Portsmouth CITY COUNCIL

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NOTICE OF MEETING

CABINET MEMBER FOR ENVIRONMENT & COMMUNITY SAFETY

THURSDAY, 21 SEPTEMBER 2017 AT 6PM

CONFERENCE ROOM A, SECOND FLOOR, THE CIVIC OFFICES

Telephone enquiries to Jane Di Dino 023 9283 4060
Email: jane.didino@portsmouthcc.gov.uk

If any member of the public wishing to attend the meeting has access requirements, please notify the contact named above.

CABINET MEMBER FOR ENVIRONMENT & COMMUNITY SAFETY
Councillor Robert New (Conservative)

Group Spokespersons

Councillor Dave Ashmore, Liberal Democrat
Councillor Stephen Morgan MP, Labour
Councillor Julie Bird, Independent Group

(NB This agenda should be retained for future reference with the minutes of this meeting).

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Deputations by members of the public may be made on any item where a decision is going to be taken. The request should be made in writing to the contact officer (above) by 12 noon of the working day before the meeting, and must include the purpose of the deputation (for example, for or against the recommendations). Email requests are accepted.

A G E N D A

1 Apologies for Absence

2 Declaration of Members' Interests

3 Health and safety intervention plan 2017/2020 (Pages 3 - 30)

Purpose.
This report is an expression of the Council's commitment to its health and safety role and responsibilities to develop a Health and Safety Delivery Team. It sets out the manner in which health & safety inspections, initiatives and activities have been designed to meet the requirements of the National Local Authority Enforcement Code (the Code), issued by the Health and Safety Executive (HSE), under Section 18 of the Health and Safety at Work etc. Act 1974 (HSW Act).

RECOMMENDED that the Cabinet Member for Environment & Community Safety approves the manner in which Regulatory Services delivers its health and safety responsibilities in 2017 / 2020 as set out in Appendix 1.

4 Assessment of air quality - annual statement report 2016 (Pages 31 - 238)

Purpose.

1. To update the Cabinet Member for Environmental and Community Safety on the:

    - Review and assessment of air quality in Portsmouth and the publication of the 2016 air quality Annual Status Report (ASR);
    - Conclusions of the 2017 air quality Source Appointment Study (SAS);
    - National Air Quality Action Plan (NAQAP) to tackle nitrogen dioxide as published by Department of Environment Food and Rural Affairs (DEFRA);
    - Actions undertaken by Portsmouth City Council (PCC) which are likely to positively impact upon pollution levels in Portsmouth as part of our responsibilities to review, assess and improve air quality locally.

2. To comply with our statutory requirements to publish an ASR annually.

3. To reaffirm PCCs commitment to Local Air Quality Management (LAQM) to tackle areas of poor air quality and our ambition to reduce levels of harmful pollutant in Portsmouth to protect human health.

4. To evidence the fact that the work being undertaken to tackle poor air quality is supported by officers and members at the highest levels of council administration and governance.

RECOMMENDED that the Cabinet Member for Environment & Community Safety approves:

a) The conclusions and publication of the 2016 ASR as attached as Appendix 1;

b) The conclusions and publication of the 2017 SAS as attached as Appendix 2.

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Portsmouth CITY COUNCIL

Title of meeting:	Environment and Community Safety Decision Meeting
Date of meeting:	21st September 2017
Subject:	Health & Safety Intervention Plan 2017 / 2020
Report by:	Director of Culture and City Development
Wards affected:	All
Key decision:	No

1 Purpose of report

1.1 This report is an expression of the Council's commitment to its health and safety role and responsibilities to develop a Health and Safety Delivery Team. It sets out the manner in which health & safety inspections, initiatives and activities have been designed to meet the requirements of the National Local Authority Enforcement Code (the Code), issued by the Health and Safety Executive (HSE), under Section 18 of the Health and Safety at Work etc. Act 1974 (HSW Act).

1.2 The HSE require a Health and Safety Intervention Plan to be submitted annually for elected member approval to ensure local transparency and accountability. Following the creation of this year's plan, in order to maximise officer resource, the Portsmouth City Council Regulated Services Business Support Team (the *BST*) does not propose to undertake a further formal review of service delivery until 2020 unless there is a material change either in national or local health and safety delivery principals / protocols or a significant increase in demand. The BST will monitor demand and legislative requirements carefully to ensure compliance with statutory obligations.

1.3 The 2017 / 2020 plan is attached as Appendix 1.

1.4 The plan sets out the overall aim of the service, which is:

"To work with others to protect people's health and safety by ensuring that risks in the changing workplace are managed properly."

1.5 The plan is based upon the following on-going national key priorities:

- Supporting economic growth, especially in small businesses by ensuring a fair, responsible and competitive trading environment
- Helping people to live healthier lives by preventing ill health and harm and promoting public health

1.6 Upon approval, the plan will be effective for a period of 3 years.

2 Recommendation

2.1 That the Cabinet Member for Environment & Community Safety approves the manner in which Regulatory Services delivers its health and safety responsibilities in 2017 / 2020 as set out in Appendix 1.

3 Background

3.1 The enduring principle of health and safety law in Great Britain is that those who create risks are best placed to control them, and they should do so in a proportionate and practicable way.

3.2 The primary function of the BST in respect to the regulation of health and safety is the investigation of failures of controls put in place to manage risk.

3.3 Whilst the responsibility for managing health and safety risks lies with the business that creates the risk, the BST retains an important role in ensuring that businesses are proportionately supported in manging risks to protect their workforce and the general public.

3.4 As a result of the government's austerity programme, the BST has undergone significant resourcing changes in recent years. In 2016 / 2017 all health and safety functions were delivered through a team of generic officers equating to a combined FTE of 0.7. This level of resource in considered to be the minimum acceptable and therefore will be maintained during the life of this IP.

3.5 As with the delivery of any statutory function, there are dangers in services being limited in terms of resource without proper guidance on what an adequate arrangement of delivery might actually look like.

3.6 The BST therefore will continue to assess the manner in which it delivers its health and safety responsibilities and retain this minimum level of resource, as the threat of legal challenge for not meeting its statutory requirements is tangible.

3.7 Any failure to resource its health and safety responsibilities will by definition lead to potential claims being placed at the door of the Authority based upon a failure to act concomitantly with a Statutory Duty (direct civil claim) or acting as a reasonable Authority would do (potential review of a decision and declaration).

4 Introduction - statutory functions and guidance

4.1 Section 18 of the HSW Act places a duty on the HSE and PCC to make adequate arrangements for health and safety enforcement.

4.2 The National Local Authority Enforcement Code has been developed as an outcome of the Red Tape Challenge on health and safety. It is designed to ensure that local authority health and safety regulators take a more consistent and proportionate approach to enforcement.

4.3 In order to assess how local authorities are meeting the requirements of the Code, the HSE monitor local authority data returns. Where there is a lack of information, or where the information prompts questions, the HSE works with local authorities to assist their implementation and compliance with the Code.

4.4 The most recent health and safety strategy "*Helping Great Britain Work Well*" was published in 2016. It sets out six strategic themes for local authority regulators. The BST will have high regard to these themes when considering its involvement with businesses:

- Encouraging and recognising improvements, being increasingly joined up to deliver improved outcomes and minimise unnecessary burdens on businesses
- Continuing to promote the risk-based, goal-setting regulatory regime that has served health and safety in Great Britain so well
- Working with partners in the system to make workplaces safer and healthier, providing a level playing field for responsible employers with regulators and co-regulators, by advising, promoting, and where necessary, enforcing good standards of risk control
- Using proportionate, risk-based regulation to support better outcomes, innovation and the safe use of new technologies
- Developing services and products that contribute to improved management and control of risks, sharing our knowledge, and
- Continuing the dialogue and conversation with stakeholders to make the system better, always looking to provide simple, pragmatic advice and support

5 Key service drivers

5.1 Whilst delivering the themes set out in 4 above the BST will endeavor to:

- provide a risk based intervention strategy that targets resource at higher risk activities or where there is a history of poor compliance
- provide a comprehensive health and safety enforcement and advisory service to business and other stakeholders as requested
- work in partnership with the HSE, other local authorities and interested bodies to promote a positive health and safety culture
- appropriately respond to and investigate accidents, dangerous occurrences and diseases reported to PCC
- investigate complaints in line with the HSE and PCC's procedure on complaints about workplaces, taking appropriate action as necessary

6 Service delivery - intervention plan

6.1 The service will continue to:

- only carry out proactive inspections at premises where higher risk activities are being undertaken and at premises where there is intelligence showing that the risks are not being effectively managed

- only carry out intervention visits to premises where accidents have occurred and where other interventions have highlighted risks in these premises

- record details of interventions in all premises recorded on the City Council's database

- promote the proper management of asbestos within any premises where an issue has been identified. A stepped intervention approach will be taken and where advice has been previously given and the duty holder has failed to act, enforcement action will be taken. This intervention is based on evidence that asbestos is one of the greatest causes of workplace latent morbidity

- continue to check compliance with the Portsmouth byelaws on tattooing, acupuncture, electrolysis and cosmetic piercing of registered premises

- where appropriate visit nail bars to ensure that employees are not put at risk from exposure from chemicals used on site

- continue to administer the Portsmouth Tattooing Hygiene Rating Scheme. This scheme involves all registered tattooing premises in Portsmouth. The scheme is voluntary. Visits are made to all those who wish to participate to assess them and give them a grading. Further details on the scheme can be found at: https://www.portsmouth.gov.uk/ext/the-council/transparency/the-tattooing-hygiene-rating-scheme.aspx

- continue to recognise its responsibilities with PCC Licensing and Events services with respect to the safety issues associated with events. The service will liaise with colleagues and advise where appropriate on any events held on PCC land. The service cannot certify that a document, construction or practice meets legal requirements, unless it is specifically in a position to do so. If a conflict of interest is identified, the service will refer the matter immediately to the HSE

- continue to implement the findings of the Lofstedt review and guidance issued by the HSE to local authorities

- continue to recognise that health and safety is often incorrectly used as somewhat of a convenient excuse to stop what are essentially sensible activities going ahead. The service continues to make it clear that health and safety is about managing real risks properly, not being risk averse and stopping people getting on with their lives. Together with the HSE, the BST aims at dispelling the myths behind tabloid headlines concerning actions taken by

businesses in the name of health and safety, thus changing attitudes and cultures towards health and safety

- will focus on specific safety concerns in catering premises in accordance with the Code, namely carbon monoxide poisoning and the risk of gas explosion due to lack of suitable ventilation, unsafe and poorly maintained appliances and poor work procedures

- visit or carry out other interventions at premises where a risk from legionella has been identified.

7 Service levels 2016 / 2017

7.1 The BST responded to all enquiries and complaints as directed through to it. These enquiries and complaints typically come from a number of sources including the post, the services mailbox and in line with the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) from the HSE.

7.2 **Table 1** below details in previous years the service interventions following contacts from consumers and businesses:

Table 1

Intervention	2013 / 2014	2014 / 2015	2015 / 2016	2016 / 2017
Proactive inspections	0	0	0	0
Non-inspection visits	4	4	48	41
RIDDORS processed	161	153	127	137
Reactive visits in relation to incidents	1	10	12	0
Reactive visits in relation to complaints	14	8	1	7
Reactive visits following requests from businesses	0	0	2	0
Revisit following earlier intervention	1	12	4	1

7.3 Enforcement action 2016 / 2017 considered of the following:

- 2 formal improvement notices
- 0 immediate prohibition notices
- 0 investigations are currently ongoing
- 0 premises has legal action pending
- No prosecutions were taken

8 Regulators code and enforcement policy

8.1 The Regulators' Code came into statutory effect in 2014 under the Legislative and Regulatory Reform Act 2006, replacing the Regulators' Compliance Code. It provides a clear, flexible and principles-based framework for how regulators should engage with those they regulate. Officers within the BST take into

account the principles of good enforcement set out in the Code. The council's general enforcement policies are compliant with the Compliance Code.

9 The necessity to adopt the 2016 / 2017 plan

9.1 To ensure that the BST continues to operate in adherence with the principles of better regulation. In particular:

- Transparency
- Accountability
- Consistency
- Proportionality
- Utilising intelligence led targeting

10 Equality impact assessment

10.1 The intervention and inspection criteria have been subject to a provisional equality impact assessment. There are unlikely to be any equality impacts as a result of this proposal as it will not result in a change to the level of service currently provided.

11 City Solicitor's comments

11.1 Legal Services have confirmed that it is within the Cabinet Members powers to approve adoption of the Health & Safety Intervention Plan 2017 / 2020 as contained within this report.

12 Head of Finance's comments

12.1 The activities proposed within the Health and Safety Intervention Plan 2017 / 2020 and summarised in this report, will be funded from existing service budgets, as approved by Full Council.

……
Signed by: Stephen Baily, Director of Culture and City Development

Appendices:

Appendix 1 - Health and Safety Intervention Plan 2017 / 2020
Appendix 2 - Equality Impact Assessment

Background list of documents: Section 100D of the Local Government Act 1972

The following documents disclose facts or matters, which have been relied upon to a material extent by the author in preparing this report:

Title of document and location of document
Nil

The recommendation set out in 2.1 above were approved/ approved as amended / deferred / rejected by the Cabinet Member for Community Safety on …….

……
Signed by: Councillor Robert New, Cabinet Member for Environment and Community Safety

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Portsmouth CITY COUNCIL

Health and Safety Intervention Plan 2017 / 2020

Regulatory Services - Business Support Team

Contents

1 Introduction

1.1 The enduring principle of health and safety law in Great Britain is that those who create risks are best placed to control them, and they should do so in a proportionate and practicable way.

1.2 The primary function of Portsmouth City Council Regulated Services Business Support Team (the *BST*) in respect to the regulation of health and safety is the *investigation of failures of controls put in place to manage risk.*

1.3 This Intervention Plan (IP) has been developed to outline the manner in which the BST deliver its health and safety responsibilities for the period of the 1st April 2017 to the 31st March 2020.

1.4 Following the creation of this IP, in order to maximise officer resource, the BST does not propose to undertake a further formal review of service delivery until 2020 unless there is a material change either in national or local health and safety delivery principals / protocols or a significant increase in demand.

1.5 A report detailing the demand for services will however continue to take place annually and presented to Members for their information through the Members Information Service.

2 Overall aim of the service

"To work with others to protect people's health and safety by ensuring risks in the changing workplace are managed properly."

3 Statutory obligation

3.1 Section 18 of the Health and Safety at Work etc. Act 1974 (HSWA) places a duty on the Health and Safety Executive (HSE) and PCC to make *adequate arrangements* for health and safety enforcement.

4 Service resource

4.1 The health and safety function is currently staffed by four Environmental Health Officers (2 x 0.2 and 2 x 0.1 FTE) and 2 x Environmental Health Practitioners (2 x 0.05 FTE). *Total: 0.7 FTE.* This level of resource in considered to be the minimum necessary to deliver the requirements of the HWSA.

4.2 As with the delivery of any statutory function, there are dangers in services being limited in terms of resource without proper guidance on what an inadequate arrangement of delivery might actually look like.

4.3 The BST needs to think carefully as to the manner in which it delivers its health and safety responsibilities and retaining this minimum level of resource, as the threat of legal challenge for not meeting its statutory requirements is tangible.

4.4 Any failure to resource its health and safety responsibilities will by definition lead to potential claims being placed at the door of the Authority based upon a failure to act concomitantly with a Statutory Duty (direct civil claim) or acting as a reasonable Authority would do (potential review of a decision and declaration).

5 Service delivery initiatives

5.1 The plans and initiatives to which the service will have regard which delivery its statutory obligations are:

- The HSE's strategy "Help Great Britain Work Well"
- The Council's Corporate Plan
- The HSE's National Local Authority Enforcement Code
- Local Authority Circular (LAC) 67/2 (Revision 6)
- The Regulators' Code

6 Delivery objectives

6.1 The BST will continue to seek to conduct its affairs in adherence with the principles of better regulation and the various legislative requirements relating thereto. In particular:

- Transparency
- Accountability
- Consistency
- Proportionality
- Utilising intelligence led targeting

6.2 In pursuit of these principles the primary objectives of the BST in regard to health and safety are as follows:

- Delivering improved regulatory outcomes
- Reducing unnecessary burdens on business
- Maintaining a common approach to enforcement policies
- Building safer, healthier and stronger local communities
- Achieving consistency in advice and enforcement

7 Delivery methods

7.1 In line with previous years, the BST will deliver a mixture of proactive and reactive interventions which will be consistent with our service delivery initiative and objectives.

7.2 In practice this will comprise, as necessary, of a very limited programme of proactive inspections of the highest risk workplaces alongside targeted projects aligned with LAC 67/2. These will be supplemented only where appropriate with risk-based reactive interventions in response to reported accidents, work-related diseases, dangerous occurrences and complaints.

7.3 According to the National Code the high risk sectors which are suitable for proactive inspections include:

- Open farms and animal visitor attractions
- Premises with buried metal LPG pipework
- High volume warehousing and distribution
- Industrial retail / wholesale premises
- Large scale public events
- Commercial catering premises that use solid fuel cooking equipment
- Premises with vulnerable working conditions (e.g. lone working)

7.4 LAC 67/2 also identifies specific topic areas that should be addressed during the course of routine visits. These include:

- Falls from height – work on or adjacent to fragile roofs/materials
- Duty to manage asbestos
- Beverage gases in the hospitality industry
- Welfare facilities for delivery drivers

7.5 LAC 67/2 identifies several other intervention types which can be used as an alternative to unannounced proactive inspections. These include the following:

- Visits by appointment
- The provision of advice and information
- Sector-specific initiatives which target local problems
- Responding to “local intelligence” which gives cause for concern
- Dealing with serious matters as they are observed or brought to an inspector’s attention during advisory or other interventions
- These include Matters of Evident Concern (MECs) - issues that create a risk of serious personal injury or ill-health; and Matters of Potential Major Concern (MPMCs) - those with a realistic potential to cause either multiple fatalities or multiple cases of acute or chronic ill-health

7.6 The HSE "Helping Great Britain Work Well" strategy sets out the priority themes for the effective regulation of health and safety in the workplace. Local authorities play a part in delivering the strategy with particular reference to the following:

- Tackling ill health - managing risk well - simplifying risk management and helping businesses to grow
- Supporting small employers - giving SMEs simple advice so they know what they have to do

7.7 The HSE’s detailed plans are contained in their Health and Work Strategy and in 19 sector-specific strategies under their control which are based on industry type and risk profile. These sectors include commercial consumer services, logistics / transport and sports and leisure and businesses areas as diverse as beauty, retail, hospitality, catering, distribution centres, children’s play,

swimming and thrill-seeking activities such as bungee jumping and motorised leisure pursuits.

8 On-going inspection regime

8.1 New business enquiries and inspections

8.1.1 Health and safety legislation does not require new businesses to notify the Council when they start up. Our experience is that only a tiny percentage of businesses ask for proactive assistance in respect to starting up or seeking assistance with finding appropriate guidance in respect to their specific health and safety needs.

8.2 Health and safety complaints and requests for service

8.2.1 These fall into one of the following broad categories, and will be investigated in accordance with internal procedures and central guidance:

- Complaints about unsafe working conditions, practices or equipment
- Complaints about welfare-related issues such as working hours and meal breaks
- Complaints about the lack of suitable training, supervision or instruction for employees
- Adverse Inspection Reports about lifting equipment and pressure vessels

8.3 Notifiable accidents, injuries, diseases and dangerous occurrences (RIDDORS)

8.3.1 These investigations are carried out in accordance with relevant guidance and procedures.

8.4 Formal notifications

8.4.1 The Council receives formal notifications from specialist engineers relating to lifting equipment; work with asbestos; pressure systems and location of cooling towers. Follow-up work is regularly required in all these areas to ensure that safe working practices are in place. Such work is generally office based and does not form part of the demand analysis statistics as provided in Table 1.

9 Intervention programme

9.1 The BST will:

- only carry out proactive inspections at premises where higher risk activities are being undertaken and at premises where there is intelligence showing that the risks are not being effectively managed
- only carry out intervention visits to premises where accidents have occurred and where other interventions have highlighted risks in these premises

- record details of interventions in all premises recorded on the City Council's database

- promote the proper management of asbestos within any premises where an issue has been identified. A stepped intervention approach will be taken and where advice has been previously given and the duty holder has failed to act, enforcement action will be taken. This intervention is based on evidence that asbestos is one of the greatest causes of workplace latent morbidity

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- continue to implement the findings of the Lofstedt review and guidance issued by the HSE to local authorities

- continue to recognise that health and safety is often incorrectly used as somewhat of a convenient excuse to stop what are essentially sensible activities going ahead. The service continues to make it clear that health and safety is about managing real risks properly, not being risk averse and stopping people getting on with their lives. Together with the HSE, the BST aims at dispelling the myths behind tabloid headlines concerning actions taken by businesses in the name of health and safety, thus changing attitudes and cultures towards health and safety

- will focus on specific safety concerns in catering premises in accordance with the Code, namely carbon monoxide poisoning and the risk of gas explosion due to lack of suitable ventilation, unsafe and poorly maintained appliances and poor work procedures

- visit or carry out other interventions at premises where a risk from legionella has been identified.

10 Service analysis 2016 / 2017

10.1 The BST will continue to respond to all enquiries and complaints as directed through to it. These enquiries and complaints typically come from a number of sources including the post, the services mailbox and from the HSE.

