

Riverside Energy Park

Applicant's response to Air Quality Matters

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1 The Applicant's Response to Air Quality Matters

1.1 Introduction

1.1.1 This document sets out the Applicant's position on the air quality matters that have been raised by a number of Interested Parties at Deadline 5 and Deadline 6 and also by a new respondent not registered as an Interested Party, but whose submission has been accepted at the discretion of the Examining Authority.

1.1.2 This document is structured on a themed basis, responding to air quality matters raised by the following Interested Parties:

Greater London Authority (GLA): Air Quality matters are raised in:

- Schedule 1 - response to Applicant document 8.02.35, "*Applicant response to the GLA's Deadline 3 Submissions*" (see **REP5-031**);
- Schedule 2 - GLA comments on document 8.02.36, "*Applicant's response to London Borough of Bexley Deadline 3 Submissions*" (see **REP5-032**);
- Schedule 3 – GLA's comments on London Borough of Bexley comments on the Applicant's revised draft DCO submitted at Deadline 3 (see **REP5-033**);
- Schedule 4 - GLA comments on new relevant documents submitted by the Applicant (see **REP5-034**); and
- Schedule 5 - Response to Examining Authority's Further Written Questions (see **REP6-008**).

London Borough of Bexley (LBB): Air Quality matters are raised in:

- Deadline 5 Submissions (see **REP5-037**).

London Borough of Havering (LBH): Air Quality matters are raised in:

- Examining Authority's Further Written Questions (see **REP6-009**)

1.1.3 This document also responds to the air quality matters raised by the new respondent non-Interested Party, **Countryside Properties (UK) Limited and L&Q New Homes Limited** (see **REP5-035**).

1.1.4 The air quality matters that this document responds to, together with evidenced reasoning including cross references to the Applicant's previous application and Examination submissions where appropriate, are as follows:

- Impacts on the Havering Air Quality Management Area (AQMA);
- The impacts on potential Tall Buildings;

- The impacts on Opportunity Areas;
 - Assessment of Significance and Professional Judgement;
 - Environmental Permit Emission Limits;
 - Inclusion of workplaces as a receptor;
 - Short-term impacts of nitrogen dioxide and sulphur dioxide;
 - Anaerobic Digestion Facility;
 - Impacts at James Watt Way; and
 - Contribution to monitoring.
- 1.1.5 In carefully seeking to understand and respond effectively to concerns raised and properly inform the Examining Authority, the Applicant wants to make sure that:
- the evidence and likely risk of air quality effects are fully understood from the evidence submitted; and
 - matters arising from air quality related concerns that are genuinely expressed but are not considered to be based on assessed likely significant effects or supported by professional evidence are tested and clarified.
- 1.1.6 The Environmental Statement and additional sensitivity assessment and submissions have all been undertaken and reported on a precautionary basis.
- 1.1.7 The Applicant made full written submissions and called oral expert evidence at the issue specific hearing to enable the proper exploration and testing of the air quality evidence and considerations. To assist, the Examining Authority is referred to the Applicant's **Oral Summary from the Issue Specific Hearing on Environmental Matters (8.02.19, REP3-027)** and the Applicant's **Oral Summary from the Issue Specific Hearing on the draft Development Consent Order (8.02.20, REP3-021)**. In the absence of any project specific contrary expert evidence, the Examining Authority is invited to accept the Applicant's case.

1.2 Qualification and Experience

Graham Harker – Senior Managing Consultant, Ramboll UK

- 1.2.1 The air quality evidence has been prepared by Graham Harker of Ramboll UK. Graham has over 20 years' experience in industrial environmental regulation and air quality following 13 years' experience working for British Petroleum. He has managed complex Environmental Permit applications for a wide range of industrial installations covering power plant, energy from waste, gas storage, pharmaceutical and food and drink installations. He has expertise in carrying out ambient air quality assessments, either as stand-alone studies to

support planning applications, or as part of Environmental Statements or Environmental Permit applications. These have included the assessment of the impacts of transport related emissions (road, rail and air) as well as assessing odour and dust impacts and the impacts of stack emissions. He has provided expert witness evidence at planning inquiries and in support of Development Consent Orders. He holds a BSc in Mechanical Engineering from Imperial College, London, is a Chartered Mechanical Engineer and a member of the Institute of Air Quality Management (IAQM) and the Institution of Environmental Sciences. He is currently a committee member of the IAQM and was a member of the working group that prepared the IAQM guidance:

- Land-Use Planning & Development Control: Planning For Air Quality, and
- A guide to the assessment of air quality impacts on designated nature conservation sites.

1.3 Peer Review

1.3.1 The Applicant has asked for the work of Graham Harker of Ramboll UK to be independently peer reviewed by a Philip Branchflower of PBA. The purpose of the peer review is to demonstrate that the Applicant's assessment and conclusions are justified in light of the data evidence presented in the Environmental Statement.

Philip Branchflower – Senior Associate, Peter Brett Associates

1.3.2 Philip Branchflower is a highly skilled air quality practitioner with 18-years consultancy experience and a reputation for providing high quality technical work with the ability to communicate findings in both a technical and public-friendly style. He is a member of the Committee of the IAQM and sat on the DEFRA working group on the Transposition of the Medium Combustion Plant Directive (MCPD).

1.3.3 Philip has undertaken detailed air quality assessments for a wide range of residential, mixed-use, mineral extraction and processing, waste, and industrial developments in support of planning applications, environmental impact assessments, environmental permit applications and for compliance assessment purposes. He is proficient with the application of a range of modelling techniques (including AERMOD, ADMS-Roads, GasSim) in order to undertake assessments with the requirements of guidance. He is also adept in the application of air quality models and interrogation of data to inform non-routine assessments.

1.3.4 Phil Branchflower has reviewed the information presented in this document and considers the assessment of significance to be appropriate and in accordance with the guidance. A response to this review is included in **Appendix A.**

1.4 Impacts on Havering Air Quality Management Area (AQMA)

1.4.1 The following non-Interested Party has raised matters on Havering Air Quality Management Area:

- Countryside Properties (UK) Limited and L&Q New Homes Limited.

