

Technical Note

Project	Goldthorpe - Air Quality Comments
Subject	Further Consultation Response
Project no	00052805
Date	14 August 2024

1 Introduction

This Technical Note (TN) has been prepared by Vanguardia on behalf of Equite Newlands (Goldthorpe) Ltd (the applicant) to address further comments (Ricardo ref: ED18432127) received in respect to Air Quality works undertaken for planning Ref: 2023/1105 and a follow up meeting with Ricardo, Barnsley Metropolitan Borough Council (BMBC) and the applicant on 13th August 2024.

An Air Quality ES Chapter was submitted in December 2023 by Vanguardia. Ricardo, on behalf of BMBC undertook a review of this Chapter and provided comments in May 2024. Vanguardia, on behalf of the applicant, submitted a Technical Note (TN) (ref Air Quality VC-00052805-EN-RP-0001_TN_FINAL (hereafter referred to as the 'original TN')) responding to these comments in June 2024. Ricardo, on behalf of BMBC, responded with further comments on this TN (Ricardo ref: ED18432127) on 1st August 2024.

This TN sets out responses (where deemed to be required) to the comments received from Ricardo on behalf of Barnsley Metropolitan Borough Council (BMBC) on 1st August 2024 and further comments made within the meeting on 13th August 2024.

This TN should be read in conjunction with the associated comments (which are set out in **Appendix A**).

Subsequent to the meeting on 13th August 2024, the main points left to be agreed between Vanguardia, Ricardo, BMBC and the applicant relate to mitigating the impact of the development. The relevant policies at a national and local level are set out in Section 7 of the original TN.

It is important to note that in most circumstances, the relevant policy (and guidance) would suggest that only the impact of the development requires mitigating, and any measures that would prevent a worsening of air quality would be deemed acceptable in line with policy requirements. It is therefore not the responsibility of the development to mitigate pre-existing conditions.

2 Rebuttals

2.1 Development of Queries Raised in May 2024

The following queries were raised by Ricardo in the first review of the Air Quality ES Chapter, and have been addressed by Vanguardia. With regards to AQ1, AQ3 and AQ6, Ricardo have agreed on these points and therefore no further clarification is required. With regards to AQ4, AQ7 and AQ8, these have been addressed in an EIA Addendum produced by Stantec and are not set to be discussed further within this TN. The outstanding queries are AQ2 and AQ5.

2.1.1 AQ2

Ricardo's latest comments on AQ2 state:

"Ricardo raised a query for the applicant to provide justification for using the meteorological site Doncaster Sheffield meteorological station. The applicant has now confirmed that although the Emley Moor meteorological station was most suitable, it was agreed with the EHO that Doncaster Sheffield should be utilized for the assessment scenario. An updated modelling has now been undertaken for 2023 using Emley Moor meteorological

station. However, no justification has still been provided on why the site is considered representative of the meteorological conditions at the dispersion site. The applicant should confirm the distance away from the site, the height above sea level and any other parameters that can help justify that the met site is representative of the dispersion site. We have reviewed the meteorological site location, and provided that data capture is sufficient we agree that this choice of meteorological site is sensible"

Emley Moor meteorological station is ~ 26.9 km from the dispersion site. The meteorological station is ~ 268 m above sea level. The data capture for the relevant parameters is between 92.8% and 93.6%. In line with Paragraph 7.523 of TG22, this sits above the minimum 85% required, and therefore it is deemed reasonable to assume this query is satisfied for both the applicant and BMBC sub-consultant.

2.1.2 AQ5

Ricardo's latest comments on AQ5 state:

"Ricardo raised a query for the applicant to take into consideration the stringent PM_{2.5} target of 10µg/m³. The applicant has stated that "the PM_{2.5} targets are central government targets primarily focusing on tackling emissions, rather than requiring local authorities to assess concentrations against these new PM_{2.5} targets. In March 2023, the Department of Levelling Up Housing and Communities write to all Chief Planning Officers in England advising that guidance was progressing on how these targets should be integrated into the planning system but that until such guidance is published local authorities should continue to assess local air quality impacts in accordance with existing guidance. It is thus not appropriate to consider these new targets until such guidance has been published which at this time it is understood this guidance has not been released. The proposed guidance referred to by the applicant is expected to be specific to local authorities assessing whether they would meet the PM_{2.5} targets based on the assessment of individual projects in the LA. Furthermore, it is important that the impact of a new scheme is considered in the context of whether it will be detrimental to the LA meeting these new PM_{2.5} targets. Air quality professionals have the expertise to make this judgement based on the modelled concentrations. However, given that this is a future target, the LA has the discretion to decide if this should be considered for this and any upcoming planning applications."

In further support of the points already set out in the original TN, the UK Air Quality Strategy (2023)¹ provides that the government expects local authorities to "effectively use their powers to reduce PM_{2.5} emissions from the sources which are within their control" (pp.20-21). The Strategy references the legally binding targets set out in the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. However, it is important to note that the duty to comply with the those targets is on the Secretary of State as competent authority, not the Council as set out in the Environment Act 2021². Consistent with the above, it is not deemed possible to model compliance with the more stringent PM_{2.5} targets at a local level; these targets should be met via long-term monitoring, at a national level. This query has been left to be satisfied by the Local Authority (LA), and therefore cannot fully be satisfied by virtue of this TN, although it is agreed by Vanguardia and the applicant that the LA should adopt the aforementioned view. Furthermore, in the meeting on 13th August, Ricardo and Vanguardia agreed this point, and this point is more to make BMBC aware of the future requirements.

2.2 Additional Queries Raised in August 2024

Six additional comments require addressing in line with comments received in August 2024 by Ricardo (ref: ED18432127) on behalf of BMBC. AQ9, AQ10 and AQ11 are recommendations which "need to be resolved to provide evidence that receptors would not be exposed to poor air quality". Nonetheless, commentary is provided in order to further examine these points. AQ12, AQ13 and AQ14 are modelling queries which are also addressed below.

2.2.1 AQ9

AQ9 states:

"The applicant should provide the specification of the mechanical ventilation, its maintenance routine and the improvement in air quality expected from the mechanical ventilation device. Where this air quality improvement reveals that air quality impact would be reduced to a negligible impact, then no further work is required."

The mitigation package for Hickleton has been broken down into two separate areas (John O Gaunts specific and wider Hickleton AQMA mitigation), with both elements secured through a S106 agreement, based upon the air quality damage calculation, with the total monetary value of £227,482.73 (as set out in the original TN). The mitigation measures are

¹ Department for Environment, Food & Rural Affairs, 2023. *Air Quality strategy: framework for local authority delivery.*

² UK Public General Acts, 2021. *Environment Act 2021.*

discussed fully in the ES Addendum produced by Stantec, with the technical specification and efficiency of one option for mechanical ventilation that could be used specifically for John O Gaunts (known as AAC Nitrosorb) is provided in **Appendix B**, which as previously highlighted would be specifically set out in the S106 agreement. The remainder of the agreed financial contribution (minus specific mitigation for John O Gaunts) would go towards additional mitigation measures which could benefit the wider Hickleton AQMA. An example of an additional mitigation is Roadvent (supplied by Pollution Solution – two examples of the use of which are provided in **Appendix C**), which is a measure highlighted in the emerging Doncaster Air Quality Action Plan (AQAP) as set out in **Appendix D**. In both instances, based on worked examples in different locations it is considered that the implementation of these measures in Hickleton would lead to compliance with the NO₂ annual mean air quality standard at affected receptors, with key results set out below:

- AAC Nitrosorb has been shown to achieve a 75.43% filter efficiency in Brentford London. While the dynamics of Hickleton are distinctively different to this example, a similar reduction would lead to a comfortable compliance with the NO₂ annual mean objective at John O Gaunts.
 - A 75.43% reduction in NO₂ concentrations at the worst-case affected receptor in the 'Baseline + Construction Traffic + Cumulative Traffic' would result in a concentration of 15.0 µg/m³ and hence comply with the NO₂ annual mean objective
 - A 75.43% reduction in NO₂ concentrations at the worst-case affected receptor in the 'Baseline + Proposed Development (Operational Traffic) + Cumulative Traffic' would result in a concentration of 16.4 µg/m³ and hence comply with the NO₂ annual mean objective
- Roadvent technology has been shown to achieve 72 - 91% reduction in roadside NO_x concentrations in real-world experiments, while modelling has shown a compliance of the NO₂ annual mean objective (32 µg/m³) from a baseline of 63 µg/m³ (i.e. similar to that seen at Hickleton). In line with this, the 'Baseline + Proposed Development (Operational Traffic) + Cumulative Traffic' would result in, once converted to total NO₂, a concentration of 17.3 – 29.8 µg/m³ and hence comply with the NO₂ annual mean objective

The above improvements would go above and beyond the policy requirements set out in **Section 1** and would, more than just mitigate the impact of the development, lead to betterment at affected receptors and compliance with the NO₂ annual mean objective. Post-installation monitoring of NO₂ concentrations would help indicate to what extent the technology is achieving the desired effect.

To note, with regards to the emerging AQAP, the measures outlined in this TN are subject to their own regime of testing and it should be assumed that the measures will have passed some degree of efficiency checks before being formally adopted. The adoption of Roadvent, for example, as a mitigation measure benefitting the wider Hickleton village would be subject to wider highway safety considerations which would need to be considered by the highways authority and would likely result in the full closure of the A635 through Hickleton for a period of time to install. The applicant would not be liable for the implementation of this, however the contribution made by the applicant (and potentially in combination with other schemes allocated in the Local Plan that will come forward) could be put towards this technology.

Technical specifications of the above technology are based on performance testing of the equipment and it is reasonable to assume they are accurate. This is not an exhaustive list of technologies which would help achieve compliance with the relevant air quality standards. The implementation of mitigation measures will be secured via a S106 agreement (with the current draft set out in **Appendix E**).

With regards to the maintenance routine for any mechanical ventilation proposed, the applicant has confirmed that the sum of monies anticipated to be required provide maintenance on the unit would be forthcoming, and two lots of maintenance on the system, five and then ten years after it is installed, would provide appropriate maintenance for the example unit (AAC Nitrosorb). This is considerably past the year in which concentrations at the receptor in question would be expected to comply with the annual mean objective (based upon advice provided within the meeting). Should any further development come forward, it would be anticipated that the relevant local authority place the onus on the respective applicant to provide at least basic funding for the maintenance of such unit, if the year at which the air quality standard is met is pushed back sufficiently that the five and ten year maintenance proposed would not cover this period.

2.2.2 AQ10

AQ10 states:

"The applicant should also confirm that there are no other receptors apart from John O Gaunts (R29 and R30) where non-negligible (i.e., slight, moderate or substantial adverse impacts) would occur. If there are, the proposed mitigation measures should also be applied to these receptors."

As set out in the original TN, without consideration for cumulative impacts, the only receptors where non-negligible impacts would occur are R29 and R30, at John O Gaunts. However, with consideration of cumulative impacts, as set out in Table C.10 of the original TN, additional non-negligible (Slight) impacts are predicted to occur for NO₂ at receptors R11 and R12 (16 Barnsley Road), R22 (19 Garden Cottage), R26 (9 Barnsley Road) and R31 (also on John O Gaunts), totalling three properties, in addition to John O Gaunts.

With regards to proposed mitigation measures, while certain mitigation measures proposed would benefit the village of Hickleton as a whole (Roadvent technology, the proposed bypass and potentially the junction improvements), if mechanical ventilation was adopted as the primary mitigation measure, this would only be applied to receptors experiencing a substantial adverse impact and exceeding the NO₂ annual mean objective.

The EPUK & IAQM (2017) guidance³ states *"Mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact"*. The guidance goes on to give an example of how significance could be judged:

"An individual property exposed to a moderately adverse impact might not be considered a significant effect, but many hundreds of properties exposed to a slight adverse impact could be."

In the case of Hickleton, the judgment of a significant effect is solely determined by the Substantial adverse impacts at R29 and R30, and there is little to no contribution from additional Slight adverse impacts. With regards to mitigating these effects, the guidance states:

"In those circumstances where the assessment concludes that there will be a significant effect, then there is a requirement for mitigating these residual impacts, where this is feasible."

It is therefore adjudged that, since the significant effect (and exceedance of the NO₂ annual mean objective) is restricted to one property (John O Gaunts), this is where mitigation measures should be focused, and proposed mitigation for the three additional receptors would not be necessary, although may still be achieved depending on the mitigation agreed.

The NPPG sets out examples of mitigation measures (Paragraph 008 Reference ID: 32-008-20191101). While the final decision on what would be deemed an appropriate level of mitigation rests with the local authority, the applicant has expressed a willingness to provide funding towards:

- Appropriate means of filtration and ventilation; and
- Contributing funding to measures, including those identified in emerging AQAP.

These mitigation measures are deemed to be the only examples listed in the NPPG which are achievable within Hickleton. As set out in the response to AQ9 above, the mitigation measures proposed are anticipated not only mitigate the impact of the proposed development, but also achieve compliance with the NO₂ annual mean objective at John O Gaunts, hence providing betterment to the receptor in question.

The latest sum of funding, set out in the Original TN, which should be agreed in the final S106 between the applicant and BMBC is £227,482.73. An AAC Nitrosorb single unit could cost up to £1200 + VAT. The unit could combine with a Zehnder Mechanical Ventilation Heat Recovery Unit (MVHR), which could cost up to £2500 + VAT. Maintenance costs are anticipated to be ~ £350, per change of filter cells. The applicant has proposed more than adequate funding to cover these costs. It is expected the remaining financial contribution of ~£223,082.73 would go toward those set out in the emerging AQAP.

2.2.3 AQ11

AQ11 states:

"Where the ventilation strategy is unable to achieve the appropriate reduction to achieve a negligible air quality impact, then further modelling studies should be undertaken based on traffic estimates of the proposed bypass and junction improvements to predict the air quality improvement from this additional mitigation."

³ EPUK & IAQM (2017). *Land-Use Planning & Development Control: Planning for Air Quality*.

As set out in the ES Addendum produced by Stantec, further modelling studies regarding a proposed bypass and junction improvements are not possible. The benefits arising from these measures are self-evident and should an application be submitted for the bypass or junction improvements, a modelling study could be undertaken as part of this planning application to show how the works improved adverse air quality at affected receptors.

2.2.4 AQ12

AQ12 states:

"The applicant should provide a commentary on why the updated 2023 model is performing significantly worse than the original model at kerbside sites."

As set out in Section 4.2.1 in the original TN, the updated verification process at kerbside sites considered the now relocated DT47. This monitoring location was previously located within the modelled street canyon, however has since moved to sit outside the street canyon, causing a reduction in the modelled road NO_x between the 2022 model and the 2023 model. This led to the increase in the adjustment factor as well as the Root Mean Squared Error (RMSE). Nonetheless, as set out in Appendix B of the original TN, the modelled results in the kerbside verification are working within an acceptable margin of error, in line with TG22 and therefore no further adjustment was deemed to be required.

2.2.5 AQ13

AQ13 states:

"An explanation should be provided for why predicted baseline concentrations in 2026 are significantly lower using the updated model compared to the previous modelling."

The modelled 2026 baseline concentrations in the 2023 modelling exercise have reduced for the majority of the residential receptors compared to the 2022 modelling exercise. It is considered this reduction is in line with the updated verification results, summarised in Section 4.2.1 and set out in full in Appendix B of the original TN. Since the majority of the residential receptors were classed as 'roadside', and the roadside adjustment factor reduced due to data not being available for automatic monitoring location CM7, the majority of the modelled residential receptors did indeed see a reduction in baseline concentrations. The exception to this was for receptors R29 and R30, which were classed as 'kerbside' receptors, and hence had the kerbside adjustment factor applied to the modelled road NO_x and resultantly saw an increase in modelled baseline concentrations.

Other factors did change between the modelling process, including using updated Emission Factor Toolkits (EFTs) and different meteorological data.

Further analysis has been undertaken to gain better understanding of the reductions between the two modelling exercises with regards to the different meteorological data used. A less significant prevailing southerly component was identified in the 2023 Emley Moor meteorological data compared to the 2022 Doncaster Sheffield Data. This conspired in a more notable reduction in roadside concentrations on the north side of the A635 (Average: 27%), while a more subtle reduction was noted at receptors on the south side of the A635 (Average: 5%).

The combination of these factors has driven the changes AQ13 refers to.

2.2.6 AQ14

AQ14 states:

"The applicant should confirm why the predicted change at the majority of sensitive receptors in the domain is significantly lower in the 2023 model than in the 2022 model. These changes affect the impact descriptor as per the significant assessment methodology outlined in the report."

The reason for this is in line with the above response to AQ13. When modelled road NO_x was adjusted, the lower roadside adjustment factor narrows the predicted change between the 'Baseline' scenario and any 'with Development' scenario when adjusted modelled road NO_x goes through the relevant conversions to be calculated as NO₂. Again, the exception to this is where the kerbside adjustment factor is used, and in this instance the predicted change increases.

2.3 Further Points Raised in Meeting on 13th August 2024

Two further points require addressing that were raised in the subsequent meeting with Ricardo, BMBC and the applicant.

2.3.1 Amenity

A query was raised that if mechanical ventilation was agreed as appropriate mitigation, this does not mitigate the potential loss of amenity in the gardens of residential receptors. These would not be locations in which exposure would be long-lasting, and therefore the short-term NO₂ 1-hour mean objective would be applicable in this instance. This objective states there should be no more than 18 occasions per calendar year where NO₂ concentrations exceed 200 µg/m³ for a 1-hour period. The indicator value of this, expressed as an annual mean, is 60 µg/m³. There are no impact descriptors set out in the EPUK & IAQM (2017) guidance on assessing these short term targets therefore only the objective is deemed applicable in this instance. As set out in the original TN, no short-term receptor concentrations are anticipated to exceed 60 µg/m³ and therefore it would be anticipated that mitigation would be required for short-term receptor locations.

2.3.2 Alternative Routing and Emissions Controls on HGVs

A query was raised about the rerouting of HGV's or emission controls on the HGV's which can access the proposed development. This avenue has been considered by the applicant during the planning process.

Due to the location of the allocated site (ES10), it was deemed not practical (due to potential increase in journey times with the redirecting of HGV's to the primary highway network).

In terms of emission control for HGV's, since no end-user is known for the proposed units, this option is not deemed practical. Nonetheless, simply applying these restrictions to vehicles at the proposed development would not help achieve compliance with the NO₂ annual mean objective within Hickleton; as set out before, other such proposed mitigation measures would.

3 Conclusions

This TN has been produced to address the comments raised by the BMBC subconsultant, received in August 2024, as well as in a subsequent meeting between Ricardo, BMBC and the applicant on 13th August. The below summarises the queries raised and the responses made in this TN:

- AQ1, AQ3 and AQ6 are now agreed;
- AQ2 has been satisfied within this TN;
- AQ4, AQ7 and AQ8 are addressed in an ES Addendum produced by Stantec;
- AQ5 is left up to the discretion of the LA, although it is advised that they share the view of the applicant in this instance;
- AQ9, AQ10 and AQ11 have lead to additional commentary provided in this TN. These points are also inherently covered in the ES Addendum produced by Stantec; and
- AQ12, AQ13 and AQ14 are technical points which all revert back to the updated model verification process, which is adjudged to be robust and working within the realms of a reasonable margin of error
- Two further queries were raised by BMBC / Ricardo in the meeting on 13th August. It is not thought that either of these queries pose a material change in the options discussed.

In line with the above, it is considered that between this TN and the ES Addendum produced by Stantec, all queries raised by the BMBC subconsultant have been satisfied, apart from AQ5 which is up to the discretion of the LA.

Appendix A – Consultation Comments

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Our reference: ED18432127

01 August 2024

Dear John,

Planning Application for Land to the south of Dearne Valley Parkway (23/02596/CON) – Review of Applicants’ Response

Ricardo undertook a review of the of the Air Quality Chapters and associated appendices included within the Environmental Statements (ES) for Land to the south of Dearne Valley Parkway (Application Reference: 23/02596/CON) on behalf of Barnsley Metropolitan Borough Council (BMBC) on 2nd May 2024. In addition, the review also looked at the City of Doncaster Council (CDC’s) response to the planning application to determine whether they have valid reasons which have led to the rejection to support the planning application.

Ricardo’s review of the Air Quality ES identified eight issues and clarifications (referred to as AQ1 to AQ8) to be considered by the applicant.

The purpose of this letter is to review the applicants’ response to the eight issues which they have provided in the Technical Note (TN) “*Air Quality VC-00052805-EN-RP-0001_TN_FINAL.pdf*” to confirm whether the issues have been suitably addressed and also provide recommendations with regards the conclusions of the report. This letter also reviews the updated 2023 modelling provided with the submission.

Review of Applicants’ Response

AQ1

Ricardo raised a query for the applicant to clarify the surface roughness value used at the dispersion and meteorological site (AQ1). The applicant has confirmed the use of a SF for 0.5 at the dispersion site and SF of 0.2 at the meteorological site. These values are appropriate for the dispersion site (a semi urban location) and for the meteorological site (low lying grass). Therefore, no further clarification is required regarding this issue.

AQ2

Ricardo raised a query for the applicant to provide justification for using the meteorological site Doncaster Sheffield meteorological station. The applicant has now confirmed that although the Emley Moor meteorological station was most suitable, it was agreed with the EHO that Doncaster Sheffield should be utilized for the assessment scenario. An updated modelling has now been undertaken for 2023 using Emley Moor meteorological station. However, no justification has still been provided on

why the site is considered representative of the meteorological conditions at the dispersion site. The applicant should confirm the distance away from the site, the height above sea level and any other parameters that can help justify that the met site is representative of the dispersion site. We have reviewed the meteorological site location, and provided that data capture is sufficient we agree that this choice of meteorological site is sensible.

AQ3

Ricardo raised a query for the applicant to clarify the source of the background data used for the ecological receptors. The applicant has confirmed that the data was sourced from Air Pollution Information System (APIS) provided by JNCC. This is a reputable data sources and as such no further clarification is required.

AQ5

Ricardo raised a query for the applicant to take into consideration the stringent PM_{2.5} target of 10 µg/m³. The applicant has stated that “ *the PM_{2.5} targets are central government targets primarily focusing on tackling emissions, rather than requiring local authorities to assess concentrations against these new PM_{2.5} targets. In March 2023, the Department or Levelling Up Housing and Communities write to all Chief Planning Officers in England advising that guidance was progressing on how these targets should be integrated into the planning system but that until such guidance is published local authorities should continue to asse local air quality impacts in accordance with existing guidance. It is thus not appropriate to consider these new targets until such guidance has been published which at this time it is understood this guidance has not been released.*”

The proposed guidance referred to by the applicant is expected to be specific to local authorities assessing whether they would meet the PM_{2.5} targets based on the assessment of individual projects in the LA. Furthermore, it is important that the impact of a new scheme is considered in the context of whether it will be detrimental to the LA meeting these new PM_{2.5} targets. Air quality professionals have the expertise to make this judgement based on the modelled concentrations. However, given that this is a future target, the LA has the discretion to decide if this should be considered for this and any upcoming planning applications.

AQ6

Ricardo raised a query for the applicant to clarify the source of power and heating of the development. The applicant has responded that the heating technology to be used will be a combination of Air Source Heat Pumps (ASHPs), Electric Heaters and Solar Photovoltaic (PV). It is agreed that none of these technologies have any emissions associated with them and as such no air quality impacts are likely, therefore no further clarification is required.

