Response to ExA's Second Written Questions:
Principal Issue 1 Air Quality and Emissions

August 2015

The Infrastructure Planning (Examination Procedure) Rules 2010
A14 Cambridge to Huntingdon improvement scheme

Development Consent Order Application Response to ExA’s Second Written Questions: Principal Issue 1 Air Quality and Emissions

HE/A14/EX/80
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1 Air Quality and Emissions

Question 2.1.1

How would mitigation to manage air quality impacts during construction be secured through the Code of Construction Practice (CoCP) (APP-752) section 6 and Requirement 3 (now 4). (Ref Q1.1.4 and Q1.1.17 REP2-002)

Response

1. Section 6 of the Code of Construction Practice (CoCP) (Applicant reference Appendix 20.2 of the Environmental Statement, PINS reference APP-752) confirms dust, air pollution, odour and exhaust emission during construction will be managed in accordance with best practicable means and then sets out mitigation measures to manage air quality impacts for the various construction activities.

2. Section 3 (Environmental Management and Implementation) of the CoCP outlines how mitigation measures included in Section 6 will be implemented and managed by Highways England’s employer’s representative. This includes the obligations for the employer’s representative to establish a process to monitor both compliance with, and the effectiveness of, the measures included within the CoCP, and the approach to be implemented to plan and monitor compliance with environmental legislation and the environmental provisions in the Development Consent Order (DCO).


“The authorised development must be carried out in accordance with the provisions of the code of construction practice."

4. Hence the mitigation measures to manage air quality impacts during construction which are outlined in section 6 of the CoCP would be secured in the DCO (if made).
Question 2.1.2
How would mitigation within the design of the scheme to ensure the impacts from operation are not significant, be secured? (Ref Q1.1.4 REP2-002)

Response


“The authorised development must be carried out in accordance with the scheme design shown on the works plans and the engineering drawings and sections unless otherwise agreed in writing by the Secretary of State following consultation with the relevant planning authority on matters related to its functions.”

6. The need to adhere to Requirement 3 ensures that the development must be carried out in accordance with the scheme design. The design of the scheme is adequate to ensure that the air quality effects would not be significant, and therefore, as a result of compliance with this requirement, no changes to the air quality impacts shown in Chapter 8 of the Environmental Statement (Applicant reference 6.1, PINS reference APP-339) would be anticipated during the operation of the scheme.
Question 2.1.3

CoCP 6.10 (APP7.52) provides details of the monitoring that would be implemented by main contractors if monitoring is deemed to be ‘appropriate’. A decision would be taken at detailed design stage and in consultation with interested parties (Ref Q1.1.5 REP2-002.) Can the applicant provide a detailed explanation of how consultation with interested parties would take place and with which interested parties?

Response

7. Once the detailed design is completed local environmental management plans (LEMPs) will be produced for each local authority region. These plans will detail the ‘appropriate’ monitoring for each authority area based on the level of risk associated with the planned on site activities.

8. As set out in section 3.5 of the Code of Construction Practice (Applicant reference HE/A14/EX/64, PINS reference REP-026), consultation with each of the local authorities will take place to discuss the measures to control and monitor construction activities proposed to be included within each of the LEMPs. The local authorities are the interested parties referred to in Highways England’s Response to First Written Questions, Report 1: Air Quality and Carbon Emissions (Applicant reference HE/A14/EX/28, PINS reference REP2-002) question 1.1.5.
Question 2.1.4

SCDC are seeking an appropriate baseline for post construction monitoring of PM10 and NO2 to be agreed and secured by Requirement. Can the applicant comment? (Ref Q1.1.5 REP2-002)

Response

9. The air quality assessment considered the main pollutants of concern from vehicle emissions, which are fine particulate matter ($\text{PM}_{10}$) and NO$_x$ and NO$_2$. (Chapter 8, Environmental Statement (ES) (Applicant reference 6.1, PINS reference APP-339)).

10. The ES concludes no significant effects are predicted across the scheme area. During the operational phase “the scheme is predicted to improve air quality in a number of areas” (paragraphs 8.6.5-8.6.6, ES). As there are no significant effects predicted it is not considered necessary to undertake any post-construction monitoring.

11. An appropriate baseline for ambient air quality has been established across the scheme area and reported within the ES (Section 8.3). This was derived from local air quality monitoring from local authority sites and scheme specific monitoring, as well as national modelling from the Department for Environment, Food and Rural Affairs (Defra).
Question 2.1.5

The applicant has indicated that post completion air quality monitoring is not necessary (Comments on response to SCDC re Q1.1.1 REP2-002 (REP4-018). What is the reasoning for this? Local Authorities may wish to comment?

Response

12. Highways England does not consider there to be a requirement for post-scheme monitoring as no significant impacts or exceedances of the air quality objectives or limit values have been predicted.

