Air Quality Assessment

Lanwades Redevelopment,
Kentford
Suffolk

Prepared for
Lochailort Investments Ltd

by

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ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADMS-Roads	A comprehensive air pollution model for investigating air pollution problems due to networks of roads that may be in combination with industrial sites
AQA	Air Quality Assessment
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
ATC	Automated Traffic Count
DEFRA	Department for Environment, Food, and Rural Affairs
DEV	Development generated traffic
DMRB	Design Manual for Roads and Bridges
EPUK	Environmental Protection UK
EU	European Union
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LAQM.TG(22)	Local Air Quality Management Technical Guidance
LGV	Light Goods Vehicle
LPA	Local Planning Authority
MCC	Manual Classified Traffic Count
NAQO	National Air Quality Objectives
NO_2	Nitrogen Dioxide
NO_X	Oxides of Nitrogen
NPPF	National Planning Policy Framework
PM_{10} / $PM_{2.5}$	Particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}) or less than 2.5 microns ($PM_{2.5}$), expressed in units of $\mu g/m^3$
PPG	Planning Practice Guidance
SMA	Stuart Michael Associates Limited
SO_2	Sulphur dioxide
TEMPRO	Trip End Model Presentation PROgram
WLTP	Worldwide Harmonised Light Vehicle Test Procedure
WSC	West Suffolk Council
μgm^{-3}	Micrograms per cubic meter

1.0 INTRODUCTION

1.1 Stuart Michael Associates Limited (SMA), Consulting Engineers, has been appointed by Lochailort Investments Ltd (the Applicant) to prepare an Air Quality Assessment in support of a planning application for re-development on Land at Lanwades, Kentford (the Site).

1.2 This report supports a Full Planning Application (Detailed) comprising:

Full application - Demolition of existing buildings on the eastern site, and phased redevelopment to provide residential units alongside a retail and commercial/ employment building (Use Class E), conversion of the existing listed stable block to community/ commercial/ employment use (Use Class F2/ E), provision of open space, woodland walks, play space, and associated infrastructure and car parking.

1.3 And a Hybrid Planning Application (Hybrid) comprising:

"Hybrid application for the demolition of the existing buildings on site and the phased development of the entire site for residential, care home, retail and commercial/ employment, community and education use along with provision of open space and woodland walks, play space, and associated infrastructure and car parking, comprising:

Full application - Demolition of existing buildings on the eastern site, and phased redevelopment to provide residential units alongside a retail and commercial/ employment building (Use Class E), conversion of the existing listed stable block to community/ commercial/ employment use (Use Class F2/ E), provision of open space, woodland walks, play space, and associated infrastructure and car parking.

Outline application – Phased redevelopment of the western site to provide residential units alongside commercial/ employment (Class E) floorspace, one form entry primary school, 90 bed care home provision of open space, woodland walks and play space, and associated infrastructure and car parking.."

1.4 The proposed site layout on the Illustrative Masterplan has been considered in this air quality assessment. Refer to **Appendix 1** for a copy of the Illustrative Masterplan.

Site Description

1.5 The Site is located approximately 4.5km east of Newmarket and is bounded to the east by existing residential dwellings in Kentford. Bounding the site to the north is the B1506 with the A14 approximately 0.9km further north. On the western boundary of the site is School Road. The site is surrounded on three sides paddocks and gallops. Refer to **Figure 1.1** for the site location.

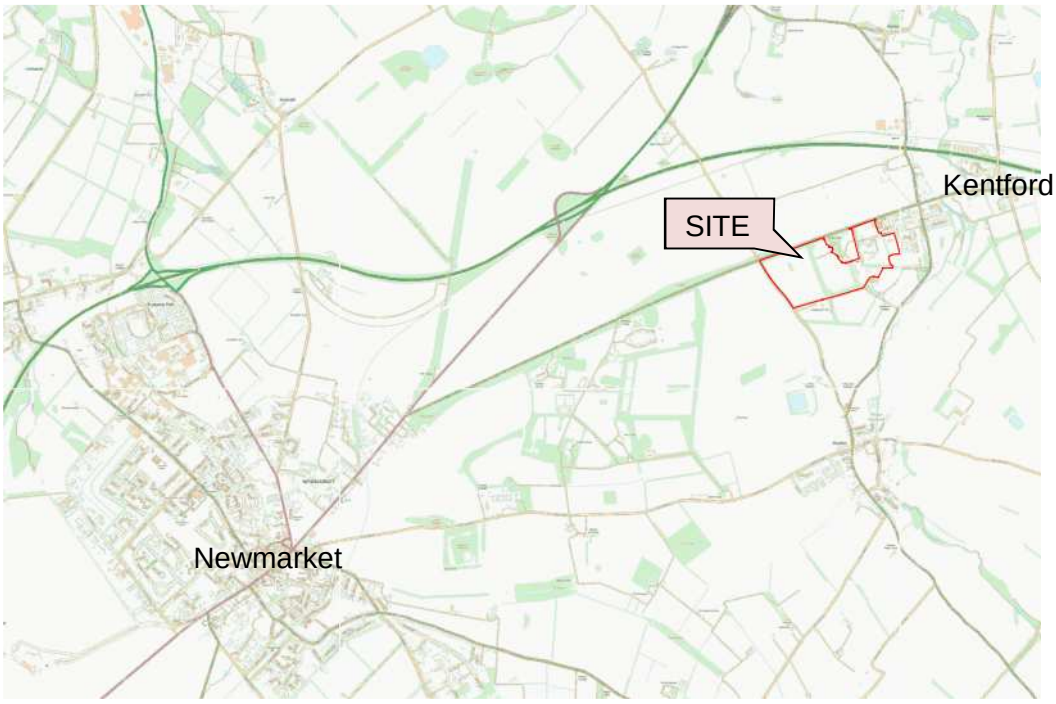


Figure 1.1: Site Location Plan

1.6 The proposed development site is located within the administrative boundary of West Suffolk Council (WSC), which is the Local Planning Authority (LPA) for the area. WSC is responsible for the review and assessment of air quality within the vicinity of this site.

1.7 Air quality within WSC is generally good and the monitoring data shows compliance with the nitrogen dioxide (NO_2) air quality objectives have been achieved. However, WSC have declared one AQMA on the A143 in Great Barton which is approximately 19km east of the site and it is highly unlikely that development generated traffic will have pass through the AQMA.

Assessment Methodology

1.8 The report addresses the effects of air pollutant emissions from road traffic using the adjacent roads and the way they impact the site and surrounding area. Also

considered are the emissions associated with the construction of the proposed Development.

1.9 The report has been split into two parts; the first part assesses the impact of the development on surrounding sensitive receptors and the second part assesses the constraints on the development (i.e. how the existing environment will impact on the development).

1.10 Road traffic flows on the local highway network have been obtained from permanent automatic traffic counters (ATC) and from surveys undertaken by the Transport Consultants. Where necessary, the surveyed traffic flows have been growthed to the assessment years using TEMPRO and adjusted using NTM.

1.11 The dispersion modelling software ADMS Roads has been used to determine the concentrations of pollutants at the development site and assess the likely changes in the concentrations of pollutants. Background concentrations of pollutants have been obtained from the Department for Environment Food and Rural Affairs (DEFRA) website.

1.12 Construction dust impacts on local receptors have been assessed using the method detailed in the Institute of Air Quality Management (IAQM) publication "*Guidance on the assessment of dust from demolition and construction*" (2024).

1.13 Potential to impact on receptors of ecological sensitivity within the vicinity of the site were assessed using the IAQM guidance on "*Air Quality Impacts on Designated Nature Conservation Sites*" (2020).

1.14 The principles in the IAQM document Land Use Planning & Development Control: Planning for Air Quality January 2017 (v1.2) have been considered and followed where appropriate.

Report Outline

1.15 The report assesses the overall levels of oxides of nitrogen (NO_X), nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}) and 2.5 microns ($PM_{2.5}$) within the development site and at sensitive receptor locations. The base year for the development is 2024 and the future year of assessment is 2031, which is the predicted year of opening. Verification has been undertaken for 2019.

2.0 LEGISLATION AND PLANNING POLICY CONTEXT

Introduction

2.1 Poor air quality is the largest environmental risk to public health. Over recent years, UK air quality has improved significantly as a result of concerted action. Total UK emissions of nitrogen oxides (NO_x) have fallen by 79% since 1970. There has not been much change since 2020 due to the Covid-19 restriction which continued to reduce traffic on many roads in early 2021. Between 1990 and 2023 there was an average reduction of 5% which demonstrates that there is a downward trend in NO_X emissions in the UK[1].

2.2 In the UK, emissions from domestic transport account for a substantial proportion of national air pollutant emissions. Domestic transport accounted for 29% of national carbon dioxide (CO_2) emissions in 2023. "*Domestic transport emissions fell by 1% between 2022 and 2023, largely due to reductions in road vehicle diesel use, and despite a rise in emissions from road vehicle petrol use. This is the first-time domestic transport emissions have fallen since 2020 when travel was heavily restricted due to the COVID-19 pandemic. Emissions from domestic transport remain 10% lower than in 2019, the last pre-pandemic year*"[2]. Emissions from road transport of nitrogen dioxide (NO_2) and particulate matter smaller than 10µm in diameter (PM_{10}) have also continued to fall over the same period[3].

2.3 Total pollutant emissions from cars peaked in 1990/91 and declined to 2009. "*Average CO_2 emissions from cars registered for the first time were steadily falling since 2003, but began to rise from mid-2016 through to 2019.*[4] *Average CO_2 emissions for new car registrations has decreased overall between Q4 (October to December) 2018 and Q4 (October to December) 2022 as shown by figure 3. The DVLA attributes the decrease in emissions mainly to the increase in newly registered electric and plug-in hybrid vehicles*[5].

2.4 Private car ownership has grown from 24.4 million in 2000 to 38.7 million at the end of 2019. At the end of December 2023, there were 41.2 million licensed

[1] DEFRA National Statistics Release: Emissions of air pollutants in the UK, 1970 to 2023 – Statistical Release: Updated 13th February 2025
[2] 2023 UK Greenhouse Gas Emissions, Final Figures – Released 6th February 2025
[3] Department for Transport (DfT), Transport and environment statistics: 2023 – Published 19th October 2023
[4] Department for Transport (DfT), Vehicle licensing Statistics: Annual 2019 – Published 30th April 2020
[5] Driver & Vehicle Licensing Agency Annual Report & Accounts 2022 23 – Printed on 18th July 2023

vehicles in the UK, which was a 1.0% increase compared to the end of December 2022.

2.5 Of the licensed vehicles using the highway network, cars accounted for 81.6%, motorcycles 3.3%, light goods vehicles (<3.5t) 11.4%, HGV's (>3.5t) 1.3%, Bus's and Coaches 0.3%, and "other vehicles" 2.0% of all motor vehicle traffic at the end of 2023[6].

2.6 The percentage of different fuel type usage for road using private cars has significantly changed since the mid - 1990s. At the end of 2023 there were 8.9 million diesel cars, accounting for 32.1% of the total, up from 7.3% in 1997 but down from a peak of 37.5% in 2017 and 2018. Alternative fuel vehicles which include gas, electricity, or a combination such as gas bi-fuel and hybrid electric were up to 2.78 million by the end of 2023.[7]

2.7 At the end of December 2023, there were 1.07 million licensed Ultra-Low Emission Vehicles (ULEVs) in the UK. This was an increase of 38% compared to the end of 2022, when there were 0.776 million.

2.8 During 2023, 487,000 new ULEVs were registered for the first time, which is a 24% increase when compared with the previous year[8].

National Air Quality Strategy

2.9 In 1997 the United Kingdom National Air Quality Strategy (NAQS) was published and for the first time. The document set out an analysis of the magnitude and potential health and environmental problems associated with, amongst other things, air pollutant emissions resulting from road traffic.

2.10 It proposed a schedule of air quality objectives which were to be met in the years up to 2005. In setting these objectives, health and socio-economic cost-benefit factors were considered, together with the practical and pragmatic aspects of whether targets would be achievable. Whilst it was identified in the NAQS that the objectives for benzene, 1,3-butadiene, lead (Pb) and carbon monoxide (CO) could be achieved as a result of improvement measures already put in place, complying with targets for NO_2 and PM_{10} would be more difficult.

[6] DfT Statistics - Vehicle Licensing Statistics: Annual 2023
[7] VEH1103: Licensed vehicles at the end of the quarter by body type and fuel type: Great Britain and United Kingdom – Last updated 24th September 2024
[8] Ultra low emission vehicles (ULEVs) [note 1] registered for the first time by body type [note 2] and fuel type, Great Britain and United Kingdom from January 2010 - Last updated 24th September 2024

2.11 Considering the additional measures that would have to be introduced to counter these apparent shortfalls, the Government voiced the following thought:

"*Changes in planning and transport policies (are needed) which would reduce the need to travel and reliance on the car*". Regarding the necessity for encouraging a shift away from private car usage, the Strategy commented, in terms of the new package approach to transport funding:

"*As a general rule, traffic demand management and restraint measures should be included and this, together with proposals to promote and enhance other modes of transport, should aim to achieve modal shifts away from the private car*."

2.12 The Environment Act 1995 sections 82-84 requires that Local Authorities shall carry out reviews of air quality within their administrative areas and, where it is assessed that the air quality objectives may not be complied with in the future, an Air Quality Management Area (AQMA) must be declared. The Local Authority must then formulate an Action Plan, setting out the measures that will be employed to achieve compliance with the objectives.

2.13 A review of the UK Air Quality Strategy was undertaken in 1998 and a consultation document was published in January 1999 which outlined proposals for amending the Strategy. In August 1999, in response to the consultation, the Government then published a draft Air Quality Strategy for England, Scotland, Wales and Northern Ireland. The Air Quality Regulations (England) 2000 were enacted in April 2000, and the Air Quality (England) (Amendment) Regulations 2002 gives legal force to the air quality standards set out in the Strategy. A new strategy was released in July 2007 with various amendments to the air quality objectives. The proposals, in brief, consisted of recommendations to adopt the provisions of the EU Air Quality Daughter Directives. The National Air Quality Objectives (NAQO's) included in the Regulations are set out in **Appendix 2**.

2.14 Given the significant influence that motor vehicle exhausts exert on air quality in the UK and the apparent links between elevated levels of certain air pollutants and premature mortality, current and emerging Government policy is geared towards several essential objectives, which are:

- continued action to reduce pollutant emissions from vehicles across the EU, which can be exemplified by the plethora of Directives concerning limitation of motor vehicle emissions since the 1970's

and specific targeted initiatives such as the Auto-Oil Study programme;

- concerted action at a National level to reduce private car trips in urban and inter-urban uses and encourage use of alternative forms of transportation;
- action at a local level to manage transportation and air quality in order to reduce the number of car trips in urban areas specifically and to aim for compliance with the NAQS by the appointed dates; and
- to ensure that Local Authorities in the execution of their development control responsibilities take account of the consequent air quality impacts.

2.15 It is evident that continued growth in private car ownership and usage will result in further deterioration of air quality in urban areas and increasing emissions of greenhouse gases. Whilst current technological improvements will extend the reduction in emissions, additional measures will be required in order to prevent re-growth of emissions, both to meet ambient air quality targets in urban areas and to offer an alternative to the car for urban journeys. Consequently, where new development can be in close proximity to public transport and local services, a contribution to the UK's target of reducing emissions will have been made.

2.16 Levels of lead (Pb) and sulphur dioxide (SO_2) are also controlled by the NAQO. Lead levels have reduced significantly since its reduced use as a fuel additive, and the abolition of four-star petrol in January 2000 means that the amount of Pb in petrol is reduced to a negligible level. SO_2 is predominantly associated with emissions from industrial processes and when assessing the effects of traffic, neither SO_2 nor Pb need be assessed.

National Planning Policy Framework

2.17 Paragraphs 199 to 201 of the NPPF (NPPF – December 2024) are considered relevant to this assessment:

"199. Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement.

So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when. determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

200. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

201. The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.".

Planning Practice Guidance (PPG)

2.18 The Planning Practice Guidance (PPG) provides guidance on the policy governing Environmental Impact Assessment of air quality and the process by which Environmental Impact Assessment is carried out. The PPG states:

"The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health…."

Additional Guidance

2.19 The Local Air Quality Management Technical Guidance LAQM.TG(22) (August 2022 update) is designed to support local authorities in carrying out their duties under the Environment Act 1995. These duties require local authorities to periodically review and assess air quality in their area.

2.20 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS, 2007) sets out air quality objectives and policy options to further improve

air quality in the UK. It provides options which are intended to provide important benefits to UK Air Quality.

2.21 The effects of dust generation from construction will be assessed at the detailed AQA in accordance with the methodology presented in the Institute of Air Quality Management (IAQM) publication "*Guidance on the assessment of dust from demolition and construction*" (2024).

Local Plan or Local Development Framework

2.22 Current Policy for West Suffolk Council is presented in the adopted West Suffolk Local Plan (consisting of the former Forest Heath District Council (FHDC) and St Edmundsbury Borough Council (SEBC) areas) – Core Strategy (2010) former FHDC area, Core Strategy (2010) former SEBC area, Forest Heath area of West Suffolk Council Site Allocations Local Plan (SALP) and SEBC Vision 2031 (2014).

2.23 The current Local Plan is to be replaced and future Policy is covered in the emerging West Suffolk Local Plan which is out for public consultation.

2.24 There are two Policies in the current Local Plan for West Suffolk (CS2 Sustainable Development Policy DM14 Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards) and three Policies in the emerging Local Plan (SO16 Environment, LP8 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards and SPX Development affecting the horse racing industry) which specifically cover air pollution, and extracts are produced below.

<u>Policy CS2 Sustainable Development</u>

"A high quality, sustainable environment will be achieved by designing and incorporating measures appropriate to the nature and scale of development, including:

The protection and enhancement of natural resources:

A) making the most resource efficient use of land and infrastructure;

B) protecting and enhancing biodiversity, wildlife and geodiversity, and avoiding impact on areas of nature conservation interest in both rural and built up areas;

C) identifying, protecting and conserving: a network of designated sites including the Breckland Special Protection Area (SPA)* and other sites of national and local importance; Biodiversity Action Plan (BAP) habitat and

species; wildlife or green corridors, ecological networks; and other green spaces will be identified, protected and habitats created as appropriate;

D) conserving and, wherever possible, enhancing the character and quality of local landscapes and the wider countryside and public access to them, in a way that recognises and protects the fragility of these resources;

E) conserving and, wherever possible, enhancing other natural resources including, air quality and the quality and local distinctiveness of soils;

F) protecting the quality and availability of water resources;

G) maximising the efficient use of water including recycling of used water and rain water harvesting;

H) maximising the potential of existing and new sources of energy from biomass including timber and other energy crops; and

Sustainable design of the built environment:

I) providing the infrastructure and services necessary to serve the development;

J) incorporating the principles of sustainable design and construction in accordance with recognised appropriate national standards and codes of practice to cover the following themes:-

- Energy and CO2 Emissions – seeking, where feasible and viable, carbon neutral development, low carbon sources and decentralised energy generation;
- Water – ensuring water efficiency by managing water demand and using such waste water reuse methods as rainwater harvesting and grey water recycling;
- Materials - minimising the use of resources and making use of local materials;
- Surface Water Run-off – incorporating flood prevention and risk management measures, such as sustainable urban drainage;
- Waste – adhering to the waste hierarchy during construction and following development to prevent waste generation and ensure reuse, recovery and recycling;
- Pollution – remedying existing pollution or contamination and preventing further pollution arising from development proposals;

- Transport – minimising the need for travel and ensuring a balance between transport infrastructure and pedestrians;
- Health and Wellbeing – ensuring that the development enhances the quality of life of future occupants and users;
- Ecology – valuing and enhancing the ecological features of the development site, where appropriate.

K) ensuring that developments and their occupants are capable of managing the impact of heat stress and other extreme weather events;

L) making a positive contribution towards the vitality of the area through an appropriate mix of uses. In areas of strategic growth this will include employment, community, retail, social, health and recreation facilities (including the protection and provision of informal and formal recreation, parks, open spaces and allotments);

M) creating a safe environment which enhances the quality of the public realm;

N) making a positive contribution to local distinctiveness, character, townscape and the setting of settlements;

O) conserving or enhancing the historic environment including archaeological resources.

Where appropriate, site specific and area targets, along with detail of viability, to meet national standards and codes, will be set out in the Development Management document, Area Action Plans and the Rural Site Allocations document.

* Only development that will not adversely affect the integrity of the SPA will be permitted. In applying this policy a buffer zone has been defined that extends 1,500m from the edge of those parts of the SPA that support or are capable of supporting stone curlews, within which:-

a) Permission may be granted for the re-use of existing buildings and for development which will be completely masked from the SPA by existing development; alternatively

b) Permission may be granted for other development not mentioned in sub paragraph (a) provided it is demonstrated by an appropriate assessment that the development will not adversely affect the integrity of the SPA.

A further 1,500m buffer zone has been defined which extends around those areas (shown on the Proposals Map) outside of the SPA which have supported 5 or more nesting attempts by stone curlew since 1995 and as such act as supporting stone curlew habitat, within which permission may be granted in accordance with a) and b) above. Additionally within this zone, where it can be shown that proposals to mitigate the effects of development would avoid or overcome an adverse impact on the integrity of the SPA or qualifying features, planning permission may be granted provided the Local Planning Authority is satisfied that those proposals will be implemented. In these areas development may also be acceptable providing alternative land outside the SPA can be secured to mitigate any potential effects.

Development at Risby (which lies partly within the 1,500m stone-curlew buffer) will be possible if it is fully screened from the Breckland SPA by existing development. A project level appropriate assessment should be undertaken to ensure no adverse affect upon the integrity of the SPA.

A 400m buffer zone has been defined around those parts of the SPA that support or are capable of supporting nightjar and woodlark. Any development proposal within this zone will need to clearly demonstrate that it will not adversely affect the integrity of the SPA."

Policy DM14: Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards

"Proposals for all new developments should minimise all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality. All applications for development where the existence of, or potential for creation of, pollution is suspected must contain sufficient information to enable the Planning Authority to make a full assessment of potential hazards.

Development will not be permitted where, individually or cumulatively, there are likely to be unacceptable impacts arising from the development on:

- the natural environment, general amenity and the tranquillity of the wider rural area;
- health and safety of the public;
- air quality;
- surface and groundwater quality;
- land quality and condition; or

- compliance with statutory environmental quality standards.

Development will not be permitted where there is an unacceptable risk:

a. due to siting on known or suspected unstable land; or

b. due to siting on land which is known to be or potentially affected by contamination or where the land may have a particular sensitive end use;

c. due to the storage or use of hazardous substances.

Proposals for development on or adjacent to land which is known to be or potentially affected by contamination; or land which may have a particular sensitive end use; or involving the storage and/or use of hazardous substances,

will be required to submit an appropriate assessment of the risk levels, site investigations and other relevant studies, and remediation proposals and implementation schedule prior to or as part of any planning application.

