Middlesbrough Council

Middlesbrough Local Nitrogen Dioxide Plan

Outline Business Case

258748-OBC-04

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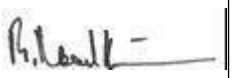
		Signature			
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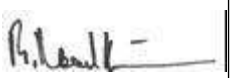
		Signature			
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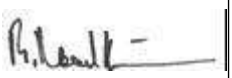
		Signature			

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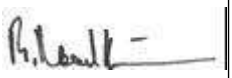
		Signature			
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Executive Summary

The *UK plan for tackling roadside nitrogen dioxide (NO_2) concentrations* ("The National NO_2 Plan") (July 2017) identifies Middlesbrough as one of twenty-eight local authorities required to address nitrogen dioxide (NO_2) concentrations. This followed on from national modelling, which indicated that two sections of the A66 in Middlesbrough would persistently exceed the annual average limit value for NO_2 concentration of 40µg/m^3, laid down in the Air Quality Standards Regulations 2010 ("the Limit Value for NO_2"). The Government directed Middlesbrough Council under the Environment Act 1995[1] to develop a Local NO_2 Plan by 31 December 2018 to deliver compliance within the shortest possible time.

As part of the Local NO_2 Plan for Middlesbrough, a Strategic Outline Case (SOC) was developed. This required the development of detailed local Air Quality modelling to provide evidence supporting the SOC.

At this time, "Early Measures" were identified to ensure that improvements were made as quickly as possible, whilst the assessment of larger scale interventions was undertaken. Funding of £1.8 million has been granted for these measures from the Early Measures fund (part of the £255 Implementation Fund).

The evidence prepared for the SOC indicated no exceedances of the Limit Value for NO_2 in the study area in any modelled year. This was confirmed by more detailed modelling undertaken following the submission of the SOC. The evidence underpinning this conclusion does not rely upon the success of the Early Measures Fund schemes.

This document sets out the Outline Business Case (OBC) for Middlesbrough's Local NO_2 Plan. As no exceedances have been identified for the study area, and as agreed with the Joint Air Quality Unit (JAQU), this OBC has been developed to demonstrate that there is no case for change, and that no additional measures need to be implemented in Middlesbrough to achieve compliance with the Limit Value for NO_2.

Consequently, Middlesbrough Council will not develop a Full Business Case (FBC).

This document also outlines how the process will conclude, including the relevant approvals. Acceptance and approval of this OBC is anticipated to be the final stage in the process for Middlesbrough.

[1] Environment Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2017. Available at: https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

1 Introduction

1.1 Background

On 26 July 2017, the Government published the UK plan for tackling roadside nitrogen dioxide (NO_2) concentrations[2] ("The National NO_2 Plan"). This plan sets out how Government would achieve compliance with the Limit Value for NO_2 concentration (40 micrograms per cubic metre ($\mu g/m^3$)) laid down in the Air Quality Standards Regulations 2010, in the shortest possible time.

The National NO_2 Plan identified a list of local authorities with roads indicated by national modelling to have NO_2 levels above the annual average limit value for NO_2 ("the Limit Value for NO_2"). The Government has directed a number of local authorities under the Environment Act 1995[1] to undertake feasibility studies to identify the best option to achieve compliance. Middlesbrough Council is one of the local authorities required to undertake further action to address two areas of noncompliance with NO_2 limiting concentrations on the A66.

A feasibility study process was implemented to make the case for a Local NO_2 Plan for Middlesbrough, based on the guidelines produced by the Joint Air Quality Unit (JAQU), a joint unit between the Department for the Environment, Food and Rural Affairs (Defra) and the Department for Transport (DfT). Its role is to oversee the delivery of The National NO_2 Plan by supporting local authorities with the delivery of local measures in their area.

The feasibility study process specified by JAQU involves developing a Strategic Outline Case (SOC), Outline Business Case (OBC) and Full Business Case (FBC) for the Local Plan, each supported by technical evidence and associated reports.

1.2 Purpose of report

This report presents the OBC for Middlesbrough's Local NO_2 Plan. It follows the submission of the SOC in March 2018 and has been prepared on behalf of Middlesbrough Council, with the support of JAQU.

This OBC provides an overview of the process that was followed to develop Middlesbrough's Local NO_2 Plan and presents the evidence that supports the conclusion that there is no case for change regarding NO_2 concentrations in Middlesbrough.

Initial local air quality modelling results presented as part of the SOC indicated no exceedances of the Limit Value for NO_2 in the study area in Middlesbrough for any scenario (base or future). This was subsequently confirmed by detailed modelling. As a result, and as agreed with JAQU, this OBC has been developed to demonstrate that there is no case for change, and that no additional measures will need to be implemented in Middlesbrough with regards to NO_2 concentrations.

[2] Department for Environment Food & Rural Affairs, Department for Transport, 2017. UK plan for tackling roadside nitrogen dioxide concentrations – Detailed plan

Consequently, Middlesbrough Council does not propose to develop an FBC. Acceptance and "sign-off" of this OBC is anticipated to be the final stage in the feasibility study process for Middlesbrough.

This document is supported by the "Local Plan Air Quality Modelling Report" (AQ3), which was submitted to JAQU on 11 September 2018 (**Appendix A)**. Additional evidence can be found in supporting technical reports, accompanying this submission (**Appendix A**).

The feasibility study process for developing Middlesbrough's Local NO_2 Plan is outlined below.

1.3 Feasibility study process

The feasibility study process consists of the following stages:

Stage 1: Proposal for feasibility from Middlesbrough Council to JAQU – December 2017

Stage 2: SOC submission to JAQU – 29 March 2018.

Stage 3: Initial Evidence Submission to JAQU – 8 June 2018: This submission included the following reports (also provided in **Appendix A**):

- Local Plan Transport Modelling Tracking Table (T1): summarises the Transport Modelling Methodology
- Local Plan Transport Validation Report (T2): outlines the local validation of the transport model
- Local Plan Transport Modelling Methodology Report (T3): provides detail on the transport modelling and forecasting methodology
- Local Plan Transport Modelling Forecasting Report (T4): details the results of the transport forecasting.
- Local Plan Air Quality Modelling Tracking Table (AQ1): summarises the air quality modelling methodology
- Local Plan Air Quality Modelling Methodology Report (AQ2): provides detail on the air quality modelling methodology
- Local Plan Air Quality Modelling Report (AQ3): details the air quality modelling results.

Stage 4: Target Determination part 1 (TD1) – 8 June 2018 – 22 June 2018: JAQU reviewed the initial evidence and requested some model inputs for checking in TD2;

Stage 5: Technical Independent Review Panel (T-IPR) 26 June 2018: An independent review of TD1 and the technical evidence submitted so far;

Stage 6: Target determination part 2 (TD2) – 5 July 2018 – 27 July 2018: JAQU reviewed model inputs provided in response to TD1, and requested further clarification and detail.

Stage 7: T-IRP 2 – 26 September 2018: Independent review of all evidence to date including TD2, and responses to TD2 document.

Final Stage: OBC submission – 10 October 2018, approval to follow.

1.4 Report contents

Following this intro, the remainder of this report is presented in line with the HM Treasury Five Case Business Model format.

The Strategic Case sets out the strategic context of Middlesbrough and the A66, and provides an overview of the planned "Early Measures" grant schemes for Middlesbrough.

The Economic Case provides evidence of the NO_2 compliance, including a summary of the air quality and transport modelling methodology and results. More details on the modelling process and outputs are provided in **Appendix A**.

As no measures are proposed for Middlesbrough, the Commercial and Financial Cases identify the lack of commercial and financial implications.

The Management Case presents the project participants, management strategy and governance structure, as well as the timeline for the conclusion of the feasibility study process.

2 Strategic Case

2.1 Overview

The Green Book Supplementary Guidance [3] on the Five Case Model Methodology for developing business cases requires the Strategic Case to demonstrate that the proposal for change provides business synergy and strategic fit and is predicated upon robust evidence.

Guidance produced by JAQU on the OBC states that the OBC Strategic Case should revisit the SOC Strategic Case, reassess the case for change and preferred way forward, summarise the results of baseline ("no measures") air quality and transport modelling, provide detailed logic maps, include input from stakeholder engagement, and present the results of air quality and transport modelling.

Following the findings presented in the SOC and additional modelling work (presented in **Section 3** and accompanying technical reports), no case for change regarding NO_2 concentrations has been identified for the study area in Middlesbrough. As such, the purpose of this OBC Strategic Case is to set out the strategic context for Middlesbrough and the A66, to reiterate that there is no requirement for additional measures to reduce NO_2 concentrations in Middlesbrough, and to provide a summary of the planned "Early Measures" grant schemes for Middlesbrough.