AQ4, AQ7 and AQ8

Ricardo raised the following queries:

- The applicant should undertake further modelling studies of the proposed mitigation measures to **confirm that the impacts would become “negligible”**. It is recommended that the ecological assessment of air quality impact’s is reviewed by Barnsley’s Ecologist to confirm an adequate assessment has been undertaken (AQ4).
- The applicant should undertake further modelling studies of the proposed mitigation measures to confirm that **cumulative impacts** would be negligible (AQ7).
- The applicant should conduct a more robust study of the effects of mitigation measures and then provide an overall **significance of the impact** of the development based on the outcome of this study (AQ8).

The applicant has provided a mitigation strategy in response to the impacts at the ecology sites and human receptors, however no modelling has been undertaken based on the proposed junction improvement or bypass to demonstrate the extent of air quality improvement expected to be achieved. Cumulative impacts and the significance of impacts have also not been re-assessed.

The applicant has undertaken an updated air quality modelling assessment using 2023 traffic data and provided an updated the model verification exercise using 2023 monitoring data. The updated modelling results do not change the conclusions of the previous modelling assessment with regards to the significance of impacts of the scheme alone and in combination with cumulative developments

at John O Gaunts, as substantial impacts are still predicted. However, slight and moderate adverse impacts are no longer predicted at other sensitive receptors in Hickleton.

The mitigation strategy provided in the TN is specific to John O Gaunts and assumes that mechanical ventilation is viable. However, the mechanical ventilation system proposed, its maintenance strategy and the effectiveness of this to reduce concentrations such that the air quality impact would become negligible has not yet been established.

BMBC and Natural England have provided a response on the air quality impacts at the ecological sites and their view is that appropriate mitigation should be secured via planning conditions to ensure minimal impact on sensitive habitat. This is agreed.

Review of updated modelling

The applicant's response includes updated modelling for 2023. This modelling includes the following changes:

- The version of the Emission Factor Toolkit used has been updated to v12.
- Meteorological data for 2023 has been taken from the Emley Moor site.
- Traffic flows have been updated using growth factors derived from nearby DfT traffic counts.
- An updated model verification has been carried out using available monitoring data for 2023.

The resulting effects on the results of the modelling exercise can be summarised as follows:

- The kerbside adjustment factor (used at R29 and R30 where a "substantial" adverse impact is predicted in the operational phase of the proposed site) has increased from 2.5 to 2.9. The RMSE for this adjustment factor has increased substantially (from 4.4 $\mu\text{g.m}^{-3}$ to 8.3 $\mu\text{g.m}^{-3}$), suggesting that the updated model is performing substantially worse than the 2022 model at kerbside sites.
- The roadside adjustment factor (used for the majority of sensitive receptors) is reduced from 1.8 $\mu\text{g.m}^{-3}$ to 1.5 $\mu\text{g.m}^{-3}$. The new model adjustment factor has been calculated using measurements from a single monitoring site, DT46, rather than 2 sites as in the original modelling which included results from CM7. As a result, it is no longer possible to assess the performance of the model at roadside sites.
- Baseline predicted annual mean NO₂ concentrations are substantially lower at all sensitive receptors.
- The predicted change in concentrations resulting from the implementation of the proposed scheme on annual mean NO₂ concentrations is lower at the majority of receptors.
- The combined impact of these effects is to reclassify impacts from the proposal as 'Negligible' at 7 sensitive receptors.

Results for these receptors in the 2022 and 2023 based models are summarised in Table 1.

Table 1: Predicted annual mean concentrations in the original submission and the 2023 model update

Receptors	2022 model (Table G.1)				2023 model (Table C.7)			
	2026 Baseline	2026 Base + Op	Conc. increase	Impact Descriptor	2026 Baseline	2026 Base + Op	Conc. increase	Impact Descriptor
R06	24.2	26.4	2.22	Slight	18.1	19.4	1.3	Neg.
R11	29.4	32.3	2.87	Mod.	23.6	25.7	2.1	Neg.
R12	26.9	29.3	2.49	Slight	21.3	23.0	1.7	Neg.
R22	26.1	28.4	2.37	Slight	21.2	22.9	1.7	Neg.
R23	25.0	27.2	2.20	Slight	20.4	22.0	1.6	Neg.
R28	25.8	28.1	2.24	Slight	20.4	21.9	1.5	Neg.
R29	55.1	60.2	5.09	Sub.	57.6	63.4	5.8	Sub.
R30	50.7	55.3	4.69	Sub.	53.2	58.5	5.3	Sub.
R31	27.6	30.1	2.51	Slight	21.7	23.4	1.7	Neg.

It is unlikely that the change in EFT version, meteorological data and adjustment factor are likely to be sufficient to explain this change, which substantially alters the conclusions of the study. Therefore, additional issues and clarifications have been made to the original eight issues (AQ1 to AQ8). These are summarised in the recommendations below.

Recommendations

AQ 9 - The applicant should provide the specification of the mechanical ventilation, its maintenance routine and the improvement in air quality expected from the mechanical ventilation device. Where this air quality improvement reveals that air quality impact would be reduced to a negligible impact, then no further work is required.

AQ10 - The applicant should also confirm that there are no other receptors apart from John O Gaunts (R29 and R30) where non-negligible (i.e., slight, moderate or substantial adverse impacts) would occur. If there are, the proposed mitigation measures should also be applied to these receptors.

AQ11 - Where the ventilation strategy is unable to achieve the appropriate reduction to achieve a negligible air quality impact, then further modelling studies should be undertaken based on traffic estimates of the proposed bypass and junction improvements to predict the air quality improvement from this additional mitigation.

AQ12 - The applicant should provide a commentary on why the updated 2023 model is performing significantly worse than the original model at kerbside sites.

AQ13 – An explanation should be provided for why predicted baseline concentrations in 2026 are significantly lower using the updated model compared to the previous modelling.

AQ14 - The applicant should confirm why the predicted change at the majority of sensitive receptors in the domain is significantly lower in the 2023 model than in the 2022 model. These changes affect the impact descriptor as per the significance assessment methodology outlined in the report.

Conclusions

It is considered that the applicant's Technical Note provides responses to some of the issues, however there are still several outstanding issues which would need to be addressed.

AQ2 and AQ5 are outstanding low priority and medium priority issues, respectively that need further clarification.

In conclusion, to resolve the high priority issues **AQ4, AQ7 and AQ8** which are still outstanding, we have made the additional recommendations **AQ9, AQ10 and AQ11** (if necessary), which need to be resolved to provide evidence that receptors would not be exposed to poor air quality.

The applicant has not explained what the significance of the impacts of the scheme would be based on the revised modelling results. There are also queries (**AQ12, AQ13 and AQ14**) about why there is a significant change in the significance of impact at several receptors. As such the conclusions of the assessment would need to be revisited once the above clarifications have been addressed.

Yours sincerely,



Angela Goodhand

Principal Consultant

Direct: 

Email: 

Appendix B – AAC Eurovent Technical Specification



LEADERS IN AIR & LIQUID PHASE FILTRATION TECHNOLOGY
0800 999 4884



AAC NITROSORB[®]

INDOOR AIR NO₂ FILTRATION SYSTEMS

Residential

Commercial

Educational



Indoor Air Quality Solutions for Residential Properties, Schools, Universities and Commercial Buildings

Indoor Air NO₂ Filtration Systems

The European Union Air Quality and Clean Air for Europe 2008/50/EC (CAFE) Directive set stringent NO₂ levels for designated Air Quality Management Areas.

At AAC Eurovent we design and manufacture cutting edge NO_x filters.

AAC NITROSORB® filters provide planners, developers and mechanical consultants with an effective and sustainable NO₂ mitigation solution for indoor air projects in new build and retrofit residential, commercial and educational schemes, where NO₂ concentrations exceed the accepted level of 40ug/m³

Our high performance solutions offer a number of key benefits;

- Suitable for residential, commercial and educational applications
- Suitable for both new build and retrofit schemes
- Widely accepted by planners in Air Quality Management Areas
- Recommended for use by leading UK air quality consultants
- Routinely specified by mechanical consulting engineers
- Solutions available to suit both Mechanical Ventilation Heat Recovery systems and centralised Air Handling plant
- Offer a very low pressure drop
- Can be supplied in both horizontal and vertical air flow orientations
- Range of standard units available to suit most applications
- Bespoke design service also available
- Compatible with the AAC Colourcell® media filter system
- Transparent viewing panel for ease of inspection
- Available in either Plain Galvanised or Electric Powder Coat finish





Indoor Air NO₂ Mitigation for Mechanical Ventilation Heat Recovery Units

For residential apartments where individual ventilation systems are connected to an MVHR system, we recommend the AAC Swiftpack® NITROSORB® filter system.

AAC Swiftpack® NITROSORB® Filter System

The AAC Swiftpack® NITROSORB® filter system incorporates AAC NITROSORB® media into the AAC PR™ range of media filter cells.

This compact, high performance solution is suitable for both horizontal and vertical airflows, is designed for use with a wide a range of volume flow rates, and can be accommodated in a false ceiling void as low as 100mm.

The units meet the low pressure drop requirements of MVHR units installed under part F of the Building Regulations and when situated downstream from the MVHR (recommended) offers the benefit of longevity, alongside low pressure drop, with no increased energy consumption from the indoor ventilation system.

PM10 or PM2.5 particulates can also be easily removed by the installation of a suitably rated particulate pre-filter, thus enabling the unit to comply with the particulate aspect of the legislation.

Features & Benefits

- Independently MCERTS tested and verified
- Accepted by planners as an AQMA NO₂ mitigation measure
- Compatible with MVHR units
- G3 after-filter fitted as standard
- Optional PM10/PM2.5 filter can be installed into the unit
- Smart remote system monitoring available
- Compact design, allowing for easy installation
- Bespoke design service available





NO₂ Mitigation for Commercial and Educational Schemes with Air Handling Units

The AAC NITROSORB® filter system can easily be installed into an AAC Swiftkit® or an AAC Skeleton™, to meet the requirements of larger commercial and educational buildings served by AHUs.

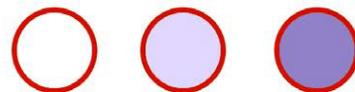
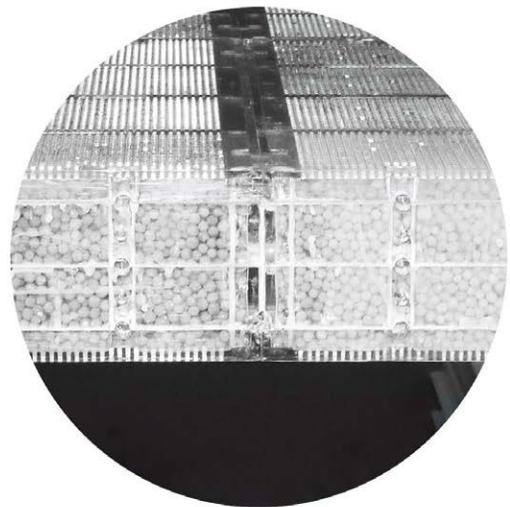
These units can then be connected to the AHU, or if space allows, fitted within it.

AAC Swiftpack® NITROSORB® Filter System with Colourcell®

Our unique AAC Colourcell® media filter system is designed to save time and money by providing end users and maintenance technicians with a clear indication of the status of the NITROSORB® media and notification when the media replacement should be carried out.

AAC Colourcell is a patented, transparent filter cell containing a media formulated to react to changes in the condition of installed AAC NITROSORB media, by undergoing a series of visible changes in appearance from white (new media) to pink (spent media). Our units feature a transparent viewing panel for ease of inspection.

The result can be further verified by analysis of a media sample in the laboratory.





AAC EQUINOX® - NO₂ Monitoring & Data Acquisition

AAC EQUINOX® is a NO₂ monitoring & data acquisition solution designed to work seamlessly with the AAC Swiftpack® NITROSORB® filter system, continuously measure the efficiency and performance in reducing indoor air levels of NO₂. In addition to the monitoring of NO₂, AAC EQUINOX® has the capability to monitor: carbon monoxide, temperature, relative humidity and noise.

The Limitations of Conventional NO₂ Monitoring

Low data resolution (monthly data from diffusion tubes) and prohibitive costs have rendered conventional air quality monitoring techniques unsuitable for the continuous monitoring of NITROSORB® filter efficiency. AAC EQUINOX® has been developed as a bespoke solution to deliver a continuous monitoring system that offers planners and end users a low cost, reliable and accurate way to continuously measure the efficiency and performance of installed AAC Swiftpack® NITROSORB® filter systems.

About the AAC Swiftpack® NITROSORB® Filter System

The AAC Swiftpack® NITROSORB® filter system is a unique NO₂ mitigation solution designed to assist developers, planning consultants, consulting engineers and local authority planning departments to comply with the **EU Directive 2008/50/EC (the CAFE Directive) European Union Air Quality and Clean Air for Europe 2008.**

The role of AAC NITROSORB® in NO₂ reduction is well established, and the solution is regularly specified by consulting engineers for residential, school and commercial projects in Air Quality Management Areas where there is a planning requirement to mitigate NO₂ from the indoor air.

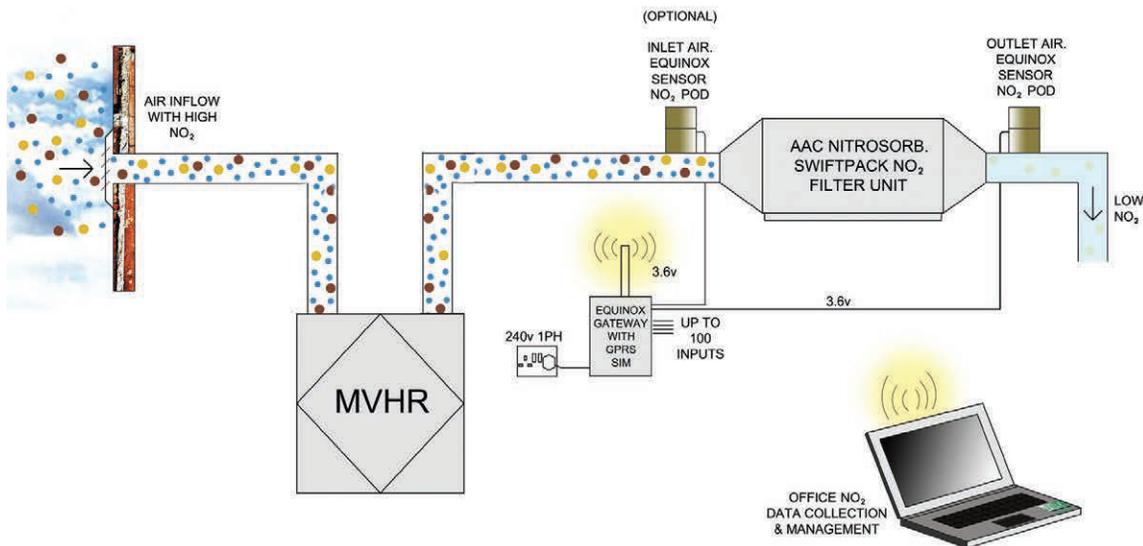


What is EQUINOX®?

AAC EQUINOX® is a wireless NO₂ monitoring system which operates using an electro-chemical NO₂ sensor on the filter discharge. A second optional sensor can also be fitted on the filter inlet if required.

How Does EQUINOX® Work?

AAC EQUINOX® is designed to communicate over a wireless ZigBee protocol. The EQUINOX® units can be deployed in a network, or mesh which only requires a single gateway hub to communicate data from the entire network back to the central server.



The schematic drawing above illustrates how EQUINOX® is positioned to provide end users with the critical information needed to measure the efficiency and performance of their installed AAC Swiftpack® NITROSORB® filter system.

Why choose the AAC EQUINOX®?

- A high quality, accurate, low cost solution with low maintenance and running costs
- Simple to install and easy to understand
- Remote analysis with set point alarm providing media replacement alerts
- Provides reliable assurance to end users that the filters are performing well and protecting them

AAC EQUINOX® and AAC COLOURCELL®

AAC EQUINOX® is designed for use in conjunction with the AAC COLOURCELL® media filter cell technology, which offers end users an important visual indication of the condition of the installed NITROSORB® media. In practice these changes take place over a 2-5 year period, but by monitoring changes in the appearance of the COLOURCELL® filter media, end users and maintenance personnel are able to easily determine when the NITROSORB® filter media may require to be changed, by way of a transparent viewing panel included in our NITROSORB® filter units.

AAC EQUINOX® is available either for purchase or very affordable low cost hire.

Address: AAC Eurovent Ltd, AAC House, Unit K, Maybrook Industrial Estate, Maybrook Road, Brownhills, West Midlands, WS8 7DG

UK Tel: 0800 999 4884 | **Fax:** 08444 77 4797 | **International Callers Tel:** +44 (0) 1543 379823

Email: sales@aceurovent.co.uk | **Website:** www.aceurovent.co.uk

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Case Study

Location: Brentford, London, 7th Floor Building, off the A40
AAC EQUINOX® Assessment Period: 3/9/2015 -18/9/2015

The Problem

Continuous poor air quality in this area, with spikes in excess of 200ug/m³.

The Solution

A large AAC Swiftpack® NITROSORB® system was installed on the roof of the property, in conjunction with an AAC EQUINOX® system.

The red line in the graph overleaf represents the inlet/upstream concentration and the blue line shows the downstream concentration after the AAC Swiftpack® NITROSORB® filter unit.

The horizontal line indicates the 40ug/m³ acceptable limit, and the pink line represents exceedance for a short period of time where the AAC Swiftpack® NITROSORB® filter unit passes air above the 40ug/m³ NO₂ level, due to some extraordinarily high spikes in the overall air quality.

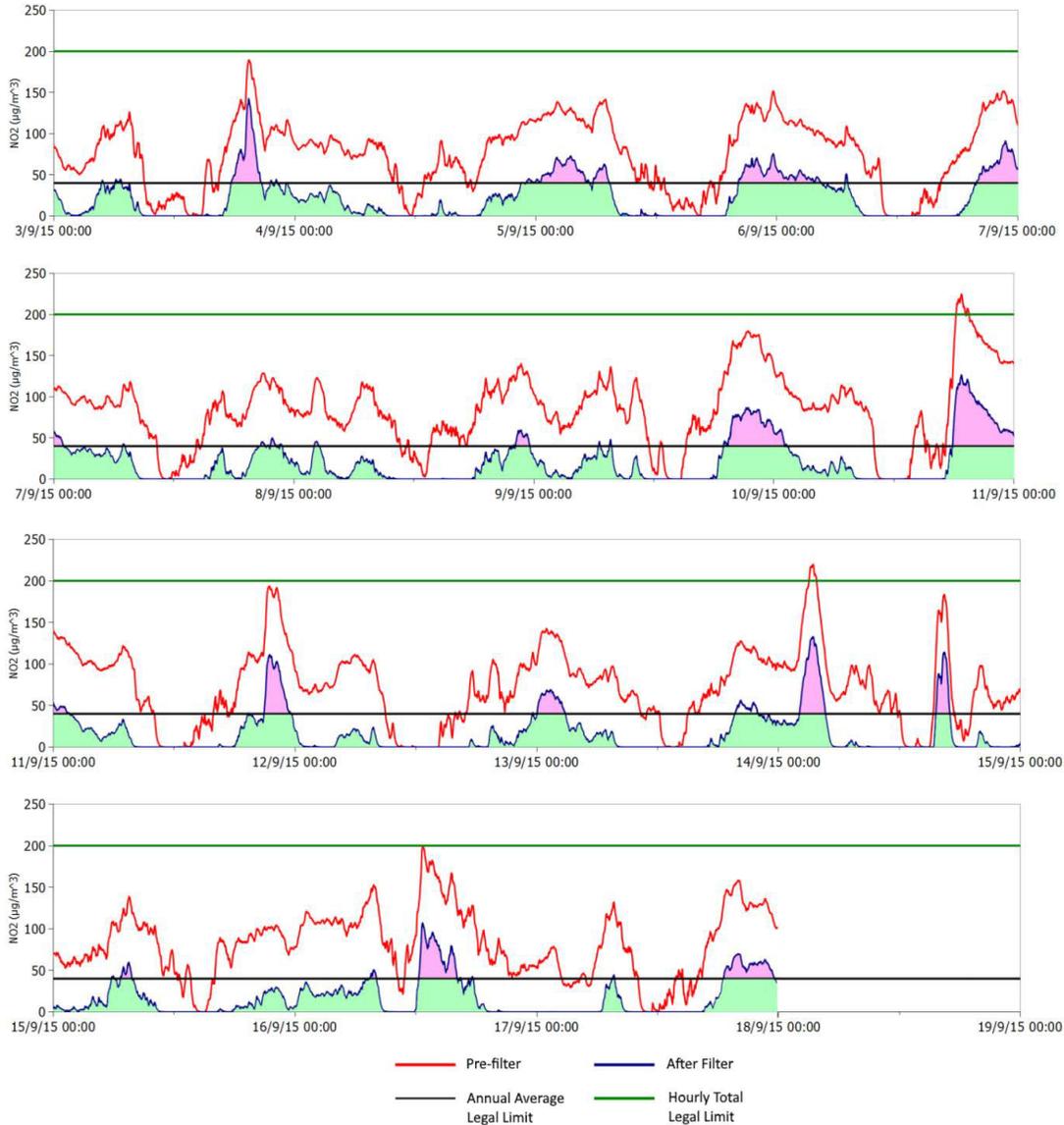
The Result

The average inlet concentration is 70.4ug/m³ and the average downstream concentration is 17.3ug/m³ demonstrating a filter efficiency of 75.43%.

AAC EQUINOX® NO₂ Monitoring & Data Acquisition

The effectiveness of AAC EQUINOX® in monitoring of the AAC Swiftpack® NITROSORB® filter system is clearly demonstrated in the graph below.

AAC Eurovent EQUINOX® Assessment 3/19/15 - 18/9/15



	Before Filter	After Filter
Study Mean Average (µg/m ³)	70.4	17.3
Exceedances of 200µg/m ³ Hourly Averaged	2	0
Filter Efficiency (%)	75.43	

To find out more about the role of AAC NITROSORB® and AAC EQUINOX® in NO₂ mitigation, call: **0800 999 4884** or email: sales@aceurovent.co.uk

Address: AAC Eurovent Ltd, AAC House, Unit K, Maybrook Industrial Estate, Maybrook Road, Brownhills, West Midlands, WS8 7DG
UK Tel: 0800 999 4884 | **Fax:** 08444 77 4797 | **International Callers Tel:** +44 (0) 1543 379823
Email: sales@aceurovent.co.uk | **Website:** www.aceurovent.co.uk

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Appendix C – Roadvent Technical Specification



Modelling emission reduction solutions in an air quality management area

Professor Paul Lewis

Director of R&D, Vindico ICS Ltd

Professor Emeritus, Medical School Swansea University

UKRI Clean Air Programme Regional Champion for Wales

VINDICO

Hafod-yr-Ynys AQMA

Was it Wales' most polluted street?