13. The proposed opening year (2020) concentrations of PM$_{10}$ and NO$_2$ are predicted to be below the objectives at all sensitive receptors affected by the scheme. Confidence in the results is provided by the sensitivity testing in the Environmental Statement (Applicant reference 6.1, PINS reference APP-339) carried out to determine the possible effects of vehicle emissions not improving as anticipated within the Department for Environment, Food and Rural Affairs’ (Defra’s) calculations. These showed that the conservative results from sensitivity testing did not result in any significant impacts. Therefore no monitoring is required across the scheme area during the operational phase.
Question 2.1.6

What are the sanctions if best practice measures to control dust during construction prove ineffective and impacts become unacceptable? Local authorities may wish to comment. (Ref Q1.1.17 REP2)

Response

14. Section 3.6 of the Code of Construction Practice (CoCP) (Applicant reference Appendix 20.2 of the Environmental Statement, PINS reference APP-752) states that the main contractors will undertake monitoring, as outlined in section 6 of the CoCP, to ensure the effectiveness of mitigation measures to prevent dust and air pollutant emissions. The CoCP also states that monitoring, together with provisions for any corrective action required, will be implemented using the systems set out under their individual main contractors’ Construction Environmental Management Plan (CEMP). The detailed provisions of the main contractors’ CEMP would be subject to review and acceptance as being suitable by Highways England/the employer’s representative.

15. As noted in Highways England’s Response to First Written Questions, Report 1: Air quality and Carbon Emissions (Applicant reference HE/A14/EX/28, PINS reference REP2-002) question 1.1.17, the best practice measures outlined in the CoCP are well established measures and are known to be effective. Measures such as water damping and enclosure result in significant reductions in dust emissions and can only fail if incorrectly applied.

16. Schedule 2, Part 1, Requirement 4 of the Revised Draft Development Consent Order (DCO) (Applicant reference HE-A14-EX-59,PINS reference REP4-021) requires that the development is carried out in accordance with the provisions of the CoCP. If best practice measures detailed in the CoCP are not carried out or carried out incorrectly then the contractor (and indeed Highways England) would be in breach of the terms of the DCO. Under section 161 of the Planning Act 2008 this is an offence, and the local planning authority has a number of actions open to it.

17. The enforcement regime for the requirements outlined in a DCO is set out in Part 8 of the Planning Act 2008 and is undertaken by the relevant local planning authority. This includes investigation and gathering evidence, including the monitoring of compliance with the DCO requirements. If it is proved by the local planning authority that an offence has been committed then it can proceed with prosecution. If a person is guilty of an offence the local authority can issue a notice of unauthorised works requiring the rectification of the breach. The local authority can apply for an injunction with respect to any actual or apprehended prohibited activity constituting an offence. The sanction for breaching terms of an order granting development consent, if convicted, is a fine of up to £50,000 per offence.
Question 2.1.7

How would agreement be reached with the local authorities regarding their request for post implementation air quality monitoring in locations where air quality is predicted to decline?

Response

18. Highways England does not consider operational phase air quality monitoring is required as no significant effects and no exceedances of the air quality objectives are predicted at any sensitive receptors affected by the scheme. Therefore, Highways England does not propose to install any operational phase monitoring.
Question 2.1.8
The applicant’s response to Q1.1.7 (REP2-002) suggests that even if higher traffic growth rates or higher than expected emission rates are applied to the assessment the overall conclusions remain the same. Please provide further explanation setting out why this conclusion has been reached.

Response

19. As part of the air quality assessment Highways England carried out a sensitivity test using an alternative modelling approach. This used the methodology detailed in Interim Advice Note (IAN) 170/12 which assumes a slower rate of reduction in NO\textsubscript{x} emissions from motor vehicles than is currently predicted in the Department for Environment, Food and Rural Affairs (Defra) emission factors. Using this approach is equivalent to assuming a higher level of future traffic growth, as either case would result in increased NO\textsubscript{x} emission rates. Therefore an equivalent of increased growth or emissions rates has already been considered by this sensitivity test.

20. If there are higher traffic growth rates or higher than expected pollutant emission rates then the predicted NO\textsubscript{2} concentrations would also have been underestimated. If this were the case then the outcome of examining two of the criteria used to assess significance may be affected. Firstly, whether there is a predicted exceedance of the relevant air quality standard and secondly whether there would be a large change in predicted NO\textsubscript{2} concentrations (i.e. greater than 4µg/m\textsuperscript{3}). An assessment has therefore been made to examine how much the predicted traffic flows would have to differ from those used in Chapter 8 of the Environmental Statement (ES) (Applicant reference 6.1, PINS reference APP-339) to change the conclusions regarding significance.