2.2 Background

The National NO_2 Plan[2] identifies the Government's aim to achieve compliance with the limit value for NO_2 laid down in the Air Quality Standards Regulations 2010 in the shortest possible time. The National NO_2 Plan's conclusions are supported by evidence generated from a national modelling exercise using the Pollution Climate Mapping (PCM) model.

As Middlesbrough Council was identified as one of the local authorities where the PCM model identified persistent exceedances of the Limit Value for NO_2, Middlesbrough Council was required by Ministerial direction to undertake further action to consider the best option to achieve compliance within the shortest possible time.

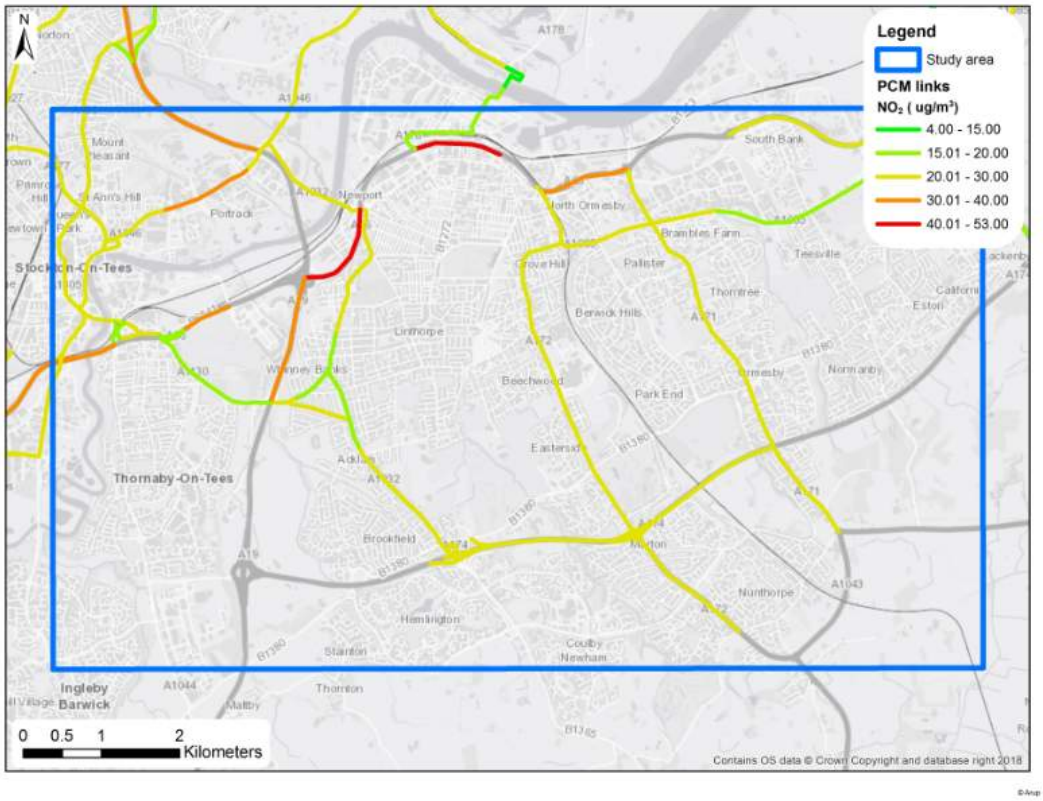
The PCM national model predicted two locations in Middlesbrough where the Limit Value for NO_2 was exceeded in 2017 and was predicted to persist in being exceeded beyond 2023. These two locations are listed below (and are referred to as "PCM links" throughout). These are shown in red in **Figure 1**.

1. **PCM link 1.** The A66 between the A66 / B1272 / North Road junction and the A66 / Marton Road junction (eastern link). This part of the A66 is a four-lane dual carriageway flyover, located in an urban setting; and

[3] HM Treasury, 2013. Public Sector Business Cases Using the Five Case Model, Green Book Supplementary Guidance on Delivering Public Value from Spending Proposals

2. **PCM link 2.** The A66 between the A19 / A66 junction and the A66 / A1032 / Newport Road (western link). This part of the A66 is a four-lane dual carriageway, located in an urban setting.

Figure 1: Modelled roadside annual average NO_2 concentrations according to the PCM Model



Road traffic source apportionment for oxides of nitrogen (NO_x) is available from the PCM model and is shown in **Table 1**. This identifies two key groups contributing significantly to NO_x concentrations, which are diesel cars and diesel HGVs. Combined, these groups make up 52% of the road traffic NO_x for the first census link, and 51% for the second census link.

Table 1: PCM road traffic source apportionment for NO_x

Census Link	Road traffic source apportionment of NO_x as a percentage total of NO_x (%)								
	Cars petrol	Cars diesel	HGVa diesel	HGVr diesel	Buses diesel	LGVs diesel	LGVs diesel	Mcyles petrol	Taxis diesel
58357	6	27	10	15	2	0	19	0	0
46643	6	27	11	13	4	0	16	0	0
Middlesbrough average	5	23	7	3	7	0	14	0	0

In line with JAQU requirements, a local modelling exercise was undertaken to explore the issues further around NO_2 concentrations in the study area in Middlesbrough. The local modelling exercise is discussed in the Economic Case, and is detailed in the technical reports. The conclusion of the modelling exercise is that NO_2 concentrations in the study area in Middlesbrough did not exceed the Limit Value for NO_2 in 2016 (the baseline year) and are not expected to do so in the years up to and including 2021.

2.3 Strategic context

This section sets out the strategic context of this OBC, in terms of a summary of the local, health, economic and air quality context of Middlesbrough.

2.3.1 Local context

Middlesbrough has a population of 140,400, making it the second largest town in the Tees Valley[4]. Information on the local demographic context[8] is provided in **Appendix B**.

The A66 forms a vital east-west strategic road link through the Tees Valley, connecting Redcar and Cleveland, Middlesbrough, Stockton and Darlington. Further west the A66 continues across the Pennines to the M6 at Penrith, and on through the Lake District to West Cumbria. It also provides access to the A19 and the A1, which provide vital strategic links to the rest of the country. The A66 passes through the north side of Middlesbrough town centre and therefore serves as an important local link, in addition to providing the strategic east-west route.

Teesport is located to the east of Middlesbrough approximately 3 km from the A66. It is the ninth biggest port in the United Kingdom and England's largest exporting port. It handles 5,000 vessels per year and around 40 million tonnes of cargo[5]. This equates to £17bn worth of trade passing through the port. Though much of the cargo is transported by rail, around 2,000 Heavy Goods Vehicles (HGV) movements per day are generated by Teesport[6]. The A66 provides the link not only to the West, but also to the North and South via the A19 and A1. This means that the majority of the HGV movements use the A66.

The A66 is vital to the local economy. Much of the local economic strategy centres around encouraging growth in the area served by the A66, and so the significance of the corridor is likely to grow. The Tees Valley Combined Authority Strategic Economic Plan[7] notes the role of the A66 transport corridor and its local and regional economic importance. One of the aims of the Economic Plan is to provide improved east-west road connectivity to provide a high quality resilient corridor along the A66 from the A1M to Teesport.

[4] Office for National Statistics, 2016. Population estimates – local authority based by five year age band
[5] http://www.pdports.co.uk/en/our-locations/teesport/
[6] Tees Valley Combined Authority. Connecting the Tees Valley – Strategic Transport Plan: Freight Strategy (Draft)
[7] Tees Valley Combined Authority. Tees Valley Strategic Economic Plan – The Industrial Strategy for Tees Valley 2016-2026

Approximately 4,250 new jobs and 5,500 new homes are planned to be delivered in Middlesbrough by 2025, as presented in the Middlesbrough Investment Prospectus[8]. Key residential sites will be located in south-east and south-west Middlesbrough. A significant volume of traffic from these areas is expected to access the town centre via the A19 and A66.

Significant office development will be provided in Centre Square, in Middlesbrough town centre. Other employment sites include the Hemlington Grange Business Park, Teesside Advanced Manufacturing Park and Boho. Additional development opportunities include mixed-use education, leisure, sport and hotel land uses in Middlehaven, north of the A66, and educational, residential and commercial opportunities in Middlesbrough town centre, associated with Teesside University.[8] The A66 provides access to all of these future developments.

As part of Stockton Borough Council's requirements to deliver 10,150 new homes up to 2032, housing sites will be delivered in the Regeneration River Tees Corridor, among others, located between Newport Bridge and the A66[9].

In the wider context, Tees Valley Combined Authority's aspirations include providing 25,000 additional jobs and in excess of 22,000 new homes by 2026[7] and the A66 has a significant role to play in supporting this regional growth. It should be noted that the expected regional future growth has been incorporated in the future transport and air quality modelling, to undertake a robust assessment of future compliance with NO_2 in the study area in Middlesbrough.

