
CHAPTER 7.0 LANDSCAPE AND VISUAL EFFECTS

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7.0 LANDSCAPE AND VISUAL EFFECTS

7.1 Introduction and Scope

- 7.1.1 This Landscape and Visual Impact Assessment (LVIA) follows best practice guidance set out in *Guidelines for Landscape and Visual Impact Assessment*¹, hereafter referred to as the GLVIA.
- 7.1.2 In accordance with the guidance set out in the GLVIA, the LVIA adopts an approach proportionate to the likely significant effects of the Proposal. The conclusions of the LVIA have been determined via use of professional judgement, supported by reasoned justification, to a level of details considered appropriate for the likely potential significant effects of the changes being assessed.
- 7.1.3 As the Proposal will not change the design or appearance of the Consented Development (as assessed in the May 2011 ES), it was originally proposed that landscape and visual effects be scoped out of the EIAR during the scoping exercise undertaken (see Scoping Report at Appendix 2-1 of the EIAR).
- 7.1.4 Following receipt of scoping responses from consultees, and notably from the Environment Agency, the Scoping Opinion issued by the Department for Business, Energy and Industrial Strategy (BEIS) (refer to Appendix 2-2 of the EIAR) requested that the visual effects of plumes from the LSEP with the Proposal (both from the stack and the cooling system) should be assessed.
- 7.1.5 For the avoidance of doubt, the cooling system for the LSEP facility will be air-cooled and there would be no plumes associated with it. As such, this Chapter of the EIAR (Main Report) is concerned solely with the visual effects of plumes emitted from the stack.
- 7.1.6 Visual effects are changes to what can be seen by people as a result of what is proposed. A visual assessment assesses the change in visual amenity undergone by people (either individually or in groups) that would arise from any change in the nature of views experienced.

¹ Landscape Institute and Institute for Environmental Management and Assessment, 3rd edition 2013. *Guidelines for Landscape and Visual Impact Assessment*. Abingdon: Routledge.

Competence

- 7.1.7 The Chapter was written by a Chartered Member of the Landscape Institute (CMLI) with over fourteen and a half years' post qualification experience in the landscape and visual impact assessment of major infrastructure projects.

Limitations

- 7.1.8 The assessment set out in this Chapter is informed by modelling undertaken as part of the Air Quality Assessment, and as such is subject to any inherent limitations in the modelling process (refer to Chapter 5.0 of the Main Report and Appendix 5-2 for further details).

7.2 Baseline

- 7.2.1 The Lostock Works site is a well-established industrial facility that includes several existing structures that emit visible plumes. The Consented Development will also emit visible plumes. The visibility of plumes from the Consented Development was modelled in the May 2011 ES. As part of the Air Quality Assessment for the Proposal (refer to Chapter 5.0 and Appendix 5-2), the plume visibility for the Consented Development has been recalculated using more up to date modelling software and reflecting more contemporary weather data for the period 2016-2020.

- 7.2.2 The modelling indicates that in relation to the Consented Development, a visible plume will be apparent for between 7.5% and 12.2% of daylight hours (the extent of variation is based upon the variability of weather conditions during the 5-year period included in the model). In other words, there would be no visible plume for more than 87% of the time. The average visible plume length is predicted to be short, with plume length being less than 50m for between approximately 94.2% and 97% of daylight hours (including those periods when no plumes are visible). The visible plume would be of a length that exceeds 100m for between approximately 1.1% and 2.3% of daylight hours (again including those periods when no plumes are visible).

Future Baseline

- 7.2.3 In the absence of the Proposal, plume visibility will be as stated above, i.e. the plumes from the Consented Development would be visible.