21. Looking firstly at whether there would be an exceedance of the air quality standard, the results for the sensitivity test reported in the ES show that the highest predicted NO\textsubscript{2} concentration for the ‘Do Something’ case would be 31.7µg/m\textsuperscript{3}. This is significantly below the air quality limit value of 40µg/m\textsuperscript{3}. Estimates have been made using the Highways England DMRB spreadsheet\textsuperscript{1} that show that an increase of traffic volumes of approximately 20% of the annual average daily traffic (AADT) would be required to result in an increase in NO\textsubscript{2} concentrations of 1µg/m\textsuperscript{3} at this receptor. It is therefore considered highly unlikely that the traffic growth assumed in the ES would have been underestimated sufficiently to result in an exceedance of the air quality limit value.

\textsuperscript{1} http://www.standardsforhighways.co.uk/guidance/air-quality.htm
22. Considering the second criterion used to assess significance, currently the highest predicted increase in concentrations is 3.6µg/m³ at Orchard View (close to the A1 and proposed A14 route). The increase in traffic at this location is approximately 70,000 AADT. Using the DMRB spreadsheet at this location shows that the increase in traffic would have to have been underestimated by around 7,000 vehicles per day in the opening year for an increase of more than 4µg/m³ to occur. This is considered to be unrealistic given that this is already using pessimistic assumptions.

23. Therefore Highways England is of the view that it is not likely that overall conclusions would change even if traffic growth or pollutant emission rates were higher than those used in the assessment.
Question 2.1.9

What progress has been made in discussions between the applicant and SCDC about the PM10 data from the Impington monitoring station (Ref Q1.1.1 REEP2-002)

Response

24. No further progress has been made between Highways England and South Cambridgeshire District Council (SCDC) regarding the reliability of PM10 monitoring data from the Impington site. In order to continue to progress this issue with the council, Highways England has continued to analyse the Impington monitoring data.

25. Highways England’s position with respect to the monitoring data from the Impington monitoring station is set out fully in response to question 1.1.1 and the accompanying appendix to question 1.1.1 (Response to First Written Questions, Report 1: Air Quality and Carbon Emissions (Applicant reference HE/A14/EX/28, PINS reference REP2-002)).

26. Since the response to question 1.1.1 at Deadline 2, Highways England has analysed a full 12 month period from the Impington monitoring site since the change of equipment (the monitoring equipment was replaced in March 2014, as explained in the response to question 1.1.1). An updated technical report has been prepared and has been attached to this response as part of Appendix 1.

27. Highways England believes that the results from the new equipment are representative of the area as they correlate well with other nearby roadside monitoring sites and are consistent with concentrations measured at other similar locations in the UK.

28. Previously SCDC felt that they had insufficient data available to form an opinion about the new data as they reported a data capture of 57%. As more data is now available from the monitoring equipment (including a period of 12 months from July 2014 when data capture was 89.4%), Highways England has asked SCDC again to review the most recent results and provide an opinion whether the data recorded from April 2014 now best represents PM10 concentrations in the area. SCDC has been content to report data for Local Air Quality Management (LAQM) purposes below the recommended data capture using annualised results in past reports.

29. Attached as at Appendix 1 to this response are copies of: the most recent letter to SCDC and technical report, along with a record of other correspondence that together demonstrates Highways England’s attempts to reach agreement with SCDC based on the available evidence.
Question 2.1.10
How would the mitigation of air quality emissions during construction be secured through the DCO?

Response

30. Mitigation measures to minimise air quality emissions during the construction phase are covered in the Code of Construction Practice (CoCP) (Applicant reference Appendix 20.2 of the Environmental Statement, PINS reference APP-752). Section 6 of the CoCP states that:

“The main contractors will manage dust, air pollution, odour and exhaust emissions during the construction works in accordance with best practicable means (BPM).”

31. The CoCP includes specific mitigation measures, also set out in section 6 of the document, to minimise emissions from construction plant and vehicles, transportation of materials, excavations and earthworks and drilling activities. There are monitoring protocols in place, including site inspections, to ensure that the mitigation measures are effective in minimising emissions.

32. The CoCP and measures contained within it, if the application is granted, would be secured through Schedule 2, Part 1, Requirement 4 of the Revised Draft Development Consent Order (DCO) (Applicant reference HE-A14-EX-59, PINS reference REP4-021) which states:

“The authorised development must be carried out in accordance with the provisions of the code of construction practice.”
Question 2.1.11

SCDC has raised concerns about air quality monitoring during construction. Would an air quality monitoring strategy address this concern?

Response

33. Visual inspection and monitoring protocols would be used to assess the effectiveness of mitigation measures being used by the contractors to control dust emissions. These would allow a rapid response to high dust emission events and hence provide effective mitigation of air quality impacts during construction.

34. An air quality monitoring strategy using measurement equipment is not recommended during construction as it can be difficult to attribute any high readings recorded to specific activities on site and often there is a significant delay before the results are available, particularly for passive measurement techniques.