2.3.2 Health context

Evidence collated by Defra, Public Health England and the Local Government Association for a briefing for directors of public health shows that short-term exposure to high levels of air pollution can cause a range of adverse health effects including exacerbation of asthma, effects on lung function, increases in hospital admissions and mortality[10]. The briefing also presents evidence that long-term exposure to air pollution contributes to deaths from respiratory and cardiovascular conditions[10].

Poor air quality is the largest environmental risk to public health in the UK. It has fundamental impacts on human health, affecting the quality and duration of people's lives, the quality of their environments and the resilience of their communities[2]. It also has implications for equality of access to a healthy living environment[2]. Poor air quality is also known to have more severe effects on vulnerable groups, for example the elderly, children and people already suffering from pre-existing health conditions such as respiratory and cardiovascular conditions[2]. Studies have also suggested that the most deprived areas of Britain bear a disproportionate share of poor air quality[2].

[8] Middlesbrough Council, 2017. Middlesbrough Investment Prospectus
[9] Stockton-on-Tees Borough Council, 2017. Stockton-on-Tees Publication Draft Local Plan – Regulation 19 Consultation
[10] Local Government Association, 2017. Air Quality – A Briefing for Directors of Public Health

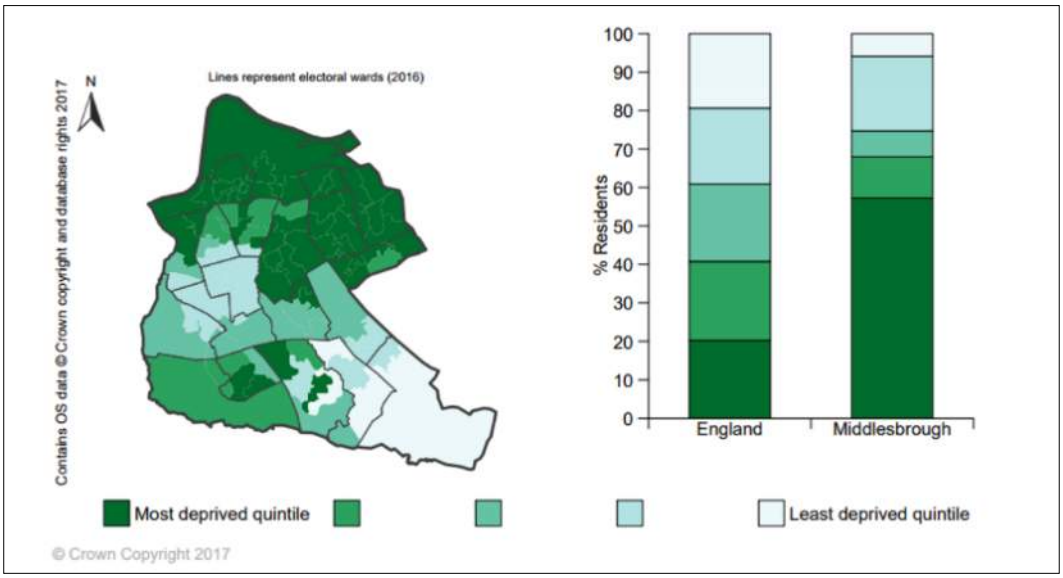
A relationship between NO_2 in outdoor air and reduced lung development (lung function growth) and respiratory infections in early childhood and effects on lung function in adulthood has been observed[10]. It has been unclear whether these effects are caused by NO_2 itself or by other pollutants emitted by the same sources (such as road traffic)[10].The overall burden is estimated to be equivalent to nearly 23,500 deaths in the UK per year, although there is likely to be an overlap between the health impact associated with particulate matter and NO_2 concentrations[10].

The health of people in Middlesbrough is generally worse than the English average, and significant health inequalities have been noted between the most and least deprived areas in Middlesbrough[11]. Life expectancy in the most deprived areas of Middlesbrough is 12.9 years lower for men and 12.0 years lower for women than in the least deprived areas of the town[11].

Figure 2 shows a comparison of deprivation between Middlesbrough wards (left) and between Middlesbrough and England (right). **Figure 3** shows the inequalities in life expectancy in Middlesbrough.

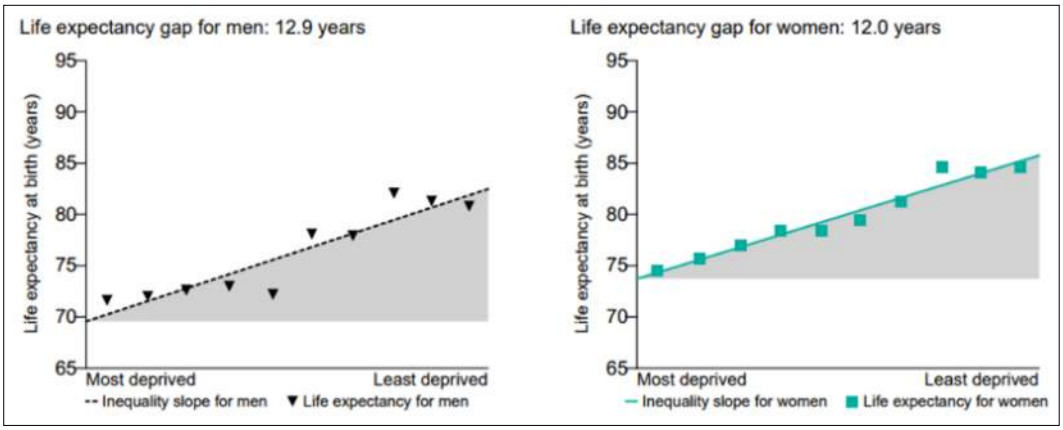
The existence of connections between health and air quality in Middlesbrough, however, has not been explored.

Figure 2: Deprivation in Middlesbrough and England[11]



[11] Public Health England, 2017. Middlesbrough Unitary Authority Health Profile 2017

Figure 3: Life expectancy inequalities in Middlesbrough[11]



2.3.3 Economic context

A key element of the strategic background for Middlesbrough is the local economic context.

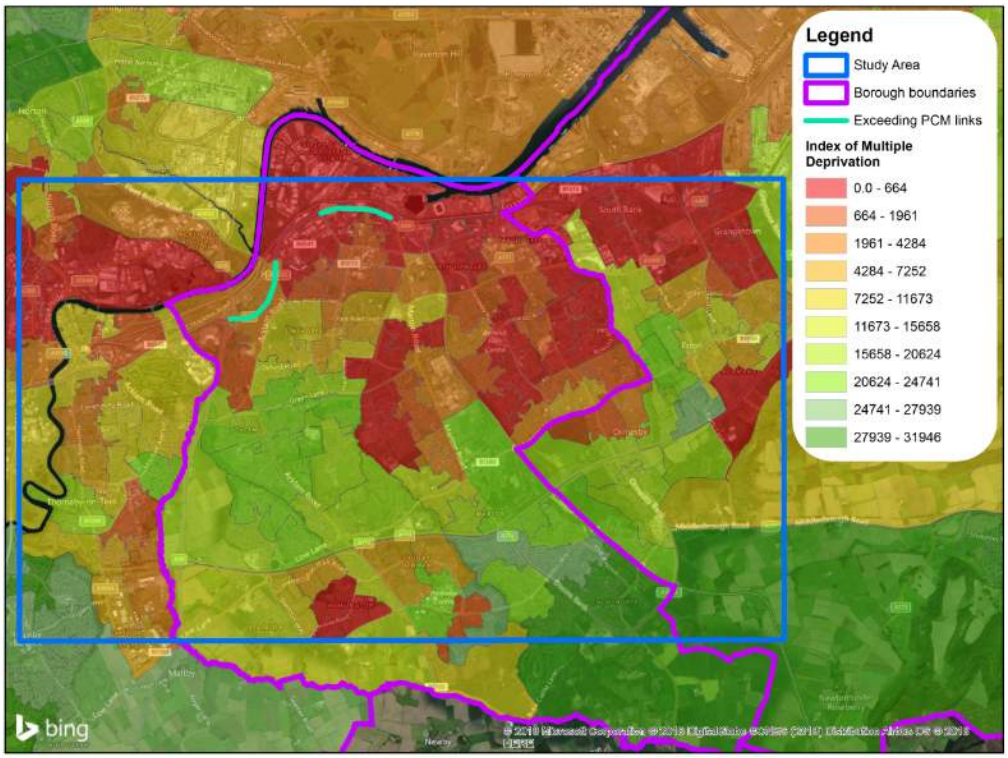
The deindustrialisation of the region has resulted in the closure of much of Middlesbrough's industry. As a result, Middlesbrough has faced a series of challenges with regards to the local economy, leading to an increased level of deprivation in the area.

