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M SCOTT PROPERTIES
LAND AT MARRIOTTS PARK, TAVERHAM

PRELIMINARY AIR QUALITY APPRAISAL

MAY 2019

the journey is the reward

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MAY 2019

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Issue Date:	May 2019
Status:	Rev 1

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M Scott Properties

Land at Marriotts Park, Taverham

Preliminary Air Quality Appraisal

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1 Introduction

1.1 Mayer Brown has been appointed by M Scott Properties to provide a preliminary appraisal to demonstrate the suitability of the Land at Marriotts Park, Taverham in relation to air quality for residential development and support the potential allocation of the site.

1.2 The land to which this preliminary appraisal refers to is illustrated in **Figure 1.1** below.

Figure 1.1: Land at Marriotts Park, Taverham

1.3 The following sections are included in this appraisal.

- Section 2 – Legislation and Policy Content
- Section 3 – Significance Criteria
- Section 4 – Baseline Site Conditions
- Section 5 – Evaluation of Potential Effects
- Section 6 – Suggested Mitigation
- Section 7 – Summary & Conclusions

2 Legislation and Policy Content

The Air Quality Strategy[1]

2.1 The Air Quality Strategy (AQS) has been prepared following obligations imposed upon the UK Government to produce standards, objectives and measures for improving ambient air quality, following The Environment Act 1955.

2.2 The AQS sets out a framework for Local Authorities to reduce adverse health effects from ambient air pollution and ensures that international and national commitments are met, using the Local Air Quality Management (LAQM) system.

2.3 The AQS sets standards and objectives for pollutants to protect human health, vegetation and ecosystems. The pollutant objectives are the future dates by which each standard is to be achieved, taking into account economic considerations, practical and technical feasibility.

2.4 The main air quality pollutants of concern with regards to developments, such as this one, are the traffic related pollutants of Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10} and $PM_{2.5}$).

2.5 The relevant air quality objectives, as they currently apply in the United Kingdom are presented in **Table 2.1** below.

Pollutant	Air Quality Objectives		Date to be Achieved by
	Concentration	Measured As	
Nitrogen Dioxide (NO_2)	200 µg m^{-3}	1-hour mean not to be exceeded more than 18 times per year	31/12/2005
	40 µg m^{-3}	Annual mean	31/12/2005
Particles (PM_{10})	50 µg m^{-3}	24-hour mean not to be exceeded more than 35 times per year	31/12/2004
	40 µg m^{-3}	Annual mean	31/12/2004
Particles ($PM_{2.5}$) (UK – Except Scotland)	25 µg/m^3	Annual mean	2020
Particles ($PM_{2.5}$) (UK – Urban Areas)	Target of 15% reduction in concentrations at urban background		Between 2010 and 2020

[1] Department of Environment, Food and Rural Affairs in Partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2011). The Stationery Office (TSO). Norwich.

Table 2.1: Air Quality Objectives in the UK

Local Air Quality Management Technical Guidance (TG16)[2]

2.6 The Local Air Quality Management (LAQM) Technical Guidance (TG16) is aimed at providing local authorities with the guidance and support required to carry out their duties under the Environment act 1995, the Environment (Northern Ireland) Order 2002 and subsequent regulations.

2.7 LAQM details the statutory process by which local authorities monitor, assess and take action to improve local air quality.

2.8 Where areas of non-compliance with the air quality objectives are identified, following a detailed assessment, and there is relevant public exposure, an Air Quality Management Area (AQMA) must be declared and an Air Quality Action Plan (AQAP) prepared identifying all the remedial measures necessary to address the problem.

Air Quality Standards Regulations[3]

2.9 The air quality limit values set out in EU Directive (2008/50/EC, 2008) are transposed in English law by the Air Quality Standards Regulations (2010). This imposes duties on the Secretary of State relating to achieving limit values.

National Planning Policy 2019[4]

2.10 In February 2019, the National Planning Policy Framework (NPPF) was updated and replaces the previous versions. The purpose of this document is to set out the Governments planning policies for England and how these should be applied.

2.11 In respect of air quality, the following sections are relevant:

- Section 9 – Promoting Sustainable Transport
- Section 15 - Conserving and Enhancing the Natural Environment, underground conditions and pollution.

Planning Practice Guidance (2014)[5]

2.12 The Planning Practice Guidance in relation to Air Quality was published online in 2014 and is used to support the NPPF.

