Southampton to London Pipeline Project

Construction Environmental Management Plan (CEMP)

Appendix G: Lighting Management Plan

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Surrey Heath Borough Council

Contents

Acronyms ..... **ii**
1 Introduction **1**
1.1 Overview of Project 1
1.2 Purpose of the Lighting Management Plan 1
1.3 Aims and Objectives 1
1.4 LMP Roles and Responsibilities 2
1.5 Document Structure 2
2 Geographical Context **3**
2.1 Introduction 3
2.2 Receptors 3
3 Control Measures **4**
3.1 Introduction: Lighting Standards and Guidance 4
3.2 Good Practice Measures 4
3.3 Construction Programme 5
3.4 Description of Works 5
3.5 General Requirements 5
3.6 Construction Operations 6
3.7 Exceptional Working (Out of Hours) 7
3.8 Temporary Construction Compounds 7
3.9 Training for Construction Staff 8
4 Site Checks **9**
4.1 Ongoing Checks 9
4.2 Complaints Process 9

Acronyms and Abbreviations

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
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).

1 Introduction

1.1 Overview of Project

1.1.1 Esso Petroleum Company, Limited (Esso) has been granted a Development Consent Order (DCO) by the Secretary of State to replace 90km (56 miles) of an existing pipeline with 97km of new 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 The project within this local authority area is broken down into 10 stages. These are based on geographical areas. Surrey Heath Borough Council is host to 16km of the 97km pipeline route. This Lighting Management Plan (LMP) specifically applies to the section of works between (487 672E, 157 236N) and (498 999E, 164 608N), in the Borough of Surrey Heath. This is shown on Sheets 9, 10 and 11 in the Stages of the Authorised Development.

1.1.4 It is anticipated that works to install the pipeline will start in 2021 and be completed in 2023. The installation of the pipeline is planned to be completed within a two-year construction period. On completion of the installation works the contractor will hydrotest the pipeline and any post-construction monitoring required will be carried out.

1.1.5 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 LMP has been produced as an appendix to the CEMP and will be submitted to, and approved by, Surrey Heath Borough Council as relevant planning authority in accordance with Requirement 6 in the DCO. Esso and its supply chain of contractors will adopt the control measures set out in this LMP when undertaking the construction of the pipeline and ancillary works

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.

1.4 LMP Roles and Responsibilities

1.4.1 Overall roles and responsibilities for the project are presented in the CEMP. The main roles and responsibilities specific to the LMP are set out in Table 1.1 along with the specification for the roles where applicable.

Table 1.1: Roles and Responsibilities

Roles and Specification	Responsibilities
Works Supervisor	Responsible for delivering the site works in accordance with the requirements of the CEMP and implementing good environmental practices required by the Environmental Manager. They are responsible for managing operatives, plant and their areas of work in accordance with the principles of good environmental practice.

1.5 Document Structure

1.5.1 The Final LMP includes:

- Section 2: This contains a summary of the geographical context based on the details set out in Environmental Statement (ES) Chapter 10: Landscape and Visual (**Application Document APP-050**).
- Section 3: This includes the main body of the LMP, with good practice measures and details about methods that will be employed to prevent or reduce lighting impact during construction.
- Section 4: This outlines the site checks and reporting that will be undertaken in respect of lighting impact.

2 Geographical Context

2.1 Introduction

2.1.1 The Order Limits pass through suburban and urban areas within the Borough of Surrey Heath.

2.1.2 Based on zoning under the UK Guidance Notes for the Reduction of Obtrusive Light GN01:2020 (see Appendix A), the Order Limits within Surrey Heath Borough pass through Zones E3 and E4.

2.1.3 The use of temporary construction lighting has the potential to cause localised, short-term effects on human receptors and ecological receptors.