35. The proposed measures are listed in Paragraph 6.10 of the Code of Construction Practice (CoCP) (Applicant reference Appendix 20.2 of Environmental Statement, PINS reference APP-752). This states that:

“The main contractors will implement inspection and monitoring procedures to assess the effectiveness of measures to prevent dust and air pollutant emissions. Relevant local authorities will be consulted regarding the monitoring procedures to be implemented which will include the following measures, as appropriate:

- Site inspections covering the establishment of operation of the construction site.
- Inspection procedures for areas adjacent to the construction site to visually assess any dust and air pollution which may be generated.
- Reference to inspection and maintenance schedules for construction vehicles, plant and machinery.
- Inspection procedures relating to the level of trafficking, use and condition of haul routes.”

36. Rather than prepare a separate air quality monitoring strategy document, it is recommended that visual monitoring protocols for air quality during construction (in line with paragraph 6.10 of the CoCP, as set out above) are included in the Local Environmental Management Plan produced for the South Cambridgeshire District Council area.
Question 2.1.12

The applicant’s response to Q1.1.13 (Fig 1-2) (REP2002) indicates that properties in Hemingford Grey would suffer a worsening of air quality post the implementation of the scheme. What are the detailed reasons for this to be the case and are there other locations where air quality is predicted to worsen?

Response

37. As noted in Figure 1-2 (REP2-002), there are receptors across the scheme area where concentrations of pollutants are predicted to marginally increase compared to the ‘do nothing’ scenario without the proposed scheme. Importantly, none of these locations experience an exceedance of any relevant air quality objective or limit value with the proposed scheme.

38. Some properties in Hemingford Grey along the A1096 are predicted to experience a small increase in pollutant concentrations. This increase is due to a predicted increase in traffic volumes of 1,223 vehicles per day between the ‘do minimum’ and ‘do something’ scenarios.

39. As shown within the response to question 1.1.13 Figure 1-2 (REP2-002) (Response to First Written Questions, Report 1: Air Quality and Carbon Emissions (Applicant reference HE/A14/EX/28, PINS reference REP2-002)) there are other areas where increases in predicted air pollutant concentrations occur. These increases are also due to changes in traffic volumes or changes in traffic speeds between the ‘do minimum’ and ‘do something’ scenarios. Again, none of these result in an exceedance of the air quality objectives and no significant impacts from air quality have been predicted.
Question 2.1.13
What mitigation has been proposed given the predicted increase in NOx concentrations at Great Stukeley Railway Site SSSI?

Response
40. The predicted increase in NOx concentrations as a result of the scheme in 2020 at Great Stukeley Railway SSSI is 0.4µg/m³. As explained in Highways England's *Response to First Written Questions, Report 1: Air Quality and Carbon Emissions* (Applicant reference HE/A14/EX/28, PINS reference REP2-002) question 1.1.6, this change in concentration is considered to be negligible, and the total concentration remains below the annual mean NOx standard for designated sites. In addition, nitrogen deposition rates remain within the critical load for the site. Therefore no significant air quality effects are anticipated on the designated habitats or species at Great Stukeley Railway SSSI. Hence no mitigation is required at this site.
Question 2.1.14

Cambridge City Council has suggested that the applicant undertakes a review of the scheme proposals based on the approach set out in IAN185/15 further to its high level analysis set out in response to Q1.1.2 (REP2-002). The applicant has indicated that significantly different results would be unlikely and therefore does not propose to undertake a further review. Does either party wish to comment further?

Response

41. As noted within Highways England response to question 1.1.2 (Response to First Written Questions, Report 1: Air Quality and Carbon Emissions (Applicant reference HE/A14/EX/28, PINS reference REP2-002)), the high level analysis carried out indicates that the application of IAN 185/15 would not result in different conclusions to those predicted within the Environmental Statement (ES) (Applicant reference 6.1, PINS reference APP-339) with regards to the significance of the air quality assessment.

42. The scheme is anticipated to alleviate congestion along the existing A14 corridor. Therefore if IAN185/15 had been applied the improvement in air quality as predicted within the ES could potentially have been greater. The scheme is not predicted to cause congestion along other areas of the route away from the A14. Therefore no further deterioration to air quality would be anticipated as a result of the scheme, had IAN 185/15 applied to this assessment.
Appendix 1.1
Appendix to examining authority written question 2.1.9.
Highways England response.

Contents
Highways England Letter 31/07/2015
Highways England Letter 06/01/2015 and SCDC response
Highways England Letter 30/05/2014 and SCDC response
Dear Mr Hill,

On 31st December 2014, the Highways Agency submitted a Development Consent Order to the Planning Inspectorate for the A14 Cambridge to Huntingdon Improvement Scheme. The application included an Environmental Statement, which contains a chapter on air quality. This chapter utilises data recorded by South Cambridgeshire District Council’s air quality monitoring stations.

