosts.</li> <li>• limit times that the lights are on and consider factors such as height of lighting columns and use of light sources with minimal ultra violet.</li> </ul>

3.2.2 At Deadline 3, Esso responded to a question from the SDNPA regarding meeting the criteria of the Dark Night Skies Technical Note as follows ~~(REP3-016)~~:(REP3-016):

*'[Esso] confirms that the project would ensure that temporary lighting during construction would accord with the SDNPA's Dark Night Skies Technical Note (April 2018). This will be secured through the Lighting Management Plan which [Esso] confirmed at the Issue Specific Hearing on the dDCO, will be included as part of the Construction Environment Management Plan (CEMP), secured by draft DCO Requirement 6. An outline CEMP will be submitted at Deadline 4 and will demonstrate that several of the criteria will be included.'*

3.2.3 This Outline LMP addresses the proposed approach for the entire pipeline route and for the additional requirements for compliance with the SDNPA's Dark Night Skies Technical Note (April 2018) which are applied as per Section 3.9 below.

### 3.3 Construction Programme

3.3.1 The construction schedule has yet to be developed in detail, as this would be undertaken during the detailed design stage. The high-level construction programme will be included within the final CEMP.

### 3.4 Description of Works

3.4.1 A project description is set out within ES Chapter 3 (**Application Document APP-043**). This describes the main works that would be undertaken before, during and after installation of the pipeline.

3.4.2 This section of the final LMP(s) will contain additional details based on the appointed contractor's final construction design and methodology, which would include:

- site planning and preparation as applicable for:
  - normal pipe laying operations;
  - exceptional working requirements with specific, occasional and short-term extended working hours;
  - temporary construction compounds; and
  - logistics hubs;
- additional requirements for the SDNP; and



- training for construction staff.

### 3.5 General Requirements

- 3.5.1 Unless stated otherwise below, the construction lighting will be installed in accordance with: GN01:~~2011~~2020, BS EN 12464-2-2014 (Outdoor Workplaces) and the requirements of G45 (lowest lux levels) and G46 (impact on bats). Appropriate assessment, design and checks would be undertaken to ensure compliance with the final LMP(s).
- 3.5.2 In accordance with commitment G45, lighting shall be the lowest average lux levels necessary for safe delivery of each task and shall be positioned and directed to reduce the intrusion into adjacent properties and habitats.
- 3.5.3 Design would ~~consider~~include the following as appropriate:
- appropriate assessments of receptors and impact, including up-to-date advice on the location of light sensitive receptors, such as nocturnal species including but not limited to bats, which shall be obtained from the Ecology / Environmental team;
  - performance of lux calculations;
  - the use of appropriate correlated colour temperature (CCT) lighting;
  - the use of appropriate lighting fixtures, heights, hoods/cowls and louvres, whether fixed or mobile;
  - the use of timers;
  - the use of sensor operated systems;
  - the use of bat friendly red LED lighting technology; and
  - potential use of infra-red lighting for security purposes.

### 3.6 Construction Operations

- 3.6.1 In accordance with the general requirements above, construction activities will be lit as necessary ~~between 07:00 and 19:00 on weekdays and Saturdays (which includes the start-up and shut-down activities up to an hour either side of the core working hours of 08:00 to 18:00)~~ during the working hours authorised under Requirement 14 of the DCO and as set out in the CoCP at section 2.20. It should be noted that a period of one hour may be utilised either side of the core construction working hours at the start and end of each day to include activities such as job start meetings, toolbox talks, safety briefings, training, refuelling plant & equipment, setting up of material & equipment, installation of traffic management systems, and general housekeeping measures. Noise and light emissions will be kept to a minimum and these start-up and shut-down activities would not involve the operation of construction plant and equipment. Outside these hours, no lighting will be permitted outside of logistics hubs, temporary construction compounds or areas where exceptional work is required.

### 3.7 Exceptional Working (Out of Hours)

- 3.7.1 Exceptional working, ~~as stated in the ES~~, will be specific, occasional and of short duration. During exceptional working, areas be will lit in accordance with

commitment G45, including the requirements of BS EN 12464-2-2014 (Outdoor Workplaces), and lighting shall still be the lowest average lux levels necessary for safe delivery of each task and shall be positioned and directed to reduce the intrusion into adjacent properties and habitats. When not required for safe working, the requirements of GN01:~~2011~~2020 and commitment G46 (impact on bats) will be met.