In appropriate cases, the local planning authority may impose planning conditions or through a legal obligation secure remedial works and/or monitoring processes."

Environment SO16

"Ensure new development maximises the potential to reduce its environmental impact including noise, air quality, light pollution, recycling, waste reduction and water efficiency and re-use, and to reduce and phase out use of harmful chemicals."

Policy LP8 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards

"All proposals for development should minimise all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality. All applications for development where the existence or potential for creation of pollution is suspected, both on and off site, must include a full assessment of the impacts of potential hazards and any necessary mitigation measures which could include a site-specific construction environment management plan (CEMP).

Proposals will be permitted where, the development is, individually or cumulatively, unlikely to result in significant impacts on the following, as appropriate:

a. The natural environment and general amenities that are intrinsic to the character of the surrounding areas, these can include impact from light, noise, smell, dust and vibrations of nearby areas.

b. Health and safety of the public.

c. Air quality, on the site and surrounding area.

d. Surface or groundwater quality.

e. Land quality or condition.

To safeguard development from potential hazards, development will not be permitted where the proposal is suspected to have an unacceptable risk, such as:

- The site being situated on known or suspected unstable land or
- The land is known to be or potentially affected by contamination or where the land may have a particular sensitive end use or
- The storage or use of hazardous substances on site.

Proposals for development on or adjacent to land which is known to be or potentially affected by contamination; or land which may have a particular sensitive end use; or involving the storage and/or use of hazardous substances, will be required to submit an appropriate assessment of the risk levels as part of any planning application. This assessment of risk should take a tiered approach to include as a minimum a tier one land contamination preliminary risk assessment and where necessary further technical reports.

In appropriate cases, the local planning authority may impose planning conditions or through a legal obligation secure remedial works and/or monitoring processes."

Policy SPX Development affecting the horse racing industry

"Any development within or around Newmarket which is likely to have a material adverse impact on the operational use of an existing site within the horse racing industry (such as noise, air quality, volume of traffic, horse movements, access and/or servicing requirements), or which would threaten the viability of the horse racing industry as a whole, will only be permitted in exceptional circumstances and where it is demonstrated the benefits would significantly outweigh the harm to the horse racing industry.

Proposals shall include detailed consideration of the movement of horses to and from training, highway safety, network capacity and accessibility for all modes of transport, and measures to reduce any transport impacts of the proposal to an acceptable level to the local highway authority."

3.0 METHODOLOGY AND ASSESSMENT CRITERIA

Assessment of the Prevailing Air Quality

3.1 This section summarises the methodology used to consider whether there are "Significant" air pollution impacts on sensitive receptors or constraints on development. In order to determine the extent to which air quality issues will affect the sensitive receptors, the study has considered the following:

- Any air quality measurements carried out in West Suffolk (which are in the public domain);
- The Review and Assessment of air quality carried out by WSC for the area, as submitted to the Department for the Environment, Food and Rural Affairs (DEFRA);
- Predictions of air pollutant concentrations adjacent to the site; and
- The predictions have been carried out utilising the ADMS Roads dispersion modelling program.

Assessment Criteria

3.2 The NAQO levels are derived from air quality standards set to protect health. The objectives address social and economic factors as well as the health standards.

3.3 For the purposes of this development proposal, the NAQO will form the basis of the air quality assessment. The NAQO levels are based on an assessment of the effects of each pollutant on public health. Therefore, they are a good indicator in assessing whether the air quality in the vicinity of a road is likely to be detrimental to human health.

3.4 The effects of dust generation from construction have been undertaken following the methodology presented in the Institute of Air Quality Management (IAQM) publication "Guidance on the assessment of dust from demolition and construction" (2024).

3.5 In determining whether air pollutant levels may constrain development, the results of the study have been compared against the acceptability criteria.

Impact Magnitude and Impact Descriptors (Significance) – Air Quality Assessments

Construction Phase

3.6 During the construction phase, there will be a number of activities undertaken that have the potential to generate and/or re-suspend dust and PM_{10}. At the time of assessment, the exact activities to be undertaken during construction are unknown. However, in order to evaluate the magnitude and extent of potential adverse impacts likely to result from the proposed development, the following construction activities have been assumed:

- Site clearance and preparation;
- storage of materials;
- laying of hard surfaces;
- construction of buildings; and
- vehicle movements to and from the Site.

3.7 The magnitude of the potential impacts of a construction site on air quality is mainly determined by its size, the range of activities undertaken across the site, proximity to sensitive receptors, complexity of terrain and any barriers between sources and receptors.

3.8 A qualitative assessment of the potential impacts during construction has been undertaken using information in guidance documents produced by IAQM.

3.9 According to this guidance; a human receptor refers to any location where a person may experience the annoyance effects of airborne dust or dust soiling or exposure to PM_{10} over a time period relevant to the air quality objectives. In terms of annoyance effects, this will most commonly relate to residential dwellings and schools.

3.10 Activities on construction sites can be divided into four types to reflect their different potential impacts, with the potential for dust emissions to be assessed only for each activity taking place:

- Demolition and Site Preparation;
- Earthworks;
- Construction; and
- Trackout.

3.11 The assessment methodology considers three separate dust effects:

- annoyance due to soiling;
- harm to ecological receptors; and
- the risk of health effects due to a significant increase in exposure to PM_{10}.

3.12 Account is also to be taken of the distance of the receptors that may experience these effects. The assessment procedure assumes no mitigation measures are applied except those required by legislation.

3.13 The potential dust emission magnitude for the proposed Development Site is determined for the four construction activities using the criteria presented in IAQM guidelines. The magnitude is based on the scale of the anticipated works and classified as "Small", "Medium" or "Large". Example definitions are presented in **Table 3.1**.

Table 3.1: Example definitions for Potential Dust Emission Magnitude

Phase of Construction / Magnitude	Demolition	Earthworks	Construction	Trackout
Large	Total building volume >75,000m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12m above ground level;	Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6m in height	Total building volume >75,000 m^3, on site concrete batching, sandblasting	>50 HDV (>3.5t) outward movements[a] in any one day,10 potentially dusty surface material (e.g. high clay content), unpaved road length >100 m
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12m above ground level	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching	20-50 HDV (>3.5t) outward movements[a] in any one day,10 moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m
Small	Total building volume <12,000m^3, construction material with low potential for dust release (e.g metal cladding or timber), demolition activities <6m above ground, demolition during wetter months	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4m in height	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber)	<20 HDV (>3.5t) outward movements[a] in any one day,10 surface material with low potential for dust release, unpaved road length <50 m

[a] A vehicle movement is a one way journey. i.e. from A to B, and excludes the return journey.

3.14 The sensitivity of the area takes account of several factors: the specific sensitivities of receptors in the area; the proximity and number of those receptors; in the case of PM_{10}, the local background concentration; and site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust. The sensitivities of people to dust soiling effects are presented in **Table 3.2** and **Table 3.3** for the sensitivities of people to the health Effects of PM_{10}. Sensitivities of receptors to ecologic effects are presented in **Table 3.4**.

Table 3.2: Sensitivities of People to Dust Soiling Effects

Sensitivity	Criteria
High	• users can reasonably expect enjoyment of a high level of amenity; or • the appearance, aesthetics or value of their property would be diminished by soiling; and • the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.
Medium	• users would expect[1] to enjoy a reasonable level of amenity, but would not reasonably expect[1] to enjoy the same level of amenity as in their home; or • the appearance, aesthetics or value of their property could be diminished by soiling; or • the people or property wouldn't reasonably be expected[1] to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • indicative examples include parks and places of work.
Low	• the enjoyment of amenity would not reasonably be Expected[1]; or • property would not reasonably be expected1 to be diminished in appearance, aesthetics or value by soiling; or • there is transient exposure, where the people or property would reasonably be expected[1] to be present only for limited periods of time as part of the normal pattern of use of the land. • indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks[2] and roads.
[1] People's expectations will vary depending on the existing dust deposition in the area	
[2] Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits	

Table 3.3: Sensitivities of People to the Health Effects of PM_{10}

Sensitivity	Criteria
High	• locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals maybe exposed for eight hours or more in a day).[1] • indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
Medium	• locations where the people exposed are workers[2], and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.
Low	• locations where human exposure is transient[3] • indicative examples include public footpaths, playing fields, parks and shopping streets.
[1] This follows Defra guidance as set out in LAQM.TG(22).	
[2] Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of PM10. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.	
[3] There are no standards that apply to short-term exposure, e.g. one or two hours, but there is still a risk of health impacts, albeit less certain	

Table 3.4: Sensitivities of Receptors to Ecological Effects

Sensitivity	Criteria
High	• locations with an international or national designation and the designated features may be affected by dust soiling; or • locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain.[1] • Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • locations with a national designation where the features may be affected by dust deposition. • Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	• locations with a local designation where the features may be affected by dust deposition. • Indicative example is a local Nature Reserve with dust sensitive features.
[1] Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.	

3.15 The "Sensitivity of an Area" to dust soiling effects on people and property is determined by using the criteria presented in **Table 3.5**. The "Sensitivity of an Area" to human health impacts is presented in **Table 3.6.** The "Sensitivity of an Area" and to ecological impacts is presented in **Table 3.7**.

Table 3.5: Sensitivity of the area to dust soiling effects on people and property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	***<50***	***<100***	***<350***
High	***>100***	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	***>1***	Medium	Low	Low	Low
Low	***>1***	Low	Low	Low	Low

Table 3.6: Sensitivity of the area to human health impacts

Receptor Sensitivity	Annual Mean PM_{10} conc.	Number of Receptors	Distance from the Source (m)				
			<20	*<50*	*<100*	*<200*	*<350*
High	*>32 µgm^{-3} (>18 µgm^{-3} in Scotland)*	*>100*	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µgm^{-3} (16-18 µgm^{-3} in Scotland)	*>100*	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µgm^{-3} (14-16 µgm^{-3} in Scotland)	*>100*	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µgm^{-3} (<14 µgm^{-3} in Scotland)	*>100*	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	*>32 µgm^{-3} (>18 µgm^{-3} in Scotland)*	*>10*	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µgm^{-3} (16-18 µgm^{-3} in Scotland)	*>10*	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µgm^{-3} (14-16 µgm^{-3} in Scotland)	*>10*	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µgm^{-3} (<14 µgm^{-3} in Scotland)	*>10*	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	*-*	*>=1*	Low	Low	Low	Low	Low

Table 3.7: Sensitivity of the area to ecological impacts

Receptor Sensitivity	Distance from the Source (m)	
	<20	*<50*
High	High	Medium
Medium	Medium	Low
Low	Low	Low

3.16 **Figure 3.1** illustrates that there are Dust sensitive receptors within the vicinity of the site boundary, **Figure 3.2** illustrates that there are PM_{10} sensitive receptors within the vicinity of the site boundary.

Figure 3.1: Sensitivity to Dust Soiling Effects on People and Property

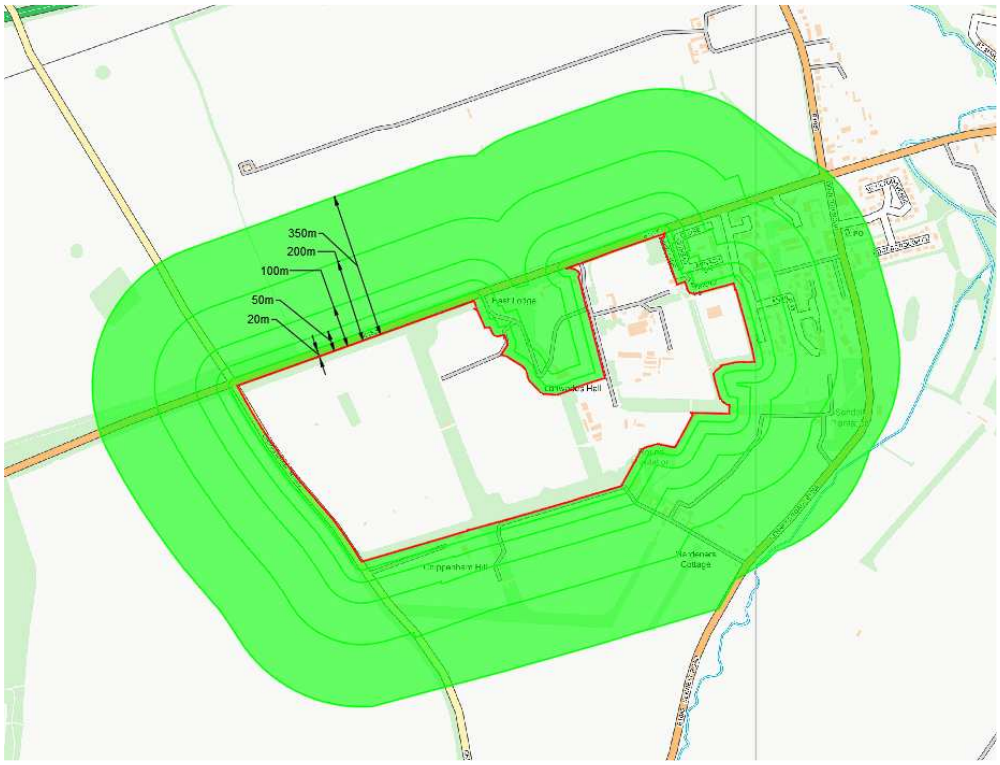


Figure 3.2: Sensitivity of the Area to Human Health Effects of PM_{10}

Figure 3.3: Sensitivity of the Area to Ecological Impacts

3.17 Once the potential dust emissions magnitude and the sensitivity of the area have been determined the results can be combined to define the risks of impact using the criteria in the following tables.

Table 3.8: Risk of Dust Impacts – Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	***Medium***	***Small***
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 3.9: Risk of Dust Impacts – Earthworks and Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	***Medium***	***Small***
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 3.10: Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	***Medium***	***Small***
High	High Risk	Medium Risk	Medium Risk
Medium	Medium Risk	Low Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

3.18 The proposed development's site-specific results and significance of these tables are discussed in Section 5 of this Report.

Operational Phase

3.19 The impact of local traffic growth, development generated traffic and other potential sources of air pollution have been assessed for the magnitude of change and for the extent to which change in air quality from existing to future levels would be significant.

3.20 Descriptors for the magnitude of change in annual mean concentrations of NO_2 and PM_{10} and the number of days with PM_{10} concentrations greater than 50 μgm^{-3} are presented in **Table 3.11**.

Table 3.11: Descriptors for the magnitude in changes in annual mean concentrations of NO_2 and PM_{10} and the number of days with PM_{10} concentrations greater than 50 μgm^{-3}

Magnitude of Change	Annual Mean NO_2/PM_{10}	Days PM_{10} >50 μgm^{-3}
Large	Increase/decrease >4 μgm^{-3}	Increase/decrease >4 days
Medium	Increase/decrease 2 - 4 μgm^{-3}	Increase/decrease 2 - 4 days
Small	Increase/decrease 0.4 - 2 μgm^{-3}	Increase/decrease 1 - 2 days
Imperceptible	Increase/decrease <0.4 μgm^{-3}	Increase/decrease <1 day

3.21 Following on from the determination of the magnitudes of the impact of change of NO_2 and PM_{10} levels, the assessment of the significance of the impact with reference to the NAQO Levels can be undertaken. Descriptors of the changes to annual mean concentrations of NO_2 and PM_{10} and the number of days with PM_{10} concentrations greater than 50 μgm^{-3} are presented in **Table 3.12**.

Table 3.12: Impact descriptors for changes to annual mean concentrations of NO_2 and PM_{10} and the number of days with PM_{10} concentrations greater than 50 μgm^{-3}

Absolute Concentration in Relation to Objective/Limit Value	**Change in Concentration /Number of Days**		
	Small	***Medium***	***Large***
Increase with Scheme			
Above Objective/Limit Value with Scheme (>40 μgm^{-3}/>35 days)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value with Scheme (36-40 μgm^{-3}/>32-35 days)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with Scheme (30-36 μgm^{-3}/>26-32 days)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value with Scheme (<30 μgm^{-3}/<26 days)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value Without Scheme (>40 μgm^{-3}/>35 days)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value Without Scheme (36-40 μgm^{-3}/>32-35 days)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value Without Scheme (30-36 μgm^{-3}/>26-32 days)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value Without Scheme (<30 μgm^{-3}/<26 days)	Negligible	Negligible	Slight Beneficial
Note – an “Imperceptible” change would be described as “Negligible”			

3.22 Detailed in Table 3.11 and Table 3.12 are the magnitude and “Significance” of changes in NO_2 and PM_{10} levels. The tables have been extracted from the Environmental Protection UK (formerly National Society for Clean Air (NSCA)) publication “*Development Control: Planning for Air Quality (2010 Update) – Table 5 and Appendix 3*”.

3.23 The updated IAQM guidance[9] includes an abbreviated version of Table 3.11 and Table 3.12 and replaces numerical change / concentration with percentage change in concentrations which can be applied to NO_2, PM_{10} and the number of days with PM_{10} concentrations greater than 50 μgm^{-3} and $PM_{2.5}$. A copy of IAQM Table 6.3 is presented below.

Long term average Concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	***2-5***	***6-10***	***>10***
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Traffic Data

3.24 The future concentrations of NO_X, NO_2, PM_{10}, $PM_{2.5}$ at the locations of WSC diffusion tubes and a selection of representative sensitive receptors in the vicinity of the existing highway network have been predicted using the ADMS - Roads (Version 5.0.1.3) dispersion model based on forecast traffic flows for the local road network.

Road traffic data for the local highway network has been collected using automatic traffic count (ATC), the Transport Consultants and from publicly available traffic data. Road traffic data has been growthed using growth factors derived from NTM and adjusted for local factors using TEMPRO.

3.25 One existing and nine future scenarios have been assessed:

"Base" (2025);

"Future Base" (2029 - do nothing);

"Future with Detailed Development" (2029 - do something detailed);

"Future with Hybrid Development" (2029 - do something hybrid);

[9] Land-Use Planning & Development Control: Planning For Air Quality January 2017 (v1.2)

"Future Base" (2030 - do nothing);

"Future with Detailed Development" (2030 - do something detailed);

"Future with Hybrid Development" (2030 - do something hybrid);

"Future Base" (2031 - do nothing);

"Future with Detailed Development" (2031 - do something detailed); and

"Future with Hybrid Development" (2031 - do something hybrid).

3.26 The "Base" scenario vehicle flows on the local highway network used in the assessment are presented in **Appendix 3** (AADT Traffic flow data (no development generated traffic) 2025).

3.27 The local highway network has been modelled as distinctive links where vehicle speeds change, the width of roads change, and at junctions. Also included are changes in vehicle speed due to pedestrian crossings and traffic lights.

Background Concentrations of Air Pollutants

3.28 Background concentrations of air pollutants for the dispersion modelling were obtained from the UK National Air Quality Information Archive (DEFRA website), in accordance with Local Air Quality Management Technical Guidance TG(22). Data sets for 2021 (background maps for years 2021 – 2040) have been published by DEFRA. Identified in **Table 3.13** are the background concentrations of NO_X, NO_2, PM_{10} and $PM_{2.5}$ for the years 2025, 2029, 2030 and 2031 covering the Site, Kentford Village and Newmarket.

Table 3.13: Background pollutant concentrations for 2025, 2029, 2030 and 2031

Grid Reference		2025				2029			
Easting	***Northing***	***NO_x***	***NO_2***	***PM_{10}***	***$PM_{2.5}$***	***NO_x***	***NO_2***	***PM_{10}***	***$PM_{2.5}$***
570500	266500	7.26	5.76	14.39	6.14	6.33	5.05	14.06	5.86
569500	266500	6.29	5.03	10.73	5.68	5.39	4.33	10.42	5.42
564500	263500	8.20	6.48	11.11	6.31	6.84	5.45	10.79	6.03
Grid Reference		**2030**				**2031**			
Easting	***Easting***	***NO_x***	***NO_2***	***PM_{10}***	***$PM_{2.5}$***	***NO_x***	***NO_2***	***PM_{10}***	***$PM_{2.5}$***
570500	266500	6.09	4.87	13.98	5.79	5.92	4.74	13.93	5.75
569500	266500	5.16	4.15	10.35	5.35	4.99	4.02	10.30	5.30
564500	263500	6.49	5.18	10.71	5.95	6.24	4.99	10.65	5.90

4.0 BASELINE CONDITIONS

Air Quality Review and Assessment

4.1 As previously indicated, Local Authorities have been required to carry out a review of local air quality within their boundaries to assess areas that may fail to comply with the NAQO. In areas where these objectives are unlikely to be achieved, local authorities must designate these areas as Air Quality Management Areas (AQMA's) and prepare a written Action Plan to achieve the NAQO.

4.2 The review of air quality takes on several prescribed stages, of which each stage is reported. The review and assessment of air quality is the responsibility of West Suffolk Council (WSC).

4.3 At the time of undertaking the AQ assessment the latest WSC Air Quality Annual Status Report (ASR) is 2024 (published in June 2024).

4.4 WSC have declared one AQMA within their administrative boundary. The AQMA is located on the A143 in Great Barton which is approximately 19km east of the Site.

Air Quality Monitoring

4.5 WSC did not undertake any continuous monitoring in 2023. WSC did undertake passive monitoring of NO_2 at 80 sites in 2023. No particulate matter (PM_{10}) monitoring is currently undertaken. Detailed below are the results of the passive monitoring of NO_2 up to the end of 2023.

Passive Monitoring - Diffusion Tubes

4.6 WSC operates a network of non-automatic (passive) monitoring sites within its administrative boundary and at the end of 2023 there were 80 active sites monitoring NO_2 via diffusion tube (DT). Refer to **Figure 4.1** and **Figure 4.2** for the locations of the diffusion tubes closest to the development site.

Figure 4.1: Non-Automatic (DT) Monitoring Sites within Kentford which is East of the Site (Ref: WSC ASR 2024)

Figure 4.2: Non-Automatic (DT) Monitoring Sites within Newmarket which are West of the Site (Ref: WSC ASR 2024)

4.7 The DT locations within Kentford and Newmarket represent “Roadside”, “Kerbside” and “Urban Background” concentrations. The closest DT to the Site is located within Kentford.

4.8 Presented in **Table 4.1** are recorded concentrations of NO_2 available for 2019 to 2023 in in Kentford and Newmarket and where concentrations are at or above the NAQO level the cells have been shaded light grey.