Middlesbrough was one of the five local authorities with the largest proportions of highly deprived neighbourhoods in England in 2010 and 2015, and has been one of the ten most deprived local authorities according to 2004 and 2007 Indexes of Multiple Deprivation[12].

Figure 4 shows the variance in multiple deprivation across the Borough.

[12] Department for Communities and Local Government, 2015. The English Indices of Deprivation

Figure 4: 2015 Index of Multiple Deprivation – Middlesbrough



Economic data from Official Labour Market Statistics for 2017 also indicates that the Gross Weekly Pay for full time workers in Middlesbrough is lower than the North East and Great Britain medians. The data also identify a higher unemployment rate for Middlesbrough, in comparison to regional and national values.[13,14,15]

With respect to economic drivers and development ambitions, Middlesbrough cannot be viewed in isolation. It serves as the defacto city centre for the wider Tees Valley and a functional economic area with a population of around 800,000 people.

Middlesbrough is delivering an ambitious Investment Prospectus that will fundamentally enhance the economy of the area. Whilst the sustainability of development across the city is a paramount consideration, economic growth brings with it additional volumes of people movement and pressures to the existing transport networks. It is critical that a sustainable balance is achieved between delivering Middlesbrough's economic and social outcomes and the potential negative impacts of growth.

The Mayor's 2025 Vision puts Middlesbrough firmly at the heart of the Tees Valley City Region, competing with cities across the UK and further afield. With approximately 65 miles separating it from Leeds to the south and 40 miles from

[13] Office for National Statistics, 2017. Annual Survey of Hours and Earnings: 2017 provisional and 2016 revised results
[14] Office for National Statistics, 2017. Annual Population Survey
[15] Office for National Statistics, 2017. Annual Survey of Hours and Earnings – Resident Analysis

Newcastle to the north, Middlesbrough is ideally placed to develop its status further as a major economic centre.

The town's capacity to grow and prosper depends on its ability to continue to attract the new businesses, entrepreneurs and investment that will drive job creation and long-term prosperity. The Council plays a critical role in facilitating and financially supporting this investment and growth through developing investment models and working with the Tees Valley Combined Authority to stimulate investment.

The Investment Prospectus[8] reflects on a number of recent successes (supported by £74 million of direct Council investment) and lays out the ambitions and priorities that will take Middlesbrough on to the next phase in its journey, with an additional £625m investment by the private sector and other sources by 2025.

The Council's vision[8], which builds on its work already under way, is underpinned by a commitment to creating sustained economic growth, high quality jobs and thriving communities. Critical to this is the ambition to inspire, upskill and connect Middlesbrough's people to the new opportunities created.

Headline targets presented in the investment strategy include creating an additional:

- Commercial and housing investment – circa £625M;
- Total supply chain jobs – circa 750;
- Total land regenerated 57.5 hectares;
- Business accommodation developed 1.7million square feet;
- Total direct jobs – circa 4,250; and
- Total new homes built – circa 5,500.

2.3.4 Air quality context

Background

Middlesbrough has formally reviewed and assessed air quality through the Defra Local Air Quality Management (LAQM) process since 2000 and has produced an annual assessment reports[16] each year. These LAQM reports have concluded that in areas of relevant public exposure air quality pollutant concentrations in Middlesbrough are below the relevant threshold and comply with the national objectives, and therefore no Air Quality Management Areas (AQMAs) have been declared. In contrast, the results of national modelling undertaken by Defra to inform The National NO_2 Plan[2] identified two areas along the A66 that persistently exceed the Limit Value for NO_2.

Middlesbrough and the Tees Valley have a strong industrial heritage, which has contributed significantly to poor air quality in the past. In recent times however, industrial air pollution has reduced significantly as a result of closure of old plants

[16] Middlesbrough Council, 2017. 2017 Air Quality Annual Status Report (ASR)

and tighter regulation, and pollution from road traffic is now the greatest contributor to local pollutant concentrations[16].

Policy developed by Middlesbrough Council and neighbouring local authorities identifies the importance of improving air quality by reducing emissions through a series of measures, such as promoting a shift from cars to public transport, supporting the growth of electric vehicles, and encouraging walking and cycling[17]. These measures are expected to have long term air quality benefits for the area.

Improving air quality

Middlesbrough Council has been taking a proactive approach to reducing air pollution for a number of years and is currently undertaking a series of transformational improvements to the transport network. These measures will assist in reducing traffic on the A66, whilst simultaneously improving traffic flow around the town. These improvements include:

- Middlehaven Dock Bridge – Creation of a vehicular bridge to open up Eastern Middlehaven for development will create a new access point into the area and remove sole reliance on access to the area via the A66;
- Creation of cycleways – This scheme will help increase cycling connectivity by improving the cycle network, and will make journeys by bike safer and easier;
- Rail Station Master Plan – Development funding has been granted to improve Middlesbrough Rail Station. This will improve facilities within the station and will prepare it for enabling the ambitions of the new proposed rail franchises; and
- Rail franchise ambitions – As part of the roll out of the new franchise periods, Middlesbrough is set to receive a new direct London service, alongside increased service and frequency of trains to Middlesbrough and key strategic destinations around the region. This will improve the connectivity and availability of services, making rail a realistic alternative to the private car.

There are also a number of other plans that will assist in improving air quality in Middlesbrough in the longer term. These include:

- Electric vehicle incentive scheme;
- Freight Consolidation/improvements to rail freight – This would require gauge clearance improvements along the existing infrastructure, and would therefore require large amounts of funding and support/implementation from Network Rail, plus the local industry;
- Park and Ride facility at Nunthorpe – This would require Network Rail buy in, plus cross boundary land negotiations; and

[17] Department for Environment Food & Rural Affairs, Department for Transport, 2017. Air Quality Plan for tackling roadside nitrogen dioxide concentrations in Teesside Urban Area (UK0013)

- Re-location of Middlesbrough Bus Station – This will align the bus and rail stations, and make attractive public transport options more viable by creating improved facilities.

Monitoring

Middlesbrough Council has carried out air quality monitoring using continuous automatic analysers for over 20 years.

From 2015, the Council has also undertaken passive monitoring using diffusion tubes at a variety of locations, operating twenty-two diffusion tubes across the authority area.

No exceedances of the national annual average NO_2 objective have been recorded at any of the automatic monitoring or diffusion tube sites. The monitor in Crown Square (site no. M16) recorded the highest annual average NO_2 concentrations in 2017 of 37.0µg/m^3. This site is adjacent to the A66 on the eastern PCM link. The nearest sites to the western PCM link are Dunlane Close and West Lane, which recorded annual average NO_2 concentrations of 25.3µg/m^3 and 23.4µg/m^3 respectively in 2017. The results show that concentrations were generally elevated in 2016 compared to 2015 and 2017, however some sites (M3, M7 and M16) show an increase between 2016 and 2017.

Results for Middlesbrough Council's monitoring sites are shown in **Appendix C** along with a figure showing the locations of these sites.

As noted in **Section 2.2**, the national PCM model indicates two locations of persistent exceedances within Middlesbrough, both along the A66, as shown in **Figure 1**. All monitoring data for Middlesbrough, however, shows that NO_2 concentrations have been below the Limit Value for NO_2 since monitoring commenced.

2.3.5 European, national, regional and local policy and strategy

The importance of local economy, health and air quality is well recognised in policy and strategy. **Appendix E** contains a review of relevant policy and strategy.

2.3.6 "Early Measures" grant schemes

The "Early Measures" grant was set up by the Government to allow local authorities to get started with measures that would be implementable within a short timeframe (1 – 2 years) and that would not require time-consuming research and development. These measures would aim to start reducing NO_2 concentrations to put local authorities on the path to compliance and were expected to be complementary to the local plans to deliver compliance, informed by ongoing feasibility studies.

Middlesbrough was identified in the PCM model as having persistent breaches of the Limit Value for NO_2 and the need to act quickly was recognised by Government. As part of the "Early Measures" grant, Middlesbrough Council was

awarded funding of £1.8 million to implement a series of measures that will assist in reducing traffic on the A66, whilst simultaneously improving traffic flow around the town. More details on these improvements are provided in **Table 2**.

The "Early Measures" grant funding was awarded before the local air quality modelling supporting the SOC was completed and "Early Measures" schemes are planned in Middlesbrough to improve air quality. Whilst the local modelling identifies that these schemes are not required to bring about legal compliance, the effect of these schemes will be to improve air quality further. However, because the evidence underpinning this business case was developed using modelling that does not consider the effect of the early measures schemes, legal compliance is not dependent on the effectiveness of these schemes.