2.1.4 In summary, for the purposes of the LMP the following elements of the works are considered:

- 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). Examples of relevant receptors in Surrey Heath Borough include, but are not limited to, the following:

- SC Johnson;
- Frimley Community Centre;
- Frimley Baptist Church;
- Pine Ridge Golf Club;
- dwellings on Henley Drive, Balmoral Drive, The Maultway, Red Road;
- dwellings on Guildford Road;
- Windlemere SANG;
- dwellings on Colville Gardens and Heronscourt;
- dwellings on Blind Lane and off Windlesham Road; and
- dwellings on Steep Hill.

2.2.2 Examples of relevant sensitive ecological receptors in Surrey Heath Borough include, but are not limited to, the following:

- bats;
- fish; and
- birds within the Special Protection Area.

3 Control Measures

3.1 Introduction: Lighting Standards and Guidance

3.1.1 The concept of 'Environmental Zones' has informed this LMP. This concept was introduced by the Commission Internationale de l'Eclairage and updated by the Institute of Lighting Professionals in its publication Guidance Notes for the Reduction of Obtrusive Light GN01:2020 for the UK.

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 Institution:
  - BS EN 12464-2:2014 – Light and lighting. Lighting of workplaces. Part 2 Outdoor workplaces.
- Institution of Lighting Professionals:
  - GN01: 2020 Guidance Notes for the Reduction of Obtrusive Light GN01:2020; and
  - 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 will reduce lighting impacts are listed in Table 3.1. This section also includes further detail as appropriate.

Table 3.1: Project Commitments Relevant to 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.
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: • limit illumination of confirmed bat roosts, or trees with moderate or high potential to support bat roosts.

Commitment Number	Commitment
	• limit times that the lights are on and consider factors such as height of lighting columns and use of light sources with minimal ultraviolet.

3.3 Construction Programme

3.3.1 It is anticipated that works to install the pipeline will start in 2021 and be completed in 2023. Within Surrey Heath Borough the programme is anticipated to follow the phasing, shown in the stages of authorised development. This accommodates the following good practice measures: G35, G36, G37, G38, G171, G196 and PC3.

3.4 Description of Works

3.4.1 A project description is set out within the Code of Construction Practice (CoCP). This describes the main works that will be undertaken before, during and after installation.

3.4.2 A standard lighting approach will be implemented during the works (applicable to all scenarios described in paragraph 2.1.4). This approach will use mobile lighting towers which will be orientated inwards of the works away from any adjacent receptors. By preference these will be solar lighting towers.

3.5 General Requirements

3.5.1 Unless stated otherwise below, the construction lighting will be installed in accordance with: GN01:2020, BS EN 12464-2-2014 (Outdoor Workplaces) and the requirements of G45 (lowest lux levels) and G46 (impact on bats).

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 Review 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, shall be obtained from the Ecology/Environmental team.

3.5.4 Appropriate lighting fixtures, including hoods/cowls and louvres, whether fixed or mobile, will be used where necessary to control lighting direction away from sensitive receptors.

3.5.5 It is intended that the primary source of temporary lighting requirements will be provided by mobile solar lighting towers or similar. These typically operate with a lux level of circa 20 and a lumen output of 10-40k. Generally, the tower would extend up to four metres and include four LED lights which can be directionally adjusted.

Illustration 3.1: Example solar tower

3.5.6 The use of solar lighting towers will be limited to the working hours authorised under Requirement 14 of the DCO and as set out in the CoCP at Section 2.20. However, when 24/7 working is required during activities, such as completing trenchless crossings, lighting will be provided. In these scenarios, within ecologically sensitive areas, an ecologist will be consulted during the planning phase to advise on any mitigation required.

3.6 Construction Operations

3.6.1 In accordance with the general requirements above in Section 3.5, it should be noted that a period of one hour either side of the core construction working hours at the start and end of each day, may include activities such as job start meetings, toolbox talks, safety briefings, training, refuelling plant and equipment, setting up of materials and equipment, installation of traffic management systems, and general housekeeping measures. Noise and light emissions will be reduced during these start-up and shut-down activities which will generally not involve the operation of construction plant and equipment. Outside of these hours, no lighting will be permitted except at logistics hubs, temporary construction compounds or areas where exceptional work is required.