Table 4.1: Measured Annual Mean NO_2 Concentrations (μgm^{-3}) – DT (Ref: WSC ASR 2024)

Site ID	Location	Within AQMA?	Annual mean concentrations (μgm^{-3})				
			2019	*2020*	*2021*	*2022*	*2023*
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	N	-	-	-	-	12.1
NMK1	23 Old Station Road	N	23.9	19.5	20.9	20.2	17.3
NMK3	Old Station Road and Rous Road	N	27.1	21.3	20.9	20.8	17.6
NMK5	Café Nero' crossing	N	28.7	21.1	24.4	23.7	21.3
NMK6	KFC' downpipe	N	24.6	18.9	22.6	22	20.7
NMK7	White Hart' crossing	N	30.5	22.2	25	25.6	22.1
NMK8	"Newmarket – Park area"	N	14	11.6	10.6	11.1	9.3
NMK9	Blackbear Lane, and High Street	N	24.2	18.7	21.5	22.4	18.9
NMK10	Taxi rank	N	33.1	25.2	27.3	27.4	25.2
NMK11	Market St 'EE'	N	17.2	12.9	13.9	14	11.9
NMK12	Clock tower, crossing	N	30.3	23.9	25.8	26.3	22.3
NMK14	Rutland Arms' crossing	N	28.4	22	23	23.3	20.2
NMK15	'Savers' lamppost	N	29.4	23.5	24.1	25.5	22.3
NMK19	Old Station Road, Nancy's Tearoom	N	31	23.2	24.8	25.2	21.1

4.9 From Table 4.1 it can be seen that all annual mean concentrations of NO_2 were well below the NAQO level of 40 μgm^{-3} up to the end of 2023.

4.10 Presented in **Figure 4.3** are the annual trends in NO_2 concentrations since 2019 within Kentford and Newmarket.

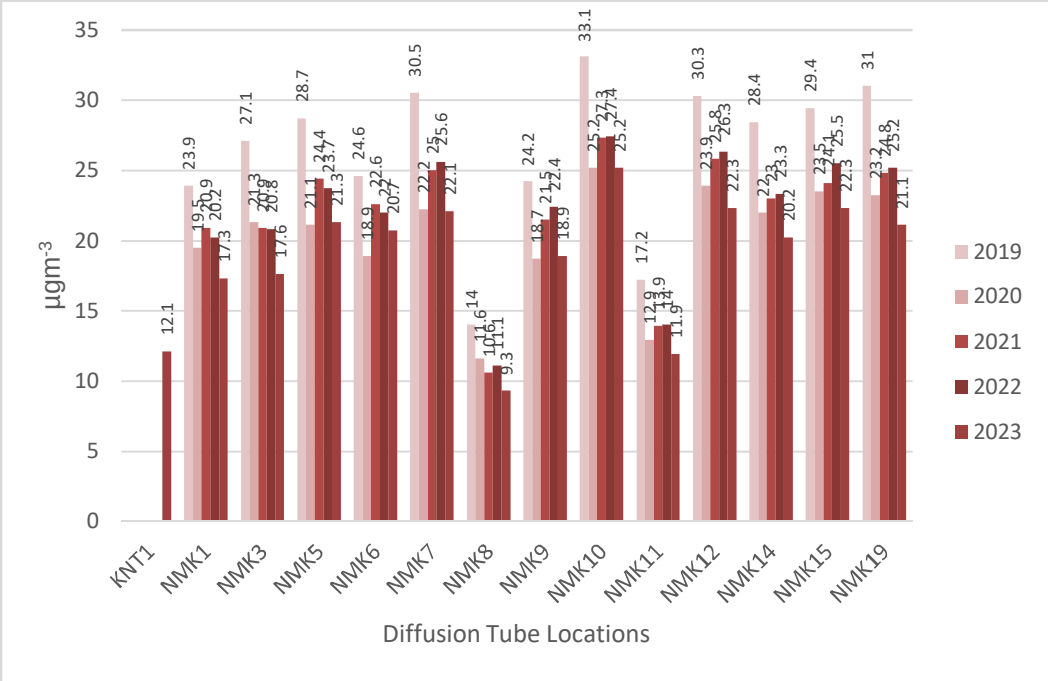


Figure 4.3: Annual Trends in NO_2 Concentrations Since 2019 within Kentford and Newmarket

4.11 From Figure 4.3 it can be seen that overall concentrations of NO_2 have decreased following the Covid pandemic. There has been a slight increase in the period 2020 to 2021 which is probably due to a combination of travel patterns returning to normal following Covid and due to local development. However, there has been a decrease in concentrations since 2021.

4.12 The West Suffolk 2024 ASR concluded that:

"Air quality in West Suffolk continues to be relatively good, with all the monitored *locations being below (that is compliant with) the air quality objectives. Most monitoring locations in 2023 were relatively similar to 2022 but were below prepandemic levels at every location which is consistent with the long-term downward trend in nitrogen dioxide pollution levels. Nitrogen dioxide monitoring will continue throughout the district, including within the AQMA.*

West Suffolk continues to grow, with major developments in Bury St Edmunds and Haverhill both continuing. It is important for West Suffolk to continue to monitor throughout the area and react to any new information that becomes available."

Dispersion Modelling – ADMS-Roads

4.13 The existing and future concentrations of pollutants within the assessment area for all scenarios have been modelled using the Atmospheric Dispersion Modelling System software ADMS-Roads (Version 5.0.1.3). The software is PC based and models the release of pollutants from road and industrial sources into the atmosphere.

4.14 ADMS-Roads is designed to allow the modelling of simple scenarios such as single carriageway roads up to complex scenarios such multiple lane roads and junctions. Allowance is made in the model for initial release of pollutants which are affected by vehicle wake, traffic induced turbulence and street canyons. Boundary layer structure based on the Monin-Obukhov length and the boundary layer height are incorporated in the model which allows for a realistic representation of the changing characteristics of dispersion with height.

4.15 Multiple road traffic sources were used in the model to represent the changing concentration of traffic, the different speeds of traffic and the changing road geometry.

4.16 Representative meteorological data for 2019 covering the assessment area was obtained from ADM Ltd. The closest representative site is at Mildenhall. The MET data has been used for the verification of the model, base modelling and future years and a wind rose for 2019 is presented in **Appendix 4**.

4.17 Background pollutant concentrations for the kilometre squares covering the assessment area were obtained from the Defra website. The years obtained are for 2019 (Verification), 2025 (Base year) and 2029, 2030 and 2031 (Future years).

Model Verification

4.18 Model verification has been undertaken using the guidance provided in LAQM.TG (22). The process requires the comparison of the monitored roadside contribution of NO_2 with the modelled roadside contribution of NO_2. The site type definitions have been taken from WSC 2024 ASR.

4.19 To verify the model adjacent to the roads that would be affected by the proposed development traffic, predictions have been made at locations representative of the DT for the base year 2019 using ADMS-Roads dispersion modelling. The locations of the DTs are illustrated on Figures 4.1 and 4.2 and the results of the predictions are presented in **Table 4.2**.

Table 4.2: Predicted air quality concentrations at the DT for 2019

Site ID		NO_X	NO_2
		Annual mean μgm^{-3}	Annual mean μgm^{-3}
NMK1	23 Old Station Road	27.46	14.15
NMK3	Old Station Road and Rous Road	24.44	13.29
NMK5	Café Nero' crossing	25.05	13.30
NMK6	KFC' downpipe	25.49	13.42
NMK7	White Hart' crossing	25.76	13.49
NMK8	"Newmarket – Park area"	15.65	10.76
NMK9	Blackbear Lane, and High Street	25.75	13.48
NMK10	Taxi rank	25.73	13.48
NMK11	Market St 'EE'	27.10	13.85
NMK12	Clock tower, crossing	31.84	15.07
NMK14	Rutland Arms' crossing	25.41	13.40
NMK15	'Savers' lamppost	25.00	13.29
NMK19	Old Station Road, Nancy's Tearoom	25.89	13.64
NAQO		-	40

4.20 If the pollutant concentrations in Table 4.2 are compared to the NAQO, it can be seen that concentrations of NO_2 are predicted to be well below the NAQO level of 40 μgm^{-3}.

4.21 ADMS-Roads has been used to calculate NO_X and NO_2, concentrations for 2019 which have been verified against the recorded NO_x and NO_2 levels at the DTs. The results from the monitoring and the ADMS-Roads modelling are presented in **Table 4.3**.

Table 4.3: Comparison of the monitored (DT) and modelled (ADMS) concentrations of NO_2

Site ID	Monitor Type	Background NO_2	2019 Monitored NO_2	2019 Modelled NO_2	Difference [(monitored - modelled)/monitored] x100 (%)
NMK1	DT	10.10	23.9	14.15	-40.8
NMK3	DT	10.10	27.1	13.29	-51.0
NMK5	DT	10.10	28.7	13.30	-53.7
NMK6	DT	10.10	24.6	13.42	-45.5
NMK7	DT	10.10	30.5	13.49	-55.8
NMK8	DT	10.10	14	10.76	-23.1
NMK9	DT	10.10	24.2	13.48	-44.3
NMK10	DT	10.10	33.1	13.48	-59.3
NMK11	DT	10.10	17.2	13.85	-19.5
NMK12	DT	10.10	30.3	15.07	-50.3
NMK14	DT	10.10	28.4	13.40	-52.8
NMK15	DT	10.10	29.4	13.29	-54.8
NMK19	DT	10.10	31	13.64	-56.0

4.22 Table 4.4 illustrates that the model is under predicting concentrations of NO_2 by between 19.5% and 59.3%.

4.23 Within TG(22) there is guidance on how to apply an adjustment factor to the road contribution NO_X to reduce the inaccuracy of the results from the modelling. Using the TG (22) 'Boxes 7-17 to 7-19' method, the modelled road contribution NO_X is not predicting an accurate contribution of NO_X to the overall contribution. Therefore, a correction factor will need to be applied to the modelled road contribution NO_X to bring it to within comparable levels with the monitored data.

4.24 A Road-NO_X adjustment factor of 2.6717 was determined as the slope of the best fit between the 'measured' road contribution and 'modelled' road contribution NO_X, forced through zero. The comparison is presented in **Figure 4.4**.

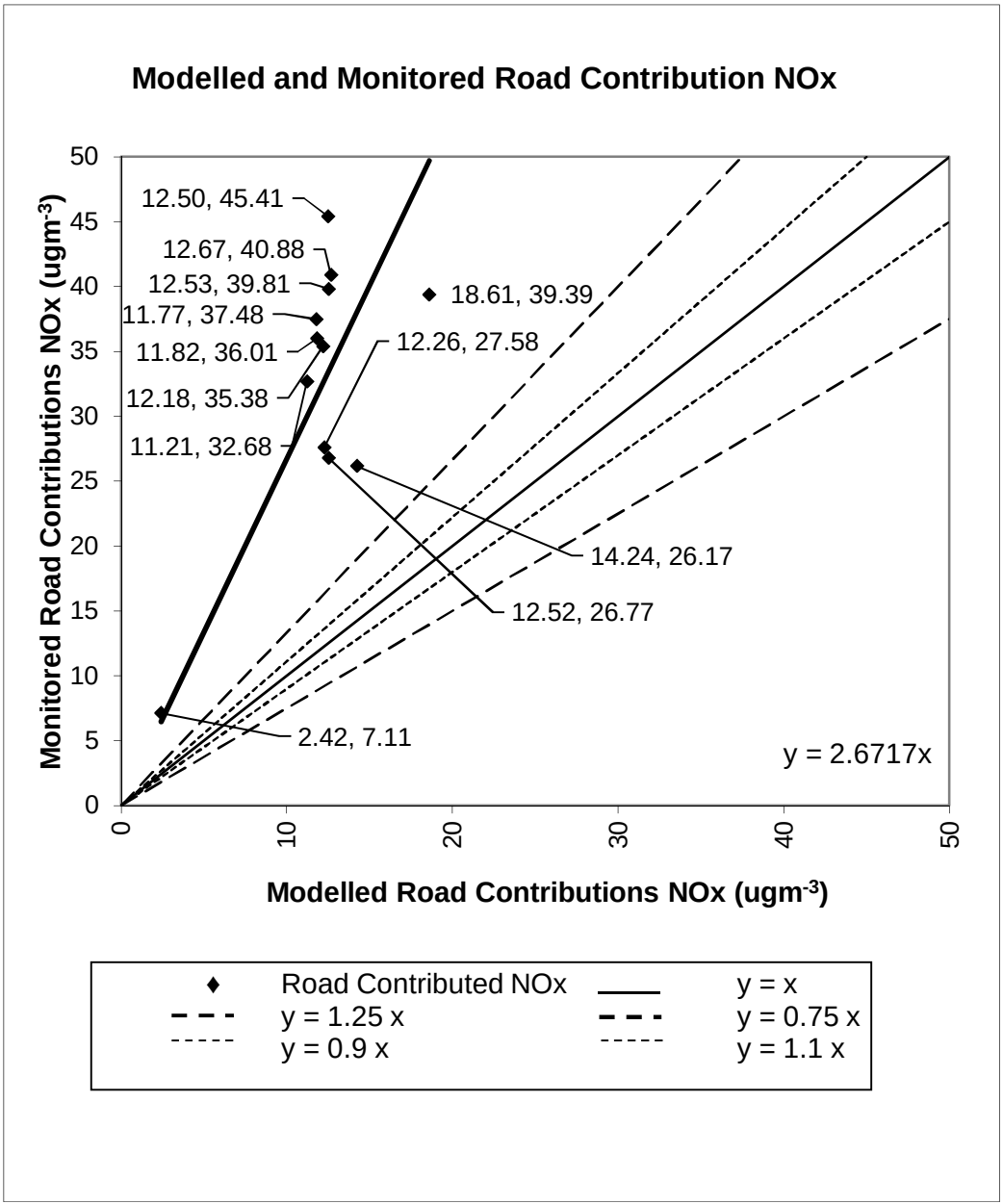


Figure 4.4: Comparison of Measured Road NO_X and Unadjusted Modelled Road NO_X

4.25 Presented in **Table 4.4** is the comparison of the monitored NO_2 concentrations and the adjusted ADMS-Roads modelled NO_2 concentrations.

Table 4.4: Comparison of the Monitored (DT) and the Adjusted Modelled (ADMS) Concentrations of NO_2

Site ID	Monitor Type	Background NO_2	2019 Monitored NO_2	2019 Adjusted Modelled NO_2	Difference [(monitored - modelled)/monitored] x100 (%)
NMK1	DT	10.10	23.9	29.66	24.10
NMK3	DT	10.10	27.1	25.77	-4.91
NMK5	DT	10.10	28.7	26.57	-7.42
NMK6	DT	10.10	24.6	27.14	10.33
NMK7	DT	10.10	30.5	27.48	-9.90
NMK8	DT	10.10	14	13.66	-2.43
NMK9	DT	10.10	24.2	27.47	13.51
NMK10	DT	10.10	33.1	27.45	-17.07
NMK11	DT	10.10	17.2	17.61	2.38
NMK12	DT	10.10	30.3	35.06	15.71
NMK14	DT	10.10	28.4	27.03	-4.82
NMK15	DT	10.10	29.4	26.51	-9.83
NMK19	DT	10.10	31	27.66	-10.77

4.26 The comparison of the monitored NO_2 and the adjusted modelled NO_2 concentrations are illustrated on **Figure 4.5**.

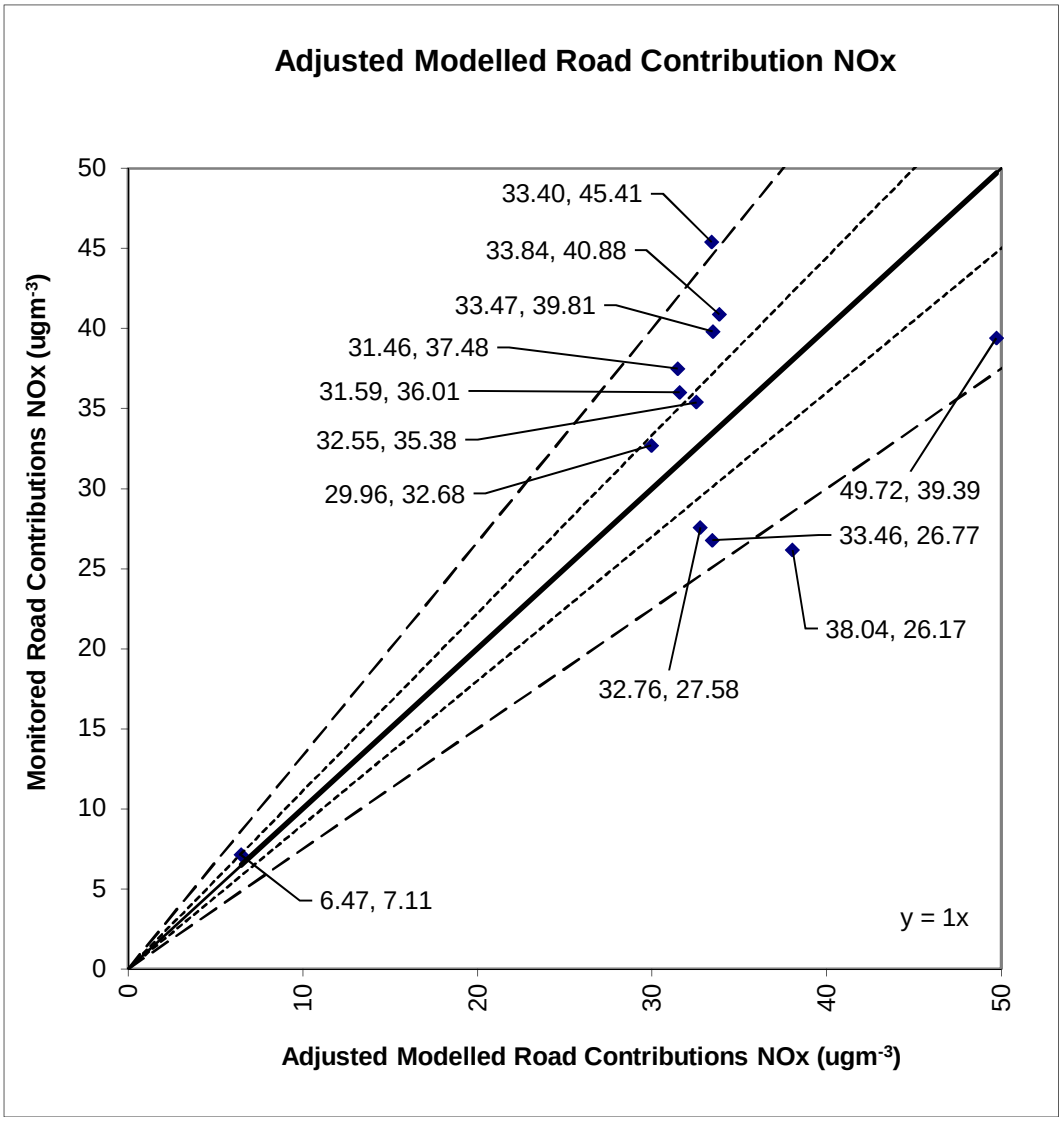


Figure 4.5: Comparison of Measured NO_2 and Adjusted Modelled NO_2

4.27 With reference to Figure 4.5, there is no systematic over or under-prediction of concentrations of NO_2 following adjustment of the road concentration NO_X.

Pollutant Concentrations

4.28 To characterise the air pollutant concentrations adjacent to the roads that would be affected by the proposed development traffic, predictions have been made at WSC DTs in Kentford, Newmarket, five representative residential receptors close to the site and three ecological receptors (within 200m of roads that would be affected by the proposed development traffic[10]).

[10] The IAQM guidance on 'Air Quality Impacts on Designated Nature Conservation Sites' (2020)

4.29 The DT and representative residential receptors are presented in **Table 4.5** and the ecological receptors are presented in **Table 4.5**.

Table 4.5: Modelled WSC DT and Sensitive Receptor Locations

Modelled Sensitive Receptor		X	Y	Receptor Height (m)
R1	4 Byerley Cl	569821	266505	2
R2	53 Bury Road	565451	264609	2
R3	Bell Inn PH	570176	266660	2
R4	Flint Cottages	571537	266762	2
R5	Lanwades House	570163	266640	2
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	570549	266761	2.2
NMK1	23 Old Station Road	564716	263502	2.2
NMK3	Taxi rank	564707	263493	2.2
NMK5	Market St 'EE'	564337	263343	2.2
NMK6	Clock tower, crossing	564307	263338	2.3
NMK7	Rutland Arms' crossing	564233	263274	2.3
NMK8	'Savers' lamppost	564138	263301	2.2
NMK9	Old Station Road, Nancy's Tearoom	564043	263159	2.3
NMK10	Old Station Road and Rous Road	564362	263381	2.3
NMK11	Café Nero' crossing	564380	263407	2
NMK12	KFC' downpipe	564550	263544	2.1
NMK14	White Hart' crossing	564480	263464	2.3
NMK15	"Newmarket – Park area"	564383	263381	2.3
NMK19	Blackbear Lane, and High Street	564626	263525	2.1

Table 4.6: Ecological Sensitive Receptor Locations

Site ID	Site	Designation	X	Y	Distance From Site (km)	Distance from Nearest Affected Road (m)
E1	Breckland SPA	SPA	577687	266107	2.2	25
E2	Chippenham Fen	Ramsar	565429	269767	4.6	200
E3	Wicken Fen	Ramsar	557136	270151	13.3	200

4.30 Refer to Figures 4.1 and 4.2 for the locations of the DT and **Figure 4.6** for the sensitive receptors and **Figure 4.7** for the ecological receptors within the assessment area.