### 3.8 Logistics Hubs and Temporary Construction Compounds

3.8.1 Logistics hubs and temporary construction compounds will require security lighting and operational lighting and, in addition to the general requirements in Section 3.5, will be lit in accordance with commitment G25 (location within logistics hubs and construction compounds). Security lighting will be a sensor lighting system with variable lighting levels through the evening and bat friendly red LED lighting technology where applicable. ~~Construction lighting will be turned on up to one hour before construction works start at 8:00 and dimmed or switched off by up to one hour after construction works stop at 18:00. The exception to this curfew is where operations are required to support exceptional working (out of hours).~~

3.8.2 Construction lighting may be required for activities taking place at the start and end of each day (including start-up and shut-down activities where necessary) and in instances where operations are required to support exceptional working (out of hours). Where temporary construction compounds are dormant the lighting will, if possible, be turned off.

### 3.9 Additional Requirements Associated with the SDNP

3.9.1 For all locations within the SDNP, as well as the A31 logistics hub (which is adjacent to SDNP), including sensitive ecological areas, the approach documented in Sections 3.6, 3.7 and 3.8 above applies, except that the requirements of the SDNP Dark Skies Technical Advice Note replaces those of GN01:~~2011~~2020. This applies additional constraints on lux levels, curfews and more stringent zoning.

3.9.2 Notwithstanding paragraph 3.9.1 above, when undertaking exceptional working out of hours, it may be necessary to temporarily relax the requirements of the Dark Skies Technical Note in order to provide a safe working environment.

### 3.10 Training for Construction Staff

3.10.1 The final LMP(s) will contain details of training and toolbox talks for staff in relation to reducing lighting impacts during works. This would be in accordance with commitment G28: *'Construction workers would undergo training to increase their awareness of environmental issues.....'*

3.10.2 This would include:

- Training the operatives in how to correctly position the mobile units and make them aware of the locations of the key sensitive receptors. Note: there will be no tilt allowed on these units.
- Toolbox talks regarding ongoing checks of equipment, effectiveness of lighting/mitigations etc.



## 4 Site Checks

### 4.1 Installation Design Check

4.1.1 Upon completion of fixed lighting column installation, the installation will be checked to ensure it has been completed as outlined in the appropriate LMP and detailed lighting design. Installation checks shall be in accordance with BS EN 13201-4:2003 (methods of measurement). This will be required both when the installation is complete and in the event that subsequent changes are made to the lighting scheme. These checks will be undertaken by the contractor and confirmed by the Environmental Clerk of Works (ECoW).

### 4.2 Ongoing Checks

4.2.1 The contractor(s) will be responsible for record keeping and site checks during the construction period. The contractor would undertake regular audits and inspection as part of the compliance with the requirements of the final LMP(s). This would be in addition to the regular environmental inspections undertaken by the ECoW. Table 4.1 in the final LMP(s) will set out the site checks that would be undertaken during construction. Examples are provided in Table 4.1.

**Table 4.1: Proposed Lighting Checks for Illustration**

Action	Responsibility	Frequency
Logistics hubs and temporary construction compounds: Visual inspections and light readings to monitor for non-compliance with the lighting design and conformance with the LMP.	Contractor	Weekly
Exceptional working (out of hours): Visual inspections and light readings to monitor for non-compliance with the lighting design and conformance with the LMP.	Contractor	Daily
Normal work fronts: Visual inspections to monitor conformance with the LMP.	Contractor	Weekly
Logistics hubs and temporary construction compounds: Checking conformance with the LMP.	ECoW	Weekly
Exceptional working (out of hours): Checking conformance with the LMP.	ECoW	Daily
Normal pipelaying operations: Visual inspections to monitor conformance with the LMP.	ECoW	Monthly

### 4.3 Complaints Process

4.3.1 The complaints procedure would follow the process set out within the final CEMP. A record would be made of the complaint or incident for audit purposes.

## 5 Glossary of Terms

Table 5.1: Glossary of Terms

Term	Meaning
CEMP	Construction Environmental Management Plan
CoCP	Code of Construction Practice
DCO	Development Consent Order
ECoW	Environmental Clerk of Works
ES	Environmental Statement
Esso	Esso Petroleum Company, Limited
ILP	Institute of Lighting Professionals
Light pollution	The spillage of light into areas where it is not required. Also known as obtrusive light.
LMP	Lighting Management Plan
Lux (lx)	Illuminance is the quantity of light or luminous flux, falling on a unit area of a surface in the environment. It is designated by the symbol E. The unit is lux (lx).
SDNP	South Downs National Park
SDNPA	South Downs National Park Authority
SSSI	Sites of Special Scientific Interest



Appendix A: UK Guidance Notes for the Reduction of  
Obtrusive Light ILP:GN01:~~2011~~2020



## **Appendix B: SDNP Dark Skies Technical Advice Note April 2018**