10.2 **Table 1** below details in previous years the service interventions following contacts from consumers and businesses:

Table 1

Intervention	2013 / 2014	2014 / 2015	2015 / 2016	2016 / 2017
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10.3 Enforcement action 2016 / 2017 considered of the following:

- 2 formal improvement notices
- 0 immediate prohibition notices
- 0 investigations are currently ongoing
- 0 premises has legal action pending
- No prosecutions were taken

11 Government response

11.1 The BST continues to acknowledge the government's overall intention to develop "*a different and more mature relationship with business*" by:

- continuing to apply the principles of "*earned recognition*"
- establishing a presumption that regulators should help businesses comply with the law
- clarifying that no business should face a sanction for simply asking a regulator for advice
- implementing new partnership working between government, regulators and businesses at the heart of the new regulatory system, bringing the expertise of the Better Regulation Delivery Office into government
- upon request, working with businesses and local authorities through Local Enterprise Partnerships to promote better local regulation

- continuing to deliver the Primary Authority (PA) scheme to improve the coherence, accountability and transparency of local regulation

- retaining the Regulator's Code, placing it at the heart of the reviews of regulators and ensuring that it is understood by customers

12 Primary authority

12.1 PA is a statutory scheme, established by the Regulatory Enforcement and Sanctions Act 2008, that offers businesses operating across council boundaries the opportunity to be regulated in a new way. It was introduced by the government in 2009 to address concerns raised by businesses about how they are regulated by local authorities in areas such as environmental health, licensing and trading standards legislation. Business concerns included contradictory advice, unfocussed activity, duplicated efforts, and the lack of effective dispute resolution when councils disagree.

12.2 PA relationships enable business to form a legally recognised partnership with a single local authority, which is called its "*primary authority*". The PA can provide the business with robust and reliable regulatory advice which other local authorities must take into account in their dealings with the business. In this way, PA promotes consistency and fairness in the way that local councils enforce regulations. A primary authority is also able to guide the way that other local authorities carry out checks such as inspections, by developing an inspection plan.

12.3 The government is committed to developing PA agreements and sees the scheme as playing a key role in its work to improve the way that regulations are enforced.

12.4 PCC currently has one PA partnership relating to health and safety, with the Southern Co-operative.

12.5 The chief impacts of participating in the scheme for our partners include:

- reducing the costs of complying with regulations
- improving your confidence in the measures you are taking to comply; and
- reducing the costs associated with compliance failures

13 Regulators code

13.1 The BST carefully notes the publication of the "*Regulators Code*" (the Code) by Better regulation Delivery Officer in 2013. The Code came into statutory effect in 2014 under the Legislative and Regulatory Reform Act 2006, replacing the Regulators Compliance Code. It provides a clear, flexible and principles-based framework for how regulators should engage with those they regulate.

13.2 In the Autumn Statement 2012 Government announced that it would introduce a package of measures to improve the way regulation is delivered at the frontline such as the Focus on Enforcement review of appeals, the proposed

"*growth duty*" for non-economic regulators and the "*Accountability for Regulator Impact*".

13.3 The Government is committed to reducing regulatory burdens and supporting compliant business growth through the development of an open and constructive relationship between regulators and those they regulate. The Code provides a flexible, principles based framework for regulatory delivery that supports and enables regulators to design their service and enforcement policies in a manner that best suits the needs of businesses and other regulated entities.

13.4 The government's expectation is that by clarifying the requirements contained in the previous Regulators Compliance Code, in a shorter and accessible format, the BST and the businesses we regulate will have a clear understanding of the services that can be expected and will feel able to challenge if these are not being fulfilled.

13.5 Regulators within scope of the Code are diverse but they share a common primary purpose - to regulate for the protection of the vulnerable, the environment, social or other objective. This Code does not detract from these core purposes but seeks to promote proportionate, consistent and targeted regulatory activity through the development of transparent and effective dialogue and understanding between regulators and those they regulate.

13.6 Officers within the BST take into account the principles of good enforcement set out in the Code. PCC's general enforcement policies are compliant with the Code.

14 Open for business: a shared vision for local regulation

14.1 At the Local Government Association conference held in 2013 the strategy document "*Open for Business: A Shared Vision for Local Regulation*" was launched.

14.2 The BST continues to support the statements made in this document and in particular the following sentiment: that the ambition is for local government to be able to work with business in a local area to understand risks and determine what level of regulation is appropriate. The BST are well placed to free up businesses from unnecessary regulation and can design and operate a scheme which is right for business and right for their local communities, without central direction and prescription.

14.3 Additionally, the BST continues to acknowledge the premise that good, well designed regulation can stop the abuse of market power and improve the way markets work to the benefit of business, employees and consumers and that a the provision of a clear framework for the behaviour of firms, with boundaries. We support the view that some regulations create new markets and deliver jobs, and that that good regulation strikes a proper balance.

15 Communications

15.1 The BST through delivering its key priorities clearly recognises the importance of continuing to develop its role in the communication to businesses and consumers of the work it becomes involved with.

15.2 This communication strategy will involve the continuing development of a number of key themes:

- The continuing development and updating of information on the web-pages assigned the health and safety service
- The continuation of the general offer made to all businesses, associations, groups and organisations in the city for officers to provide talks and presentations to these groups when requested
- The use of the media, including the local press, radio and television and the City Council's media sites to continue to promote the work of the BST

16 Working with local authority partners

16.1 The BST is represented on the South East Health and Safety Advisory Group (HESAG) comprising 17 local authorities. The panel shares knowledge and good practice across the region. The BST is also represented on the Hampshire and Isle of Wight Environmental Health Chief Officers Group where the above is undertaken at a strategic level.

17 Staff training

17.1 The BST in delivering its key priorities has, and continues to view the provision of training as fundamental to adding value to existing professional training and retaining competency levels for all officers against the background of change.

17.2 Therefore, as a direct consequence, the BST will continue to ensure every opportunity that presents itself will be taken to address identified skill gaps (subject to resources and capacity).

18 Concluding summary

18.1 The BST remains committed to the protection and well-being of the public whilst supporting the growth of business.

18.2 The BST will continue to deliver its work plan in partnership with governmental departments, key agencies and organisations within the consumer landscape together with legitimate businesses.

18.3 Local Government continues to undergo far reaching changes, the BST has recognised this and continues to adapt to the challenges presented by the new and evolving regulatory landscape.

Annex 1

References

Decentralisation and the Localism Bill: An Essential Guide - December 2010 Department for Communities and Local Government - ISBN 9781409826620

Open Public Services - White Paper - July 2011 - CM 8145

Priority Regulatory Outcomes - A New Approach to Refreshing the National Enforcement Priorities for Local Authority Regulatory Services - Final Report - November 2011 - LBRO

No Stone Unturned - In Pursuit of Growth - URN 12/1213 - Department for Business, Innovation and Skills - October 2012

Public Health Outcomes Framework for England 2013 / 2016

Open for Business - A Shared vision for Regulation - Local Government Association - July 2013

Reclaiming Health and safety for all: An independent review of health and safety legislation - Professor Ragnar E - Lofstedt - November 2011 - CM8219 HMSO ISBN 9780101821926

Regulators Code - Department for Business, Innovation and Skills - July 2013

Helping Great Britain Work Well - Health and Safety Executive - February 2016

Health and Safety Executive - Business Service Plan 2016 / 2017 - April 2016

Cutting Red Tape - Cabinet Office - March 2016

The Portsmouth Plan

Regeneration Strategy - Shaping Portsmouth

Health and Safety at Work Act 1974

National Enforcement Code - Health and Safety at Work - Health and Safety Executive

HSE - LAC 22/13

Lifting Operations and Lifting Equipment Regulations 1998

ASB5 Notification of Asbestos Work

The Construction (Design and Management) Regulations 2015

The Health and Safety (Enforcing Authority) Regulations 1998

The Management of Health and Safety at Work Regulations 1999

The Control of Substances Hazardous to Health Regulations 2002

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Portsmouth CITY COUNCIL

Equality Impact Assessment

Preliminary assessment form v5 / 2013

www.portsmouth.gov.uk

The preliminary impact assessment is a quick and easy screening process. It should:

- identify those policies, projects, services, functions or strategies which require a full EIA by looking at:
  - negative, positive or no impact on any of the equality groups
  - opportunity to promote equality for the equality groups
  - data / feedback
- prioritise if and when a full EIA should be completed
- justify reasons for why a full EIA is not going to be completed

Directorate: Director of City Development & Culture

Function e.g. HR, IS, carers: Regulatory Services - Environmental Health

Title of policy, service, function, project or strategy (new or old) :

Health & Safety Intervention Plan 2017 / 2020

Type of policy, service, function, project or strategy:

- ★ Existing
- ☐ New / proposed
- ☐ Changed

Q1 - What is the aim of your policy, service, function, project or strategy?

The plan is an expression of the Council's commitment to its health and safety role and responsibilities to develop a Health and Safety Delivery Team. It sets out the manner in which health & safety inspections, initiatives and activities have been designed to meet the requirements of the National Local Authority Enforcement Code, issued by the Health and Safety Executive (HSE), under Section 18 of the Health and Safety at Work etc. Act 1974 (HSW Act).

Q2 - Who is this policy, service, function, project or strategy going to benefit or have a detrimental effect on and how?

The plan is designed to protect individuals, employees and businesses health and safety by ensuring that risks in the changing workplace are managed properly.

Q3 - Thinking about each group below, does, or could the policy, service, function, project or strategy have a negative impact on members of the equality groups below?

Group	Negative	Positive / no impact	Unclear
Age		★	
Disability		★	
Race		★	
Gender		★	
Transgender		★	
Sexual orientation		★	
Religion or belief		★	
Pregnancy and maternity		★	
Other excluded groups		★	

If the answer is "negative" or "unclear" consider doing a full EIA

Q4 - Does, or could the policy, service, function, project or strategy help to promote equality for members of the equality groups?

Group	Yes	No	Unclear
Age	★		
Disability	★		
Race	★		
Gender	★		
Transgender	★		
Sexual orientation	★		
Religion or belief	★		
Pregnancy or maternity	★		
Other excluded groups	★		

If the answer is "no" or "unclear" consider doing a full EIA

Q5 - Do you have any feedback data from the equality groups that influences, affects or shapes this policy, service, function, project or strategy?

Group	Yes	No	Unclear
Age		★	
Disability		★	
Race		★	
Gender		★	
Transgender		★	
Sexual orientation		★	
Religion or belief		★	

Pregnancy and maternity	☐	★	☐
Other excluded groups	☐	★	☐

If the answer is "no" or "unclear" consider doing a full EIA

Q6 - Using the assessments in questions 3, 4 and 5 should a full assessment be carried out on this policy, service, function or strategy?

☐ yes ★ No

Q7 - How have you come to this decision?

The service records all complaints and enquiries on its bespoke database. The service plan aims to protect all members of the public and businesses. The service deals with all health and safety matters equally and impartially regardless of the status of the service user. This is monitored by service management and partners such as legal services. However, if issues are identified, for example: communication problems due to language, the City council has a contract with 2 translation services (both for written and face to face contacts). All officers have been trained in dealing with ethnic and excluded groups. If other issues are identified advice will be sought from the Equalities and Diversity team. Based on this assessment it has been decided that a full EIA is not required at this time. However this will be periodically monitored and reviewed.

If you have to complete a full EIA please contact the Equalities and diversity team if you require help Tel: 023 9283 4789 or email:equalities@portsmouthcc.gov.uk

Q8 - Who was involved in the EIA?

Business Support Team Leader
Environmental Health Regulatory Services Manager

This EIA has been approved by: Richard Lee

Contact number: 023 9283 4857

Date: 18/08/2017

Please email a copy of your completed EIA to the Equality and diversity team. We will contact you with any comments or queries about your preliminary EIA.

Telephone: 023 9283 4789

Email: equalities@portsmouthcc.gov.uk

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Portsmouth CITY COUNCIL

Title of meeting:	Environment and Community Safety Portfolio Decision Meeting
Date of meeting	21st September 2017
Subject:	Assessment of Air Quality - Annual Statement Report 2016
Report by:	Director of Culture and City Development
Wards affected:	All
Key decision:	No
Full Council decision	No

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1. Purpose of report

1.1. To update the Cabinet Member for Environmental and Community Safety on the:

- review and assessment of air quality in Portsmouth and the publication of the 2016 air quality Annual Status Report (ASR)
- conclusions of the 2017 air quality Source Appointment Study (SAS)
- National Air Quality Action Plan (NAQAP) to tackle nitrogen dioxide as published by Department of Environment Food and Rural Affairs (DEFRA)
- actions undertaken by Portsmouth City Council (PCC) which are likely to positively impact upon pollution levels in Portsmouth as part of our responsibilities to review, assess and improve air quality locally

1.2. To comply with our statutory requirements to publish an ASR annually.

1.3. To reaffirm PCCs commitment to Local Air Quality Management (LAQM) to tackle areas of poor air quality and our ambition to reduce levels of harmful pollutant in Portsmouth to protect human health.

1.4. To evidence the fact that the work being undertaken to tackle poor air quality is supported by officers and members at the highest levels of council administration and governance.

2. Recommendations

2.1. That the Cabinet Member for Environment & Community Safety approves:

a) the conclusions and publication of the 2016 ASR as attached as Appendix 1;

b) the conclusions and publication of the 2017 SAS as attached as Appendix 2.

3. Reason for the recommendations

3.1. On the 17th July 2017 PCC again recognised the impact that poor air quality has on health and the need for co-ordinated action to reduce air pollution through the publication of a Local Air Quality Strategy (LAQS).

3.2. The 2017 LAQS will help to drive forward improvements aiming towards a healthier city for all, leading on a collaborative approach in reducing air pollution across the city in the shortest possible timeframe. Having published the 2017 AQS an updated local Air Quality Action Plan (AQAP) will follow. Once developed, the AQAP will detail specific measures to achieve this overarching aim.

3.3. The publication of the 2016 ASR and 2017 SAS will provide valuable evidence to inform the LAQS and the subsequent updated AQAP, particularly in regard to what actions are necessary, where they should be focused, and to what extent improvements in air quality are required.

4. Abstract of 2016 ASR conclusions

4.1. The monitoring data:

- reveals a deterioration in the level of nitrogen dioxide in several key monitoring locations and that several known pollution hotspot areas remain a concern
- supports the review of two air quality management areas (AQMA) during 2017 / 2018 with a provisional recommendation of revocation (AQMA 12) / part revocation (AQMA 7)
- provides evidence that particulate matter concentrations are well below UK Air Quality Directive Objectives (NAQO)

5. Introduction to the 2017 SAS

5.1. A SAS of road traffic sources was carried out as part of our ongoing LAQM responsibilities to quantify the contributions of different road vehicle types to

ambient pollutant concentrations. This was carried out in the areas of likely exceedance to determine the emission reductions required to achieve compliance with those objectives and to identify the likely year of compliance.

5.2. The following scenarios were modelled:

- a base year (2015) scenario for the purpose of model verification and to examine current pollutant concentrations in the city
- a future year scenario (2020) when it was, at the studies conception, anticipated that pollutant concentrations will be within the NAQO at all locations of relevant exposure throughout the city
- scenario testing of intermediate years to determine the likely earliest year of compliance with the NAQO

5.3. The pollutants assessed were nitrogen dioxide and particulate matter of 10 and 2.5 microns in size (PM_{10} and $PM_{2.5}$).

6. Summary of 2017 SAS Conclusions

6.1. Total background percentage concentrations of nitrogen dioxide in 2020 are, in the vast majority of locations, greater than those generated by local vehicular traffic sources.

6.2. In 2020 the largest reductions required to meet the NAQO are estimated at sensitive receptor locations along the London Road / Kingston Road / Fratton Road corridor within AQMA 6.

6.3. It is estimated that reductions in road nitrogen oxide emissions of up to 15% in 2020 would be required in order to achieve the NAQO at all modelled receptor locations within AQMA 6. Elsewhere annual mean nitrogen dioxide concentrations are predicted to be below the NAQO and so reductions in road nitrogen oxide emissions to attain the NAQO are not required.

6.4. Annual mean particulate concentrations in 2020 are predicted to be well below the annual mean NAQO at all locations in Portsmouth and so reductions to attain the NAQO are not required.

6.5 That, 'best case', the NAQOs will be achieved by 2020. However, a less optimistic and more likely prediction for compliance is 2022.

7. DEFRA's National Air Quality Action Plan (NAQAP)

7.1. During 2017 PCC has been in regular dialog with DEFRA in regard to their NAQAP to tackle high levels of nitrogen dioxide and whether PCC should introduce additional measures to those proposed within our LAQM protocols.

7.2. DEFRA has confirmed that its data for Portsmouth shows that the current areas of exceedance of the NAQO will fall within compliance levels by 2021.

7.3. As a result DEFRA has confirmed within their NAQAP dated 26th July 2017 that no requirement for closer joined up work with their experts is necessary and that Portsmouth has not been named as an urban area with higher levels of pollution where additional measures, such as clean air zones, are required.

7.4. DEFRA has however stated that it will continue to take a close interest in the work that Portsmouth is undertaking in creating our own local AQAP to drive forward improvement in local air quality through the 2017 AQS.

8. PCC's Air Quality Progress Report (AQPR) and forthcoming AQAP

8.1. Despite the challenges faced, significant progress has been made to improve air quality in Portsmouth over the past year and to drive forward future improvements.

8.2. A key element of work that has contributed towards encouraging and supporting modal change and awareness of sustainable travel has been undertaken through the Sustainable Travel Transition Year fund. A number of schemes were implemented through this work, such as personalised journey planning, workplace travel planning initiatives, travel to school initiatives and developing and promoting cycling. All of these measures have played a part in raising awareness of and making improvements to local air quality. Similarly, a number of schemes developed through the Local Transport Plan have contributed to local improvements, such as the introduction of cycle lanes, traffic calming and junction improvements, reducing speeds, creating safer pedestrian environments, and improving vehicle flow.

8.3. Additionally, PCC is moving forward with air quality improvements through use of new technology, after successfully securing funding to develop an innovative IoT (Internet of Things) and Big Data platform for Portsmouth's Traffic Management Centre. This project will develop capabilities in monitoring traffic conditions on the network and provide an understanding of current journey patterns through the collection of data sources into one platform. Understanding more about journey patterns and travel demand will help to develop schemes to encourage modal shift to more sustainable options.

8.4. A comprehensive list of the projects, which can be linked to improvements in air quality, can be found within Table 2.2 the 2016 ASR.

9. Equalities Impact Assessment

9.1. A full equality impact assessment is not required as the recommendations do not have a negative impact on any of the protected characteristics as described in the Equality Act 2010. The provisional EIA is attached as appendix 3.

10. City Solicitor's comments

10.1. The timetable submitting the ASR is provided Section 2.5 of the Local Air Quality Management Technical Guidance 2016. PCC acknowledges that it has

not complied with the timetable as prescribed by not providing DEFRA with the information contained within this report by the deadline date of the 30th June. PCC has fully engaged with DEFRA with respect to the delays in publishing this report.

10.2. The aim of the assessment of air quality is to identify with reasonable certainty whether or not a likely exceedance of the national air quality objectives will occur. The Air Quality (England) Regulations 2000 (SI 928) and The Air Quality (England) (Amendment) Regulations 2002 (SI 3043) make it clear that likely exceedances of the objectives should be assessed in relation to the quality of the air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present. It is particularly important that our assessments focus on those locations where members of the public are likely to be regularly present and which are likely to be exposed for a period of time appropriate to the averaging period of the objective.

11. Head of Finance comments

11.1. The costs of continuing to review and assess air quality in Portsmouth will need to be met from within existing budgets. The 2016 procurement of a three year contract to provide the air quality monitoring services within Portsmouth has been funded (with an ability to extend for a further two years should further funding be secured). The situation in respect to funding the contract from 2019 onwards remains unchanged in that the Directorate has identified that it will not have sufficient funding to continue to provide these services at this level.

.....
Signed by: Stephen Baily, Director of Culture and City Development

Appendix 1: 2016 Annual Status Report of Air Quality
Appendix 2: 2017 Source Apportionment Study
Appendix 3: Equality Impact Assessment

Background list of documents: The following list of documents discloses facts or matters, which have relied upon to a material extent by the author in preparing this report:

Title of Document	Location
NAQAP to tackle nitrogen dioxide in the UK (2017)	https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

The recommendations set out above in 2.1 above were approved / approved as amended / deferred / rejected by the Cabinet Member for the Environment and Community Safety on ……..

.....
Signed by: Councillor Robert New, Cabinet Member for Environment and Community Safety

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Portsmouth
CITY COUNCIL

2016 Air Quality Annual Status Report (ASR)

In fulfilment of
Part IV Environment Act 1995
Local Air Quality Management

September 2017

Local Authority Office	Portsmouth City Council
Department	Regulatory Services
Address	Civic Offices, Guildhall Square, Portsmouth, PO1 2AL
Telephone	023 9283 4245
E-mail	redouan.sadak@portsmouthcc.gov.uk
Report Reference number	ASR 2016
Date	September 2017

Executive Summary: Air quality in Portsmouth

Overview of air quality in Portsmouth

This overview is a summary of the state of Portsmouth Local Air Quality (LAQ) and progress on actions that Portsmouth City Council (PCC) is taking to improve air quality.

This report covers air quality monitoring data for the period 2012 to 2016.

The principal issues and findings of this Annual Status Report (ASR) are:

- PCC recognises the impact of pollution upon public health and is committed to the continuous reduction of pollution levels;
- Monitoring of Nitrogen Dioxide (NO_2) using continuous monitoring and passive Nitrogen Dioxide Diffusion Tubes (NDDT) during 2016 indicates that 6 locations exceeded the National Air Quality Objective (NAQO) levels;
- PCC confirms that the most significant source of air pollution in the city is from road traffic;
- As a result of forthcoming committed development and concerns raised from members of the public in respect to specific levels of NO_2 a number of new monitoring locations have been set up in areas where road traffic may have an influence on sensitive receptors. These locations will be reported upon in the next ASR;
- All responsible agencies within PCC who's role is likely to impact upon LAQ are committed to working together to deliver improvements through Local Air Quality Management (LAQM);
- PCC recognises the need to co-ordinate work with external partners and the public in order to improve LAQ;
- To confirm its commitment to improving LAQ PCC has published a Local Air Quality Strategy (LAQS).