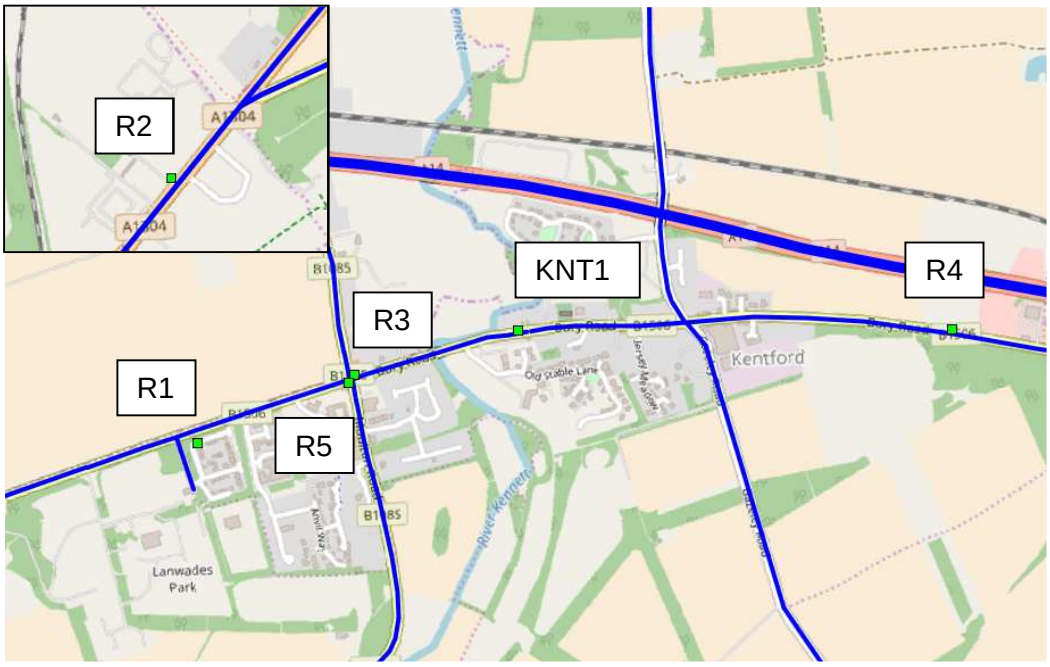


Figure 4.6: Existing Sensitive Receptors Plan

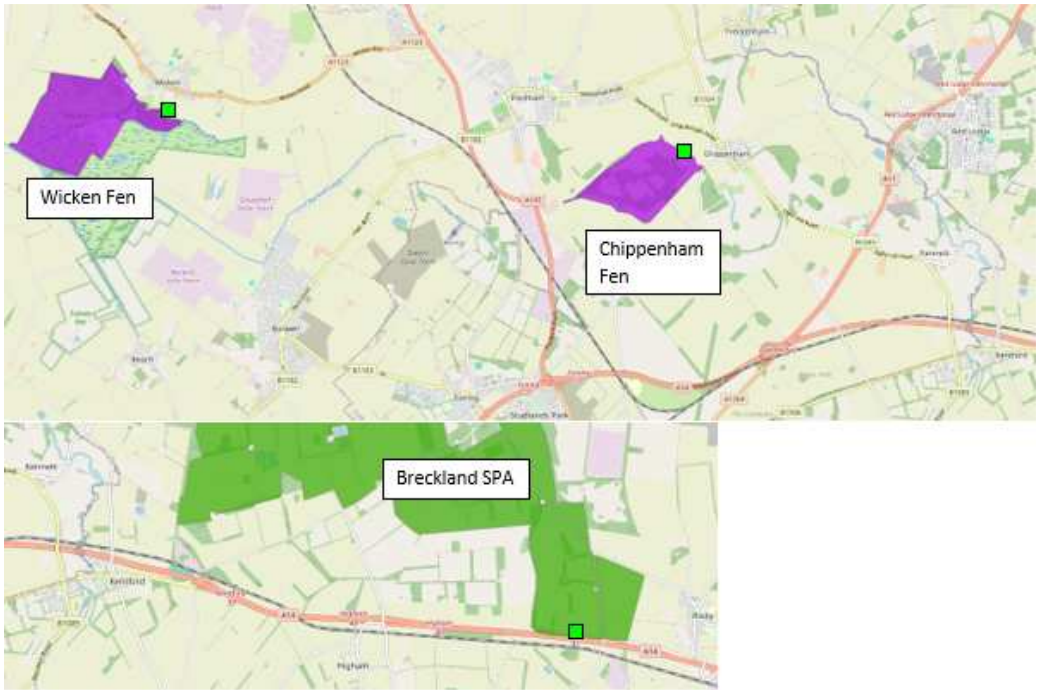


Figure 4.7: Ecological Receptor Location Plan

4.31 Concentrations have been calculated for the 'Base Years' 2025, 2029, 2030 and 2031 using ADMS Roads dispersion modelling.

4.32 Background concentrations for future assessments years have been kept the same as the Verification year 2019. The reason for using the base year background concentrations is due to recorded local concentrations of NO_2 not decreasing significantly as predicted over the past five years, and a worst-case scenario has therefore been modelled.

4.33 The results of the predictions for 2025 concentrations at DT and existing sensitive receptors are presented in **Table 4.7**. Ecological receptors are presented in **Table 4.8**. Where concentrations are above the NAQO the cells have been shaded light grey.

Table 4.7: Predicted Air Quality Concentrations at Existing Sensitive Receptors 2025

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	11.45	9.31	14.69	0.12	9.66
R2	53 Bury Road	18.64	13.49	14.48	0.13	9.37
R3	Bell Inn PH	20.68	14.14	18.97	2.26	10.02
R4	Flint Cottages	17.76	12.17	17.88	1.31	10.09
R5	Lanwades House	19.74	13.67	18.91	2.20	9.98
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	19.66	13.56	18.83	2.12	9.94
NMK1	23 Old Station Road	32.87	20.26	16.11	0.35	10.38
NMK3	Taxi rank	28.86	18.31	15.85	0.27	10.25
NMK5	Market St 'EE'	30.68	19.15	15.96	0.30	10.31
NMK6	Clock tower, crossing	37.22	22.03	16.19	0.38	10.43
NMK7	Rutland Arms' crossing	28.47	18.13	15.83	0.26	10.23
NMK8	'Savers' lamppost	27.90	17.86	15.79	0.26	10.22
NMK9	Old Station Road, Nancy's Tearoom	30.38	19.08	15.85	0.27	10.25
NMK10	Old Station Road and Rous Road	28.43	18.21	15.84	0.27	10.24
NMK11	Café Nero' crossing	27.95	17.89	15.80	0.26	10.22
NMK12	KFC' downpipe	28.53	18.15	15.83	0.27	10.24
NMK14	White Hart' crossing	28.86	18.31	15.85	0.27	10.25
NMK15	"Newmarket – Park area"	15.44	11.80	15.04	0.13	9.82
NMK19	Blackbear Lane, and High Street	28.84	18.29	15.85	0.27	10.25
NAQO		-	40	40	35	25

4.34 When the pollutant concentrations in Table 4.7 are compared to the NAQO, concentrations of NO_2 and PM_{10} are predicted to be well below the level of 40 μgm^{-3} and the number of days when the concentration of PM_{10} is greater than 50 μgm^{-3} is well below 35 days. It can also be seen that the concentrations of $PM_{2.5}$ are well below 25 μgm^{-3}.

Table 4.8: Predicted NO_X Concentrations at Ecological Receptors 2025

Receptor Number and Name		NO_X Annual mean μgm^{-3}
E1	Breckland SPA	7.28
E2	Chippenham Fen	5.97
E3	Wicken Fen	6.30

5.0 AIR QUALITY ASSESSMENT

5.1 The assessment has been split into two parts, the potential "Impacts" of development generated traffic and construction activities and the "Constraints" on the development.

5.2 The "Impact" section assesses whether development generated traffic flows on the highway network are likely to result in a significant change in annual mean concentration of NO_2, PM_{10} and $PM_{2.5}$ at sensitive off-site receptors when added to cumulative local development generated traffic. Also assessed are the potential construction dust impacts and PM_{10} and $PM_{2.5}$ changes on sensitive receptors.

5.3 The "Constraints" part of the assessment compares the predicted concentration of NO_2, PM_{10} and $PM_{2.5}$ within the Development Site against NAQO levels and assesses whether predicted levels within the site are above the objective levels.

Impacts

Dust Assessment: Predicted Construction Impacts

5.4 The main sources of dust and PM_{10} during construction activities are:

- Haulage routes, vehicles and construction traffic;
- Materials handling, storage, stockpiling, potential spillage and disposal;
- Exhaust emissions from site plant;
- Site preparation;
- Construction and fabrication processes; and
- Internal and external finishing and refurbishment.

5.5 The majority of the releases are likely to occur during the typical "working-week". The construction impact assessment has been split into two sections. The first deals with the potential impacts from dust soiling and changes in PM_{10} concentrations due to on-site works and the second deals with the effect of emissions from construction traffic.

Dust soiling and changes in PM_{10} concentrations

5.6 The site will require earthworks, construction and trackout of vehicles associated with all phases of the Site. The resulting dust emission magnitudes are:

- Earthworks – **Medium** (Total site area 18,000 m^2 to 110,000 m^2, moderately dusty soil type (e.g. silt), 5 to 10 heavy earth moving

vehicles active at any one time, formation of bunds 3m to 6m in height);

- Construction – **Medium** (Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching);
- Trackout – **Medium** (20 to 50 HDV (>3.5t) outward movements in any one day,10 moderately dusty surface material (e.g. high clay content), unpaved road length 50 m to 100 m).

5.7 Using the information presented in Section 3 and the criteria presented in Table 3.5, Table 3.6 and Table 3.7, the sensitivity of the construction for the proposed development can be defined. The results of defining the sensitivity of the area are presented in **Table 5.1**.

Table 5.1: Outcome of Defining the Sensitivity of an Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	***Earthworks***	***Construction***	***Trackout***
Dust Soiling	N/A	Low	Low	Low
Human Health	N/A	Low	Low	Low
Ecological	N/A	Negligible	Negligible	Negligible

5.8 From Table 5.1 it can be seen that the predicted sensitivity of the surrounding area to dust soiling is “Low” during the earthworks and construction phases and during trackout. The sensitivity of the surrounding area to changes in PM_{10} affecting human health is “Low” during the construction and earthworks phase and during trackout. As there are no ecological receptors within 50m of the development, the predicted sensitivity impact is “Negligible”.

5.9 The dust emission magnitude determined in paragraph 5.6 is combined with the sensitivity of the area summarised in Table 5.1 to determine the risk of impacts with no mitigation applied. The risk of impacts are summarised in **Table 5.2**.

Table 5.2: Summary Dust Risk Table to Define Site-Specific Mitigation

Potential Impact	Risk			
	Demolition	***Earthworks***	***Construction***	***Trackout***
Dust Soiling	N/A	Low	Low	Low
Human Health	N/A	Low	Low	Low
Ecological	N/A	Negligible	Negligible	Negligible

5.10 During the Earthworks and Construction phases of development and due to Trackout, there is a Low Risk of annoyance caused by dust soiling and health effects due to increase exposure in PM_{10}.

5.11 For those cases where the risk category is Negligible (i.e. ecological), no specific mitigation measures is required beyond specific legislation.

Predicted Operational Impacts

5.12 The air quality impact of the proposed development on the surrounding area has been assessed by considering the changes in traffic flows which will occur on the existing highway network with the development in place.

5.13 Potential impacts from the proposed development would occur following the completion of the proposed development in 2031. However, the two preceding years 2030 and 2029 have also been assessed in line with the Transport Assessment.

5.14 Planning proposals are for a “Detailed” application and a “Hybrid” application and both scenarios have been assessed.

5.15 Therefore, the years of assessment are 2029, 2030 and 2031 “do nothing”, “do something - Detailed” and “do something - Hybrid”. For this development a Transport Assessment (TA) has been undertaken and part of the assessment was the collection and analysis of road traffic data from automated traffic counts (ATC), and the proposed development.

5.16 Road traffic data has been provided in part by the Transport Consultants (RPS). The remaining traffic data was collected using permanent ATCs and publicly available traffic data for the local highway network. The “Base” traffic flows have been growthed using TEMPRO and NTM, which takes into account traffic from Committed Development projects.

Detailed Application - Traffic Generation

5.17 Worst-case flows arising from the “Detailed” development generated traffic has then been added to the 2029, 2030 and 2031 traffic flows and the results are presented in **Appendix 5**.

5.18 Road traffic flows are predicted to change by between 0% and 282% due to “Detailed” development generated traffic in 2029, 2030 and 2031 (greatest change is predicted to be on Sire Lane).

Hybrid Application - Traffic Generation

5.19 Worst-case flows arising from the "Hybrid" development generated traffic has then been added to the 2029, 2030 and 2031 traffic flows and the results are presented in **Appendix 6**.

5.20 Road traffic flows are predicted to change by between 0% and 231% due to "Hybrid" development generated traffic in 2029, 2030 and 2031 (greatest change is predicted to be on Sire Lane).

Background Concentrations – 2029, 2030 and 2031

5.21 From Table 4.1, it can be seen that there has been no significant change in measured concentrations of NO_2 in the past five years. Therefore, the background concentrations in NO_X, NO_2, PM_{10} and $PM_{2.5}$ for 2019 have been used for the future assessments.

ADMS Roads Assessment

2029 - Detailed Application

5.22 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, “do nothing” and “do something - detailed”. The results from the assessment are presented in **Table 5.3** and **Table 5.4.**

Table 5.3: Predicted air quality concentrations at sensitive receptors in 2029 "do nothing"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.11	8.49	14.69	0.12	9.66
R2	53 Bury Road	15.28	11.35	14.48	0.13	9.37
R3	Bell Inn PH	16.48	11.75	19.02	2.31	10.04
R4	Flint Cottages	14.00	10.04	17.90	1.33	10.10
R5	Lanwades House	15.74	11.40	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	15.71	11.38	18.86	2.15	9.96
NMK1	23 Old Station Road	24.56	15.99	16.11	0.35	10.37
NMK3	Taxi rank	21.90	14.77	15.84	0.27	10.23
NMK5	Market St 'EE'	21.54	14.60	15.79	0.25	10.21
NMK6	Clock tower, crossing	21.88	14.76	15.82	0.26	10.23
NMK7	Rutland Arms' crossing	22.08	14.85	15.84	0.27	10.24
NMK8	'Savers' lamppost	14.11	11.06	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	22.06	14.84	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	22.08	14.85	15.84	0.27	10.24
NMK11	Café Nero' crossing	23.16	15.35	15.95	0.30	10.29
NMK12	KFC' downpipe	27.08	17.13	16.18	0.38	10.42
NMK14	White Hart' crossing	21.84	14.74	15.82	0.26	10.23
NMK15	Newmarket - Park area	21.50	14.58	15.79	0.25	10.21
NMK19	Blackbear Lane, and High Street	23.08	15.31	15.85	0.27	10.24
NAQO		-	40	40	35	25

Table 5.4: Predicted air quality concentrations at sensitive receptors in 2029 "do something - detailed"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.35	8.61	14.72	0.12	9.67
R2	53 Bury Road	15.39	11.40	14.48	0.13	9.37
R3	Bell Inn PH	16.97	11.98	19.07	2.36	10.07
R4	Flint Cottages	14.24	10.16	17.93	1.35	10.11
R5	Lanwades House	16.19	11.61	18.99	2.28	10.02
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	16.05	11.54	18.90	2.19	9.98
NMK1	23 Old Station Road	24.67	16.04	16.12	0.35	10.38
NMK3	Taxi rank	21.99	14.81	15.85	0.27	10.24
NMK5	Market St 'EE'	21.61	14.63	15.80	0.26	10.21
NMK6	Clock tower, crossing	21.96	14.80	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	22.16	14.89	15.85	0.27	10.24
NMK8	'Savers' lamppost	14.12	11.07	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	22.15	14.88	15.85	0.27	10.24
NMK10	Old Station Road and Rous Road	22.16	14.89	15.85	0.27	10.24
NMK11	Café Nero' crossing	23.25	15.39	15.96	0.30	10.30
NMK12	KFC' downpipe	27.21	17.19	16.20	0.38	10.42
NMK14	White Hart' crossing	21.93	14.78	15.83	0.26	10.23
NMK15	Newmarket - Park area	21.58	14.62	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	23.18	15.36	15.86	0.27	10.24
NAQO		-	40	40	35	25

5.23 Presented in **Table 5.5** are the predicted change in concentrations of NO_2, PM_{10} and $PM_{2.5}$ and the change in the number of days where concentrations of PM_{10} are greater than 50 μgm^{-3}.

Table 5.5: Predicted change in air quality concentrations at sensitive receptors in 2029 "do something - detailed"

Receptor Number and Name		NO_2		PM_{10}				$PM_{2.5}$	
		Change in annual mean μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)		Change in days >50 μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)	
R1	4 Byerley Cl	0.24	(2.37)	0.12	(1.41)	0.03	(0.20)	0	(0.00)
R2	53 Bury Road	0.11	(0.72)	0.05	(0.44)	0.01	(0.07)	0	(0.00)
R3	Bell Inn PH	0.49	(2.97)	0.23	(1.96)	0.06	(0.32)	0.06	(2.60)
R4	Flint Cottages	0.24	(1.71)	0.12	(1.20)	0.03	(0.17)	0.02	(1.51)
R5	Lanwades House	0.45	(2.86)	0.21	(1.84)	0.05	(0.26)	0.05	(2.24)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.35	(2.23)	0.16	(1.41)	0.04	(0.21)	0.03	(1.39)
NMK1	23 Old Station Road	0.11	(0.45)	0.05	(0.31)	0.01	(0.06)	0	(0.00)
NMK3	Taxi rank	0.09	(0.41)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK5	Market St 'EE'	0.08	(0.37)	0.03	(0.21)	0.01	(0.06)	0	(0.00)
NMK6	Clock tower, crossing	0.08	(0.37)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK7	Rutland Arms' crossing	0.08	(0.36)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK8	'Savers' lamppost	0.02	(0.14)	0.01	(0.09)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.08	(0.36)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.08	(0.36)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK11	Café Nero' crossing	0.09	(0.39)	0.04	(0.26)	0.01	(0.06)	0	(0.00)
NMK12	KFC' downpipe	0.14	(0.52)	0.06	(0.35)	0.01	(0.06)	0	(0.00)
NMK14	White Hart' crossing	0.08	(0.37)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK15	Newmarket - Park area	0.08	(0.37)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.11	(0.48)	0.05	(0.33)	0.01	(0.06)	0	(0.00)

5.24 From Table 5.5 it can be seen that changes in concentration of NO_2 are predicted to be 0.49 μgm^{-3} or less and changes in concentration of PM_{10} are predicted to be 0.23 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM_{10} is predicted to be more than 50 μgm^{-3} will be 0.05 days or less. Changes in concentration of $PM_{2.5}$ are predicted to be 0.06 μgm^{-3} or less.

Magnitude of Change – 2029 with Detailed development

5.25 Comparing the results in Table 5.5 with the magnitude of change in Table 3.11 it can be seen that all the receptors are predicted to experience a change in annual mean NO_2 concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.26 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{10} and $PM_{2.5}$ concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.27 There is predicted to be an "Imperceptible" (<1 day) or "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

"Significance" of Change – 2029 with Detailed development

5.28 The "Significance" of the predicted changes in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are presented in **Table 5.6**, **Table 5.7** and **Table 5.8**.

Table 5.6: NO_2 – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		NO_2		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0.24	Imperceptible	Negligible
R2	53 Bury Road	0.11	Imperceptible	Negligible
R3	Bell Inn PH	0.49	Imperceptible	Negligible
R4	Flint Cottages	0.24	Imperceptible	Negligible
R5	Lanwades House	0.45	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.35	Imperceptible	Negligible
NMK1	23 Old Station Road	0.11	Imperceptible	Negligible
NMK3	Taxi rank	0.09	Imperceptible	Negligible
NMK5	Market St 'EE'	0.08	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.08	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.08	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.08	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.08	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.09	Imperceptible	Negligible
NMK12	KFC' downpipe	0.14	Imperceptible	Negligible
NMK14	White Hart' crossing	0.08	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.08	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.11	Imperceptible	Negligible

5.29 With reference to the overall concentration of NO_2 presented in Table 5.4 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.6 being "Imperceptible" the "Significance" of change in NO_2 concentrations is considered "Negligible".

Table 5.7: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	"Significance" of change
R1	4 Byerley Cl	0.12	Imperceptible	Negligible
R2	53 Bury Road	0.05	Imperceptible	Negligible
R3	Bell Inn PH	0.23	Imperceptible	Negligible
R4	Flint Cottages	0.12	Imperceptible	Negligible
R5	Lanwades House	0.21	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.16	Imperceptible	Negligible
NMK1	23 Old Station Road	0.05	Imperceptible	Negligible
NMK3	Taxi rank	0.04	Imperceptible	Negligible
NMK5	Market St 'EE'	0.03	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.04	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.04	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.04	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.04	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.04	Imperceptible	Negligible
NMK12	KFC' downpipe	0.06	Imperceptible	Negligible
NMK14	White Hart' crossing	0.04	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.04	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.05	Imperceptible	Negligible

5.30 With reference to the overall concentrations of PM_{10} presented in Table 5.4 being well below the objective level of 40 μgm^{-3} and the magnitude of change presented in Table 5.7 being "Imperceptible", the "Significance" of change in PM_{10} concentration is considered to be "Negligible".

Table 5.8: $PM_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		$PM_{2.5}$		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.06	Imperceptible	Negligible
R4	Flint Cottages	0.02	Imperceptible	Negligible
R5	Lanwades House	0.05	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.03	Imperceptible	Negligible
NMK1	23 Old Station Road	0	No Change	No Change
NMK3	Taxi rank	0	No Change	No Change
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0	No Change	No Change
NMK12	KFC' downpipe	0	No Change	No Change
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Park area	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0	No Change	No Change

5.31 With reference to the overall concentration of $PM_{2.5}$ presented in Table 5.4 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.8 being "Imperceptible" or "No Change" the "Significance" of change in $PM_{2.5}$ concentrations is considered "Negligible" or "No Change".

5.32 Presented in Table 5.44 are the predicted changes in Nitrogen Oxide (NOx) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 5.9: Predicted Annual Average concentrations of NO_X at Ecological Receptor Locations 2029

Ecological Receptor		Predicted Annual Average NO_X Concentration (μgm^{-3})				
		Do Nothing 2029	Do Something 2029	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	23.39	23.50	0.115	0.38	6.08
E2	Chippenham Fen	8.68	8.69	0.012	0.04	5.18
E3	Wicken Fen	9.06	9.06	0.003	0.01	5.51
Annual Mean AQO/Critical Level (CL)		30				

5.33 With reference to Table 5.9, the maximum change in annual exposure to NO_X due to development generated traffic is 0.115 μgm^{-3} at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and 0.115 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution stated within the guidance of '*A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2020.

5.34 Therefore, no further assessment is required and the impact at E1 Breckland SPA is considered to be negligible.

2030 - Detailed Application

5.35 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, "do nothing" and "do something". The results from the assessment are presented in **Table 5.10** and **Table 5.11**.