Response

1.4.2 The whole of the London Borough of Havering (LBH) was declared an Air Quality Management Area (AQMA) on the 11th September 2006 for exceedances of the annual mean NO₂ objective of 40µg/m³, and the daily mean PM₁₀ objective of 50µg/m³ (allowable 35 exceedances per year). The stated reason for the AQMA declaration was 'Road traffic unspecified'¹.

1.4.3 As noted in Paragraph 4.1 Local Air Quality Management (LAQM) Policy Guidance (PG16)², local authorities have a duty under Section 83(1) of the Environment Act 1995 to designate an AQMA covering those areas where the air quality objectives are not being met and where people are likely to be regularly present.

1.4.4 Paragraph 4.3 goes on to say that: 'These Areas can cover single streets or road networks, a junction, roundabout or even a single dwelling. In many urban and built-up areas, especially where trans-boundary pollution is an issue, the authority may decide to designate the entire borough as an AQMA; this kind of declaration provides greater flexibility for air quality officers to respond to pollution issues as and when they arise. This does not prevent officers from then focussing on key areas within an AQMA for taking action.'

1.4.5 When a local authority declares an AQMA it must produce an Air Quality Action Plan (AQAP) which shows what action the local authority intends to take to improve air quality. The latest AQAP for LBH is for 2018-2023³.

1.4.6 As noted in the Executive Summary of the AQAP, the daily mean PM₁₀ objective is now being met in Havering although the AQMA remains in place for this pollutant.

1.4.7 Within any area, air quality varies spatially due to the proximity to the source of pollution, especially road traffic emissions which have the highest impact closest to the point of emission. This is shown in **Figure 1** below, which is taken from the Havering AQAP.

¹ https://uk-air.defra.gov.uk/aqma/details?aqma_ref=464 accessed 27th August 2019

² Local Air Quality Management Policy Guidance (PG16) Defra April 2016

³ Air Quality Action Plan 2018-2023. LBH

Figure 1: Figure 1 from LBH AQAP: London Atmospheric Emissions Inventory 2013 Having Annual Mean NO₂

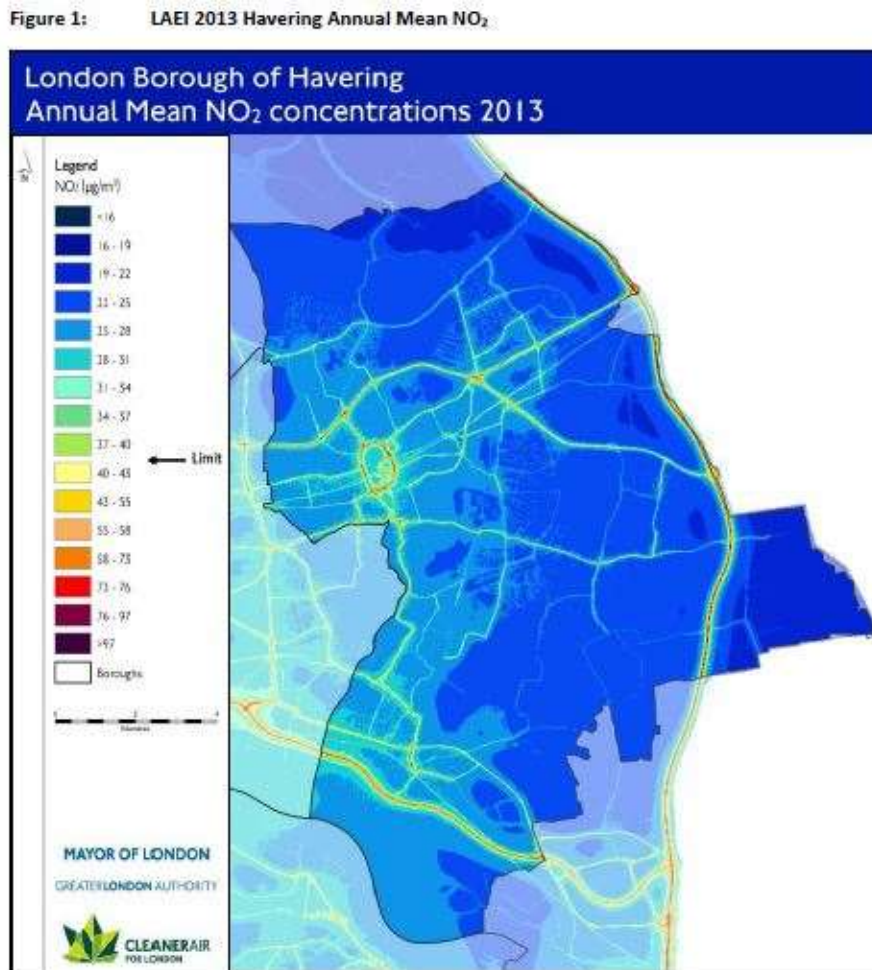
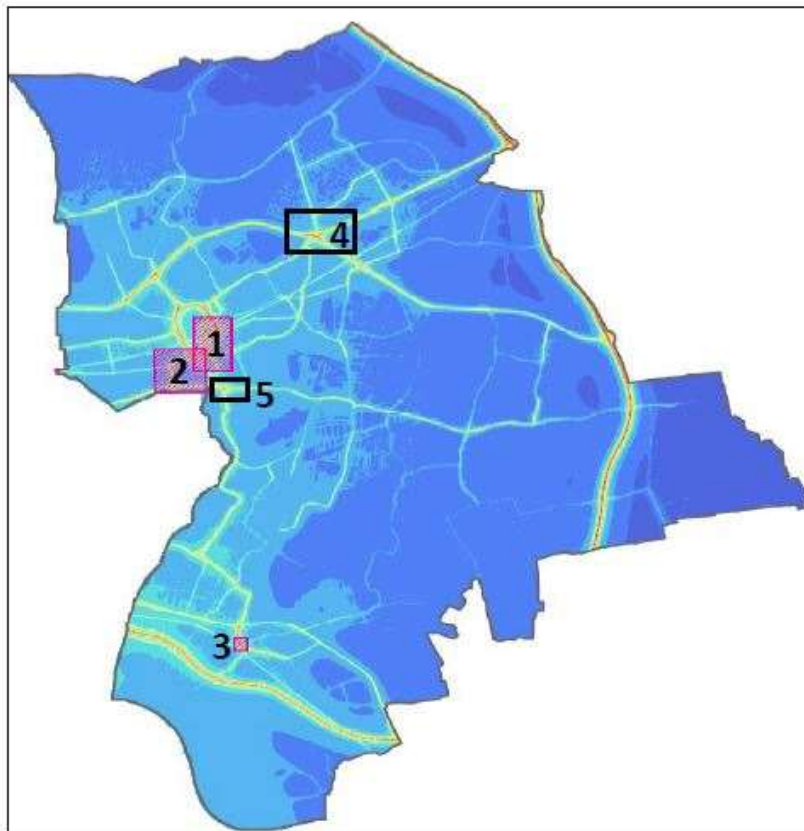


