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24 January 2023

Dear Sir/Madam

**Planning Act 2008 (as amended) - Section 88 and 89 and The Infrastructure Planning (Examination Procedure) Rules 2010 - Rules 6 and 8**

**Application by National Highways for an Order Granting Development Consent for the A66 Trans-Pennine Dualling Project**

**Deadline 3 – 24 January 2023**

**Durham County Council Reference No. 20032071**

I write in response to the 'Rule 6' letter dated 17 October 2022 and the 'Rule 8' letter dated 8 December 2022 which, amongst other matters, sets out information which is required to be submitted to the Examining Authority (ExA) by Deadline 3.

**Updated Statements of Common Ground requested by ExA – see Annex D of the Rule 6 Letter**

The Applicant provided Durham County Council (DCC) with the opportunity to comment upon an updated draft document prior to submission but DCC has not had the time to do so. Any document therefore submitted by the applicant is not an agreed document at this stage. In addition, the Applicant is proposing changes to the DCO as set out in REP2-042 ('Deadline 2 Late Submission Accepted by ExA- Applicants Response to the ExA Rule 9 Letter Dated 6 January 2023') and the Statement of Common Ground (SoCG) may well alter as a result.

**Updated Statements of Commonality of Statements of Common Ground**

It is understood that the Applicant is submitting an update to this document which has not been viewed by DCC.

**Updated Principal Areas of Disagreement Summary Statements**

An updated document is enclosed with this letter, however as the Applicant is proposing changes to the DCO as set out in REP2-042 ('Deadline 2 Late Submission Accepted by ExA- Applicants Response to the ExA Rule 9 Letter Dated 6 January 2023') and the Principal Areas of Disagreement Summary Statements may well alter as a result.

**Regeneration, Economy and Growth**

Durham County Council, Planning Development (Strategic), Room 4/123-128, County Hall,  
Durham DH1 5UL Main Telephone: 03000 262 830

**Comments on the Applicant's draft ASI Itinerary**

DCC has no comments to made regarding REP2-023 (Deadline 2 Submission - 7.13 Applicant's Draft Itinerary for the Accompanied Site Inspection - Rev 1)

**Comments on the Applicant's revised draft DCO**

DCC has no comments to make at this time.

**Any further information requested by the ExA under Rule 17 of The Infrastructure Planning (Examination Procedure) Rules 2010**

Not applicable to DCC.

**Comments on any further information/submissions received by Deadline 2**

A number of other documents have been submitted by the applicant at Deadline 2. In REP2-018 (Deadline 2 Submission - 7.9 Applicant's Comments on Local Impact Report - Rev 1) the Applicant has commented upon DCC's Local Impact Report (REP1-021). DCC has no comments to make at this time.

In REP2-016 (Deadline 2 Submission - 7.7 Applicant's Response to Written Representations made by Interested Parties subject to an SoCG at Deadline 1 - Rev 1) the Applicant has responded to DCC's Response to Examination Document PDL-013. DCC has comments in relation to air quality and Climate chapter of the ES and these can be found in Appendix 1 at the end of this letter.

**General**

There continues to be a need for the Applicant to liaise with DCC regarding the ongoing and final highway design of the scheme as well as other matters including the proposed changes to the DCO.

Please do not hesitate to contact me should you have any queries regarding this letter.

Yours sincerely



Principal Planning Officer

*Encs:*

- 1. Appendix 1 – DCC response to REP2-016 (Deadline 2 Submission - 7.7 Applicant's Response to Written Representations made by Interested Parties subject to an SoCG at Deadline 1 - Rev 1)*
- 2. Durham County Council's Updated Principal Areas of Disagreement Summary Statement.*

***DCC response to REP2-016 (Deadline 2 Submission - 7.7 Applicant's Response to Written Representations made by Interested Parties subject to an SoCG at Deadline 1 - Rev 1)***

**Air Quality**

As stated in DCC's previous responses AECOM commissioned AECOM to provide comments on Air Quality as stated in the Council's previous responses.

There are a number of points made whereby a meeting to discuss is considered to be beneficial to provide further understanding for both DCC and the Applicant behind the outstanding requests / comments, understanding what is proposed for the further assessment within Barnard Castle as a result of Issue Specific Hearing 1, and then resolve any outstanding matters relating to local air quality in DCC. This would be beneficial to avoid any further backward and forward or repetition of points already made so that a conclusion can be reached.

Although reference should be made to the below table, the key points considered to be outstanding are as follows:

Applicant is not considered to have monitored to derive a suitable air quality baseline.

Specifically, no air quality monitoring was undertaken at Barnard Castle and assessment assumptions do not offset the uncertainty in baseline conditions at this location. It appears that an assumption was made that air quality was good in this area and therefore was approved to be screened out of the construction traffic assessment on this basis.

There are a number of methodological assumptions in the assessment that we consider not to represent a reasonable worst case. Therefore, it is not clear whether reasonable worst-case assumptions would materially affect the conclusions of the assessment.

Such methodological assumptions include:

- not utilising monitoring data to factor Defra air quality background data, using an adjustment factor of less than 1 (essentially reducing the model predicted concentrations);
- relying on an RMSE of  $12.6 \mu\text{g}/\text{m}^3$ , where guidance states that a model with an RMSE value of  $10 \mu\text{g}/\text{m}^3$  or more should be revisited in order to make improvements to the model. Guidance also states that an RMSE value of  $4 \mu\text{g}/\text{m}^3$  or less is the ideal,
- relying on an adjustment factor based on monitoring data from only two monitors to adjust a large rural study area,
- worst case traffic data in the transport chapter for the construction phase was not used in AQA due to the uncertainty around the likelihood and duration of traffic impacts within Barnard Castle causing that area to be screened out of the assessment,

Construction phase road traffic emissions assessment was not screened considering speed data.

Clarity requested on what the applicant means on short term diversions for construction phase traffic in Barnard Castle (Point 29).

The current version of DMRB LA 105 guidance does not require the consideration of NO<sub>x</sub> impacts or concentrations at sensitive nature conservation habitats. It is therefore not considered appropriate that annual mean NO<sub>x</sub> concentrations have been used in the assessment to screen whether or not impacts on designated ecological sites are reported. It is agreed that for the public exposure / human health element, that percentage change in ambient concentrations are appropriate to be used to determine significance. However for ecosystems, this process should be based on changes in nitrogen deposition rather than NO<sub>x</sub>. If this has been misunderstood by the Applicant's consultant, it is suggested that the air quality impact assessment on ecosystems be revisited.