Air quality in Portsmouth

The main pollutant of concern in Portsmouth is NO_2.

Monitored concentrations of this pollutant in recent years have exceeded the annual mean NAQO at a number of varying locations throughout the city.

PCC currently has five Air Quality Management Areas (AQMAs) declared on the grounds of monitored or modelled exceedances of the UK annual mean NO_2 NAQO.

The LAQ monitoring program was not significantly changed in the course of 2016.

NO_2

The NO_2 continuous monitoring program for the period stretching between 2012 and 2016 concluded that:

- The 2016 NO_2 annual mean level increased a cross the four Continuous Air Quality Monitoring Stations (CAQMS) compared to that of 2015 but did not exceed the NO_2 annual mean NAQO at all but the London Road CAQMS. These results are indicative of a worsening in LAQ. The maximum recorded NO_2 annual mean was at London Road kerbside CAQMS and was 41.21µg/m^3. This level breaches the NO_2 annual mean NAQO.

The 2016 adjusted NDDT data shows that exceedances are concentrated predominantly in the declared AQMAs with the exception of:

- Albert Road (location reference AR118) where the 2016 NO_2 annual mean concentration exceeded the NAQO. This monitoring site is located close to one of the busiest junctions in Southsea. The NO_2 long-term development over the last five years at this location has exhibited a slight upward trend since 2012 (Figure F21, Appendix F).

- Northern Road (location reference NR-6) where the 2016 NO_2 annual mean concentration exceeded the NO_2 annual mean NAQO. This monitoring site is located close to one of the busiest junctions linking Southampton Road / A3 / Havant Road in Cosham. The NO_2 long-term development over the last five years at this location exhibited upward trends since 2012 (Figure F9, Appendix F).

In addition, the 2016 NDDT survey data concluded that NO_2 annual mean levels were in excess of the NO_2 annual mean NAQO at the following monitored locations:

- Lord Montgomery Way (AQMA 7);

- London Road (AQMA 6) continuous monitoring station;

- 117 Kingston Road (AQMA 6);

- The Tap Public House London Road (AQMA 6).

The overall trend emerging from the 2016 NDDT survey data reveals that a downward trend emerged at 53.57 % of monitored locations in the last five years since 2012. This can be translated to a worsening in LAQ compared to the five year trend commenced from 2011 where 78.57% of the monitored locations developed a downward trend.

Particulate Matter (PM_{10})

Particulate matter (PM_{10} and $PM_{2.5}$) concentrations are considered to be well below the PM_{10} annual mean NAQO throughout the city.

There has been no exceedance of the PM_{10} annual mean or the daily NAQO since 2012 at any of the CAQMSs. The highest registered PM_{10} annual mean since then was in 2015 at the kerbside CAQMS along London Road and reached 34.36µg/m^3.

There has been no exceedance of the PM_{10} daily mean concentrations for the past five years.

The PM_{10} monitoring data at two CAQMSs exibits a downward trend at London Road and Gatcombe Park resulting in an improvement in LAQ while the remaining two at Mile End Road and Burrfields Road exibits an upward trend resulting in a worsening in LAQ (Figures F33 to Figure F36, Appendix F).

Particulate Matter ($PM_{2.5}$)

PCC monitors $PM_{2.5}$ at an urban background station at Gatcombe Park Primary School. This CAQMS is affiliated to the National Automatic Urban and Rural Network (AURN). The highest $PM_{2.5}$ annual mean registered at this station to date was recorded in 2014 and reached 14.26µg/m^3.

The overall trend over the monitored period since 2012 exhibits a downward trend resulting in an improvement in LAQ.

Source apportionment study

A Source Apportionment Study (SAS) of road traffic sources was carried out as part of the ongoing LAQM Review and Assessment (LAQMRA) processes in 2017 to:

- quantify the contributions of different road vehicle types to ambient pollutant concentrations in the areas of likely exceedance;
- determine the emissions reductions required to achieve compliance;
- identify the likely year of compliance with the NAQO;
- aid with the development of the LAQS and Local Air Quality Action Plan (LAQAP).

The SAS study covered mainly NO_2 as the pollutant of concern locally. SAS covered also $PM_{2.5}$ and PM_{10} and concluded the following:

- Total background percentage concentrations of NO_2 in 2020 are, in the vast majority of locations, greater than those generated by local vehicular traffic sources;
- In 2020 the largest reductions required to meet the NO_2 annual mean NAQO are estimated at sensitive receptor locations along the London Road / Kingston Road / Fratton Road corridor within AQMA 6;
- It is estimated that reductions in road nitrogen oxide (NO_x) emissions of up to 15% in 2020 would be required in order to achieve the NAQO at all modelled receptor locations within AQMA 6. Elsewhere annual mean NO_2 annual mean concentrations are predicted to be below the NO_2 annual mean NAQO and so reductions in road NO_x emissions to attain the NO_2 annual mean NAQO are not required;

- Making the simplifying assumption that reductions in road NO_X between 2015 and 2020 continue beyond 2020 at the same rate it would be expected that all areas of Portsmouth will achieve compliance with the NO_2 annual mean NAQO by 2022;

- The $PM_{2.5}$ and PM_{10} annual mean concentrations in 2020 are predicted to be well below the annual mean NAQO at all locations in Portsmouth and so reductions to attain the NAQO are not required.

DEFRA's Air quality action plan to tackle NO_2

In June 2017 PCC responded to DEFRA's AQAP to tackle NO_2. Subsequently, DEFRA has confirmed that its data for Portsmouth demonstrates that the current areas of exceedance of the NAQO will fall within compliance levels by 2021. The forthcoming installation of a new DEFRA funded CAQMS in Anglesea Road is likely to assist in validating these results.

Although this compliance date differs from our own predictions of compliance, DEFRA has confirmed, within their the publication of their NAQAP on the 26th July 2017, that there is no formal requirement for PCC to work closer with their experts in respect to alternative strategies beyond those we proposed through LAQM and that Portsmouth has not been named within the Government's Air Quality Strategy to tackle NO_2 as an urban area with higher levels of pollution.

LAQM actions to improve air quality

PCC is committed to working in partnership to improve and maintain a healthy air quality in the city. Despite the challenges faced, significant progress has been made to improve air quality in the city over the past few years and to drive forward further improvements in the coming years.

In order to improve local air quality in Portsmouth, our LAQS has been produced. This strategy outlines the consistent approach that is needed to improve air quality across the city and will drive forward improvements through the review of the LAQA taking into account the findings of the 2017 SAS whilst embedding air quality at the heart of decision making. The local LAQS will support improvements in delivering a healthier city for all.

PCC acknowledges that fact that DEFRA will continue to take a keen interest in our work, particularly in the creation our LAQAP following publication of the LAQS to drive forward improvement in local air quality.

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1 Local Air Quality Management

Primarily this report is intended to provide an overview of Portsmouth's LAQ since 2012 up to and including 2016.

It fulfils the requirements of LAQM as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities (LAs) to regularly review and assess LAQ in their areas and to determine whether or not the NAQOs are likely to be achieved.

Where an exceedance is considered likely the LA must declare an AQMA and prepare a LAQAP setting out a set of mitigating measures it intends to put in place in pursuit of the NAQOs.

Secondly this ASR fills PCC's annual requirement to report upon our strategies employed to improve LAQ and any progress that has been made.

The statutory NAQOs applicable to LAQM in England can be found in Table E1 in Appendix E.

2 Actions to improve air quality

2.1 Air Quality Management Areas

AQMAs are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an AQAP within 12-18 months setting out measures it intends to put in place in pursuit of the objectives.

A summary of AQMAs declared by PCC can be found in **Table 2.1**.

Further information relating to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=198.

Table 2.1 – Declared AQMA

AQMA Name	Pollutants and Air Quality Objectives	Description	Action Plan
AQMA 6	NO_2 annual mean	An area encompassing a large number of residential properties extending north along Fratton Road; from Fratton Bridge into Kingston Road, continuing into London Road until the roundabout junction with Stubbington Road and Gladys Avenue	Portsmouth City Council's Air Quality Action Plan has been, and will continue to be, set up as a citywide AQAP rather than specifying actions for individual AQMAs.
AQMA 7	NO_2 annual mean	An area encompassing a number of residential properties along Hampshire Terrace and St Michaels Road gyratory.	
AQMA 9	NO_2 annual mean	An area encompassing a number of residential properties near to the southernmost section of Eastern Road from Sword Sands Road south into Velder Avenue and its junction with Milton Road.	
AQMA 11	NO_2 annual mean	This area encompasses a large number of residential properties east of the west transport corridor extending along part of the M275 and Mile End Road stretching from Rudmore roundabout south to Church Street roundabout.	
AQMA 12	NO_2 annual mean	An area encompassing a number of residential properties along Queen Street mainly an area stretching from The Hard to St James's Road.	

2.2 Historical air quality priorities

As part of the 2009 Further Assessment (FA), a SAS was carried out that enabled PCC to identify the sources causing the highest level of air pollution and those upon

which any LAQAP should focus and prioritise. The conclusions of the 2017 SAS confirm that these priorities remain equally valid in terms of their potential benefit in 2017.

The following were considered to be the priorities of the 2012 AQAP:

- Priority 1:
    - HGVs in 2010 were predicted to contribute between 23.2% and 24.5% of the NO_X within AQMAs 6 and 11. Therefore any percentage decrease in HGVs passing through these areas would have a significant beneficial impact upon local air quality. Another factor is the effect of HGVs' reduced speed, as the very lowest speeds are disproportionately more polluting. Congestion impairing HGV movement was therefore highly significant and needed to be reduced. Furthermore, HGVs contribute directly to the problem of congestion when making deliveries. This is particularly relevant on the London Road / Kingston Road / Fratton Road corridor (AQMA 6)
- Priority 2:
    - Car traffic in 2010 was predicted to contribute between 24.3% and 32.0% of NO_x emissions within AQMAs 6 and 11. Reducing congestion across the road network is therefore essential if air quality is to improve.
- Priority 3:
    - Buses in 2010 were predicted to contribute between 4.9% and 14.4% of the NO_x emissions within AQMA 6 and 11. The continued introduction of bus priority measures and introduction of improved bus exhaust technology therefore play an important part in ensuring public transport can offer a realistic and sustainable alternative to the private car.
- Priority 4:
    - Domestic, commercial and background sources: as background concentrations are influenced by pollution generated from outside Portsmouth's boundaries, emissions are difficult to specify or control. The 2010 LAQAP stated that, wherever possible, PCC needs to encourage a reduction of unnecessary discharges from residential and industrial premises and encourage the use of more efficient heating systems.
- Priority 5:
    - Shipping sources: The 2009 FA confirmed that the emissions from shipping did not exceed 10% of the total NO_x contribution in AQMA 11. This contribution is relatively small given the economic importance of shipping to Portsmouth.

- Priority 6:
    - In 2007, industrial sources were found to contribute only between 0.2% and 0.4% to the NO_X levels in AQMA 6 and 11.
- Priority 7:
    - Continuous improvement: Although the current legal limits on ambient air quality are now met across the majority of Portsmouth, the remaining NO_2 hotspots within the five AQMAs mean that exposure in these areas is still highly significant. Even where the objectives have been achieved, effort is needed to maintain air quality given pressures from Portsmouth's increasing population and demands on transport and land use.

Additionally, the 2009 FA identified the need to consider the following actions:

- Revocation of eight AQMAs (AQMA 1, 2, 3, 4, 5, 8, 10 and 13) based on 2008 monitoring data;
- Retention of five remaining AQMAs (6,7,9,11 and 12);
- Continued assessment of AQMA 6 and 11 based on the predicted breach of the NO_2 annual mean NAQO;
- Continued assessment of AQMA 7 and 9 based on the monitored breach of the NO_2 annual mean NAQO;
- Continued assessment of AQMA 12 based on a lack of historical monitoring data to justify a revocation;
- A review of the geographical extent of AQMA 11 based on the 40µg/m^3 contour line of the 2007 base-line dispersion modelling output.

The 2007 draft AQAP was then revisited and updated according to the 2009 FA findings to focus on AQMAs that were retained (AQMA 6, 7, 9 and 11).

On the 23rd March 2010 PCC revoked eight AQMAs (1, 2, 3, 4, 5, 8, 10 and 13), retaining four AQMAs (6, 7, 9 and 12) and re-designating AQMA 11.

On 11th January 2011 PCC adopted a LAQAP, which was annexed to the Local Transport Plan 3 (LTP3).

2.3 Progress and impact of measures to address air quality

Improving the air in Portsmouth with its high population and limited space is no easy challenge, especially as trans-boundary harmful pollutants are also blown into Portsmouth from sources beyond our direct control and influence.

At the core of proposals within any LAQAP / LAQS is the message that in order to deliver the improvements needed everyone needs to play their part and take steps to improve LAQ.

PCC is committed to working in partnership to improve and maintain a healthy air quality in the city. Despite the challenges faced, significant progress has been made to improve LAQ in the city and to drive forward further improvements in the coming years.

A key element of work that has contributed towards encouraging and supporting modal change and awareness of sustainable travel has been undertaken through the Sustainable Travel Transition Year fund.

A number of schemes were implemented through this work, such as personalised journey planning, workplace travel planning initiatives, travel to school initiatives and developing and promoting cycling. All of these measures have played a part in raising awareness of, and making improvements to local air quality.

Similarly, a number of schemes developed through the LTP have contributed to local improvements, such as the introduction of cycle lanes, traffic calming and junction improvements, reducing speeds, creating safer pedestrian environments, and improving vehicle flow.

PCC is moving forward with LAQ improvements through use of new technology, after successfully securing funding to develop an innovative IoT (Internet of Things) and Big Data platform for Portsmouth's Traffic Management Centre.

This project will develop capabilities in monitoring traffic conditions on the network, and provide an understanding of current journey patterns through the collection of data sources into one platform. Understanding more about journey patterns and travel demand will help to develop schemes to encourage modal shift to more sustainable options.

PCC's progress on delivering LAQ improvement is summarised in the Table 2.2.

2.4 Local air quality strategy

In order to continue to improve LAQ in Portsmouth, the new LAQS has been published, consulted upon and was formally adopted by PCC on the 17th July 2017.

This strategy outlines the consistent approach that is needed to improve air quality across the city.

Embedding air quality at the heart of decision making, the LAQS will support improvements in delivering a healthier city for all through a revision of the 2011 LAQAP measures details in Table 2.2.

PCC acknowledges the serious impact that poor LAQ has on health and the need for co-ordinated action to reduce air pollution.

2.5 Source Apportionment Study

In early 2017 PCC commissioned AECOM (an air quality Consultancy) to undertake a SAS of road traffic sources as part of the ongoing Local Air Quality Management's Review and Assessment (LAQRA) process.

This was based on a detailed dispersion modelling of LAQ in accordance with Defra's Technical Guidance LAQM.TG(16)[1], using the AAQuIRE detailed dispersion model, to identify geographical areas of the city where ambient pollutant concentrations exceed or are likely to exceed the relevant NAQO.

The SAS calculations were carried out to quantify the contributions of different road vehicle types to ambient pollutant concentrations in the areas of likely exceedance, to determine the emissions reductions required to achieve compliance, and to identify the likely year of compliance.

The conclusions of the study are as follows:

2.5.1 SAS and NO_2

PCC's monitoring data for 2015 has shown that annual mean NO_2 concentrations exceeded the annual mean NO_2 NAQO of 40µg/m^3 at 4 locations within the city. The monitored exceedances are within the boundaries of the existing AQMAs.

The results of the detailed dispersion modelling for 2015 are consistent with the monitoring data with areas predicted to exceed the annual mean NO_2 NAQO being confined to the London Road / Kingston Road / Fratton Road route corridor and the M275 / A3 corridor.

Exceedances of the annual mean NO_2 NAQO are predicted at 11 sensitive receptor locations in 2015. All of the predicted exceedances are at locations within the existing AQMA boundaries. The highest predicted annual mean NO_2 concentration in 2015 at modelled receptor location is 48.9µg/m^3 at London Road within AQMA 6.

The annual mean NO_2 NAQO exceedances were predicted at 8 other receptor locations along the London Road / Kingston Road / Fratton Road corridor within AQMA 6. The annual mean NO_2 NAQO is also predicted to be exceeded at 2 receptors within AQMA 11, located alongside Commercial Road. Annual mean NO_2 concentrations at receptor locations within AQMA 7, AQMA 9 and AQMA 12 are predicted to be below the annual mean NO_2 NAQO in 2015.

The SAS calculations indicate that at those receptors predicted to exceed the annual mean NO_2 NAQO, local traffic sources are estimated to account for 46% to 58% of total NO_2 concentrations. Cars and taxis are, on average, the most significant contributor to annual mean NO_2 concentrations at those receptors where NO_2 concentrations are predicted to exceed the annual mean NO_2 NAQO, accounting for 20% to 29% of annual mean NO_2 concentrations. Buses are estimated to account for 6% to 19% of annual mean NO_2 whilst LGVs account for 6% to 10%. Heavy goods vehicles (OGV1 and OGV2) are estimated to contribute up to 7% of annual mean NO_2 concentrations at receptors predicted to exceed the annual mean NO_2 NAQO.

In order to achieve the annual mean NO_2 NAQO at all modelled receptor locations within AQMA 6 in 2015, reductions in NO_2 concentrations of up to 8.9µg/m^3 are required. This corresponds to reductions in road NO_X emissions of up to 35%. Reductions in road NO_X emissions of around 14% are likely to be needed to attain the NAQO at all receptor locations in AQMA 11. Since the annual mean NO_2 NAQO is expected to be achieved within AQMA 7, AQMA 9 and AQMA 12, no reductions in road NO_X emissions are required in these areas in order to attain the annual mean NO_2 NAQO in 2015.

[1] Defra Local Air Quality Management Technical Guidance TG(16). https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf

In the 2020 scenario, exceedances of the annual mean NO_2 NAQO are predicted at four sensitive receptors within AQMA 6 along the London Road / Kingston Road / Fratton Road corridor. The highest predicted annual mean NO_2 concentration in 2020 at modelled receptor locations is 43.2µg/m^3 at 16 London Road (Receptor 32). Annual mean NO_2 concentrations at receptor locations within AQMA 7, AQMA 9, AQMA 11 and AQMA 12 are predicted to be below the annual mean NO_2 NAQO in 2020.

The SAS calculations indicate that at those receptors predicted to exceed the annual mean NO_2 NAQO local traffic sources are estimated to account for 54% to 55% of total NO_2 concentrations. Cars and taxis are, on average, the most significant contributor to annual mean NO_2 concentrations at those receptors where NO_2 concentrations are predicted to exceed the annual mean NO_2 NAQO, accounting for 24% to 29% of annual mean NO_2 concentrations. Buses are estimated to account for 12% to 18% of annual mean NO_2 whilst LGVs account for 9% to 11%. Heavy goods vehicles (OGV1 and OGV2) are estimated to contribute up to 4% of annual mean NO_2 concentrations at receptors predicted to exceed the annual mean NO_2 NAQO.

In order to achieve the annual mean NO_2 NAQO at all modelled receptor locations within AQMA 6 in 2020, reductions in NO_2 concentrations of up to 3.2µg/m^3 are required. This corresponds to reductions in road NO_X emissions of up to 15%. Since the AQO is expected to be achieved within AQMA 7, AQMA 9, AQMA 11 and AQMA 12, no further reductions in road NO_X emissions are required in these areas in order to attain the annual mean NO_2 NAQO in 2020.

The results of the detailed dispersion modelling of annual mean NO_2 concentrations in Portsmouth indicates that exceedances of the annual mean NO_2 NAQO are likely to remain in a few small areas in 2020 if no additional action is taken to improve LAQ.

Making the simplifying assumption that reductions in road NO_X between 2015 and 2020 continue beyond 2020 at the same rate it would be expected that all areas of Portsmouth will achieve compliance with the annual mean NO_2 NAQO by 2022.

2.5.2 SAS and particulate Matter (PM_{10} and $PM_{2.5}$)

PCC's monitoring of PM_{10} and $PM_{2.5}$ has shown that the annual mean UK NAQO (PM_{10}) and EU Limit Value ($PM_{2.5}$) have been achieved in Portsmouth in recent years and exceedances are unlikely to occur anywhere within the city.

The results of the detailed dispersion modelling for 2015 are consistent with the monitoring data. Annual mean PM_{10} concentrations in 2015 are predicted to be 22µg/m^3 and less at all modelled locations within the study area. The highest annual mean PM_{10} concentration at specific receptor locations in 2015 is 20.4µg/m^3 at St. Edmund House, which is located alongside Alfred Road to the north of the junction between Alfred Road, Queen Street and Anglesea Road.

Source apportionment calculations indicate that background sources are the largest contributors to annual mean PM_{10} concentrations at modelled receptor locations. Local traffic sources account for 6% to 20% of annual mean PM_{10} concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (3% to 13%). LGVs (1% to 4%) and buses (up to 3%) are the next largest contributing local traffic sources.

Annual mean $PM_{2.5}$ concentrations in 2015 are predicted to be 15µg/m^3 and less at all modelled locations within the study area. The highest annual mean $PM_{2.5}$ concentration at specific receptor locations in 2015 is 14.1µg/m^3 at Kingston Road.

The SAS calculations indicate that background sources are the largest contributors to annual mean $PM_{2.5}$ concentrations at modelled receptor locations. Local traffic sources account for 5% to 18% of annual mean $PM_{2.5}$ concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (3% to 12%). LGVs (1% to 3%) and buses (up to 3%) are the next largest contributing local traffic sources to annual mean $PM_{2.5}$ concentrations.

Annual mean PM_{10} concentrations in 2020 are predicted to be 21µg/m^3 and less at all modelled locations within the study area. The highest annual mean PM_{10} concentration at specific receptor locations in 2020 is 19.4µg/m^3 at St. Edmund House, which is located alongside Alfred Road to the north of the junction between Alfred Road, Queen Street and Anglesea Road.