Figure 1 indicates that the majority of Havering in 2013 met the National Air Quality Objective of $40\mu\text{g}/\text{m}^3$ for Nitrogen Dioxide. There were exceedances of this objective at locations along key transport routes (A13, A12, M25, Romford Ring Road and the A1306), which have been linked to emissions from motor vehicles (bus, HGV's and cars).

- 1.4.8 As illustrated in **Figure 1** and as noted in the AQAP text below the figure, the exceedances of the objective occur along the key transport routes related to road traffic emissions. The majority of the Borough meets the annual mean NO₂ objective.
- 1.4.9 In order to address issues of poor air quality, the AQAP identifies five 'hotspots' in **Figure 2** below.

Figure 2: Figure 12 from LBH AQAP: Local Hotspots in Havering

Figure 12: Local 'Hotspots' in Havering



KEY

1. Romford Town Centre – Thurloe Gardens (77% bus & 11% cars). Nearest receptor: 5 m (residential properties)
2. Romford/Rush Green A124 Rush Green Road and Rom Valley Way (36% Bus & 37% HGV). Nearest receptor: 8 m (residential properties)
3. Rainham – Broadway (41% HGV & 31% Bus). Nearest receptor: 3 m (residential properties)
4. Gallows Corner. Nearest receptor: 20 m + (residential properties)
5. Roneo Corner. Nearest receptor: 5 m (residential properties)

1.4.10 As shown in the AQAP, Hotspot 3 is in Rainham town centre where the proportion of heavy goods vehicles and buses is particularly high.

1.4.11 In order to assess the impact of the ERF on air quality, and in particular on the 'hotspot' areas for NO₂ within the AQMA, specific receptor locations were chosen in Rainham Town Centre. The receptor locations were chosen where traffic emissions would likely be highest such that the baseline air quality (to which the impact of emissions from the ERF would be added) would be highest. This then provides a conservative, worst case assessment of potential effects.

1.4.12 The chosen receptor locations are shown on **Figure 7.3.1 – Human Health Receptor Locations** of the **Environmental Statement (ES) (6.2, APP-056)** and are:

- Receptor 7 – Wennington Road/Anglesey Drive (ground floor)
- Receptor 18 – Celtic Farm Road (ground and 4th floor)
- Receptor 20 – Capstan Drive (ground and 5th floor)

1.4.13 For each receptor location, the total concentration (Predicted Environmental Concentration) was calculated by adding the contribution from the ERF to the baseline concentration.

1.4.14 Baseline concentrations were calculated by adding the modelled impact of road traffic emissions to the Defra estimated background pollutant concentration⁴. For the modelling of road traffic emissions, an emission year and background map year of 2022 were used for the completed development year of 2024. The Defra background map concentrations were adjusted based on 2017 monitoring data using the procedure described in **Appendix C.1 – Traffic Modelling** of the **ES (6.1, REP2-036)**. The Defra estimated background map data for annual mean NO₂, PM₁₀ and PM_{2.5} were adjusted based on a factor calculated from actual local background monitoring data to better calibrate the data to the local environment. To this baseline were added the modelled contribution of RRRF and Crossness sewage sludge incinerator (which we have subsequently learnt has been closed). Despite this closure, the impact of emissions from Crossness sewage sludge incinerator have not been removed from the predicted concentrations and, in this respect, the results over-predict total pollutant concentrations.

1.4.15 The emissions from the ERF were modelled for five years' worth of meteorological data and the highest results reported in the ES. In addition, NO_x emissions were assumed to occur at the DCO emission limit of 120mg/Nm³ where-as in reality, actual emissions will be on average lower than this. This is without taking into account the proposed Environmental Permit emission limit for NO_x of 75mg/Nm³. Overall, therefore, the predicted NO₂ impacts from the ERF are conservative.

1.4.16 The results of the assessment are presented in **Table C.2.2.9** of **Appendix C.2 – Stack Modelling** of the **ES (6.3, REP2-038)** to which the letter from BDB Pitmans (Countryside's legal representatives) refers, stating that: *'The ES (Table C.2.2.9 of Appendix C.2) shows that emissions from the Project would make exceedances of AQMA limits for NO₂ worse in Rainham town centre and potentially delay compliance with AQMA limits in Havering;...'*. Contrary to this assertion, **Table C.2.2.9** of **Appendix C.2 – Stack Modelling** of the **ES (6.3, REP2-038)** shows that there are no exceedances of AQMA limits at the modelled receptor locations in the opening year of REP, with all predicted concentrations at the receptor locations significantly below 40µg/m³. Of the three modelled receptor locations, the highest predicted concentration is at Receptor 7 and it is 29.3µg/m³. The impact of emissions from the ERF at the three receptor locations is Negligible in accordance with the criteria set out in **Table 7.21** of **Chapter 7 – Air Quality** of the **ES (6.1, REP2-019)**.

⁴ <https://uk-air.defra.gov.uk/data/laqm-background-home> Accessed May 2018

1.4.17 As there are no predicted exceedances at receptor locations in the AQMA it will not compromise compliance with air quality strategy objectives in the AQMA. Therefore, paragraph 5.2.10 of NPS EN-1 referred to by BDB Pitmans is not engaged. In any event, paragraph 5.2.10 refers to "statutory air quality limits", which specifically refers to the EU Limit Value of $40\mu\text{g}/\text{m}^3$ for annual mean NO₂ concentrations with which the UK must comply. Compliance with EU Limit Values is assessed by Defra on a zone and agglomeration basis. Only a limited number of roads are assessed within a specific zone or agglomeration. The following table provides a summary of the baseline predictions by Defra for annual mean NO₂ concentrations for the Greater London Urban Area (UK001)⁵ along the road corridors that are within Havering.