It is noted that many of the methodological decisions made appear to have been scoped as such based upon reliance on the existing air quality baseline and comparison to the air quality objectives set for human health. This is not considered an appropriate methodology for the assessment of ecological sites and it is requested that the Applicant provide discussion around this, with reference to appropriate guidance.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
Baseline					
1	Baseline NO2, PM10 and PM2.5 have been presented in Appendix 5.3 Air Quality Baseline Monitoring. No Scheme specific PM10 or PM2.5 monitoring has been undertaken and it is noted that there is no nearby existing PM10 or PM2.5 monitoring in the study area within DCC. These three pollutants have been assessed for both construction and operational phases.	Preamble, no response necessary.	No further comment.	The comments made by DCC are noted and closed with National Highways in accordance with the responses 31/8/22 DCC. 16/11/22 National Highways & 24/11/22 DCC	Noted
2	DCC air quality baseline has not been reported specifically to inform the baseline appreciation however considering the distance to the DCC air quality monitoring locations, this is not considered a material issue.	Duly noted.	No further comment.	The comments made by DCC are noted and closed with National Highways in accordance with the responses 31/8/22 DCC. 16/11/22 National Highways & 24/11/22 DCC	Noted
3	Four months of NO2 monitoring was undertaken for the Scheme between November 2021 to February 2022 at 16 NO2 locations in triplicate; four of these locations were in DCC (AQM 5, 6, 7 and 8). DCC were not consulted on the locations or given the opportunity to provide insightful, local feedback on the locations where monitoring would be useful. Based on the level of impact indicated by document 3.7 Transport Assessment in both construction and operational phases, it would have been useful to monitor at a sensitive receptor location along the A67 in Barnard Castle, near the river bridge, where a number of dwellings are located at locations nearby the road edge.	The NO2 monitoring locations were informed by the findings of the Preliminary Environmental Information Report (PEIR) and were undertaken at locations where the preliminary assessment identified the likelihood of significant effects. The comments provided, relating to monitoring locations in Barnard Castle, are noted.	We have outstanding concern of potential air quality impact at sensitive receptors in Barnard Castle due to lack of project monitoring data. Monitoring data in Barnard Castle would be helpful to understand the air quality impact risk and assist inform key method points the assessment has taken.	Traffic data for the construction and operational assessment were screened against the thresholds outlined in DMRB LA 105. Changes in construction traffic were not exceeding these thresholds in the Barnard Castle area and therefore a detailed assessment of construction traffic was screened out of the assessment.  As set out within the Issue Specific Hearing 1 (ISH1) Post Hearing Submissions (Document Reference 7.2, REP1-006) National Highways has committed to providing complementary environmental considerations to further ratify the findings of the Environmental Statement in specific regards to the Sills (Barnard Castle). The outline scope of this local level consideration is as follows:  <input type="checkbox"/> More granular / environment assessment of the impact of increased traffic on the Sills (including the consideration of Air Quality). <input type="checkbox"/> Institute of Environmental Assessment and Management ("IEMA") subjective assessment of being a pedestrian/pedestrian experience and consideration of noise in the same context National Highways will submit the local level consideration and report to the examination for Deadline 3.	The current scope of further air quality assessment at The Sills in Barnard Castle within Issue Specific Hearing 1 (ISH1) Post Hearing Submissions (Document Reference 7.2, REP1-006) is considered unclear. Further discussion is requested between DCC and the Applicant to simplify communications at this point. This further work is considered to be intrinsically linked to method choices and assumptions made in the air quality assessment.
4	It is not noted in Appendix 5.3 Air Quality Baseline Monitoring whether post-scheme monitoring is also proposed. This should be confirmed.	Post-scheme monitoring is not proposed at the current time due to the absence of likely significant effects in the area .	No further comment.	The comments made by DCC are noted and closed with National Highways in accordance with the responses 31/8/22 DCC. 16/11/22 National Highways & 24/11/22 DCC.	Noted
5	Data from the NO2 monitoring survey was noted to be annualised to 2019, the model base year, for AQM1 to AQM14, however not for AQM15 and 16; neither of these locations are in DCC. AQM 5 is adjacent to the existing A66, AQM 6 is more than 250m from the A66 at Rokeby, AQM 7 is adjacent to the B6277, and AQM 8 is to the south of the B6277 Lartington Lane. The backcasted adjusted annual mean NO2 monitoring results for monitors in DCC ranges from 2.6 µg/m3 to 10.2 µg/m3 and therefore below the annual mean objective of 40 µg/m3. The highest concentrations were recorded at AQM 5, adjacent to the existing A66; the unadjusted concentration is noted to be 16.3 µg/m3, showing that the adjustment has reduced the concentrations at this location by almost 40%.	Reviewer statement, no re	Applicant is requested to please respond to this point.  The initial comment was intended to highlight that the adjustments had decreased concentrations. These monitors have been relied on for verification, and so robustness of these adjustments is important to impact significance.	The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards. – as set out in Chapter 5 of the Environment Statement (ES)  Having considered the comment, the points made regarding the model set up or adjustment of results would not alter the assessment of no likely significant effects on air quality as there would be negligible risk of exceeding the air quality objectives.	There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications.
6	There is no discussion of appropriateness of the method to adjust monitoring results in light of the Covid-19 pandemic and the changing traffic patterns associated with government lockdowns and post-lockdown trends. This should be provided.	The baseline monitoring survey and data annualisation were carried out in line with the guidance in LAQM TG16. Supplementary guidance published by Defra in April 2021 for use in reporting 2020 data, which were affected by the activity restrictions associated with Covid-19 lockdown measures, indicates that the diffusion tube sampling and data annualisation methodology in LAQM TG16 remain valid. No further guidance has been issued for 2021/22 data; consequently, the approach is considered appropriate.	A recognition of the current uncertainties following the Covid-19 pandemic would be considered best practice in this situation and a cautious approach to any future prediction would be sensible.	The impact of covid on traffic data collection and on traffic modelling was noted in the Combined Modelling and Appraisal Report (Document Reference 3.8, APP-237) in sections 3.1, 3.2 and 3.3. Chapter 5 of the document describes how the traffic forecasting has been undertaken in line with TAG Unit M4 Forecasting and Uncertainty. Covid 19 is not mentioned specifically in TAG Unit M4 as such the reporting around the transport forecasts is considered appropriate.	The points within the Combined Modelling and Appraisal Report on the impact of Covid on traffic data are noted. However the lack of discussion in the Air Quality Chapter on how this relates to air quality, and the method choices behind air quality monitoring periods may have been informed by Covid, is highlighted. This is however considered a lesser concern than the other points raised in the review process.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
7	The air quality documents reviewed make reference to the influence of Helm Wind between December and April. There is no discussion around the baseline monitoring being undertaken during this period and whether the method of results adjustment or final results presented are representative of annual conditions or whether this should be seen as a limitation of the air quality assessment.	Baseline air quality monitoring was undertaken at locations along the A1(M), A66 and M6. Helm Wind has been reported to occur along the western side of the Pennines around Cross Fell, leading to reports of localised high winds in this area. No adjustment has been made to the monitoring data, gathered throughout the study area, to account for this infrequent and localised phenomenon nor is a methodology provided in LAQM TG16 for doing so. Meteorological data from both Warcop and Leeming are considered sufficient to account for this potential difference in both long-term and short-term meteorological conditions. The project specific monitoring was also undertaken during November – February and therefore the data accounts for the time-period when this phenomenon occurs. Whilst there may be very localised variations in short-term meteorological conditions, the overall conclusions of the assessment against an annual average are not likely to materially change.	The applicant has recognised the limitations of this method choice due to localised variations in meteorological conditions. No further comment.	The comments made by DCC are noted and closed with National Highways in accordance with the responses 31/8/22 DCC. 16/11/22 National Highways & 24/11/22 DCC.	Noted
8	NH3 Scheme specific monitoring was additionally undertaken during the same period at 13 of the 16 locations of NO2 monitoring. The same four locations are within DCC (AQM 5 to 8). The NH3 monitoring results for the monitors in DCC ranges from 1.6 µg/m3 to 3.3 µg/m3; again the concentration at AQM 5 was the highest. There is no provided discussion around representativeness of this data to the assessed base year of 2019.	Roadside NH3 measurements in the UK are limited although national predictions of mid-year (3-year average) averaged background NH3 concentrations, taken from the Concentration Based Estimates of Deposition (CBED) model, are available on a 1km x 1km basis. To address this uncertainty, project specific monitoring was undertaken. Whilst no adjustment was made for concentrations to NH3 (or indeed recognized guidance to do this, particularly around the effects of Covid-19 pandemic), the data collected are considered to be representative to provide an insight to NH3 levels across the study area, which otherwise would have been absent from the assessment.	The risk remains that ammonia concentrations relied on may be lower than actual.	A call was held between National Highways and Natural England on Thursday 8th December. A summary of the ammonia assessment will be set out in the Natural England Statement of Common Ground (SoCG).	The document does not yet appear to be available. It is understood that this will be considered further.
9	There is no source of background nitrogen deposition rates used in the assessment provided in Appendix 5.3 Air Quality Baseline Monitoring. As per LA 105, this should be included in any reporting.	Background nitrogen deposition rates for the ecological sites identified in the assessment were taken from Air Quality Information System (APIS) at the time of ES drafting and assessment, as set out in Chapter 5 Air Quality (Document Reference 3.2, APP- 048) (Current Baseline - paragraph 5.7.3).	No further comment.	The comments made by DCC are noted and closed with National Highways in accordance with the responses 31/8/22 DCC. 16/11/22 National Highways & 24/11/22 DCC.	Noted
10	Defra annual mean background pollutants concentrations have been used in the assessment for 2019 and future year 2029; in grid square contribution from major road sector emissions have been removed from the background NOx estimates. This is reasonable. A comparison between Defra modelled and local authority background NO2 monitoring data has been made; this showed that Defra backgrounds were slightly lower than local authority monitored data however there is no discussion on this other than the difference is small (1 µg/m3) and concentrations are below the objective, nor any consideration discussed of factoring the Defra predictions using the monitoring. Given the low levels of predicted model result concentrations, this will not likely materially affect the conclusions.	Reviewer statement, no response required.	There are a number of methodological assumptions in the assessment that we consider not to represent a reasonable worst case. Therefore, it is not clear whether reasonable worst-case assumptions would materially affect the conclusions of the assessment.  An assessment taking into account a reasonable worst case here would have used the monitoring data to inform the background pollutant concentrations.	The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards– as set out in Chapter 5 of the Environment Statement (ES)  Monitoring data for the Project is limited. Outside of the Eden DC area, the data are even more limited. Only one monitoring site in the Richmond DC area was considered appropriate for verification purposes, which is a roadside site and therefore not representative of 'background' conditions.  Having considered the comment, the points made regarding the model set up or adjustment of results, we feel we have made reasonable worst-case assumptions that would not alter the assessment of no likely significant effects on air quality, as there would be negligible risk of exceeding the air quality objectives	There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications.
11	There was very little on verification provided in the PEIR. Baseline data from ten sites from local authorities and one National Highways monitor (total 11 sites) are presented in Table 1 of Appendix 5.3 Air Quality Baseline Monitoring; it is understood that seven of these 11 sites have	Model verification factors used in the assessment are reported in Table 4 of Appendix 5.4 Air Quality Assessment Results (Document Reference 3.4, APP- 153) and have been applied to the predicted road NOx concentrations, used in both the construction	It is understood that the same adjustment factors have been used to adjust the construction phase and operational phase dispersion modelling results despite the model domains for	The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards– as set out in Chapter 5 of the Environment Statement (ES) .	There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	been used to verify the roads model. It would be useful to provide discussion of whether the seven monitors have been used to verify both the construction and operational phase assessments, and the appropriateness of the chosen method to verify each model domain.	and operational phase assessments, as stated in section 5.4.1.8. Tables 2 and 3, also in Appendix 5.4 (Document Reference 3.4, APP-153), provide details of which sites were used to derive the verification factors for the urban (Table 2) and rural (Table 3) road links based on site typology in the construction and operational phase assessments, as stated in section 5.4.1.8. Tables 2 and 3, also in Appendix 5.4, provide details of which sites were used to derive the verification factors for the urban (Table 2) and rural (Table 3) road links based on site typology.	each assessment differing. A discussion on the limitations of relying on the same method for both assessments should be provided given the stated different traffic data sets, and model domain extents.  It is understood that the rural zone adjustment factor has been applied to the assessed receptors within DCC's jurisdiction. It is not considered a reasonable worst case to use an adjustment factor lower than 1 to adjust any dispersion model outputs and also rely on an RMSE of 12.6ug/m <sup>3</sup> . This is not considered a robust assessment and is recommended to be re-assessed.	Whilst the RMSE value is noted as being above the desired values in Defra TG(16 and 22), monitoring data for the Project is limited. Outside of the Eden DC area, the data are even more limited. Only one monitoring site in the Richmond DC area was considered appropriate for verification purposes. In-line with TG(16 and 22) the model parameters were reviewed multiple times as part of the model verification, to no avail. So as to include at least one site on the A66 in Richmond DC, the adjustments were made accordingly,  Having considered the comment, the points made regarding the model set up or alternative adjustment of results would not alter the assessment of no likely significant effects on air quality as there would still be negligible risk of exceeding the air quality objectives in DCC.	assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.
12	<b>No DCC monitoring or National Highways monitoring within DCC boundaries has been used to verify the model outputs against measured data. It is further understood that none of the Scheme-specific monitoring has been used for verification. Discussion would be useful in this instance to present how representative the verification is of receptors within DCC.</b>	12 and 13. There are no DCC monitoring locations adjacent to the ARN (as noted by the Interested Party in comment (2) above which they acknowledge is not a material issue). Available data from a National Highways air quality monitoring station have been used for model verification. Several administrative areas are covered by the assessment study area which is predominantly rural in nature with pockets of urban settlements; overall, air quality is good. In addition to National Highways air quality monitoring data, the model was verified using local authority monitoring data from representative roadside locations adjacent to the ARN. As noted above in response to item (13), site typology was considered and two separate verification factors, one for urban and another for rural road links (and receptors), were derived and applied. Where possible, sites with ≥75% data capture were used; where this condition could not be met, in one instance, this has been noted. The verification using the rural zone for use with DCC receptors is considered to be representative as the site typology, setting and traffic were not considered to be materially different and therefore did not warrant an alternative approach or verification factor. The best monitoring data available in the study were also used. Due to the generally low background concentrations in the study area rural locations, an alternative rural factor would however unlikely change the conclusions of the assessment.	A reasonable worst-case and robust assessment should be undertaken. It is not considered a reasonable worst case to use an adjustment factor lower than 1 to adjust any dispersion model outputs, given the ADMS software's tendency to underpredict. Relying on an RMSE of 12.6ug/m <sup>3</sup> is not considered robust, based on the guidance referenced in the ES chapter, and it is recommended that the modelling and verification that informed the assessment of construction and operational phase impacts is revisited. It is also not considered a limitation of the assessment to not use more monitoring data locations. Should DCC not monitor in this area, project specific monitoring should have been undertaken to sufficiently obtain a reliable baseline of air quality. This is not considered to have been presented.	The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards as set out in Chapter 5 of the Environment Statement (ES).  Whilst the RMSE value is noted as being above the desired values in Defra TG(16 and 22), monitoring data for the Project is limited. Outside of the Eden DC area, the data are even more limited. Only one monitoring site in the Richmond DC area was considered appropriate for verification purposes. In-line with TG(16 and 22) the model parameters were reviewed multiple times as part of the model verification, to no avail. So as to include at least one site on the A66 in Richmond DC, the adjustments were made accordingly.  Additional site-specific monitoring was undertaken for a period of four months to gain additional understanding of the baseline conditions in the study. These data presented in Appendix 5.3 Air Quality Baseline Monitoring (bias adjusted and annualised in-line with guidance) were not used for verification purposes given the short time scales of deployment, however they confirm the position that ambient NO2 conditions are well below relevant objective across the study areas.  Having considered the comment, the points made regarding the model set up or alternative adjustment of results would not alter the assessment of no likely significant effects on air quality as there would still be negligible risk of exceeding the air quality objectives in DCC	There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.
13	The verification is understood to have been undertaken in two zones: rural and urban. It is further understood that the rural zone is to the east using met station RAF Leeming used two monitors to verify; and the urban zone is to the west using met station Warcop Range used five monitors to verify. It is not clear the boundary of the urban/rural receptors assessed, however it is assumed that those within DCC boundary fall within the rural zone. One of the two rural monitors is understood to be the automatic National Highways monitoring station at the A1M southbound at Leeming which only achieve a data capture of 56% in the baseline year of 2019; it should be outlined whether the data used from this station was annualised and		The applicant has not answered the request to outline whether the data used from automatic National Highways monitoring station at the A1M southbound at Leeming was annualised. This has informed the adjustment factor used in the assessment and it is requested that the comment is responded to.	We confirm A1(M) Leeming data was annualized in accordance with LAQM.TG (16) (and since TG22) guidance and is therefore considered representative and as explained in the ES.	Understood that the automatic data from monitoring at the A1M southbound at Leeming was annualised. No further comment.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	whether the used data is considered representative.				
14	<p>The rural verification zone of two monitors has a bias adjustment factor of 0.632 and an RMSE of 12.6 µg/m<sup>3</sup>; this is well outside the RMSE of 10% of the objective (4 µg/m<sup>3</sup> for annual mean NO<sub>2</sub>) recommended by LAQM TG16.</p> <p><b>Discussion is required to explain how the results at sensitive receptors presented in DCC and the rural zone as a whole are reliable in this instance. This is considered a potentially material consideration, particularly in light of the presented slight adverse (albeit concluded not significant) effects at receptors in DCC boundary.</b></p>	<p>The suitability and representativeness of the verification for use with DCC receptors is set out in the response for item 12 above. The verification factor was derived using available monitoring data collected at representative rural roadside locations with 200m of the ARN. While the RMSE derived does not meet the criteria given in LAQM TG16, the use of two verification points, as opposed to one, reduces uncertainty in the assessment and improves the representativeness of the model verification (as noted above in response to item 13), it is therefore not perceived to be a risk to the assessment findings. No likely significant effects were identified within DCC and any change in verification method is unlikely to material change this conclusion. This is particularly relevant when considering the approach followed in-line with DMRB LA105 (rather than EIA specific significance criteria), which determines significance only at locations with predicted concentrations above the relevant air quality standard, in this case 40µg/m<sup>3</sup> for nitrogen dioxide, which is unlikely to occur for DCC receptors.</p>	<p>It is not considered reliable to only use two monitoring locations for verification in an assessment, especially when applied to such a large area and when the agreement with monitoring data post-adjustment is very poor. An RMSE of 12.6ug/m<sup>3</sup> is considered very poor and could be representative of several things, including the poor data capture at the automatic monitor used for verification, if no annualisation was undertaken. It is additionally not considered appropriate to use an adjustment factor of less than 1; a reasonable worst-case adjustment factor should be used, despite the likelihood of the assessed receptors to exceed the air quality objective, or not.</p>	<p>The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards– as set out in Chapter 5 of the Environment Statement (ES).</p> <p>Whilst the RMSE value is noted as being above the desired values in Defra TG(16 and 22), monitoring data for the Project is limited. Outside of the Eden DC area, the data are even more limited. Only one monitoring site in the Richmond DC area was considered appropriate for verification purposes. In-line with TG(16 and 22) the model parameters were reviewed multiple times as part of the model verification, to no avail. So as to include at least one site on the A66 in Richmond DC, the adjustments were made accordingly.</p> <p>Data capture for the continuous monitoring site at Leeming was poor and therefore the data were annualized for use.</p> <p>Additional site-specific monitoring was undertaken for a period of four months to gain additional understanding of the baseline conditions in the study. These data presented in Appendix 5.3 Air Quality Baseline Monitoring (bias adjusted and annualized in-line with guidance) were not used for verification purposes given the short time scales of deployment, however they confirm the position that ambient NO<sub>2</sub> conditions are well below relevant objective across the study areas.</p> <p>Having considered the comment, the points made regarding the model set up or adjustment of results would not alter the assessment of no likely significant effects on air quality as there would still be negligible risk of exceeding the air quality objectives in DCC</p>	<p>There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.</p>
15	<p>27 monitoring locations are noted to have been excluded from verification, and the reader of Appendix 5.4 Air Quality Assessment Results is directed to Table 1 for the reasons for exclusion. Table 1 only includes reasons for 19 monitors; none of the 19 sites are within DCC. The eight remaining monitors excluded from verification should be presented alongside the 19 in Table 1. It would be useful to discuss the use of the scheme specific monitoring for verification in light of the poor RMSE, where these are located at site types acceptable for verification as per LAQM TG16.</p>	<p>The comment on the exclusion of monitoring locations is noted. Scheme specific monitoring data are set out in Environmental Statement Appendix 5.3 Baseline Air Quality Baseline Monitoring (Document Reference 3.4, APP-152). A detailed review was undertaken on a project level alongside National Highways, in relation to the gathered data and its use for comparison against the formal verification. The data was not used formally in the assessment verification due to the short-time period, however the two verification factors were considered to perform reasonably well and had a high level of agreement to one another. Overall, National Highways concluded that it was unlikely for there to be any material changes to the conclusions of the assessment.</p>	<p>We disagree that the two verification factors perform well, in light of the RMSE of 12.6 µg/m<sup>3</sup> and how that contradicts the Defra guidance referred to in the ES chapter. This point is not considered to have been addressed on reliability of the results. A reasonable worst case assessment of impacts at sensitive receptors should be presented.</p>	<p>The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards as set out in Chapter 5 of the Environment Statement (ES).</p> <p>Whilst the RMSE value is noted as being above the desired values in Defra TG(16 and 22), monitoring data for the Project is limited. Outside of the Eden DC area, the data are even more limited. Only one monitoring site in the Richmond DC area was considered appropriate for verification purposes. In-line with TG(16 and 22) the model parameters were reviewed multiple times as part of the model verification, to no avail. So as to include at least one site on the A66 in Richmond DC, the adjustments were made accordingly.</p> <p>Data capture for the continuous monitoring site at Leeming was poor and therefore the data were annualized for use.</p> <p>Additional site-specific monitoring was undertaken for a period of four months to gain additional understanding of the baseline conditions in the study. These data presented in Appendix 5.3 Air Quality Baseline Monitoring (bias adjusted and annualized in-line with guidance) were not used formally for verification purposes given the short time scales of deployment, however the overall findings were the same.</p> <p>Having considered the comment, the points made regarding the model set up or adjustment of results would not alter the assessment of no likely significant effects on air quality as there would still be negligible risk of exceeding the air quality objectives in DCC</p>	<p>Reasons for the eight remaining monitors removed from verification should be presented as requested on 31.08.2022. It remains to be understood why more project specific monitoring with suitable monitoring periods was not undertaken to fill in this area with limited monitoring data. This is not considered a valid reason for such a project to only have two monitors used to verify the model output, and to use an adjustment factor that lowers it is not considered a reasonable worst case assessment.</p> <p>There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.</p>
Construction phase dust					
16	<p>The PEIR stated that construction phase dust monitoring and post consent air quality monitoring may be required, subject to findings of the final ES. A qualitative assessment of the impact of nuisance dust arising during construction is noted to have been undertaken, using standards set out in Section 2.56 of DMRB</p>	<p>Reviewer statement, no response required.</p>	<p>No further comment.</p>	<p>Noted</p>	<p>Noted</p>