We have previously discussed the issue of PM$_{10}$ concentrations at the Impington monitoring station with Mr Kenny Abere, on behalf of South Cambridgeshire District Council. Unfortunately, we have been unable to reach consensus regarding accuracy of data recorded at this monitoring station.

In January 2015, we asked South Cambridgeshire District Council to clarify which measurements were considered most relevant at the Impington continuous monitor, given the large reduction in average PM$_{10}$ concentrations measured since replacement of the monitoring equipment in March 2014.

Your reply in April 2015 stated that whilst you had hoped to provide us with your opinion based on a full year of monitoring data (January to December 2014) but this was not possible due to low data capture.

We have carried out further analysis of monitoring data from the site based on 12 months of available data (July 2014 to July 2015) which has a good level of data capture (89%). A technical note summarising our findings is attached to this letter.

In summary, the concentrations of PM$_{10}$ at Impington are recording concentrations which correlate well with other nearby monitoring locations. The annual mean concentrations are well below the annual and short term objectives and are considerably lower than those reported by South Cambridgeshire District Council from 2009-2012.
Therefore we write to ask you if you are now in a position where you could give an opinion as to whether the data recorded from April 2014 best represents PM$_{10}$ concentrations in the area?

If it would be of assistance to help take this matter forward, I would be happy to meet with you to talk through the analysis and the best action to move this matter forward.

Yours sincerely

Chris Bayliss
Email: christopher.bayliss@highwaysengland.co.uk
Introduction

This note discusses the PM$_{10}$ monitoring data collected at the Impington monitoring site operated on behalf of South Cambridgeshire District Council during recent monitoring, from 30/07/2014 to 29/07/2015. This period has been selected as the most recent full year of monitoring, to compare with annual mean objectives.

Local Monitoring Data
In the period 30/07/2014 to 29/07/2015 South Cambridgeshire DC (SCDC) has operated three continuous monitoring sites that measure PM$_{10}$.

- Impington;
- Girton; and
- Orchard Park.

Figure 1 Monitoring Sites in SCDC (Reproduced from the SCDC 2013 LAQM Progress Report)

The Orchard Park site is located approximately 700m from the Impington site, to the east. The Girton site is located further from Impington (approximately 1.5km away), and so is considered...
to be less representative of concentrations at the Impington site that those recorded at Orchard Park.

The results of PM$_{10}$ monitoring since 2005 for Impington and Orchard Park are shown in Table 1. Ten years of data from 2005 to 2015 have been selected to enable a comparison of the data over time. The monitoring equipment at the site has changed within the 10 year period shown. In 2014 the old equipment was replaced. There is a clear change between the results with the older instrument and the data captured since the reinstallation.

Table 1 PM$_{10}$ Monitoring Results and Data Capture Rates at Impington and Orchard Park

<table>
<thead>
<tr>
<th>Year</th>
<th>Impington</th>
<th>Orchard Park</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual mean PM$_{10}$ (No. exceedences)</td>
<td>Annual mean PM$_{10}$ (No. exceedences)</td>
</tr>
<tr>
<td>2005</td>
<td>32 (37)</td>
<td>N/A</td>
</tr>
<tr>
<td>2006</td>
<td>36 (42)</td>
<td>N/A</td>
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<td>2007</td>
<td>34 (34)</td>
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<tr>
<td>2011</td>
<td>54 (119)</td>
<td>23 (10)</td>
</tr>
<tr>
<td>2012</td>
<td>58 (180)</td>
<td>21 (4)</td>
</tr>
<tr>
<td>2013</td>
<td>N/A</td>
<td>22 (7)</td>
</tr>
<tr>
<td>2014</td>
<td>22 (4)</td>
<td>22 (7)</td>
</tr>
<tr>
<td>2014-2015</td>
<td>19 (5)</td>
<td>18 (5)</td>
</tr>
</tbody>
</table>

Annual Mean Objective: 40µg/m$^3$

24-Hour Mean Objective: 50µg/m$^3$ not to be exceeded more than 35 times a year

(Figures in parentheses – number of exceedences of daily mean > 50 µg/m$^3$)

Values in bold are exceedances of the air quality threshold

*Data capture for Impington in 2013 was very low (12.3%) and hence the results are not reported.

**Represents data capture following installation of the new monitor in March 2014.

***Data capture for the period from 30/07/2014 to 29/07/2015. Data has been fully ratified to 31/03/2015.

Table 1 shows that concentrations at Impington were stable between 2005 and 2008 but then increased substantially, with concentrations increasing by some 75%.