Table 5.10: Predicted air quality concentrations at sensitive receptors in 2030 "do nothing"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.84	8.35	14.69	0.12	9.66
R2	53 Bury Road	14.60	11.02	14.48	0.13	9.37
R3	Bell Inn PH	15.51	11.29	19.02	2.31	10.04
R4	Flint Cottages	13.22	9.67	17.91	1.33	10.10
R5	Lanwades House	14.86	10.97	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.90	10.99	18.87	2.16	9.96
NMK1	23 Old Station Road	23.52	15.51	16.19	0.38	10.42
NMK3	Taxi rank	21.07	14.38	15.90	0.28	10.27
NMK5	Market St 'EE'	20.31	14.03	15.79	0.26	10.21
NMK6	Clock tower, crossing	20.61	14.17	15.83	0.26	10.23
NMK7	Rutland Arms' crossing	20.77	14.24	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.86	10.94	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	20.75	14.23	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	20.79	14.25	15.85	0.27	10.24
NMK11	Café Nero' crossing	21.73	14.69	15.96	0.30	10.30
NMK12	KFC' downpipe	25.23	16.30	16.20	0.38	10.42
NMK14	White Hart' crossing	20.59	14.16	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	20.29	14.02	15.79	0.25	10.21
NMK19	Blackbear Lane, and High Street	22.10	14.86	15.90	0.28	10.27
NAQO		-	40	40	35	25

Table 5.11: Predicted air quality concentrations at sensitive receptors in 2030 "do something - detailed"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.05	8.46	14.72	0.12	9.67
R2	53 Bury Road	14.70	11.07	14.49	0.13	9.37
R3	Bell Inn PH	15.91	11.48	19.08	2.37	10.07
R4	Flint Cottages	13.39	9.75	17.94	1.35	10.11
R5	Lanwades House	15.24	11.16	18.99	2.28	10.02
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	15.13	11.10	18.90	2.19	9.98
NMK1	23 Old Station Road	23.63	15.57	16.20	0.38	10.42
NMK3	Taxi rank	21.16	14.42	15.91	0.29	10.27
NMK5	Market St 'EE'	20.38	14.06	15.80	0.26	10.22
NMK6	Clock tower, crossing	20.68	14.20	15.84	0.27	10.23
NMK7	Rutland Arms' crossing	20.85	14.28	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.88	10.95	15.05	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	20.83	14.27	15.85	0.27	10.24
NMK10	Old Station Road and Rous Road	20.86	14.28	15.86	0.27	10.25
NMK11	Café Nero' crossing	21.81	14.72	15.97	0.30	10.30
NMK12	KFC' downpipe	25.36	16.35	16.21	0.39	10.43
NMK14	White Hart' crossing	20.67	14.19	15.83	0.27	10.23
NMK15	"Newmarket – Park area"	20.35	14.05	15.80	0.26	10.22
NMK19	Blackbear Lane, and High Street	22.20	14.91	15.91	0.29	10.27
NAQO		-	40	40	35	25

5.36 Presented in **Table 5.12** are the predicted change in concentrations of NO_2, PM_{10} and $PM_{2.5}$ and the change in the number of days where concentrations of PM_{10} are greater than 50 μgm^{-3}.

Table 5.12: Predicted change in air quality concentrations at sensitive receptors in 2030 "do something - detailed"

Receptor Number and Name		NO_2		PM_{10}					
		Change in annual mean μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)		Change in days >50 μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)	
R1	4 Byerley Cl	0.21	(2.13)	0.11	(1.32)	0.03	(0.20)	0	(0.00)
R2	53 Bury Road	0.09	(0.62)	0.05	(0.45)	0.01	(0.07)	0	(0.00)
R3	Bell Inn PH	0.40	(2.58)	0.19	(1.68)	0.05	(0.26)	0.05	(2.16)
R4	Flint Cottages	0.17	(1.29)	0.08	(0.83)	0.02	(0.11)	0.02	(1.50)
R5	Lanwades House	0.38	(2.56)	0.19	(1.73)	0.05	(0.26)	0.05	(2.24)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.23	(1.54)	0.11	(1.00)	0.03	(0.16)	0.03	(1.39)
NMK1	23 Old Station Road	0.11	(0.47)	0.06	(0.39)	0.01	(0.06)	0	(0.00)
NMK3	Taxi rank	0.09	(0.43)	0.04	(0.28)	0.01	(0.06)	0	(0.00)
NMK5	Market St 'EE'	0.07	(0.34)	0.03	(0.21)	0.01	(0.06)	0	(0.00)
NMK6	Clock tower, crossing	0.07	(0.34)	0.03	(0.21)	0.01	(0.06)	0	(0.00)
NMK7	Rutland Arms' crossing	0.07	(0.34)	0.04	(0.28)	0.01	(0.06)	0	(0.00)
NMK8	'Savers' lamppost	0.01	(0.07)	0.01	(0.09)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.07	(0.34)	0.04	(0.28)	0.01	(0.06)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.07	(0.34)	0.03	(0.21)	0.01	(0.06)	0	(0.00)
NMK11	Café Nero' crossing	0.08	(0.37)	0.03	(0.20)	0.01	(0.06)	0	(0.00)
NMK12	KFC' downpipe	0.13	(0.52)	0.05	(0.31)	0.01	(0.06)	0	(0.00)
NMK14	White Hart' crossing	0.07	(0.34)	0.03	(0.21)	0.01	(0.06)	0	(0.00)
NMK15	"Newmarket – Park area"	0.07	(0.35)	0.03	(0.21)	0.01	(0.06)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.11	(0.50)	0.05	(0.34)	0.01	(0.06)	0	(0.00)

5.37 From Table 5.12 it can be seen that changes in concentration of NO_2 are predicted to be 0.40 μgm^{-3} or less and changes in concentration of PM_{10} are predicted to be 0.19 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM_{10} is predicted to be more than 50 μgm^{-3} will be 0.05 days or less. Changes in concentration of $PM_{2.5}$ are predicted to be 0.05 μgm^{-3} or less.

Magnitude of Change – 2030 with Detailed development

5.38 Comparing the results in Table 5.12 with the magnitude of change in Table 3.11 it can be seen that all the receptors are predicted to experience a change in annual mean NO_2 concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.39 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{10} and $PM_{2.5}$ concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.40 There is predicted to be "Imperceptible" (<1 day) or "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

"Significance" of Change – 2030 with Detailed development

5.41 The "Significance" of the predicted changes in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are presented in **Table 5.13**, **Table 5.14** and **Table 5.15**.

Table 5.13: NO_2 – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		NO_2		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0.21	Imperceptible	Negligible
R2	53 Bury Road	0.09	Imperceptible	Negligible
R3	Bell Inn PH	0.4	Imperceptible	Negligible
R4	Flint Cottages	0.17	Imperceptible	Negligible
R5	Lanwades House	0.38	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.23	Imperceptible	Negligible
NMK1	23 Old Station Road	0.11	Imperceptible	Negligible
NMK3	Taxi rank	0.09	Imperceptible	Negligible
NMK5	Market St 'EE'	0.07	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.07	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.07	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.07	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.07	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.08	Imperceptible	Negligible
NMK12	KFC' downpipe	0.13	Imperceptible	Negligible
NMK14	White Hart' crossing	0.07	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.07	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.11	Imperceptible	Negligible

5.42 With reference to the overall concentration of NO_2 presented in Table 5.10 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.6 being "Imperceptible", the "Significance" of change in NO_2 concentrations is considered "Negligible".

Table 5.14: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	"Significance" of change
R1	4 Byerley Cl	0.11	Imperceptible	Negligible
R2	53 Bury Road	0.05	Imperceptible	Negligible
R3	Bell Inn PH	0.19	Imperceptible	Negligible
R4	Flint Cottages	0.08	Imperceptible	Negligible
R5	Lanwades House	0.19	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.11	Imperceptible	Negligible
NMK1	23 Old Station Road	0.06	Imperceptible	Negligible
NMK3	Taxi rank	0.04	Imperceptible	Negligible
NMK5	Market St 'EE'	0.03	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.03	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.04	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.04	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.03	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.03	Imperceptible	Negligible
NMK12	KFC' downpipe	0.05	Imperceptible	Negligible
NMK14	White Hart' crossing	0.03	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.03	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.05	Imperceptible	Negligible

5.43 With reference to the overall concentrations of PM_{10} presented in Table 5.10 being well below the objective level of 40 μgm^{-3} and the magnitude of change presented in Table 5.7 being "Imperceptible", the "Significance" of change in PM_{10} concentration is considered to be "Negligible".

Table 5.15: $PM_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		$PM_{2.5}$		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.05	Imperceptible	Negligible
R4	Flint Cottages	0.02	Imperceptible	Negligible
R5	Lanwades House	0.05	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.03	Imperceptible	Negligible
NMK1	23 Old Station Road	0	No Change	No Change
NMK3	Taxi rank	0	No Change	No Change
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0	No Change	No Change
NMK12	KFC' downpipe	0	No Change	No Change
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Parkarea	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0	No Change	No Change

5.44 With reference to the overall concentration of $PM_{2.5}$ presented in Table 5.10 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.8 being "Imperceptible" or "No Change" the "Significance" of change in $PM_{2.5}$ concentrations is considered "Negligible" or "No Change".

5.45 Presented in Table 5.16 are the predicted changes in Nitrogen Oxide (NOx) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 5.16: Predicted Annual Average concentrations of NO_X at Ecological Receptor Locations 2030

Ecological Receptor		Predicted Annual Average NO_X Concentration (μgm^{-3})				
		Do Nothing 2030	Do Something 2030	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	21.78	21.88	0.10	0.33	5.77
E2	Chippenham Fen	8.59	8.60	0.01	0.04	4.97
E3	Wicken Fen	9.01	9.01	0.003	0.01	5.31
Annual Mean AQO/Critical Level (CL)		30				

5.46 With reference to Table 5.16, the maximum change in annual exposure to NO_X due to development generated traffic is 0.10 μgm^{-3} at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and 0.10 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution stated within the guidance of '*A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2020.

5.47 Therefore, no further assessment is required and the impact at E1 Breckland SPA is considered to be negligible.

2031 - Detailed Application

5.48 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, "do nothing" and "do something". The results from the assessment are presented in **Table 5.17** and **Table 5.18**.

Table 5.17: Predicted air quality concentrations at sensitive receptors in 2031 "do nothing"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.61	8.24	14.69	0.12	9.66
R2	53 Bury Road	14.01	10.73	14.48	0.13	9.37
R3	Bell Inn PH	14.64	10.86	19.02	2.31	10.04
R4	Flint Cottages	12.52	9.32	17.91	1.33	10.10
R5	Lanwades House	14.08	10.59	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.13	10.61	18.87	2.16	9.96
NMK1	23 Old Station Road	22.05	14.83	16.20	0.38	10.42
NMK3	Taxi rank	19.92	13.84	15.90	0.29	10.27
NMK5	Market St 'EE'	19.23	13.51	15.80	0.26	10.21
NMK6	Clock tower, crossing	19.49	13.63	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	19.63	13.70	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.64	10.83	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	19.61	13.69	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	19.64	13.70	15.85	0.27	10.24
NMK11	Café Nero' crossing	20.46	14.09	15.96	0.30	10.30
NMK12	KFC' downpipe	23.51	15.50	16.20	0.38	10.42
NMK14	White Hart' crossing	19.48	13.63	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	19.21	13.50	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	20.83	14.26	15.91	0.29	10.27
NAQO		-	40	40	35	25

Table 5.18: Predicted air quality concentrations at sensitive receptors in 2031 "do something - detailed"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.79	8.32	14.72	0.12	9.67
R2	53 Bury Road	14.10	10.78	14.49	0.13	9.37
R3	Bell Inn PH	14.99	11.03	19.08	2.37	10.07
R4	Flint Cottages	12.67	9.39	17.94	1.35	10.11
R5	Lanwades House	14.42	10.76	19.00	2.28	10.03
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.33	10.71	18.90	2.19	9.98
NMK1	23 Old Station Road	22.13	14.87	16.21	0.38	10.43
NMK3	Taxi rank	19.99	13.87	15.91	0.29	10.27
NMK5	Market St 'EE'	19.34	13.56	15.81	0.26	10.22
NMK6	Clock tower, crossing	19.61	13.69	15.84	0.27	10.24
NMK7	Rutland Arms' crossing	19.75	13.76	15.86	0.27	10.25
NMK8	'Savers' lamppost	13.66	10.84	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	19.73	13.75	15.86	0.27	10.25
NMK10	Old Station Road and Rous Road	19.76	13.76	15.86	0.27	10.25
NMK11	Café Nero' crossing	20.59	14.15	15.97	0.31	10.31
NMK12	KFC' downpipe	23.71	15.59	16.22	0.39	10.43
NMK14	White Hart' crossing	19.59	13.68	15.84	0.27	10.24
NMK15	"Newmarket – Park area"	19.32	13.55	15.80	0.26	10.22
NMK19	Blackbear Lane, and High Street	20.92	14.30	15.92	0.29	10.28
NAQO		-	40	40	35	25

5.49 Presented in Table 5.19 are the predicted change in concentrations of NO_2, PM_{10} and $PM_{2.5}$ and the change in the number of days where concentrations of PM_{10} are greater than 50 μgm^{-3}.

Table 5.19: Predicted change in air quality concentrations at sensitive receptors in 2031 "do something - detailed"

Receptor Number and Name		NO_2		PM_{10}					
		Change in annual mean μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)		Change in days >50 μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)	
R1	4 Byerley Cl	0.18	(1.87)	0.08	(0.97)	0.03	(0.20)	0	(0.00)
R2	53 Bury Road	0.09	(0.64)	0.05	(0.47)	0.01	(0.07)	0	(0.00)
R3	Bell Inn PH	0.35	(2.39)	0.17	(1.57)	0.05	(0.26)	0.06	(2.59)
R4	Flint Cottages	0.15	(1.20)	0.07	(0.75)	0.02	(0.11)	0.02	(1.50)
R5	Lanwades House	0.34	(2.41)	0.17	(1.61)	0.05	(0.26)	0.05	(2.24)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.2	(1.42)	0.1	(0.94)	0.03	(0.16)	0.03	(1.39)
NMK1	23 Old Station Road	0.08	(0.36)	0.04	(0.27)	0.01	(0.06)	0	(0.00)
NMK3	Taxi rank	0.07	(0.35)	0.03	(0.22)	0.01	(0.06)	0	(0.00)
NMK5	Market St 'EE'	0.11	(0.57)	0.05	(0.37)	0.01	(0.06)	0	(0.00)
NMK6	Clock tower, crossing	0.12	(0.62)	0.06	(0.44)	0.01	(0.06)	0	(0.00)
NMK7	Rutland Arms' crossing	0.12	(0.61)	0.06	(0.44)	0.01	(0.06)	0	(0.00)
NMK8	'Savers' lamppost	0.02	(0.15)	0.01	(0.09)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.12	(0.61)	0.06	(0.44)	0.01	(0.06)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.12	(0.61)	0.06	(0.44)	0.01	(0.06)	0	(0.00)
NMK11	Café Nero' crossing	0.13	(0.64)	0.06	(0.43)	0.01	(0.06)	0	(0.00)
NMK12	KFC' downpipe	0.2	(0.85)	0.09	(0.58)	0.02	(0.12)	0.01	(2.62)
NMK14	White Hart' crossing	0.12	(0.62)	0.05	(0.37)	0.01	(0.06)	0	(0.00)
NMK15	"Newmarket – Park area"	0.11	(0.57)	0.05	(0.37)	0.01	(0.06)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.08	(0.38)	0.04	(0.28)	0.01	(0.06)	0	(0.00)

5.50 From Table 5.19 it can be seen that changes in concentration of NO_2 are predicted to be 0.35 μgm^{-3} or less and changes in concentration of PM_{10} are predicted to be 0.17 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM_{10} is predicted to be more than 50 μgm^{-3} will be 0.05 days or less. Changes in concentration of $PM_{2.5}$ are predicted to be 0.06 μgm^{-3} or less.

Magnitude of Change – 2031 with Detailed development

5.51 Comparing the results in Table 5.19 with the magnitude of change in Table 3.11 it can be seen that all the receptors are predicted to experience a change in annual mean NO_2 concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.52 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{10} and $PM_{2.5}$ concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.53 There is predicted to be "Imperceptible" (<1 day) or "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

"Significance" of Change – 2031 with Detailed development

5.54 The "Significance" of the predicted changes in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are presented in **Table 5.20**, **Table 5.21** and **Table 5.22**.

Table 5.20: NO_2 – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		NO_2		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0.18	Imperceptible	Negligible
R2	53 Bury Road	0.09	Imperceptible	Negligible
R3	Bell Inn PH	0.35	Imperceptible	Negligible
R4	Flint Cottages	0.15	Imperceptible	Negligible
R5	Lanwades House	0.34	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.2	Imperceptible	Negligible
NMK1	23 Old Station Road	0.08	Imperceptible	Negligible
NMK3	Taxi rank	0.07	Imperceptible	Negligible
NMK5	Market St 'EE'	0.11	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.12	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.12	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.12	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.12	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.13	Imperceptible	Negligible
NMK12	KFC' downpipe	0.2	Imperceptible	Negligible
NMK14	White Hart' crossing	0.12	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.11	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.08	Imperceptible	Negligible

5.55 With reference to the overall concentration of NO_2 presented in Table 5.17 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.20 being "Imperceptible", the "Significance" of change in NO_2 concentrations is considered "Negligible".

Table 5.21: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	"Significance" of change
R1	4 Byerley Cl	0.08	Imperceptible	Negligible
R2	53 Bury Road	0.05	Imperceptible	Negligible
R3	Bell Inn PH	0.17	Imperceptible	Negligible
R4	Flint Cottages	0.07	Imperceptible	Negligible
R5	Lanwades House	0.17	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.1	Imperceptible	Negligible
NMK1	23 Old Station Road	0.04	Imperceptible	Negligible
NMK3	Taxi rank	0.03	Imperceptible	Negligible
NMK5	Market St 'EE'	0.05	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.06	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.06	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.06	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.06	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.06	Imperceptible	Negligible
NMK12	KFC' downpipe	0.09	Imperceptible	Negligible
NMK14	White Hart' crossing	0.05	Imperceptible	Negligible
NMK15	Newmarket – Park area	0.05	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.04	Imperceptible	Negligible

5.56 With reference to the overall concentrations of PM_{10} presented in Table 5.17 being well below the objective level of 40 μgm^{-3} and the magnitude of change presented in Table 5.21 being "Imperceptible", the "Significance" of change in PM_{10} concentration is considered to be "Negligible".

Table 5.22: $PM_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		$PM_{2.5}$		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.06	Imperceptible	Negligible
R4	Flint Cottages	0.02	Imperceptible	Negligible
R5	Lanwades House	0.05	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.03	Imperceptible	Negligible
NMK1	23 Old Station Road	0	No Change	No Change
NMK3	Taxi rank	0	No Change	No Change
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0	No Change	No Change
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket – Park area	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0	No Change	No Change

5.57 With reference to the overall concentration of $PM_{2.5}$ presented in Table 5.17 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented inTable 5.22 being "Imperceptible" or "No Change" the "Significance" of change in $PM_{2.5}$ concentrations is considered "Negligible" or "No Change".

5.58 Presented in **Table 5.23** are the predicted changes in Nitrogen Oxide (NOx) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 5.23: Predicted Annual Average concentrations of NO_X at Ecological Receptor Locations 2031

Ecological Receptor		Predicted Annual Average NO_X Concentration (μgm^{-3})				
		Do Nothing 2031	Do Something 2031	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	20.42	20.51	0.09	0.28	5.56
E2	Chippenham Fen	8.52	8.52	0.01	0.03	4.81
E3	Wicken Fen	8.97	8.97	0.002	0.01	5.16
Annual Mean AQO/Critical Level (CL)		30				

5.59 With reference to Table 5.23, the maximum change in annual exposure to NO_X due to development generated traffic is 0.09 μgm^{-3} at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and 0.09 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution stated within the guidance of '*A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2020.

5.60 Therefore, no further assessment is required and the impact at E1 Breckland SPA as this is considered to be negligible.

2029 - Hybrid Application

5.61 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, "do nothing" and "do something". The results from the assessment are presented in **Table 5.24** and **Table 5.25**.

Table 5.24: Predicted air quality concentrations at sensitive receptors in 2029 "do nothing"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.61	8.24	14.69	0.12	9.66
R2	53 Bury Road	14.01	10.73	14.48	0.13	9.37
R3	Bell Inn PH	14.64	10.86	19.02	2.31	10.04
R4	Flint Cottages	12.52	9.32	17.91	1.33	10.10
R5	Lanwades House	14.08	10.59	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.13	10.61	18.87	2.16	9.96
NMK1	23 Old Station Road	22.05	14.83	16.20	0.38	10.42
NMK3	Taxi rank	19.92	13.84	15.90	0.29	10.27
NMK5	Market St 'EE'	19.23	13.51	15.80	0.26	10.21
NMK6	Clock tower, crossing	19.49	13.63	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	19.63	13.70	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.64	10.83	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	19.61	13.69	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	19.64	13.70	15.85	0.27	10.24
NMK11	Café Nero' crossing	20.46	14.09	15.96	0.30	10.30
NMK12	KFC' downpipe	23.51	15.50	16.20	0.38	10.42
NMK14	White Hart' crossing	19.48	13.63	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	19.21	13.50	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	20.83	14.26	15.91	0.29	10.27
NAQO		-	40	40	35	25

Table 5.25: Predicted air quality concentrations at sensitive receptors in 2029 "do something - hybrid"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.05	8.45	14.76	0.12	9.70
R2	53 Bury Road	14.27	10.86	14.50	0.13	9.38
R3	Bell Inn PH	15.64	11.34	19.18	2.47	10.12
R4	Flint Cottages	12.95	9.53	17.98	1.39	10.14
R5	Lanwades House	15.04	11.05	19.09	2.38	10.08
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.71	10.89	18.96	2.25	10.01
NMK1	23 Old Station Road	22.22	14.91	16.22	0.39	10.43
NMK3	Taxi rank	20.06	13.90	15.92	0.29	10.28
NMK5	Market St 'EE'	19.40	13.59	15.82	0.26	10.22
NMK6	Clock tower, crossing	19.67	13.72	15.85	0.27	10.24
NMK7	Rutland Arms' crossing	19.82	13.79	15.87	0.28	10.25
NMK8	'Savers' lamppost	13.67	10.85	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	19.80	13.78	15.87	0.27	10.25
NMK10	Old Station Road and Rous Road	19.82	13.79	15.87	0.28	10.25
NMK11	Café Nero' crossing	20.66	14.18	15.98	0.31	10.31
NMK12	KFC' downpipe	23.84	15.65	16.24	0.39	10.44
NMK14	White Hart' crossing	19.66	13.71	15.85	0.27	10.24
NMK15	"Newmarket – Park area"	19.38	13.58	15.81	0.26	10.22
NMK19	Blackbear Lane, and High Street	21.01	14.35	15.93	0.29	10.28
NAQO		-	40	40	35	25

5.62 Presented in **Table 5.26** are the predicted change in concentrations of NO_2, PM_{10} and $PM_{2.5}$ and the change in the number of days where concentrations of PM_{10} are greater than 50 μgm^{-3}.