Table 1: UK0001 Projected Annual Mean NO₂ Concentrations

Road Name	Census ID	Census Grid Reference		Annual Mean NO ₂ ($\mu\text{g}/\text{m}^3$)		
				2024	2025	2026
A12	26211	550830	190000	31.3	29.3	27.8
A12	46211	555000	191400	27.3	25.6	24.3
A12	56211	550000	189130	33.7	31.6	29.9
A127	56663	554050	190000	28.1	26.3	25.0
A13	99816	550360	182400	38.9	36.6	34.8
A12	26211	550830	190000	31.3	29.3	27.8
A12	46211	555000	191400	27.3	25.6	24.3
A127	56663	554050	190000	28.1	26.3	25.0

1.4.18 The B1335 Broadway/Wennington Road is not included in the assessment of compliance with EU Limit Values. The highest predicted concentration on a modelled road for 2024 (the year of opening of REP) is for the A13 at $38.9\mu\text{g}/\text{m}^3$ and this shows compliance with the limit value of $40\mu\text{g}/\text{m}^3$, with concentrations reducing in subsequent years.

⁵ <https://uk-air.defra.gov.uk/library/no2ten/2017-no2-projections-from-2015-data> 2017 NO₂ projections data (2015 reference year). Accessed August 2019

1.4.19 The maximum impact of emissions from the ERF on annual mean NO₂ concentrations is less than 0.8 µg/m³ (**Figure 5** attached) and this is based on NO_x emissions from the ERF at 120mg/Nm³. Emissions from REP will not lead to non-compliance with a statutory limit.

1.5 The impacts on potential Tall Buildings

1.5.1 The following Interested and non-Interested Parties have raised matters on tall buildings and air quality:

- GLA; and
- Countryside Properties (UK) Limited and L&Q New Homes Limited.

Response

1.5.2 The impact of emissions from the ERF on proposed tall buildings within Beam Park and the Opportunity Areas identified in **Figure 2a** that could potentially be impacted by emissions from the ERF has been specifically assessed in **Section 6.5** of the **Applicant's response to Greater London Authority Deadline 3 Submission (8.02.35, REP4-014)**. Within this response, the Applicant shows that the Proposed Development will not have a significant impact on either long-term or short-term pollutant concentrations at ground level or elevated receptor locations within existing or proposed development areas.

1.5.3 The specific receptor locations referenced in the response are shown in the enclosed **Figure 1** where Receptor TBR1 is representative of the Beam Park location (the tall building receptor locations have been prefixed with 'TB' to distinguish them from the numbered receptor locations set out in **Table 7.29** of the **ES (6.1, REP2-019)**). As set out in **Table 6.1** and **Paragraphs 6.5.16 to 6.5.19** of the **Applicant's response to Greater London Authority Deadline 3 Submission (8.02.35, REP4-014)**, the difference between ground floor and 25th floor level for annual mean impacts is approximately 10%, with none of the impacts being significant.

1.5.4 The changes in 1-hour average NO₂ concentrations at Receptors R1-R5 are all described as Negligible in accordance with **Table 7.22** of **Chapter 7 – Air Quality** of the **ES (6.1, REP2-019)**.

1.5.5 The modelling results are as anticipated given the relative distances of the receptor points to the emission point. R1 is approximately 2.3km from the ERF emission point and therefore differences in elevation are not significant in this context. At R1, a ground level receptor is approximately 2,348.3m from the 90m exit point of the stack, where-as a receptor at 75m elevation is approximately 2,346.6m away, or only 1.7m closer (i.e. on a diagonal basis).

1.5.6 The results of the assessment show conclusively that emissions from the ERF will not constrain tall buildings being delivered within Beam Park and the Opportunity Areas.

1.6 Impacts on Opportunity Areas

1.6.1 The following Interested and non-Interested Parties have raised matters on air quality in Opportunity Areas:

- GLA; and
- Countryside Properties (UK) Limited and L&Q New Homes Limited.

Response

1.6.2 The impact of emissions from the ERF on the Opportunity Areas has been specifically assessed in **Section 6.5** of the **Applicant's response to Greater London Authority Deadline 3 Submission (8.02.35, REP4-014)**. The Applicant shows, that the Proposed Development will not have a significant impact on either long-term or short-term pollutant concentrations at ground level within the existing or proposed development areas. Tall Buildings are covered in the response above.

1.7 Assessment of Significance and Professional Judgement

1.7.1 The following Interested Parties have raised matters on the assessment of significance and professional judgement:

- GLA;
- LBH; and
- LBB.

Response

1.7.2 In the GLA's *Schedule 1 – GLA response to Applicant document 8.02.35, "Applicant Response to the GLA's Deadline 3 Submissions"* (see **REP5-031**) submitted at Deadline 5, reference is made (pages 18-20, "Selection and assessment of sensitive receptors"), to how the overall level of the significance of the effect of the Proposed Development has been determined. The concern has specifically been expressed in relation to the predicted annual average nickel concentrations which were assessed as having minor adverse impacts at seven of the modelled receptor locations. The GLA asserts that the Applicant has not taken the isopleth maps into account and has not attempted to quantify the number of people who would be affected by the Proposed Development.

1.7.3 The methodology for assessing significance is set out in Paragraph 7.7 of the IAQM guidance, where it states:

'Any judgement on the overall significance of effect of a development will need to take into account such factors as:

- *The existing and future air quality in the absence of the development;*

- *The extent of current and future population exposure to the impacts; and*
- *The influence and validity of any assumptions adopted when undertaking the prediction of impacts.'*

1.7.4 In relation to the population exposure, Paragraph 7.8 states:

'An individual property exposed to a moderately adverse impact might not be considered a significant effect, but many hundreds of properties exposed to a slight adverse impact could be. Such judgements will need to be made taking into account multiple factors and this guidance avoids the use of prescriptive approaches.'

1.7.5 Paragraph 7.9 goes on to state:

'A judgement of the significance should be made by a competent professional who is suitably qualified. The reasons for reaching the conclusions should be transparent and set out logically. Whilst the starting point for the assessment of significance is the degree of impact, as defined by Table 6.3, this should be seen as one of the factors for consideration, not least because of the outcome of this assessment procedure applies to a receptor and not to the overall impact.'