The SAS calculations indicate that background sources are the largest contributors to annual mean PM_{10} concentrations at modelled receptor locations. Local traffic sources account for 5% to 19% of annual mean PM_{10} concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (3% to 13%). LGVs (1% to 4%) and buses (up to 2%) are the next largest contributing local traffic sources.

Annual mean $PM_{2.5}$ concentrations in 2020 are predicted to be 14µg/m^3 and less at all modelled locations within the study area. The highest annual mean $PM_{2.5}$ concentration at modelled receptor locations in 2020 is 13.0µg/m^3 at 48-50 Kingston Road.

The SAS indicate that background sources are the largest contributors to annual mean $PM_{2.5}$ concentrations at modelled receptor locations. Local traffic sources account for 4% to 16% of annual mean $PM_{2.5}$ concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (2% to 11%). LGVs (1% to 3%) and buses (up to 2%) are the next largest contributing local traffic sources to annual mean $PM_{2.5}$ concentrations.

2.6 DEFRA's plans

In June 2017 PCC responded to DEFRA's draft NAQAP to tackle NO_2. As the UK's only island city, PCC acknowledged the fact we faced a number of unique challenges in improving Portsmouth's LAQ.

PCC stated that as a densely populated city with high visitor numbers and only three roads linking Portsea Island to the mainland, there is significant potential for congestion within some parts of the city, particularly at peak times.

In addition to the impacts of local sources, the city is impacted by harmful transboundary pollutants which can be blown into Portsmouth from sources beyond its direct control and influence.

PCC stated that the current legal limits on ambient LAQ are now being met across the majority of the city, particularly where sensitive receptors are located and that although NO_2 levels in hotspot areas still exceed these limits, our published data (at

the time we submitted our comments) demonstrated that levels were generally improving (since contradicted in some areas by the 2016 ASR) and the contribution of NO_2 from vehicles was in decline (confirmed by the 2017 SAS).

Additionally, PCC contended that while national modelling provides estimates of background concentrations and contributions from nationally-managed roads, it did not attempt to accurately model concentrations in urban areas or contributions from locally-managed roads.

PCC modelling of impact and levels of NO_2 through the 2017 SAS developed with the air quality specialist AECOM represented an assessment at a considerably higher resolution following the input of robust locally obtained data specific to our unique circumstances. This demonstrated that in a 'do-nothing' scenario compliance across Portsmouth may ''best case'' be achieved by 2020.

We acknowledged the fact that this is not good enough and highlighted its ambitious plans which are currently underway to continue to improve the air quality within the city to deliver improvement within the shortest possible timeframe.

Portsmouth is building an alliance of leading organisations across the city to promote improvements in air quality to achieve compliance within the shortest possible time, recognising that the LA cannot independently implement all improvements to LAQ.

Correspondingly, PCC welcomed the Government's targeting of factors which contribute to the background pollution observed within the city, which our modelling suggests is an increasingly significant contributor to pollution levels recorded in Portsmouth.

Subsequently, DEFRA confirmed that its data for Portsmouth shows that the current areas of exceedance of the NAQO will fall within compliance levels by 2021. The forthcoming installation of the new monitoring station in Anglesea Road is likely to assist in validating these results in the near future.

Within the 2017 NAQAP, DEFRA have confirmed that Portsmouth is not named within the Government's Air Quality Strategy as an urban area with higher levels of pollution.

Full details of DEFRAs plan to tackle nitrogen dioxide can be found at https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

2.7 Recommendations

Following analysis of the 2016 ASR data, the conclusions of the 2017 SAS and strategic intentions of the 2017 LAQS the following is recommended:

- A new detailed LAQAP be developed in order to deliver the overarching principles as set out within the 2017 LAQS. High regard being given to the conclusions of the 2016 ASR data sets in terms of pollution levels, trends and hotspot areas and the findings of the 2017 SAS in respect to the composition and contribution of pollution sources and the predicted improvements necessary to delivery compliance with NAQO in the shortest possible timeframe;

- AQMA 7 is kept closely under review during the next 12 months with a view to defining its geographical extent. The result of monitoring data, as presented during the last 6 years, being consistently and considerably below the NO_2 annual mean NAQO clarifies the levels of NO_2 within Queen Street in particular and therefore it is possible that this particular area is revoked;
- AQMA 12 is kept closely under review during the next 12 months with a view to complete revocation. The result of monitoring data, as presented during the last 6 years, being consistently below the NO_2 annual mean NAQO.

Table 2.2 – Progress on Measures to Improve Air Quality

EU Categories

VFE	Vehicle Fleet Efficiency
PI	Public Information
PTA	Promoting Travel Alternatives
TPI	Transport Planning and Infrastructure
TM	Traffic Management
PGDC	Policy Guidance and Development Control
APV	Alternative to Private Vehicle Use
FDM	Freight and Delivery Management
PLET	Promoting Low Emission Transport

Progress on Measures to Improve Air Quality								
Theme: Public Information								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Dat**	**End Date**	**Target Area**	**Progress to Date**
PI1	**Air Quality Information** Provision of information regarding air quality, including real time monitoring data and information regarding assessments of air quality to enable public awareness of issues and success of actions implemented	PI	Via the internet	PCC	2017	On-going	Citywide	Whilst some actions have already been carried out in this area, more can be done to provide air quality information to enable public awareness, and will be progressed.
PI2	**Sustainable Travel Behaviour Change**	PI	Via the internet, via leaflets, via other mechanisms	PCC	2012	On-going	Citywide	Much good work has been carried out through Local Sustainable Transport Fund and Sustainable Travel Transition Year Grant. Further behaviour change work will be conducted in the future, through promotion and awareness raising of schemes and initiatives.
PI3	**On Street Travel Advisors**	PI	Via other mechanisms	PCC	2016	2017	Citywide	Travel Advisors played a big role in the Personal Journey Planning work through the Sustainable Travel Transition Year programme. Where funding is available on street travel advisors will be used at various events held across the city.
PI4	**Idling engines**	PI	Via the internet, via other mechanisms	PCC	2009	On-going	Citywide, particularly all AQMA's	An awareness campaign was carried out in 2011 to encourage drivers to switch off engines when stationary for more than a minute or two. Further awareness raising campaigns will be carried out in the future, to further encourage consideration of switching off engines to prevent idling.

Progress on Measures to Improve Air Quality								
Theme: Cycling								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
C1	**Promote cycling** Road Safety & Active Travel initiatives set and prioritised around improving road safety, the cycle network and behaviour change. Educational programmes in schools include Bikeability, Transition years and Pompey Monster. Road safety behaviour change with students and commuters - Be bright, Share the Road's, bike security and businesses using light good vehicles. Cycle promotion through community based cycle events to promote Quieter routes and 'Glow Ride'. Cycle Hub to support events with the provision of Bike Dr. Stake holder engagement to support British cycling set up Community cycle groups.	PTA	Promotion of cycling	PCC	2010	2030	Citywide	An Active Travel Strategy in place for the period 2010 to 2030. It is being taken forward in conjunction with other departments notably Public Health. This strategy will be reviewed in accordance with the latest Government's walking and cycling strategy. Walking and cycling map reprinted and reissued. It has proven very popular. Further redesign of the map is required and will be taken forward. Works in conjunction with stakeholders such as Portsmouth Cycle Forum continues.
C2	**Cycle Parking** The provision of appropriate cycle parking at key destinations across the city	TPI	Cycle Network	PCC	On-going	On-going	Citywide	Cycle parking is continually introduced and improved as required and funding is available. Most recently a number of cycle parking stands were provided at a wide range of locations across the city as part of the Sustainable Travel Transition Year scheme. Further cycle parking will be provided at various locations through ongoing schemes.

C3	**Community Cycle Hub** Continued partnership working to support and generate income through community events and initiatives using Bike Dr.	PTA	Promotion of cycling	PCC	2011	2023	N/A	Ongoing - introduction of a cycle hub providing maintenance, training and retail of cycle goods. Cycle hire provision also available. Continuation of the Bike Dr maintenance sessions across the city.
C4	**LTP Programme**	TPI	Cycle Network	PCC	On-going	On-going	Citywide	On-going schemes being developed through the LTP will provide improvements to local air quality.
C5	**Winston Churchill Avenue** Segregated cycle route.	TPI	Cycle Network	PCC	2017	2021	Winston Churchill Avenue	Development of a fully segregated East West route.
C6	**Bike Hire Scheme**	PTA	Promotion of cycling	PCC	2017	Ongoing	Citywide	Implementation of a city wide bike hire scheme.
C7	**Healthy Streets Application**	PTA	Promotion of cycling	PCC	2017	Ongoing	Citywide	Considering applying the London healthy streets concept in Portsmouth.
C8	**Family Cycle Grants and Family Cycle Training**	PTA	Promotion of cycling	PCC	2017	Ongoing	Citywide	Successfully delivered in 2016/17, enabling lower income families to access safe cycling and move away from the private car.
C9	**Events Programme**	PTA	Promotion of cycling	PCC	2017	Ongoing	Citywide	Successfully delivered Pedal Portsmouth events, Glow Ride, Changing Places and Be bright be seen in 2016/17. Events programme planned for 2017/18.
C10	**Supply of pool bikes for staff travel**	PTA	Promotion of cycling	PCC	On-going	Ongoing	Citywide	Have pool bikes for staff business use.
C11	**Active Steps - Job Seekers**	TPI	Other	PCC	2016	2017	Citywide	Adult cycle training was provided through the Sustainable Travel Transition Year work, in partnership with Sustrans. Adult cycle training was also provided by PCC.

C12	**Quieter Routes**	PTA	Promotion of cycling	PCC	2016	2017	Citywide	A network of 'Quieter Routes' has been highlighted in the city, with a map being produced to illustrate these routes. Coloured stickers on lampposts mark out the routes, with five being between the north and south of the city, and five being between the east and west. These routes will assist people wishing to cycle through the city on quieter routes, away from main roads.

Progress on Measures to Improve Air Quality								
Theme: Walking								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
W1	**Promote walking** Road Safety & Active Travel initiatives set and prioritised around improving road safety for pedestrians and behaviour change. Educational programmes in schools such as, pedestrian training, Junior Road Safety Officers and Pompey Monster Walk to School Challenge, along with supporting measures such as Park and Stride. Partnership work with Routes4U and local action groups to support local walking initiatives.	PTA	Promotion of walking	PCC	2010	2030	Citywide	Active Travel Strategy in place for the period 2010 to 2030. It is being taken forward in conjunction with other departments notably Public Health. This strategy will be reviewed to ensure it is kept current and fit for purpose. Walking and cycling map reprinted and reissued. It has proven very popular. Further redesign of the map is required and will be taken forward. Works in conjunction with ramblers and Portsmouth Friends of the Earth continue. Wayfinding system introduced to make it easier to navigate the city centre by foot. 61 totem style maps and 23 finger posts are displayed in the three retail/tourist centres of city centre, Southsea and The Harbour area.
W2	**Rights of Way / Way finding and signage rationalisation** Routes4U Piloted programme (City-centre) to detail accessible routes for the elderly, visually and physically impaired. Reactive response to rights of way requests. Sustainable way finding signage and repair of damage.	TPI	Other	PCC	2012	Ongoing	Citywide	Ongoing - 61 totem style maps and 23 finger posts are displayed in Portsmouth's main city centre areas and tourist attractions.
W3	**Healthy Streets Application**	PTA	Promotion of walking,	PCC	2017	Ongoing	Citywide	Considering applying the London healthy streets concept in Portsmouth.

W4	**Duisburg Way pedestrian crossing facility**	TM	Other	PCC	2016	May 2017	Duisburg Way	A controlled toucan crossing has been implemented at Duisburg Way to link the existing footway and shared use facilities in the area. Also offers a controlled crossing facility to pedestrians and cyclists within the area who wish to attend the Events that are held within the area of Southsea Common.
W5	**Victoria Road North - Bradford Rd junction / pedestrians crossing**	TM	Other	PCC	2016	March 2017	Victoria Road North/ Bradford Road	To improve the layout of the existing junction and provide a safe crossing point for both pedestrians and cyclists within the area.

Progress on Measures to Improve Air Quality								
Theme: Energy								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
E1	**Domestic heating emissions**	PGDC	Other policy	PCC	2014	2030	Citywide	Ongoing - control of replacement gas-fired boilers through building control and private sector housing teams - careful consideration of CHP.
E2	**Energy saving measures**	PGDC	Other policy	PCC	2014	2030	N/A	Ongoing - Promotion of energy saving measures leading to reductions in combustion emissions across the city. To be conducted through PSAG. Continued implementation of Portsmouth Climate Change Strategy to reduce energy use for both organisations and housing across the city.

Progress on Measures to Improve Air Quality								
Theme: Schools								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
S1	**Safer Routes to School Minor Remedial Works**	TPI	Other	PCC	2014	2030	Citywide	This work is on-going and will be completed year on year.
S2	**School travel plans**	PTA	School Travel Plans	PCC	2014	On-going	Citywide	Small scale travel planning is taking place. Benefits from Safer Routes to School capital programme and the new partnership between Transport Environment and Business Support, Public Health and the Cycle Forum toward working with more schools.
S3	**Upper Arundel Street improvement**	TPI	Other	PCC	2016	2018	Arundel Street	Improvements made in summer 2016.Ongoing - Alterations to parking to ensure safer access to the school by foot.
S4	**Pompey Monster Walk to School Challenge - school behaviour change**	PTA	Promotion of walking	PCC	2016 / 17	On-going	Citywide	The Pompey Monsters Scheme was introduced in 2016/7, and a trial of the scheme was carried out at three schools in the city, as part of the STTY scheme. This successful initiative was popular with the children and encouraged an increase in walking to school. It is hoped that this initiative can be extended to other schools if further funding becomes available.

Progress on Measures to Improve Air Quality								
Theme: Network Management								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
NM1	**Variable message signs**	PI	Via other mechanisms	PCC	2009	On-going	Citywide	Several VMS signs are already in place. Further signs to be rolled out at car parks and other locations providing route guidance. In late 2017 five new signs displaying live car park occupancy information will be installed.
NM2	**Junction improvements**	TM	UTC, Congestion management, traffic reduction	PCC	2013	On-going	Various locations	Improvements to traffic controlled junctions throughout AQMA 6 (all 3 sections). Co-ordination of signal operation through MOVA (or similar). Particular attention paid to: London Rd / Stubbington Rd roundabout; London Rd / Kingston Crescent (completed 2016); Kingston Rd / New Rd(to be delivered 2017/18); Fratton Rd / Arundel St (to be delivered 2017/18); roundabout at Fratton Rd – Victoria Rd North – Goldsmith Ave; Review all junctions citywide, starting with AQMAs, to increase effectiveness and prevent unnecessary congestion.
NM3	**Traffic Signal Reconfiguration 2014/15 and 16/17**	TM	UTC, Congestion management, traffic reduction	PCC	2014	On-going	Citywide	Minor improvements to the current traffic signal infrastructure. Goldsmith Ave/Priory Crescent identified so far for potential alterations to signals in 17/18.
NM4	**Tourist sign on M275**	TM	Other	PCC	2016	2018	N/A	To provide the initial tourist destination sign for the primary tourist destinations in Portsmouth coming into the city via the M275. This will ensure private vehicles drive the most direct route to their destination reducing traffic in the city centre.

NM5	**Eastern Corridor Works**	TM	UTC, Congestion management, traffic reduction	PCC	2017	2018	Eastern Corridor including AQMA 9	A comprehensive study is being conducted of the Eastern Road corridor, which will deliver identifiable solutions for this key corridor into the city. The study will identify problems of current uses and identify future uses and solutions.
NM6	**LTP Programme**	TM	UTC, Congestion management, traffic reduction	PCC	On-going	On-going	Citywide	On-going schemes being developed through the LTP will provide improvements to local air quality.
NM7	**Wightlink increased capacity**	TM	UTC, Congestion management, traffic reduction	PCC	2017	2018	Gunwharf terminal	Works to facilitate increased capacity, improved loading and vehicle waiting facilities.
NM8	**City Centre Road**	TM	Strategic highway improvements, re-prioritising road space away from cars, including access management, selective vehicle priority, bus priority, high occupancy vehicle lane	PCC	2017	On-going	City centre	Improved road layout to the city centre, increasing capacity and prioritising public transport, walking and cycling.
NM9	**A27 Upgrade**	TM	Other	PCC	2017	2018	A27	Traffic safety measures which will also assist with traffic flow.

NM10	**Smart Motorways M27 Jct. 11to Jct 12**	TM	UTC, Congestion management, traffic reduction	PCC	2017	On-going	M27 Jct. 11 to 12	Request to HE for an upgrade and improvements from M27 Junction 11 to the A27/A3 (M) junction to include: Smart Motorways, ALR, and off-HE network investment in connecting junctions including Farlington and Portsbridge roundabouts. Upgrade of the A27 between Junction 12 M27 to the A27/A3 (M) junction to motorway standard as part of RIS 2.
NM11	**Integration of air quality data with Stratos System**	TM	Other	PCC	2017	On-going	Citywide	Investigating the possibility of integrating air quality data with the Stratos system.
NM12	**Speed Reduction Schemes 16/17**	TM	Other	PCC	2016	2017	Citywide	Schemes delivered to reduce speed.
NM13	**Signs and Lines**	TPI	Other	PCC	2016	2017	Citywide	Small city wide improvements to existing road signage and markings and 2016/17.
NM14	**Anglesea Rd/ Market Way Traffic Signal Corridor**	TM	UTC, Congestion management, traffic reduction	PCC	2016	2016	Anglesea Rd / Market Way	Completed: Signal refurbishment completed 2016.
NM15	**Western Road - Northern Parade Improvements**	TM	UTC, Congestion management, traffic reduction	PCC	2017	2017	AQMA 13	South of AQMA 13 - speed limit reduced on Western Way to 50mph - implemented
NM16	**Traffic Calming schemes - Lonsdale Rd / Salisbury Rd**	TM	Other	PCC	2016	2017	Lonsdale Road/ Salisbury Road	Introduction of speed tables

Progress on Measures to Improve Air Quality								
Theme: Public Transport								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
PT1	**Promoting bus use**	TPI	Public transport improvement - interchanges stations and services	PCC	2009	On-going	Citywide	Increasing bus vehicle miles and bus patronage is the responsibility of the bus operators. Portsmouth City Council work closely with the operators to encourage usage and increased punctuality so making public transport more attractive.
PT2	**Upgrade bus fleet**	VFE	Promoting Low Emission Public Transport	PCC	2009	On-going	Citywide	Upgrade fleet and improve emission technologies by bus operators. PCC will work closely with operators to encourage an upgrade of their fleet and technologies.
PT3	**Public transport ticketing**	TPI	Public transport improvement - interchanges stations and services	PCC	2011	2017	Citywide	Smart card ticketing has been implemented across the bus network. Ongoing work will see contactless payment being introduced by Autumn 2017.
PT4	**Public transport information**	PI	Via leaflets, via the internet, via other mechanisms	PCC	2012	On-going	Citywide	SMS/ texting / bus timetable downloads; Improved Shelters with 85 real-time passenger information units have been installed.
PT5	**Station Travel Plans**	PTA	Other	PCC	2012	On-going	Citywide	Station Travel Plans have been written. Further work needs to be undertaken in order to take forward the actions in these plans with the new franchise.

PT6	**Public transport infrastructure**	TPI	Public transport improvement - interchanges stations and services	PCC	2016	On-going	N/A	Phase 1 and 2 were completed through Local Sustainable Transport Fund, and there is scope for phase 3 to be completed in the future. This project will enhance the availability of Real Time Passenger Information (RTPI) along bus corridors in Portsmouth. Encouraging people to use Public Transport over private cars.
PT7	**Traveline**	PI	Via the internet, via other mechanisms	PCC	2016	On-going	Citywide	Traveline consists of a national database for all bus stops and timetables which is updated daily, providing comprehensive information and is used to populate all journey planning engines.
PT8	**Commercial Road South**	PI	Via leaflets, via the internet, via other mechanisms	PCC	2017	2018	Commerci -al Road South	Improvements to the legibility of the bus network.
PT9	**Park and Ride decking**	APV	Bus based park and ride	PCC	2017	On-going	City centre, Hard	This proposal is at the feasibility stage, and if developed will provide increased parking space availability at the Park and Ride site, allowing for increased usage of the service.
PT10	**Working with First/MTR to implement investments through the new South Western Rail Franchise**	TPI	Public transport improvements -interchanges stations and services	PCC	2017	On-going	Rail stations	To meet with new franchisee in August.
PT11	**Re-development of Hard Interchange**	TPI	Public transport improvement interchanges stations and services	PCC	2014	May 2017	The Hard and Portsmouth and Southsea Interchange	Re-development of The Hard Gateway and Portsmouth and Southsea interchange - sub-regional hubs. Providing improved links to rail and ferry services and improving pedestrian and cycle links to Gunwharf Quays and city centre principle shopping areas. These improvements will help to make public transport easier and more attractive to use.

PT12	LTP delivery of improved and integrated network of public	TPI	Public transport improvement interchanges stations and services	PCC	2016	2017	Citywide	Improvements have taken place in traffic signalling (reducing waiting times for all traffic including buses).

Progress on Measures to Improve Air Quality								
Theme: Freight								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
F1	**Freight quality partnership**	FDM	Route Management Plans / Strategic routing strategy for HGV's	PCC	2008	On-going	Citywide with particular focus on AQMA 6 and 11	Further work is required in this area, working closely with freight supplies (particularly local) to ensure the most appropriate routes are undertaken through AQMAs particularly through AQMA 6 (Norway Rd International Port).