7.3 Assessment of Effects

- 7.3.1 The combustion process will produce an emissions plume, composed primarily of water vapour, which will be emitted via the exhaust flues contained in the stack. The degree to which this plume is visible will be determined by the flowrate of the exhaust gases in combination with their temperature and humidity relative to that of the surrounding air environment.
- 7.3.2 When visible, emission plumes vary greatly in their visual characteristics in response to weather conditions. Plumes often have characteristics in common with the surrounding air environment (i.e. on a cloudy or overcast day they will tend to blend in with the background, as they comprise primarily of water vapour).
- 7.3.3 Plume visibility taking into account the changes forming part of the Proposal, has been modelled as part of the Air Quality Assessment (Appendix 5-2 of the EIAR Main Report). The modelling was based on weather data recorded over the five-year period 2016-2020.
- 7.3.4 The modelling indicates that a visible plume would be apparent for between 29.1% and 38.2% of daylight hours (the extent of variation is based upon the variability of weather conditions during the 5-year period included in the model). In other words, there would be no visible plume for more than 61% of the time. The average visible plume length is predicted to be short, with plume length being less than 50m for between approximately 83.3% and 91.8% of daylight hours (including those periods when no plumes are visible). The visible plume would be of a length that exceeds 100m for between approximately 2.9% and 7.1% of daylight hours (again including those periods when no plumes are visible).
- 7.3.5 Where the emissions plume of the LSEP is visible, this will have potential to draw attention to the presence of the facility from the surrounding area, thereby increasing the influence of the facility upon the views available.
- 7.3.6 Atmospheric conditions that lead to plume formation (low temperature and low humidity) occur more frequently in winter, and consequently both plume length and visibility reduce in the summer months.

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- 7.3.7 Cloud cover is a significant factor in determining the extent to which visible plumes are discernible. In clear or blue sky conditions a plume will contrast strongly with its background. However, in skies with more than one or two oktas² of cloud, this contrast becomes progressively less marked. The periods when cloud cover is likely to be at its greatest are across the autumn, winter and early spring seasons, which coincide with when the plumes are most likely to occur, and when hours of daylight are less.
- 7.3.8 The modelling for the Proposal indicates that a visible plume would not be present for the majority of daylight hours (not visible more than 61% of the time), and when visible, the plume would tend to be fairly short. As such, in general it is considered that the emissions plume of the LSEP would not be prominent as a result of the Proposal.
- 7.3.9 There is some potential for a visible plume to draw attention to the presence of the LSEP facility. However, the Consented Development comprises large scale industrial structures and is located within an existing industrial site (Lostock Works) where other large scale industrial structures are already present. Accordingly, the small increase in the frequency of the intermittent presence of the LSEP stack plume would give rise to a very limited, small scale and incremental change in view.
- 7.3.10 There would be occasional transient adverse visual effects locally (for example where the plume forms in clear skies during a temperature inversion) but it is concluded that the presence of the emissions plume of the Proposal (when compared to the Consented Development) would not lead to significant adverse visual effects, and that further, more detailed consideration of effects at individual receptors is not necessary.

Assessment of Effects against Future Baseline

- 7.3.11 The visibility of the plume of the Consented Development ('the Consented Plume') is set out in Section 8.3 above, and has been modelled using the same software and weather data as for the plume that would be emitted by the LSEP when the Proposal is taken into account ('the Proposal Plume'). Table 8.1 compares the visibility of the two plumes.

² An okta is a unit of measurement describing levels of cloud cover. 0 oktas equates to a clear sky, whilst 8 oktas equates to complete cloud cover.

Table 8.1 Viewpoint Locations

	Consented Plume	Proposal Plume
% of daylight hours when plume would be visible	7.5% to 12.2%	29.1% to 38.2%
% of daylight hours when visible plume would be less than 50m in length	94.2% to 97%	83.3% to 91.8%
% of daylight hours when visible plume would be greater than 100m in length	1.1% to 2.3%	2.9% to 7.1%

7.3.12 Table 8.1 shows that the Proposal Plume would be visible for a greater proportion of the time than the Consented Plume. This is because a greater moisture content has been included in the modelling for the Proposal Plume (refer to Chapter 5.0 and Appendix 5-2 of the EIAR for further details). In both cases, a plume would intermittently be emitted from the stack of the facility, depending upon weather conditions, and when visible would typically be short. As such, it is not considered that there would be any difference of note in the visual effects of plume visibility between the Consented Development and the amendments to the LSEP now proposed.

7.4 Residual Effects and Conclusions

7.4.1 The landscape and visual effects of the 'Proposal Plume' of the LSEP will not differ materially from those of the 'Consented Plume'. The Proposal Plume will be more frequently visible than the Consented Plume, however, when visible it would typically be short in length.

7.4.2 In the context of the presence of the Consented Development (which the Proposal will not change its appearance), in addition to the existing large scale industrial structures at Lostock Works, the more frequent presence of the Proposal Plume will have little appreciable influence upon the views available.