The table shows that the average PM$_{10}$ concentration for Impington for the 2014-2015 period was 19 µg/m$^3$, compared to annual mean concentration at Orchard Park of 18 µg/m$^3$. There were the same number of exceedences (5 no.) of a daily mean concentration greater than 50 µg/m$^3$ in during this period at the Impington and Orchard Park sites, and Figure 2 shows that the trend in concentrations at both sites is similar.
Therefore to conclude, the recent data shows there has been a significant reduction in comparison to the concentrations reported by SCDC between 2009-2012. Concentrations correlate well to other nearby monitoring locations and total PM$_{10}$ concentrations are well below the objectives. Highways England consider the most recent results to be representative of the current air quality concentrations at the site.
Dear Mr Hill,

On 31st December 2014, the Highways Agency submitted a Development Consent Order to the Planning Inspectorate for the A14 Cambridge to Huntingdon Improvement Scheme. The application included an Environmental Statement, which contains a chapter on air quality.

As part of the air quality assessment, data from air quality monitoring stations (including from the Impington monitoring station) was reviewed. This review showed that, in our opinion, data from this station contains anomalies. We met with Kenny Abere in September 2014 to discuss and understand the anomalous results from the Impington monitoring station; to date, a satisfactory explanation has not been received. This data was not included within the ES chapter due to these potentially anomalous readings.

To aid the next stages of the planning process we would like to have an agreed position with the council regarding the validity of data from the Impington monitor. To summarise our consultants initial concerns with the data I have provided the below bullet points.

Examination of the data collected for fine particulate matter (PM$_{10}$) at the Impington monitoring station shows that:

- Between 2008 – 2012 the annual average concentrations at this site have almost doubled, from 33 µg/m$^3$ to 58µg/m$^3$
- Over the same period the number of occasions when the daily mean exceeds 50µg/m$^3$ have increased from 43 – 180.
- The PM$_{10}$ concentrations recorded in 2012 at the Impington site would mean that this location would be, by some considerable margin, the most polluted site in the UK; with concentrations higher than London. Given its location, this would be unlikely.

Such increases in PM$_{10}$ since 2008 suggest a major new source of pollution has moved into the area contributing to the very high PM$_{10}$ concentrations. We are not aware of any new PM$_{10}$ source from your reports. The result of our last meeting concluded with no justifiable explanation for the data provided, however the project team felt that the most likely explanation was a faulty analyser or an error in data processing.

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6 January 2015
We understand that the analyser was replaced around April 2014. Since this time the annual average recorded at this site has reduced to 27µg/m³; a value consistent with other sites nearby. The number of occasions where the daily mean has exceeded 50µg/m³ has reduced from 180 to 14 times (April 2014 to December 2014).

Given the substantial changes in recorded PM₁₀ levels at this site, we are writing to ask you which measurements are considered to best represent PM₁₀ concentrations at Impington i.e. those recorded by the new monitor or those reported in the period before the replacement of the monitor?

Lastly, we would like to agree a joint position on the data used in the Environmental Statement chapter prior to the DCO hearing. If it would be of assistance to help take this matter forward, our air quality specialists would be happy to meet with you to talk through the analysis and the best action to move this matter forward.

If you have any questions or require any further information please do not hesitate to contact me.

Yours sincerely

Christopher Bayliss
Email: christopher.bayliss@highways.gsi.gov.uk
Dear Mr Bayliss,

Good morning and thanks for your last e-mails dated 8th October, 2014 and 6th January, 2015 respectively addressed to the director of our service Mr Mike Hill.

Apology, we couldn’t come back to you earlier on these e-mails as we were hoping to be in a position to provide you with the site up – to – date monitoring result between January, 2014 – December, 2014 following the installation of the new analyser in March, 2014 thou; we seem now unable to provide you with such accurate result as explain later in this response.

Whilst it’s unlikely we will be able to provide you any further information on this matter for now; however, "below is an excerpt from our consultant Ricardo – AEA on its finding regarding this matter as you have requested.

- The Impington PM$_{10}$ has large gaps in the data set across the period 2010 to 2014 while the Eberline instrument was in use, due to equipment failures, this makes it difficult to assess the validity of the measurements with any degree of certainty. However after re-assessing the long term plots and underlying data sets we are happy that the reported data are accurate to the best of our knowledge – with the caveat that the instrument is of course indicative as mentioned above.

- ARUP’s report highlights some high PM$_{10}$ concentrations at the Impington site across the summer of 2009; these episodes were highlighted to the Council and investigated. An air quality officer reported back that the likely concentration increases were due to agricultural works (harvesting and subsequent ploughing/ground works etc. and road works on the A14). Due to this local knowledge/evidence we decided that the high measurements should remain in the data set.

I trust this help to explain our thinking on the data sets, our data management processes and how we have approached this work

In addition, based on the reports and email information we have seen we believe the Council has advised ARUP and the Highways Agency correctly, if a large development is to be considered then additional air quality measurements specifically tailored to meet the requirements of the changes should be considered / implemented. We are of course happy to advise the Council, ARUP and the Highways Agency on the best approach to any air quality investigations as required”.