Progress on Measures to Improve Air Quality								
Theme: Workplace								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
WP1	**Workplace travel plans (WPTP)**	PTA	Workplace Travel Planning	PCC	2014	On-going	Citywide	40 WTP in total 1 signed off in 2010-11. Between 2012 and 2015 there have been a further 9 Travel Plans. More WTPs expected. The SignPOST Travel Forum has been replaced by the easitPortsmouth network which meets 3X a year. Easit offers a range of benefits including discounts on peak train travel, cycling, & electric vehicle for employees of member organisation.
WP2	**Workplace Sustainable Travel Fund (WSTF)**	PTA	Workplace Travel Planning	PCC	2016 /17	On-going	Citywide	The WSTF was carried out in 2016/17 through STTY. It is hoped that further WSTF schemes can be delivered with local businesses in the future, should funding become available.
WP3	**Eco Driver Training**	VFE	Driver training and ECO driver aids	PCC	2013	2017	Citywide	Eco Driver Training was delivered as part of the STTY project, with the training being offered to local businesses.

Progress on Measures to Improve Air Quality								
Theme: Technology								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
T1	**Explore new technology**	PGDC	Other	PCC	2017	On-going	Citywide	Undertake research into new technologies to reduce levels of NOx and consider their potential use within future strategies

Progress on Measures to Improve Air Quality								
Theme: Accessibility								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
A1	**Access for people with disabilities**	TPI	Other	PCC	2016	On-going	Citywide	To provide low cost measures Portsmouth citywide where improvements to the kerb lines, signing and street furniture will aid mobility for the disabled and parents with young children in prams and pushchairs. Encouraging active travel modes.

Progress on Measures to Improve Air Quality								
Theme: Planning								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
P1	AQ improvements through the planning process	PGDC	Other	PCC	On-going	On-going	Citywide	

Progress on Measures to Improve Air Quality								
Theme: Other								
Measure ID	**Measure and Description**	**EU Category**	**EU Classification**	**Lead Authority**	**Start Date**	**End Date**	**Target Area**	**Progress to Date**
O1	Bidding for Funding	PGD	Other	PCC	Ongoing	Ongoing	Citywide	We will seek funding opportunities to assist with air quality initiatives wherever possible.
O2	Review of PCC fleet and moving away from diesel vehicles	PLET	Company vehicle procurement - prioritising uptake of low emission vehicles	PCC	On going	Ongoing	Citywide	Future consideration to be given to PCC fleet procurement, with a view to moving away from Diesel vehicles.

2.9 $PM_{2.5}$ – Local authority approach to reducing emissions and or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7) LAs are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$. There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Given that the main source of air pollution in Portsmouth is road traffic related and that the main sources of PM_{10} and NO_2 are the same as that of $PM_{2.5}$ PCC is taking no specific measure(s) to reduce $PM_{2.5}$. Dealing with one automotive related pollutant such as PM_{10} and NO_2 will inherently deal with $PM_{2.5}$.

3 Air quality monitoring data and comparison with air quality objectives and national compliance

3.1 Summary of monitoring undertaken

3.1.1 Automatic monitoring sites

This section sets out what monitoring has taken place and how it compares with NAQOs.

PCC has been undertaking automatic monitoring at four CAQMSs for many years. Table A1 in Appendix A shows the details of the sites.

Maps showing the locations of the CAQMS sites are provided in Map 1 in Appendix D.

Additionally, Map 2, Map 3, Map 4 and Map 5 show individual monitoring locations of Gatcombe Park, London Road, Burrfield Road and Mile End Road station locations respectively.

Details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-automatic monitoring sites

PCC has undertaken non- automatic (passive) monitoring of NO_2 at 40 sites for many years (including four colocation sites).

Table A2 in Appendix A shows the details of the monitored sites.

The locations of the monitoring sites are provided on Map 6 in Appendix D.

3.2 Individual Pollutants

There has been no significant change to PCC's air quality monitoring program within the period 2012 to 2016. However, at the beginning of 2017 both London Road and Mile End Road station were both refurbished with HORIBA APDA-372 $PM_{2.5}$ / PM_{10} analysers, replacing the elderly Eberlines. Data from these analysers will be reported in the 2017 ASR.

NO_2, and PM_{10} are being monitored continuously at four CAQMSs, while $PM_{2.5}$ is being monitored continuously at three CAQMSs. In addition, NO_2 is being monitored using diffusion at 40 locations across the city.

Emphasis in Section from 1.37 and 1.39; including Box 1.1; in the LAQM.TG (16) has been placed, for the annual mean NAQO, on monitoring and assessing non-occupational above or below ground level outdoor locations, where members the public might be regularly exposed. These include:

- Building facades of residential properties;
- Schools, hospitals, care homes, library facades etc.

PCC's NO_2, $PM_{2.5}$ and PM_{10} monitoring programmes are annually assessed to ensure that the LAQ monitoring requirements of the R&A process are met.

Continuous monitoring has been carried out in accordance with the Quality Assurance / Quality Control (QA / QC) protocols documented in Appendix C.

Each of the CAQMS is fitted with NO_2 and $PM_{2.5}$ / PM_{10} analysers with the exception of C6 that is not fitted with $PM_{2.5}$. These are located as follows:

- Station C2: This is a fixed kerbside station set up to monitor NO_2 and PM_{10} generated by the road traffic along London Road (Map 3, Appendix D).

  This station was recently newly refurbished (January 2017) with a new HORIBA's APDA-372; $PM_{2.5}$ / PM_{10} analyser; that replaced the elderly Eberline to meet DEFRA's AQ monitoring requirement.

  This station is located in a narrow busy roadside shopping area where large numbers of pedestrians are present (with pavements in places approximately only 2 metres). This station is located within AQMA 6.

  Buildings in the immediate vicinity are predominantly commercial. However, residential units are located further north and south of the site typically at first floor level above retail outlet units. This shopping location has some of the characteristics of a street canyon-like sitting with slow moving road traffic often causing congestion.

- Station C4: An Automatic Urban and Rural Network (AURN) station located in an urban background location at Gatcombe Park Primary School, Curtis Mead (Map 2, Appendix D). At this station $PM_{2.5}$ is monitored in addition to NO_2 and PM_{10}.

- Station C6: This is a fixed roadside station established in 2007 to monitor NO_2 and PM_{10} generated by the road traffic along Burrfield Road (Map 4, Appendix D). This station is located at a junction with large numbers of pedestrians and residential properties. Buildings in the immediate vicinity are a mixture of both commercial and residential. This station was mainly set up to monitor road traffic related pollution generated from the adjacent Burrfield Road / Copnor Road junction within the revoked AQMA 3.

- Station C7: This is a fixed Roadside station established in 2007 to monitor NO_2 and PM_{10} generated by the road traffic along Mile End Road and the southern end of the M275 into the City (Map 5, Appendix D).

  This station was recently newly refurbished (January 2017) with a new HORIBA APDA-372; $PM_{2.5}$/PM_{10} analyser; that replaced the elderly Eberline to meet DEFRA's AQ monitoring requirement.

  This station is located within AQMA 11 approximately 6.5 metres from Mile End kerbside in a residential area. Buildings in the immediate vicinity are all residential.

The locations and characteristics of all continuous monitoring sites are summarised in Table A.1, appendix A and the NO_2 continuous monitoring data for 2012, 2013, 2014, 2015 and 2016 are presented on last four rows of Table A.3, Appendix A.

The LAQ monitoring results presented in these sections were subjected to various corrections depending on the pollutants, monitoring means and period and locations.

3.2.1 NO_2

The NO_2 continuous monitoring program is supplemented by a non-automatic passive monitoring survey using an extensive NDDT survey implemented in 2004.

These sites are located mainly near busy junctions, at kerbside and roadside locations, at relevant exposure locations as defined in Box 1.1 of the LAQM.TG(16) guidance. This monitoring program is primarily focused on both declared and revoked AQMAs.

The NDDT survey covers 40 locations across the City. Four of these locations are dedicated to collocation studies.

Data generated from NDDT survey was firstly annualised where monitoring had been carried out for less than twelve months, yearly projections as prescribed in Box 7.10 of LAQM.TG(16).

Secondly the data was subjected to bias correction using locally generated bias correction factor from local co-location study. These were generated using spreadsheet based "Local Bias Adjustment Factor" tool.

In addition, monitored data at locations that are not on the façade of building of sensitive receptors are corrected to the nearest façade of building with relevant exposure.

The non-continuous NDDT survey locations and monitoring site characteristics are summarised in Table A2, Appendix A and illustrated on Map 6, Appendix D.

NDDT survey has been conducted in accordance with the QA / QC outlined in Appendix C.

The NDDT survey data were bias adjusted using the bias correction factor generated from the local co-located study. This involved the exposure of three NDDTs at each of the four CAQMSs.

The bias correction factors was generated following the approach prescribed from Section 7.190 to 7.198 of LAQM.TG (16) using the calculating precision and accuracy spreadsheet (http://laqm.defra.gov.uk/documents/AEA_DifTPAB_v04.xls).

For 2016 as the reporting year the NDDT collocation study generated the following bias correction factors:

- tubes exposed at the London Road station (kerbside station) generated 0.96 as the bias correction factor;
- tubes exposed at both Mile End Road and Burrfield Road stations (both roadside stations) generated 1.05 and 1.07 respectively as the bias correction factors;
- tubes exposed at the Gatcombe Park station (urban background station) generated 1.02 as the bias correction factor;

The above bias correction factors were averaged using the methodology prescribed in Section 7.192 of the LAQM.TG(16).

The 2016 NDDT survey results were bias adjusted using 1.023 as the average of all the above mentioned bias correction factors.

The 2012, 2013, 2014, 2015 and 2016 NDDT survey data was subjected up to three stage adjustments to be directly compared to the NO_2 annual mean NAQO:

- Annualised: NDDT locations with less than 8 month data were projected for 12 months first
- Bias Correction: bias corrected using the local co-location bias correction factor.
- Distance corrections: To predict the level of the pollutant at the façade of the receptors property should the monitoring location be at some distance from the receptor. This was carried out using the calculator that was made available by 'Air Quality Consultants'. This tool is provided to local authorities to predict the annual mean NO_2 concentration for a receptor location that is close to a monitoring site, but nearer or further to the kerb than the monitor.

Two NDDT locations were however subjected to a further adjustment as the monitoring points at these locations are distant from the façade of the nearest relevant exposure.

The two locations are:

- 106 Victoria Road North
- Anchorage Road

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the NO_2 annual mean NAQO of 40µg/m^3.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Table B1, Appendix B.

The adjusted NDDT survey data as prescribed above for all monitored sites in the city are presented on Table A3 in Appendix A.

3.2.1.1 NO_2 data sets

NDDT

The results for 2012, 2013, 2014, 2015 (and 2016) adjusted NDDT survey data shows that all exceedances are concentrated predominantly in the declared AQMAs with the exception of:

- Addison Madden location on Hampshire Terrace, where the 2014 NO_2 annual mean concentration exceeded the NO_2 annual mean NAQO. This monitoring site is located close to one of the busiest junctions in Southsea that centres in AQMA 7. The NO_2 long-term trend over the last five years at this location exhibited slight downward trends since 2012 (Figure F27, Appendix F).
- Albert Road (AR116) where the 2016 NO_2 annual mean concentration exceeded the NO_2 annual mean NAQO. This monitoring site is located close to one of the busiest junctions in Southsea in a revoked AQMA. The NO_2 long-

term trend over the last five years at this location exhibited slight upward trends since 2012 (Figure F21, Appendix F).

- Victoria Road North (VRN-106) where the 2012 NO_2 annual mean concentration exceeded the NO_2 annual mean NAQO. This monitoring site is located close to one of the busiest junctions linking Fratton to Southsea. The NO_2 long-term trend over the last five years at this location exhibited downward trends since 2012 (Figure F20, Appendix F).
- Northern Road (NR-6) where the 2016 NO_2 annual mean concentration exceeded the NO_2 annual mean NAQO. This monitoring site is located close to one of the busiest junctions linking Southampton Road/ A3/ Havant Road in Cosham in a revoked AQMA. The NO_2 long-term trend over the last five years at this location exhibited upward trends since 2012 (Figure F9, Appendix F).

2012 NDDT

The 2012 NDDT survey data concluded that NO_2 annual mean NAQO was exceeded at four locations:

- Lord Montgomery Way (AQMA 7).
- 106 Victoria Road North.
- 117 Kingston Road (AQMA 6).
- The Tap Public House in London Road (AQMA 6).

2013 NDDT

The 2013 NDDT survey data concluded that NO_2 annual mean NAQO was exceeded at four locations:

- Lord Montgomery Way (AQMA 7).
- 221 Fratton Road (AQMA 6).
- The Tap Public House London Road (AQMA 6).
- Addison Madden Hampshire Terrace (Adjacent to AQMA 7).

2014 NDDT

The 2014 NDDT survey data concluded that NO_2 annual mean levels increased compared with those of 2013 at 65.51% of the monitored locations across the City:

- the highest increase was recorded at the 17 Kingston Road location (AQMA 6) and at the Addison Madden Hampshire Terrace (adjacent to AQMA7)
- 7 Velder Avenue (AQMA 9), 4 Merlyn Drive, Market Tavern, Mile End Road (AQMA 11), 103 Elm Grove, Larch Court Church Road (Corner) adjacent to AQMA 11), 121A High Street, Anchorage Road, 116 Albert Road and 2 Victoria Road North with an increase of 13.49, 12.46, 7.15, 5.60, 5.30, 4.48, 3.84, 3.57, and 3.00 µg/m^3 respectively

- the NDDT survey data of 2014 also concluded that NO_2 annual mean levels were in excess of the NO_2 annual mean NAQO in 2014 at the following seven monitored locations:
    - Lord Montgomery Way (AQMA 7).
    - London Road (AQMA 6) continuous monitoring station.
    - 221 Fratton Road (AQMA 6).
    - 117 Kingston Road (AQM6).
    - The Market Tavern Mile End Road (AQMA 11).
    - The Tap Public House London Road (AQMA 6).
    - Addison Madden Hampshire Terrace (Adjacent to AQMA 7).

2015 NDDT

The 2015 NDDT survey data concluded that:

- 2015 NO_2 annual mean levels decreased compared with those of 2014 at 72.41% of the monitored locations across the City resulting in an improvement of LAQ.
- Most significant improvement was registered at Addison Madden (Hampshire Terrace), 117 Kingston Road, Market Tavern (Mile End Road), 103 Elm Grove, Anchorage Road (Column 6), 221 Fratton Road, Larch Court Church Road (Corner), 2 Victoria Road North, 7 Velder Avenue, 4 Milton Road with a decrease of 12.95, 10.39, 9.81, 5.81, 4.40, 4.18, 3.25, 2.74, 2.16 and 1.99 $\mu g/m^3$ respectively.
- The highest increase was recorded at 88 Stanley Road, in Queen Street, the Tap Public House in London Road, 106 Victoria Road North and Lord Montgomery Way with an increase of 11.21, 2.57, 2.32, 2.20, and 1.76 $\mu g/m^3$ respectively. However, Data capture at 88 Stanley Road was very poor (two month of readings only) and therefore the increase at this location by 11.21 $\mu g/m^3$ can be considered as incorrect and not recorded as an exceedance of the NO_2 annual mean NAQO in 2015 at this location.
- NO_2 annual mean levels were in excess of the NO_2 annual mean NAQO at:
    - 117 Kingston Road (AQM6).
    - The Tap Public House London Road (AQMA 6).
    - Lord Montgomery Way (AQMA 7).
    - 88 Stanley Road (AQMA11) [It is important to note that this location is represented by NDDT survey data for only two months which was subjected to all necessary corrections].

2016 NDDT

The 2016 NDDT survey data concluded that NO_2 annual mean levels were in excess of the annual mean NAQO at the following monitored locations:

- Lord Montgomery Way (AQMA 7).
- Northern Road.

- Albert Road.
- London Road (AQMA 6) continuous monitoring station.
- 117 Kingston Road (AQM6).
- The Tap Public House London Road (AQMA 6).

A closer examination at the NDDT survey data reveals that a downward trend emerged at 53.57 % of the NDDT monitored locations in the last five years since 2012 and this can be translated to a worsening in LAQ compared to the five year trend commenced from 2011 that shown that 78.57%of the NDDT monitored locations showed a downward trend (From Figure F1 to Figure F28, Appendix F).

It is not possible to categorically state why the NO_2 levels increased across the city in 2014, decreased in 2015, and to increase again in 2016 as a multitude of factors influence pollutant generation and their subsequent dispersion. Such influences are wide ranging and complex.

Localised influences such as route popularity or road changes / roadworks may be part of the cause. Others may be of a regional nature perhaps dictated by the meteorological conditions. National or international stimuli such as requirement for improved vehicle emissions technologies are also likely to play a part.

CAQSM 2012 - 2016

The NO_2 continuous monitoring program for the period stretching between 2012 and 2016 concluded that:

- The 2012 NO_2 annual mean levels exceeded the NO_2 annual mean NAQO only at the kerbside London Road CAQMS (43.9µg/m^3).
- The 2013 NO_2 annual mean levels did not exceed the NO_2 annual mean NAQO at any of the four CAQMSs. The maximum recorded concentration was close to breaching the NO_2 annual mean NAQO at London Road station (39.68µg/m^3).
- The 2014 NO_2 levels increased across the four CAQMSs compared to that of 2013, exceeding the NO_2 annual mean NAQO at the kerbside London Road CAQMS (45.68µg/m^3). This demonstrated a worsening in LAQ in this year.
- The 2015 NO_2 annual mean levels fell compared to that of 2014 to a level below the NO_2 annual mean NAQO at all four CAQMSs. This demonstrates an improvement in LAQ. The maximum recorded concentration was at London Road kerbside CAQMS (38.4µg/m^3). This level was close to breaching the NO_2 annual mean NAQO.
- The 2016 NO_2 annual mean level increased a cross the four CAQMS compared to that of 2015 to a level below the NO_2 annual mean NAQO at all but London Road CAQMSs to result in a worsening in LAQ. The maximum recorded concentration was at London Road kerbside CAQMS (41.21µg/m^3). This level breaches the NO_2 annual mean NAQO.
- The largest increase in 2016 NO_2 annual mean was registered at Mile End Road CAQMS as it increased by 5.23µg/m^3 compared to the level recorded in 2015.

- NO_2 annual mean levels for 2015 decreased to a level lower than those of 2013. However, NO_2 annual mean levels for 2016 increased to a level slightly higher than those of 2013.
- NO_2 annual mean trends between 2012 and 2016 (Figures F29 to Figure F32, Appendix F) exhibit an upward trend translated into a worsening in LAQ.

Table A4 in Appendix A compares the ratified continuous monitoring NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3 (not to be exceeded more than 18 times per year).

Data collected at PCC CAQMSs did not register any exceedance of the NO_2 hourly mean NAQO since 2012. The highest annual mean registered was 45.68µg/m^3 in 2014 at the London Road kerside station.

The NO_2 hourly mean was in excess of 200µg/m^3 seven times in 2012 and once in 2014 at London road kerbside CAQMSs. These do not amount to any exceedances of the NO_2 hourly mean NAQO.

3.2.2 Particulate Matter (PM_{10})

Table A5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

There has been no exceedance of the PM_{10} annual mean NAQO since 2012 at any of the CAQMSs. The highest registered annual mean since then was in 2015 at the kerbside CAQMS along London Road and was 34.36µg/m^3.

Table A6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the daily air quality NAQO of 50µg/m^3 not to be exceeded more than 35 times per year.

The PM_{10} monitoring data at both C2 and C4 CAQMSs exibits an downward trend while that of the C6 and C7 exibit a upward trend (Figures F33 to Figure F 36, Appendix F).

Registered PM_{10} annual mean was in excess of 50µg/m^3 in some of the stations but did not exceed PM_{10} annual mean NAQO. The worst location was the roadside the urban background C4 station which recorded an annual mean in excess of 50µg/m^3 on nine occassions in 2012. This did not amount to an exceedance of the PM_{10} daily NAQO.

3.2.3 Particulate Matter ($PM_{2.5}$)

PCC monitors $PM_{2.5}$ at the urban background station of Gatcombe Park (C4), and commenced monitoring $PM_{2.5}$ from January 2017 at the C2 and C7. The C4 CAQMS is affiliated to the National Automatic Urban and Rural Network (AURN). Table A7 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years. The highest $PM_{2.5}$ annual mean recorded in Portsmouth was 14.26µg/m^3 back in 2014.

The overall trend over the monitored period exhibits a downward trend (Figure F37, Appendix F).

Appendix A: Monitoring Results

Table A1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
C2	London Road	Kerbside	464925	102129	NO_2 $PM_{2.5}$ PM_{10}	Y	Chemiluminescent; Eberline/ HORIBA's APDA- 372	1.8m of the kerbside further to the south of the station	1m	1.8m
C4	Gatcombe Park Primary School	Urban Background	465403	103952	NO_2 PM_{10} $PM_{2.5}$ O_3	N	Chemiluminescent, FDMS	0m	119 m	2.5m
C6	Burrfields Road	Roadside	466004	102348	NO_2 PM_{10}	N	Chemiluminescent; Eberline	0.5m	4.5m of Burrfields Road & 5.5m of Copnor Road	1.8m
C7	Mile End Road	Roadside	464397	101270	NO_2 $PM_{2.5}$ PM_{10}	Y	Chemiluminescent; Eberline/ HORIBA's APDA- 372	2m	6.5m	1.8m

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

(3) $PM_{2.5}$ Monitoring commenced in January 2017 at C2 and C7 therefore $PM_{2.5}$ data was not reported.

(4) $PM_{2.5}$ and $PM_{2.5}$ data reported for C2 and C7 were generated by the Eberline up to the end of 2016.