1.7.6 As noted by the GLA, in Paragraphs 7.2 and 7.3 of the guidance it is acknowledged that the Applicant and local authority may come to a different conclusion as to the level of significance.

1.7.7 In undertaking the analysis of the significance of the effects, and in relation to the impacts of nickel, the predicted concentrations with and without the development are shown in **Table C2.2.8 of Appendix C.2 – Stack Modelling of the ES (6.3, REP2-038)**. For the receptor locations with minor adverse impacts in the table, the ERF contribution is assessed as large in accordance with **Table 7.20 of Chapter 7 – Air Quality of the ES (6.1, REP2-019)**, with the impact minor adverse in accordance with **Table 7.21 of Chapter 7 – Air Quality of the ES (6.1, REP2-019)** as all Predicted Emission Concentrations (PECs) are less than 75% of the assessment level. However, of particular importance in this regard is that the PECs are not just less than 75% of the assessment level, but are less than 25% of the assessment level.

1.7.8 In terms of the number of properties that this represents; the exposure for existing residential properties that gives rise to a large change in nickel concentration ($0.0011\mu\text{g}/\text{m}^3$) is 397 properties⁶. The consented Dovers Court development is for 394 residential properties which gives a total of 791. This would correspond to the 'many hundreds' of properties within the guidance, where minor adverse impacts could be considered significant if the other elements of the assessment approach were not applied.

⁶ Ordinance Survey Address Point Data/ EmapSite

1.7.9 In terms of the third element of the assessment, there is an in-built conservancy in the assessment which means that the predicted development impact is likely to be overstated. The impacts have been reported for the year that gives the highest predicted concentrations and assuming that the emission is at the assessed highest predicted concentration all year round.

1.7.10 As noted in note e) to **Table 7.17 Chapter 7 – Air Quality** of the **ES (6.1, REP2-019)**, the impacts of the Group 3 metals which includes nickel, were modelled at the maximum measured emission concentration from EA guidance⁷. For nickel the modelled concentration was 0.220mg/Nm³. **Table 1** below shows the range of measured emission concentrations reported by the Environment Agency.

Table 1: Table A1: EA Metals Emission Data

Table A1 contains a summary of 34 measured values for each metal recorded at 18 MWI and Waste Wood Co-incinerators between 2007 and 2015. Note these data may differ from previous guidance notes.

Table A1- Monitoring data^a from Municipal Waste Incinerators and Waste Wood Co-Incinerators

Pollutant	Measured Concentrations (mg/Nm ³)			Percentage of the IED group 3 ELV		
	Max	Mean	Min ^b	Max	Mean	Min ^b
antimony	0.0115	0.0014	0.0001	2.3%	0.3%	0.02%
arsenic	0.0250	0.0010	0.0002	5.0%	0.2%	0.04%
total chromium	0.0920	0.0084	0.0002	18.4%	1.7%	0.04%
chromium VI ^c	1.3 x 10 ⁻⁴	3.5 x 10 ⁻⁵	2.3 x 10 ⁻⁶	0.03%	0.01%	0.0005%
cobalt	0.0056	0.0011	0.0002	1.1%	0.2%	0.03%
copper	0.0290	0.0075	0.0019	5.8%	1.5%	0.4%
lead	0.0503	0.0109	0.0003	10.1%	2.2%	0.1%
manganese	0.0600	0.0168	0.0015	12.0%	3.4%	0.3%
nickel ^d	0.2200	0.0150	0.0025	44.0%	3.0%	0.5%
vanadium	0.0060	0.0004	0.0001	1.2%	0.1%	0.0%

^aNote all data are referenced to 11% oxygen. Guidance on conversion between oxygen contents can be found in Part 7 Annex VI of the IED.

^b Minimum values correspond in some cases to the detection limit.

^cChromium VI concentrations presented in the table are based on stack measurements for total chromium and measurements of the proportion of chromium VI (to total chromium) in Air Pollution Control (APC) residuals collected at the same plant.

^dThe two highest nickel concentrations are outliers being 44%, as above, and 27% of the ELV. The third highest concentration is 0.53 mg/Nm³ or 11% of the ELV.

1.7.11 As shown in **Table 1**, the average measured nickel emission concentration reported in the Environment Agency document was 0.015mg/Nm³ as opposed to the maximum modelled concentration for the ERF of 0.220mg/Nm³, thus providing a conservative assessment. It is also noted that two of the monitored nickel concentrations reported in the EA data above were outliers, with the third highest (and therefore more representative) being 11% of the overall metals emission limit of 0.5mg/Nm³, or 0.053mg/Nm³ (there is a typo in

⁷ Releases from waste incinerators. Version 4 Guidance on assessing group 3 metal stack emissions from incinerators

the table footnote)). Had the modelling been undertaken assuming the average nickel emission concentration (0.015mg/Nm³) instead of the maximum, then the predicted nickel concentrations would be reduced to 6.8% of the reported concentrations in **Table C.2.2.8 of Appendix C.2 – Stack Modelling** of the **ES (6.3, REP2-038)**. This would result in all of the predicted impacts being classified as negligible, with the properties affected exposed to negligible impacts. This difference in predicted impacts is shown in attached **Figures 3a and 3b**.

1.7.12 Taking into account the PECs as presented in **Table C.2.2.8 of Appendix C.2 – Stack Modelling** of the **ES (6.3, REP2-038)** and the conservancy in the assessment, it is the professional judgement of the author, an experienced air quality expert, that the likely nickel impacts will be Negligible and therefore there will be no significant effects from the emissions from the ERF.

1.7.13 In terms of Chromium VI emissions, the Applicant disagrees with the assertion that the incremental change in Chromium VI concentrations could be greater than 0.5% of the assessment for the reasons set out above regarding the conservancy of the assessment. In addition to assessing the impacts at the maximum throughput of waste and showing the highest of the 5 years' worth of meteorological data used, Table A1 from the EA guidance on assessing metals emissions shows that average Chromium VI emissions are only approximately 27% of the maximum values used in the modelling. The difference in predicted concentrations taking into account the difference between the maximum and average emission concentrations is shown in the enclosed **Figures 4a and 4b**. For these reasons, the actual Chromium VI concentrations are likely to be lower than the range 0.32 to 0.36% of the assessment level rather than higher.