3.7 Exceptional Working (Out of Hours)

3.7.1 Exceptional working will be specific, occasional and of short duration, and will generally be confined to locations where tunnelling activities will take place. During exceptional working, areas will be 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 GN01:2020 and commitment G46 (impact on bats) will be met. Residents within the vicinity of these locations will be notified of planned night works in advance, in accordance with the Community Engagement Plan.

3.7.2 Trenchless Crossing locations which may require night-time working and therefore lighting within Surrey Heath Borough, include the following locations:

- TC020 - Blackwater Valley; and
- TC024, TC025 and TC026 - Chobham Common.

3.8 Temporary Construction Compounds

3.8.1 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 only be activated in the event of motion sensors detecting an intruder. This allows live CCTV to be recorded/viewed by the security control room which is able to switch off the lighting remotely in the event of a false alarm (such as if the motion sensors were activated by an animal).

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.

3.8.3 Within Surrey Heath Borough, temporary working compounds include:

- Compound CO-5A: west of B3411 Frimley Green Road and south of SC Johnson Offices;
- Compound CO-5B: south of Balmoral Drive at Buckingham Way;
- Compound CO-5C: northern Intersection of St Catherine's Road and Frith Hill Road;
- Compound:CO-7A: west of B3015 Deepcut Bridge Road adjacent Mindenhurst Tomlinscote;
- Compound CO-5D: east of B3015 The Maultway between Old Bisley Road and Yockley Close;
- Compound CO-5E: south of Guildford Road, Turf Hill;
- Compound CO-5F: west of Halebourne Lane at Blind Lane;
- Compound CO-5G: west of Windsor Road at Staple Hill;

- Compound CO-5H: Chobham Common West; and
- Compound CO-5I: Chobham Common East.

3.9 Training for Construction Staff

3.9.1 Training and toolbox talks for staff will be undertaken regularly and these will include subjects in relation to reducing lighting impacts during works. Further details on training can be found within the CEMP. Additionally:

- operatives will be trained in how to correctly position the mobile units and make them aware of the locations of the key sensitive receptors; and
- periodic toolbox talks regarding ongoing checks of equipment, effectiveness of lighting/mitigations etc., will be given by supervisory personnel.

4 Site Checks

4.1 Ongoing Checks

4.1.1 The contractor(s) will be responsible for record keeping and site checks during the construction period. Site checks and inspections will be undertaken regularly throughout the construction period as set out below, to monitor compliance with the requirements of the LMP. This will be in addition to the regular environmental inspections undertaken as identified in Table 3.2 of the CEMP.

4.1.2 Table 4.1 sets out the site checks that would be undertaken during construction.

Table 4.1: Site Checks

Action	Responsibility	Frequency
Logistics hubs and temporary construction compounds: Visual inspections of lighting type, number, location and direction to monitor for non-compliance with the lighting design and conformance with the LMP.	Works Supervisor	Weekly
Exceptional working (out of hours): Visual inspections of lighting type, number, location and direction to monitor for non-compliance with the lighting design and conformance with the LMP.	Works Supervisor	Daily (when exceptional working is taking place)
Normal work fronts: Visual inspections of lighting type, number, location and direction to monitor conformance with the LMP.	Works Supervisor	Daily

4.2 Complaints Process

4.2.1 The name and contact details for the project will be displayed at the entrance to all compounds. This will include an emergency telephone number (G27). In addition, details of the works including contact details will be provided to each community ahead of the work commencing. This will be as set out in the Community Engagement Plan.

4.2.2 Any complaints regarding environmental issues will be discussed with the Construction Manager and the Environmental Manager, and appropriate action will be taken and the conclusion recorded. A record will be made of the incident for audit purposes.