Table A2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA ?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
1	Lord Montgomery Way (FST)	Roadside	463872	99874	NO_2	Y	0	3.7m	N	2m
2	12 Chadderton Gardens (CG-12)	Urban background	463705	99371	NO_2	N	0	N/A	N	2m
3	High Street (HS-121A)	Roadside	463408	99460	NO_2	Y	0	3.1m	N	2m
4	Queen Street (QS-Col 30)	Roadside	463190	100390	NO_2	Y	N/A	3m	N	2m
5	119 Whale Island Way (WIW-119)	Roadside	464230	102194	NO_2	N	0	16.23m	N	2m
6	88 Stanley Road (SR-88)	Roadside	464331	102197	NO_2	N	0	9.88m	N	2m
7	138 Lower Derby Road (LDR-138)	Urban background	464291	102279	NO_2	N	0	37.57m	N	2m
8	492 Hawthorn Crescent (HC-492)	Urban background	466690	104355	NO_2	N	0	34m	N	2m
9	6 Northern Road (NR-6)	Roadside	465621	105528	NO_2	N	0	5.43m	N	2m
10	20 Stroudley Avenue (SA-20)	Urban background	467107	104850	NO_2	N	0	N/A	N	2m
11	Anchorage Road (AR-Col6)	Roadside	466869	103457	NO_2	N	11.76M	6.56m	N	2m
12	2 Hobby Close (HC-2)	Roadside	466074	103747	NO_2	N	0	10.11m	N	2m
14	4 Merlyn Drive (MD-4)	Roadside	466109	103736	NO_2	N	0	11.26m	N	2m
15	29 Milton Road (MR-29)	Roadside	466120	101324	NO_2	N	0	7.04m	N	2m
16	Parade Court, London Road (LR-PC)	Roadside	465474	104205	NO_2	N	5.32m	5.15m	N	2m
18	4 Milton Road (MR-4)	Roadside	466097	101332	NO_2	N	0	6.13m	N	2m
19	7 Velder Avenue (VA-7)	Roadside	466392	100226	NO_2	Y	0	4.44m	N	2m
20	136 Eastney Rd (ER-136)	Roadside	466712	99415	NO_2	N	0	6.23m	N	2m
21	118 Albert Road (AR-116)	Roadside	465209	98964	NO_2	N	0	2.36m	N	2m
22	2 Victoria Road North (VRN-2)	Roadside	464778	99306	NO_2	N	0	5.53m	N	2m
23	106 Victoria Road North (VRN-106)	Roadside	464974	99766	NO_2	N	2.37m	2.42m	N	2m
24	221 Fratton Road (FR-221)	Roadside	465111	100737	NO_2	Y	0	4.21m	N	2m
25	117 Kingston Rd (KR-117)	Roadside	465036	101547	NO_2	Y	0	2.46m	N	2m
26	The Tap London Road (Tap)	Kerbside	464900	101976	NO_2	Y	0	1.91m	N	2m
28	65 Kingston Crescent (KR-65)	Roadside	464825	101933	NO_2	N	0	9.21m	N	2m
29	Estella Road (ER-74)	Roadside	464551	101787	NO_2	Y	0	20.04m	N	2m
30	Market Tavern (Mile End Rd) (MT)	Roadside	464478	101457	NO_2	Y	0	12.73m	N	2m
32	Larch Court, Church Rd (CR-Corner)	Roadside	464559	100980	NO_2	N	0	5.84m	N	2m
34	Sovereign Gate, Commercial Rd (UF)	Roadside	464425	100893	NO_2	Y	0	4.40m	N	2m
35	Hampshire Terrace (AM)	Roadside	463837	99759	NO_2	N	0	4.9m to 10.74m	N	2m
36	Elm Grove (EG-103)	Roadside	464501	99329	NO_2	N	0	2.26m	N	2m
37	London Road	Kerbside	464925	102129	NO_2	Y	1.8 m	1m	Y	1.8
38	Gatcombe Park Primary School	Urban background	465403	103952	NO_2	N	0	119m from London Road (as the major road)	Y	2.5m
39	Burrfields Road	Roadside	466004	102348	NO_2	N	0.5 M	4.5m of Burrfields Road & 5.5m of Copnor Road	Y	1.8m
40	Mile End Road	Roadside	464397	101270	NO_2	Y	2m	6.5m		1.8m

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property) (2) N/A if not applicable.

Table A3– Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2012	2013	2014	2015	2016
1	Roadside	Diffusion Tube		83.33	42.54	41.9	42.57	44.33	43.52
2	Urban background	Diffusion Tube		100.00	17.48	16.5	16.55	15.74	17.40
3	Roadside	Diffusion Tube		100.00	26.63	22.1	25.67	24.07	25.75
4	Roadside	Diffusion Tube		91.67	36.35	31.51	27.97	30.54	34.70
5	Roadside	Diffusion Tube		100.00	28.62	27.49	28.93	27.53	29.52
6	Roadside	Diffusion Tube		58.33	35.62	38.29	34.85	46.06	36.08
7	Urban background	Diffusion Tube		83.33	29.78	30	26.53	26.05	28.09
8	Urban background	Diffusion Tube		100.00	28.81	27.22	28.37	28.43	29.94
9	Roadside	Diffusion Tube		100.00	35.07	31.95	33.88	34.98	40.86
10	Urban background	Diffusion Tube		91.67	17.91	17.66	16.66	16.48	19.54
11	Roadside	Diffusion Tube		66.67	31.76	29.54	33.29	28.27	28.10
14	Roadside	Diffusion Tube		100.00	22.68	21.61	27.21	26.87	22.20
15	Roadside	Diffusion Tube		83.33	28.82	28.15	27.57	26.21	28.97
16	Roadside	Diffusion Tube		91.67	36.44	33.98	32.32	32.01	36.45
18	Roadside	Diffusion Tube		100.00	29.52	27.8	28.9	26.91	29.30
19	Roadside	Diffusion Tube		91.67	34.52	30.1	37.24	35.08	39.61
20	Roadside	Diffusion Tube		100.00	26.07	27.42	28.9	27.58	29.12
21	Roadside	Diffusion Tube		100.00	35.79	32.88	35.18	35.28	40.05
22	Roadside	Diffusion Tube		91.67	31.61	28.69	30.8	28.06	31.23
23	Roadside	Diffusion Tube		91.67	41.05	30.4	28.8	31	37.00
24	Roadside	Diffusion Tube		91.67	39.12	42.48	40.49	36.32	37.74
25	Roadside	Diffusion Tube		83.33	44.58	38.69	52.18	41.79	43.65
26	Kerbside	Diffusion Tube		91.67	50.48	50.93	40.81	43.12	49.16
30	Roadside	Diffusion Tube		75.00	37.97	38.83	44.12	34.31	39.34
32	Roadside	Diffusion Tube		100.00	35.99	31.09	34.93	31.68	33.51
34	Roadside	Diffusion Tube		91.67	38.8	34.65	35.52	34.65	36.06

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2012	2013	2014	2015	2016
35	Roadside	Diffusion Tube		100.00	31.1	28.96	41.42	28.48	30.68
36	Roadside	Diffusion Tube		100.00	32.84	30.33	34.81	29	33.32
C2	Kerbside	Automatic		82.37	43.9	39.68	45.68	38.4	41.21
C4	Urban background	Automatic		93.76	21.1	20.27	22.17	18.78	20.05
C6	Roadside	Automatic		96.55	36.1	33.52	35.93	32.81	34.34
C7	Roadside	Automatic		81.94	36.9	35.94	36.51	30.25	35.48

Notes: Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in bold.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in bold and underlined.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Technical Guidance LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Levels in excess of the NAQO are highlighted in red

Levels corrected to the façade using 'air quality consultants' are highlighted in green

Table A4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2012	2013	2014	2015	2016
C2	Kerbside	Automatic		82.37	7	0	1	0	0
C4	Urban background	Automatic		93.76	0	0	0	0	0
C6	Roadside	Automatic		96.55	0	0	0	0	0
C7	Roadside	Automatic		81.94	0	0	0	0	0

Notes: Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in bold.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Table A5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM_{10} Annual Mean Concentration (µg/m^3) (3)				
				2012	2013	2014	2015	2016
C2	Kerbside		70.56	22.10	30.72	32.43	34.36	20.04
C4	Urban background		66.73	17.96	18.17	18.48	16.16	18.15
C6	Roadside		89.16	8.11	15.39	26.92	26.45	19.75
C7	Roadside		60.59	14.74	16.33	17.53	23.45	11.88

Notes: Exceedances of the PM_{10} annual mean objective of 40µg/m^3 are shown in bold.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) All means have been "annualised" as per Technical Guidance LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Table A6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2012	2013	2014	2015	2016
C2	Kerbside		70.56	1	0	0	1	1
C4	Urban background		66.73	9	2	0	2	2
C6	Roadside		89.16	1	0	7	4	1
C7	Roadside		60.59	2	0	0	1	0

Notes: Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in bold.

(1) data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

Table A7 – $PM_{2.5}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	$PM_{2.5}$ Annual Mean Concentration ($\mu g/m^3$) (3)				
				2012	2013	2014	2015	2016
C4	Urban background		90.52	13.63	14.11	14.26	10.5	11.63

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) All means have been "annualised" as per Technical Guidance LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B1– NO_2 Monthly Diffusion Tube Results for 2016

Site ID	NO_2 Mean Concentrations (µg/m^3)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted (1)
1	39.46	36.65	39.24	45.22	45.71	44.69	39.40			41.45	44.76	48.82	42.54	43.52
2	14.23	16.20	16.31	15.67	16.18	14.40	12.93	16.10	15.57	20.20	20.78	25.57	17.01	17.40
3	24.59	22.51	29.49	23.50	22.51	21.08	20.54	22.90	25.00	27.25	29.65	33.08	25.17	25.75
4	41.80	35.15	28.60	33.00		31.07	29.05	31.01	33.17	33.39	36.12	40.72	33.92	34.70
5	29.43	31.62	25.55	25.44	29.73	26.64	19.54	22.64	29.07	34.76	32.39	39.47	28.86	29.52
6	40.21	27.49	25.40		20.91	35.26				26.72	29.23		29.32	36.08
7	30.30	26.48	25.03	21.92			23.59	27.73	32.10	29.28	19.11	39.05	27.46	28.09
8	43.69	27.01	27.19	27.40	21.54	27.90	26.63	27.56	27.62	25.80	28.68	40.11	29.26	29.94
9	40.38	44.39	37.41	37.07	31.65	40.69	35.77	40.71	38.30	46.50	90.93	46.50	44.19	40.86
10	22.21	16.15	15.49	14.62	13.55		28.38	13.42	16.00	17.58	22.28	30.48	19.10	19.54
11	29.55	26.71			21.70	26.65	26.11	25.47	21.87			37.24	26.91	28.10
14	19.98	25.03	17.09	23.27	20.10	17.98	15.35	17.02	19.70	25.30	26.83	32.80	21.70	22.20
15	31.11	25.80	25.61	26.06	30.83	23.87	19.25			31.95	31.80	36.92	28.32	28.97
16	34.96	32.08	32.95	32.42	35.28	32.85	30.96		36.93	46.86	41.03		35.63	36.45
18	28.56	27.19	28.02	24.57	23.03	28.26	26.67	25.41	26.11	28.50	39.53	37.82	28.64	29.30
19	37.95		38.74	34.40	35.88	36.91	32.84	38.98	41.47	37.55	41.49	49.71	38.72	39.61
20	24.66	25.33	28.41	25.11	32.23	29.27	25.73	29.88	29.08	26.49	30.64	34.68	28.46	29.12
21	38.61	33.43	40.27	40.11	34.59	38.89	34.93	40.61	43.30	34.57	41.79	48.65	39.14	40.05
22		28.00	29.48	25.82	31.61	27.70	24.81	31.61	29.72	34.40	34.69	37.92	30.52	31.23
23	39.62	35.30	41.74	39.73	44.00	35.71	27.24		33.38	41.65	43.05	53.48	39.54	37.00
24	35.91	36.23	28.69		30.29	39.09	35.21	39.69	40.24	39.89	39.50	41.04	36.89	37.74
25	47.33	43.79	43.02	36.64	36.48	44.88	40.51		48.60	36.64		48.77	42.67	43.65

Site ID	NO_2 Mean Concentrations (µg/m^3)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	
													Raw Data	Bias Adjusted (1)
26	47.46	43.69	44.81	54.12	41.20	47.83	43.20	44.98	52.38	47.04		61.89	48.06	49.16
30	40.69		40.00	31.38	33.15	37.10		36.87	41.55	39.40	45.95		38.45	39.34
32	31.08	29.01	31.29	27.35	31.98	28.97	31.25	30.81	34.27	40.52	43.37	28.94	32.40	33.51
34	29.03	28.22	30.17	31.41	39.50	31.47		35.35	35.05	41.17	40.58	45.81	35.25	36.06
35	27.40	27.48	24.77	31.91	29.97	25.26	21.75	28.83	31.07	35.86	36.50	39.09	29.99	30.68
36	26.47	34.15	29.55	33.73	34.22	29.07	26.20	28.32	29.77	40.28	37.99	41.12	32.57	33.32

(1) See Appendix C for details on bias adjustment.

Appendix C: Supporting technical information / air quality monitoring aata QA / QC

1 QA / QC of automatic monitoring

1.1 Continuous Air Quality Monitoring, Quality Assurance and Quality Control

PCC manages four air quality-monitoring stations. These are all fully equipped with PCC DEFRA / NETCEN approved real-time automatic continuous monitoring analysers. These are sophisticated automatic monitoring systems housed in purpose built air-conditioned enclosures. These analysers measure and record in real-time a combination of NO_2, PM_{10} and $PM_{2.5}$.

PCC compiled continuous air quality monitoring data for the Further Assessment using Horiba's APNA-370, NO_2 based on the chemiluminescent analysis method.

1.2 Routine site operations

PCC employs a dedicated staff member to operate the network of continuous air quality monitoring stations. He is trained in all aspects of the monitoring processes including routine site operations, field calibrations and data ratification. He is also the NETCEN trained Local Site Operator (LSO) for the local affiliated AURN station. This is to ensure that both a high-level of accurate data and an acceptable percentage of data capture are obtained.

All automatic monitoring equipment has both routine remote calibration check and routine (fortnightly) on-site checks. They also have maintenance visits, which follow documented procedures that stem from equipment manuals, manufacturer instructions and the UK Automatic Network Site Operators Manual.

- Routine visits include;
  - visual inspection of the station;
  - regular inlet-filter changes;
  - regular sampling head-cleaning and airflow;
  - a two-point calibration of the NO_2 analyser using a zero-air scrubber and a Nitric Oxide (NO) gas on-site;
  - AIR LIQUIDE supplies the NO_x span gas with the concentration certificate. This gas is traceable to national standards.

All equipment fitted within each station's enclosure (e.g. sample meteorological sensors, pumps, air conditioning units, modem etc.) is subject to independent routine maintenance and support via a service contract with Horiba. This includes:

- six-monthly minor service and equipment check visits by the manufacturer for Horiba's analysers and approved engineers covering all non-Horiba equipment following national protocols and traceable QA/QC procedures. Horiba is ISO 9001 accredited and carries out similar or identical support work for a number of AURN network stations across the UK
- six-monthly major service where a full multi-point calibration is carried out on the NO_2 analyser, using zero-air, NO and NO_2 span gas (again traceable to national standards) meaning the analyser data slope and offset factors are reset. In addition to multi-point calibration the following checks are carried out:

- linearity;
- noise;
- response time, leaks and flow;
- converter efficiency;
- stability of the on-site gas calibration cylinder.

The local AURN station is also subject to external audit. Site Inter-calibration checks carried out by National Environmental Technology Centre Network engineers prior to each Horiba's major service.

Horiba also carries out non-routine site visits in response to equipment failure to the same standards. Contract arrangements ensure that visits are carried out within two to three days of the notification of call-out in order to minimise data loss.

All routine and non-routine site visits are fully documented and detail all works carried out, including any adjustments, modifications and repairs completed.

1.3 Calibration check methods

The calibration procedure for NO_x for sites C2, C4, C6 and C7 is based on a two point zero / span calibration check being performed at intervals of two weeks. The calibration procedure for the NO_x analyser of the C4 AURN network was based on three points, the third being span NO_2 to check the NO_2 Converter. However this was changed to two point calibration check. The methodology for the calibration procedure is followed according to the manufacturers' instruction handbooks:

- pre-calibration check - the site condition and status of the analyser is recorded prior to the zero / span check being conducted;
- zero check – the response of the analyser to the absence of the gas being monitored. The stations were fitted with an integrated scrubber system incorporating a set of scrubbers, Hopcalite, activated charcoal, Purafil and Drierite, to generate a dried gas with none of the monitored pollutants. All were changed at least every six months but Hopcalite is changed more frequently due to the high levels of humidity in Portsmouth. These were changed with to be fitted with synthetic air cylinders supplied by Air Liquide UK Ltd;
- span check – the response of the analyser to the presence of the gas of a known concentration. Traceable gases are used for calibration checks supplied as part of the maintenance contract;
- post calibration check - the site condition and status of the analyser upon completion of all checks;
- all Horiba's APNA-370 analysers have their own built in data storage facility. They are built in a multi-drop set up. The calibration checks are done directly through the front panel. Each analyser zero / span check is fully documented with records being kept centrally.

1.4 Automatic data handling

All the stations are remotely accessible from a desktop computer at the civic offices via a telemetry linkage by either landline or GSM system. The telemetry linkage software used is 'Data Communication Server'. It is set on a daily auto-dial collection mode for data retrieval. It is also set to run calibration checks every three days.

Once the connection is established, the 'Data Communication Server' software retrieves the overnight auto-calibration first and stores it in a temporary database and a calibration factor is generated according to the following steps:

- instrument span, F = C/(Vs-Vz) and
- pollutant concentration (ppb) = Fx(Va-Vz) where:
    - C is the set gas value on the gas certificate;
    - Vs span value;
    - Vz zero span value;
    - Va is the sample value as recorded by the analyser.

Raw measured data retrieved from the station data logger(s) is then subject to the calculated correction factors and stored in the final database as corrected. The latter is then made readily available to be queried via the 'IDAZRW Central Station', database access software.

Instrument status and internal auto-calibration data can be viewed in addition to the corrected collected measured monitoring data.

The air quality data ratification is carried out manually from this station.

1.5 Manual data handling

All collected data is screened or validated by visual examination to see if there are any unusual measurements. The affected data is then flagged in the database. Any further remaining suspicious data, such as large spikes, 'flat-lines' and excessive negative data is flagged for more detailed investigation. 'IDAZRW Central Station' is capable to trace back any change made at all times with the administrator's name. An original raw dataset is always kept in the data processing software.

When data ratification has been completed the data is then made available for further statistical and critical examination for reporting purposes.

Air quality monitoring data can be imported manually into a Microsoft Excel spreadsheet. This scaled data (where values are above the lower detectable limit is considered to be valuable data) is then further converted to generate data in the National Air Quality Objective format to enable direct comparison to the standards. A file of raw data is always kept for reference in the database.

2 QA / QC of diffusion tube monitoring

2.1 Monitoring technique

The continuous NO_2 monitoring network is complemented by a secondary network of passive NO_2 tubes that are located in suspected air quality hot spots. In addition, tubes are located at the relevant continuous monitoring sites to enable data adjustment. At a selection of sites three tubes are exposed simultaneously and the data compared. Where the data is consistent, the results are averaged. Where the tubes results show significant differences the data is discounted.

This method provides a cost-effective means of monitoring a wide range of monitoring locations. The accuracy of tubes however is variable depending on the tube handling procedures, the specific tube preparation, adsorbent mixture and the analysing laboratory. These tubes are supplied and analysed by Gradko International Ltd

PCC's NO_2 diffusion tubes are prepared by the supplier using 50% Triethanolamine (TEA) in acetone. These tubes were exposed for one-month periods in accordance with LAQM.TG (09) guidance [5].

2.2 Tube Handling Procedures

Once received by post, NO_2 tubes are stored in cool location within the supplied packaging until use. The tube end caps are not removed until the tube has been placed at the monitoring location at the start of the monitoring period. The exposed tubes are recapped at the end of the monitoring period and returned as quickly as possible to a clean cool storage environment then sent to GIL for analysis.

2.3 Laboratory QA / QC

GIL is a UKAS accredited company for the analysis of NO_2. GIL take part in the WASP scheme on a quarterly basis. An inter-comparison of results from other laboratories demonstrates that GIL's performance is good in terms of accuracy and precision.

2.4 Data Ratification

Once analysed, the NO_2 diffusion tubes results which, were significantly within the documented limit of detection, were laboratory blank corrected.

The returned results are closely examined on a monthly basis to identify any spurious data (e.g. very high or very low data).