Table 5.26: Predicted change in air quality concentrations at sensitive receptors in 2029 "do something - hybrid"

Receptor Number and Name		NO_2		PM_{10}					
		Change in annual mean μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)		Change in days >50 μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)	
R1	4 Byerley Cl	0.59	(5.83)	0.29	(3.42)	0.06	(0.41)	0	(0.00)
R2	53 Bury Road	0.33	(2.16)	0.16	(1.41)	0.02	(0.14)	0	(0.00)
R3	Bell Inn PH	1.38	(8.38)	0.66	(5.62)	0.16	(0.84)	0.16	(6.94)
R4	Flint Cottages	0.63	(4.50)	0.31	(3.09)	0.08	(0.45)	0.06	(4.52)
R5	Lanwades House	1.29	(8.19)	0.61	(5.35)	0.15	(0.79)	0.15	(6.73)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.87	(5.54)	0.41	(3.60)	0.09	(0.48)	0.09	(4.18)
NMK1	23 Old Station Road	0.24	(0.98)	0.11	(0.69)	0.02	(0.12)	0.01	(2.87)
NMK3	Taxi rank	0.19	(0.87)	0.09	(0.61)	0.02	(0.13)	0.01	(3.75)
NMK5	Market St 'EE'	0.16	(0.74)	0.07	(0.48)	0.02	(0.13)	0	(0.00)
NMK6	Clock tower, crossing	0.17	(0.78)	0.08	(0.54)	0.02	(0.13)	0	(0.00)
NMK7	Rutland Arms' crossing	0.17	(0.77)	0.08	(0.54)	0.02	(0.13)	0	(0.00)
NMK8	'Savers' lamppost	0.04	(0.28)	0.02	(0.18)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.17	(0.77)	0.08	(0.54)	0.02	(0.13)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.17	(0.77)	0.08	(0.54)	0.02	(0.13)	0	(0.00)
NMK11	Café Nero' crossing	0.19	(0.82)	0.09	(0.59)	0.02	(0.13)	0.01	(3.33)
NMK12	KFC' downpipe	0.31	(1.14)	0.14	(0.82)	0.03	(0.19)	0.01	(2.67)
NMK14	White Hart' crossing	0.17	(0.78)	0.08	(0.54)	0.02	(0.13)	0	(0.00)
NMK15	"Newmarket – Park area"	0.16	(0.74)	0.08	(0.55)	0.02	(0.13)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.24	(1.04)	0.11	(0.72)	0.02	(0.13)	0.01	(3.71)

5.63 From Table 5.26 it can be seen that changes in concentration of NO_2 are predicted to be 1.38 μgm^{-3} or less and changes in concentration of PM_{10} are predicted to be 0.66 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM_{10} is predicted to be more than 50 μgm^{-3} will be 0.16 days or less. Changes in concentration of $PM_{2.5}$ are predicted to be 0.16 μgm^{-3} or less.

Magnitude of Change – 2029 with Hybrid development

5.64 Comparing the results in Table 5.26 with the magnitude of change in Table 3.11 it can be seen that all the receptors are predicted to experience a change in annual mean NO_2 concentrations which is "Small" (0.4 – 2 μgm^{-3}), "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.65 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{10} and $PM_{2.5}$ concentrations which is "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.66 There is predicted to be "Imperceptible" (<1 day) or "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

"Significance" of Change – 2029 with Hybrid development

5.67 The "Significance" of the predicted changes in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are presented in **Table 5.6**, **Table 5.7** and **Table 5.8**.

Table 5.27: NO_2 – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		NO_2		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0.59	Small	Negligible
R2	53 Bury Road	0.33	Imperceptible	Negligible
R3	Bell Inn PH	1.38	Small	Negligible
R4	Flint Cottages	0.63	Small	Negligible
R5	Lanwades House	1.29	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.87	Small	Negligible
NMK1	23 Old Station Road	0.24	Imperceptible	Negligible
NMK3	Taxi rank	0.19	Imperceptible	Negligible
NMK5	Market St 'EE'	0.16	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.17	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.17	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.04	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.17	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.17	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.19	Imperceptible	Negligible
NMK12	KFC' downpipe	0.31	Imperceptible	Negligible
NMK14	White Hart' crossing	0.17	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.16	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.24	Imperceptible	Negligible

5.68 With reference to the overall concentration of NO_2 presented in Table 5.24 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.27 being "Small" or "Imperceptible", the "Significance" of change in NO_2 concentrations is considered "Negligible".

Table 5.28: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	"Significance" of change
R1	4 Byerley Cl	0.29	Imperceptible	Negligible
R2	53 Bury Road	0.16	Imperceptible	Negligible
R3	Bell Inn PH	0.66	Small	Negligible
R4	Flint Cottages	0.31	Imperceptible	Negligible
R5	Lanwades House	0.61	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.41	Imperceptible	Negligible
NMK1	23 Old Station Road	0.11	Imperceptible	Negligible
NMK3	Taxi rank	0.09	Imperceptible	Negligible
NMK5	Market St 'EE'	0.07	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.08	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.08	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.08	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.08	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.09	Imperceptible	Negligible
NMK12	KFC' downpipe	0.14	Imperceptible	Negligible
NMK14	White Hart' crossing	0.08	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.08	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.11	Imperceptible	Negligible

5.69 With reference to the overall concentrations of PM_{10} presented in Table 5.24 being well below the objective level of 40 μgm^{-3} and the magnitude of change presented in Table 5.7 being "Small" or "Imperceptible", the "Significance" of change in PM_{10} concentration is considered to be "Negligible" or "No Change".

Table 5.29: $PM_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2029

Receptor Number and Name		$PM_{2.5}$		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.16	Imperceptible	Negligible
R4	Flint Cottages	0.06	Imperceptible	Negligible
R5	Lanwades House	0.15	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.09	Imperceptible	Negligible
NMK1	23 Old Station Road	0.01	Imperceptible	Negligible
NMK3	Taxi rank	0.01	Imperceptible	Negligible
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0.01	Imperceptible	Negligible
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Parkarea	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0.01	Imperceptible	Negligible

5.70 With reference to the overall concentration of $PM_{2.5}$ presented in Table 5.24 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.8 being "Imperceptible" or "No Change" the "Significance" of change in $PM_{2.5}$ concentrations is considered "Negligible" or "No Change".

5.71 Presented in Table 5.30 are the predicted changes in Nitrogen Oxide (NOx) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 5.30: Predicted Annual Average concentrations of NO_X at Ecological Receptor Locations 2029

Ecological Receptor		Predicted Annual Average NO_X Concentration (μgm^{-3})				
		Do Nothing 2029	Do Something 2029	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	23.39	23.50	0.12	0.38	6.08
E2	Chippenham Fen	8.68	8.69	0.01	0.04	5.18
E3	Wicken Fen	9.06	9.06	0.00	0.01	5.51
Annual Mean AQO/Critical Level (CL)		30				

5.72 With reference to Table 5.30, the maximum change in annual exposure to NO_X due to development generated traffic is 0.12 μgm^{-3} at receptor E1 – Breckland SPA. The increase is more than 1% of the critical load and 0.12 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution stated within the guidance of '*A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2020.

5.73 Therefore, no further assessment is required and the impact at E1 Breckland SPA as this is considered to be negligible.

2030 - Hybrid Application

5.74 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, "do nothing" and "do something". The results from the assessment are presented in **Table 5.31** and **Table 5.32**.

Table 5.31: Predicted air quality concentrations at sensitive receptors in 2030 "do nothing"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.84	8.35	14.69	0.12	9.66
R2	53 Bury Road	14.60	11.02	14.48	0.13	9.37
R3	Bell Inn PH	15.51	11.29	19.02	2.31	10.04
R4	Flint Cottages	13.22	9.67	17.91	1.33	10.10
R5	Lanwades House	14.86	10.97	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.90	10.99	18.87	2.16	9.96
NMK1	23 Old Station Road	23.52	15.51	16.19	0.38	10.42
NMK3	Taxi rank	21.07	14.38	15.90	0.28	10.27
NMK5	Market St 'EE'	20.31	14.03	15.79	0.26	10.21
NMK6	Clock tower, crossing	20.61	14.17	15.83	0.26	10.23
NMK7	Rutland Arms' crossing	20.77	14.24	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.86	10.94	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	20.75	14.23	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	20.79	14.25	15.85	0.27	10.24
NMK11	Café Nero' crossing	21.73	14.69	15.96	0.30	10.30
NMK12	KFC' downpipe	25.23	16.30	16.20	0.38	10.42
NMK14	White Hart' crossing	20.59	14.16	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	20.29	14.02	15.79	0.25	10.21
NMK19	Blackbear Lane, and High Street	22.10	14.86	15.90	0.28	10.27
NAQO		-	40	40	35	25

Table 5.32: Predicted air quality concentrations at sensitive receptors in 2030 "do something - hybrid"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.36	8.61	14.76	0.12	9.69
R2	53 Bury Road	14.89	11.16	14.50	0.13	9.38
R3	Bell Inn PH	16.68	11.84	19.18	2.47	10.12
R4	Flint Cottages	13.73	9.92	17.98	1.39	10.14
R5	Lanwades House	15.96	11.50	19.09	2.38	10.08
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	15.58	11.32	18.96	2.25	10.01
NMK1	23 Old Station Road	23.72	15.61	16.21	0.39	10.43
NMK3	Taxi rank	21.24	14.46	15.92	0.29	10.28
NMK5	Market St 'EE'	20.45	14.09	15.81	0.26	10.22
NMK6	Clock tower, crossing	20.75	14.23	15.85	0.27	10.24
NMK7	Rutland Arms' crossing	20.92	14.31	15.86	0.27	10.25
NMK8	'Savers' lamppost	13.89	10.95	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	20.90	14.30	15.86	0.27	10.25
NMK10	Old Station Road and Rous Road	20.93	14.32	15.87	0.28	10.25
NMK11	Café Nero' crossing	21.89	14.76	15.98	0.31	10.31
NMK12	KFC' downpipe	25.50	16.42	16.23	0.39	10.44
NMK14	White Hart' crossing	20.74	14.23	15.84	0.27	10.24
NMK15	"Newmarket – Park area"	20.43	14.08	15.81	0.26	10.22
NMK19	Blackbear Lane, and High Street	22.30	14.95	15.92	0.29	10.28
NAQO		-	40	40	35	25

5.75 Presented in **Table 5.33** are the predicted change in concentrations of NO_2, PM_{10} and $PM_{2.5}$ and the change in the number of days where concentrations of PM_{10} are greater than 50 μgm^{-3}.

Table 5.33: Predicted change in air quality concentrations at sensitive receptors in 2030 "do something - hybrid"

Receptor Number and Name		NO_2		PM_{10}					
		Change in annual mean μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)		Change in days >50 μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)	
R1	4 Byerley Cl	0.51	(5.18)	0.26	(3.11)	0.07	(0.48)	0	(0.00)
R2	53 Bury Road	0.29	(1.99)	0.14	(1.27)	0.02	(0.14)	0	(0.00)
R3	Bell Inn PH	1.17	(7.54)	0.55	(4.87)	0.15	(0.79)	0.16	(6.92)
R4	Flint Cottages	0.51	(3.86)	0.25	(2.59)	0.07	(0.39)	0.05	(3.75)
R5	Lanwades House	1.1	(7.40)	0.53	(4.83)	0.15	(0.79)	0.15	(6.73)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.68	(4.56)	0.33	(3.00)	0.09	(0.48)	0.08	(3.70)
NMK1	23 Old Station Road	0.2	(0.85)	0.1	(0.64)	0.02	(0.12)	0.01	(2.65)
NMK3	Taxi rank	0.16	(0.76)	0.08	(0.56)	0.02	(0.13)	0.01	(3.52)
NMK5	Market St 'EE'	0.14	(0.69)	0.06	(0.43)	0.02	(0.13)	0	(0.00)
NMK6	Clock tower, crossing	0.14	(0.68)	0.06	(0.42)	0.02	(0.13)	0	(0.00)
NMK7	Rutland Arms' crossing	0.15	(0.72)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK8	'Savers' lamppost	0.03	(0.22)	0.01	(0.09)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.15	(0.72)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK10	Old Station Road and Rous Road	0.15	(0.72)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK11	Café Nero' crossing	0.16	(0.74)	0.07	(0.48)	0.02	(0.13)	0.01	(3.31)
NMK12	KFC' downpipe	0.27	(1.07)	0.12	(0.74)	0.03	(0.19)	0.01	(2.62)
NMK14	White Hart' crossing	0.15	(0.73)	0.07	(0.49)	0.02	(0.13)	0	(0.00)
NMK15	Newmarket – Park area	0.14	(0.69)	0.06	(0.43)	0.02	(0.13)	0	(0.00)
NMK19	Blackbear Lane, and High Street	0.2	(0.91)	0.09	(0.61)	0.02	(0.13)	0.01	(3.51)

5.76 From Table 5.33 it can be seen that changes in concentration of NO_2 are predicted to be 1.17 μgm^{-3} or less and changes in concentration of PM_{10} are predicted to be 0.55 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM_{10} is predicted to be more than 50 μgm^{-3} will be 0.15 days or less. Changes in concentration of $PM_{2.5}$ are predicted to be 0.16 μgm^{-3} or less.

Magnitude of Change – 2030 with Hybrid development

5.77 Comparing the results in Table 5.33 with the magnitude of change in Table 3.11 it can be seen that all the receptors are predicted to experience a change in annual mean NO_2 concentrations which is "Small" or "Imperceptible" (<0.4 μgm^{-3}).

5.78 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{10} is "Small" or "Imperceptible" (<0.4 μgm^{-3}).

5.79 $PM_{2.5}$ concentrations are predicted to experience an "Imperceptible" (<0.4 μgm^{-3}) or "No Change" and "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

5.80 There is predicted to be "Imperceptible" (<1 day) or "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

"Significance" of Change – 2030 with Hybrid development

5.81 The "Significance" of the predicted changes in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are presented in **Table 5.34**, **Table 5.35** and **Table 5.36**.

Table 5.34: NO_2 – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		NO_2		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0.51	Small	Negligible
R2	53 Bury Road	0.29	Imperceptible	Negligible
R3	Bell Inn PH	1.17	Small	Negligible
R4	Flint Cottages	0.51	Small	Negligible
R5	Lanwades House	1.1	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.68	Small	Negligible
NMK1	23 Old Station Road	0.2	Imperceptible	Negligible
NMK3	Taxi rank	0.16	Imperceptible	Negligible
NMK5	Market St 'EE'	0.14	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.14	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.15	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.03	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.15	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.15	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.16	Imperceptible	Negligible
NMK12	KFC' downpipe	0.27	Imperceptible	Negligible
NMK14	White Hart' crossing	0.15	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.14	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.2	Imperceptible	Negligible

5.82 With reference to the overall concentration of NO_2 presented in Table 5.31 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.34 being "Small" or "Imperceptible",the "Significance" of change in NO_2 concentrations is considered "Negligible".

Table 5.35: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	"Significance" of change
R1	4 Byerley Cl	0.26	Imperceptible	Negligible
R2	53 Bury Road	0.14	Imperceptible	Negligible
R3	Bell Inn PH	0.55	Small	Negligible
R4	Flint Cottages	0.25	Imperceptible	Negligible
R5	Lanwades House	0.53	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.33	Imperceptible	Negligible
NMK1	23 Old Station Road	0.1	Imperceptible	Negligible
NMK3	Taxi rank	0.08	Imperceptible	Negligible
NMK5	Market St 'EE'	0.06	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.06	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.07	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.01	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.07	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.07	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.07	Imperceptible	Negligible
NMK12	KFC' downpipe	0.12	Imperceptible	Negligible
NMK14	White Hart' crossing	0.07	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.06	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.09	Imperceptible	Negligible

5.83 With reference to the overall concentrations of PM_{10} presented in Table 5.31 being well below the objective level of 40 μgm^{-3} and the magnitude of change presented in Table 5.35 being "Small" or "Imperceptible", the "Significance" of change in PM_{10} concentration is considered to be "Negligible".

Table 5.36: $PM_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2030

Receptor Number and Name		$PM_{2.5}$		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.16	Imperceptible	Negligible
R4	Flint Cottages	0.05	Imperceptible	Negligible
R5	Lanwades House	0.15	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.08	Imperceptible	Negligible
NMK1	23 Old Station Road	0.01	Imperceptible	Negligible
NMK3	Taxi rank	0.01	Imperceptible	Negligible
NMK5	Market St 'EE'	0	No Change	No Change
NMK6	Clock tower, crossing	0	No Change	No Change
NMK7	Rutland Arms' crossing	0	No Change	No Change
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0	No Change	No Change
NMK10	Old Station Road and Rous Road	0	No Change	No Change
NMK11	Café Nero' crossing	0.01	Imperceptible	Negligible
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0	No Change	No Change
NMK15	Newmarket - Parkarea	0	No Change	No Change
NMK19	Blackbear Lane, and High Street	0.01	Imperceptible	Negligible

5.84 With reference to the overall concentration of $PM_{2.5}$ presented in Table 5.31 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.36 being "Imperceptible" or "No Change" the "Significance" of change in $PM_{2.5}$ concentrations is considered "Negligible" or "No Change".

5.85 Presented in **Table 5.37** are the predicted changes in Nitrogen Oxide (NOx) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 5.37: Predicted Annual Average concentrations of NO_X at Ecological Receptor Locations 2030

Ecological Receptor		Predicted Annual Average NO_X Concentration (μgm^{-3})				
		Do Nothing 2030	Do Something 2030	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	21.78	22.06	0.28	0.94	5.77
E2	Chippenham Fen	8.59	8.62	0.03	0.10	4.97
E3	Wicken Fen	9.01	9.02	0.01	0.03	5.31
Annual Mean AQO/Critical Level (CL)		30				

5.86 With reference to Table 5.37, the maximum change in annual exposure to NO_X due to development generated traffic is 0.28 μgm^{-3} at receptor E1 – Breckland SPA. The increase is more than 1% of the critical load and 0.28 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution stated within the guidance of '*A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2020.

5.87 Therefore, no further assessment is required at E1 Breckland SPA as this is considered to be negligible.

2031 - Hybrid Application

5.88 Sensitive receptors adjacent to the Site and where there is predicted to be an impact from the development have been assessed for the two scenarios, "do nothing" and "do something". The results from the assessment are presented in **Table 5.38**, **Table 5.39** and **Table 5.40**.

Table 5.38: Predicted air quality concentrations at sensitive receptors in 2031 "do nothing"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	9.61	8.24	14.69	0.12	9.66
R2	53 Bury Road	14.01	10.73	14.48	0.13	9.37
R3	Bell Inn PH	14.64	10.86	19.02	2.31	10.04
R4	Flint Cottages	12.52	9.32	17.91	1.33	10.10
R5	Lanwades House	14.08	10.59	18.94	2.23	10.00
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.13	10.61	18.87	2.16	9.96
NMK1	23 Old Station Road	22.05	14.83	16.20	0.38	10.42
NMK3	Taxi rank	19.92	13.84	15.90	0.29	10.27
NMK5	Market St 'EE'	19.23	13.51	15.80	0.26	10.21
NMK6	Clock tower, crossing	19.49	13.63	15.83	0.27	10.23
NMK7	Rutland Arms' crossing	19.63	13.70	15.85	0.27	10.24
NMK8	'Savers' lamppost	13.64	10.83	15.04	0.13	9.82
NMK9	Old Station Road, Nancy's Tearoom	19.61	13.69	15.84	0.27	10.24
NMK10	Old Station Road and Rous Road	19.64	13.70	15.85	0.27	10.24
NMK11	Café Nero' crossing	20.46	14.09	15.96	0.30	10.30
NMK12	KFC' downpipe	23.51	15.50	16.20	0.38	10.42
NMK14	White Hart' crossing	19.48	13.63	15.83	0.26	10.23
NMK15	"Newmarket – Park area"	19.21	13.50	15.79	0.26	10.21
NMK19	Blackbear Lane, and High Street	20.83	14.26	15.91	0.29	10.27
NAQO		-	40	40	35	25

Table 5.39: Predicted air quality concentrations at sensitive receptors in 2031 "do something - hybrid"

Receptor Number and Name		NO_X	NO_2	PM_{10}		$PM_{2.5}$
		Annual mean μgm^{-3}	Annual mean μgm^{-3}	Annual mean μgm^{-3}	Days >50 μgm^{-3}	Annual mean μgm^{-3}
R1	4 Byerley Cl	10.05	8.45	14.76	0.12	9.70
R2	53 Bury Road	14.27	10.86	14.50	0.13	9.38
R3	Bell Inn PH	15.64	11.34	19.18	2.47	10.12
R4	Flint Cottages	12.95	9.53	17.98	1.39	10.14
R5	Lanwades House	15.04	11.05	19.09	2.38	10.08
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	14.71	10.89	18.96	2.25	10.01
NMK1	23 Old Station Road	22.22	14.91	16.22	0.39	10.43
NMK3	Taxi rank	20.06	13.90	15.92	0.29	10.28
NMK5	Market St 'EE'	19.40	13.59	15.82	0.26	10.22
NMK6	Clock tower, crossing	19.67	13.72	15.85	0.27	10.24
NMK7	Rutland Arms' crossing	19.82	13.79	15.87	0.28	10.25
NMK8	'Savers' lamppost	13.67	10.85	15.05	0.13	9.83
NMK9	Old Station Road, Nancy's Tearoom	19.80	13.78	15.87	0.27	10.25
NMK10	Old Station Road and Rous Road	19.82	13.79	15.87	0.28	10.25
NMK11	Café Nero' crossing	20.66	14.18	15.98	0.31	10.31
NMK12	KFC' downpipe	23.84	15.65	16.24	0.39	10.44
NMK14	White Hart' crossing	19.66	13.71	15.85	0.27	10.24
NMK15	"Newmarket – Park area"	19.38	13.58	15.81	0.26	10.22
NMK19	Blackbear Lane, and High Street	21.01	14.35	15.93	0.29	10.28
NAQO		-	40	40	35	25

5.89 Presented in **Table 5.40** are the predicted change in concentrations of NO_2, PM_{10} and $PM_{2.5}$ and the change in the number of days where concentrations of PM_{10} are greater than 50 μgm^{-3}.