As it regards your question in the 6th January, 2015 e-mail about which measurement we will considered best represented the concentration of PM$_{10}$ at our Impington site, we are currently not in the position to answer this question as a result of the low data capture for this site following the installation of the new analysers as explained in our consultant ratified data comment for the year below. However, from the ratified data collected for the year 2014 though with low data capture as advised, the NO$_2$ and PM$_{10}$ level is 23 and 22 μg/m$^3$ respectively.

- NOx data capture is 55% following ratification. Data capture is low across April, May, June, July and August 2014 due to analyser faults, and subsequent data rejection. Again November - December low data capture due to analyser faults

- PM$_{10}$ 57% Data capture, this is low across January - March due to analyser being turned off, followed by a replacement analyser installation on the 23/03. Data capture is low across June and September due to a data logging fault.

Therefore, we seems to have a different opinion to your technical view at this site and hope we will be in a better position to answer your question about the current pollutant concentration at the site at the end of this current monitoring period in December.

We hope the above addresses your query?

Yours sincerely,

Kenny Abere
Scientific Officer – Air Quality
(On behalf of Mike Hill)
Highways England Letter 30/05/2014 and SCDC response
Dear Mr Hill

The Highways Agency is currently planning improvements on the A14 in your district and as part of this work we are preparing an Environmental Statement for this Scheme. Further information on the A14 scheme can be found on the HA website\(^1\). The Environmental Statement will include an assessment of the air quality changes that are predicted to occur as a result of the proposals. Our consultants working on the air quality assessment for this scheme have collated the air quality monitoring data at the sites operated by South Cambridgeshire and have undertaken extensive analysis of this information. As a result of this analysis we have identified some significant concerns regarding the quality of data collected, particularly (but not exclusively) from the site in Impington.

Examination of the data collected for fine particulate matter (PM\(_{10}\)) at the Impington monitoring station shows that:

- Between 2008 – 2012 the annual average concentrations at this site have almost doubled
- Over the same period the number of occasions when the daily mean exceeds 50\(\mu\)g/m\(^3\) have increased from 43 – 180.
- The PM\(_{10}\) concentrations recorded in 2012 at the Impington site would mean that this location would be, by some considerable margin, the most polluted site in the UK; with concentrations higher than London. Given its location, this would be unlikely.

Such increases in PM\(_{10}\) since 2008 suggest a major new source of pollution has moved into the area contributing to the very high PM\(_{10}\) concentrations. We are not aware of any new PM\(_{10}\) source from your reports.

No similar increases in concentrations have been recorded at Barr Hill which is relatively close to the Impington site and would have certainly recorded any regional changes in PM\(_{10}\) concentrations.

\(^1\) http://www.highways.gov.uk/roads/road-projects/a14-cambridge-to-huntingdon-improvement-scheme/
Given that the results from the monitoring site are in the public domain and that your council has declared an Air Quality Management Area partly on the basis of these results, there is considerable concern being raised about the air quality conditions in our study and this could result in constraints on the development of the A14 proposals. As such, it is important that we are confident that the PM\textsubscript{10} measurements made at Impington are accurate and representative of the local area.

Our air quality specialists working on the scheme, in conjunction with the Highways Agency’s air quality advisor, have undertaken a comprehensive analysis of the PM\textsubscript{10} monitoring data. A copy of the report setting out the analysis is attached to this letter, and a summary of the measured results taken from your 2013 Air Quality Progress Report are provided below.

### Monitored NO\textsubscript{2} and PM\textsubscript{10} Concentrations at Impington

<table>
<thead>
<tr>
<th>Parameter</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Mean NO\textsubscript{2}</td>
<td>35</td>
<td>33</td>
<td>30</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Annual Mean PM\textsubscript{10}</td>
<td>33</td>
<td>41</td>
<td>42</td>
<td>54</td>
<td>58</td>
</tr>
<tr>
<td>Number of Exceedences of PM\textsubscript{10} Daily Mean (50µg/m\textsuperscript{3})</td>
<td>43</td>
<td>55</td>
<td>36</td>
<td>119</td>
<td>180</td>
</tr>
</tbody>
</table>

In summary the outcome of this analysis concluded that:

- Based on the monitoring data it was very likely that the equipment had begun to malfunction at the end of 2008 and that the PM\textsubscript{10} concentrations recorded after 2008 were unreliable.
- There was no obvious new source since 2008 likely to contribute to elevated PM\textsubscript{10} concentrations at this site.
- The NO\textsubscript{2} concentrations observed at site are indicative of a rural location next to a moderately trafficked road and the constant observed concentrations between 2008 and 2012 show no notable increases in traffic contributions.

This conclusion was reached based on the relative trends in concentrations recorded for nitrogen oxides and PM\textsubscript{10} (both traffic related pollutants). Concentrations of nitrogen dioxide at the Impington site have remained almost unchanged between 2008-2012 indicating that there have been no major changes in traffic conditions or other major combustion sources in the area.