2 Department of Environment, Food and Rural Affairs (DEFRA). (2018). Local Air Quality Management Technical Guidance (TG16). DEFRA, London.

3 UK Parliament (2010). The Air Quality Standards Regulations 2010, SI 2010/1001. HMSO, London.

4 Ministry of Housing, Communities and Local Government, February 2019, National Planning Policy Framework, London

5 Ministry of Housing, Communities and Local Government, March 2014, Planning Practice Guidance – Air Quality, Available on: https://www.gov.uk/guidance/air-quality--3

2.13 Guidance is also provided on how detailed an air quality assessment needs to be:

"Assessments should be proportionate to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be locationally specific…"

2.14 Mitigation options on the impact of air quality are stated to be:

"locationally specific, will depend on the proposed development and should be proportionate to the likely impact.."

Local Planning Policy

Joint Core Strategy for Broadland, Norwich and South Norfolk[6]

2.15 The Joint Core Strategy was adopted on 24 March 2011 and later amended by the Broadland Part of the Norwich Policy Area: Local Plan, adopted in January 2014.

2.16 Policy 1: Addressing climate change and protecting environmental assets

"…

Development will therefore:

…minimise the need to travel and give priority to low impact modes of travel"

2.17 The main contributor of air quality is transport emissions therefore, minimising the need to travel improves air quality.

Development Management DPD 2015[7]

2.18 The Development Management Development Plan Document is a Local Plan in accordance with the Town and Country Planning Regulations 2012 (section 6). The document forms part of the Broadland Development Plan.

2.19 Policy EN4- pollution relates to air quality and states:

"*Development proposals will be expected to include an assessment of the extent of potential pollution. Where pollution may be an issue, adequate mitigation measures will be required. Development will only be permitted where there will be no significant adverse impact upon amenity, human health or the natural environment"*

[6] Greater Norwich Development Partnership, March 2011, amendment Jan 2014, Joint Core Strategy for Broadland, Norwich and South Norfolk,

[7] Planning Department, Broadland District Council, 2015, Development Management DPD, Planning Development, Broadland District Council, Norwich,

3 Significance Criteria

Construction Dust Emissions

3.1 Potential dust impacts associated with construction activities have been screened and suitable mitigation measured, in accordance with guidance from the IAQM has been provided in Section 6 below.

Traffic Exhaust Emissions

3.2 A qualitative assessment of traffic impacts will be carried out, in accordance with guidance prepared by EPUK and IAQM in order to help establish indicative criteria, which may trigger the requirement for an air quality assessment.

The Development Will:	Indicative Criteria to proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on roads with relevant receptors.	A change of LDV flows of: • more than 100 vehicles per day (vpd) within or adjacent to an AQMA or within 100m of an internationally or nationally designated habitat; and • more than 500 vpd elsewhere. Coupled with relevant receptors within: • 10m of roads with AADT flows 5,000 to 10,000 vpd; • 20m of roads with AADT flows 10,000 to 30,000 vpd; and • 30m of roads with AADT flows > 30,000 vpd.
2. Cause a significant change in Heavy Duty Vehicles (HDV) flows on local roads with relevant receptors.	A change of HDV flows of: • more than 25 vpd within or adjacent to an AQMA or within 100m of an internationally or nationally designated habitat; and • more than 100 vpd elsewhere. Coupled with relevant receptors within: • 10m of roads with AADT flows 5,000 to 10,000 vpd; • 20m of roads with AADT flows 10,000 to 30,000 vpd; and • 30m of roads with AADT flows > 30,000 vpd.
3. Cause a significant change in road alignment bringing roads closer to relevant receptors.	Where relevant receptors will be within: • 10m of roads with AADT flows 5,000 to 10,000 vpd; • 20m of roads with AADT flows 10,000 to 30,000 vpd; and • 30m of roads with AADT flows > 30,000 vpd.
4. Introduce a new junction near to relevant receptors.	The junction will cause vehicles to slow down and accelerate, e.g. traffic lights. Coupled with relevant receptors within 50m of the junction.
5. Introduce or change a bus station.	Where bus flows will be: • more than 25 vpd within or adjacent to an AQMA; and • more than 100 vpd elsewhere. Coupled with relevant receptors within: • 50m of the buses within the bus station.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes.	Where the combustion unit is: • any centralised plant using biomass fuel; • a CHP unit > 15kWe; • any other combustion plant with thermal input > 400kWth; and • a standby emergency generator associated with a centralised energy centre.
Note – Where distances from the road are presented, they are from the edge of the nearest carriageway to the nearest relevant receptor, taking account of vertical and horizontal dimensions. Where traffic flows are presented they are Annual Average Daily Traffic (AADT) in vehicles per day (vpd). Where HDV flows are	

specified, they include lorries and buses. Where LDV's are specified they include cars and vans (with a gross vehicle weight ≤ 3.5 tonnes).