	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	LA 105. Sensitive receptors within 200m of dust producing activities have been identified within Figure 5.3.				
17	Following a review of the sections of the project (Schemes 7, 8 and 9) in DCC, there are a large number of sensitive receptors nearby the construction activity at Bowes village and a number in the vicinity of the A66. Three ecological sites assessed fall in DCC's boundary: Rokeby Park, Mortham Wood (ERIC LWS) and Graham's Gill Jack-Wood Ancient Woodland and Steven Band Road Verge (NEYEDC LWS). There would appear to be a number of residential dust sensitive receptors in DCC not identified in Figure 5.3 which should be considered in Table 5-8 of the Assessment of likely significant effects from construction dust in Chapter 5 Air Quality.	The assessment of construction dust was undertaken for the specific areas on the A66 where works will be undertaken (i.e., Scheme 7, 8 and 9, etc.) for example, where there is a proposed upgrade from single to dual carriageway; change in alignment or new infrastructure bypass /road/ junction). These are illustrated in the Environmental Statement Figure 5.3 Key for the 'Order Limits' (Document Reference 3.3, APP-061) . It is acknowledged that identifying all sensitive receptors in the Figure 5.3 is difficult due to the multiple layers on the drawings, however all sensitive receptors within 200m of these Work boundaries, in-line with DMRB LA105, were identified using the up-to-date Address Point data available at the time of drafting and included in the assessment (and Table 5-8 in Environmental Statement Chapter 5: Air Quality (Document Reference 3.2, APP-048)); of which these are highlighted in Figure 5.3.	This is understandable, and the response confirming that all sensitive receptors within 200m of the Work boundaries have been included in the assessment is appreciated. No further comment.	Noted	Noted
18	There is no discussion provided in the documents reviewed of existing levels of baseline dust. For example, Hulands Quarry within DCC is an existing source of emissions; this would be useful to be considered in the assessment.	Comment noted. Dust from mineral workings is unlikely to extend beyond 400m from its source. It is anticipated that the site operator will be using a combination of good site practice and industry best practice mitigation measures, secured through a planning condition. This will be agreed with the local regulator, to limit any dust arising. Consequently, no significant adverse effect would be expected.	Noted. It is recommended that the EMP include that communication will be sought with Hulands Quarry to reduce any potential cumulative effects. No further comment.	Noted	Noted
19	At the scoping stage, as shown in the Scoping Opinion Appendices, it was requested that mitigation measures be included for non-road mobile machinery. Further assessment has been screened out of the ES chapter however in the Environmental Management Plan Annex B4 Air Quality and Dust Management there are measures listed in Section B4.6. The use of ultra-low sulphur diesel, electric plant and hydrogen plant is noted to be considered and used where practicable. This should be confirmed with DCC prior to construction commencement.	Duly noted, the use of ultra-low sulphur diesel, electric plant and hydrogen plant will be considered prior to construction commencement.	Noted. Use of ultra low sulphur diesel electric plant and hydrogen plant should be confirmed with DCC prior to construction commencement. No further comment.	Noted	Noted
20	The Project is considered to have a large construction dust risk potential due to potential impact to receptors and consequently mitigation measures are noted to be required to reduce the frequency and intensity of potential dust impacts. Best practice dust mitigation measures are proposed in the EMP; the Chapter states that this will reduce the impact to a negligible level through the use of a dust management plan with measures to monitor effectiveness of mitigation, on-site and off-site inspections and keeping a record of complaints/exceptional dust events. Final dust mitigation measures should be agreed with DCC.	Duly noted, dust mitigation measures will be refined through the development of the Environmental Management Plan (EMP) (Document Reference 2.7, APP-019) which will be developed through the DCO Process in consultation with DCC, where required.	Noted. The applicant has confirmed that final dust mitigation measures will be agreed with DCC. No further comment.	Noted	Noted
21	There are a number of human health and ecological receptors relevant to the construction phase air quality impacts in DCC. It is recommended that the EMP refers to 'Figure 5.3	Duly noted, the EMP will refer to the relevant figure which identifies receptor locations that could be affected by construction phase impacts (this acknowledges that Environmental	Noted. The applicant has confirmed the EMP will reference the receptor figure. No further comment.	Noted	Noted