The data is subjected to a further series of corrections for the monitored period under consideration:

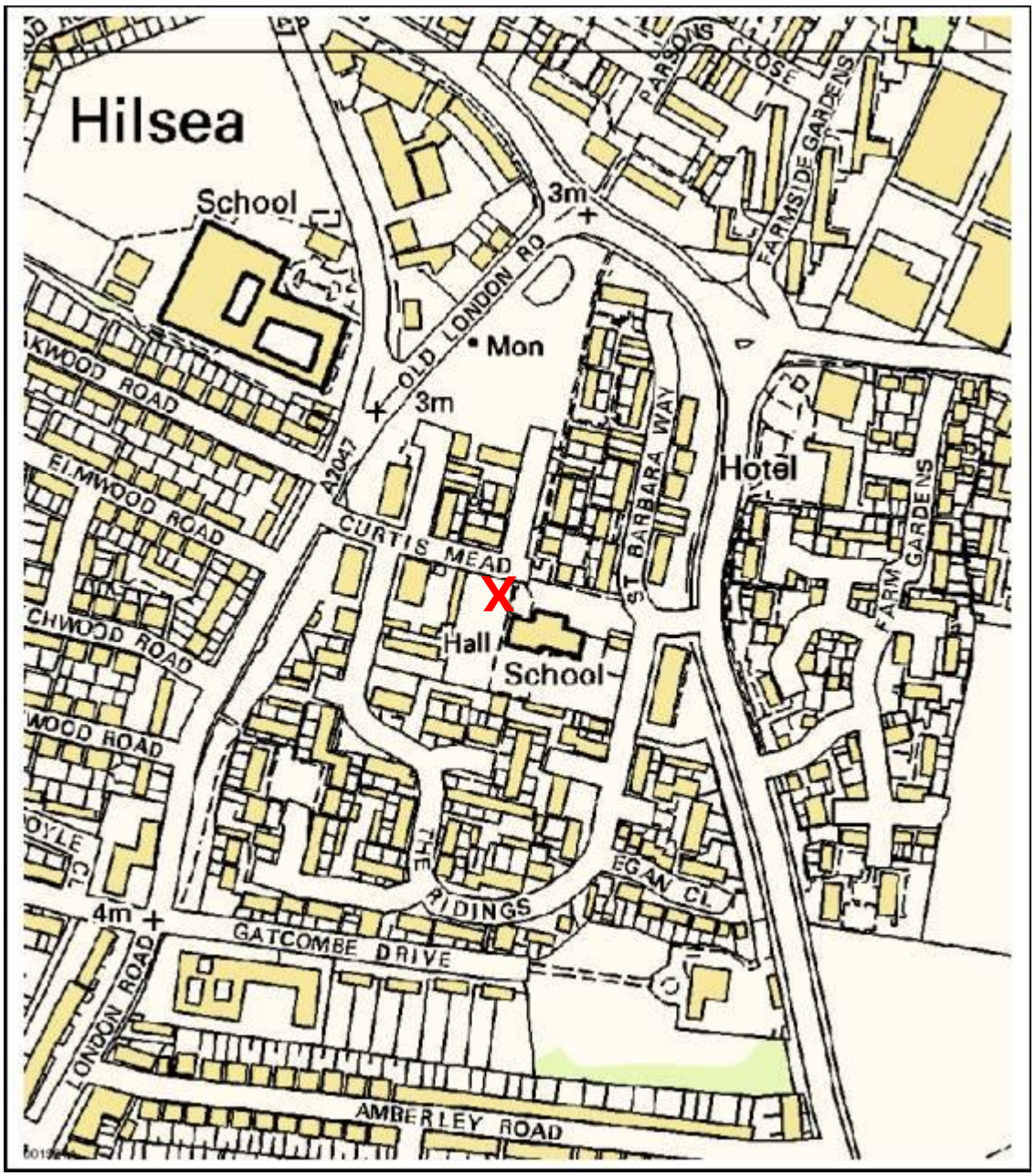
- Firstly, PCC use the data from the local collocation study of NO_2 diffusion tubes to calculate the bias following the approach prescribed in Box 6.4 of LAQM TG (09) using the appropriate continuous monitoring data from the local air quality monitoring network for individual NO_2 monitored site according to the site criteria;
- Secondly, the estimation of the NO_2 annual mean is deduced for individual NO_2 diffusion tube monitored locations following the approach prescribed in Box 6.5 of LAQM TG (09) using data from both Portsmouth and Southampton AURN stations;
- The corrected results are then reported and used for comparison only, i.e. not for verification processes in the Further Assessment (Review and Assessment process).

Appendix D: Map(s) of Monitoring Locations.

Map 1 – PCC's CAQMS locations (C2, C4, C6 and C7)

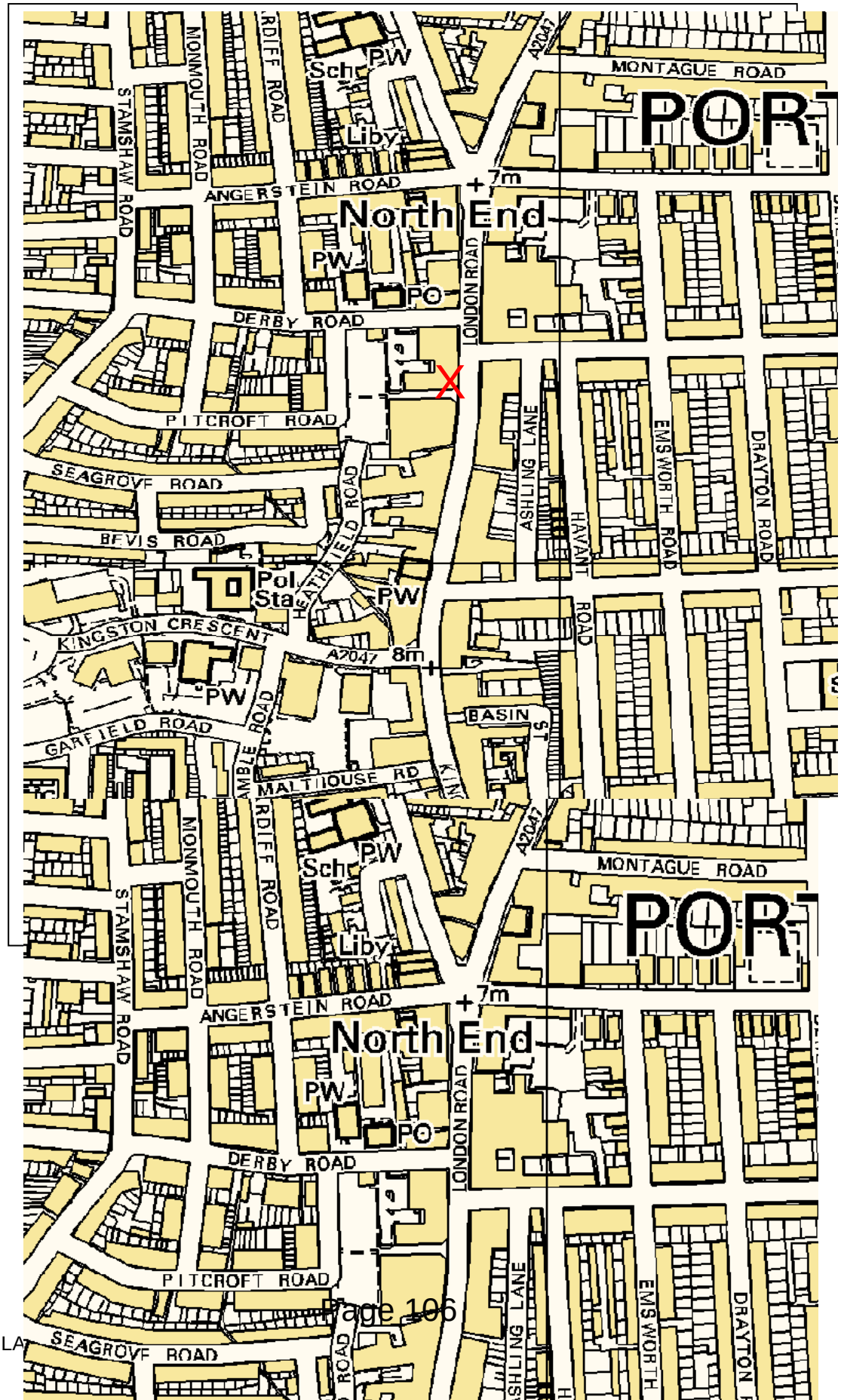
Map 2 – PCC's Background CAQMS

Location (C4) at Gatcombe Park Primary School, Hilsea



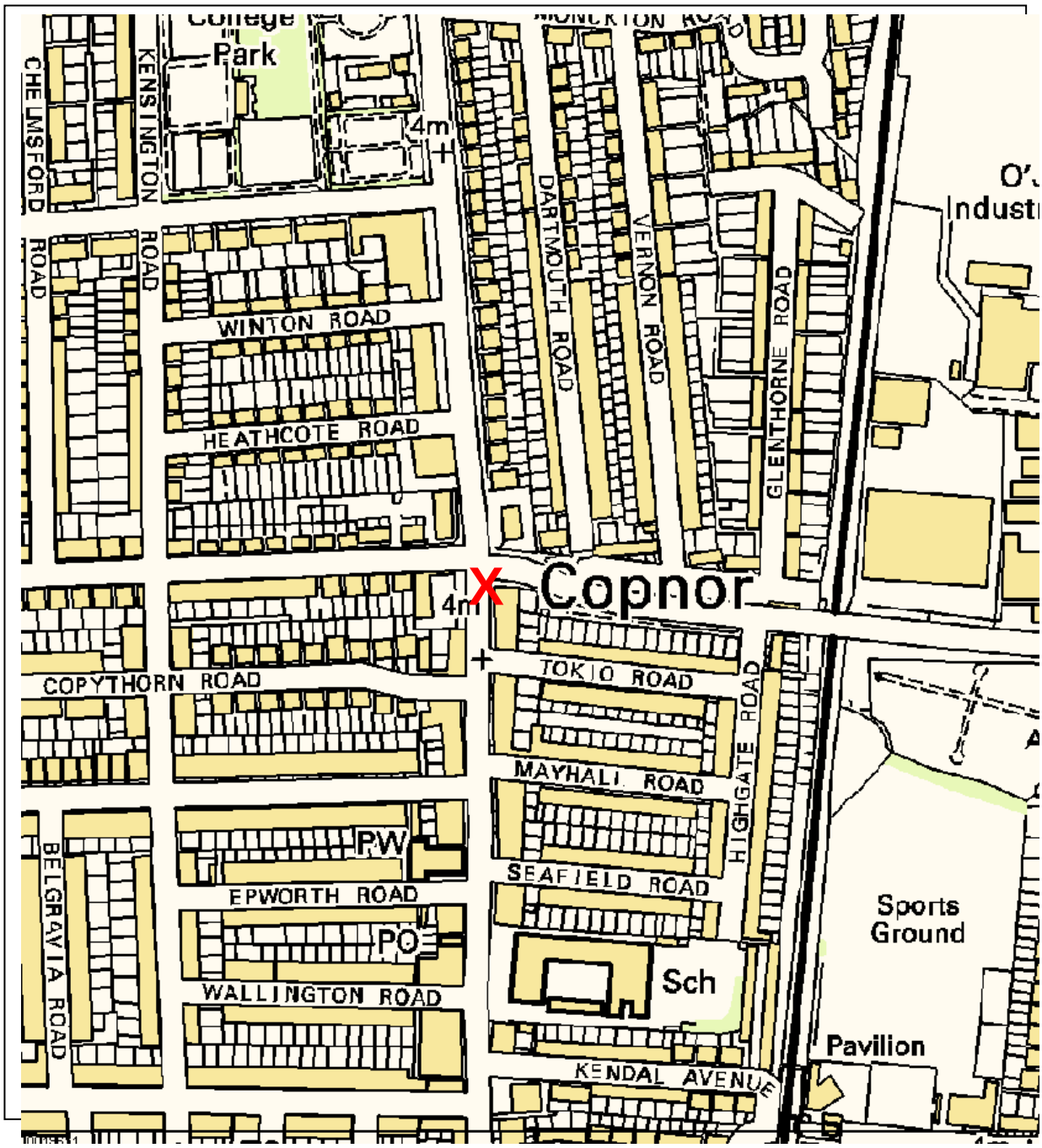
Map 3 – PCC's Kerbside CAQMS

Location (C2) along London Road, North End



Map 4 – PCC's Roadside CAQMS

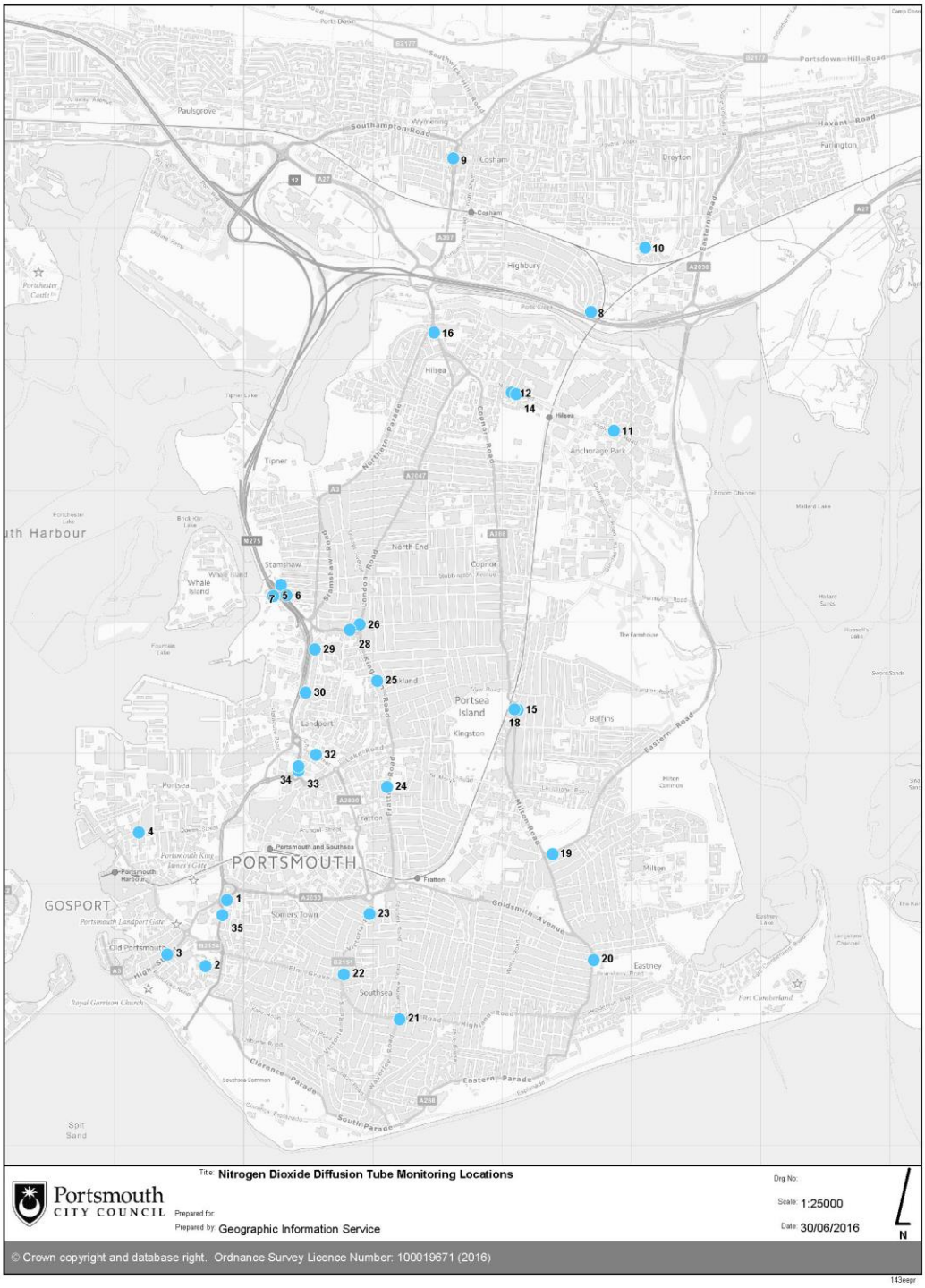
Location (C6) Along Burrfields Road, Baffins



Map 5 – PCC's Roadside CAQMS

Location (C7) Along Mile End Road, Buckland

Map 6 – PCC's Nitrogen Dioxide Diffusion Tube Monitoring Locations



Appendix E: Summary of national air quality objectives

Table E1– Air Quality Objectives in England

Pollutant	Air Quality Objective[2]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[2] The units are in micrograms of pollutant per cubic metre of air (µg/m^3).

Appendix F: Figures exhibiting last five years trend at each of the monitored location.