WalesOnline  NEWS ▾ RUGBY FOOTBALL IN YOUR AREA WHAT'S ON ▾ MORE ▾     

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Wales' most polluted street - where residents wish their homes would be torn down

Woodside Terrace is the most polluted street outside of London



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[Wales](#) | [Wales Politics](#) | [Wales Business](#) | [North West](#) | [North East](#) | [Mid](#) | [South West](#) | [South East](#)

Wales must set out reduction plan rules High Court

© 21 February 2018

AQMA's in Wales

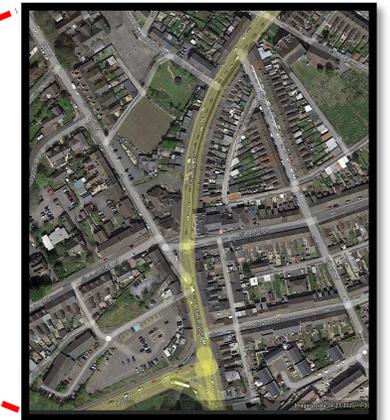
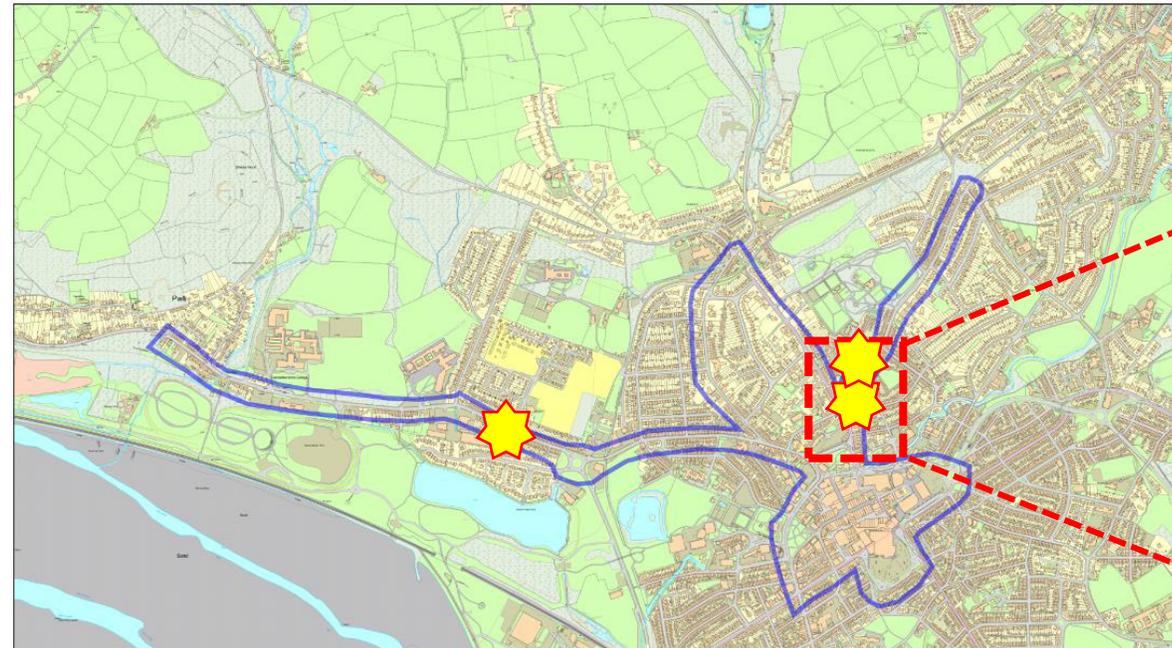
Local Authority	AQMAs (current)	AQMAs (revoked)
Bridgend	1	0
Caerphilly	2	0
Cardiff	4	3
Carmarthenshire	3	0
Merthyr Tydfil	1	0
Monmouthshire	2	0
Neath Port Talbot	1	0
Newport	11	2
Pembrokeshire	2	0
Powys	0	1
Rhondda Cynon Taf	16	2
Swansea	1	0
the Vale of Glamorgan	0	1

Llanelli AQMA

Northern route (M4 link)



Llanelli AQMA Boundary Map



0 200 400 600m

Graddfa Scale 1:15000

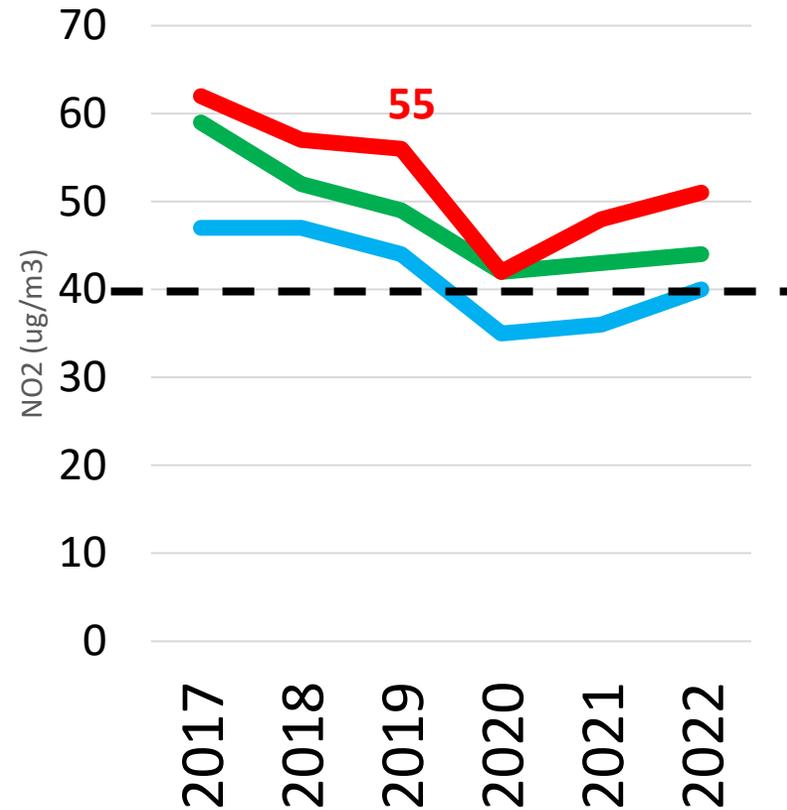
Canol y Map Map Centre [249868,201019.8]

Dyddiad Date 26/02/2016



2019 Annual Average NO₂ > 40 ug/m³

NO₂ exceedances around Felinfoel Road



Background

~ 10-14ug/m³



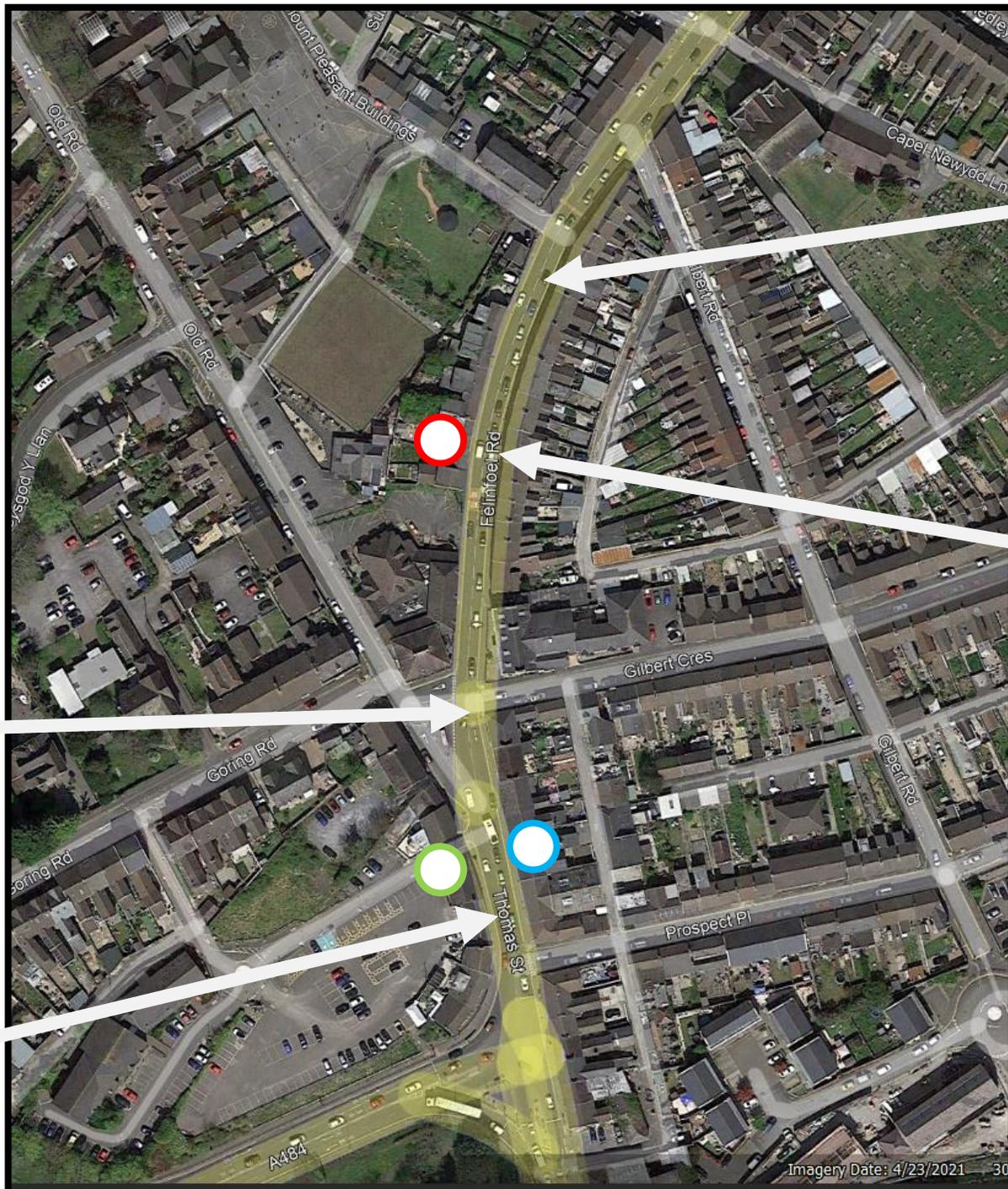
13 Felinfoel Road

33 Thomas Street

44 Thomas Street

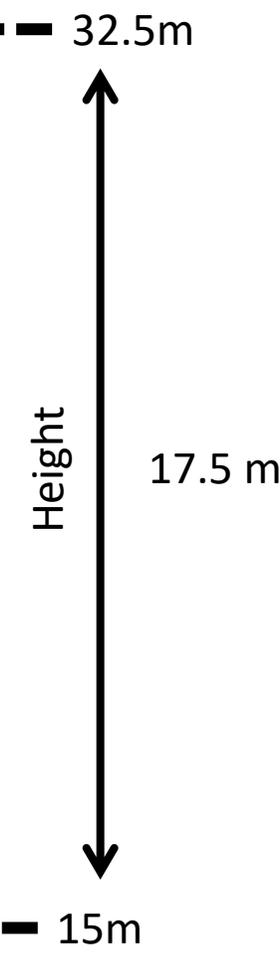
Topography

Predominantly Canyon

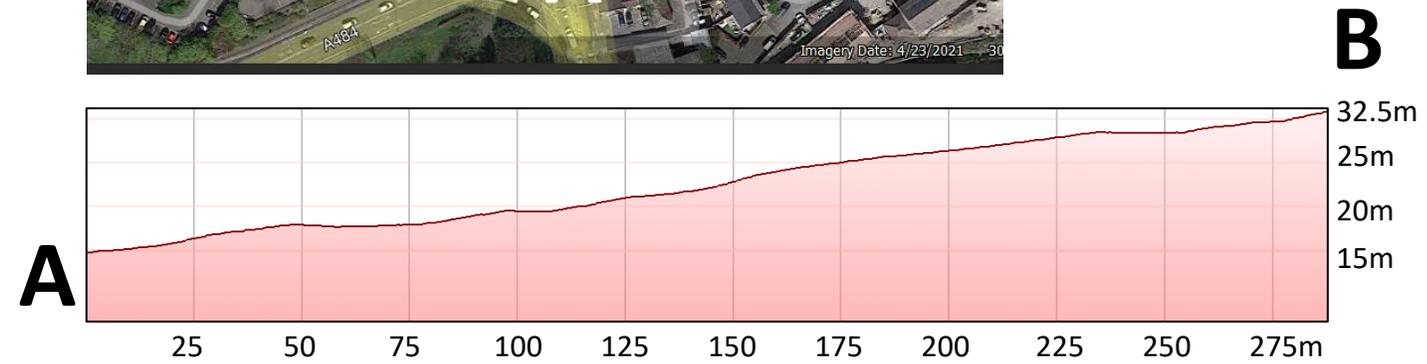


Topography

**Continuous
Uphill
-
Steep
Gradient**



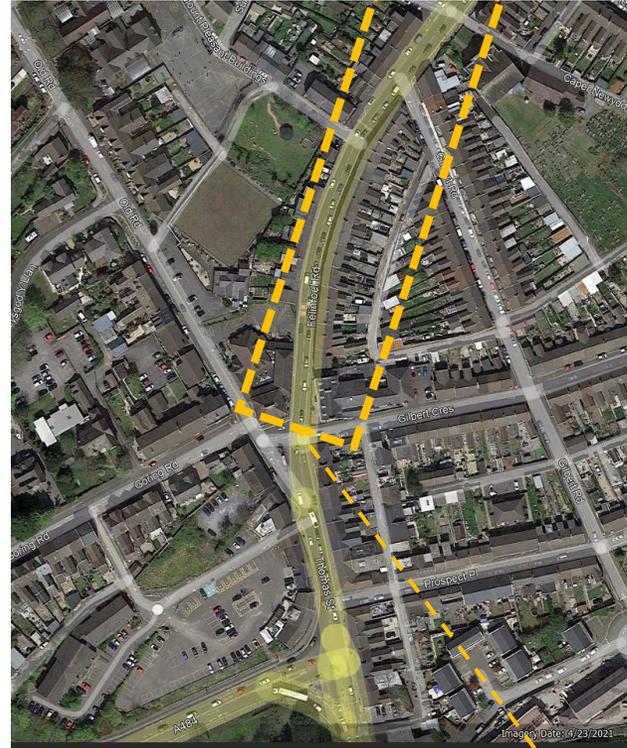
Gradient
6.5%



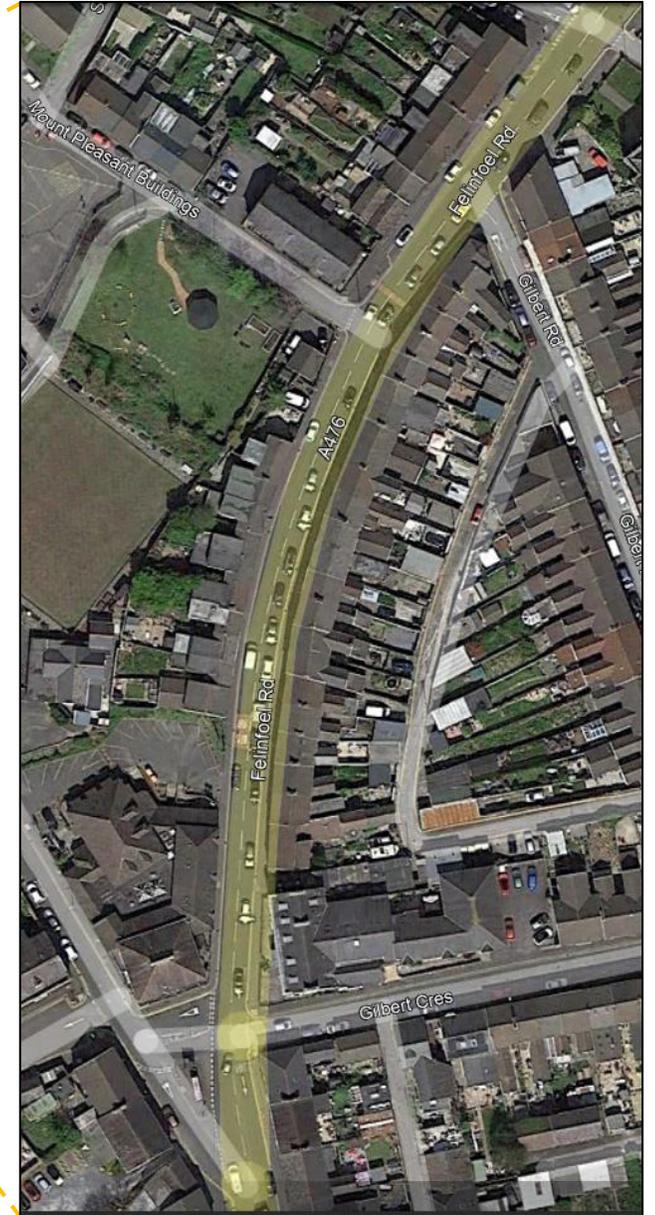
Potential measures to address NO₂ exceedance?

1. No idling scheme
2. Divert HGV/Buses
3. In-road NO_x capture

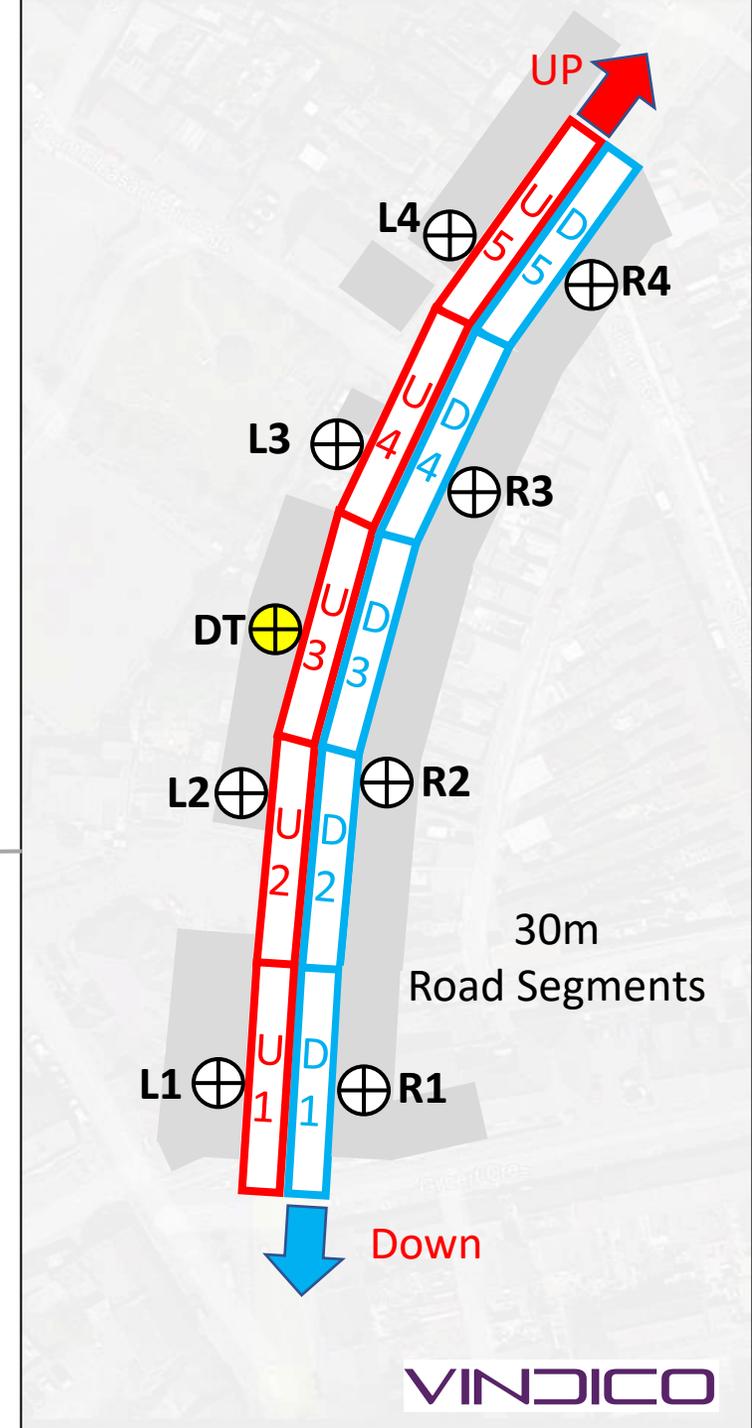
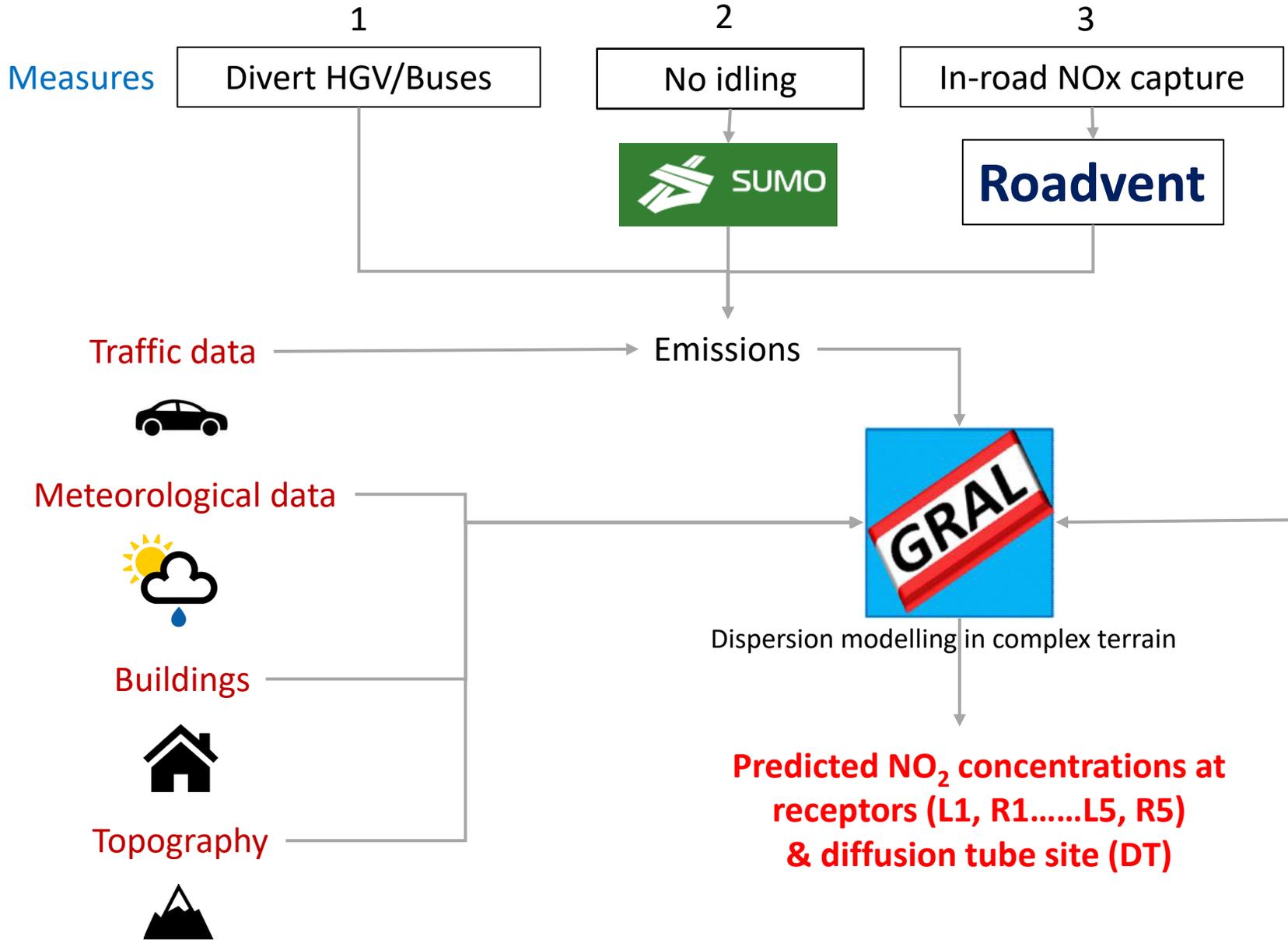
- CAZ
- Traffic planning and management
- Encouragement of shift of transport modes
- Public information and Education
- Etc....