Table 5.40: Predicted change in air quality concentrations at sensitive receptors in 2031 "do something - hybrid"

Receptor Number and Name		NO_2		PM_{10}				$PM_{2.5}$	
		Change in annual mean μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)		Change in days >50 μgm^{-3} (%)		Change in annual mean μgm^{-3} (%)	
R1	4 Byerley Cl	0.44	(4.58)	0.21	(2.55)	0.07	(0.48)	0	(0.00)
R2	53 Bury Road	0.26	(1.86)	0.13	(1.21)	0.02	(0.14)	0	(0.00)
R3	Bell Inn PH	1.00	(6.83)	0.48	(4.42)	0.16	(0.84)	0.16	(6.92)
R4	Flint Cottages	0.43	(3.44)	0.21	(2.25)	0.07	(0.39)	0.05	(3.75)
R5	Lanwades House	0.96	(6.82)	0.46	(4.34)	0.15	(0.79)	0.15	(6.72)
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.58	(4.11)	0.28	(2.64)	0.09	(0.48)	0.08	(3.70)
NMK1	23 Old Station Road	0.17	(0.77)	0.08	(0.54)	0.02	(0.12)	0.01	(2.63)
NMK3	Taxi rank	0.14	(0.70)	0.06	(0.43)	0.02	(0.13)	0.01	(3.50)
NMK5	Market St 'EE'	0.17	(0.88)	0.08	(0.59)	0.02	(0.13)	0.01	(3.91)
NMK6	Clock tower, crossing	0.18	(0.92)	0.09	(0.66)	0.02	(0.13)	0.01	(3.77)
NMK7	Rutland Arms' crossing	0.19	(0.97)	0.09	(0.66)	0.02	(0.13)	0.01	(3.71)
NMK8	'Savers' lamppost	0.03	(0.22)	0.02	(0.18)	0	(0.00)	0	(0.00)
NMK9	Old Station Road, Nancy's Tearoom	0.19	(0.97)	0.09	(0.66)	0.02	(0.13)	0.01	(3.72)
NMK10	Old Station Road and Rous Road	0.18	(0.92)	0.09	(0.66)	0.02	(0.13)	0.01	(3.69)
NMK11	Café Nero' crossing	0.21	(1.03)	0.09	(0.64)	0.02	(0.13)	0.01	(3.31)
NMK12	KFC' downpipe	0.33	(1.40)	0.15	(0.97)	0.03	(0.19)	0.01	(2.62)
NMK14	White Hart' crossing	0.18	(0.92)	0.08	(0.59)	0.02	(0.13)	0.01	(3.78)
NMK15	Newmarket - Parkarea	0.17	(0.89)	0.08	(0.59)	0.02	(0.13)	0.01	(3.92)
NMK19	Blackbear Lane, and High Street	0.18	(0.86)	0.09	(0.63)	0.02	(0.13)	0.01	(3.49)

5.90 From Table 5.40 it can be seen that changes in concentration of NO_2 are predicted to be 1.00 μgm^{-3} or less and changes in concentration of PM_{10} are predicted to be 0.48 μgm^{-3} or less. It can also be seen that the change in the number of days where the concentration of PM_{10} is predicted to be more than 50 μgm^{-3} will be 0.16 days or less. Changes in concentration of $PM_{2.5}$ are predicted to be 0.16 μgm^{-3} or less.

Magnitude of Change – 2031 with Hybrid development

5.91 Comparing the results in Table 5.40 with the magnitude of change in Table 3.11 it can be seen that all the receptors are predicted to experience a change in annual mean NO_2 concentrations which is "Small" (0.4 – 2 μgm^{-3}), "Imperceptible" (<0.4 μgm^{-3}) or "No Change".

5.92 It can also be seen that the receptors are predicted to experience an increase in annual mean PM_{10} is "Small" or "Imperceptible" (<0.4 μgm^{-3}).

5.93 $PM_{2.5}$ concentrations are predicted to experience an "Imperceptible" (<0.4 μgm^{-3}) or "No Change" and "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

5.94 There is predicted to be "Imperceptible" (<1 day) or "No Change" in the number of days where PM_{10} levels are greater than 50 μgm^{-3}.

"Significance" of Change – 2031 with Hybrid development

5.95 The "Significance" of the predicted changes in NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations are presented in **Table 5.6**, **Table 5.7** and **Table 5.8**.

Table 5.41: NO_2 – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		NO_2		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0.44	Small	Negligible
R2	53 Bury Road	0.26	Imperceptible	Negligible
R3	Bell Inn PH	1	Imperceptible	Negligible
R4	Flint Cottages	0.43	Small	Negligible
R5	Lanwades House	0.96	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.58	Small	Negligible
NMK1	23 Old Station Road	0.17	Imperceptible	Negligible
NMK3	Taxi rank	0.14	Imperceptible	Negligible
NMK5	Market St 'EE'	0.17	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.18	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.19	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.03	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.19	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.18	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.21	Imperceptible	Negligible
NMK12	KFC' downpipe	0.33	Imperceptible	Negligible
NMK14	White Hart' crossing	0.18	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.17	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.18	Imperceptible	Negligible

5.96 With reference to the overall concentration of NO_2 presented in Table 5.38 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.41 being "Small" or "Imperceptible", the "Significance" of change in NO_2 concentrations is considered "Negligible".

Table 5.42: PM_{10} – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		PM_{10}		
		Change in annual mean (μgm^{-3})	Magnitude of Change	"Significance" of change
R1	4 Byerley Cl	0.21	Imperceptible	Negligible
R2	53 Bury Road	0.13	Imperceptible	Negligible
R3	Bell Inn PH	0.48	Small	Negligible
R4	Flint Cottages	0.21	Imperceptible	Negligible
R5	Lanwades House	0.46	Small	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.28	Imperceptible	Negligible
NMK1	23 Old Station Road	0.08	Imperceptible	Negligible
NMK3	Taxi rank	0.06	Imperceptible	Negligible
NMK5	Market St 'EE'	0.08	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.09	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.09	Imperceptible	Negligible
NMK8	'Savers' lamppost	0.02	Imperceptible	Negligible
NMK9	Old Station Road, Nancy's Tearoom	0.09	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.09	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.09	Imperceptible	Negligible
NMK12	KFC' downpipe	0.15	Imperceptible	Negligible
NMK14	White Hart' crossing	0.08	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.08	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.09	Imperceptible	Negligible

5.97 With reference to the overall concentrations of PM_{10} presented in Table 5.38 being well below the objective level of 40 μgm^{-3} and the magnitude of change presented in Table 5.42 being "Small" or "Imperceptible", the "Significance" of change in PM_{10} concentration is considered to be "Negligible".

Table 5.43: $PM_{2.5}$ – Significance of change in annual mean concentrations following the completion of the proposed development in 2031

Receptor Number and Name		$PM_{2.5}$		
		Change in annual mean (μgm^{-3})	Magnitude of change	"Significance" of change
R1	4 Byerley Cl	0	No Change	No Change
R2	53 Bury Road	0	No Change	No Change
R3	Bell Inn PH	0.16	Imperceptible	Negligible
R4	Flint Cottages	0.05	Imperceptible	Negligible
R5	Lanwades House	0.15	Imperceptible	Negligible
KNT1	Kentford, bus stop, Bury Road, 1 Orchard Place	0.08	Imperceptible	Negligible
NMK1	23 Old Station Road	0.01	Imperceptible	Negligible
NMK3	Taxi rank	0.01	Imperceptible	Negligible
NMK5	Market St 'EE'	0.01	Imperceptible	Negligible
NMK6	Clock tower, crossing	0.01	Imperceptible	Negligible
NMK7	Rutland Arms' crossing	0.01	Imperceptible	Negligible
NMK8	'Savers' lamppost	0	No Change	No Change
NMK9	Old Station Road, Nancy's Tearoom	0.01	Imperceptible	Negligible
NMK10	Old Station Road and Rous Road	0.01	Imperceptible	Negligible
NMK11	Café Nero' crossing	0.01	Imperceptible	Negligible
NMK12	KFC' downpipe	0.01	Imperceptible	Negligible
NMK14	White Hart' crossing	0.01	Imperceptible	Negligible
NMK15	Newmarket - Parkarea	0.01	Imperceptible	Negligible
NMK19	Blackbear Lane, and High Street	0.01	Imperceptible	Negligible

5.98 With reference to the overall concentration of $PM_{2.5}$ presented in Table 5.38 being well below the NAQO level of 40 μgm^{-3} and the magnitude of change presented in Table 5.43 being "Imperceptible" or "No Change" the "Significance" of change in $PM_{2.5}$ concentrations is considered "Negligible" or "No Change".

5.99 Presented in Table 5.44 are the predicted changes in Nitrogen Oxide (NOx) at the location of the ecological receptors which are within 200m of roads within the assessment area.

Table 5.44: Predicted Annual Average concentrations of NO_X at Ecological Receptor Locations 2031

Ecological Receptor		Predicted Annual Average NO_X Concentration (μgm^{-3})				
		Do Nothing 2031	Do Something 2031	Process Contribution (PC)	PC as % of AQO	Background
E1	Breckland SPA	20.42	20.66	0.24	0.81	5.56
E2	Chippenham Fen	8.52	8.54	0.03	0.31	4.81
E3	Wicken Fen	8.97	8.98	0.01	0.02	5.16
Annual Mean AQO/Critical Level (CL)		30				

5.100 With reference to Table 5.44, the maximum change in annual exposure to NO_X due to development generated traffic is 0.24 μgm^{-3} at receptor E1 – Breckland SPA. The increase is more than 1% of the critical load and 0.24 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution stated within the guidance of '*A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2020.

5.101 Therefore, no further assessment is required at E1 Breckland SPA as this is considered to be negligible.

6.0 MITIGATION

Construction Phase

6.1 Monitoring during the construction phase should be considered in the management of operations to ensure that the nuisance thresholds are not exceeded at nearby sensitive locations. However, it is important to note that such limits are subjective (as “nuisance” caused by dust does not currently have a statutory limit applied to it).

6.2 Monitoring of dust could be achieved using a variety of sampling techniques, for example deposit (“Frisbee”) gauges, glass slides or high-volume air samplers located around the site perimeter and at the sensitive locations up to 400 metres from the site boundary.

6.3 In addition, there are a number of Best Practice mitigation measures that can be used by contractors to ensure that the impacts experienced in close proximity to the construction site are minimal. Sample mitigation:

6.4 Specific to demolition (for information only):

- Ensure effective water suppression is used during demolition operations;
- Avoid explosive blasting, using appropriate manual or mechanical alternatives;
- Bag and remove any biological debris or damp down such material before demolition; and

6.5 Effective site planning:

- Erect solid barriers to site boundary;
- Dust generating activities to be located away from sensitive receptors;
- All site personnel will be fully trained;
- There will be a trained and responsible manager on site during working times to maintain a logbook and carry out site inspections;
- There will be no run off of mud or water from the site;
- Relevant legislation and guidance will be adhered to; and

6.6 Construction Traffic

- All vehicles to switch off engines (no idling);
- On road vehicles will comply to set emission standards;

- Effective vehicle cleaning and specific wheel-washing on leaving site;
- All loads entering site must be covered;
- All non-road mobile machinery (NRMM) should use ultra-low sulphur diesel where available; and

6.7 Site Activities

- Minimise dust generating activities where possible;
- Use water as a dust suppressant where applicable;
- Stockpiles will be covered, enclosed, seeded or kept them sheeted; and
- If applicable, any concrete crushers/batchers will have the required permits.

6.8 It is recommended that liaison with West Suffolk Council Environmental Health Department be maintained throughout the construction process. In addition, the main contractor should nominate a representative (possibly the site manager) to act as a point of contact with the Council, the construction team and the local community to ensure that any air quality related issues that occur during the construction period can be dealt with efficiently, effectively and promptly.

6.9 All other site sub-contractors should also nominate or appoint a suitable team member responsible for liaison with the lead contractor's representative and to ensure that sub-contractor construction activities are managed effectively.

6.10 Details of the proposed methodology for achieving this and procedures to follow should be set out in a Construction Environmental Management Plan (CEMP). This would be held on-site and would include relevant contact names, details, lines of communication and mitigation action plans. The document should be available to all site personnel who should be made aware of its existence and provide an undertaking that they will adhere to the guidance provided therein.

6.11 The mitigation of PM_{10} releases due to material disturbance will be achieved in the same manner as the control of dust releases. By achieving effective control of sources of dust release, PM_{10} releases can be minimised.

6.12 The most effective control of particulate releases from site plant will be achieved by ensuring that it is maintained in good working order and is of the appropriate capacity and specification for the job being carried out. It should also be located

away from the site perimeter, thereby maximizing the distance between source and receptor.

6.13 There may be occasions where breakdown of site plant could cause short-term releases of excess particulate matter (smoke) and odour. Short-term releases may also occur during start up (of diesel engines, etc.). Regular visual checks and routine maintenance should be applied in accordance with the plant specification, to ensure that these releases are minimised. Faulty site plant should be decommissioned until repairs have been carried out and have been tested and found to be operating satisfactorily.

6.14 Detailed mitigation measures to control construction traffic should be discussed with officers from West Suffolk Council, in order to establish the most suitable access routes for the site traffic and service vehicles. The most effective mitigation will be achieved by ensuring that construction traffic vehicles are kept clean and sheeted when on public highways (through the use of wheel washers) and avoid using sensitive roads. Timing of large-scale vehicle movements to avoid peak hours on the local road network would also be beneficial. Clear signposting to the site access for construction traffic should also be provided and direct traffic along routes agreed with the Council.

6.15 Early morning delivery vehicles, which may arrive prior to the site opening, should be prevented from waiting on the approach roads to the site. If site deliveries arrive prior to the site opening, they should wait at a suitable location, and if possible, turn the engine off.

6.16 With the implementation of the appropriate mitigation measures detailed above, but not restricted to the information detailed above, the residual effects will normally be “Not Significant”.

Mitigation: Operational Phase

6.17 Taking into account the predicted “Negligible” increases in NO_2 and “No Change” or “Negligible” increases in PM_{10} and $PM_{2.5}$ concentrations at sensitive receptors due to the development generated traffic following the completion of the development, and the fact that concentrations of NO_2 and PM_{10} are predicted to be below the NAQO level of 40 μgm^{-3}, no additional mitigation is proposed.

6.18 Within the development site, concentrations of NO_2 and PM_{10} are predicted to be well below the NAQO level of 40 μgm^{-3}. Therefore, there are no proposals to mitigate air quality within the site.

7.0 SUMMARY AND CONCLUSIONS

7.1

7.2 Stuart Michael Associates Limited (SMA), Consulting Engineers, has been engaged by Lochailort Investments Ltd to undertake an air quality assessment of a proposed residential development at Lanwades, Kentford.

7.3 In line with the proposed planning strategy, the air quality assessment has considered a “Detailed” planning application and a “Hybrid” planning application.

7.4 The assessment has been undertaken to demonstrate the impact on concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors as a result of development generated traffic. Annual average concentrations have been compared to the National Air Quality Objective Levels and the magnitude and significance of change has also been assessed against national guidelines.

7.5 Constraints on development have been assessed using background concentrations, existing and future emissions from road traffic at the proposed development site.

7.6 Also assessed are the likely impacts from the construction of the development. The impact assessment has been undertaken using the method detailed in the Institute of Air Quality Management (IAQM) publication “Guidance on the assessment of dust from demolition and construction” (2024).

7.7 Concentrations of NO_2 and PM_{10} at six diffusion tubes (DT) have been assessed using ADMS Roads. The 2019 NO_2 concentrations from the five DT have been used to verify the results from the modelling.

7.8 Base concentrations have been calculated for 2025 and scenarios have been assessed for the future years 2029, 2030 and 2031. The first is a “Do Nothing” scenario with committed development generated traffic but no development generated traffic. The second scenario is “Do Something - Detailed” with committed development generated traffic and the Detailed development generated traffic. The third scenario is “Do Something - Hybrid” with committed development generated traffic and the Hybrid development generated traffic.

7.9 The future scenarios for 2029, 2030 and 2031 have been assessed to gauge the magnitude of change in concentrations NO_2 and PM_{10} and the significance of those changes.

7.10 Development generated road traffic data has been obtained from the Transport Consultants.

7.11 Road traffic flows are predicted to change by between 0% and 282% due to "Detailed" development generated traffic in 2029, 2030 and 2031 (greatest change is predicted to be on Sire Lane).

7.12 Road traffic flows are predicted to change by between 0% and 231% due to "Hybrid" development generated traffic in 2029, 2030 and 2031 (greatest change is predicted to be on Sire Lane).

7.13 The concentrations of NO_2 in 2029, 2030 and 2031 are predicted to be well below the objective level of 40 μgm^{-3}. The magnitude of change in annual mean concentrations at all the receptors due to development generated traffic is predicted to be "Small", "Imperceptible" or "No Change". Therefore the "Significance" of change is considered to be or "Negligible" or "No Change".

7.14 Concentrations of PM_{10} are predicted to be below the objective level of 40 μgm^{-3} at the receptor locations and the magnitude of change due to development generated traffic is "Small", "Imperceptible" or "No Change". Therefore, the significance is considered "Negligible" or "No Change".

7.15 Concentrations of $PM_{2.5}$ in are predicted to be below the objective level of 25 μgm^{-3} at the receptor locations and experience "Imperceptible" or No Change due to development generated traffic. Therefore the "Significance" of change is considered to be "Negligible" or No Change.

7.16 At Ecological receptors, the maximum change in annual exposure to NO_X due to development generated traffic is 0.28 μgm^{-3} at receptor E1 – Breckland SPA. The increase is less than 1% of the critical load and 0.28 μgm^{-3} is less than the 0.3 μgm^{-3} development contribution therefore no further assessment is required as this is considered to be "Negligible".

7.17 During the Construction phase of development, it has been assessed that there is a Low Risk of potential annoyance to people and property caused by dust soiling and a Low Risk of health effects due to an increase exposure in PM_{10}. Therefore, mitigation may be required.

7.18 During the Trackout processes, there is a Low Risk of dust soiling and a Low Risk to human health effects due to an increase exposure in PM_{10}.

7.19 For those cases where the risk category is Negligible (i.e. ecological), no specific mitigation measures is required beyond specific legislation.

7.20 Within the development site concentrations of NO_2 and PM_{10} are predicted to be well below the NAQO levels 40 μgm^{-3}.

7.21 Based on the results of the AQA, it has been concluded that, air quality concentrations are acceptable for future residents of the Proposed Development. Moreover, the impact of development on local sensitive receptors is predicted to be negligible during both construction and operational phases. Therefore, in terms of the planning application, the proposed Lanwades development is acceptable from an air quality perspective.

8.0 APPENDICES

Appendix 1 – Illustrative Masterplans – Detailed Application

Illustrative Masterplan – Hybrid Application

Appendix 2 – National Air Quality Objectives (NAQO)

National air quality objectives and European Directive limit and target values for the protection of human health						
Pollutant	**Applies**	**Objective**	**Concentration measured as** [10]	**Date to be achieved by (and maintained thereafter)**	**European Obligations**	**Date to be achieved (by and maintained thereafter)**
Particles (PM_{10})	UK	50 µg/m³ not to be exceeded more than 35 times a year	24 hour mean	31 December 2004	50 µg/m³ not to be exceeded more than 35 times a year	1 January 2005
	UK	40 µg/m³	annual mean	31 December 2004	40 µg/m³	1 January 2005
	Indicative 2010 objectives for PM_{10} (from the 2000 strategy and Addendum) have been replaced by an exposure reduction approach for $PM_{2.5}$ (except in Scotland – see below)					
	Scotland	50 µg/m³ not to be exceeded more than 7 times a year	24 hour mean	31 December 2010	50 µg/m³ not to be exceeded more than 35 times a year	1 January 2005
	Scotland	18 µg/m³	annual mean	31 December 2010	40 µg/m³	1 January 2005
Particles ($PM_{2.5}$) Exposure Reduction	UK (except Scotland)	25 µg/m³	annual mean	2020	Target value - 25 µg/m³	2010
	Scotland	10 µg/m³		31 December 2020	Limit value - 25 µg/m³	1 January 2015
	UK urban areas	Target of 15% reduction in concentrations at urban background		Between 2010 and 2020	Target of 20% reduction in concentrations at urban background.	Between 2010 and 2020

National air quality objectives and European Directive limit and target values for the protection of human health						
Pollutant	**Applies**	**Objective**	**Concentration measured as**[1]	**Date to be achieved by (and maintained thereafter)**	**European Obligations**	**Date to be achieved by (and maintained thereafter)**
Nitrogen dioxide	UK	200 µg/m³ not to be exceeded more than 18 times a year	1 hour mean	31 December 2005	200 µg/m³ not to be exceeded more than 18 times a year	1 January 2010
	UK	40 µg/m³	annual mean	31 December 2005	40 µg/m³	1 January 2010
Ozone	UK	100 µg/m³ not to be exceeded more than 10 times a year	8 hour mean	31 December 2005	Target of 120 µg/m³ not to be exceeded by more than 25 times a year averaged over 3 years	31 December 2010
Sulphur dioxide	UK	266 µg/m³ not to be exceeded more than 35 times a year	15 minute mean	31 December 2005	-	-
	UK	350 µg/m³ not to be exceeded more than 24 times a year	1 hour mean	31 December 2004	350 µg/m³ not to be exceeded more than 24 times a year	1 January 2005
	UK	125 µg/m³ not to be exceeded more than 3 times a year	24 hour mean	31 December 2004	125 µg/m³ not to be exceeded more than 3 times a year	1 January 2005
Polycyclic Aromatic Hydrocarbons	UK	0.25 ng/m³ B[a]P	as annual average	31 December 2012	1.0 ng/m³	31 December 2012

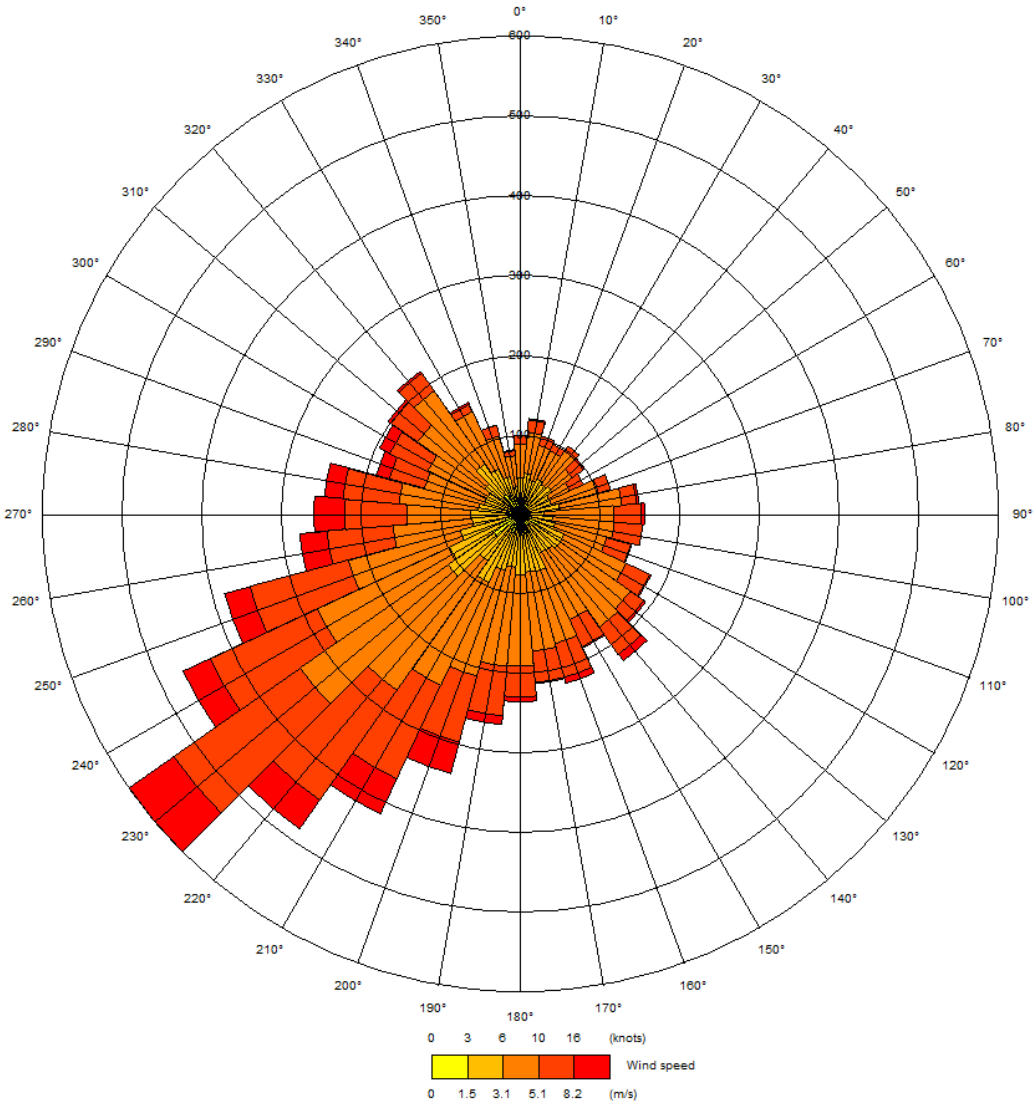
National air quality objectives and European Directive limit and target values for the protection of human health						
Pollutant	**Applies**	**Objective**	**Concentration measured as[1]**	**Date to be achieved by (and maintained thereafter)**	**European Obligations**	**Date to be achieved by (and maintained thereafter)**
Benzene	UK	16.25 µg/m³	running annual mean	31 December 2003	-	-
	England and Wales	5 µg/m³	annual average	31 December 2010	5 µg/m³	1 January 2010
	Scotland, Northern Ireland	3.25 µg/m³	running annual mean	31 December 2010	-	-
1,3-butadiene	UK	2.25 µg/m³	running annual mean	31 December 2003	-	-
Carbon monoxide	UK	10 mg/m³	maximum daily running 8 hour mean/in Scotland as running 8 hour mean	31 December 2003	10 mg/m³	1 January 2005
Lead	UK	0.5 µg/m³	annual mean	31 December 2004	0.5 µg/m³	1 January 2005
		0.25 µg/m³	annual mean	31 December 2008	-	-