Table 2: Early Measures Grant Schemes in Middlesbrough

Scheme	Brief Description of the proposed work	Total costs (£)	Delivery estimate
Variable messaging signage	Installation of interchangeable message signage at key junctions on the A66. This informs drivers of accidents/incidents to advise alternate routing to reduce congestion at times of heavy flow. This works toward altering driver behaviour.	354,280	Sep-19
Windward Way link Road	Creation of a new access road linking Windward Way with Cleveland Street. This aligns with the Middlehaven Dock Bridge, and creates an alternate access route in the area, whilst improving road safety and active travel options by improving the public realm.	965,553	May -20
Signalisation of North Road and Snowdon Road	Creation of a signalled junction helps to improve journey time reliability, safety, congestion and traffic flow. Linked to wider Middlehaven accessibility, and improving alternate routes into an area of economic expansion.	161,614	Sep-19
Junction improvements Vulcan Street/Ferry Road	Creation of a signalled junction helps to improve journey time reliability, safety, congestion and traffic flow. Linked to wider Middlehaven accessibility, and improving alternate routes into an area of economic expansion. This is directly linked to the Middlehaven Dock Bridge.	209,830	Dec-18
Cycleway improvements Vulcan Street	Creation of off carriage cycleway will create attractive facilities as part of NCN1 (National Cycle Network route 1), providing continuous infrastructure from Stockton along the river to South bank via riverside Park.	122,062	May -19
	Total scheme costs	**1,813,339**	

2.4 Local air quality modelling

2.4.1 Initial local modelling

Following JAQU guidance, local air quality modelling was undertaken by Arup as part of the SOC to understand further the current roadside NO_2 concentrations in Middlesbrough. The modelled results were verified against air quality monitoring results and adjusted as appropriate. The local modelling provides a more realistic and detailed picture of local air quality pollutant concentrations than the national model and supports a better understanding of any exceedances, together with the potential causes of these.

The full methodology for the local modelling assessment is provided in the AQ2 report. A summary of the modelling outputs from the Baseline (present) and Do Minimum (without measures) models is provided below and full results are provided in **Appendix D**. The Baseline scenario shows the 2016 situation, while the Do Minimum scenarios show the future "without measure" scenarios for 2017 through to 2021.

Air quality modelling results included in the SOC were predicted using the local model for the following locations:

- Sensitive receptor locations;
- Local monitoring locations (for comparison with real world monitoring results); and
- PCM comparison points at 2m height and 4m distance from the kerbside.

2.4.2 Updated local modelling

Following the work carried out for the SOC, the initial interim modelling results were updated using local fleet data to refine the local air quality model further. The conclusion of the updated local modelling is consistent with the initial modelling and shows that there is no case for change.

Since the Do Minimum modelling shows no exceedances in Middlesbrough, no further modelling work or the implementation of a scheme are required. However, the Early Measures will still be implemented and are expected to improve the air quality in Middlesbrough further. Further discussion of the updated modelling is given in the Economic Case.

2.5 Conclusions

This section has identified that the A66 is vital to the local economy, providing strategic and local connectivity to the Tees Valley. Following the de-industrialisation of the region, the local economy of Middlesbrough is in a challenging period of change. The strategies for dealing with these challenges rely in many ways on the transport network and particularly on the A66.

The air quality around the A66 was shown by the PCM to be non-compliant with legal requirements.

Local and more detailed air quality modelling, however, has identified there are no exceedances of the Limit Value for NO_2 for any baseline or future scenario. As a result, no additional measures are proposed for Middlesbrough. More details on the air quality evidence is provided in **Section 3**.

3 Economic Case

3.1 Overview

The Green Book Supplementary Guidance[3] on the Five Case Model Methodology for developing business cases specifies that the main purpose of the Economic Case is to demonstrate that the spending proposal optimises public value (to the UK as a whole).

According to the JAQU guidance on the OBC for developing a Local NO_2 Plan, the OBC Economic Case revisits the SOC Economic Case and notes all changes to the initial assumptions, provides an evaluation of relevant costs and benefits and undertakes an assessment of the shortlist of options based on costs and benefits, to identify a preferred option. The Economic Case should also include the full economic model and outputs of the scenario analysis of the air quality and transport modelling.

As local air quality modelling has identified no NO_2 exceedances in Middlesbrough, the Economic Case of this OBC will not provide an economic analysis of options to identify a preferred option, but will provide a summary of evidence (including air quality modelling results) supporting the conclusion that there is no case for change.

3.2 Transport modelling

In order to generate traffic forecasts to inform the air quality modelling, an extensive transport modelling exercise was undertaken. Details of the transport modelling can be found in the supporting technical reports T1, T2, T3 and T4 (**Appendix A**). This section provides a high-level overview.

The modelling used the Tees Valley Model (TVM), which is maintained by Tees Valley Combined Authority, and is validated to 2014. Validation covers the whole of the Tees Valley and is to the standards outlined in WebTAG.

The model follows methodology outlined in WebTAG. In order to ensure that the model forms a good basis to provide local traffic forecasts, a local validation exercise was undertaken, focussing on the study area. The local validation is reported in T2, and this demonstrated the model is adequately validated. In addition, a flow and speed pivoting methodology was used to ensure a high level of confidence in the links key to the assessment. The rationale and methodology for the pivoting is outlined in T3.

A local Automatic Number Plate Recognition (ANPR) survey was undertaken in order to understand local fleet composition. The local fleet composition was used to disaggregate the model outputs into their euro classifications. The ANPR data provides a good understanding of the current fleet composition, but does not provide a means of forecasting the future fleet composition. In order to provide forecast fleet composition, a feature of the Defra Emissions Factor Toolkit (EFT) was used, which assumes the local fleet converges with the national projected fleet at a given year. This is discussed further in T3.

The TVM was used to generate forecasts following guidance set out in WebTAG. The forecasting methodology ensures that the forecasts are consistent with national projections, and also accounts for local developments and changes in the transport network. Details of the transport forecasting methodology can be found in T3.

3.3 Air quality modelling

In order to investigate local NO_2 concentrations in Middlesbrough, an extensive air quality modelling exercise was undertaken. Details of the air quality modelling can be found in the supporting technical reports AQ1, AQ2 and AQ3 (**Appendix A**). This section provides a high-level overview.

3.3.1 Methodology

Study area

The study area for the assessment was defined in consultation with Middlesbrough Council and JAQU. It includes the Middlesbrough A66 PCM links identified as exceeding the Limit Value for NO_2 and the modelled road network that covers the surrounding area. All A and B roads within the study area are included in the air quality model. Additional non-A/B roads were added where deemed necessary, for example Marton Road (an area of known traffic congestion and a possible displacement route) and Wilson Street (a known bus route adjacent to the A66).

The study area extends to the west to include the Stockton automatic monitoring station (ID A1035), which was used for model verification (see AQ2 and AQ3 for more details). The study area also extends to the south to encompass possible displacement routes, such as the A174.

Assessment scenarios

The baseline year for this assessment is 2016 and the compliance year is 2021. The assessment scenarios in this assessment are defined by JAQU in the Evidence Package[18] and are as follows:

1. Baseline scenario for 2016 (using 2016 traffic data and 2016 emissions estimates); and
2. Future baseline including cumulative traffic for 2021 (using 2021 traffic data and 2021 emissions).

The Evidence Package supplied by JAQU states, however, that projections for each year between the base year and the compliance year should be included. Interpolation methods were used to estimate impacts at interim years to ensure robust assessment of the main assessment years in the shortest possible time. The traffic data was interpolated, and NO_2 concentrations projected for 2017, 2018, 2019 and 2021.

[18] Joint Air Quality Unit (JAQU), 2017. Evidence Package.

The traffic data for the assessment scenarios were derived from the Tees Valley Model. Details of the transport model and traffic data are provided in **Section 3.2**, the AQ2 report and the T1, T2, T3 and T4 reports.

The modelled speeds were used in this assessment, with the exception of road links recognised as junctions and roundabouts, where modelled speeds were assumed to be 20kph following Defra's LAQM (TG16) guidance[19] (which would be representative of congested conditions, a worst-case scenario for emissions).

Model setup

The ADMS-Roads model was used in this assessment, which is able to model the impacts of street canyons and can account for flyovers and road heights above ground level by varying the road height. Both of these features were used to model canyon effects and varying road heights on the A66.

The locations of street canyons and flyovers included in the model are shown in the AQ2 report.

There are also several car parks adjacent to the A66 in Middlesbrough. The emissions of these car parks were calculated according to the methodology outlined in the AQ2 report and added to the road emissions.

A desk-top study was undertaken in order to identify all types of sensitive receptor locations within 200m of the modelled road network. Sensitive receptors have been selected on the local road network and are shown in the AQ2 report.

The ADMS-Roads Extra (version 4.1.1.0) atmospheric dispersion model was used for this assessment. The assessment follows the guidance set out in Defra's Local Air Quality Management Guidance (TG16)[19].

The local impacts of air pollutant releases vary according to the prevailing weather conditions. In order for the modelling exercise to be representative of local conditions and to predict long-term averages, the dispersion model requires representative meteorological data.