Felinfoel Road



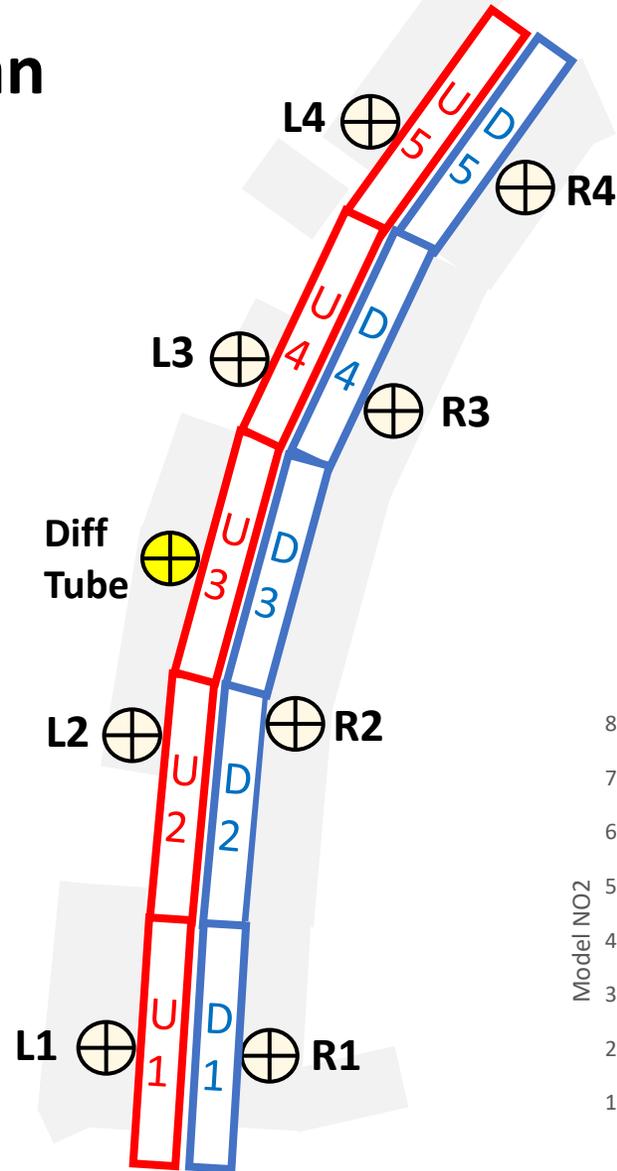
Dispersion modelling approach



Predicted modelled annual mean NO₂ at receptor sites

Predicted Annual Means

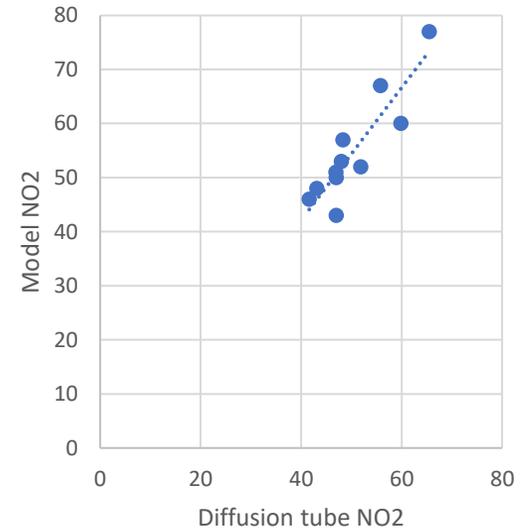
	DT	L1	L2	L3	L4
NO ₂ ug/m ³	41	12	9	28	6



Predicted Annual Means

	R1	R2	R3	R4
NO ₂ ug/m ³	8	28	62	23

Model vs Predicted



RMSE = 6.549

Source apportionment of NO₂ at receptors

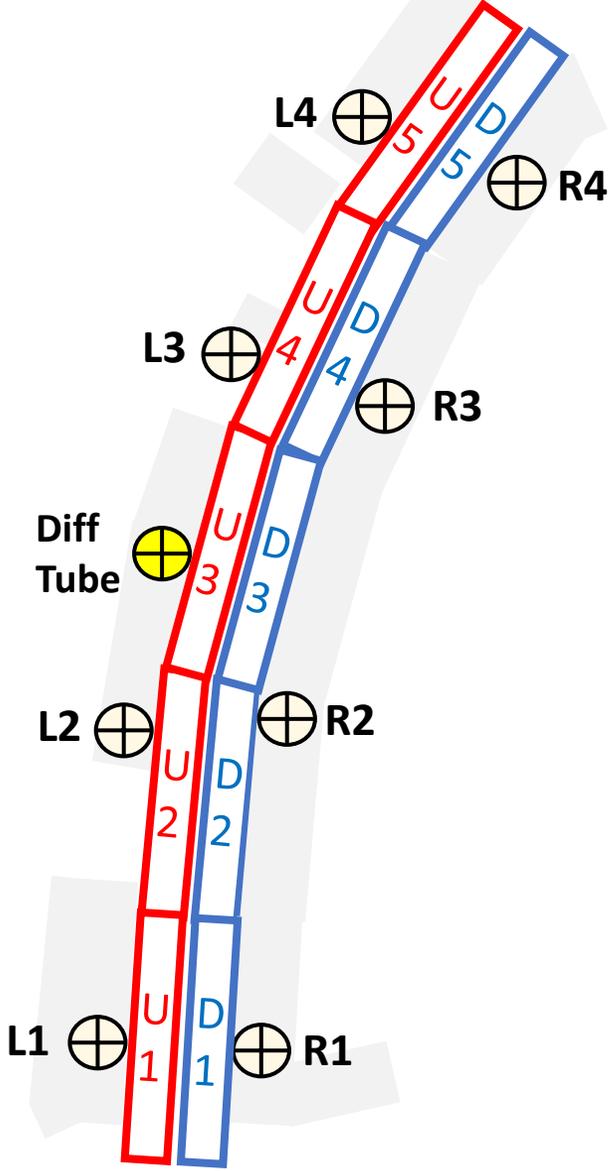
% Contribution by lanes segments to receptors

DT	L1	L2	L3	L4
----	----	----	----	----



U5	1	0	1	6	49
U4	16	1	8	61	6
U3	63	4	20	7	2
U2	5	10	27	2	1
U1	1	39	15	1	0

D5	1	0	1	4	15
D4	4	1	2	14	3
D3	5	2	4	3	1
D2	2	6	7	1	0
D1	1	13	7	0	0



R1	R2	R3	R4
----	----	----	----



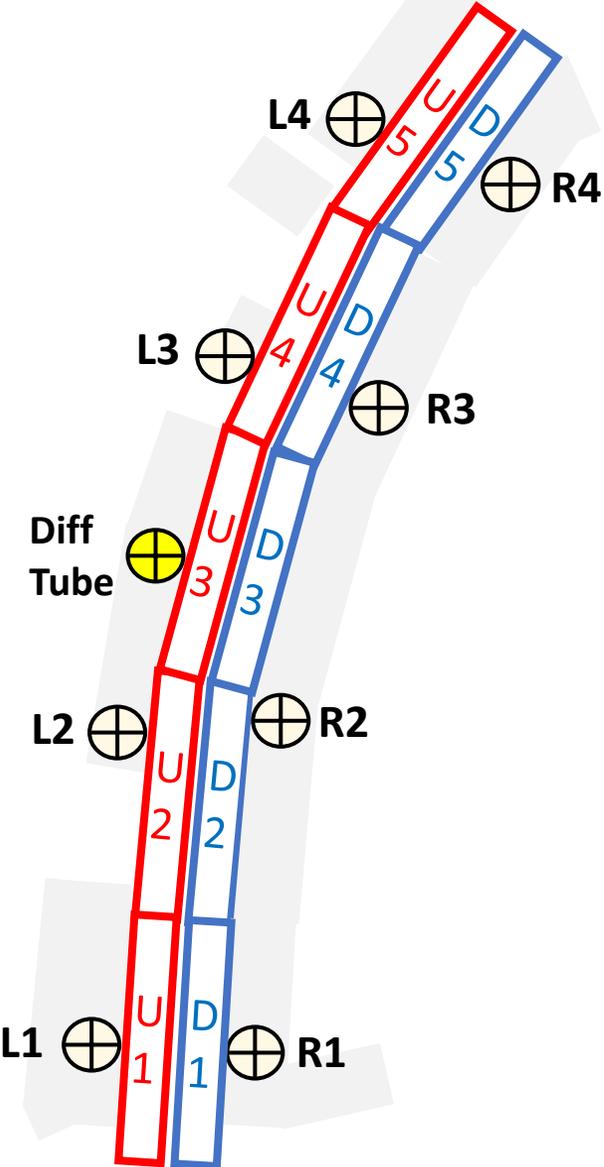
U5	0	1	10	47
U4	1	4	36	2
U3	3	19	4	1
U2	10	14	1	0
U1	21	6	1	0

D5	0	1	8	31
D4	1	3	35	1
D3	2	27	2	0
D2	5	17	1	0
D1	18	3	0	0

Predicted NO₂ at receptors from each source

NO₂ contribution by lane segments to Receptors

	DT	L1	L2	L3	L4
	⊕	⊕	⊕	⊕	⊕
U5	0.4	0.0	0.1	1.8	3.1
U4	6.5	0.1	0.7	17.1	0.4
U3	25.4	0.5	1.8	2.0	0.1
U2	2.0	1.2	2.5	0.4	0.1
U1	0.6	4.5	1.4	0.2	0.0
D5	0.3	0.0	0.1	1.0	1.0
D4	1.7	0.1	0.2	3.8	0.2
D3	2.2	0.2	0.4	0.7	0.1
D2	0.8	0.6	0.7	0.2	0.0
D1	0.3	1.5	0.7	0.1	0.0



	R1	R2	R3	R4
	⊕	⊕	⊕	⊕
U5	0.0	0.2	6.3	10.8
U4	0.1	1.2	22.6	0.6
U3	0.3	5.4	2.7	0.2
U2	0.8	4.1	0.8	0.1
U1	1.7	1.7	0.3	0.1
D5	0.0	0.2	4.8	7.1
D4	0.0	0.7	21.4	0.3
D3	0.1	7.8	1.4	0.1
D2	0.4	4.9	0.3	0.0
D1	1.4	0.9	0.2	0.0

Measures...

Diverting HGV/Buses

Reduction in annual mean NO₂

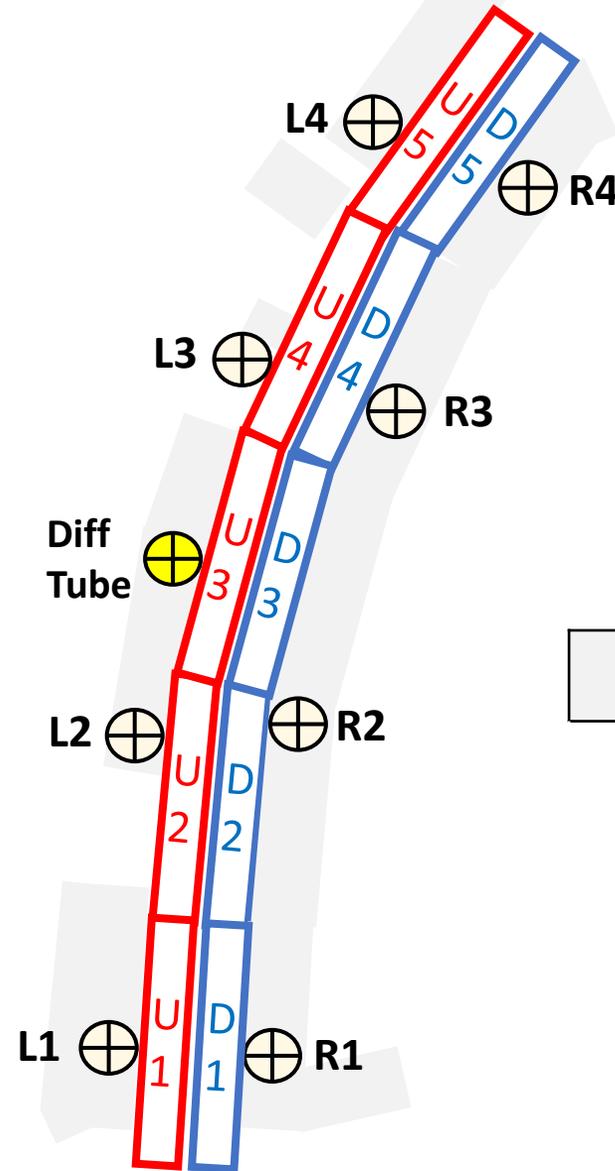
DT	L1	L2	L3	L4
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NO ₂ ug/m ³	24	5	5	17	3
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Compliance?

Predicted annual mean: **31 ug/m³**



Reduction in annual mean NO₂

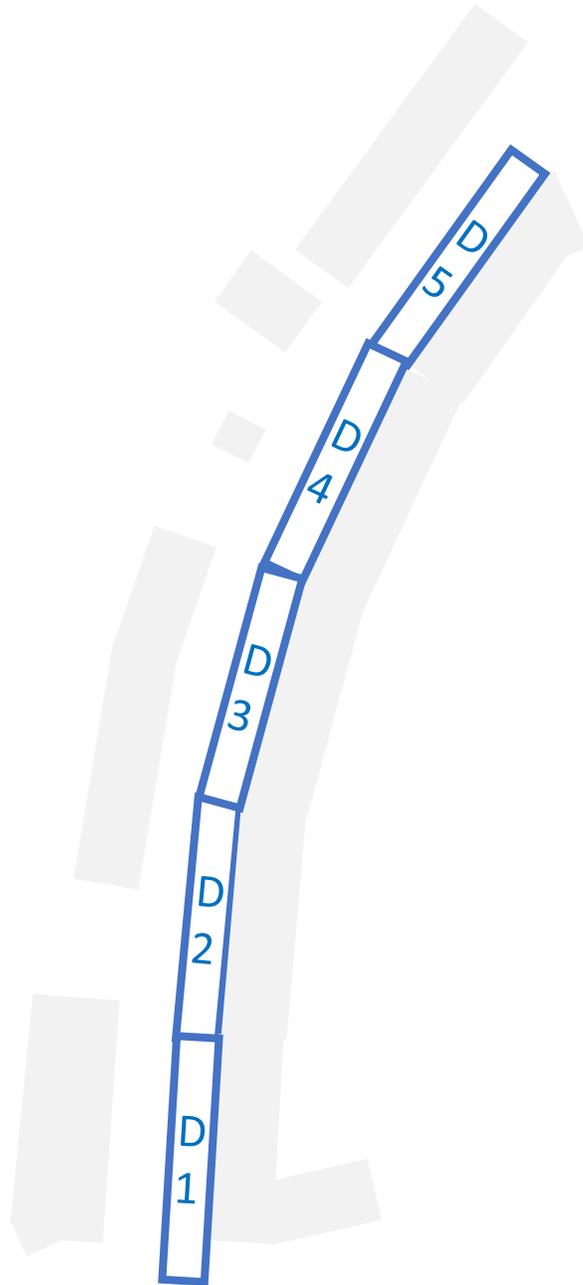
R1	R2	R3	R4
-----------	-----------	-----------	-----------



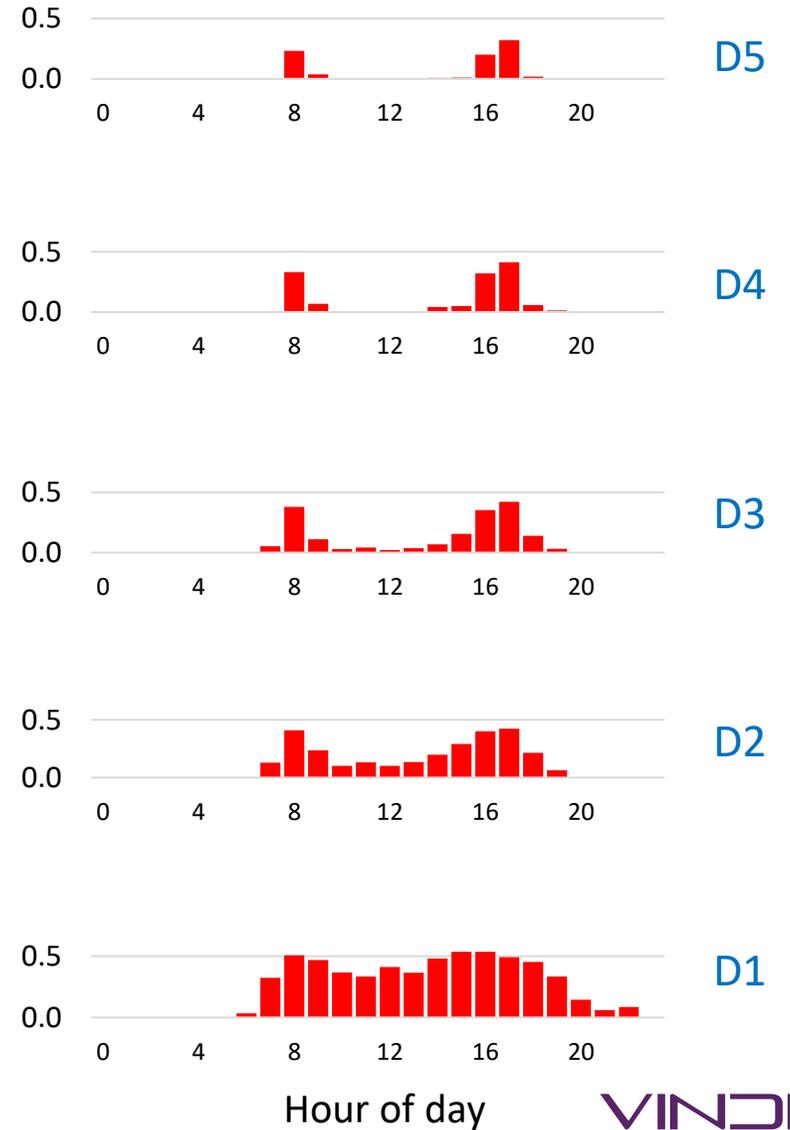
NO ₂ ug/m ³	3	17	38	12
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No-Idling

Traffic flow simulation



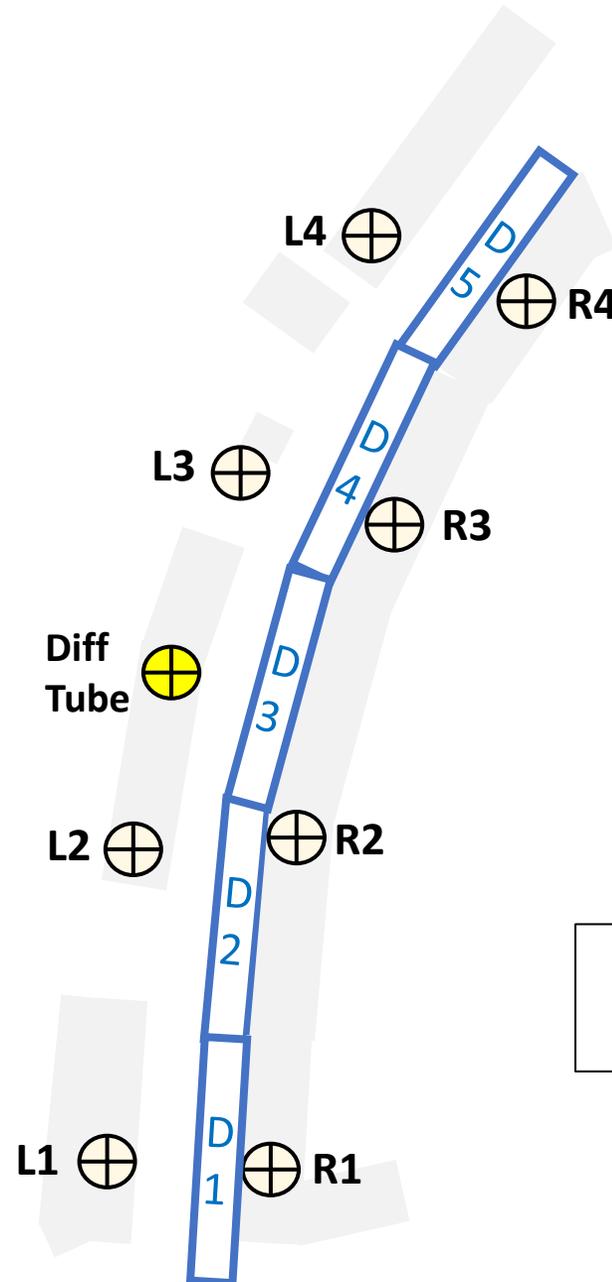
Probabilities of vehicle idling per hour per lane



No-Idling

NO₂ contribution by idling in lanes to Receptors

	DT	L1	L2	L3	L4
D5	0.07	0.01	0.02	0.26	0.24
D4	0.21	0.01	0.02	0.45	0.02
D3	0.16	0.02	0.03	0.05	0.00
D2	0.04	0.04	0.04	0.01	0.00
D1	0.01	0.05	0.02	0.00	0.00
Total	0.49	0.12	0.14	0.78	0.27



	R1	R2	R3	R4
D5	0.00	0.05	1.18	1.75
D4	0.00	0.09	2.54	0.03
D3	0.01	0.59	0.11	0.01
D2	0.02	0.27	0.02	0.00
D1	0.05	0.03	0.01	0.00
Total	0.09	1.04	3.86	1.79

Compliance?
 Predicted annual mean: **54.5 ug/m3**

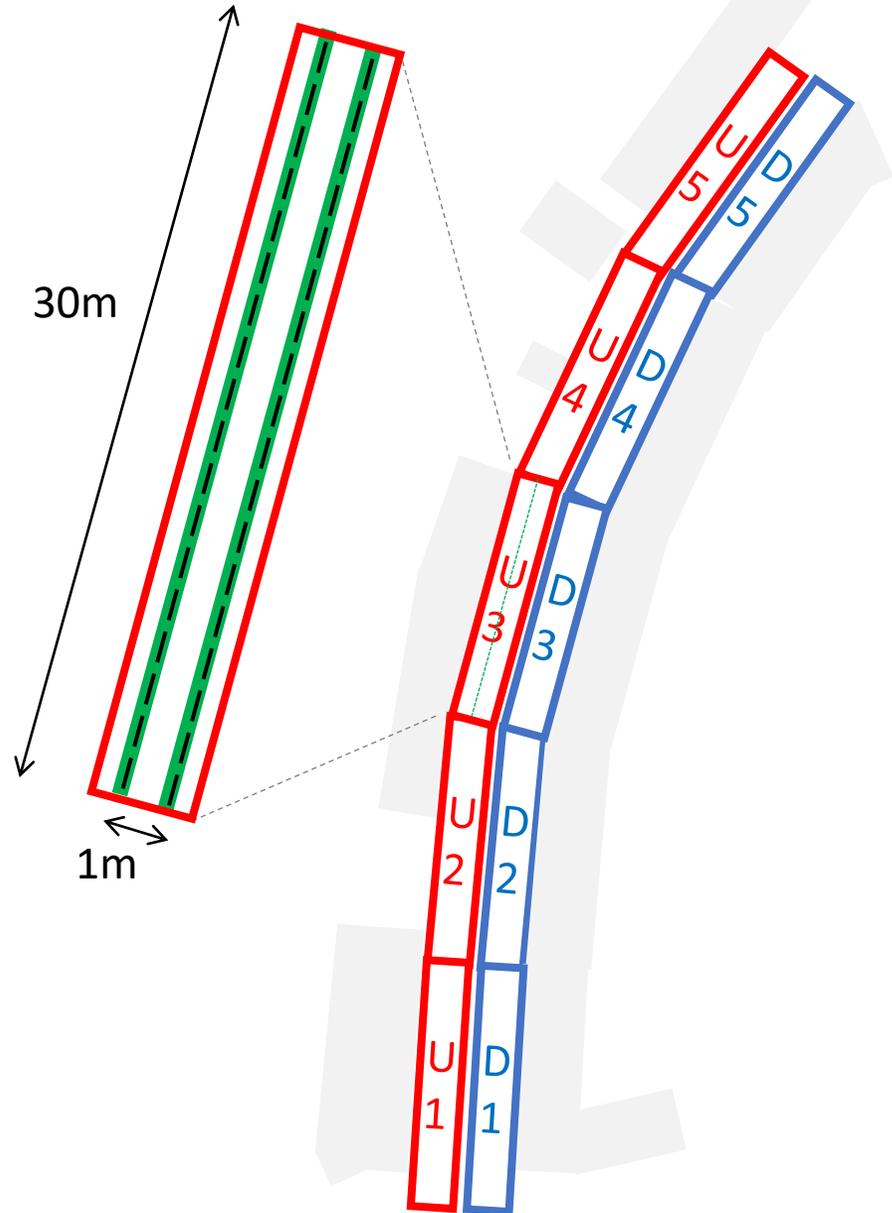
In-road NOx capture - Roadvent



- Suction fan to induce flow
- Compressed activated carbon pellets
- HEPA filter
- Electrostatic Precipitator
- Intake Plenum sample point