Table 3.1: EPUK & IAQM Indicative Criteria for Proceeding to an Air Quality Assessment

3.3 If any of the above criteria are met, then the significance of air pollution impacts must be assessed. This may be either a Simple or a Detailed Assessment. In accordance with the EPUK and IAQM guidance, a Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that must be completed with the aid of a dispersion model.

Exposure Criteria

3.4 The Air Quality and Planning Guidance takes into account the now superseded Planning Policy Statement 23: Planning and Pollution Control and is aimed at developers, their consultants and local authorities in order to ensure consistency in the approach to dealing with Air Quality and planning in London.

3.5 Whilst this guidance has been developed for London it is consistently adopted across the UK with a view of reducing exposure to air pollution.

3.6 When determining both the significance of exposure to air pollution and the levels of mitigation required, consideration should be given to the Air Pollution Exposure Criteria (APEC). The APEC criteria is set out in **Table 3.2** below.

	Applicable Range Nitrogen Dioxide Annual Mean	Applicable Range PM_{10}	Recommendation
APEC – A	> 5% below national objective	**Annual Mean:** > 5% below national objective **24 hr:** > 1-day less than national objective	No air quality grounds for refusal; however mitigation of any emissions should be considered.
APEC – B	Between 5% below or above national objective	**Annual Mean:** Between 5% above or below national objective **24 hr:** Between 1-day above or below national objective.	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., Maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered and internal pollutant emissions minimised.

APEC – C	> 5% above national objective	**Annual Mean:** > 5% above national objective **24 hr:** > 1-day more than national objective.	Refusal on air quality grounds should be anticipated, unless the Local Authority has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures.

Table 3.2: Air Pollution Exposure Criteria

3.7 It should be noted that air quality is not well suited to the rigid application of a generic significance matrix to determine the overall significance of a development and individual receptor sensitivity should also be taken into account. Therefore, professional judgement should be employed throughout, and the assessment should take into account site specific considerations.

4 Baseline Site Conditions

Local Air Quality Management

4.1 The proposed site falls within the jurisdiction of Broadland District Council (BDC).

4.2 Having undertaken a preliminary review of the air quality within BDC, it identified that air quality is generally good and as a result no Air Quality Management Areas (AQMA's) have been declared.

4.3 Therefore, the site is not located within a declared AQMA. The closest AQMA which has been declared by Norwich City Council in 2012 as a result of exceedances of the annual mean objective for Nitrogen Dioxide (NO_2). This is illustrated in **Figure 4.1** below.

Figure 4.1: Site Location in Relation to Norwich AQMA

4.4 Additionally, there are no highly sensitive ecological sites/receptors within 500m of the site, which the distance that construction trackout may occur if unmitigated. The closest highly sensitive ecological sites are located between 2 and 4Km northwest from the site and are as follows:

- Swannington Upgate Common SSSI
- Alderford Common (SSSI),
- River Wensum (SSSI); and
- River Wensum (SAC).

4.5 The site location in relation to the closest highly sensitive ecological sites is illustrated in **Figure 4.2** below.