1.8 Environmental Permit Emission Limits

1.8.1 The following Interested Party has raised matters concerning the Environmental Permit Emission Limits:

- GLA.

Response

1.8.2 The GLA's *Schedule 1 – GLA response to Applicant document 8.02.35, "Applicant Response to the GLA's Deadline 3 Submissions"* (see **REP5-031**) submitted at Deadline 5, provides a commentary on the relevance of the Environmental Permit emission limits to the DCO assessment (pages 20 to 21, "AQ - EP emission limits"). Whilst it is true that neither the Applicant nor the GLA can pre-judge the outcome of the permit application, the Applicant responded to this point in its response to the Greater London Authority's Deadline 3 submission (**8.02.35, REP4-014**) with a reasoned explanation why the Environment Agency would not grant a permit application for higher emission concentrations than have been applied for (in the Permit application) as this would effectively allow higher levels of emissions than the Applicant is willing to be controlled to, which is clearly perverse.

- 1.8.3 In accordance with Paragraph 4.10.6 of NPS EN-1 an applicant is encouraged to apply for an Environmental Permit at the same time as making a DCO application which the Applicant has done. Paragraph 4.10.8 of NPS EN-1 states that *'The [Secretary of State] should not refuse consent on the basis of pollution impacts unless it has good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted.'* The ES has been based on a precautionary basis (as has been demonstrated above) for planning purposes, whilst the Environmental Permit will provide operational controls.
- 1.8.4 As has been requested by Interested Parties, the Applicant has proposed new requirements in the draft DCO that ensures that the Proposed Development will have to operate within the emission limits assessed in the ES (DCO Requirement 15 (see **3.1, Rev 3, REP5-003**) sets a limit on annual NO_x emissions based on an emission concentration of 120mg/Nm³ and the assessed volumetric flowrate of the ERF). This emission limit also effectively controls the emissions of the other pollutants in **Table 7.17 of Chapter 7 – Air Quality** of the **ES (6.1, REP2-019)** as these are related to the volumetric flowrate and the specific emission concentration limit set by the Industrial Emissions Directive. The Environmental Permit will also contain emission limits, which will be lower than that in the DCO as the Applicant has applied for lower emission limits than those assumed for the purposes of the conservative ES assessment. The Applicant, therefore, will be complying with the DCO Requirement by complying with the lower Environmental Permit emission limits.

1.9 Inclusion of workplaces as a receptor

- 1.9.1 The following Interested Party has raised matters concerning the inclusions of workplaces as a sensitive receptor in the air quality assessment:
- GLA.

Response

- 1.9.2 The response to the issues raised in the Opportunity Areas and on high-rise buildings is covered in the previous sections of this response. In addition, the GLA again argue (pages 21-22, "Opportunity area, residential development and air quality"), that workplaces should be considered relevant receptor locations for annual average impacts. The reasons why workplaces are not relevant locations for annual average concentrations are set out in **Section 7.2 of the Applicants response to the GLA Deadline 4 Submission (8.02.46, REP5-017)**. In essence, workplaces are not considered to be relevant locations for annual average exposure as workers will not be present at their workplaces for the annual averaging period of the objective.
- 1.9.3 The GLA also raise a concern that people working within the Strategic Industrial Land would also be exposed to high arsenic concentrations. As noted in the paragraph above, workplaces would not be regarded as locations of relevant exposure for annual average impacts.

1.9.4 In addition, as demonstrated in **Section 1.6** above regarding nickel emissions, the impact of emissions of arsenic are likely to be significantly over-estimated in the modelling. In the case of arsenic, the average measured emission concentration at the existing facilities in Table 1 was only 4% of the maximum concentration that has been used in the modelling. The predicted concentrations would therefore be 4% of the reported concentrations in **Table C.2.2.8 of Appendix C.2 – Stack Modelling** of the **ES (6.3, REP2-038)**, a negligible effect.

1.10 Short-term impacts of nitrogen dioxide and sulphur dioxide

1.10.1 The following Interested Parties have raised matters on the reporting of short-term impacts of nitrogen dioxide and sulphur dioxide in the air quality assessment:

- GLA; and
- LBB.

Response

1.10.2 The Applicant disagrees with the LBB and the GLA that the short-term impacts of nitrogen dioxide and sulphur dioxide have not been reported and considered in accordance with the relevant guidance. Short term impacts have been assessed in accordance with the relevant guidance when considering the emissions from the ERF. The results of the short term impact assessment are presented in **Table 7.34 of Chapter 7 – Air Quality** of the **ES (6.1, REP2-019)** and none of the short-term impacts at the point of maximum predicted concentration are significant. **Paragraphs 1.2.9 to 1.2.10 of the Applicant's response to London Borough of Bexley Deadline 4 Submission (8.02.51, REP5-022)** provides a reasoned explanation why the reported results should not be considered in relation to the short-term assessment criteria in the guidance. In essence, the modelled results cannot occur in practice as the daily emission limit must be complied with, and the assessment of the significance of the predicted results in **Table 7.35 of Chapter 7 – Air Quality** of the **ES (6.1, REP2-019)** is whether or not the assessment level is exceeded.

1.11 Anaerobic Digestion Facility

1.11.1 The following Interested Party has raised concerns over the air quality impacts from the anaerobic digestion facility:

- GLA

Response

1.11.2 The Applicant welcomes the GLAs acceptance that if the on-site combustion is pursued, the air quality impacts from the anaerobic digestion with SCR abatement are considered acceptable.

1.11.3 In terms of the requested information on the form of the DCO commitment, this is included in Requirement 16 of the **dDCO (3.1, Rev 3, REP5-003)** where the NO_x emissions are limited to 25% of the originally proposed value to 125mg/Nm³ at 5% oxygen, dry flue gas, 273.15K.

1.12 Impacts at James Watt Way

1.12.1 The following Interested Party has raised concerns over the impacts at James Watt Way:

- GLA

Response

1.12.2 In terms of ExQ2.1.3 on the impacts at the junction of James Watt Way (Erith), the Applicant disagrees with the GLA that a revised ES chapter with the additional receptor needs to be submitted, considering the further modelling outcomes set out below.