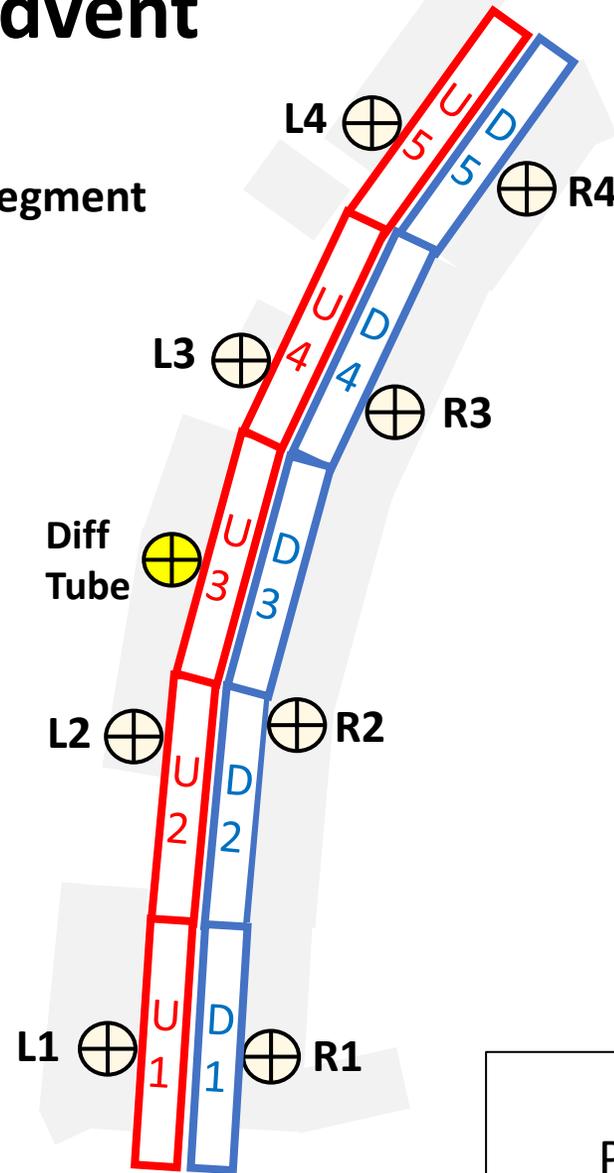
NOx pulled into Roadvent slots



In-road NOx capture - Roadvent

Reduction in NO₂ per receptor from each lane segment

	DT	L1	L2	L3	L4
U5	0.3	0.0	0.1	1.6	2.8
U4	5.9	0.1	0.7	15.4	0.3
U3	22.9	0.4	1.6	1.8	0.1
U2	1.8	1.1	2.3	0.4	0.1
U1	0.5	4.0	1.3	0.1	0.0
D5	0.2	0.0	0.1	0.9	0.9
D4	1.6	0.1	0.2	3.4	0.2
D3	1.9	0.2	0.4	0.6	0.1
D2	0.7	0.6	0.6	0.2	0.0
D1	0.3	1.4	0.6	0.1	0.0



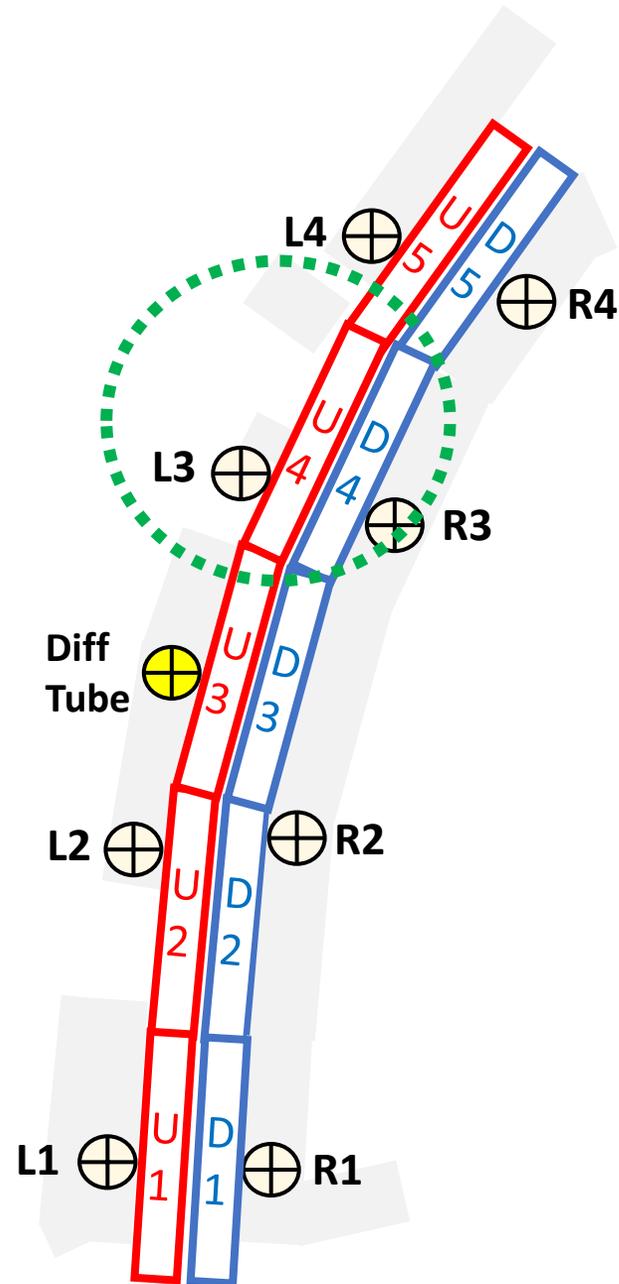
	R1	R2	R3	R4
U5	0.0	0.2	5.7	9.7
U4	0.1	1.1	20.3	0.5
U3	0.2	4.9	2.4	0.1
U2	0.7	3.7	0.7	0.1
U1	1.5	1.6	0.3	0.0
D5	0.0	0.2	4.3	6.4
D4	0.0	0.7	19.3	0.2
D3	0.1	7.0	1.2	0.1
D2	0.4	4.4	0.3	0.0
D1	1.2	0.9	0.2	0.0

Compliance?
 Predicted annual mean: 32 ug/m³
 (if U3 used for Roadvent)

In-road NOx capture - Roadvent

Total Reduction in NO₂ across L & R receptors from each lane segment

	L	R	Total
	⊕	⊕	
U4	22.6	22.1	44.7
U3	26.9	7.8	34.7
D4	5.5	20.4	25.9
U5	5.7	16.7	22.4
D5	2.5	11.7	14.1
D3	3.2	8.5	11.7
U2	5.6	5.3	10.9
U1	6.0	3.5	9.5
D2	2.1	5.2	7.3
D1	2.4	2.3	4.6



Conclusions

Measures	Predicted Annual Mean	Compliance at Felinfoel Road (based on 2019 data)?
• Anti-Idling	54.5 ug/m ³	
• Diverting HGV/Buses	31 ug/m ³	
• In-road NOx capture - Roadvent	32 ug/m ³	
• SUMO was a useful tool for predicting NOx emissions in vehicle idling		
• Dispersion modelling with GRAL is suitable for street canyons in AQMA's		

Recommendations

- Independent review panel to assess sites of continuous NO₂ exceedance in urban areas across Wales
- Measures to reduce emissions should be modelled in these areas
- Quantitative modelling should be compulsory when considering infrastructure changes within an AQMA
- Increased resources for local authorities to tackle non-compliant sites within AQMA's
- Health impacts should be quantified in all non-compliant cases across Wales

Assessment of road based air pollution control

An independent measurement study of the effectiveness of Pollution Solution technology deployed in a full scale “Roadvent” installation

Mark Peckham PhD (Cantab)
James Parnell MEng (L'boro)

Rationale

- To quantify (where possible) the effectiveness of the full scale model of Pollution Solution's "Roadvent" emission control system via the issuing of nitric oxide* tracer gas as a source pollutant and a fast response chemiluminescence detector (CLD) as the analyzer
- To deploy the above technique in a variety of scenarios
- To provide visual evidence of the effectiveness of the system via smoke visualisations
- To measure real time nitrogen dioxide using fast response laser induced fluorescence (LIF)
- Measure both NO and NO₂ in real time at points of interest (server hatch, school drop-off child nose height etc)
- To measure real time nitrogen dioxide (using fast response laser induced fluorescence (LIF)) produced from 3 diesel passenger cars of an age before NO_x catalyst systems were fitted thereby producing both NO&NO₂ in significant quantities representative of in-service vehicles
- The measurement of effectiveness within this study has been categorised as either "pollutant and gas capture" or "pollutant exposure reduction" for each respective experiment

Overview of Pollution Solution Roadvent installation

Suction fan to induce flow

Compressed activated carbon pellets

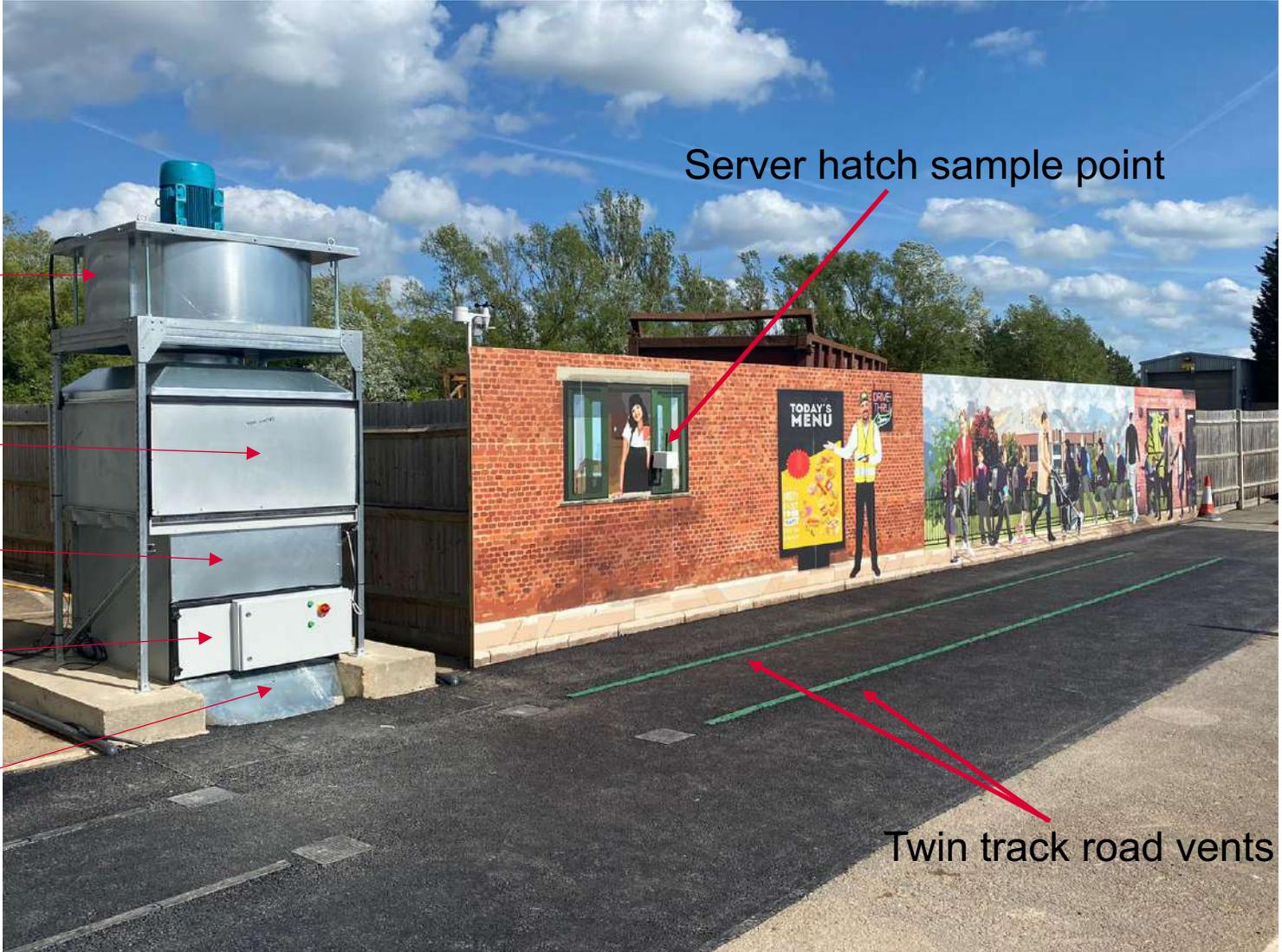
HEPA filter

Electrostatic Precipitator

Intake Plenum sample point

Server hatch sample point

Twin track road vents



Additional equipment

NO_x analyzer

- Cambustion CLD50 (with LIF) fast response NO&NO₂ analyzer

Tracer gas

- 1% NO balance N₂ calibration gas (Air Products with certificate)

PPE

- GasAlert personal NO sensors set to 2ppm alarm level

Candidate polluting vehicles

- 2006, Euro 4 diesel passenger car (VW Golf, 105k miles)
- 2007, Euro 4 diesel passenger car (Vauxhall Astra, 165k miles)
- 2011, Euro 5 diesel passenger car (Ford Galaxy, 120k miles)

Exhaust tailpipes on LHS for all of the above vehicles

Smoke visualisation source

- “Pea Soup” commercial visual effects smoke machine

Non-polluting “vehicles”

- Tesla Model S electric vehicle (carrier for tracer gas without additional NO_x production)
- Lab trolley



Ambient conditions

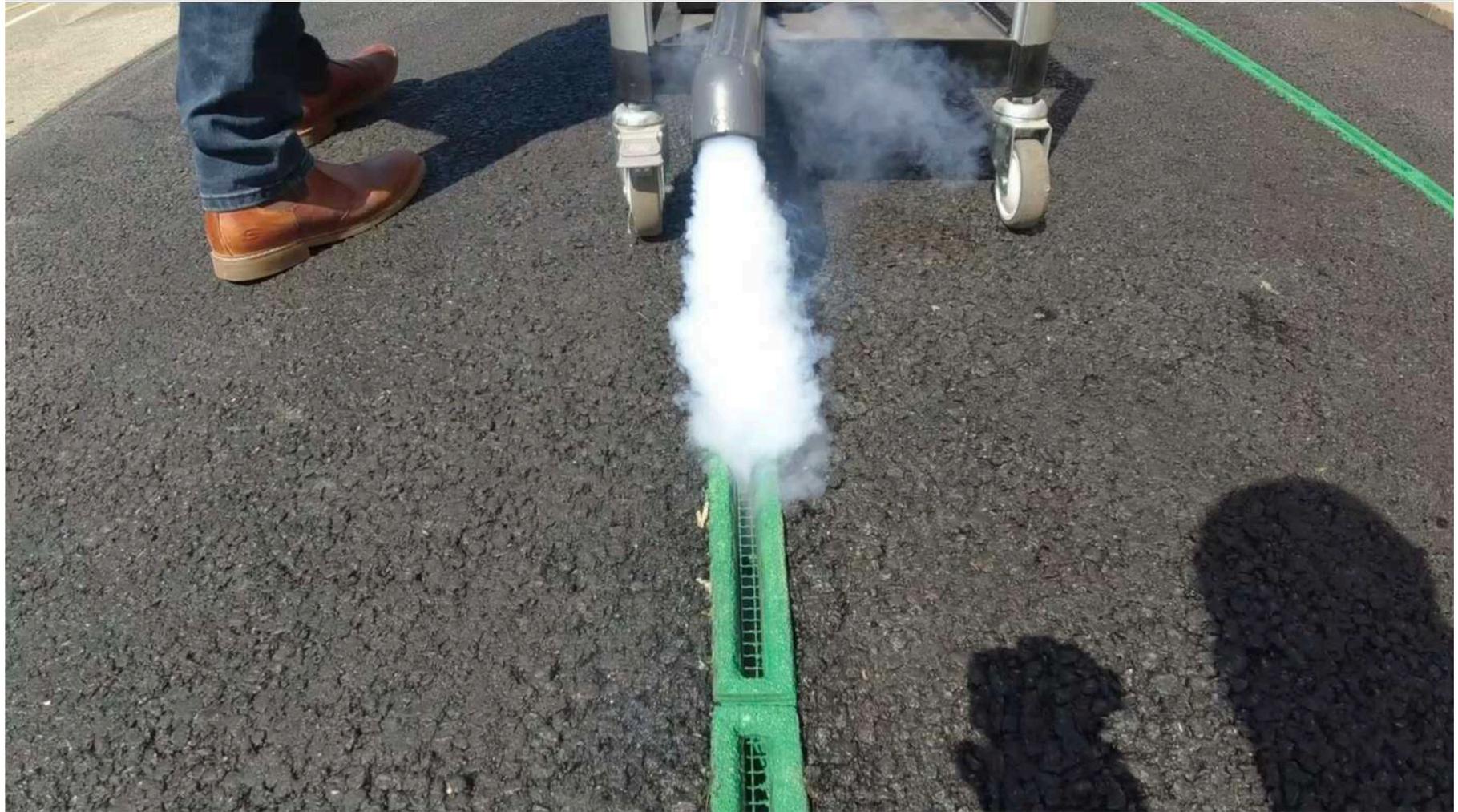
- 14th May 2022, 8am – 3pm
- Ambient temperature, 15°C – 23°C
- Light winds from South West (1-5 KPH)
- Local conditions were variable with wind speed and direction changeable but light. It was appreciated that the capture efficiency would be strongly affected by local wind conditions and that this data applies to the conditions at time of testing.
- The study was undertaken at Pollution Solution's site within the grounds of the confidential vehicle proving ground facility located at UTAC Millbrook in Bedford, UK.
- Note also that the lack of flow through the plane of the hoarding would create wall effects unlike a real open hatch which would likely allow through-flow (depending on –ve or +ve room pressures).
- Driving “style” (e.g. rates of acceleration and wait/idle times) were kept as similar as possible by drivers subject to human error.

Smoke visualisations

Fan Off: Increased exposure to server at window



Fan On: Roadvent capture of smoke from a moving vehicle



Fan On: wind disturbance (birds eye view)



Fan On: Tailpipe between slots with wind gusts



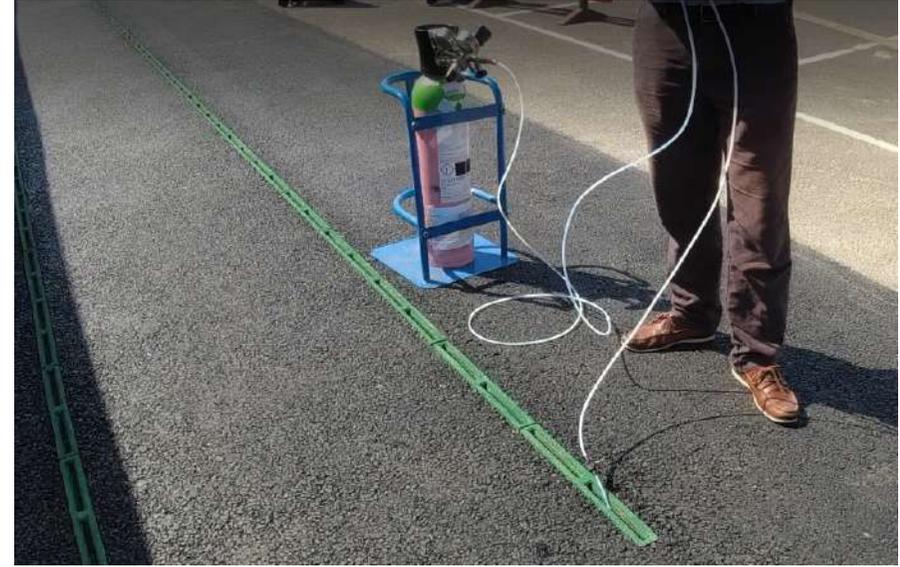
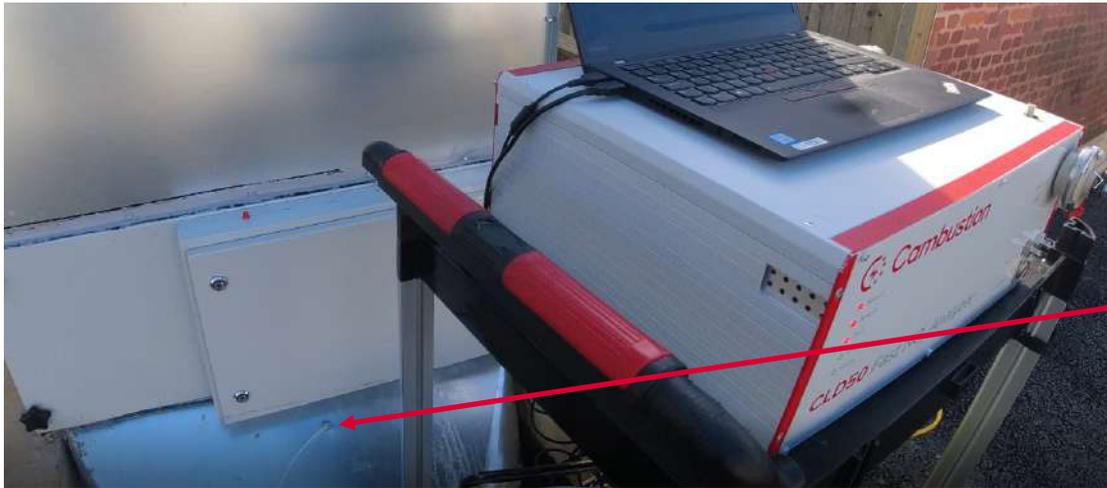
Fan On: Area of influence with light winds



Flow system dilution validation

System Dilution Check - Overview

- Flow 20 litres/min tracer gas directly in to intake flow ducts



Measure the (diluted) resulting concentration at plenum in to treatment stack. Traverse measurements show sample is well-mixed here.