Meteorological data used in this assessment was measured at Durham Tees Valley Airport over the period 1st January 2016 to 31st December 2016 (inclusive). Durham Tees Valley Airport is located approximately 11km south-west of the study area and was chosen as it is one of the closest and most representative meteorological sites to the study area.

LAQM (TG16)[19] details an approach for calculating the roadside conversion of NO_x to NO_2. This approach is available as a spreadsheet calculator, with the most up to date version having been released in October 2017 (v6.1)[20].

Traffic data was used to calculate the primary NO_2 emission fractions (f-NO_2) values for each road link using the "Primary NO_2 fraction" option in EFT 8.0.1a.

[19] Defra, 2016. Local Air Quality Management Technical Guidance (TG16).
[20] Defra, 2017. NO_x to NO_2 calculator. Available at: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc Accessed January 2018.

The weighted average supplied by the EFT was compared with the f-NO_2 fractions for the PCM links on the A66.

The regional f-NO_2 fraction (based on the national fleet mix) included in the NO_x to NO_2 calculator was reviewed and a suitable f-NO_2 fraction was determined for calculating total NO_2 concentrations.

Background pollutant concentrations are available from Defra[21] and from local monitoring. Suitable background concentrations for use in this assessment were defined during the baseline assessment and reported in the AQ3 report.

The model was verified against local monitored data to evaluate the model performance. Details of the model verification are provided in the AQ2 and AQ3 reports. It was found that no adjustment factor was necessary for the model.

3.3.2 2016 Baseline results

The 2016 baseline results are displayed in **Appendix D1** and show that there are no modelled exceedances at any receptor location across the model domain. As a result, the baseline year 2016 is in compliance.

These results show that the predicted concentrations of NO_2 are highest close to the A19 at receptors 149 and 140, where concentrations of 37.0µg/m^3 and 36.5µg/m^3 were predicted respectively. These receptors are PCM comparison points, located 4m from the roadside and 2m high.

A more detailed analysis of the results of the 2016 baseline model is provided in the AQ3 report.

3.3.3 Future years results

The future year was chosen as 2021, as this is the earliest year that it is estimated that compliance could be achieved by. Modelled concentrations are also provided for all of the intermediate years between the baseline and 2021.

The highest concentrations recorded in future year models continue to be predicted at receptors 149 and 140 for each year modelled between 2017 and 2021. These concentrations are presented below in **Table 3** for the highest concentrations overall and the highest concentrations predicted at each A66 PCM link for PCM comparison points (and highest overall receptor where not a comparison point).

[21] Defra, 2017. Background Maps. Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015 ; [Accessed: January 2018].

Table 3: Future year concentrations of annual average NO_2 (µg/m^3) at selected receptors

Description	Receptor	Annual average NO_2 concentrations (µg/m^3)				
		2017	2018	2019	2020	2021
East A66 PCM link	73 (residential)	26.4	26.1	24.1	22.9	21.7
	97 (comparison)	25.2	25.0	23.0	21.9	20.8
West A66 PCM link	95 (comparison)	32.2	31.2	28.7	27.0	25.3
Maximum concentrations in the study area	140 (comparison)	34.6	33.1	30.8	29.0	27.0
	149 (comparison)	35.0	33.7	31.2	29.3	27.4

The trend in results for future years shows a decrease in concentrations from the baseline year 2016 through to the future year 2021.

For all future years from 2017 to 2021, inclusive, no modelled exceedances of the annual mean NO_2 concentrations are predicted so all future years are in compliance.

The full set of results for all modelled receptors for all years are given in Appendices D2 to D6.

3.3.4 Sensitivity testing results

Following the Target Determination process undertaken by JAQU and the Technical Independent Review Panel (T-IRP), JAQU requested that some sensitivity tests be carried out as this could provide additional evidence to support the conclusions of this assessment. The following sensitivity tests were discussed and agreed with JAQU:

- Test 1: Model verification using a subset of the monitoring sites:
  - Test 1a: Monitoring sites within 5m of the kerb;
  - Test 1b: Monitoring sites within 15m of the kerb; and
- Test 2: Use of different f-NO_2 values in the NOx to NO_2 calculator.

Tests 1a and 1b were requested by JAQU since several of the local monitoring sites included in the original model verification are up to 40m from the kerbside. Further details and the findings of these tests are provided below.

Due to the limited number of roadside monitoring sites, only a small number of the original verification sites are roadside. Using a different set of monitoring sites for the model verification would result in a different adjustment factor, which has the potential to affect the results of the assessment. To understand the sensitivity of the model verification to the selected monitoring sites, sensitivity testing was undertaken.

Sensitivity test 1a

In this test, only monitoring sites within 5m of the kerb were included in the model verification.

There were three sites within 5m of the kerb in the study area, details of which are provided in **Table 4**.

Table 4: Monitoring sites used in the model verification exercise for test 1

Local authority	Site ID	X OS grid ref.	Y OS grid ref.	Distance from kerb (m)	2016 annual mean NO_2 ($\mu g/m^3$)
Middlesbrough	M8 (DT)	452048	515152	3.0	23.4
	M19 (DT)	452003	516915	1.5	22.5
Stockton-on-Tees	A1035 (AM)	444332	519166	3.0	19.6
DT = Diffusion tube AM = Automatic monitor					

The model verification process comparing modelled against monitored data was repeated and an adjustment factor of 1.56 was calculated and applied to the results. An adjustment factor of 1.56 was also applied to the modelled results for 2020 (this is the year JAQU reviewed as part of the target determination process). From running the air quality model for 2020, it was found that concentrations of NO_2 increased slightly but no exceedances occur at any receptor for 2020 when using the adjustment factor of 1.56. When this factor was applied to all of the receptors in this assessment, the highest modelled NO_2 concentration for the 2020 scenario was 38.9$\mu g/m^3$ at receptors 140 and 149, which are both PCM comparison points on the A19. Although this concentration is close to the Limit Value for NO_2, it should be noted that JAQU awarded Middlesbrough Council ~ £1.8m of Early Measures funding to implement quick-win measures to bring about early improvements to air quality, which are not included in the air quality or transport models. These concentrations are therefore considered as worst-case values.

These findings indicate that the model verification exercise is sensitive to the sites used. Using a different set of monitoring sites (within 5m of the kerb) for the model verification, however, has demonstrated that the conclusions of this assessment remain unchanged.

The 2020 results for the A66 PCM links and the three highest concentrations in the local model are provided in the AQ3 report.

Sensitivity test 1b

In this test, monitoring sites within 15m of the kerb were included in the model verification.

There were seven sites within 15m of the kerb in the study area, details of which are provided in **Table 5**.

Table 5: Monitoring sites used in the model verification exercise for test 1b

Local authority	Site ID	X OS grid ref.	Y OS grid ref.	Distance from kerb (m)	2016 annual mean NO_2 ($\mu g/m^3$)
Middlesbrough	M4 (DT)	452023	519438	7.0	25
	M5 (DT)	450543	517840	15.0	17.7
	M6 (DT)	451873	515430	12.0	20.4
	M8 (DT)	452048	515152	3.0	23.4
	M10 (DT)	448113	516775	8.0	18.9
	M19 (DT)	452003	516915	1.5	22.5
Stockton-on-Tees	A1035 (AM)	444332	519166	3.0	19.6
DT = Diffusion tube AM = Automatic monitor					

The model verification process described above was repeated and an adjustment factor of 1.28 was calculated and applied to the modelled results for 2020 (this is the year JAQU reviewed as part of the target determination process). From the air quality modelling it was found that concentrations of NO_2 increased slightly but no exceedances occurred at any receptor for 2020 when using the adjustment factor of 1.28. When this factor was applied to all of the receptors in this assessment, the highest modelled NO_2 concentration for the 2020 scenario was 34.3µg/m^3 at receptor 149, a PCM comparison point on the A19.

These findings indicate that the model verification exercise is sensitive to the sites used. By using a different set of monitoring sites for the model verification (within 15m of the kerb), however, the conclusions of this assessment remain unchanged.

The 2020 results for the A66 PCM links and the three highest concentrations in the local model are provided in the AQ3 report.

Sensitivity test 2

This test aimed to address a comment from the T-IRP relating to how factors such as f-NO_2 could be varied to demonstrate the model's and the results' sensitivity to changing these factors.

The original approach for determining a suitable value of f-NO_2 is outlined in the AQ3 report which states that the model used the default f-NO_2 value from the NOx to NO_2 calculator.

For this test, the value of f-NO_2 used in the NOx to NO_2 calculator for the core scenario (0.2743) was changed to the "combined f-NO_2" value (0.2723) produced by the EFT. This resulted in higher NO_2 concentrations compared to the original assessment, but no exceedances were predicted for 2020.