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	Air Quality Construction Phase Assessment' so that receptor locations identified are considered within the refinement of the EMP.	Statement "Figure 5.3 Air Quality Construction Phase Assessment" (Document Reference 3.3, APP-067) may be superseded through design development).			
22	No monitoring other than visual inspection is committed to. Following reviews of recent Planning Applications, DCC are aware that DDG monitoring at receptors adjacent to the A66 at Hulands Quarry has had historic exceedances of dust deposition limits. This location should be considered for monitoring.	Duly noted, final monitoring locations will be reviewed through the continued development of the EMP and the design.	Noted. DCC should be provided with final monitoring locations and communication with Hulands Quarry should be made. No further comment.	Noted	Noted
23	Should air quality monitoring be undertaken, the air quality samples are noted to be possibly sent to an accredited laboratory; this should be committed to.	Duly noted, if air quality monitoring is undertaken, samples will be sent to an accredited laboratory.	No further comment.	Noted	Noted
Construction phase traffic assessment					
24	It was noted at the PEIR stage that no construction phase road traffic was available for assessment. The PEIR stated that an assessment of such emissions will be undertaken as part of the EIA and reported in the Environmental Statement (ES). ADMS Roads modelling is understood to have been undertaken for limited sections of the scheme – between M60 Junction 40 to Brough and between east of Bowes, to Scotch Corner. This Affected Road Network is understood to be determined based on changes of 1000 AADT or more and/or changes of 200 AADT or more as a result of the construction phase; the chapter does not make reference to speed bands factoring into the determination of the construction phase traffic ARN therefore it is assumed that this is not a part of the criteria used; this is not following LA 105 guidance.	Construction traffic data provided for the Project were limited to vehicle movements only based on the anticipated construction programme and phasing. No speed banding data was available to consider and assess as part of the Air Quality study	Applicant has confirmed that limited construction traffic data limited the scope of the assessment. The construction phase traffic assessment is therefore understood to be not meeting all of LA 105 guidance. The applicant should confirm whether speed bands are predicted to change with the scheme's construction phase.	Construction traffic speeds were not provided and therefore the data was not screened on this basis. The assessment is robust without screening for changes in construction traffic speed.	It is requested that the Applicant confirms that the numbers of vehicles are low enough that the speeds wont vary considerably, and no greater than the relevant LA105 screening criteria.
25	It is not clear whether AADT has been used for the construction phase assessment, or whether traffic data provided was split by the four periods required by LA 105 at detailed air quality assessment stage of morning (AM), inter peak, evening peak (PM) and overnight period (OP). This should be clarified and if AADT has been used, reasons provided as to why this is considered acceptable and any limitations associated with this method choice.	Average Annual Daily Traffic (AADT) was used in the construction phase traffic assessment to maintain consistency with the operational phase assessment. Consistent with the guidance in DMRB LA105, a proportionate approach was taken to the speed pivoting process. AADT was used because, as noted in the guidance, the possibility of exceedances of air quality thresholds was considered to be low. This is reflected in the assessment's findings as set out in the Environmental Statement Chapter 5: Air Quality (Document Reference 3.2, APP-048).	The possibility of exceedances is understood to be assumed to be low, however a representative baseline through the use of air quality monitoring is not considered to have been undertaken, as noted in comments above. The monitoring data availability in the DCC area and the absence of monitoring in Barnard Castle should have informed the locations of the scheme-specific survey. The screening of the Barnard Castle area out of the assessment is considered a limitation.	Traffic data for the construction and operational assessment were screened against the thresholds outlined in DMRB LA 105. Changes in construction traffic were not exceeding these thresholds in the Barnard Castle area and therefore a detailed assessment of construction traffic was screened out of the assessment	There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.
26	Construction years are between 2024 and 2029. With reference to Figures 11-2 and 11-3 in Chapter 3.7 Transport Assessment of the ES, the peak construction traffic from workers and wagons per month is understood to be in April/May 2025 and the overall busiest year for construction will be 2025. 2024 is understood to have been assessed. The year of traffic modelled, or a method to explain how the consultant has assessed the worst-case impacts of the scheme, and the chosen year of emissions factors should be explained.	The overall busiest construction year was forecast to be 2025; however, to be consistent with the noise assessment, the air quality assessment is based on 2024.	The maximum year of construction is understood to be 2025 and this is understood to not have been assessed. It should be confirmed whether the traffic data of the peak construction period has been used to represent 2024 in the air quality assessment. If so, this is considered appropriate as future emission predictions will be more cautious. If not, this is a limitation of the assessment and recommended to be re-assessed to ensure the maximum impacts of	Peak construction vehicle movements occur in 2025 and have been used as a basis for the assessment.  Construction traffic flows have been modelled using 2024 emissions data.  Therefore we have used the largest forecast traffic flows (2025) during the construction period together with the worst-case vehicle emission factors (2024) to represent a conservative assessment.	The response that the air quality assessment has used 2025 traffic data, the largest year of construction, is welcomed. It is however not agreed that traffic data presenting a reasonable worst case has been utilised given the Transport Chapter present data different (higher) impacts. No further comment on this as this is considered to be covered in other responses.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
27	There is no detail on the methodology provided in the Environmental Statement Appendix 5.2 Air Quality Assessment Methodology for the dispersion modelling assessment of construction traffic, in the same level of detail as for the operational phase assessment. This should be provided to understand the construction phase traffic data and TRA, model input parameters, verification process and choice of met station data. If these parameters are the same as for the operation phase traffic emissions assessment of effects, then this should be stated, and justification of the method provided in relation to the construction phase affected road network.	The construction traffic assessment methodology followed the same approach used for the operational modelling, except for the level of detail in the traffic data, i.e., no speed band information (as acknowledged above in response to item 24).	the construction phase have been assessed.  Justification of the method provided in relation to the construction phase affected road network remains outstanding.	Response as 16.11.22 The construction traffic assessment methodology follows the same approach used for the operational modelling, except for the level of detail in relation to available traffic data.	The construction and operational phase ARNs cover different study areas. The same methods for both construction and operational phases therefore would not be considered appropriate. The Applicant has not provided the justification for this method choice, specifically for the construction phase, as requested.  There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.
28	<b>With reference to Figure 5.3 Air Quality Construction Phase Assessment, the construction phase ARN only falls within DCCs boundary on the A66 to the east of Barnard Castle leading to Scotch Corner. There appears to be no ARN east of Bowes at Scheme 7 Bowes Bypass and also no ARN to the west of Scheme 8 Cross Lanes to Rokeby. One of two construction compounds is noted by the Air Quality Chapter to be in Bowes, amongst other locations. It is understood that the construction traffic impact assessment in this area does not fall into the ARN and has been scoped out of requiring assessment on local air quality, possibly due to the criteria for AADT and HDV flow changes provided in Paragraph 5.6.4 of the Chapter not being exceeded. Explanation as to why these sections would not be materially affected by the scheme should be provided to suitably scope out these sections of construction within DCC, particularly in light of Bowes construction compound being in this location. A table similar to that provided for the operational phase traffic Table 5-10 would be useful. The other construction compound locations should be confirmed and agreed with DCC prior to construction commencing.</b>	Data provided for the Project and the construction traffic movements were screened in-line with the criteria in LA105 (where available). The worst-case scenario of the peak-averaged daily construction traffic were used and the ARN identified based on the changes in vehicle flows, as set out in the assessment as set out in the Environmental Statement Chapter 5: Air Quality (Document Reference 3.2, APP-048). The location of construction compounds will be reviewed through the continued development of the design.	Confirmation required on whether the peak averaged daily construction traffic stated to be used was for 2025 or 2024. Question not considered to have been suitably answered on why roads adjacent to Bowes construction compound does not cause an increase of more than 1000 AADT, when roads further east of the compound do. Table of data requested is outstanding.	Peak construction vehicle movements occur in 2025 and have been used as a basis for the assessment.  Construction traffic flows have been modelled using 2024 emissions data.  Therefore we have used the largest forecast traffic flows (2025) during the construction period together with the worst-case vehicle emission factors (2024) to represent a conservative assessment.  Construction traffic data was screened against the thresholds for HDV movements outlined in DMRB LA 105 and not total AADT movements (200 HDV AADT movements). The data highlighted in the Transport Assessment (Document Reference 3.7, APP-236) is based on a worst-case unlikely scenario for potential local short-term diversions, with no assumed mitigation in-place. As such, given the uncertainty around likelihood and duration, following discussion at a Project level, they were not considered appropriate to be included within the Air Quality Assessment and are based on a worst-case unlikely scenario for potential local short-term diversions, with no assumed mitigation in-place. As such, given the uncertain likelihood and duration, following discussion at a Project level, they were not considered appropriate to be included within the Air Quality Assessment. Bowes construction compound will be rechecked in terms of its HDV movements in readiness for Deadline 3.	Why roads adjacent to Bowes construction compound do not cause an increase of more than 1000 AADT, when roads further east of the compound do, is understood to be being looked into further by the Applicant. We reiterate that we would welcome a table of traffic data similar to that provided for the operational phase traffic Table 5-10 following this further consideration.
29	<b>Explanation should also be provided as to how Barnard Castle does not fall within the ARN for the construction phase. Following a review of Chapter 3.7 Transport Assessment it is apparent there is at least a 2,000 two-way AADT increase at A67 Barnard Castle Bridge in both Scenario C and D. It is additionally noted that Scenarios C and D combined are for a length of more than two years.</b>	The data highlighted in the Transport Assessment (Document Reference 3.7, APP-236) is based on a worst-case unlikely scenario for potential local short-term diversions, with no assumed mitigation in-place. As such, given the uncertainty around likelihood and duration, following discussion at a Project level, they were not considered appropriate to be included within the Air Quality Assessment. are based on a worst-case unlikely scenario for potential local short-term diversions, with no assumed mitigation in-place. As such, given the uncertain around likelihood and duration, following discussion at a Project level, they were not	It should be made clear whether the mitigation is built in. It is standard practice for a reasonable worst case to be first considered, and then assessment of residual effects following mitigation.  Worst case traffic data and impact appears to have been presented in the Transport Chapter but not in the Air Quality Chapter's air quality assessment. Consistency between transport and air quality chapters should be made and where this is not possible, reasons	Paragraph 11.1.3 of the Transport Assessment (APP-236) states: "construction advice has been provided by specialist construction advisor Sir Robert McAlpine (SRM). SRM have provided preliminary indicative information relating to Temporary Traffic Management (TTM) proposals, and potential compound locations such that the impact of; traffic management measures, and construction worker travel, on road capacity can be appraised during project construction". This is the best information currently available.  It also clarifies in paragraph 11.1.4 " The Construction Traffic Management Plan forms Annex B13 of Environmental Management Plan (EMP) (Document Reference 2.7). Annex B13 is an extended essay plan for the Construction Traffic Management Plan (CTMP) for the Project. It will be completed on an iterative basis by the Principal Contractor (PC) as the Project progresses through detailed design and will be used to	We would like to discuss this further to understand what the potential changes are in Barnard Castle and up to what level of traffic change.  There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
		<p>considered appropriate to be included within the Air Quality Assessment.</p> <p>Paragraph 11.7.4 of the Transport Assessment (Document Reference 3.7, APP-236) states: "The impacts identified within this will help inform the potential issues that may arise during construction such that mitigation can be considered and implemented where possible. The project team will monitor the journey times on the A66 to ensure excessive delays are not occurring due to the works. If delays on the A66 are causing inappropriate local routes to be used then the project team will consider if any adjustments can be made to the TTM (Temporary Traffic Management) with the aim of reducing the delays."</p> <p>Annex B13 of the Environmental Management Plan (EMP) (Document Reference 2.7, APP-033) provides an extended essay plan for the Construction Traffic Management Plan (CTMP) for the Project. It will be completed on an iterative basis by the Principal Contractor (PC) as the Project progresses through detailed design and will set out the proposed Temporary Traffic Management (TTM) measures for implementation during the construction of the Project. Major local businesses and other stakeholders that are likely to be impacted by the proposed traffic management will also be consulted regarding this CTMP. This will ensure that a comprehensive, detailed Traffic Management Plan is available and understood by all parties prior to commencing the works on site.</p> <p>The CTMP will be developed to ensure that the following key objectives are considered and addressed:</p> <ul style="list-style-type: none"> <li>• Safety of the travelling public, non-motorised users and roadworkers to ensure that no person is injured either working within or travelling through the site on the strategic road network</li> <li>• Clarity of temporary traffic management schemes to ensure that the CTMP is built around the customers and stakeholders</li> <li>• Minimising delays to travellers on both trunk and local roads</li> <li>• Meeting the needs of the relevant Local Highway Authorities</li> <li>• Addressing the needs of key local stakeholders</li> <li>• Maintaining adequate access for the emergency services and all affected properties during the construction works</li> </ul>	<p>provided for inconsistency. It does not appear that a reasonable worst case assessment been undertaken. <b>It is considered that the assessment is missing a significant risk that needs to be assessed unless a concrete mitigation can be determined. Clarification is requested on what short term is, in the context of the diversions.</b></p>	<p>agree the final TTM measures for implementation during the construction of the Project."</p> <p>The TTM proposals are therefore indicative, and therefore the CTMP will be updated once final TTM measures have been agreed. Figure 11-1 of the Transport Assessment (APP-236) shows that Scenario C will be in place for 365 days, and scenario D will also be in place of 365 days.</p>	<p>additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.</p>
30	<p><b>Following a review of Figure 11-1 in Chapter 3.7 Transport Assessment, it would appear that some of the construction phase scenarios will have similarities. It should be confirmed in the Air Quality Chapter how long the construction phase as a whole will be in areas of DCC and evidence provided as to how this has informed the screening and ARN determination.</b></p>	<p>Transport Assessment (Document Reference 3.7, APP-236) Figure 11-1 sets out the indicative construction programme per scheme, with works around Bowes and then Rokeby and Cross Lanes Junction being Scheme 7 and 8 respectively, showing two-year construction programmes. All worst-case construction traffic movements were reviewed against DMRB LA105 criteria and included in the ARN where the criteria were triggered.</p>	<p>Statement against item 29 above does not correlate to the statement that all worst case construction traffic movement were reviewed. Worst-case construction traffic movements have not been assessed according to Point 29. Clarification is required.</p>	<p>Peak construction vehicle movements occur in 2025 and have been used as a basis for the assessment.</p> <p>Construction traffic flows have been modelled using 2024 emissions data.</p> <p>Therefore we have used the largest forecast traffic flows (2025) during the construction period together with the worst-case vehicle emission factors (2024) to represent a conservative assessment.</p>	<p>There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that</p>