Use this measured concentration to represent 100% capture of tracer gas

System Dilution Check - Results

- Controlled release of known concentration gas
- Concentration then measured in inlet plenum

Density of Air (16°C & 1022mbar)	1.2313	kg/m ³
Measured Concentration at Plenum	780	ppb
	0.78	ppm
Concentration from Bottle	10000	ppm
Dilution Ratio (Measured/Actual)	12821	
Bottle Flow Rate (1% NO in N)	20	l/min
	1.2	m ³ /hr
Estimated Fan Flow Rate (Bottle Flow Rate*Dilution)	15385	m³/hr
Theoretical Fan Flow Rate (from fan spec sheet)	~16750	m³/hr

Experiment 1: “Synthetic gas release and capture” (Simulated exhaust)

Synthetic (simulated) exhaust - Overview

- Produce fixed flow and known [NO] issuing from pipe at rear of electric vehicle
- Drive vehicle through typical collection hatch manoeuvre, repeat
- Measure the resulting concentration at plenum
- Compare with known 100% capture rate and calculate capture efficiency



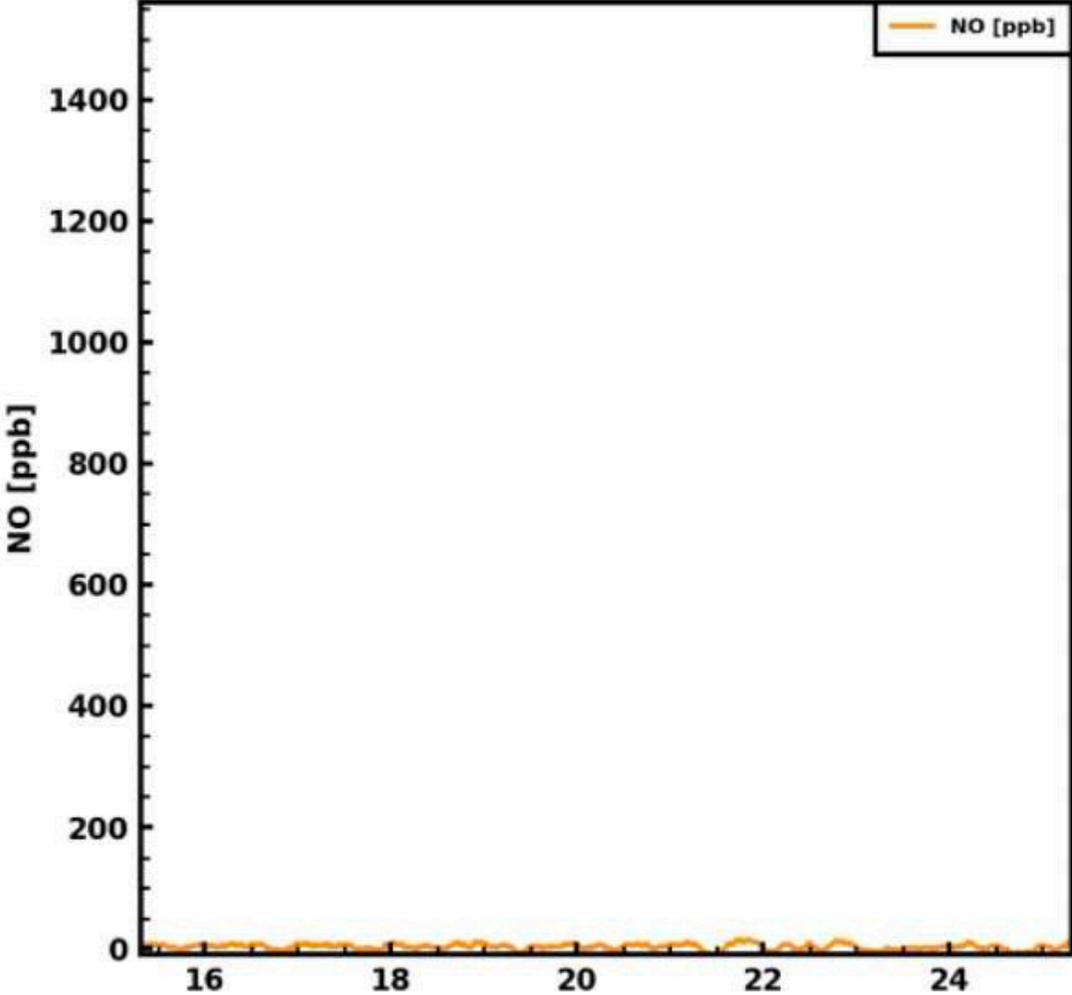
Discharge 6mm pipe exit at 180mm above road surface



Synthetic (simulated) exhaust - Overview



Simulated exhaust – Plenum [NO] capture results, system running



Average capture rate after 3 vehicle passes

- Cumulative mass emitted from bottle = 25.7g
- Cumulative mass entrained by system = 20.8g
- Capture rate = 80.9%

*Mass emitted known by fixed flow rate multiplied by time the valve was open.

*Mass entrained calculated by average measured concentration at the plenum over course of run, multiplied by the calculated flow rate at the plenum. Controlled NO release assumed to be only source of NO.

Experiment 2: “Reducing drive-thru employee pollutant exposure” (Server hatch measurements)

Pollutant measurements at server hatch - Overview

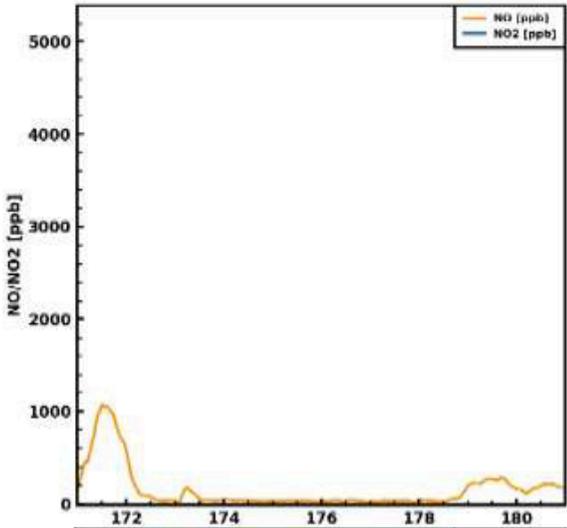
- Three warmed-up candidate diesel vehicles passing delivery hatch point
- Real time [NO] and [NO₂] measured at server face position
- Vehicles queuing for delivery and remain idling
- 5 passes of each vehicle
- Note that vehicles' approach, alignment and drive style was at discretion of each driver and thereby not accurately controlled, but was repeated to the best of the individuals' ability
- All vehicle exhausts were located on LHS (furthest point from the serving hatch)

Pollutant measurements at server hatch - Overview

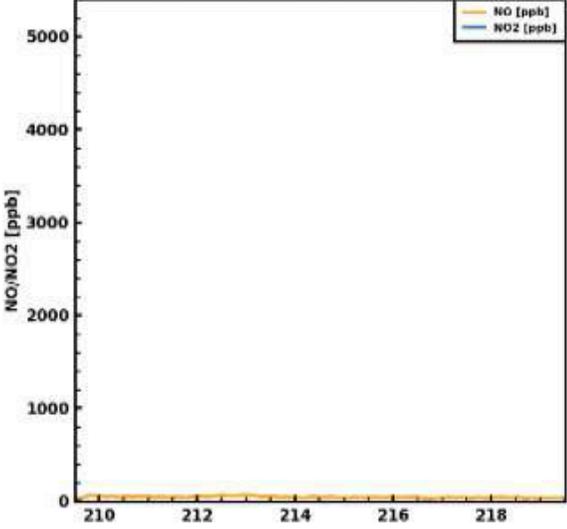


Pollutant measurements at server hatch – real time example results

Roadvent OFF



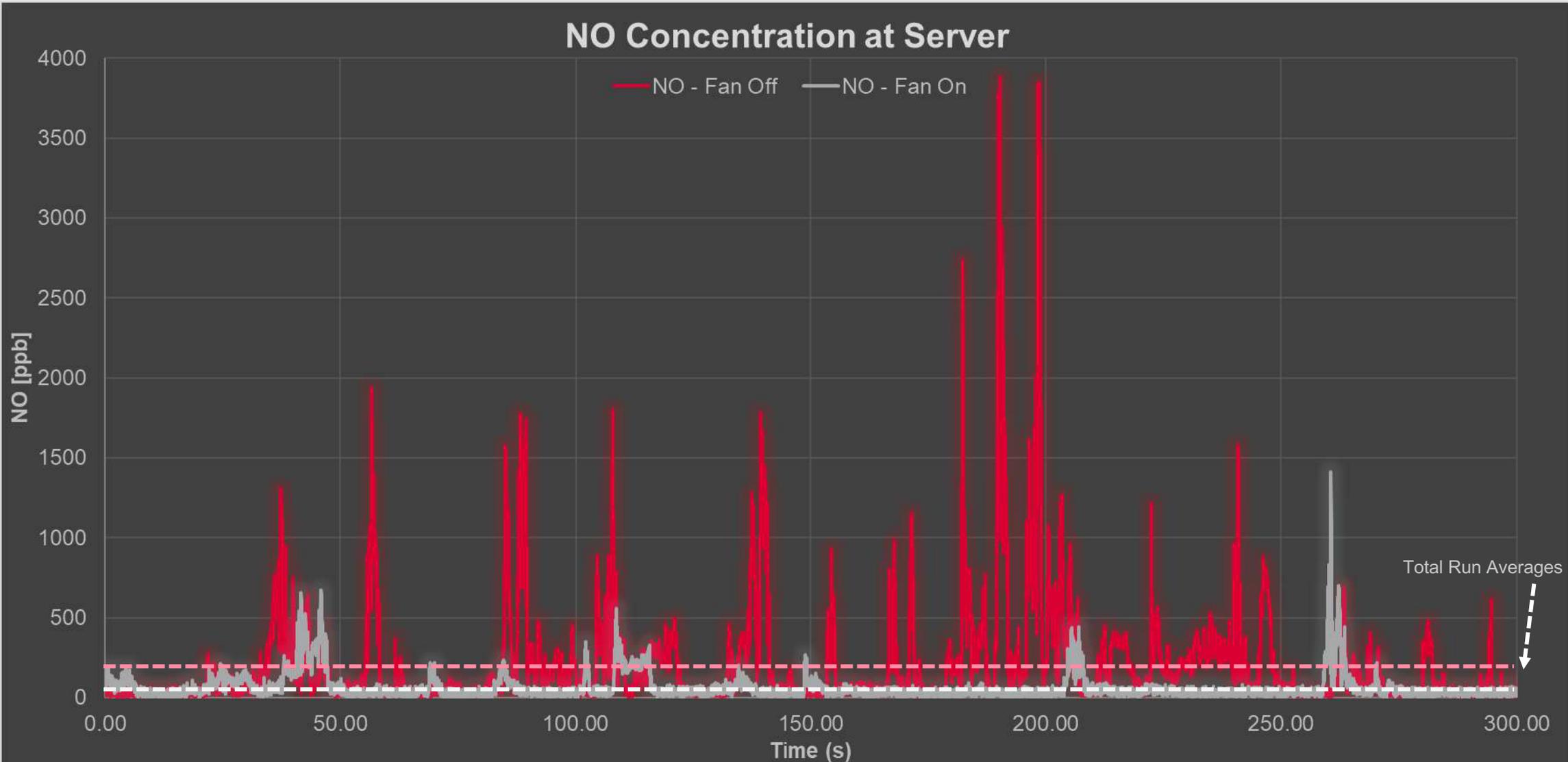
Roadvent ON



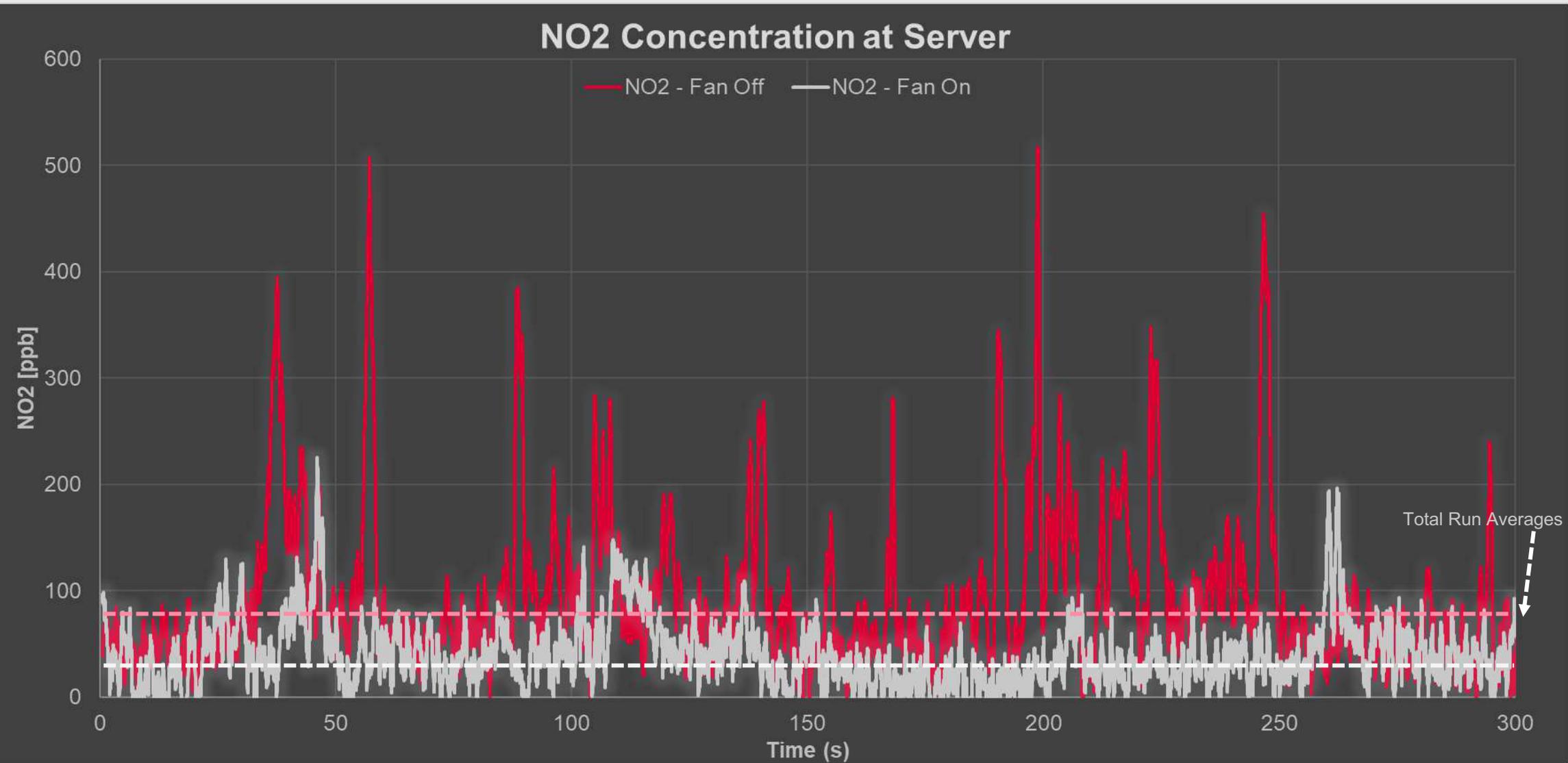
Pollutant measurements at server hatch – full results

- 3x repeats from Tesla and controlled release
 - Fan off: Average concentration = 18ppb
 - Fan on: Average concentration = 3ppb
 - Exposure reduction at serving hatch of **83.3%**
- 8x loops with 3 candidate diesel vehicles*
 - Fan off: Average concentration = (Run 1: 607ppb, Run 2: 231ppb)
 - Fan on: Average concentration = (Run 1: 55ppb, Run 2: 65ppb)
 - Exposure reduction at serving hatch of **79.0%**

Comparison at server hatch [NO]



Comparison at server hatch [NO2]



**Experiment 3: “Pollution reduction for children at school
drop off point”
(Child pedestrian measurements)**

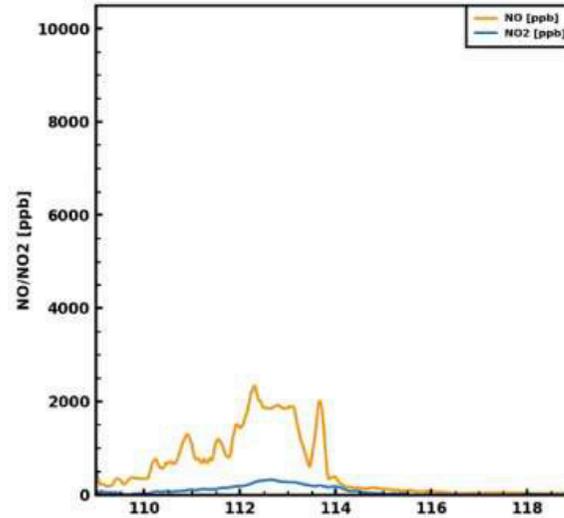
Pollutant measurements at child nose height - Overview

- School drop-off simulation
- Three candidate diesel vehicles on continuous loop and ~10s drop-off pause
- Sample pipe set at 0.8m above ground
- Sample pipe approx. 0.8m from exhaust

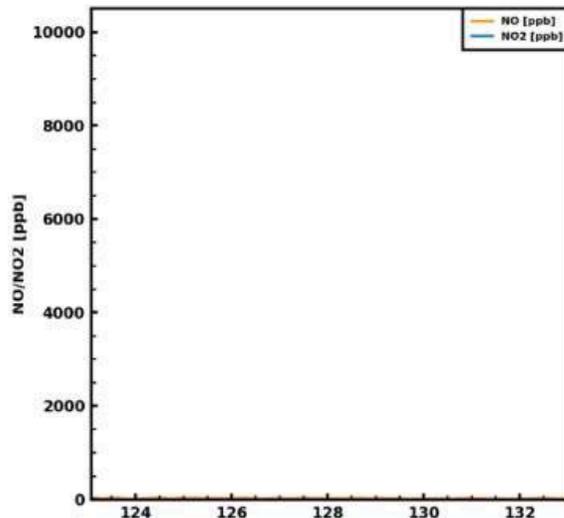


Pollutant measurements at child nose height (exhausts on LHS)

- Roadvent **OFF**



- Roadvent **ON**



Pollutant measurements at child nose height - Results

- 3x loops with 3 candidate diesel vehicles
 - Fan off: Average concentration = 746ppb
 - Fan on: Average concentration = 67ppb
 - Exposure reduction = 91.1%
- 5x repeats with only VW Golf
 - Fan off: Average concentration = 100ppb
 - Fan on: Average concentration = 11ppb
 - Exposure reduction = 89.0%

**Experiment 4: “In-car pollution reduction”
(Cabin air measurements from queuing traffic:
polluting car pull-away in front)**

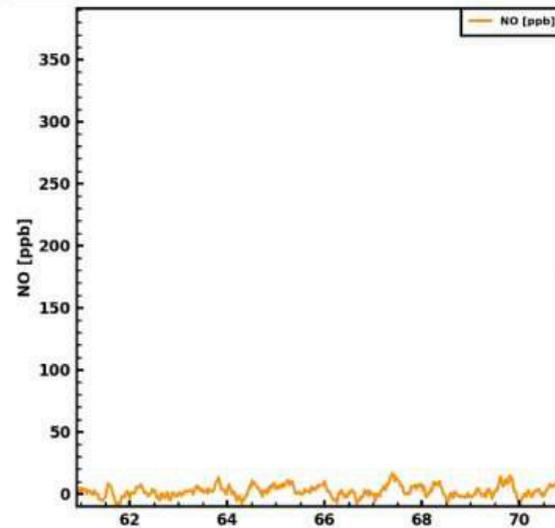
Cabin air vent measurements: Roadvent OFF & ON



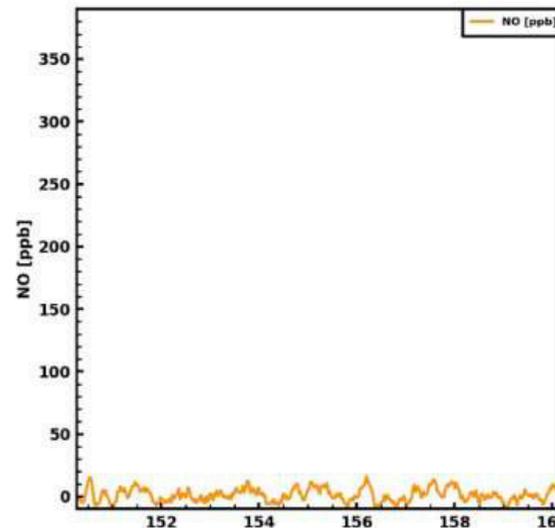
- All cabin air vents closed except for one
- Fan speed set to lowest setting
- Note: air intake under windscreen end of vehicle bonnet/hood

Cabin air vent: Roadvent OFF/ON comparison

- Roadvent **OFF**



- Roadvent **ON**



Cabin air vent - Results

- 5 x repeat tests with vehicle exhaust
 - Fan off: Average concentration = 57ppb
 - Fan on: Average concentration = 9ppb
 - In-vehicle exposure reduction = 83.8%

Experiment 5: “Brake particle simulation”

Brake particle discharge simulation - Overview

Tracer gas released at brake calliper, front wheel parked over Roadvent

Resulting concentration measured at plenum



Brake particle smoke simulation



Brake particle discharge simulation - Results

- 3x repeats with known gas release
- Cumulative mass released = 3.9g
- Cumulative mass entrained by system = 3.8g
- Capture rate = 97.4%

Experiment 6: “Tyre wear particle simulation”

Tyre particle discharge simulation - Overview



- Tracer gas discharged at exit contact position of tyre and road surface
- Resulting concentration measured at plenum

Tyre particle discharge simulation - Results

- Cumulative mass released = 7.65g
- Cumulative mass entrained by system = 7.47g
- Capture rate = 97.6%

Conclusions (1)

- **Experiment 1:** Under the prevailing conditions and using known tracer gas, the system was measured as being 81% effective at displacing NO pollution from the road surface
- **Experiment 2:** Using real vehicle diesel vehicles and under the prevailing conditions, the system was measured as being 79-83% efficient at reducing server hatch occupant exposure
- **Experiment 3:** Using real vehicle diesel vehicles and under the prevailing conditions, the system was measured as being 89-91% efficient at reducing child height exposure near idling and accelerating vehicles
- **Experiment 4:** The trailing vehicle in-cabin air vent NO concentrations are reduced by 84% with the system enabled
- **Experiments 5 & 6:** On the assumption that brake dust and tyre abrasion particles have similar mobility to tracer gas, the system was measured to be 97% effective at their removal

Conclusions (2)

- The system total flow rate when compared with blower performance specifications with measured dilution flow was 15385 m³/hr (vs quoted ~16750 m³/hr)
- Higher wind speeds and direction are likely to reduce system effectiveness, although such conditions would be expected to aid immediate human exposure by improving dilution and dispersion of pollutants
- Discharge position of tailpipe relative to the Roadvent system has some effect on capture efficiency but this was not measured or choreographed on the day and positioning was therefore random.