1.12.3 In relation to the Applicant's response to ExQ2.1.3 the GLA raises concern regarding the assessment of effects associated with construction journeys stating that *"in light of the ExA question Q2.0.4 which considers construction movements: as the daily number of construction movements are predicted to be less than the 100% delivery by road case used for the original ES modelling the GLA had previously been content to accept that the impact of construction journeys would be acceptable if operational movements were considered acceptable.*

If the revised figures presented in the table are on a different basis then this assumption does not hold."

1.12.4 The predicted air quality impacts arising from traffic at the James Watt Way receptor are higher than at other locations due to the proximity of the receptor to the road junction and the slow speed sections assumed in the assessment. Whilst the number of overall vehicle movements is higher for the construction phase than in operation, a much lower proportion of construction traffic would be HDV than in any operational scenario by road, such that construction traffic air quality effects continue to be comparably low.

1.12.5 Notwithstanding this, the impacts of construction traffic at James Watt Way have been modelled to demonstrate the impact at the junction. The construction period is anticipated to occur between 2021 and 2024. The modelling has emissions factors and background concentrations from 2019 (i.e. two years before the first construction would occur at REP in order to be conservative as vehicle emissions are anticipated to improve in the future) and therefore will be conservative for the period over which construction will occur.

1.12.6 The predicted 'Do Something'⁸ NO₂ concentration at James Watt Way is 53.4µg/m³ with an increase of 0.1µg/m³ (0.35% of the objective) when compared to the 'Do Minimum'⁹ scenario. The modelled contribution of construction traffic to the predicted pollutant concentration is only 0.26%. This modelling shows that the impact at this receptor is 'negligible' in accordance with **Table 7.21** of **Chapter 7 Air Quality** of the ES (**6.1, REP2-019**).

1.12.7 Annual mean pollutant concentrations at the junction are predicted to significantly improve over time which reduces even further the impacts from the existing and future traffic on Queens Road and James Watt Way.

Contribution to Monitoring

1.12.8 The following Interested Parties have commented on the proposed air quality monitoring programme:

- LBB; and
- GLA.

Response

1.12.9 The Applicant can confirm that a new requirement for ambient air quality monitoring was included in the **dDCO (3.1, Rev 3, REP5-003)** at Deadline 5. This requirement (Requirement 17) requires the Applicant to prepare an ambient air quality monitoring programme, which must also meet the requirements of any air quality monitoring condition on the Environmental Permit for REP. The ambient air quality monitoring programme will be submitted to the Environment Agency for approval only. The EA will be able to consult with LBB and other interested parties as required. It is not reasonable or justifiable to request that the Applicant prepares two strategies for approval by two different regulatory bodies when they will be covering the same topic. This will ensure that there is no contradiction between the DCO and the Environmental Permit, which is what the NPSs advise should be avoided.

1.12.10 As the Applicant is committing to carrying out monitoring pursuant to Requirement 17, so it will be funding that monitoring itself in order to comply with the Requirement. The Applicant is also in discussion with LBB over a potential contribution towards local off site LBB air quality monitoring. A meeting has been requested with LBB to discuss this matter.

1.12.11 Despite the above, the Applicant repeats its objection to the basis for funding suggested by LBB. LBB suggests that DEFRA Damage Costs Guidance is an appropriate basis for discussing a proposed contribution towards monitoring and the GLA supports this principle. The Applicant has previously set out at Deadlines 3, 4 and 5 why it is not appropriate or justified

⁸ '2022 Do Something' scenario - Includes the construction phase movements of the Proposed Development in addition to the 2022 Do Minimum movements

⁹ '2022 Do Minimum' scenario - Includes uplifted baseline movements based on appropriate background traffic growth and committed developments (excluding the Proposed Development).

for REP to make a financial contribution based on DEFRA's Damage Costs Guidance. DEFRA's clearly states that the Guidance is to be used in relation to policy and therefore should not apply to individual projects. Neither party has presented adopted or proposed policy or guidance within London or specifically within the Bexley borough to support the application of a damage cost approach. Therefore, the Applicant does not consider that they carry any weight in respect of a suitable approach for assessing a contribution.

- 1.12.12 In any event, and as set out above, the Applicant is agreeing to carrying out monitoring at its own expense and is in the process of discussing a contribution towards LBB local air quality monitoring.

Summary and Conclusions

- 1.12.13 The assessment of air quality impacts has been undertaken in accordance with relevant guidance by suitably qualified professionals and has been peer reviewed.
- 1.12.14 There are no predicted exceedances of air quality strategy objectives within the Havering AQMA and the emissions from the ERF will not delay compliance with statutory air quality limit values.
- 1.12.15 The impact of emissions from the ERF on annual mean concentrations at locations of potential tall buildings within the opportunity areas is virtually the same at ground level as at an elevation of 75m. This is due to horizontal separation distance of the buildings from the ERF emission point being far greater than the vertical extent of the tall buildings.
- 1.12.16 The predicted short-term impacts on hourly mean NO₂ concentrations at the locations of potential tall buildings are all insignificant.
- 1.12.17 The impacts within the opportunity areas are not significant as evidenced by the predicted pollutant concentration isopleths.
- 1.12.18 Professional judgement has been applied to the consideration of the significance of the impacts taking into account the exposure, the level of predicted impacts and the conservancy in the modelling assumptions. The conclusion of no significant effects is supported by consideration of all of these factors combined and not simply the exposure in isolation.
- 1.12.19 The Applicant has applied for an Environmental Permit at the same time as the DCO application and there is no reason to assume that a permit will not be granted. The Environmental Permit will control the emissions from the installation and these will be no higher than have been assessed in the DCO application.
- 1.12.20 Workplaces are not relevant locations for annual average exposure as employees will not be present for an annual average period.

Riverside Energy Park

Applicant's response to Air Quality Matters

- 1.12.21 Short-term impacts of nitrogen dioxide and sulphur dioxide have been assessed in accordance with relevant guidance and there are no significant effects at the point of maximum impact.
- 1.12.22 The impacts of the combustion of biogas from the Anaerobic Digestion facility on Crossness Nature Reserve are not significant with a NO_x emission limit of 125mg/Nm³.
- 1.12.23 Impacts at James Watt Way during the construction period will not be significant.
- 1.12.24 The Applicant is committing through the DCO to carry out air quality monitoring at its own cost, and is in the process of discussing a contribution towards LBB's local air quality monitoring.