Despite the evidence that the choice of f-NO_2 value has an impact on the NO_2 concentrations, none of the resulting increases are substantial enough to change the conclusions of this assessment.

3.3.5 Further analysis results

The TD2 report from JAQU noted where key differences were identified between the local air quality model and the national PCM model. A key difference noted in the report is that the emissions on the A66 were significantly higher in the national model than those in the local model. While the traffic flows and composition were consistent in the local and national models, the speeds used were significantly different. The speeds in the PCM and the local model are given in **Table 6**. The purpose of this additional analysis is to identify whether the difference in the assumed speeds accounts for the difference in the emissions on these road links.

Table 6: Local and PCM modelled vehicle speeds

PCM link	Local model speed (all vehicle types) in kph	PCM speed (Other) in kph	PCM speed (HGV) in kph	PCM speed (Bus) in kph
West A66 PCM link	87	36	36	32
East A66 PCM link	80	36	36	32

Emissions for 2020 were recalculated using the EFT; the traffic data information was kept the same, with the exception of the speeds. These were changed to match those used in the PCM model for the relevant PCM links on the A66. It was found that the recalculated emissions were very similar to those from the original PCM model, as reported in TD2.

The percentage difference in emissions from the PCM model and the local model using PCM model speeds range from -3% to -4% for the roads links tested.

Since the percentage differences are so similar between this analysis and those reported in TD2, this indicates that the differences noted in TD2 (comparing the original assessment with the PCM assessment) appear to be the result of the different speeds that were used in the PCM and local model assessments.

When the local model was rerun using the speeds from the PCM model, the emissions estimated by the two models broadly agreed. However, it is important to note that the speeds used by the PCM are estimates based on national forecasts and do not reflect the observed speeds. The speeds used in the local modelling provide a better representation of the true speeds experienced on the road, following validation against trafficmaster observed speed data. As such, the conclusion of this analysis is that the inconsistency in speeds between the two models explains the discrepancy in the emissions calculated. Since the speeds used in the local model are validated against observed data, the local model emissions are considered to be reliable.

The results of this analysis are presented in the AQ3 report.

3.4 Conclusions

The air quality modelling shows there are no breaches of the Limit Value for NO_2 in any modelled year. Sensitivity testing has been undertaken around the key assumptions underpinning the evidence.

The model verification and f-NO_2 sensitivity tests indicate that using alternative adjustment factors and f-NO_2 values does not result in exceedances of the modelled annual mean NO_2.

The further analysis shows that traffic speeds appear to be the key difference between the local model and the PCM model, and that these variations led to the noted differences in NOx emissions, and subsequently NO_2 concentrations.

Following the detailed modelling and sensitivity tests, it is concluded that modelled locations are in compliance with the Limit Value for NO_2 in all modelled years, and consequently there is no case for change.

4 Commercial Case

Based on the Green Book Supplementary Guidance[3] on the Five Case Model Methodology for developing business cases, the Commercial Case demonstrates that the "preferred option" for a scheme will result in a viable procurement and well-structured deal.

Based on JAQU guidance on the OBC for developing a Local NO_2 Plan, the Commercial Case should outline the required services and develop an associated procurement strategy and timelines. The mechanisms for management and payment of the procurements should also be considered as part of the Commercial Case.

However, based on the air quality modelling outputs, no exceedances of the Limit Value for NO_2 were predicted in Middlesbrough for any scenario (baseline or future). The Economic Case has concluded that no additional measures are required to reduce the NO_2 concentrations in Middlesbrough. It follows that there are no commercial implications and consequently a Commercial Case is not required to be developed.

5 Financial Case

Based on the Green Book Supplementary Guidance[3] on the Five Case Model Methodology for developing business cases, the Financial Case demonstrates that the "preferred option" will result in a fundable and affordable deal.

Based on JAQU guidance on the OBC for developing a Local NO_2 Plan, the tasks that the Financial Case needs to undertake are as follows:

- The financial profile needs to be developed, including the impact and consequences of the proposed deal;
- It is expected that a financial model would be implemented considering the likely impact and outcomes of the proposed deal;
- The revenue and capital needs and associated profile should be detailed; and
- Any other funding sources for parts of the packages that may have been ascertained or bid for, such as from other Government sources or partnerships, should be included.

Based on the air quality modelling evidence, the Economic Case has concluded there is no case for change and no additional measures are required to reduce the NO_2 concentrations within the study scope. As a result, there are no financial implications and a Financial Case is not required to be developed.

6 Management Case

6.1 Overview

The Green Book Supplementary Guidance[3] on the Five Case Model Methodology for developing business cases notes that a Management Case should demonstrate that the "preferred option" is capable of being delivered successfully, in accordance with recognised best practice.

Based on JAQU guidance on the OBC for developing a Local NO_2 Plan, the Management Case should outline the arrangements required to ensure successful delivery of the scheme, as well as set out benefits realisation for the identification of potential benefits, modelling and tracking, and a risk management strategy and risk mitigation. A Management Case would normally also include a risk register, monitoring and evaluation plan, an updated project plan and an organogram of the project team and governance structure.

Based on the air quality modelling evidence, the Economic Case has concluded there is no case for change and no additional measures are required to reduce the NO_2 concentrations within the study scope. The aim of this Management Case is to provide a route map to the conclusion of the process. This will cover who is involved in the project, what needs to happen and when and what approvals will be required.

The delivery of existing actions including the planned "Early Measures" grant schemes are not included in this Management Case.

6.2 Project participants and stakeholders

Middlesbrough Council is the project sponsor and is responsible for the overall leadership and management of the feasibility study process.

The list of project participants / stakeholders is set out below:

- Middlesbrough Council;
- DEFRA & JAQU;
- Tees Valley Combined Authority; and
- Local Partnerships.

Arup continues to provide support to Middlesbrough Council throughout the feasibility study process, including undertaking the technical analysis required, developing the SOC, OBC and associated technical reports, and liaising with the projects participants and stakeholders.

6.3 Management strategy and governance structure

A Project Management Team comprising representatives from relevant Council service areas, the Tees Valley Combined Authority and Middlesbrough Environment City met on three occasions. Key members of the Project Management Team, however, were regularly kept up to date on progress with the study, and assisted with providing information and inputs for the modelling and the development of the SOC, the evidence submission, and the OBC.

Middlesbrough Council's Leadership Management Team (LMT) members and the Executive Member for Adult Social Care and Public Health have been regularly updated on the progress of the Local NO_2 Plan and Business Case development.

A Strategic Air Quality Partnership Board was established on 22 February 2018, to consult and engage with key partners on Middlesbrough's current air quality matters at a strategic level and to provide leadership for delivering Middlesbrough's Local NO_2 Plan in the shortest possible time.

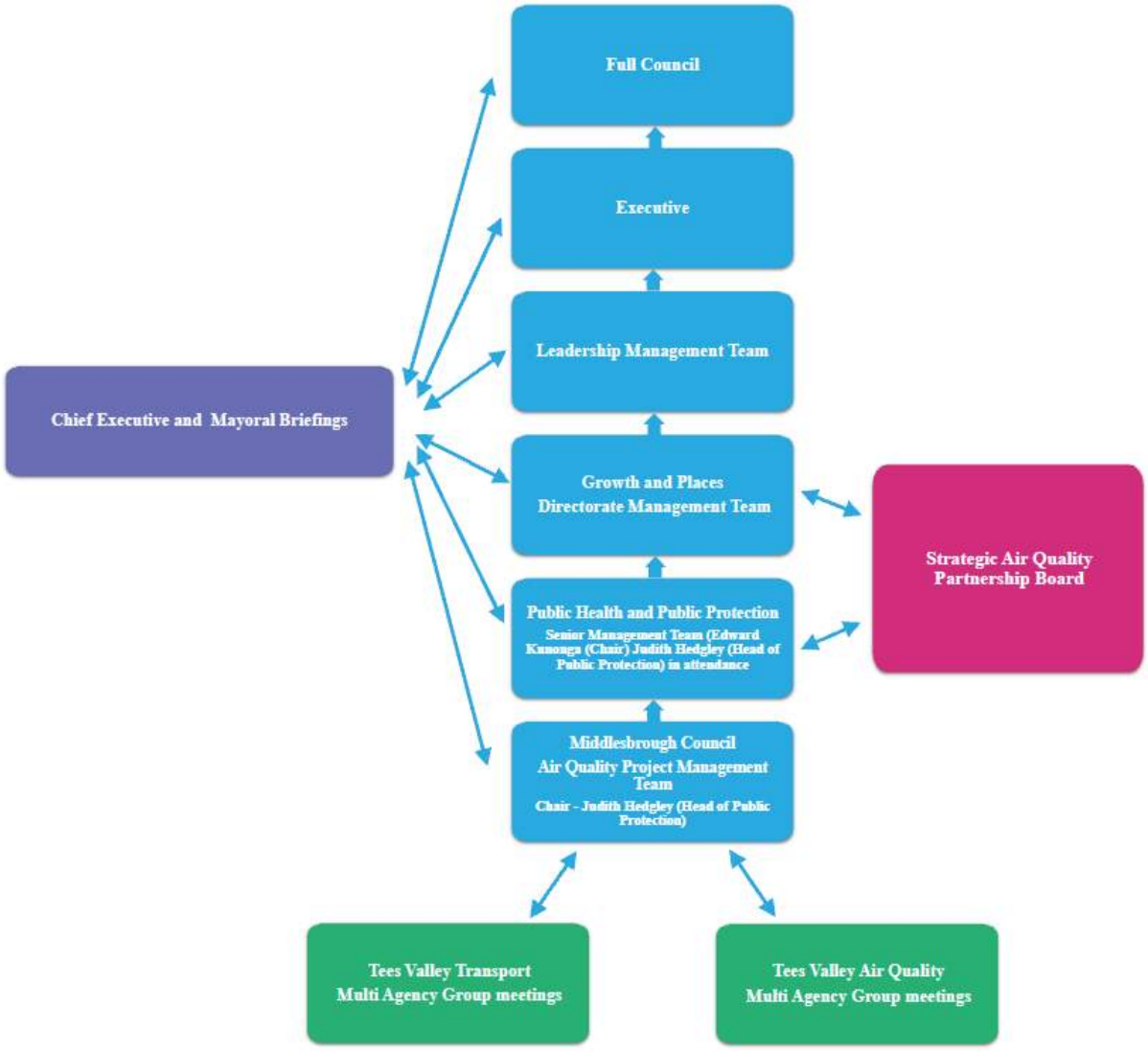
This OBC has demonstrated there is no case for change and therefore a Local NO_2 Plan is no longer required for Middlesbrough. As no measures are proposed, the Board is not required to meet again.