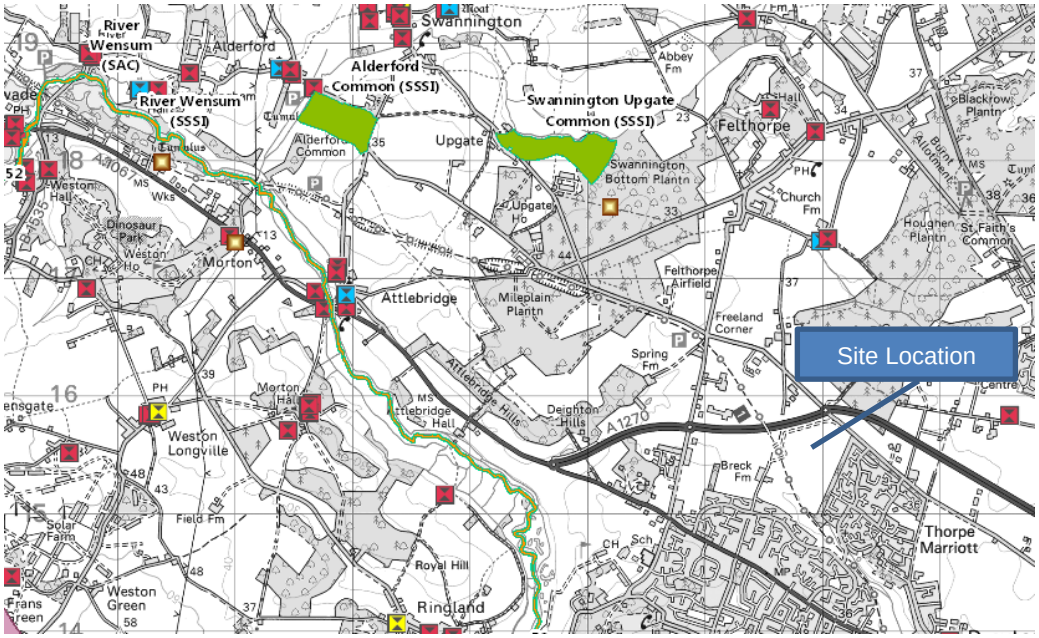


Figure 4.2: Site Location in Relation to SSSI and SAC

Monitoring

4.6 In June 2018, BDC published their latest Air Quality Annual Status Report which contained 2017 monitoring data.

4.7 Under the Air Quality Strategy, there is a duty on all Local Authorities to consider the air quality within their boundaries and prepare an annual update report.

4.8 In 2017, BDC did not undertake automatic monitoring, however the council did undertake non-automatic monitoring of NO_2 at 19 sites.

4.9 The most recent published data for all the non-automatic monitoring locations are shown in **Table 4.1** below.

Site ID	Site Name	Co-ordinates (X;Y)	Site Type	Distance to Kerb of Nearest Road (m)	Annual Mean Concentration NO_2 (µg/m3)
BN1	A47 North Burlingham	636268;310000	Kerbside	3	23.94
BN2	Norwich Rd Acle	639713;310237	Kerbside	2	16.64

BN3	Cox's Hill Beighton	638094;308891	Rural	2	14.41
BN4	Hillside Avenue Thorpe St. Andrew	626911;308738	Suburban	1	13.62
BN5	Dussingdale Drive	627755;309440	Suburban	2	16.73
BN6	Breck Road Sprowston	626313;311010	Suburban	2	13.53
BN7	17 Heath Crescent Hellesdon	621539;312522	Suburban	7	15.49
BN8	Hansell Road Thorpe St. Andrew	627003;309849	Kerbside	1	14.42
BN9	Chartwell Road Old Catton	622938;311399	Roadside	9	30.97
BN10	Yarmouth Road Thorpe St Andrew	625264;308411	Roadside	10	19.76
BN11	21 Reepham road, Hellesdon	621642;311622	Suburban	8	33.91
BN12	10A Boundary Road Hellesdon	621698;311565	Suburban	8	29.9
BN13	213 Milecross Lane Hellesdon	321811;311636	Suburban	10	23.41
BN14	Berrington road Hellesdon	621690;311758	Suburban	1	15.04
BN15	Wroxham Library Norwich Rd Wroxham	630182;318042	Roadside	2	15.58
BN16	The Avenue Norwich Road Wroxham	329887;317575	Roadside	7	18.42
BN17	School Road Drayton	617794;314204	Surburban	2	19.49

BN18	Middletons Lane Hellesdon	620175;311832	Roadside	1	18.07
BN19	189 Yarmouth Road Thorpe St. Andrew	627494;308773	Surburban	9	31.77

Table 4.1 Annual Mean Concentrations for Non-Automatic Monitoring Locations

4.10 **Table 4.1** demonstrates that the most recent published data for all the non-automatic NO_2 monitoring locations (2017) are all substantially below the national health-based annual mean objective.

Modelling

4.11 Preliminary baseline modelling has been undertaken by Mayer Brown Limited, using ADMS-Roads dispersion modelling software, preliminary traffic data provided by Canon Consulting Engineers, estimated traffic speeds based on speed limits on the roads and 2017 Defra background concentrations for the site.