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
					this point is revisited after this discussion and the further assessment at Barnard Castle.
31	A particular concern is noted to be if construction-related vehicles affected or diverted local traffic within locations with sensitive receptors close to the routes for the compounds approaching the AQO. As noted in EMP Annex B13 Construction Traffic Management Plan (Application Document 2.7), the Construction Traffic Management Plan to be developed by the appointed contractor will ensure construction vehicles avoid these areas.	Duly noted, the CTMP will be developed by the appointed contractor to ensure construction vehicles avoid areas where there are sensitive receptors close to routes used by construction traffic and air pollutant levels are approaching their respective AQOs	Considering the points made in relation to a suitable air quality baseline having not been achieved, it is not likely that the appointed contractor will be able to develop the CTMP. Will the A67 route through Barnard Castle be avoided as a construction traffic route?	The Environmental Management Plan (Document reference 2.7, APP-019) (EMP) has been developed with the intent to control construction impacts and sets out controls required to be implemented in the construction phase. Annex B13 Construction Traffic Management Plan (Document 2.7, APP-033) sets out the essay plan for a Construction Traffic Management Plan (CTMP) that must be developed]. This essay plan includes the key stakeholders to be engaged within the development of the final Construction Traffic Management Plan (section B13.2.1) and includes Durham County Council. The EMP, confirms that a detailed CTMP is subject to consultation with the local planning and highway authorities (in accordance with the consultation provisions also provided within the EMP). The CTMP must then be approved by the Secretary of State as part of a 2nd iteration EMP prior to the start of works (see article 53 of the draft DCO (Document Reference 5.1, APP-285) and paragraph 1.4.11 of the EMP). These are legally enforceable requirements.	The Applicant does not appear to have answered the query made on 24.11.2022. Considering the points made in relation to a suitable air quality baseline having not been achieved, it is not likely that the appointed contractor will be able to develop the CTMP.  There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.
32	There are predicted annual mean NO2 changes across the scheme at human health receptors of more than 0.4 µg/m <sup>3</sup> but no exceedances of the AQO in the first year of construction 2024 across the entire project assessed receptors. There are two human receptors (HSR 64 and HSR 65) assessed in DCC for the construction phase modelling of impacts. The impact is 0.1 µg/m <sup>3</sup> at both assessed receptor locations in DCC, with total predicted concentrations below 10 µg/m <sup>3</sup> . No exceedances of PM10 and PM2.5 AQOs are predicted. No significant adverse effects are therefore determined.	Reviewer statement, no response required.	No further comment.	Noted	
33	Of the three designated habitats presented within Figure 5.3 in DCC, only one (Rokeby Park and Mortham Wood (ERIC LWS)) is reported on, however it would appear that transect receptor points have not been modelled. This does not align with the requirements of LA 105 guidance. At the distance of 7.5m from the road edge, there is a 24% increase in nitrogen deposition compared to the critical load for this site. Chapter 5 Air Quality does not reference this site in the discussion, although there may be an error in Paragraph 5.10.17 which refers to Lightwater Alluvial Forest part of the River Eden and Tributaries SSSI, located outside of DCC. This should be checked and confirmed. Chapter 6 of the ES Biodiversity is however noted by Chapter 5 Air Quality to conclude that there will be no likely significant effects at designated habitat sites.	There does appear to be a drafting error in the Environmental Statement Chapter 5: Air Quality (Document Reference 3.2, APP-048) Paragraph 5.10.17, where Rokeby Park LWS should have been referenced with a change of 24% against the critical load of 10, with a change in 2.4 kg N/ha/yr.  No further transect receptor locations have been included as the predicted change in annual mean NOX at these locations is considered to be imperceptible (<0.3µg/m <sup>3</sup> ), in-line with DMRB LA105.), in-line with DMRB LA105.	Error noted by applicant. The current version of DMRB LA 105 guidance does not require the consideration of annual mean NOx and annual mean NOx concentrations should not be used to screen whether or not impacts on designated ecological site are included in any air quality assessment, or not.	The drafting error in Chapter 5 of the Environmental Statement has been accepted and a report revision is being prepared which does not alter the overall conclusions presented in Chapter 5 of the Environmental Statement.  It is important to recognise the limitations of models and to use the outputs appropriately. For example, DMRB LA 105 section 2.90 sets out that no likely significant air quality effects shall occur where the "difference in concentrations is imperceptible i.e., less than 1% of the air quality threshold (e.g., 0.4µg/m <sup>3</sup> or less for annual mean NO2)" based on uncertainties in modelling. This approach is used by the Environment Agency and also the Institute of Air Quality Management in their respective air quality guidance  In the same way, changes of less than 1% of the NOx critical level (30µg/m <sup>3</sup> - therefore the criterion is 0.3µg/m <sup>3</sup> ) were considered to be imperceptible and not considered further in the assessment. This approach is consistent with all NH projects.	It is suggested here that other clarification points we have requested input to within this table, also be taken into account in the report revision.  It is agreed that for the public exposure / human health element, that percentage change in ambient concentrations are appropriate to be used to determine significance. However for ecosystems, this process should be based on changes in nitrogen deposition rather than NOx. If this has been misunderstood by the Applicant's consultant, it is suggested that the air quality impact assessment on ecosystems be revisited.
34	Graham's Gill Jack-Wood Ancient Woodland and Steven Band Road Verge (NEYEDC LWS) do not have receptor points or transects marked on Figure 5.3, nor results reported in Table-8. Reasons for not reporting impacts on these two designated habitats should be provided.	The impacts at these receptors have not been reported or illustrated as the predicted change in annual mean NOX at these locations is considered to be imperceptible (<0.3µg/m <sup>3</sup> ), in-line with DMRB LA105. This approach is set out in sections 5.5.7 to 5.5.9 of Environmental Statement Chapter 5: Air Quality (Document Reference 3.2, APP-048).	The current version of DMRB LA 105 guidance does not require the consideration of annual mean NOx and annual mean NOx concentrations should not be used to screen whether or not impacts on designated ecological site are included in any air quality assessment, or not.		No response provided by the Applicant for this point. This is requested.
35	With reference to Chapter 2.7 Environmental Management Plan Annex B4 Air Quality and	Duly noted, as the detailed design progresses, the EMP and Annex B4 will develop based on	Active traffic management measures to be agreed with DCC.	Accepted	Noted.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	Dust Management, construction phase traffic mitigation is proposed to include implementation of active traffic management measures. Of the active traffic management measures, it is noted in Paragraph B4.4.2 that there are a number currently being considered. It is therefore understood that no measures have yet been finalised. These should be agreed with DCC. Those listed as potential measures include limiting the use of speed reductions, i.e., through applying higher safe speeds, or limiting the amount of traffic management that is used in areas where the new route is being built adjacent to the existing A66. Reactive traffic management measures would be employed as a last resort, to stop traffic from using the least suitable diversion routes.	further detailed construction information through the DCO Process.			
36	The construction phase of the Project is noted to not impact compliance with the air quality limit values.	Reviewer statement, no response required.	No further comment.	Noted	Noted.
37	Cumulative effects due to construction traffic from the cumulative proposed developments, if they occur at the same time as the Project, as well as dust and PM10 generated by construction activities, is noted by Chapter 15 Cumulative Effects to potentially lead to significant adverse effects if adequate mitigation is not implemented. The EMP is noted to ensure that adequate mitigation is in place.	Reviewer statement, no response required.	No further comment.	Noted	Noted.
Operational phase assessment					
38	The opening year was recognised to have not been assessed appropriately in the PEIR, but that the correct opening year of 2029 would be assessed in the ES; this has now been done.	Reviewer statement, no response required.	No further comment.	Noted	Noted.
39	A compliance assessment using Pollution Climate Mapping (PCM) has been undertaken and none of these are within DCC.	Reviewer statement, no response required.	No further comment.	Noted	Noted.
40	It is not clear whether AADT has been used for the operational phase assessment, or whether traffic data provided was split by the four periods required by LA 105 at detailing air quality assessment stage of morning (AM), inter peak, evening peak (PM) and overnight period (OP). This should be clarified and if AADT has been used, reasons provided as to why this is considered acceptable and any limitations associated with this method choice.	Consistent with the guidance in DMRB LA105, a proportionate approach was taken to the speed pivoting process. AADT was used in the operational phase assessment because, as noted in the guidance, the possibility of exceedances of air quality thresholds was considered to be low. This is reflected in the assessment's findings.	Methodological point that period flows have not been used based on unlikely exceedances of AQOs. Considering the above points made in relation to the absence of a reliable air quality baseline, this may require revisiting.	The modelled concentrations are below the air quality objectives at human receptor locations across the ARN. Modelling undertaken is considered robust and demonstrates no significant effects, when judged against DMRB LA105 standards. Model set up or adjustment of results would not alter conclusions for air quality as the risk of exceeding air quality objectives is negligible.	This point is understood to rely on the outcome of the assessment at Barnard Castle.  There are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaking the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.
41	A met station sensitivity assessment was welcomed by DCC at the PEIR stage. Two met stations are noted to have been used in the assessment for the ES, representing east and west study areas Warcop Range and RAF Leaming, for 2019. Leaming has been used in modelling for DCC. There is no discussion other than distance from the scheme as to how representative these two datasets are for the entire scheme, or consideration of alternatives such as Durham Tees Valley Airport. Chapter 5 Air Quality notes that the use of observations	Meteorological data for the eastern side were taken from RAF Leaming based on distance to the scheme as pointed out, but also due to the proximity of the ARN which would be considered and assessed in the modelling, particularly the A1(M), where potential likely significant effects were identified at sensitive receptors in the PIER. A National Highways continuous automatic monitoring station is also located at Leaming, which was included for model verification following the PIER findings. For these purposes, Leaming was considered to	Response noted, although the point made about automatic continuous monitor is queried in Point 13 above, as it is currently not clear whether this site with low data capture (less than 75%) has been annualised as per guidance.	We confirm A1(M) Leaming data was annualised in accordance with LAQM.TG(16) (and since TG22) guidance.	No further comment.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	from Warcop Range ensure that the Helm Wind is accounted for in the model, however explanation should be provided as to whether this is important to be considered in the eastern model domain.	be the most appropriate and no other sites were considered necessary to include. Helm wind is discussed in the response to item (7) above.			
42	An increase of 7,727 AADT is noted by Chapter 5 Air quality to be predicted at A66 near Bowes in 2029 as a result of the project, where traffic flow is noted to increase on A66 but flow is improved. However Table 7-1 of the Transport Assessment states this value is 6,300 AADT increase. The difference should be explained.	The difference is due to the fact that the increase of 7,727 AADT noted by Chapter 5 Air Quality of the Environmental Statement (Document Reference 3.2, APP-048) refers to Bowes Bypass to the east of the proposed east facing slips. The 6,300 AADT forecast increase noted in the Transport Assessment refers to Bowes Bypass to the west of the proposed east facing slips.	Response welcomed. No further comment.	Noted	Noted
43	With reference to Figure 5.4 Operational Phase Air Quality Assessment, the ARN falls within DCCs boundary on the A1M to the east of Newton Aycliffe, along the A66 from Scotch Corner in the east to Bowes and the border of DCC in the west, the B6277 to Barnard Castle and Rutherford Lane.	Reviewer statement, no response required.	No further comment.	Noted	Noted
44	No AQMA is noted to be impacted by the scheme. The scoping report noted that the nearest ARN to the Durham City AQMA was 20km to the south and the TRA did not extend to this far north and was screened out at scoping stage. Paragraph 5.2.3.5 of the Environmental Statement Appendix 5.2 Air Quality Assessment Methodology notes that any potentially affected links not within the TRA have not been modelled as there is less confidence in them. The exclusion of wider areas of potential traffic changes is noted in Appendix 5.2 as appropriate for the Project due to the large difference between reported concentrations and the air quality objectives. This is considered reasonable.	Reviewer statement, no response required.	No further comment.	Noted	Noted
45	Paragraph 5.5.7 of the Air Quality Chapter states: "It is important to recognise the limitations of models and to use the outputs appropriately. For instance traffic flows of less than a 1,000 AADT are not used in assessment as they are below the confidence that can be attributed to a traffic model. In the same way that changes of less than 1% of the AQO for NO2 (40 µg/m³ - therefore the criterion is 0.4µg/m³) and NOX (30 µg/m³ - therefore the criterion is 0.3µg/m³) are considered to imperceptible and not considered further in assessment." This should be expanded on with further explanation.	The AADT change criterion is taken from Note 2, section 2.1 in DMRB LA105. The NO2 change criterion is also quoted from section 2.90, item 2 in DMRB LA105. For NOX, the Environment Agency <sup>2</sup> and the Institute of Air Quality Management <sup>3</sup> use an identical air pollutant change criterion approach in their respective guidance to determine perceptibility and the need for further assessment.	The current version of DMRB LA 105 guidance does not require the consideration of annual mean NOx and annual mean NOx concentrations should not be used to screen whether or not impacts on designated ecological site are included in any air quality assessment, or not.	It is important to recognise the limitations of models and to use the outputs appropriately. For example, DMRB LA 105 section 2.90 sets out that no likely significant air quality effects shall occur where the "difference in concentrations is imperceptible i.e., less than 1% of the air quality threshold (e.g., 0.4µg/m <sup>3</sup> or less for annual mean NO2)" based on uncertainties in modelling. This approach is used by the Environment Agency and also the Institute of Air Quality Management in their respective air quality guidance. In the same way, changes of less than 1% of the NOx critical level (30µg/m <sup>3</sup> - therefore the criterion is 0.3µg/m <sup>3</sup> ) were considered to be imperceptible and not considered further in the assessment. This approach is consistent with all NH projects.	It is agreed that for the public exposure / human health element, that percentage change in ambient concentrations are appropriate to be used to determine significance. However for ecosystems, this process should be based on changes in nitrogen deposition rather than NOx. If this has been misunderstood by the Applicant's consultant, it is suggested that the air quality impact assessment on ecosystems be revisited.
46	<b>DCC request information on the predicted changes in traffic flows on the A1 (M) northbound into DCC boundary to the east of Newton Aycliffe. It is noted that in the TA that the increase in traffic flows along the scheme route is 7,400 but that on the A1M NB and SB the total change is only 5,500 suggesting that over 1,900 AADT do not use the strategic road network but are dissipated onto the local road network. Information should be provided of the flow change as AADT on all of the links off the Scotch Corner junction to understand how traffic is expected. It would be useful to understand if the ARN ends due to changes in traffic flow/composition/speed, or whether this is due to the ending of the TRA and to see the location of the calibration/validation data used and reported in the Transport Assessment. This is of</b>	National Highways propose to discuss the information below with Durham County Council during the meeting we are currently organising with the Head of Transport and Contract Services at DCC. Figure 8-27 within the Transport Assessment (Document Reference 3.7, APP-236) shows the increase in traffic flows at Scotch Corner Junction. The 2044 design year AADT flow increases within the figure are clarified within the Table below.	Traffic data received is appreciated. <b>Please confirm that Note 1 of Section 2.1 of DMRB LA 105 has been adhered to, and the network's road link carriageways have been suitably combined for the determination of the ARN and TRA? Following a review of the second table provided in this point, it doesn't appear to have been screened as such due to &gt;1000 AADT on the A1 North, when considering 700+680 = 1,380. This highlights that this needs to be considered further and that the Durham City AQMA could potentially be affected. Question of what other roads</b>	To clarify, our answer is based on crossing the A1 north of Junction 58. The table below shows the AADTs on all sections of the A1 between junctions 58 and 62. The fully modelled area finishes on the A1 Link to the North of Junction 60 where the AADT drops significantly to 405.  The largest change in flow in the vicinity of the City of Durham is 196 AADT on the A1 north of junction. The changes on AADT on the roads near the Durham City AQMA are all significantly less than this, therefore we do not believe there will be an impact on the AQMA	Additional information welcomed to provide evidence of the changes in AADT on the roads leading to the Durham City AQMA. No further comment.

DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023																																																																												
<p>importance to DCC, in particular at the Durham City AQMA. There is additionally no mention of air quality in the Transport Assessment with reference to the determination of the TRA; this should be jointly agreed.</p>	<table border="1" data-bbox="727 184 1207 680"> <thead> <tr> <th>Road</th> <th>Direction</th> <th>AADT</th> </tr> </thead> <tbody> <tr> <td rowspan="2">A1 North</td> <td>NBD</td> <td>+1300</td> </tr> <tr> <td>SBD</td> <td>+1100</td> </tr> <tr> <td rowspan="2">Middleton Tyas Lane</td> <td>EBD</td> <td>+250</td> </tr> <tr> <td>WBD</td> <td>+150</td> </tr> <tr> <td rowspan="2">A1 South</td> <td>SBD</td> <td>+1800</td> </tr> <tr> <td>NBD</td> <td>+1600</td> </tr> <tr> <td rowspan="2">A6055 (South of A6055/A6108 Junction)</td> <td>SBD</td> <td>+10</td> </tr> <tr> <td>NBD</td> <td>+220</td> </tr> <tr> <td rowspan="2">A6108 (Barracks Bank)</td> <td>WBD</td> <td>-72</td> </tr> <tr> <td>EBD</td> <td>-39</td> </tr> <tr> <td rowspan="2">A66</td> <td>WBD</td> <td>+4500</td> </tr> <tr> <td>EBD</td> <td>+4800</td> </tr> <tr> <td rowspan="2">A6055 North of A1 Northbound On-slip Roundabout</td> <td>NBD</td> <td>-3</td> </tr> <tr> <td>SBD</td> <td>+79</td> </tr> </tbody> </table> <p data-bbox="727 688 1207 768">Further detail of traffic flows at the boundary of County Durham around Newton Aycliffe are provided in the Table below.</p> <table border="1" data-bbox="727 802 1207 1024"> <thead> <tr> <th>Road</th> <th>Direction</th> <th>AADT</th> </tr> </thead> <tbody> <tr> <td rowspan="2">A1 North</td> <td>Nbd</td> <td>700</td> </tr> <tr> <td>Sbd</td> <td>680</td> </tr> <tr> <td rowspan="2">A68</td> <td>Ebd</td> <td>-100</td> </tr> <tr> <td>Wbd</td> <td>-150</td> </tr> <tr> <td rowspan="2">B6725</td> <td>Nbd</td> <td>+3</td> </tr> <tr> <td>Sbd</td> <td>+6</td> </tr> </tbody> </table> <p data-bbox="727 1054 1207 1625">The Combined Modelling and Appraisal Report (Document Reference 3.8, APP-237) Appendix C Transport Model Package discusses the TRA. Paragraph 3.3.1 states:  “The study area and the model’s geographical extent will include the same area as the PCF Stage1and 2 A66TM model, however, the Transport Reliability Area (TRA) has been extended further north and south at either end of the A66 along the M6 and A1(M). This has been revised considering impacts from the scheme identified within PCF Stage 2 forecasting.”  The impacts noted above are based on the classifications noted in paragraph 2.1 of DMRB LA105 Air Quality, namely:  1) annual average daily traffic (AADT) &gt;=1,000; or  2) heavy duty vehicle (HDV) AADT &gt;=200; or  3) a change in speed band; or  4) a change in carriageway alignment by &gt;=5m.  The change in flows due to the scheme within the Durham City AQMA do not exceed these thresholds.</p>	Road	Direction	AADT	A1 North	NBD	+1300	SBD	+1100	Middleton Tyas Lane	EBD	+250	WBD	+150	A1 South	SBD	+1800	NBD	+1600	A6055 (South of A6055/A6108 Junction)	SBD	+10	NBD	+220	A6108 (Barracks Bank)	WBD	-72	EBD	-39	A66	WBD	+4500	EBD	+4800	A6055 North of A1 Northbound On-slip Roundabout	NBD	-3	SBD	+79	Road	Direction	AADT	A1 North	Nbd	700	Sbd	680	A68	Ebd	-100	Wbd	-150	B6725	Nbd	+3	Sbd	+6	<p>have not been assessed in the network not been assessed on this basis?</p>	<table border="1" data-bbox="1605 184 2205 680"> <thead> <tr> <th></th> <th>Nbd</th> <th>Sbd</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>A1 North of Junction 58</td> <td>699</td> <td>683</td> <td>1382</td> </tr> <tr> <td>A1 North of Junction 59</td> <td>537</td> <td>470</td> <td>1007</td> </tr> <tr> <td>A1 North of Junction 60</td> <td>214</td> <td>191</td> <td>405</td> </tr> <tr> <td>A1 North of Junction 61</td> <td>69</td> <td>127</td> <td>196</td> </tr> </tbody> </table>		Nbd	Sbd	Total	A1 North of Junction 58	699	683	1382	A1 North of Junction 59	537	470	1007	A1 North of Junction 60	214	191	405	A1 North of Junction 61	69	127	196	
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<p>47 There are nine human health sensitive receptors assessed in DCC (HSR 57 to HSR 65) for the operational phase. There are no predicted exceedances at human health receptors of any pollutant reported in the chapter, and so no new exceedances as a result of the scheme would be expected within DCC. Results are confirmed to not be presented on a scheme by scheme basis and that the discussion for region 1 in Chapter 5 Air Quality is presents the impact of the overall scheme on the A66 region including the section of the scheme within DCC. The</p>	<p>Reviewer statement, no response required.</p>	<p>Applicant requested to confirm if receptor is the same receptor reported in the PEIR to have a very different impact.</p>	<p>The Applicant confirms that Receptor 60 highlighted from the ES is the same receptor identified as Receptor 40 from the PEIR (X,Y coordinates 405041,513817). The difference in predicted concentrations is noted and is attributed to updated base traffic data being used in the ES compared to that from the PEIR, which in turn affected the gap factor projection uplift</p>	<p>Noted. No further comment.</p>																																																																												