Efficacy results

Application	Source	Sample Location	ROADVENT ON		ROADVENT OFF		Capture Rate (%)	Roadside Exposure Reduction (%)
			Average Conc (ppb)	AVG. Conc Microgram per Cubic Metre ($\mu\text{gm-3}$)	Average Conc (ppb)	AVG. Conc Microgram per Cubic Metre ($\mu\text{gm-3}$)		
Golf idling cabin air vent	Golf	Following vehicle cabin air vent	9	11.42	57	72.33		83.8
Tesla Drive through with bottle x3	Bottle	Plenum	274	347.71			80.9	
Child height hard pull away	Golf	Child height cone by server	10.5	13.32	99.7	126.52		89.5
Child height lay-by multiple cars	All cars	Child height cone by server	67	85.02	746	946.69		91.1
Server all cars x3	All cars	Server hatch	55	69.80	607	770.30		91.0
Tesla Drive through with bottle x3	Bottle	Server hatch	3	3.81	18	22.84		83.3
Server all cars x5	All cars	Server hatch	65	82.49	231	293.14		71.7
Brake disc front	Bottle	Plenum	258				98.2	
Tyres	Bottle	Plenum	444				97.6	

Appendix D – Emerging Doncaster Air Quality Action Plan



City of Doncaster Council

City of Doncaster Council

Air Quality Action Plan

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

30th June (2023)

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
1	Clean Air Feasibility Study	Promoting Low Emission Transport	Low Emission Zone (LEZ) or Clean Air Zone (CAZ)	2023	2023 - 2024	Doncaster Council – Pollution Control	Doncaster Council	No	Not funded	£10k - £50k	Planning	High	TBC	Study carried out in AQMA 7, required for AQMA 2	Funding allocation required
2	Investigate Roadvent	Transport Planning and Infrastructure	Other	2023	2023 - 2024	Doncaster Council – Pollution Control	Doncaster Council	No	Not funded	<£10k	Planning	High	TBC	Discussions taking place with supplier to assess feasibility	New product with no current installs on running highway
3	Investigate Removing Receptors	Public Information	Other	2023	2023 - 2032	Doncaster Council	Doncaster Council	No	Not funded	£1 million - £10 million	Planning	None	None	None	Public perception.
4	Cycling strategy	Promoting Travel Alternatives	Promotion of Cycling	Adopted 2013	2023 / Ongoing	Doncaster Council - Transportation	Transforming Cities Fund – DfT Sustrans - DfT	No	Funded	>£10 million	Implementation	Low	1. Increase the number of people cycling and the number of journeys by cycle 2. Improve health and reduce health inequalities by introducing cycling into everyday life	Delivered £430k improvement to 1.6km of Trans Pennine trail in past 12 months.	
5	Enhanced Bus Partnership	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low	2016	2026	Doncaster Council – Transportation SYMCA Bus Operators	Doncaster Council – Transportation SYMCA Bus Operators	No	Funded	£380k - £5m	Implementation	Low	•Reduce and limit traffic congestion and thereby air pollution	Introduction of £2 flat fare. Electric bus scheme across South Yorkshire which will see one or two buses	

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
			emission vehicles			South Yorkshire Local Authorities	South Yorkshire Local Authorities						through investment in higher Euro Engine specifications •Providing a high quality choice for those with use of a car •Reducing environmental impact.	running between Doncaster and Rotherham currently on order at the moment. Marketing Campaign to increase bus patronage. Bus priority measures to reduce bus journey times and improve reliability	
6	Walking strategy	Alternatives to private vehicle use	Other	2019 / 2023	2023 / ongoing	Doncaster Council - Transportation	Doncaster Council	No	Funded	£10k - £50k	Implemented	Low	To improve the quality of where people walk People feel safer walking Walking is an enjoyable way to discover Doncaster Make walking the first choice for short journeys	Refresh of the strategy going to tender 2023 Walking groups have continued with new ones set up for people to gain confidence. Travel planning is offered free of charge via the Active Travel Hub for people who wish to move from car travel to walking to work	

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Potential Barriers to Implementation
7	Alternative fuelled infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	Ongoing	Doncaster Council	Community Renewal Fund	No	Funded	£150k investment to date. Further £50k allocated.	Planning	High	None	https://www.betatechnology.co.uk/doncaster-hydrogen-hub	
8	Council Fleet Improvements	Vehicle Fleet Efficiency	Other	2018	2030	Doncaster Council	Doncaster Council	No	Funded	£1 million - £10 million	Implementation	Low	% Fleet Diesel %Fleet Petrol % Fleet ULEV %Fleet Hybrid	47 Electric vehicles acquired replacing diesel vehicles. 3 additional vehicles on order. 42 charging bays currently in operation for Council fleet, with 24 being installed/awaiting installation.	Fleet renewal plan in place aiming to replace at least 600 vehicles with electric alternative before 2030
9	Taxi licensing regime policies to encourage cleaner taxi fleets	Promoting Low Emission Transport	Taxi Licensing conditions	2023	Ongoing	Doncaster Council - Licensing	Doncaster Council	No	Unfunded	<£10k	Planning	Low	% increase in Euro VI and ULEV taxis licensed by Doncaster Council.	None	
10	Hickleton/Marr Bypass	Transport Planning and Infrastructure	Other	2020	Ongoing	Doncaster Council SYMCA	SYMCA	No	Unfunded	>£10 million	Planning	High	Reduction in traffic through AQMA	Initial investigations have been completed.	Funding required

Appendix E – Draft S106 Agreement

-
- (1) BARNSELY METROPOLITAN BOROUGH COUNCIL
 - (2) WILLIAM SEELS
 - (3) JONATHON SEELS
 - (4) FREDERICKA LAUGHTON ELIZABETH MARY
 - (5) PAUL WHEELER
 - (6) STAMFORD LAND LTD
 - (7) WENTWORTH TRUSTEE COMPANY LIMITED
 - (8) DEBORAH SEELS
 - (9) EQUITES NEWLANDS (GOLDTHORPE) LIMITED
 - (10) CITY OF DONCASTER COUNCIL
 - (11) SOUTH YORKSHIRE COMBINED MAYORAL AUTHORITY

Agreement pursuant to section 106 of the Town and Country Planning Act 1990

Relating to land to the south of Dearne Valley Parkway, Goldthorpe, Rotherham, S72 0JE

BETWEEN

- (1) **BARNSELY METROPOLITAN BOROUGH COUNCIL** of the Town Hall, Church Street, Barnsley, S70 2TA (the "Council")
- (2) **WILLIAMS SEELS** of Elm Bank House, Home Farm, Burghwallis, Doncaster, S Yorkshire DN6 9JS. (the "First Owner")
- (3) **JONATHON SEELS** of Highgate Huse Farm, Goldthorpe, Rotherham, South Yorkshire, S63 9EY (the "Second Owner")
- (4) **FREDERICKA ELIZABETH MARY LAUGHTON** of 28 Marsh Road, Cowes PO31 8JQ (the "Third Owner")
- (5) **PAUL WHEELER** of 143 High Street, Newport, Isle Of Wight PO30 1TY. (the "Fourth Owner")
- (6) **STAMFORD LANE LTD** (Co. Regn. No. 06439501) of 71 Haigh Lane, Hoylandswaine, Sheffield S36 7JQ. (the "Fifth Owner")
- (7) **WENTWORTH TRUSTEE COMPANY LIMITED** (Co. Regn. No. 3736061) of Estate Office, 27 Clayfields Lane, Wentworth, Rotherham S62 7TD. (the "Sixth Owner")
- (8) **DEBORAH SEELS** of Highgate House Farm, Dearne Valley Parkway, Goldthorpe, Rotherham S63 9EY. (the "Seventh Owner")
- (9) **EQUITES NEWLANDS (GOLDTHORPE) LIMITED** (Co. Regn. No. 14095885) whose registered office is at Lumonics House Valley Drive Swift Valley Industrial Estate Rugby Warwickshire CV21 1TQ (the "Developer")
- (10) **CITY OF DONCASTER COUNCIL** of Civic Office, Waterdale, Doncaster, DN1 3BU (the "City Council")
- (11) **SOUTH YORKSHIRE MAYORAL COMBINED AUTHORITY** of 11 Broad Street West, Sheffield S1 2BQ ("the LHA")

BACKGROUND

- (A) By virtue of the Act the Council is the local planning authority for the purposes of this Agreement for the area in which the Site is situated and is the local planning authority by whom the planning obligations hereby created are enforceable.
- (B) The City Council is the highway authority for local highways within the vicinity of the Site which are likely to be impacted by the Development.
- (C) The First Owner is the registered proprietor of shown shaded blue on Plan 1 at the First Schedule with absolute title at the Land Registry under title number SYK521723.
- (D) The Second Owner is the registered proprietor of that part of the Site shown shaded green on Plan 1 at the First Schedule registered with absolute title at the Land Registry under title number SYK243292. The Second Owner is also the registered proprietor of that part of the Site shown shaded yellow and the red strip on Plan 1 registered as sharing absolute title at the Land Registry under title number SYK706127.
- (E) The Third Owner is the registered proprietor of the part of the land shaded light purple on Plan 1 at the First Schedule registered as sharing absolute title at the Land Registry under title number SYK704654.
- (F) The Fourth Owner is the registered proprietor of the part of the land shaded light purple on Plan 1 at the First Schedule registered as sharing absolute title at the Land Registry under title number SYK704654.
- (G) The Fifth Owner is the registered proprietor of the part of the land shaded orange on Plan 1 at the First Schedule registered with absolute title at the Land Registry under title number SYK386868.
- (H) The Sixth Owner is the registered proprietor of the part of the land shaded red and maroon on Plan 1 at the First Schedule registered with absolute title at the Land Registry under title numbers SYK524497 and SYK524458. The Sixth Owner also has an interest in the Second and Seventh Owner's property registered under title number SYK706127 pursuant to an option agreement dated 22 December 2023.
- (I) The Seventh Owner is the registered proprietor of the part of the land shaded yellow and the red strip on Plan 1 registered as sharing absolute title at the Land Registry under title number SYK706127.
- (J) The Planning Application has been submitted to the Council for determination.

- (K) The Owners have agreed to enter in to this Agreement to create planning obligations in respect of each of their interests in the Site in favour of the Council and City Council pursuant to section 106 of the Act and to be bound by and observe and perform the covenants, agreements, conditions and stipulations contained in this Agreement.
- (L) The Developer is the proposed purchaser of the Owners' interest in the Site under a contract made between the First Owner, the Second Owner, the Option Holder, the Developer and other parties and will assume the obligations contained in this Agreement on the part of the Owners in respect of the Site following completion of the transfer of the Owner's interest in the Site to it pursuant to the said contract.
- (M) At its meeting on the [] the Planning Committee of the Council resolved to approve the Development applied for in the Planning Application subject to the parties hereto entering into the obligations herein provided for.

1. DEFINITIONS

1.1. In this Agreement the following words and phrases have the meanings shown opposite in addition to the definitions given in the description of the parties and the Background:

the Act means the Town and Country Planning Act 1990 (as amended)

Commencement of Development means carrying out of material operation as defined in section 56(4) of the Act save that for the purposes of this Agreement the term is not to include operations in connection with site clearance, demolition, archaeological investigation, for the purposes of assessing contamination, remedial action in respect of any contamination or mining works, or of assessing the need for any diversion and laying of services and the erection of means of enclosure for the purposes of site security and / or the display of advertisements and the expression "Commence" and

“Commencement” is to be construed accordingly

Development means the development of the Site pursuant to the Planning Permission

Full Permission Development means that part of the Development for which the Planning Application seeks full planning permission and shown edged red on plan 22081 L0001 Rev C attached to this Agreement

Occupation and Occupied means occupation for the purposes permitted by the Planning Permission but not including occupation by personnel engaged in construction, fitting out or decoration or occupation for marketing or display or occupation in relation to security operations

Owners means together the First, Second, Third, Fourth, Fifth, Sixth and Seventh Owner collectively

Outline Development Means that part of the Development for which the Planning Application seeks outline planning permission and shown edged in blue hatching on 22081 L0001 Rev C attached to this Agreement

Monitoring Fees means the sum of [] payable by the Owners to the Council for the monitoring of compliance with the obligations of this Agreement

Phases Means the phases of the Development which shall comprise of the first phase being the Full Permission Development and the subsequent phases being each those individual plots of the Outline Development edged in blue on plan

22081 L0001 Rev C attached to this Agreement]

Plan 1 means the plan attached to this Agreement at the First Schedule and marked Plan 1

Planning Application means the hybrid planning application comprising an application for outline planning permission for the construction of Storage and Distribution (Use Class B8) and General Employment (Use Class B2) space with ancillary offices and gatehouses with all matters reserved except for site access and full permission and an application for full planning permission for engineering infrastructure works to support the employment development comprising the access roads; earthworks to create the development platform zones/bunding, drainage and culvert works, a flood compensation area and strategic landscaping areas ascribed reference number 2023/1105 by the Council

Planning Permission means the planning permission to be issued pursuant to the Planning Application

Site means the land to the south of Dearne Valley Parkway, Goldthorpe, Rotherham, S72 0JE, depicted in Plan 1.

Unit(s) means a unit for Storage and Distribution (Use Class B8) and General Employment (Use Class B2) space with ancillary offices and gatehouses comprised in the Development

Working Days means any day other than a Saturday and a Sunday and Bank or Public holiday.

2. CONSTRUCTION

- 2.1. Where in this Agreement reference is made to any clause, paragraph or schedule or recital such reference (unless the context otherwise requires) is a reference to a clause, paragraph or schedule or recital in this Agreement.
- 2.2. Words importing the singular meaning where the context so admits include the plural meaning and vice versa.
- 2.3. Words of the masculine gender include the feminine and neuter genders and words denoting actual persons include companies, corporations and firms and all such words shall be construed interchangeably in that manner.
- 2.4. Wherever there is more than one person named as a party and where more than one party undertakes an obligation all their obligations can be enforced against all of them jointly and severally unless there is an express provision otherwise.
- 2.5. Any reference to an Act of Parliament shall include any modification, extension or re-enactment of that Act for the time being in force and shall include all instruments, orders, plans regulations, permissions and directions for the time being made, issued or given under that Act or deriving validity from it.
- 2.6. References to any party to this Agreement shall include the successors in title to that party and to any person deriving title through or under that party and in the case of the Council the successors to its statutory functions.
- 2.7. The headings and contents list are for reference only and shall not affect construction.

3. STATUTORY PROVISIONS

- 3.1. This Agreement is a planning obligation made in pursuant of section 106 of the Act and to the extent that the covenants in this Agreement are not made under section 106 of the Act they are made under section 111 of the Local Government Act 1972 and Section 1 of the Localism Act 2011.
- 3.2. The covenants, restrictions and requirements imposed upon the Owners under this Agreement create planning obligations pursuant to Section 106 of the Act and are enforceable by the Council and City Council (as appropriate) against the Owners.

4. CONDITIONALITY

This Agreement is conditional on:

- (i) the grant of the Planning Permission; and
- (ii) the Commencement of Development pursuant to the Planning Permission

5. THE OWNERS COVENANTS WITH THE COUNCIL

5.1. The Owners hereby covenant with the Council to observe and perform the restrictions and obligations which apply to the Owners' interest in the Site and are contained in the Second Schedule Third Schedule Fourth Fifth Sixth and Seventh Schedule to this Agreement.

6. THE COUNCIL'S COVENANTS WITH THE OWNERS

The Council hereby covenants with the Owners:

- 6.1. to issue the Planning Permission (in general accordance with the Draft Planning Permission) expeditiously following the completion of this Agreement; and
- 6.2. to observe and perform any obligations on its part contained in the Eighth Schedule to this Agreement.

7. AGREEMENTS AND DECLARATIONS

The parties agree and declare

- 7.1. No provisions of this Agreement shall be enforceable under the Contracts (Rights of Third Parties) Act 1999.
- 7.2. This Agreement shall be registrable as a local land charge by the Council.
- 7.3. Where the agreement, approval, consent or expression of satisfaction is required by the Owners from the Council under the terms of this Agreement, such agreement, approval or consent or expression of satisfaction shall not be unreasonably withheld or delayed and any such agreement, consent, approval or expression of satisfaction shall be given on behalf of the Council by the Head of Planning and Building Control or his nominee.
- 7.4. Following the performance and satisfaction of all of the obligations contained in this Agreement the Council shall forthwith effect the cancellation of all entries made in the Register of Local Land Charges in respect of this Agreement.
- 7.5. Insofar as any clause or clauses of this Agreement are found (for whatever reason) to be invalid illegal or unenforceable then such invalidity illegality or unenforceability shall not affect the validity or enforceability of the remaining provisions of this Agreement.

- 7.6. This Agreement shall cease to have effect (insofar only as it has not already been complied with) if the Planning Permission shall be quashed, revoked or otherwise withdrawn or (without the consent of the Owners) it is modified by any statutory procedure (other than a modification under section 73 or 96A of the Act) or expires prior to the Commencement of Development.
- 7.7. If pursuant to clause 7.6 this Agreement shall terminate and cease to have effect the Council shall upon request remove any entry relating to this Agreement from the Register of Local Land Charges.
- 7.8. No person shall be liable for any breach of any of the planning obligations or other provisions of this Agreement after it shall have parted with its interest in the Site or the part of the Site in respect of which such breach occurs but without prejudice to liability for any subsisting breach arising prior to parting with such interest and the retention of a right of way or easement of the Site shall not constitute an interest for the purposes of this clause.
- 7.9. This Agreement shall not be enforceable against:
- 7.9.1. anyone whose only interest in the Site or any part of the Site is in the nature of the benefit of an easement or covenant or as the owner of the sub soil of any highway within the Site;
 - 7.9.2. any person whose only interest in the Site or any part of the Site is an estate or interest in any subterranean stratum of mineral or other matter;
 - 7.9.3. any statutory undertaker acquiring any part of the Site, any owner of any electricity sub-station and/or gas governor site and/or pumping station to other supply installation nor those deriving title from them.
- 7.10. Any mortgagee or chargee for the time being shall not be liable for any breach of the obligations in this Agreement unless committed or continuing at a time when the mortgagee or chargee is in possession of all or any part of the Site..
- 7.11. Subject to clause 7.13 nothing in this Agreement shall prohibit or limit the right to develop any part of the Site in accordance with a planning permission (other than the Planning Permission) granted (whether or not on appeal) after the date of this Agreement nor shall any payment be due to the Council pursuant to this Agreement as a result of any development carried out pursuant to such later planning permission.

7.12. Nothing contained or implied in this Agreement shall prejudice or affect the rights discretions powers duties and obligations of the Council under all statutes by-laws statutory instruments orders and regulations in the exercise of its functions as a local authority.

7.13. In the event that:

7.13.1. the Council shall at any time hereafter grant a planning permission pursuant to an application made under section 73 or 73A of the Act (or any re-enactment thereof) in respect of the conditions in the Planning Permission; and

7.13.2. the Council and the Owners shall agree such in writing by exchange of correspondence

references in this Agreement to the Planning Application and the Planning Permission shall be deemed to include any such subsequent planning applications and planning permissions granted as aforesaid and this Agreement shall henceforth take effect and be read and construed accordingly.

8. COUNCIL'S COSTS

8.1. The Owners shall pay on completion of this Agreement:

8.1.1. The Council's legal costs in the sum []

8.1.2. The Monitoring Fees

8.1.3. The City Council's legal costs in the sum []

8.1.4. The LHA's legal costs in the sum of []

9. WAIVER

No waiver (whether expressed or implied) by the Council or the Owners of any breach or default in performing or observing any of the covenants terms or conditions of this Agreement shall constitute a continuing waiver and no such waiver shall prevent the Council or the Owners from enforcing any of the relevant terms or conditions or for acting upon any subsequent breach or default.

10. CHANGE IN OWNERSHIP

The Owners agree with the Council to give the Council immediate written notice of any change in ownership of any of their interests in the Site occurring before all the obligations under this Agreement have been discharged such notice to give details of the transferee's full name and registered office (if a company or usual address if not) together with the area of the Site or unit of occupation purchased by reference to a plan.

11. DISPUTE RESOLUTION

- 11.1. In the event of any dispute or difference arising between any of the parties to this Agreement in respect of any matter contained in this Agreement such dispute or difference shall be referred to an independent and suitable person holding appropriate professional qualifications to be appointed (in the absence of an agreement) by or on behalf of the president for the time being of the professional body chiefly relevant in England with such matters as may be in dispute and such person shall act as an expert whose decision shall be final and binding on the parties in the absence of manifest error and any costs shall be payable by the parties to the dispute in such proportion as the expert shall determine and failing such determination shall be borne by the parties in equal shares.
- 11.2. In the absence of agreement as to the appointment or suitability of the person to be appointed pursuant to Clause 11.1 or as to the appropriateness of the professional body then such question may be referred by either part to the president for the time being of the Law Society for him to appoint a solicitor to determine the dispute such solicitor acting as an expert and his decision shall be final and binding on all parties in the absence of manifest error and his costs shall be payable by the parties to the dispute in such proportion as he shall determine and failing such determination shall be borne by the parties in equal shares.
- 11.3. Any expert howsoever appointed shall be subject to the express requirement that a decision was reached and communicated to the relevant parties within the minimum practicable timescale allowing for the nature and complexity of the dispute and in any event not more than twenty-eight working days after the conclusion of any hearing that takes place or twenty-eight working days after he has received any file or written representation.
- 11.4. The expert shall be required to give notice to each of the said parties requiring them to submit to him within ten working days of notification of his appointment written submissions and supporting material and the other party will be entitled to make a counter written submission within a further ten working days.

12. NOTICE

Any notice required to be given under this agreement shall be in writing and shall be delivered personally or sent by pre-paid first-class post or recorded delivery or by commercial courier, to any person required to receive the notice at its address as

set out on page two of this agreement, or as otherwise specified by the relevant person by notice in writing to each other person.

12.1. Any notice shall be deemed to have been duly received:

12.1.1. if delivered personally, when left at the address and for the contact referred to in this clause;

12.1.2. if sent by prepaid first-class post or special delivery, at 9.00am on the second working day after posting; or

12.1.3. if delivered by commercial courier, on the date and at the time that the courier's delivery receipt is signed

13. JURISDICTION

This Agreement is governed by and interpreted in accordance with the law of England and the parties submit to the jurisdiction of the courts of England.

14. DELIVERY

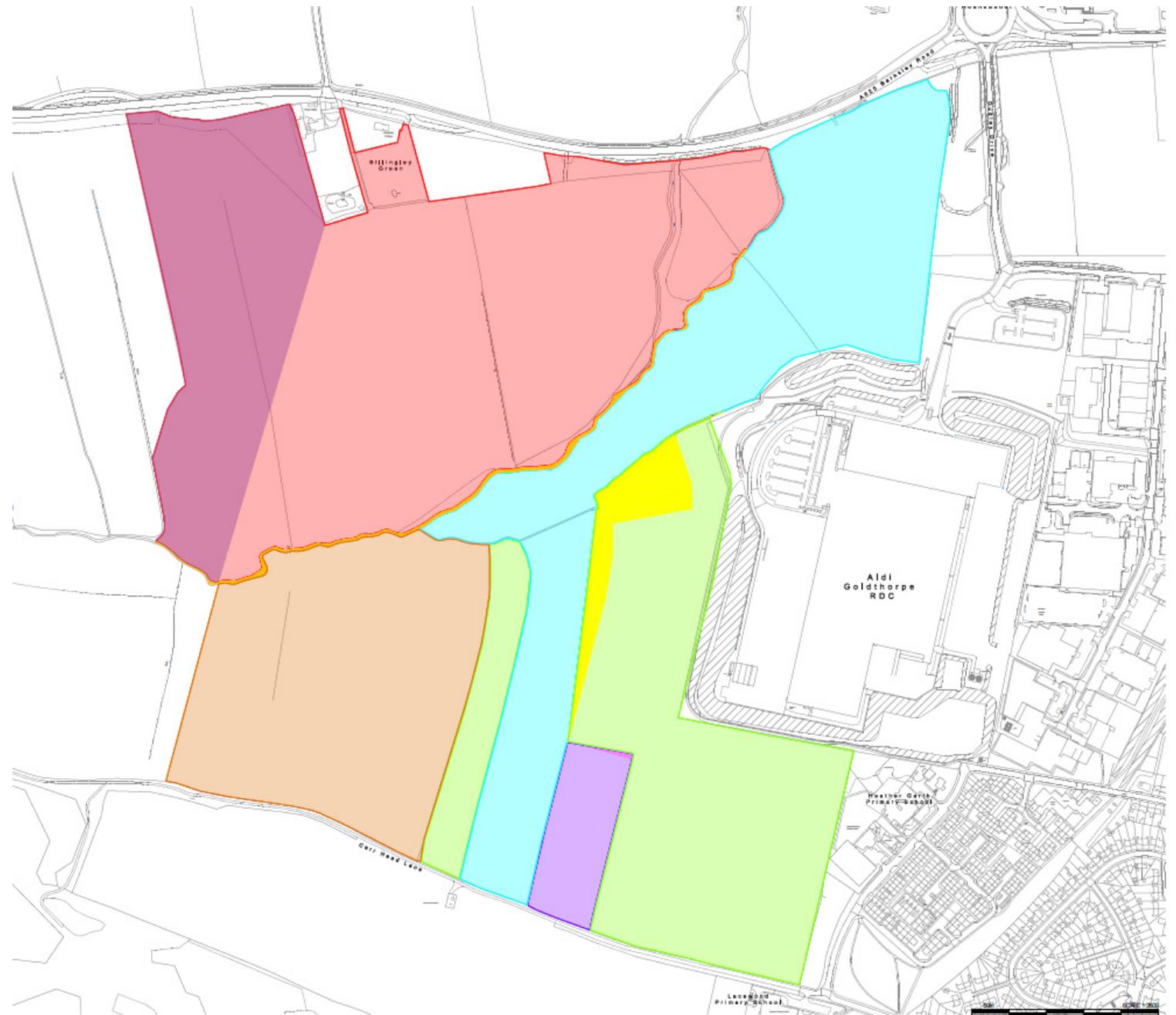
The provision of this Agreement (other than this clause which shall be of immediate effect) shall be no effect until this Agreement has been dated.