Background

4.12 The Defra background mapping tool has been used to establish the pollutant background concentration (reference year 2017). Due to the position of the site, between three 1km grid squares, an average of the background concentrations for all three squares (X:615500; Y:315500; X:616500; Y:315500; and X:617500; Y:315500) has been calculated and used.

4.13 The average NOx, NO_2, PM_{10} and $PM_{2.5}$ background concentrations for 2017 are shown in **Table 4.2** below.

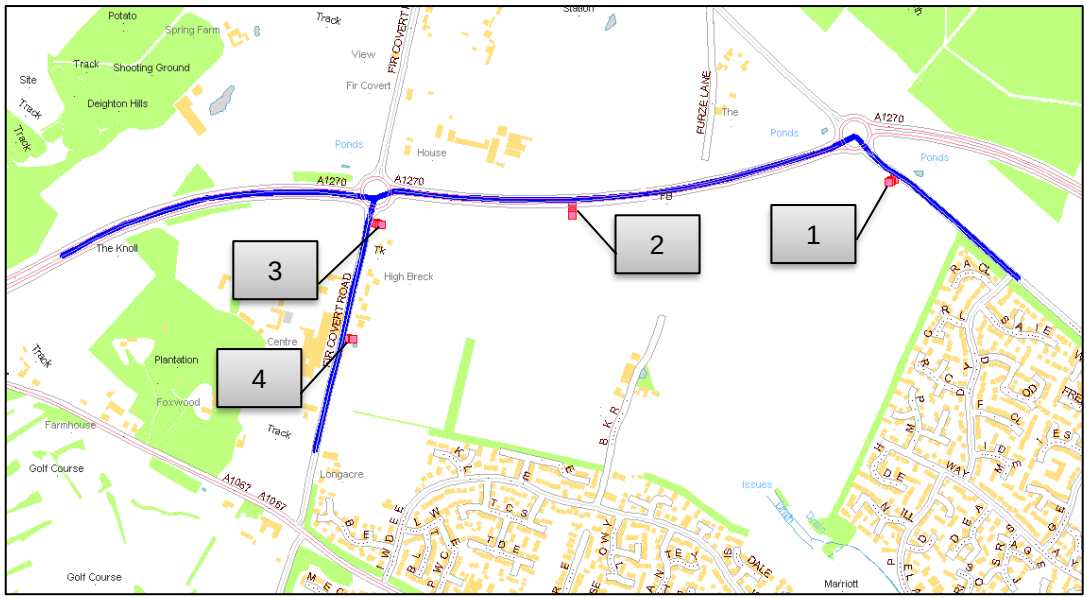
Pollutant	2017 ($\mu g\ m^{-3}$)
NOx	12.94
NO_2	9.60
PM_{10}	14.83
$PM_{2.5}$	9.10

Table 4.2: Defra Annual Mean Background Concentrations

Receptors

4.14 The model has assessed the potential road traffic emissions at 5m, 10m, 15m, 20m and 25m from the kerb of each of the surveyed roads. This is illustrated in **Figure 4.3** below.

Figure 4.3: Receptors



4.15 The preliminary results for NO_2, PM_{10} and $PM_{2.5}$ are shown in **Table 4.3** below.

ID	Baseline		
	NO_2	PM_{10}	$PM_{2.5}$
Location1 - 5m	10.45	14.98	9.19
Location 1 - 10m	10.34	14.96	9.18
Location 1 - 15m	10.19	14.93	9.16
Location 1 - 20m	10.13	14.92	9.15
Location 1 - 25m	10.07	14.91	9.15
Location 2 - 5m	11.27	15.11	9.26
Location 2 -10m	10.96	15.05	9.23
Location 2 - 15m	10.74	15.02	9.21
Location 2 - 20m	10.58	14.99	9.20
Location 2 - 25m	10.46	14.97	9.18
Location 3 - 5m	11.72	15.21	9.32
Location 3 - 10m	11.25	15.13	9.27
Location 3 -15m	11.03	15.09	9.25
Location 3 - 20m	10.84	15.05	9.23
Location 3 - 25m	10.71	15.03	9.21
Location 4 - 5m	12.39	15.34	9.40
Location 4 -10m	11.64	15.20	9.32
Location 4 - 15m	11.08	15.10	9.26
Location 4 - 20m	10.81	15.05	9.23
Location 4 - 25m	10.65	15.02	9.21

Table 4.3: Preliminary Results for NO_2, PM_{10} and $PM_{2.5}$

4.16 The above preliminary modelling results clearly demonstrate that the baseline NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations for 2017 are considerably below their national health-based objectives.