Appendix A Peer Review of 'The applicants response to Air Quality Matters'

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Job Name: Riverside Energy Project
Job No: 42166
Date: 30 Aug 2019
Prepared By: Philip Branchflower
Subject: Peer Review of 'The applicants response to air quality matters'

Item	Subject
1.	<p>This peer review has been undertaken by Philip Branchflower, Senior Associate at Peter Brett Associates who has over 18-years air quality consultancy experience. He routinely undertakes the quantification and impact assessment for a wide range of development types in accordance with relevant regulations, policy and guidance.</p> <p>In relation to waste energy recovery facilities, he has assessed the impact of emissions from a wide range of facilities including Trident Park (Cardiff), Teesside, and Ineos (Runcorn) over the past 10-years and is very familiar with the potential emissions from such facilities, the control measures and the assessment of their impacts.</p> <p>He is a member of the Committee of the Institute of Air Quality Management (IAQM) and sat on the DEFRA working group on the Transposition of the Medium Combustion Plant Directive (MCPD).</p> <p>Philip joined PBA in March 2019 and was not involved in the original ES and has not had any significant involvement through the Examination process and therefore provides an independent assessment..</p> <p>The Air Quality assessments in the ES are authored by Mr Graham Harker, of consultancy Ramboll UK.</p>
2.	<p>I have undertaken a peer review of the 'Applicants response to air quality matters' ("the Applicant's submission") and supporting documentation and my findings are as follows.</p> <p>Impacts on the Havering Air Quality Management Area (AQMA)</p> <p>In relation to the potential for adverse impacts on the Havering AQMA, I have reviewed the modelling results and context of the Havering AQMA.</p> <p>In my professional judgment, I agree with the Applicant's submission that the modelling results demonstrate that potential NO₂ impacts as a result of the development will not lead to non-compliance with the statutory limit.</p> <p>The impacts on potential Tall Buildings</p> <p>In relation to the potential for adverse impacts on 'Tall Buildings', I have reviewed the modelling results presented in the supporting documentation and context in terms of the location, proximity and scale of 'Tall Buildings'.</p> <p>In my professional judgment, I agree with the Applicant's submission that the potential impacts of emissions from the Proposed Development on 'Tall Buildings' will not constrain their development due to the predicted impacts, as shown in the Air Quality data and assessments, at these receptor locations being not significant across a range of heights.</p> <p>The impacts on Opportunity Areas</p> <p>In relation to the potential for adverse impacts on Opportunity Areas, I have reviewed the modelling results presented in the supporting documentation and context in terms of the</p>

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	<p>location and proximity of the Opportunity Areas.</p> <p>In my professional judgment, I agree with the Applicant's submission that the potential impacts of emissions from the Proposed Development on the Opportunity Areas will not constrain their development due to the predicted impacts, as shown in the Air Quality data and assessments, in these areas being not significant.</p> <p>Assessment of Significance and Professional Judgement</p> <p>In relation to the 'assessment of significance' of the predicted impacts; particularly in relation to annual average nickel impacts. I have reviewed the representations made, the Applicant's submission and the results of the modelling.</p> <p>The modelling results presented in the ES indicate a potential number of residential properties (existing and proposed) where impacts are classified as 'minor adverse'. As per the IAQM guidance a number of factors require consideration to assess the overall significance of predicted impacts, including the number of receptors, the baseline concentrations and the validity of assumptions applied in the modelling.</p> <p>I consider that the Applicant's submission explains how the significance of the predicted impacts has been judged in accordance with the IAQM guidance and has considered not only the predicted impacts but also the number of receptors, baseline conditions and the validity of assumptions applied in the modelling.</p> <p>I consider that the professional judgement of Graham Harker, as to the 'assessment of significance', has followed the approach detailed in the IAQM guidance and I consider his judgment, that there would be no significant effects from nickel and chromium VI, to be appropriate. This is because of the quantum of the predicted impacts at receptors (as detailed in the ES and Figures accompanying the Applicant's submission), baseline concentrations and the nature of the conservative assumptions applied in the modelling to quantify emissions.</p> <p>Environmental Permit Emission Limits</p> <p>In relation to the Environmental Permit emission limits, I am not aware of the Environment Agency issuing a Permit with higher emission limits than those assessed by the Applicant in the application documentation (within an Environmental Permit application) as this is the basis of their determination.</p> <p>Inclusion of workplaces as a receptor</p> <p>In relation to the consideration of workplaces as receptors, I agree with the Applicant's submission that air quality objectives and Environmental Assessment Levels (EALs) are only applicable at locations where exposure is likely to occur for a relevant time period. Hence annual average objectives and EALs do not apply at workplaces.</p> <p>Short-term impacts of nitrogen dioxide and sulphur dioxide</p> <p>In relation to the short-term impacts of NO₂ and SO₂ associated with the 'half-hourly average emission limits', I have considered the predicted impacts and the IAQM guidance.</p> <p>Whilst the IAQM guidance provides criteria for classifying short-term impacts, it is clear that they would only be 'substantial' if the limit was being approached. Therefore, given the nature of these 'half-hourly' emission limits I do not consider that the predicted</p>

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	<p>impacts require further consideration.</p> <p>Anaerobic Digestion Facility</p> <p>No comment.</p> <p>Impacts at James Watt Way</p> <p>In terms of the predicted impacts at James Watt Way, I have considered the modelled impacts and agree that for the relevant years the construction traffic impacts can be classified as 'negligible' at this location in accordance with the IAQM guidance.</p> <p>Contribution to monitoring</p> <p>In relation to the request for contribution towards ambient air quality monitoring to be based on DEFRA's 'damage cost' guidance, it is clear that this is not the intended use of this document.</p> <p>In my professional opinion I consider that any scheme for ambient air quality monitoring should be designed on its merits based on the particular scheme in question. In this case, I consider that the proposed requirement in the draft Development Consent Order on air quality monitoring, which the Applicant would have to undertake and therefore fund, is appropriate.</p> <p>.</p>