15. EXECUTION OF COUNTERPARTS

This Agreement may be executed in separate counterparts and such counterparts when executed and delivered shall be an original.

This document is executed as a deed and is delivered on the date stated at the beginning of this deed.

FIRST SCHEDULE
Plan 1



SECOND SCHEDULE

Mitigation for Rose Valley Cottage and Woodbine Cottage

1. INTERPRETATION

1.1. In this Schedule the following words shall have the following meanings:

“Affected Property(ies)”	means the property known as Rose Valley Cottage, Goldthorpe and the property known as Woodbine Cottage, Goldthorpe
“Affected Property Cap”	means the sum of up to £55,000 (Fifty Five Thousand Pounds) representing the maximum funds available for Mitigation Payment(s) in respect of Affected Properties
“Interested Person(s)”	means the owners and occupiers of any Affected Property
“Mitigation Offer”	means a written offer made to all Interested Persons setting out their ability to request and obtain a Mitigation Payment and requesting a response within 6 months providing the Quotes and confirmation that they wish to receive the Mitigation Payment
“Mitigation Payment”	means the payment to the Interested Person of a sum equivalent to the cost of the carrying out of the Mitigation Works at their property as evidenced by the Quotes subject to a maximum of (£1,500) One Thousand Five Hundred Pounds per window to the Relevant Habitable Rooms of the Affected Property and which is consistent with the Noise Insulation Regulations 1975 and to a maximum of [] in relation to the provision of boundary fencing
“Mitigation Works”	means the noise insulation and ventilation works to the Affected Property comprising enhanced glazing and alternative means of ventilation to Relevant Habitable Rooms of the Affected Property and the installation of fencing within the boundary of Rose Valley Cottage, Goldthorpe
“ Mitigation Trigger”	Means the [commencement of construction of any Unit which will result in the total cumulatively floor area of the Development exceeding 100,000sqm]
“Quotes”	Means quote(s) from relevant organisations or individuals specialised in the installation of windows

	and ventilation or the erection of fencing as the case may be obtained by Interested Persons for the undertaking of the Mitigation Works at the Affected Properties
“Relevant Habitable Rooms”	means living rooms or bedrooms within the Affected Properties

2. NOISE INSULATION

- 2.1. Prior to the Mitigation Trigger the Owners shall issue the Mitigation Offer to all Interested Persons by guaranteed delivery (tracked);
- 2.2. If an Interested Person confirms within 6 months of receipt of the Mitigation Offer that they accept the offer and wish to receive the Mitigation Payment they shall provide the Quotes to the Owners at the same time as such confirmation together with an assurance that the Mitigation Payment shall only be used for the purpose of the Mitigation Works and then the Owners shall arrange for payment of the Mitigation Payment to that Interested Person within 28 days of such acceptance PROVIDED ALWAYS THAT the total of the Mitigation Payments shall not exceed the Affected Properties Cap
- 2.3. In the event that any Interested Person has not responded to the Mitigation Offer within 5 months of the date of its issue, the Owners shall issue a further letter to all Interested Persons who have not responded enclosing a copy of the Mitigation Offer and explaining that the Mitigation Offer shall expire at the end of the 6 months from the date of its original issue.
- 2.4. At the expiry of 6 months from the date of the issue of the Mitigation Offer all Interested Persons who have not accepted the Mitigation Offer shall cease to be eligible for Mitigation Payments

THIRD SCHEDULE

Mitigation for Properties in Hickleton

1. INTERPRETATION

1.1. In this Schedule the following words shall have the following meanings:

“Eligible Property(ies)”	means a residential dwelling or other building used for residential purposes shown on the plan attached to this Agreement labelled Hickleton Road Traffic Noise Significant Effect Façade Markup that are likely to be subject to a significant effect arising from road traffic noise associated with the Development
“Eligible Properties Cap”	Means the sum of up to £233,000 (Two Hundred and Thirty Three Thousand Pounds) representing the maximum funds available for Noise Insulation Payment(s) in respect of Eligible Properties
“Eligible Person(s)”	means the owners and occupiers of any Eligible Property
“Listed Building”	means a building included in the List of Buildings of Special Architectural or Historic Interest compiled by the Department of Digital, Culture, Media and Sports pursuant to the Planning (Listed Buildings and Conservation Areas) Act 1990.
“Listed Building Consent”	means a consent for works to be carried out to a Listed Building required under the provisions of the Planning (Listed Buildings and Conservation Areas) Act 1990.
“Noise Insulation Offer”	means a written offer made to all Interested Persons setting out their ability to request and obtain a Noise Insulation Payment and requesting a response within 6 months detailing the Relevant Habitable Rooms within their respective Property and confirmation that they wish to receive the Noise Insulation Payment
“Noise Insulation Payment”	means the payment to the Interested Person of a sum equivalent to the cost of the carrying out of the Noise Insulation Works at their property and which shall include the cost of obtaining any Listed Building Consent required for the works concerned subject to a maximum of £1,500 (One Thousand Five Hundred Pounds) per window to the Relevant Habitable Rooms of the Eligible Property and which is consistent with the Noise Insulation Regulations 1975
“Noise Insulation Works”	means the noise insulation and ventilation works to

	the Eligible Property comprising enhanced glazing and alternative means of ventilation to Relevant Habitable Rooms
“Noise Mitigation Trigger”	Means the commencement of construction of any Unit which will result in the total cumulatively floor area of the Development exceeding 100,000sqm
“Noise Mitigation Quotes”	Means quote(s) from relevant organisations or individuals specialised in the installation of windows and ventilation obtained by Eligible Persons for the undertaking of the Noise Insulation Mitigation Works at Eligible Properties and which shall include the cost of obtaining any Listed Building Consent required for the works concerned
“Relevant Habitable Rooms”	means lounges or bedrooms within the elevations of Eligible Properties identified on the plan attached to this Agreement labelled Hickleton Road Traffic Noise Significant Effect Façade Markup

2. NOISE INSULATION

- 2.1. Prior to the Noise Mitigation Trigger the Owners shall issue the Noise Insulation Offer to all Eligible Persons by guaranteed delivery (tracked)
- 2.2. If an Eligible Person confirms within 6 months of receipt of the Noise Insulation Offer that they accept the offer and wish to receive the Noise Insulation Payment they shall provide the Noise Mitigation Quotes to the Owners at the same time as such confirmation together with an assurance that the Noise Insulation Payment shall only be used for the purpose of the Noise Insulation Works and then the Owners shall arrange for payment of the Noise Insulation Payment to that Eligible Person within 28 days of such acceptance PROVIDED ALWAYS THAT the total of the Noise Insulation Payments shall not exceed the Eligible Properties Cap
- 2.3. In the event that any Eligible Person has not responded to the Noise Insulation Offer within 5 months of the date of its issue, the Owners shall issue a further letter to all Eligible Persons who have not responded enclosing a copy of the Noise Insulation Offer and explaining that the Noise Insulation Offer shall expire at the end of the 6 months from the date of its original issue.

2.4. At the expiry of 6 months from the date of the issue of the Noise Insulation Offer all Interested Persons who have not accepted the Noise Insulation Offer shall cease to be eligible for Noise Insulation Payments

FOURTH SCHEDULE
Hickleton and John O Gaunt Mitigation

1. INTERPRETATION

1.1. In this Schedule the following words shall have the following meanings:

“A19 – A1 Hickleton Bypass”	means the proposed future Hickleton Bypass between the A19 and the A1 which seeks to alleviate traffic flows through Hickleton
“Additional Air Quality Improvements”	means improvements undertaken by the City Council to mitigate the impact of air pollution within the settlement of Hickleton
“Crossroads Improvements”	means the works of improvement to the Red Hill Land and Hickleton Road junction to address the impacts of the Development
“Highways Improvements”	means either the A19-A Hickleton Bypass or the Crossroad Improvements
“John O Gaunts”	means the residential property known as John O Gaunts, Hickleton
“John O Gaunts Mitigation”	means the noise insulation and ventilation works to John O Gaunts comprising enhanced glazing and alternative means of ventilation to Relevant Habitable Rooms
“John O Gaunts Mitigation Offer”	means a written offer made to the owner of John O Gaunts setting out their ability to request and obtain a John O Gaunts Mitigation Payment and requesting a response within 6 months detailing the Relevant Habitable Rooms within their respective Property and confirmation that they wish to receive the Noise Insulation Payment
“John O Gaunts Mitigation Payment”	means the payment to the owner of John O Gaunts equivalent to the costs of the John O Gaunts Mitigation up to a maximum of [£176,500 (One Hundred and Seventy Six Five Hundred Pounds)] and which shall include the cost of obtaining any Listed Building Consent required for the works concerned which is consistent with the Noise Insulation Regulations 1975
“John O Gaunts Quotes”	means quote(s) from relevant organisations or individuals specialised in the installation of windows

	and ventilation and in the obtaining of Listed Building Consents as the case may be obtained by the owner of John O Gaunts for the undertaking of the John O Gaunts Mitigation including for the application for Listed Building Consent for the John O Gaunts Mitigation
“John O Gaunts Trigger”	means the above ground construction of any Unit
“Listed Building”	means a building included in the List of Buildings of Special Architectural or Historic Interest compiled by the Department of Digital, Culture, Media and Sports pursuant to the Planning (Listed Buildings and Conservation Areas) Act 1990.
“Listed Building Consent”	means a consent for works to be carried out to a Listed Building required under the provisions of the Planning (Listed Buildings and Conservation Areas) Act 1990.
“Mitigation Contribution”	means the sum of [£209,000 (Two Hundred and Nine Pounds)] plus any Surplus payable by the Owners to the City Council towards either the Highways Improvements or the Additional Air Quality Improvements for the purpose of mitigating the impacts of the Development on the air quality of Hickleton which, for the avoidance of doubt, can include improvements to the highway network
“Relevant Habitable Rooms”	means living rooms or bedrooms within John O Gaunts
“Surplus”	means all or part of the John O Gaunts Mitigation Payment that has not been paid to or requested by the owner of John O Gaunts to be paid to the owner of John O Gaunts at the expiry of the period of 6 months from the issue of the John O Gaunts Mitigation Offer

2. MITIGATION

- 2.1. Prior to the John O Gaunts Trigger the Owners Shall issue the John O Gaunts Mitigation Offer to the owner of John O Gaunts by guaranteed delivery (tracked)
- 2.2. If the owner of John O Gaunts confirms within 6 months of receipt of the John O Gaunts Mitigation Offer that they accept the offer and wish to receive the John O Gaunts Mitigation Payment they shall provide the John O Gaunts Quotes to the Owners at the same time as such confirmation together with an assurance that the John O Gaunts Mitigation Payment shall only be used for the purpose of the John O Gaunts Mitigation and then the Owners shall arrange for payment of the John O Gaunts Mitigation Payment to the owner of John O Gaunts within 28 days of such acceptance PROVIDED ALWAYS THAT the total of the John O Gaunts Mitigation Payment shall not exceed [£176,500 (One Hundred and Seventy Six Five Hundred Pounds)]

- 2.3. In the event that the owner of John O Gaunts has not responded to the John O Gaunts Mitigation Offer within 5 months of the date of its issue, the Owners shall issue a further letter to the owner of John O Gaunts enclosing a copy of the John O Gaunts Mitigation Offer and explaining that the John O Gaunts Mitigation Offer shall expire at the end of the 6 months from the date of its original issue.
- 2.4. At the expiry of 6 months from the date of the issue of the John O Gaunts Mitigation Offer any Surplus shall be added to the Mitigation Contribution
- 2.5. Prior to first Occupation the Owners shall pay to the City Council the Mitigation Contribution PROVIDED THAT in the event that the 6 month period set out in paragraph 2.4 above has not yet expired the Owners shall pay the Mitigation Contribution without such Surplus prior to first Occupation and thereafter pay the Surplus to the Council upon the expiry of the 6 months period set out in paragraph 2.4 above

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FIFTH SCHEDULE

Transportation

1. INTERPRETATION

1.1 In this Schedule the following words shall have the following meanings:

“Bus Infrastructure Contribution”	means the sum of [£67,700 (Sixty Seven Thousand and Seven Hundred Pounds)] payable by the Owners to the LHA towards the Bus infrastructure Improvements
“Bus Infrastructure Improvements”	means the bus infrastructure improvements comprising: <ul style="list-style-type: none">• [On the A635 two new bus stops with full length laybys positioned as close to the new roundabout approaches as possible, and fitted with 3-bay full-end shelters with real time passenger travel information displays;• Stop 50245 to be fitted with a replacement 3-bay full-end solar bus shelter and realtime passenger travel information display;• The new A635 stops, stop 50245, and stop 55109 to be provided with raised kerb, tactile paving, and bus stop clearway marking]
“Bus Services”	means the evenings and Sunday bus service 219E
“Bus Services Contribution”	means the sum of £459,800 (Four Hundred and Fifty Nine Thousand Eight Hundred Pounds) payable by the Owners to the LHA for the purpose of the Bus Infrastructure Improvements
“Bus Services Enhancements”	means the enhancements proposed to the Bus Services to improve public transport connectivity from the Development

2. MITIGATION

2.1 Prior to first Occupation the Owners shall pay to the LHA the Bus Infrastructure Contribution

2.2 The Owner shall pay the Bus Services Contribution to the LHA in accordance with the following and subject to paragraph 2.4 of this Schedule:

2.2.1 £153,275 (One Hundred and Fifty Three Thousand Two Hundred and Seventy Five Pounds) upon the first annual anniversary of first Occupation;

2.2.2 £153,275 (One Hundred and Fifty Three Thousand Two Hundred and Seventy Five Pounds upon the second annual anniversary of first Occupation;

2.2.3 £153,275 (One Hundred and Fifty Three Thousand Two Hundred and Seventy Five Pounds upon the third annual anniversary of first Occupation;

2.3 In the event that it is demonstrated that the Bus Services is shown by the information obtained by the LHA in accordance with paragraph 1.3.3 of the Sixth Schedule to:

2.3.1 Have become self-funding through fare patronage within 3 years from first Occupation then the Owner's obligation to pay the Bus Services Contribution shall cease and determine absolutely

2.3.2 Have made a profit during the preceding 12 months as demonstrated by annual accounts of the Bus Services provider then that profit will be offset against the part of the Bus Service Contribution that is next payable in accordance with paragraph 2.2 of this Schedule

DRAFT

SIXTH SCHEDULE
Public Rights of Way

1. INTERPRETATION

1.2 In this Schedule the following words shall have the following meanings:

“PRoW Contribution”	means the sum of [£159,000 (One Hundred and Fifty Nine Thousand Pounds)] payable by the Owners to the LHA towards the costs of the LHA undertaking improvements and upgrading of the existing public right of way known as shown with the dashed blue line on the Plan labelled “PRoW Upgrade Plan” attached to this Agreement
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2. MITIGATION

2.1 Prior to first Occupation the Owners shall pay to the Council the PRoW Contribution

SEVENTH SCHEDULE
Biodiversity and Landscape

1. INTERPRETATION

1.1 In this Schedule the following words shall have the following meanings:

“Biodiversity Impact Assessment”	means an assessment to be undertaken for each Phase to calculate the biodiversity impact of the that Phase measured in the Biodiversity Units using the statutory biodiversity metric published by the Department for Environment Food & Rural Affairs (“DEFRA”) dated February 2024 or any other superseding metric published by DEFRA or Natural England from time to time to measure and account for biodiversity losses and gains resulting from development or land management change (or in the absence of any metric published by Natural England or Defra such other metric as may be agreed in writing by the Owners and the Council
“Biodiversity Impact Assessment Report”	means the report produced for each Phase detailing the Biodiversity Impact Assessment for that Phase [including the Biodiversity Impact Assessment dated [] which relates to the Full Permission Development]
“Biodiversity Unit”	means the measure of biodiversity resource as quantified and assessed in accordance with the Biodiversity Impact Assessment
“BNG Scheme”	means a scheme to be submitted for each Phase detailing how that Phase will contribute to providing a minimum 10% net gain in Biodiversity Units for the Development based on the Biodiversity Impact Assessment Report and may provide for biodiversity enhancements to be provided within that Phase or off-site
“LEMP”	means a scheme for the implementation of landscaping within each Phase and its subsequent management [which shall be in broad accordance with the Framework Landscape and Ecological Management Plan dated []] and include consideration of the impact on and details of any required mitigation in relation to protected birds having regard to the BNG Scheme

2. MITIGATION

2.1 The Owners shall not cause or allow Commencement of Development within each Phase until the Biodiversity Impact Assessment Report, the BNG Scheme and the LEMP for that Phase has been submitted to and approved in writing by the Council acting reasonably and deemed to be approved by the Council if the Council does

not respond within 20 Working Days of receipt of the Biodiversity Impact Assessment Report, the BNG Scheme and the LEMP for that respective Phase

- 2.2 The BNG Scheme for each Phase shall include:
 - 2.2.1 the biodiversity enhancement works proposed at the Site and/or identity of an appropriate receptor site or sites upon which any off-site biodiversity enhancements will be provided
 - 2.2.2 a management plan for the provision and maintenance of biodiversity enhancements for not less than 30 years from the date of implementation of the BNG Scheme within that Phase
 - 2.2.3 a scheme to monitor whether the biodiversity net gain has been delivered in accordance with the BNG Scheme and which shall include the provision of monitoring reports to the Council at proposed intervals
 - 2.2.4 provisions in relation to ownership and contractual terms designed to secure the delivery of the offsetting measures if required throughout the not less than 30 year period
- 2.3 For the avoidance of doubt it is hereby agreed by the Owners and the Council that if the BNG Scheme for any Phase identifies that it will generate Biodiversity Units in excess of the 10% net gain for that Phase then any excess Biodiversity Units may be taken into account for the purposes of calculating the percentage net gain in Biodiversity Units pursuant to the Biodiversity Impact Assessment Report for any other Phase or for the purposes of registering the Site on the Biodiversity Gain Sites Register as envisaged by Section 100 of the Environment Act 2021 and created by DEFRA to enable any excess Biodiversity Units to be traded and in such circumstances the Owners shall be entitled to request that the Council enter a further agreement under s106 of the Act to secure the necessary obligations to ensure the Site can be registered on the Biodiversity Gain Sites Register
- 2.4 The LEMP shall include to the extent not detailed in the BNG Scheme:
 - 2.4.1 the layout and specification of the proposed landscaping within that Phase
 - 2.4.2 a management plan for the provision and maintenance of the landscaping for not less than 30 years from the date of implementation of the landscaping within that Phase

EIGHT SCHEDULE
COVENANTS OF THE COUNCIL CITY COUNCIL AND LHA

- 2.4 If at any time the City Council shall in its discretion decide not to utilise any contribution paid under this Deed in part or as to the whole or any contribution shall not have been expended or committed to use within 5 (five) years from the date of receipt of the relevant contribution then the City Council shall refund to the Owners without delay whatever part of any contribution remains unspent as at such 5 year date
- 2.5 Subject to paragraph 1.3 below if at any time the LHA shall in its discretion decide not to utilise any contribution paid under this Deed in part or as to the whole or any contribution shall not have been expended or committed to use within 5 (five) years from the date of receipt of the relevant contribution then the LHA shall refund to the Owners without delay whatever part of any contribution remains unspent as at such 5 year date
- 2.6 With regard to the Bus Services Contribution, the Council covenants as follows:
- 1.6.1 To hold the Bus Services Contribution in an interest bearing account from the date of receipt of payment of each tranche of the Bus Services Contribution until the date of payment to the operator of the Bus Services (or successor body) (“the Operator”)
 - 1.6.2 To notify the Operator within 14 working days of receipt of each tranche of the Bus Services Contribution that the Council is in receipt of that tranche of the Bus Services Contribution and of its specified purpose in this Deed
 - 1.6.3 To pay the Bus Services Contribution to the Operator upon receipt of the written confirmation from the Operator that:
 - 1.6.3.1 the Bus Services have not become self-funding through fare patronage
 - 1.6.3.2 if the Bus Services have made a profit during the preceding 12 months, it will detail such profit by reference to its annual accounts
 - 1.6.3.3 it will apply the Bus Services Contribution for the purpose set out in this Deed;
 - 1.6.3.4 it will provide full details of the expenditure of the Bus Services Contribution on demand to the LHA or to the Owners;
 - 1.6.3.5 it will return any uncommitted part of the Bus Services Contribution to the LHA after the expiry of five years from the date of receipt of the final tranche of the Bus Services Contribution by the LHA
 - 1.6.4 Upon written request of the Owner to repay to the LHA any unspent monies received by the LHA pursuant to paragraph 1.2.2.5 of this Schedule within 28 working days of receipt from the Operator

EXECUTED as a DEED by affixing)
 The Common Seal of)
BARNSELY METROPOLITAN)
BOROUGH COUNCIL)

Borough Secretary/Authorised Signatory

<p>Executed as a deed by WILLIAM SEELS in the presence of a witness:.</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<hr/> <p>Name:</p>
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<p>Executed as a deed by JONATHON SEELS in the presence of a witness:</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<hr/> <p>Name:</p>
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<p>Executed as a deed by FREDERICKA ELIZABETH MARY LAUGHTON in the presence of a witness:</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<hr/> <p>Name:</p>
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<p>Executed as a deed by PAUL WHEELER in the presence of a witness:</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<hr/> <p>Name:</p>
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<p>Executed as a deed by STANFORD LAND LTD in the presence of a witness:</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<p>_____</p> <p>Name:</p>
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<p>Executed as a deed by WENTWORTH TRUSTEE COMPANY LIMITED in the presence of a witness:.</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<p>_____</p> <p>Name:</p>
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<p>Executed as a deed by DEBORAH SEELS in the presence of a witness:.</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<p>_____</p> <p>Name:</p>
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<p>Executed as a deed by EQUITES NEWLANDS (GOLDTHORPE) LIMITED in the presence of a witness:</p> <p>Witness signature:</p> <p>Witness name:</p> <p>Witness address:</p>	<p>_____</p> <p>Name:</p>
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EXECUTED as a DEED by affixing)
The Common Seal of)
THE CITY OF DONCASTER
COUNCIL)

Borough Secretary/Authorised Signatory