Our suppliers, on behalf of the Highways Agency, have raised concerns about the observed PM\textsubscript{10} concentrations in an email on the 8th April 2014 to your Environmental Health Officer Kenny Abere and also provided him with a copy of the report. His response to our email is provided below for reference in which he states:

“Thanks for your e-mail. However, it will seems to me not a reasonable attempt to be re-reviewing again our own data nor report. However, I can confirm to you that there was no equipment malfunction for the period we collected those data and apart from the possibility of the contribution during harvesting period around the site which is yet to be proven, we can’t think of any other reason for the high values apart from the usual contributory factors”.
Our suppliers received a response within 30 minutes of our email which included the report. We are concerned that given the very short period between the receipt of our email and the response received from Kenny Abere, the information provided could not have been examined in any detail. We would also like to raise that at no time has a satisfactory explanation for the increased PM$_{10}$ concentrations been provided by the council, to the extent that it is now the highest PM$_{10}$ concentration in the UK.

We are therefore writing to ask that the council fully examine the information. If your conclusions are that the equipment is operating satisfactorily we would be particularly interested to know the explanation for why Impington has the highest PM$_{10}$ concentrations in the UK and why there has been such a substantial increase in concentrations in a short period; especially in the context of monitored NO$_2$ concentrations over the same time period and PM$_{10}$ monitoring from other nearby air quality stations.

If it would be of assistance our air quality specialists would be happy to meet with you to talk through the analysis and the best action to move this matter forward.

If you have any questions or require any further information please do not hesitate to contact me or my colleague, Shirley Henderson (Shirley.Henderson@jacobs.com).

Yours sincerely

[Signature]

Chris Bayliss
Email: christopher.bayliss@highways.gsi.gov.uk
Dear Mr Bayliss,
Good afternoon. Sequel to your last queries and our subsequent request for clarification on the extent of the queries, you have confirmed to us that contrary to your initial claim of exclusiveness on the council quality of data for Impington, your concerns are with the: 

a. The quality of data from our Impington monitoring site from 2008 – 2012 and 
b. The quality of data from our Bar Hill monitoring site between the months of April – June, 2011

We will therefore like to respond as follows.

1. In addition to our internal investigation to your query of which there wasn’t any substantial finding for us to agree with your claim, we contacted our AURN Equivalent Quality Control Audit and Data Management Services as well as both monitoring sites yearly Services and Maintenance Companies for any explanation regarding the quality of reported data over the years.

2. The AURN Equivalent Quality Control Audit and Data Management Services as part of its response reported as thus “We have investigated the high PM10 data measured at Impington in the past (2010, 11 and 12), and unfortunately we can find no reasons for the sudden change, also we can see no reason to reject the data as not representative of ambient concentrations – that said we are happy to review the data again in light of any new information that becomes available”.

3. The sites Services and Maintenance Company in its review for the years in question did not identify any major equipment malfunctions to render the reported data invalid.

4. Considering that the monitoring site at Bar Hill was suspended in May, 2012 as detailed in the 2013 Progress Report, it will be un-realistic comparing this with the other sites as does in your report. It was specifically mentioned in the 2013 Progress Report that the Bar Hill data thou reported, has not been commented on in details in terms of the air quality objectives due to the very low data captures. On your argument on DEFRA advice regarding data capture, it will be advisable to consider the appendixes of all the previous reports with such data and you will observed those data were annualised using the methodology prescribed in Box 3.2 of LAQM TG (09) where such data was less than 90%.

5. Please be advised that contrary to your claim in the report, the AQMA of the SCDC was declared based on the Detailed Assessment Report conducted in 2006 and 2008. Detail of this can be find in the relevant link below: https://www.scambs.gov.uk/content/local-air-quality-management

6. Whilst the importance of having an accurate and representative data on each of the monitoring site cannot be over-emphasized however, it must be bear in mind that it is not un-usual for route with high number of haulage, vehicle and construction traffic to generate high PM10. The level which can also be aided with the direction of the wind.

7. The traffic monitoring report by the County Council attested to the A428 been the highest growth of 22% since 2002 of all the roads in the County whilst the density of HGV is almost three times the national average.

8. Whilst the council stated in its last progress report that no new source has been identified to account for the exceedence of the PM10 at the Impington site apart from the usual transport emission and construction works; it was explicitly stated that effort will continue to be made to seek any additional measure for the improvement of PM10 level after the delay on the A14 road extension.

9. Hopefully, with the new equipment at the site and the current speed limit restriction, it’s believed a bit of improvement will be achieved for the area and;

10. We expect a robust mitigation scheme from you in respect of your proposed improvement work.

We hope the above clarified our position on your query? Otherwise, please feel free to let us know how we can be able to assist you further on this matter.

Yours sincerely

Kenny Abere
Scientific Officer – Air Quality
(On behalf of Mike Hill)