National air quality objectives and European Directive limit and target values for the protection of vegetation and ecosystems						
Pollutant	**Applies**	**Objective**	**Concentration measured as[1]**	**Date to be achieved by (and maintained thereafter)**	**European Obligations**	**Date to be achieved by (and maintained thereafter)**
Nitrogen oxides	UK	30 µg/m³	annual mean	31 December 2000	30 µg/m³	19 July 2001
Sulphur dioxide	UK	20 µg/m³	annual mean	31 December 2000	20 µg/m³	19 July 2001
	UK	20 µg/m³	winter average	31 December 2000	20 µg/m³	19 July 2001
Ozone: protection of vegetation and ecosystems	UK	Target value of 18,000 µg/m³ based on AOT40 to be calculated from 1 hour values from May to July, and to be achieved, so far as possible, by 2010	Average over 5 years	1 January 2010	Target value of 18,000 µg/m³ based on AOT40 to be calculated from 1 hour values from May to July, and to be achieved, so far as possible, by 2010	1 January 2010

Appendix 3 – AADT Traffic flow data (no development generated traffic) 2025

Link Ref.	Description		LGV + Cars	HGV + Buses
1	A1304	Bury Road	12126	289
2	A1304	E of Newmarket	7867	133
3	A142	Fordham Road (N)	9011	232
4	A142	Fordham Road (S)	9903	254
5	0	Old Station Road	11526	244
6	A1304	High Street (E)	11278	376
7	A1304	High Street (W)	9279	294
8	B1061	Dullington Road	4461	187
9	The Street	Gazeley	1388	67
10	A14	E of Newmarket	57809	9983
11	A142	N of Newmarket Bypass (A14)	14827	2064
12	A14	W of Newmarket	68725	10691
13	A14	N of Site	30012	5262
14		Sire Lane	326	0
15	B1506	(West of Sire Lane)	6813	206
16	B1506	(East of Sire Lane)	6820	206
17		Station Road	5145	0
18	B1506	(West of Moulton Rd)	10230	206
19		Moulton Road	3430	53
20	Bury Road B1506	Pheonix Bike Park	7518	219
21		Norwich Road	1489	93
22	B1506	(East Norwich Rd)	6813	186
23		School Road	1037	20
24	B1506 Well Bottom	(West Norwich Rd)	6189	113
25	A1304	(NE Well Bottom)	7867	133
26	Well Bottom B1506	(NE A1304)	6508	106
27	A1304	(SW Well Bottom)	14266	213
28	B1506	(W Sir Graham Kirkham Av)	6893	346
29	A14	Near Kennett Train Station	30012	5262
30	A14	Near J38 (Waterhall Interchange)	46752	7979
31	Bury Road B1506	Near Bedford Lodge Hotel	12222	232
32	A14	Near Phoenix Bike Park	30012	5262
33	Herringswell Road	Herringswell Road	3539	157
34	A14	East of Kentford	42631	7015
35	B1103	Fred Archer Way	11855	258
36	A1123	Wicken Road	5246	506
37	A11	Red Lodge Bypass	40795	3328

Appendix 4 Mildenhall Wind Rose – 2019



Appendix 5 Detailed Application AADT Traffic Flows – 2029, 2030 and 2031

Link Ref.	Description		2029 AADT			
			"do nothing"	"do something - Detailed"	Change	% Change
1	A1304	Bury Road	12958	13326	368	2.8
2	A1304	E of Newmarket	8327	8327	0	0.0
3	A142	Fordham Road (N)	9580	9703	123	1.3
4	A142	Fordham Road (S)	10528	10651	123	1.2
5		Old Station Road	12175	12297	123	1.0
6	A1304	High Street (E)	12080	12202	123	1.0
7	A1304	High Street (W)	9922	10045	123	1.2
8	B1061	Dullington Road	4808	4839	31	0.6
9	The Street	Gazeley	1505	1505	0	0.0
10	A14	E of Newmarket	70266	70687	421	0.6
11	A142	N of Newmarket Bypass (A14)	17507	17613	105	0.6
12	A14	W of Newmarket	82314	82629	316	0.4
13	A14	N of Site	36714	36714	0	0.0
14		Sire Lane	338	1291	953	281.9
15	B1506	(West of Sire Lane)	7418	8371	953	12.8
16	B1506	(East of Sire Lane)	7425	8345	920	12.4
17		Station Road	6202	6892	690	11.1
18	B1506	(West of Moulton Rd)	10965	12129	1164	10.6
19		Moulton Road	3866	3866	0	0.0
20	Bury Road B1506	Pheonix Bike Park	8565	9038	473	5.5
21		Norwich Road	1642	2484	841	51.2
22	B1506	(East Norwich Rd)	7398	8607	1210	16.4
23		School Road	1097	1097	0	0.0
24	B1506 Well Bottom	(West Norwich Rd)	6673	7041	368	5.5
25	A1304	(NE Well Bottom)	8327	8327	0	0.0
26	Well Bottom B1506	(NE A1304)	6997	7300	302	4.3
27	A1304	(SW Well Bottom)	15201	15569	368	2.4
28	B1506	(W Sir Graham Kirkham Av)	7646	8875	1229	16.1
29	A14	Near Kennett Train Station	36714	36714	0	0.0
30	A14	Near J38 (Waterhall Interchange)	56964	56964	0	0.0
31	Bury Road B1506	Near Bedford Lodge Hotel	12958	13326	368	2.8
32	A14	Near Phoenix Bike Park	36714	36714	0	0.0

Link Ref.	Description		2029 AADT			
			"do nothing"	"do something - Detailed"	Change	% Change
33	Herringswell Road	Herringswell Road	3823	3823	0	0.0
34	A14	East of Kentford	51458	51931	473	0.9
35	B1103	Fred Archer Way	12530	12530	0	0.0
36	A1123	Wicken Road	5962	6014	53	0.9
37	A11	Red Lodge Bypass	45734	46575	841	1.8
38	Site Access 1	Site Access 1	0	0	0	0.0
39	Site Access 2	Site Access 2	0	0	0	0.0
40	Sir Graham Kirkham Avenue	Sir Graham Kirkham Avenue	0	684	684	100.0
41	Link Road	Link Road	0	0	0	0.0

Link Ref.	Description		2030 AADT			
			"do nothing"	"do something - Detailed"	Change	% Change
1	A1304	Bury Road	13079	13451	372	2.8
2	A1304	E of Newmarket	8405	8405	0	0.0
3	A142	Fordham Road (N)	9669	9792	123	1.3
4	A142	Fordham Road (S)	10626	10749	123	1.2
5		Old Station Road	13246	13369	123	0.9
6	A1304	High Street (E)	12192	12315	123	1.0
7	A1304	High Street (W)	10015	10137	123	1.2
8	B1061	Dullington Road	5231	5262	31	0.6
9	The Street	Gazeley	1638	1638	0	0.0
10	A14	E of Newmarket	70920	71341	421	0.6
11	A142	N of Newmarket Bypass (A14)	17670	17775	105	0.6
12	A14	W of Newmarket	83079	83395	316	0.4
13	A14	N of Site	37059	37059	0	0.0
14		Sire Lane	341	1303	962	281.9
15	B1506	(West of Sire Lane)	7488	8450	962	12.8
16	B1506	(East of Sire Lane)	7495	8424	929	12.4
17		Station Road	6260	6957	697	11.1
18	B1506	(West of Moulton Rd)	11068	12243	1174	10.6
19		Moulton Road	3902	3902	0	0.0
20	Bury Road B1506	Pheonix Bike Park	8645	9123	478	5.5
21		Norwich Road	1658	2507	849	51.2
22	B1506	(East Norwich Rd)	7467	8688	1221	16.4
23		School Road	1107	1107	0	0.0
24	B1506 Well Bottom	(West Norwich Rd)	6736	7107	372	5.5
25	A1304	(NE Well Bottom)	8405	8405	0	0.0
26	Well Bottom B1506	(NE A1304)	7063	7368	305	4.3
27	A1304	(SW Well Bottom)	15344	15715	372	2.4
28	B1506	(W Sir Graham Kirkham Av)	7718	8958	1240	16.1
29	A14	Near Kennett Train Station	37059	37059	0	0.0
30	A14	Near J38 (Waterhall Interchange)	57499	57499	0	0.0
31	Bury Road B1506	Near Bedford Lodge Hotel	13079	13451	372	2.8
32	A14	Near Phoenix Bike Park	37059	37059	0	0.0
33	Herringswell Road	Herringswell Road	4160	4160	0	0.0
34	A14	East of Kentford	51936	52410	473	0.9

Link Ref.	Description		2030 AADT			
			"do nothing"	"do something - Detailed"	Change	% Change
35	B1103	Fred Archer Way	13633	13633	0	0.0
36	A1123	Wicken Road	6017	6070	53	0.9
37	A11	Red Lodge Bypass	46159	47001	841	1.8
38	Site Access 1	Site Access 1	0	0	0	0.0
39	Site Access 2	Site Access 2	0	0	0	0.0
40	Sir Graham Kirkham Avenue	Sir Graham Kirkham Avenue	0	690	690	100.0
41	Link Road	Link Road	0	0	0	0.0

Link Ref.	Description		2031 AADT			
			"do nothing"	"do something - Detailed"	Change	% Change
1	A1304	Bury Road	13170	13544	374	2.8
2	A1304	E of Newmarket	8463	8463	0	0.0
3	A142	Fordham Road (N)	9736	9859	123	1.3
4	A142	Fordham Road (S)	10699	10822	123	1.1
5		Old Station Road	13333	13456	123	0.9
6	A1304	High Street (E)	12276	12399	123	1.0
7	A1304	High Street (W)	10084	10206	123	1.2
8	B1061	Dullington Road	5266	5296	31	0.6
9	The Street	Gazeley	1648	1648	0	0.0
10	A14	E of Newmarket	71409	71830	421	0.6
11	A142	N of Newmarket Bypass (A14)	17792	17897	105	0.6
12	A14	W of Newmarket	83652	83968	316	0.4
13	A14	N of Site	37315	37315	0	0.0
14		Sire Lane	344	1312	969	281.9
15	B1506	(West of Sire Lane)	7540	8509	969	12.8
16	B1506	(East of Sire Lane)	7547	8482	935	12.4
17		Station Road	6304	7005	702	11.1
18	B1506	(West of Moulton Rd)	11145	12327	1183	10.6
19		Moulton Road	3929	3929	0	0.0
20	Bury Road B1506	Pheonix Bike Park	8705	9186	481	5.5
21		Norwich Road	1669	2524	855	51.2
22	B1506	(East Norwich Rd)	7519	8748	1229	16.4
23		School Road	1115	1115	0	0.0
24	B1506 Well Bottom	(West Norwich Rd)	6782	7156	374	5.5
25	A1304	(NE Well Bottom)	8463	8463	0	0.0
26	Well Bottom B1506	(NE A1304)	7112	7419	307	4.3
27	A1304	(SW Well Bottom)	15450	15824	374	2.4
28	B1506	(W Sir Graham Kirkham Av)	7771	9020	1249	16.1
29	A14	Near Kennett Train Station	37315	37315	0	0.0
30	A14	Near J38 (Waterhall Interchange)	57896	57896	0	0.0
31	Bury Road B1506	Near Bedford Lodge Hotel	13170	13544	374	2.8
32	A14	Near Phoenix Bike Park	37315	37315	0	0.0
33	Herringswell Road	Herringswell Road	4187	4187	0	0.0
34	A14	East of Kentford	52295	52768	473	0.9

Link Ref.	Description		2031 AADT			
			"do nothing"	"do something - Detailed"	Change	% Change
35	B1103	Fred Archer Way	13723	13723	0	0.0
36	A1123	Wicken Road	6059	6111	53	0.9
37	A11	Red Lodge Bypass	46478	47319	841	1.8
38	Site Access 1	Site Access 1	0	0	0	0.0
39	Site Access 2	Site Access 2	0	0	0	0.0
40	Sir Graham Kirkham Avenue	Sir Graham Kirkham Avenue	0	695	695	100.0
41	Link Road	Link Road	0	0	0	0.0

Appendix 6 Hybrid Application AADT Traffic Flows – 2029, 2030 and 2031

Link Ref.	Description		2029 AADT			
			"do nothing"	"do something - Hybrid"	Change	% Change
1	A1304	Bury Road	12958	14042	1085	8.4
2	A1304	E of Newmarket	8327	8327	0	0.0
3	A142	Fordham Road (N)	9580	9819	239	2.5
4	A142	Fordham Road (S)	10528	10767	239	2.3
5		Old Station Road	12175	12413	239	2.0
6	A1304	High Street (E)	12080	12318	239	2.0
7	A1304	High Street (W)	9922	10161	239	2.4
8	B1061	Dullington Road	4808	4868	60	1.2
9	The Street	Gazeley	1505	1505	0	0.0
10	A14	E of Newmarket	70266	71466	1200	1.7
11	A142	N of Newmarket Bypass (A14)	17507	17807	300	1.7
12	A14	W of Newmarket	82314	83213	900	1.1
13	A14	N of Site	36714	36714	0	0.0
14		Sire Lane	338	1120	782	231.4
15	B1506	(West of Sire Lane)	7418	11080	3661	49.4
16	B1506	(East of Sire Lane)	7425	10791	3366	45.3
17		Station Road	6202	8207	2005	32.3
18	B1506	(West of Moulton Rd)	10965	14331	3366	30.7
19		Moulton Road	3866	3866	0	0.0
20	Bury Road B1506	Pheonix Bike Park	8565	9925	1361	15.9
21		Norwich Road	1642	4042	2399	146.1
22	B1506	(East Norwich Rd)	7398	10836	3438	46.5
23		School Road	1097	1097	0	0.0
24	B1506 Well Bottom	(West Norwich Rd)	6673	7712	1039	15.6
25	A1304	(NE Well Bottom)	8327	8327	0	0.0
26	Well Bottom B1506	(NE A1304)	6997	8082	1085	15.5
27	A1304	(SW Well Bottom)	15201	16286	1085	7.1
28	B1506	(W Sir Graham Kirkham Av)	7646	11275	3629	47.5
29	A14	Near Kennett Train Station	36714	36714	0	0.0
30	A14	Near J38 (Waterhall Interchange)	56964	56964	0	0.0
31	Bury Road B1506	Near Bedford Lodge Hotel	12958	14042	1085	8.4
32	A14	Near Phoenix Bike Park	36714	36714	0	0.0
33	Herringswell Road	Herringswell Road	3823	3823	0	0.0

Link Ref.	Description		2029 AADT			
			"do nothing"	"do something - Hybrid"	Change	% Change
34	A14	East of Kentford	51458	52819	1361	2.6
35	B1103	Fred Archer Way	12530	12530	0	0.0
36	A1123	Wicken Road	5962	6112	150	2.5
37	A11	Red Lodge Bypass	45734	48133	2399	5.2
38	Site Access 1	Site Access 1	0	1045	1045	100.0
39	Site Access 2	Site Access 2	0	1045	1045	100.0
40	Sir Graham Kirkham Avenue	Sir Graham Kirkham Avenue	0	756	756	100.0
41	Link Road	Link Road	0	1279	1279	100.0

Link Ref.	Description		2030 AADT			
			"do nothing"	"do something - Hybrid"	Change	% Change
1	A1304	Bury Road	13079	14174	1095	8.4
2	A1304	E of Newmarket	8405	8405	0	0.0
3	A142	Fordham Road (N)	9669	9908	239	2.5
4	A142	Fordham Road (S)	10626	10865	239	2.2
5		Old Station Road	13246	13485	239	1.8
6	A1304	High Street (E)	12192	12431	239	2.0
7	A1304	High Street (W)	10015	10253	239	2.4
8	B1061	Dullington Road	5231	5291	60	1.1
9	The Street	Gazeley	1638	1638	0	0.0
10	A14	E of Newmarket	70920	72119	1200	1.7
11	A142	N of Newmarket Bypass (A14)	17670	17970	300	1.7
12	A14	W of Newmarket	83079	83979	900	1.1
13	A14	N of Site	37059	37059	0	0.0
14		Sire Lane	341	1131	790	231.4
15	B1506	(West of Sire Lane)	7488	11184	3696	49.4
16	B1506	(East of Sire Lane)	7495	10892	3397	45.3
17		Station Road	6260	8284	2024	32.3
18	B1506	(West of Moulton Rd)	11068	14465	3397	30.7
19		Moulton Road	3902	3902	0	0.0
20	Bury Road B1506	Pheonix Bike Park	8645	10019	1374	15.9
21		Norwich Road	1658	4080	2422	146.1
22	B1506	(East Norwich Rd)	7467	10937	3470	46.5
23		School Road	1107	1107	0	0.0
24	B1506 Well Bottom	(West Norwich Rd)	6736	7784	1048	15.6
25	A1304	(NE Well Bottom)	8405	8405	0	0.0
26	Well Bottom B1506	(NE A1304)	7063	8158	1095	15.5
27	A1304	(SW Well Bottom)	15344	16439	1095	7.1
28	B1506	(W Sir Graham Kirkham Av)	7718	11381	3663	47.5
29	A14	Near Kennett Train Station	37059	37059	0	0.0
30	A14	Near J38 (Waterhall Interchange)	57499	57499	0	0.0
31	Bury Road B1506	Near Bedford Lodge Hotel	13079	14174	1095	8.4
32	A14	Near Phoenix Bike Park	37059	37059	0	0.0
33	Herringswell Road	Herringswell Road	4160	4160	0	0.0
34	A14	East of Kentford	51936	53297	1361	2.6

Link Ref.	Description		2030 AADT			
			"do nothing"	"do something - Hybrid"	Change	% Change
35	B1103	Fred Archer Way	13633	13633	0	0.0
36	A1123	Wicken Road	6017	6167	150	2.5
37	A11	Red Lodge Bypass	46159	48559	2399	5.2
38	Site Access 1	Site Access 1	0	1055	1055	100.0
39	Site Access 2	Site Access 2	0	1055	1055	100.0
40	Sir Graham Kirkham Avenue	Sir Graham Kirkham Avenue	0	763	763	100.0
41	Link Road	Link Road	0	1291	1291	100.0

Link Ref.	Description		2031 AADT			
			"do nothing"	"do something - Hybrid"	Change	% Change
1	A1304	Bury Road	13170	14272	1102	8.4
2	A1304	E of Newmarket	8463	8463	0	0.0
3	A142	Fordham Road (N)	9736	9975	239	2.5
4	A142	Fordham Road (S)	10699	10938	239	2.2
5		Old Station Road	13333	13572	239	1.8
6	A1304	High Street (E)	12276	12515	239	1.9
7	A1304	High Street (W)	10084	10322	239	2.4
8	B1061	Dullington Road	5266	5325	60	1.1
9	The Street	Gazeley	1648	1648	0	0.0
10	A14	E of Newmarket	71409	72609	1200	1.7
11	A142	N of Newmarket Bypass (A14)	17792	18092	300	1.7
12	A14	W of Newmarket	83652	84552	900	1.1
13	A14	N of Site	37315	37315	0	0.0
14		Sire Lane	344	1139	795	231.4
15	B1506	(West of Sire Lane)	7540	11261	3721	49.4
16	B1506	(East of Sire Lane)	7547	10968	3421	45.3
17		Station Road	6304	8341	2038	32.3
18	B1506	(West of Moulton Rd)	11145	14565	3421	30.7
19		Moulton Road	3929	3929	0	0.0
20	Bury Road B1506	Pheonix Bike Park	8705	10088	1383	15.9
21		Norwich Road	1669	4108	2439	146.1
22	B1506	(East Norwich Rd)	7519	11013	3494	46.5
23		School Road	1115	1115	0	0.0
24	B1506 Well Bottom	(West Norwich Rd)	6782	7838	1056	15.6
25	A1304	(NE Well Bottom)	8463	8463	0	0.0
26	Well Bottom B1506	(NE A1304)	7112	8214	1102	15.5
27	A1304	(SW Well Bottom)	15450	16552	1102	7.1
28	B1506	(W Sir Graham Kirkham Av)	7771	11459	3688	47.5
29	A14	Near Kennett Train Station	37315	37315	0	0.0
30	A14	Near J38 (Waterhall Interchange)	57896	57896	0	0.0
31	Bury Road B1506	Near Bedford Lodge Hotel	13170	14272	1102	8.4
32	A14	Near Phoenix Bike Park	37315	37315	0	0.0
33	Herringswell Road	Herringswell Road	4187	4187	0	0.0
34	A14	East of Kentford	52295	53656	1361	2.6

Link Ref.	Description		2031 AADT			
			"do nothing"	"do something - Hybrid"	Change	% Change
35	B1103	Fred Archer Way	13723	13723	0	0.0
36	A1123	Wicken Road	6059	6209	150	2.5
37	A11	Red Lodge Bypass	46478	48877	2399	5.2
38	Site Access 1	Site Access 1	0	1062	1062	100.0
39	Site Access 2	Site Access 2	0	1062	1062	100.0
40	Sir Graham Kirkham Avenue	Sir Graham Kirkham Avenue	0	768	768	100.0
41	Link Road	Link Road	0	1300	1300	100.0