Core membership of the Strategic Air Quality Partnership Board is set out below:

- Kevin Parkes (MBC – Executive Director of Growth and Place) (Chair)
- Edward Kunonga (MBC Director of Public Health)
- Andrew Ladyman (Redcar and Cleveland Council)
- Richard McGuckin (Head of Economic Growth & Development, Stockton Council)
- Andrew Lewis (Managing Director, TVCA)
- Patrick Burke (JAQU)
- Huw Russell (Local Partnership)
- Peter Acheson (Public Health England)
- Judith Hedgley (MBC – Air Quality Lead)
- Dave Carter (MBC Transport and Design)
- Andy Mace/Neil Robinson (Arup)

Figure 5 shows how the Board interfaces with the wider governance structure of Middlesbrough Council.

Figure 5: Governance structure for Middlesbrough's Local NO_2 Plan



6.4 Full project timeline

This feasibility study process and business case have demonstrated that Middlesbrough is in compliance with the Limit Value for NO_2. There is no case for change and a FBC is no longer required. The project timeline covers the final stages of the feasibility study process, which include the submission of the OBC, associated reviewing processes, and the final review and sign-off process.

A presentation will be made to LMT in October with regard to the outcomes and content of the OBC. Following the Ministerial approval of this OBC, an update report and presentation will be made to the LMT if necessary.

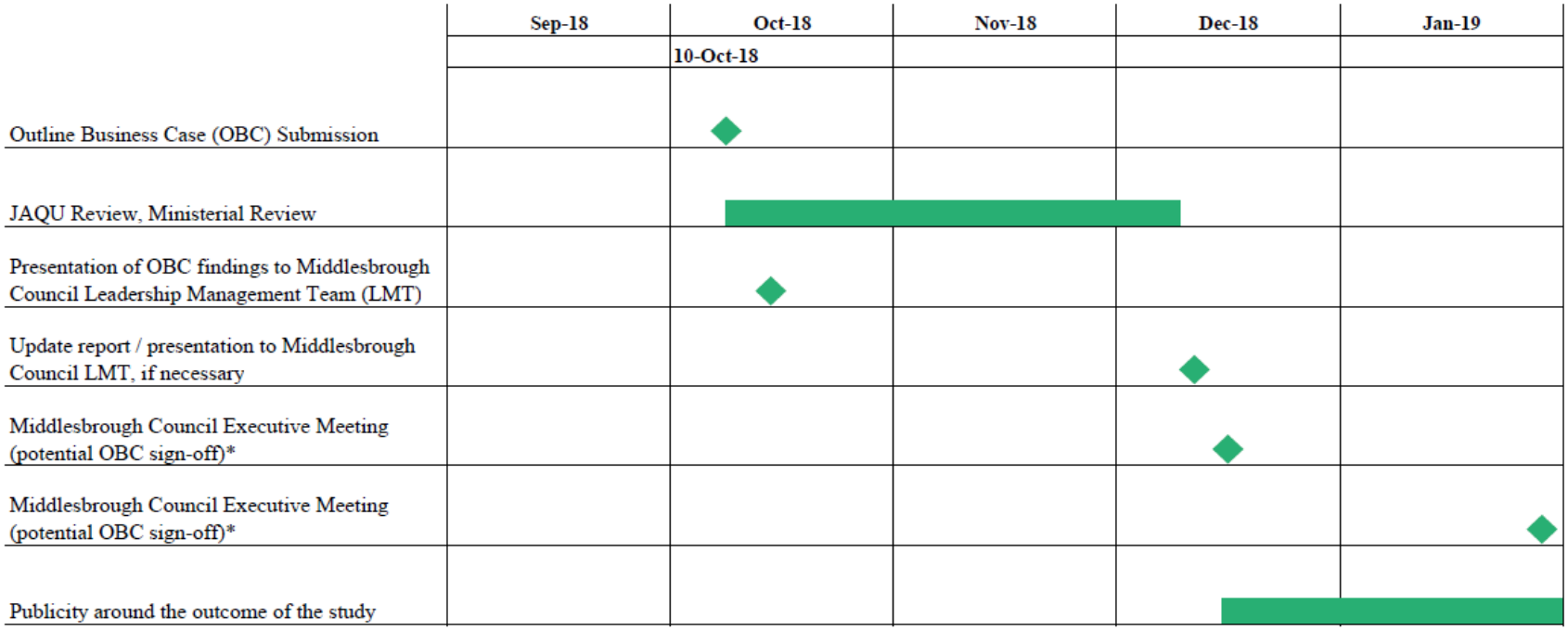
Executive Members will also be updated through a full Executive Meeting to be held in either December 2018 or January 2019, or by updates to the individual Executive Member.

It is intended that the Ministerial decision around the outcome of the OBC will be timed to coincide with the publication of the papers for the Executive Meeting.

Following the Ministerial decision, Middlesbrough Council will re-engage stakeholders consulted during the development of the Local NO_2 Plan. This will include Teesport and freight hauliers' associations. During early consultation, these stakeholders expressed concerns with the potential outcomes of the Local NO_2 Plan, particularly around charging CAZ options and their effect upon operations. Middlesbrough Council has noted that the uncertainty regarding the outcome of the Local NO_2 Plan may have already had some negative impacts upon business development and further investment in the local area. Engaging with these stakeholders again will minimise any uncertainty which may have resulted from the development of the Local NO_2 Plan. Additionally, media engagement plans and press releases will be prepared, and it is expected that local and possibly national media will be interested in the outcome of Middlesbrough's Local NO_2 Plan.

An indicative programme for concluding the feasibility study process for the Middlesbrough Local NO_2 Plan is shown in **Figure 6**.

Figure 6: Indicative Programme



**Final OBC sign-off will take place at one of the two upcoming Middlesbrough Council Executive Meetings*

7 Conclusions

The National NO_2 Plan identified two stretches of the A66 in Middlesbrough as areas of non-compliance with the Limit Value for NO_2.

This document sets out the OBC for Middlesbrough's Local NO_2 Plan, in compliance with the Environment Act 1995 (Feasibility Study for Nitrogen Dioxide Compliance) Air Quality Direction 2017[1]. This OBC follows the submission of the SOC in March 2018.

Initial local air quality modelling results presented as part of the SOC indicated no exceedances of the Limit Value for NO_2 in Middlesbrough for any scenario (baseline and future). This was confirmed by more detailed modelling undertaken following the submission of the SOC.

This OBC demonstrates that the study area complies with the Limit Value for NO_2 and consequently there is no case for change and no requirement for Middlesbrough to implement any measures to bring about legal compliance with regards to NO_2 concentrations. A FBC is not required to be developed for Middlesbrough, and Ministerial approval of this OBC is sought to conclude the feasibility study process.

This OBC details how the feasibility study process will be concluded, and notes that there are no financial and commercial implications of this outcome.