4.17 In accordance with the exposure criteria in **Table 3.2**, the site would fall within **APEC – A** for site suitability, which states the following:

"No air quality grounds for refusal; however mitigation of any emissions should be considered."

5 Evaluation of Potential Effects

Construction

Construction Dust

5.1 During the demolition and construction phases, there is the potential for emissions of dust to cause annoyance, nuisance and health effects to sensitive receptors, located close to the sites.

5.2 The construction activities associated with the proposed development can be separated into four stages:

- Site Clearance;
- Earthworks;
- Construction; and
- Trackout.

5.3 There are a number of human receptors within 350m of the site boundaries therefore suitable mitigation measures, in accordance with guidance from the IAQM, has been provided in Section 6 below.

Construction Traffic and Plant

5.4 It is anticipated that, throughout the construction period, there will be a number of delivery vehicles, stationary plant and vehicles used by the construction workforce. These may potentially present an additional source of air pollutants in the vicinity of the proposed development site. Any likely pollutant impacts will be addressed by implementing Best Available Techniques (BAT) mitigation measures.

5.5 The type and number of construction vehicles and plant have not yet been confirmed at this stage. Any likely pollutant impacts should be addressed through Best Available Techniques (BAT) mitigation measures. Likely BAT are provided in Section 6.

Completed Development

Development Traffic

5.6 Transport Consultants at Cannon Consulting Engineers have provided predicted AADT for a number of local junctions and road links. This is summarised in **Table 5.1** below.

Location / Road Link		2019 Base	2029 Base	200 Units	2029 Base + 200 Units	1400 units	2029 Base + 1400 Units
		AADT	AADT	AADT	AADT	AADT	AADT
A1270 Northern Distributer Road (west of Fir Covert Road)	Eastbound	4118	4936	12	4948	83	5019
	Westbound	4121	4940	12	4952	84	5025
	Two-Way	8239	9876	24	9900	167	10043
Fir Covert Road (south of A1270)	Eastbound	4532	5433	119	5552	830	6263
	Westbound	4319	5177	121	5298	844	6021
	Two-Way	8851	10610	240	10850	1674	12284
A1270 Northern Distributer Road (east of Fir Covert Road)	Eastbound	6022	7218	79	7298	556	7775
	Westbound	6554	7857	81	7938	565	8422
	Two-Way	12576	15075	160	15235	1121	16197
Reepham Road	Eastbound	2839	3403	119	3522	830	4233
	Westbound	2805	3363	121	3484	844	4207
	Two-Way	5645	6766	240	7006	1674	8440

Table 5.1: Predicted AADT Survey Data

5.7 Therefore, in line with the criteria specified in **Table 3.1** above, traffic related impacts do meet some of the criteria specified for requiring that an air quality assessment is undertaken to accompany any future planning application.

5.8 The level of assessment required may be either a Simple or a Detailed Assessment. This is usually discussed and agreed in detail with the relevant Environmental Health Officer at the relevant pre-application stage.

5.9 If a Detailed Assessment is required, this is usually undertaken with the aid of a dispersion model in order to adequately quantify traffic related impacts, upon local human and ecological receptors, as a result of the operation of the proposed development.

6 Suggested Mitigation

Construction

Construction Dust

6.1 The preliminary mitigation measures outlined below could make up part of a Construction Environmental Management Plan (CEMP) that would be implemented to minimise the potential of adverse construction dust impacts throughout all the relevant construction stages.

Site Clearance:

- Bag and remove any biological debris
- Cover, seed or fence stockpiles to prevent wind whipping

Earthworks:

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Avoid carrying out any earthworks during dry weather if reasonably practicable having regard to programme and contracting arrangements for the relevant works or provide and ensure appropriate use of water to control dust; and
- Re-vegetate any earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

Construction:

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out unless required for a particular process;
- Mix large quantities of cement, grouts and other similar materials in enclosed areas remote from site boundaries and potential receptors;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For small supplies of fine powder ensure bags are sealed after use and are stored appropriately to prevent dust.

Trackout:

- Ensure any vehicles arriving and leaving site are securely covered to prevent escape of materials during transport;
- Routinely clean public roads and any access routes using wet sweeping methods; and
- Avoid dry sweeping.