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	largest human health impact as a result of the scheme is reported to be +0.9 ug/m3, within the DCC boundary at Highly Sensitive Receptor 60 within the Cross Lanes to Rokeby section adjacent to the A66, south of Barnard Castle, to the east of the B6277 junction with the A66. At this location, concentrations are predicted to increase from 9 ug/m3 in DM 2029 to 9.9 ug/m3 in the DS scenario, where an increase of 3,603 AADT is predicted for the A66. It is not clear whether this receptor is the same receptor which was reported in the PEIR to have an increase of +4.0 ug/m3 in annual mean NO2 at a residential property adjacent to the A66 at Cross Lanes, however the predicted impacts would appear to have dropped significantly in DCC compared to the PEIR stage.				
48	There are improvements in air quality predicted at three of the nine receptors assessment with the largest improvement predicted to have an impact of -0.6 ug/m3 at HSR 62 and 63 where the proposed A66 alignment moves further away from the HSRs at Rokeby.	Reviewer statement, no response required.	No further comment.	Response not required	Noted.
49	There are no human health sensitive receptors selected and modelled for each ARN link within DCC; this would have provided an understanding of impact of each ARN link. For example, the B6277 is a section of ARN within DCC and a residential property north of Thorsgill Beck has not been included in the dispersion modelling. Receptors are noted by the chapter to have been selected to represent the scale of impacts associated with the project.	Reviewer statement, no response required.	We would have expected to see more receptors than included in the assessment as per LA 105. For example, the B6277 is a section of ARN within DCC and a residential property north of Thorsgill Beck has not been included in the dispersion modelling. At least one receptor per ARN link is requested to be included to ensure the air quality impact is robustly assessed.	The receptors selected in the air quality assessment were identified based on the ARN and provide representative exposure of potential worst-case impacts. For a project of this scale, it was simply not possible (nor indeed necessary given the existing baseline conditions) to provide a receptor assessment on every individual link in the ARN. The modelled concentrations across the network are well below the air quality objectives at human receptor locations across the ARN and the modelling undertaken is considered robust and demonstrates no significant effects, when judged against DMRB LA105 standards. The addition of new receptors would not alter conclusions for air quality as the risk of exceeding air quality objectives is negligible.	This point relies on the assumption that baseline air quality is well below air quality objections and is therefore understood to rely on the outcome of the assessment at Barnard Castle.
50	The greatest air quality constraint from the scheme at the PEIR stage related to impacts on nature conservation sites, where there were potential concerns and risk of significant effects with nitrogen deposition and ammonia concentrations. This was noted to be considered in greater detail within the ES. Ammonia was requested to be included at scoping stage however ammonia results at each receptor are not presented. It is noted in Paragraph 5.2.3.20 of Appendix 5.2 Air Quality Assessment Methodology that the National Highways tool has been used to account for ammonia emissions impact on deposited nitrogen.	Reviewer statement, no response required.	Ammonia results at each receptor not presented and are requested to be.	A call was held between National Highways and Natural England on Thursday 8th December A summary of the ammonia assessment will be set out in the Natural England Statement of Common Ground (SoCG).	The document does not yet appear to be available. It is understood that this will be considered further.
51	There are nine designated ecological sites (Rokeby Park and Mortham Wood (ERIC LWS), Graham's Gill Jack-Wood Ancient Woodland, Steven Band Road Verge (NEYEDC LWS), Bowes Moor SSSI, North Pennine Moors SPA and SAC, Mill Wood Ancient Woodland, Thorsgill Wood Ancient Woodland) plus a number of Ancient Trees within 200m of the ARN within DCC, with reference to Figure 5.4. Results are not presented for all of these sites in Appendix 5.4, or transect locations shown in Figure 5.4.	Transect locations are shown in Environmental Statement Figure 5.1: Cumulative Zones of Influence (Document Reference 3.3, APP-144). Results are only presented where the predicted change in NOX exceeds 0.3µg/m3 (1% of the critical load). This is noted on all the sheets within Environmental Statement Figure 5.4: Air Quality Operational Phase Assessment (Document 3.3, APP-068). The reasoning is given in sections 5.5.7 to 5.5.9 of Environmental Statement Chapter 5: Air Quality (Document Reference 3.2, APP-048).	The current version of DMRB LA 105 guidance does not require the consideration of NOX and annual mean NOx concentrations should not be used to screen whether or not impacts on designated ecological site are included in any air quality assessment, or not.	It is important to recognise the limitations of models and to use the outputs appropriately. For example, DMRB LA 105 section 2.90 sets out that no likely significant air quality effects shall occur where the "difference in concentrations is imperceptible i.e., less than 1% of the air quality threshold (e.g., 0.4µg/m3 or less for annual mean NO2)" based on uncertainties in modelling. This approach is used by the Environment Agency and also the Institute of Air Quality Management in their respective air quality guidance.  In the same way, changes of less than 1% of the NOx critical level (30µg/m³ - therefore the criterion is 0.3µg/m³) were considered to be imperceptible and not considered further in the assessment. This approach is consistent with all NH projects.	It is agreed that for the public exposure / human health element, that percentage change in ambient concentrations are appropriate to be used to determine significance. However for ecosystems, this process should be based on changes in nitrogen deposition rather than NOx. If this has been misunderstood by the Applicant's consultant, it is suggested that the air quality impact assessment on ecosystems be revisited.
52	Rokeby Park and Mortham Wood LWS nitrogen deposition is predicted to increase by 13.7% against the critical load whilst North Pennine Moors SPA and SSSI and Bowes Moor SSSI have a maximum increase of 17.6% against the critical load. Stephen Bank Road Verge LWS experiences a beneficial change due to the	Reviewer statement, no response required.	Confirmation required that the blanket bog qualifying feature noted by the Biodiversity chapter has been assessed and reported.	National Highway can confirm that potential impacts to the blanket bog qualifying feature are assessed in the Habitats Regulations Assessment (HRA) Stage 2 Statement to Inform Appropriate Assessment (Application Document 3.6 APP-235) and summarized in the Environmental Statement (ES) Chapter 6 Biodiversity (Document Reference 3.2, APP-049)	It is welcomed that the blanket bog qualifying habitat feature has been assessed in the Biodiversity chapter and a transect included in the air quality assessment to represent the location of the bog. No further comment.

	DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 20.01.2023
	<p>scheme. No other results of designated sites in DCC are reported. Chapter 5 Air Quality notes that: "These changes cannot be considered to be insignificant as defined in DMRB LA 105. Further discussion of the impacts of the Project on nitrogen deposition at these locations is included in Chapter 6: Biodiversity (section 6.10 Assessment of Likely Significant Effects)". The Biodiversity chapter considers the impact to Rokeby Park and Mortham Wood LWS as slight adverse (not significant) effect. The impact to North Pennine Moors SPA and SSSI and Bowes Moor SSSI in the Biodiversity chapter notes that blanket bog is the only qualifying feature that may be impacted by changes in nitrogen deposition at this location and it is predicted that a slight adverse (not significant) effect would occur.</p>				
53	<p><b>Given the poor RMSE derived from the verification exercise, discussion should be provided on how robust and reliable the results presented are, particularly in light of the impacts to designated ecological sites.</b></p>	<p>Please refer to the response to item 14 (above).</p>	<p>See response in above points.</p>	<p>The modelled concentrations are well below the air quality objectives at human receptor locations across the ARN. The modelling carried out is robust and has demonstrated that there is no potential for adverse likely significant effects, following the DMRB LA105 standards– as set out in Chapter 5 of the Environment Statement (ES).</p> <p>Whilst the RMSE value is noted as being above the desired values in Defra TG(16 and 22), monitoring data for the Project is limited. Outside of the Eden DC area, the data are even more limited. Only one monitoring site in the Richmond DC area was considered appropriate for verification purposes. In-line with TG(16 and 22) the model parameters were reviewed multiple times as part of the model verification, to no avail. So as to include at least one site on the A66 in Richmond DC, the adjustments were made accordingly,</p> <p>Having considered the comment, the points made regarding the model set up or alternative adjustment of results would not alter the assessment of potential air quality impacts on r sites as described in the in the Environmental Statement (ES) Chapter 6 Biodiversity (Document Reference 3.2, APP-049) and the Habitats Regulations Assessment (HRA) Stage 2 Statement to Inform Appropriate Assessment (Application Document 3.6 APP-235).</p>	<p>It is noted that many of the methodological decisions made appear to have been scoped as such based upon reliance on the existing air quality baseline and comparison to the air quality objectives set for human health. This is not considered an appropriate methodology for ecological sites.</p> <p>In addition to this, there are a number of points within the SOCG regarding the robustness of the air quality assessment undertaken, to include baseline characterisation, model assumptions and limitations for both construction and operational phases, the RMSE and predicted pollutant concentrations and impacts at receptors in DCC. The assessment undertaken is not considered robust or to have taken a reasonable worst case approach, however it is acknowledged that existing baseline air quality may be good within the study area. This is subject to further air quality work undertaken the additional assessment within Barnard Castle, and further discussion between DCC and the Applicant is requested to simplify communications. Suggestion that this point is revisited after this discussion and the further assessment at Barnard Castle.</p>
54	<p>There is no section in Chapter 5 Air Quality describing outcomes against relevant policies such as the County Durham Plan, other than NPSNN in Paragraph 5.10.84.</p>	<p>The outcomes relevant to regional and local are mapped in Table 5-3 in Chapter 5 Air Quality of the Environmental Statement (Document Reference 3.2, APP-048)</p>	<p>No further comment.</p>	<p>Noted</p>	<p>Noted</p>
55	<p>The operational phase traffic data is noted to include traffic associated with other developments, therefore the air quality impact assessment is noted to be inherently cumulative.</p>	<p>Comment duly noted</p>	<p>No further comment.</p>	<p>Noted</p>	<p>Noted</p>

## **Climate**

As stated in DCC's previous responses AECOM commissioned AECOM to provide comments on Climate chapter of the ES as stated in the Council's previous responses. There are two points of discussion outstanding at this time. Both points are summarised in the table below with additional comments from AECOM provided on behalf of DCC.

DCC response 31.08.2022	Applicant response 16.11.2022	DCC response 24.11.2022	Applicant response 15.01.2023	DCC response 23.01.2023
<p>Can the applicant please provide details on how the Traffic Reliability Area (TRA) referred to was defined. We are interested to know whether or not the potential for climate change impacts was a consideration when the TRA was defined?</p> <p>Paragraph 7.6.5 states that the TRA “was determined based on the regional screening criteria set out in DMRB LA 105”. DMRB LA 105 does not include regional screening criteria. Can the applicant confirm how the TRA was defined?</p>	<p>The Combined Modelling and Appraisal Report Appendix C Transport Model Package (Document Reference 3.8, APP-239) discusses the TRA. Para 3.3.1 states:</p> <p><i>“The study area and the model’s geographical extent will include the same area as the PCF Stage1and 2 A66TM model, however, the Transport Reliability Area (TRA) has been extended further north and south at either end of the A66 along the M6 and A1(M). This has been revised considering impacts from the scheme identified within PCF Stage 2 forecasting”.</i></p> <p>The extent of the geographic zone included in the TRA is informed by the road link screening criteria noted in para 2.1 of DMRB LA 105 Air Quality, namely:</p> <ol style="list-style-type: none"> <li>1) annual average daily traffic (AADT) <math>\geq 1,000</math>; or</li> <li>2) heavy duty vehicle (HDV) AADT <math>\geq 200</math>; or</li> <li>3) a change in speed band; or</li> <li>4) a change in carriageway alignment by <math>\geq 5m</math>.</li> </ol> <p>NOTE 1 The AADT and HDV criteria are applied to the sum of</p>	<p>It remains unclear why the ES referred to regional screening criteria – presumably in error. The use of local air quality criteria to determine the physical extent of TRA to determine an appropriate study area for greenhouse gas calculations is not directly linked to relevant guidance. Typically, greenhouse gas study areas for highways schemes are larger than TRAs to try and capture wider changes in routing that a scheme may cause, often the full extent of a traffic model is utilised for this task. Can National Highways review whether any changes in traffic and so greenhouse gas emissions are being missed and as such whether a realistic worst case is not being presented for the scheme.</p>	<p>The assessment followed the Guidance within LA 114: Climate which states:3.9 For operational road user GHG emissions, the study area shall be consistent with the affected road network defined in a project’s traffic model.</p>	<p>On review of Paragraph 3.15.7 of Document 7.9: Applicant’s Comments on Local Impact Report, we are content with the road-user GHG study area considered.</p>

	<p>carriageways and not individual carriageways. NOTE 2 The 1,000 vehicles and 200 HDVs represent the lowest threshold above which the traffic model can represent change in traffic conditions to a reasonable level of confidence.</p> <p>While these criteria support the definition of the physical extents of the TRA, they were not applied when identifying links within that geographic extent for the GHG assessment – i.e. all road links within the spatial extent of the TRA were included in the GHG assessment (but the air quality criteria supported definition of the outer boundary of the TRA).</p> <p>The TRA definition is provided in LA 105 and is provided within Table 5 of Environmental Statement Appendix 7.1: Greenhouse Gas Assessment (Document Reference 3.4, APP-176). This states the TRA reflects the widest road network the traffic modelling is considered verified /reliable. A more detailed discussion of the development of the TRA is provided in the Combined Modelling and Appraisal Report referred to above.</p>			
<p>Nowhere within Chapter 7 or Appendix 7.1 does there appear to be reference to vehicle kilometres travelled. Vehicle kilometres travelled is a useful metric to provide context for changing GHG emissions. It would be useful if the</p>	<p>Chapter 5.6 in the Combined Modelling and Appraisal Report (Document Reference 3.8, APP-237) discusses the overall change in modelled vehicle distance both with and without the Project. The network performance statistics are based on</p>	<p>It would have been useful for the response to provide the vehicle kilometres travelled that relate specifically to the road-user GHG calculations in terms of scenario, study area and fleet mix. Whilst (Document Reference 3.8, APP-</p>	<p>National Highways have responded to this comment in section 15 of the Applicant’s Comments on Local Impact Report (Document Reference 7.9).</p>	<p>Vehicle kilometres travelled is not the sole determinant of road-user GHG emissions, but is still an extremely good indicator to understand changes in GHG emissions.</p>

<p>applicant could provide the vehicle kilometres travelled for the scenarios reported in Table 7-10 and Table 7-23 of Chapter 7 and Table 4 of Appendix 7.1.</p>	<p>assigned traffic in the SATURN assignment model. Tables 5-26 to 5-31 of the Combined Modelling and Appraisal Report (Document Reference 3.8, APP-237) show the network statistic scenario values including modelled travel time, distance, speed and total trips. The Report found that the inclusion of the Project increases total distance travelled (by all modelled vehicles) marginally as drivers are prepared to travel further to take advantage of the increased speed and reliability as a result of the links provided by the Project.</p>	<p>237) does appear to provide a lot of useful information, it does not appear to provide vehicle kilometres travelled values directly relating to the road-user GHG numbers reported in Chapter 7 or Appendix 7.1. If it does, please provide reference to the appropriate section and table.</p> <p>The additional information provided as to why road-user GHG emissions increase as a result of the scheme in operation is welcomed.</p>		<p>DCC request that vehicle kilometres travelled data is provided for all assessments in which road-user GHG emissions have been reported.</p>
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