General Mitigation Measures:

- Ensure regular cleaning of hardstanding surfaces using wet sweeping methods;
- Display the head or regional office contact information, and the name and contact details of person(s) accountable for air quality on the site boundary;
- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Log all air quality complaints, identify the cause(s), take appropriate measures to reduce emissions in a timely manner and record all measures taken. Make the complaints log available to the Local Authority when requested;
- Carry out regular on-site and off-site inspections to monitor dust soiling effects, with cleaning to be provided if necessary. Increase the frequency of inspections when activities with a high potential to produce dust are being carried out;
- Erect barriers around the site, any dusty activities and stockpiles (the last of which should be covered);
- Screen areas of the building, where dust producing activities are taking place, with debris screens or sheeting;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Remove materials that have a potential to produce dust as soon as possible, unless they are being re-used. If they are to be re-used, on site covers should be used;
- Ensure all vehicles switch off engines when stationary, so that there are no idling vehicles;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine sprays on such equipment wherever possible; and
- Avoid bonfires and the burning of waste materials;

6.2 It is important that attention is paid to any construction activity that takes place in close proximity to site boundaries, especially at the closest location to sensitive receptors.

6.3 The implementation of the specific mitigation measures given above within a CEMP will usually ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

Construction Traffic and Plant

6.4 As previously stated, there is potential for air pollutant impacts to arise from construction plant and vehicles associated with the scheme. The following BAT should be implemented during the construction phase.

- All vehicles should switch off engines when stationary, no idling vehicles;
- Minimise the movement of construction traffic around the site;
- Maximising efficiency (this may include alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing);
- Vehicles should be well maintained and kept in a high standard of working order;
- Avoid the use of diesel or petrol powered generators by using mains electricity or battery powered equipment where possible; and
- Locate plant away from boundaries close to residential areas.

Completed Development

Operational Traffic

6.5 The preliminary AADT analysis undertaken by Cannon Consulting Engineers has indicated that the proposed traffic generation is likely to meet some of the criteria for requiring further, more detailed assessment.

6.6 Therefore, it is recommended that any future planning application ought to be accompanied by an air quality assessment in order to adequately quantify traffic related impacts, upon local human and ecological receptors as a result of the operation of the proposed development and establish the extent of any mitigation measures required, if any.

6.7 The level of assessment undertaken should be discussed and agreed in detail with the relevant Environmental Health Officer at the relevant pre-application stage.

7 Summary & Conclusions

7.1 Mayer Brown has been appointed by M Scott Properties to provide a preliminary appraisal to demonstrate the suitability of the Land at Marriotts Park, Taverham in relation to air quality for residential development and support the potential allocation of the site.

7.2 The proposed development sites fall within the jurisdiction of Broadland District Council (BDC).

7.3 Having undertaken a preliminary review of the air quality within BDC, it identified that air quality is generally good and as a result no Air Quality Management Areas (AQMA's) have been declared.

7.4 In 2017, BDC did not undertake automatic monitoring, however the council did undertake non-automatic monitoring of NO_2 at 19 sites.

7.5 The most recent published data for all the non-automatic monitoring locations (2017) were found to be all substantially below the national health-based annual mean objectives.

7.6 Baseline modelling has been undertaken in order to establish the suitability of the sites for residential use. The modelling has been completed using ADMS-Roads dispersion modelling software, baseline traffic data provided by Cannon Consulting Engineers and Defra background concentrations.

7.7 The results of the preliminary modelling demonstrate that the baseline NO_2, PM_{10} and $PM_{2.5}$ annual mean concentrations for all the locations and distances assessed, are substantially below national health-based objectives. Which in accordance with the exposure criteria set in **Table 3.2**, places the site within **APEC – A** for site suitability, which states the following:

"No air quality grounds for refusal; however mitigation of any emissions should be considered."

7.8 Dust impacts associated with construction activities have been screened in accordance with guidance from the IAQM.

7.9 It has been identified that the implementation of the specific mitigation measures given above within a CEMP will usually ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

7.10 With regard to traffic related impacts it is concluded that the development will naturally generate a quantum of additional traffic that will require assessment to determine the significance of any impacts and establish the requirement of any mitigation measures.

7.11 However, any mitigation measures likely to be implemented to reduce noise propagation across the sites, i.e. buffer zones, building orientation, are very likely to be more than adequate to ensure suitable air quality to any future residents.