Figure F.1 – Lord Montgomery Way NDDT Data Exhibits Upward Trend

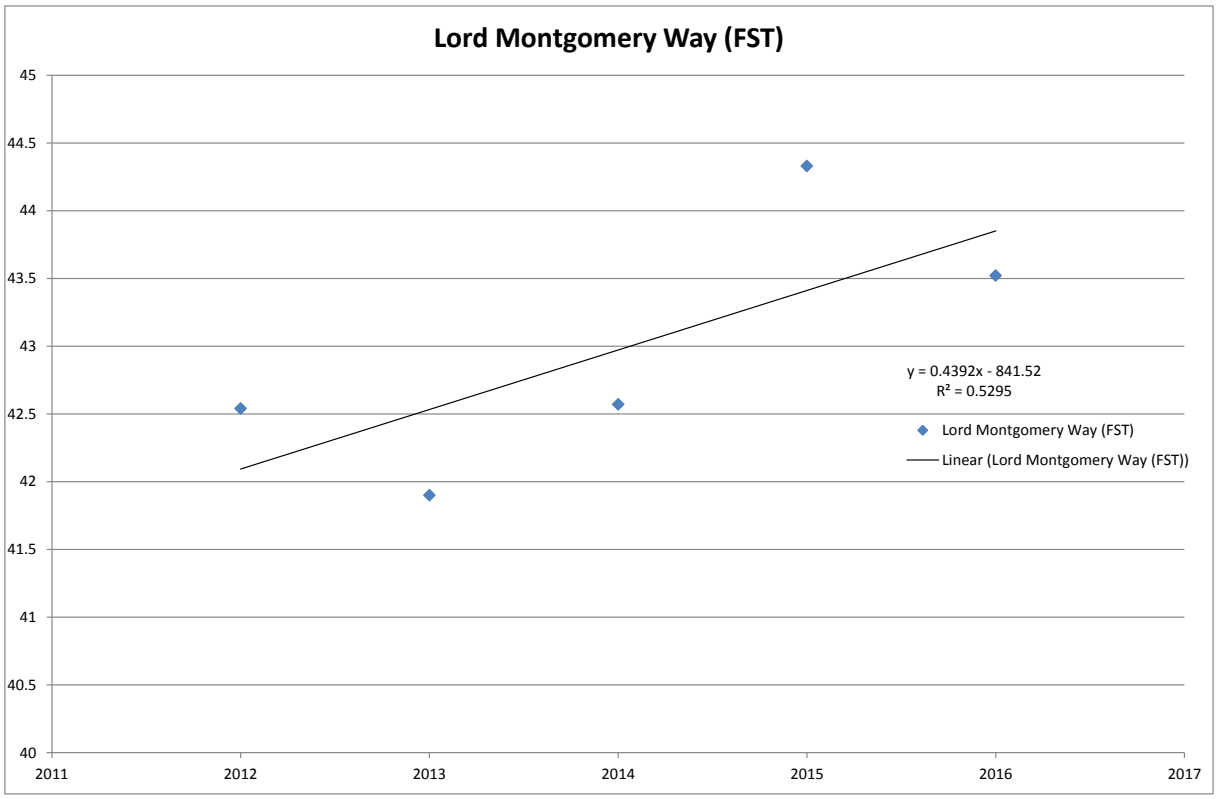


Figure F.2 – Chadderton Gardens NDDT data Exhibits Downward Trend

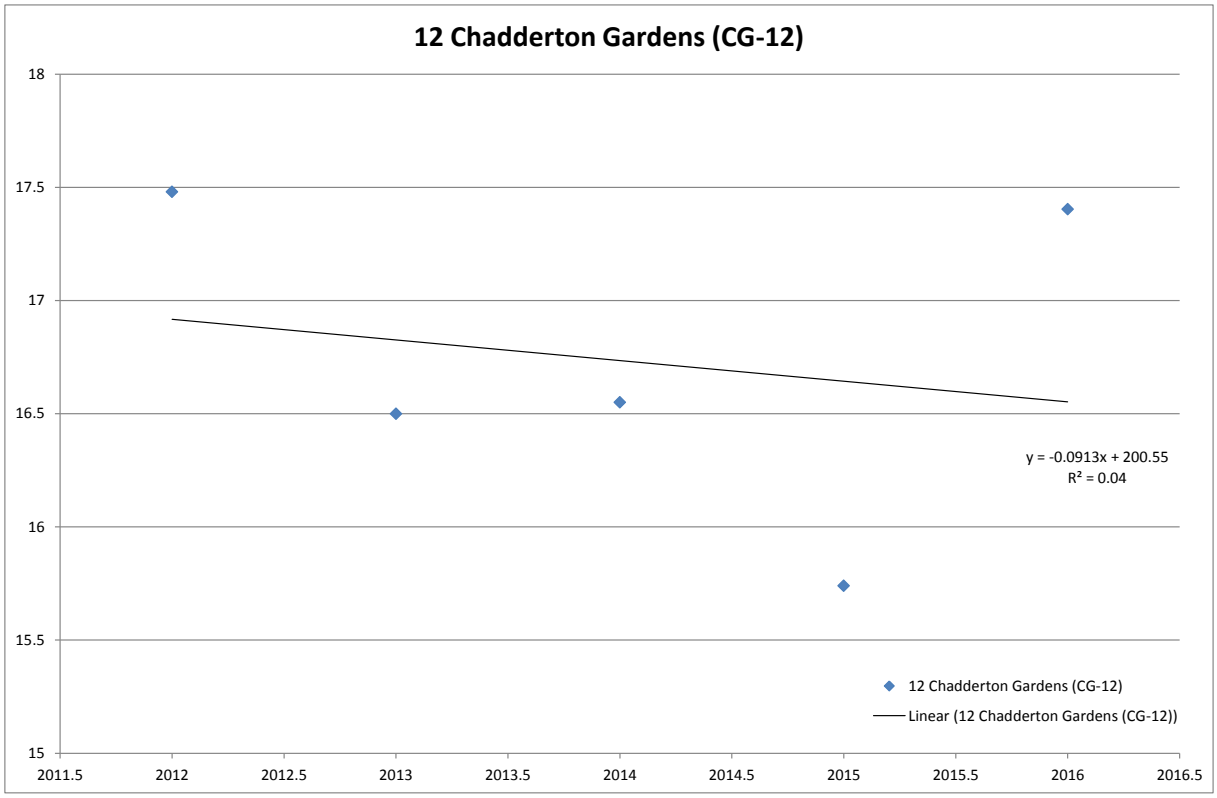


Figure F.3 – High Street NDDT Data Exhibits Downward Trend

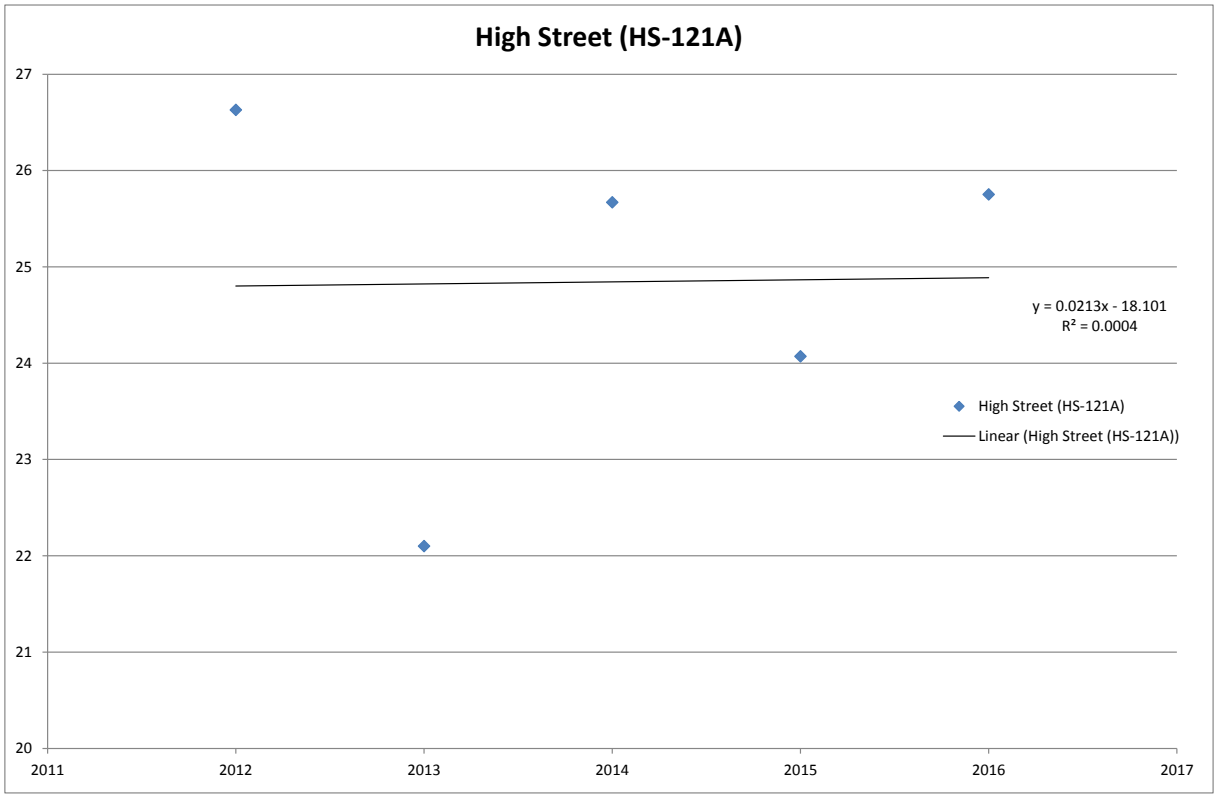


Figure F.4 – Queen Street NDDT Data Exhibits Downward Trend

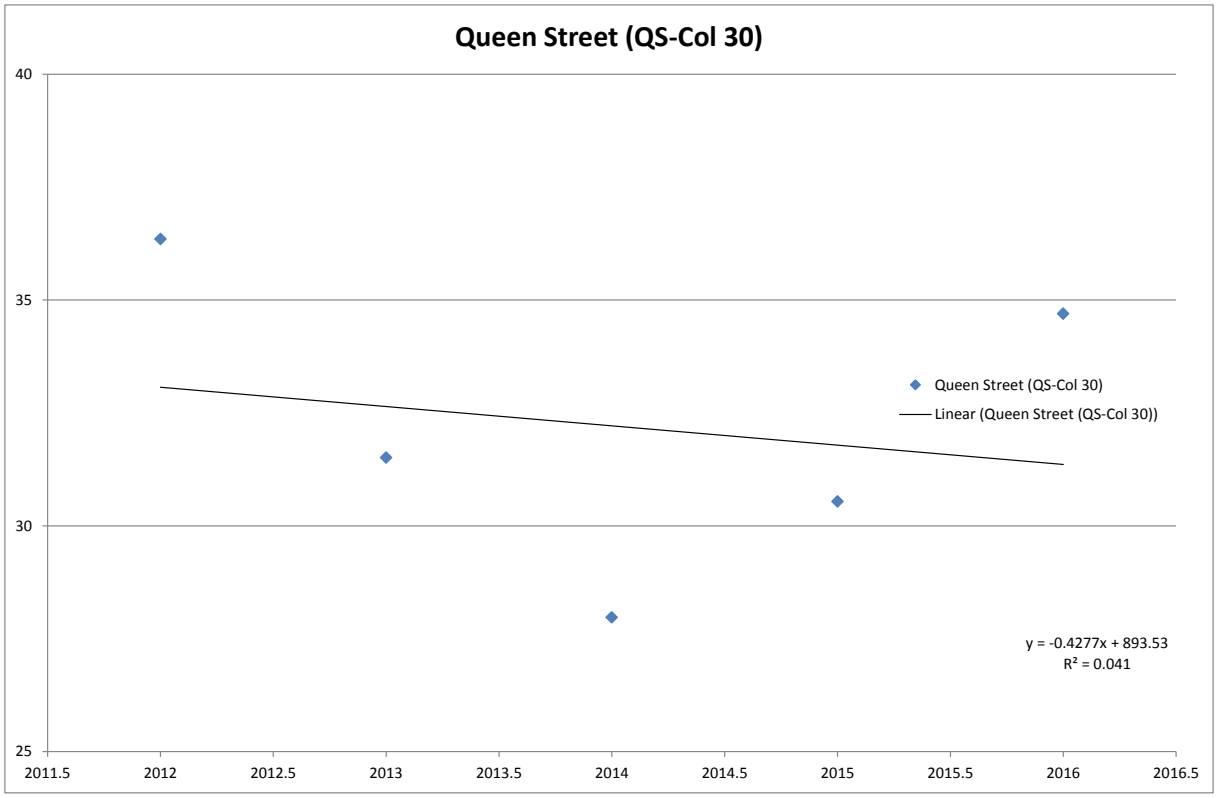
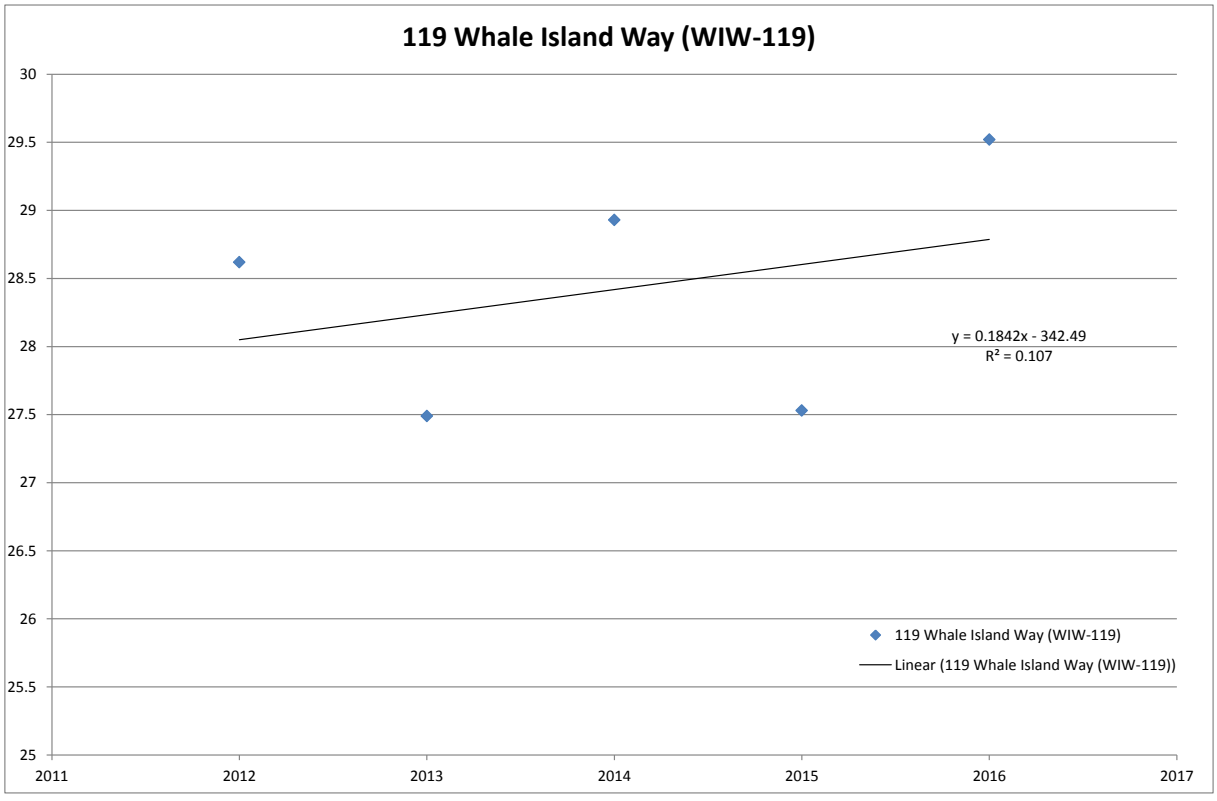


Figure F.5 – Whale Island Way NDDT Data Exhibits Downward Trend



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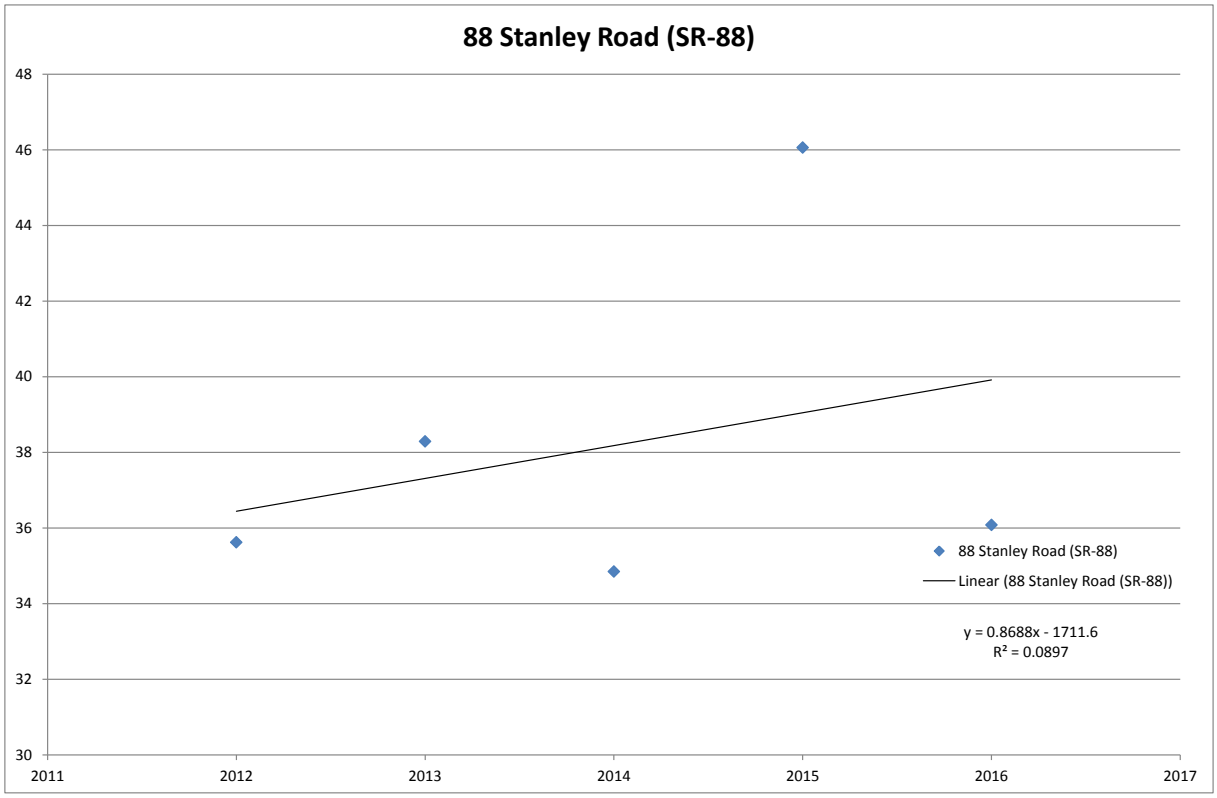

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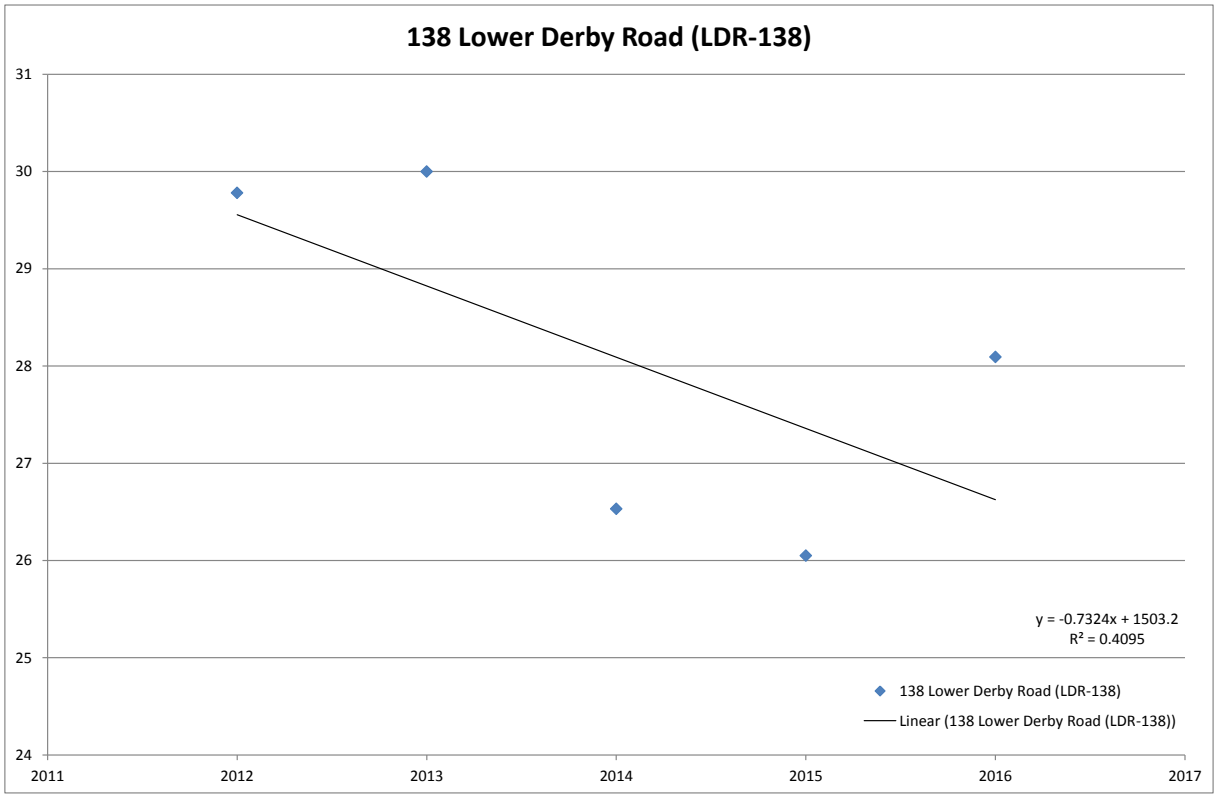

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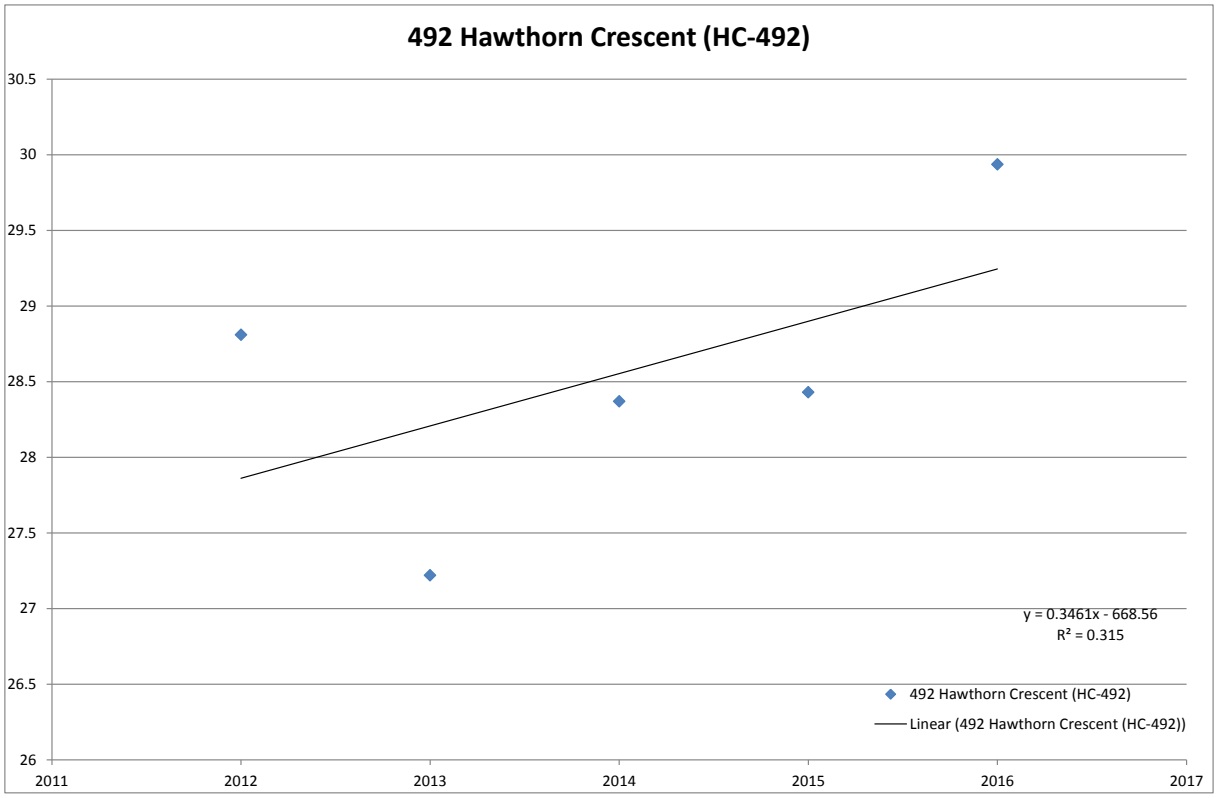

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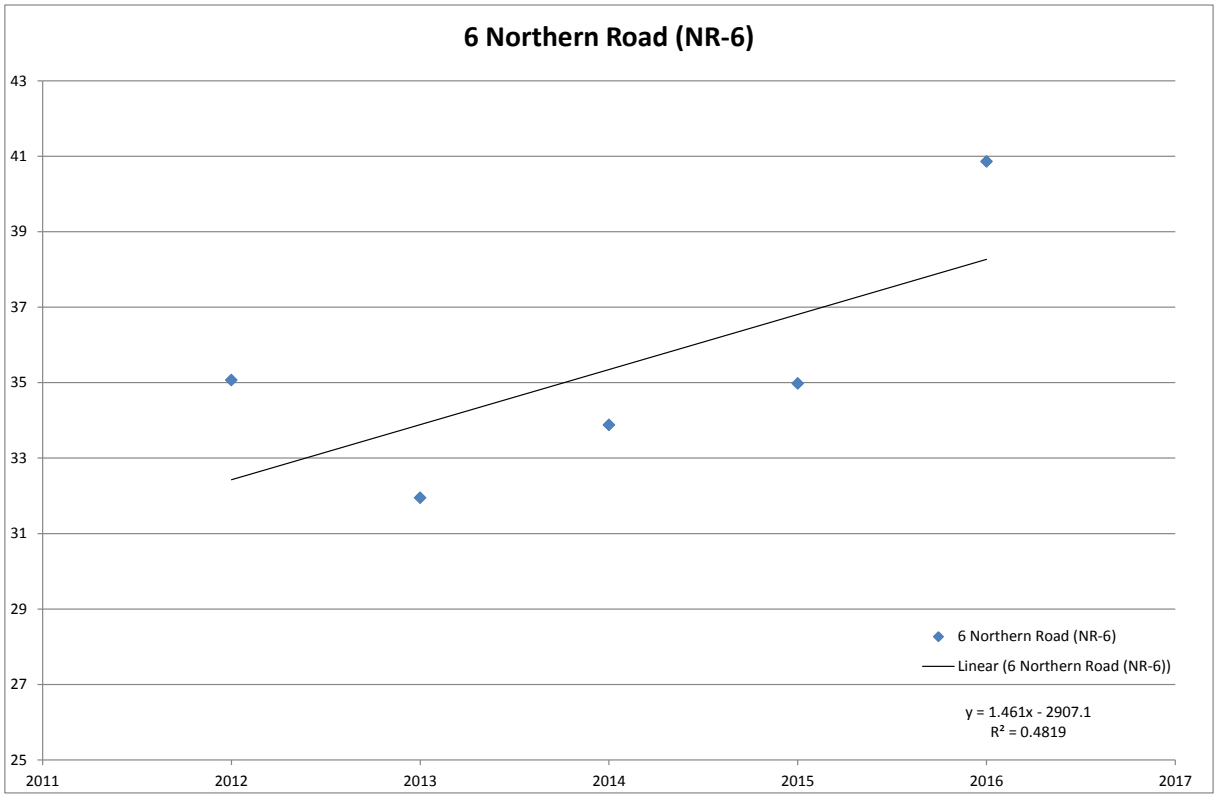

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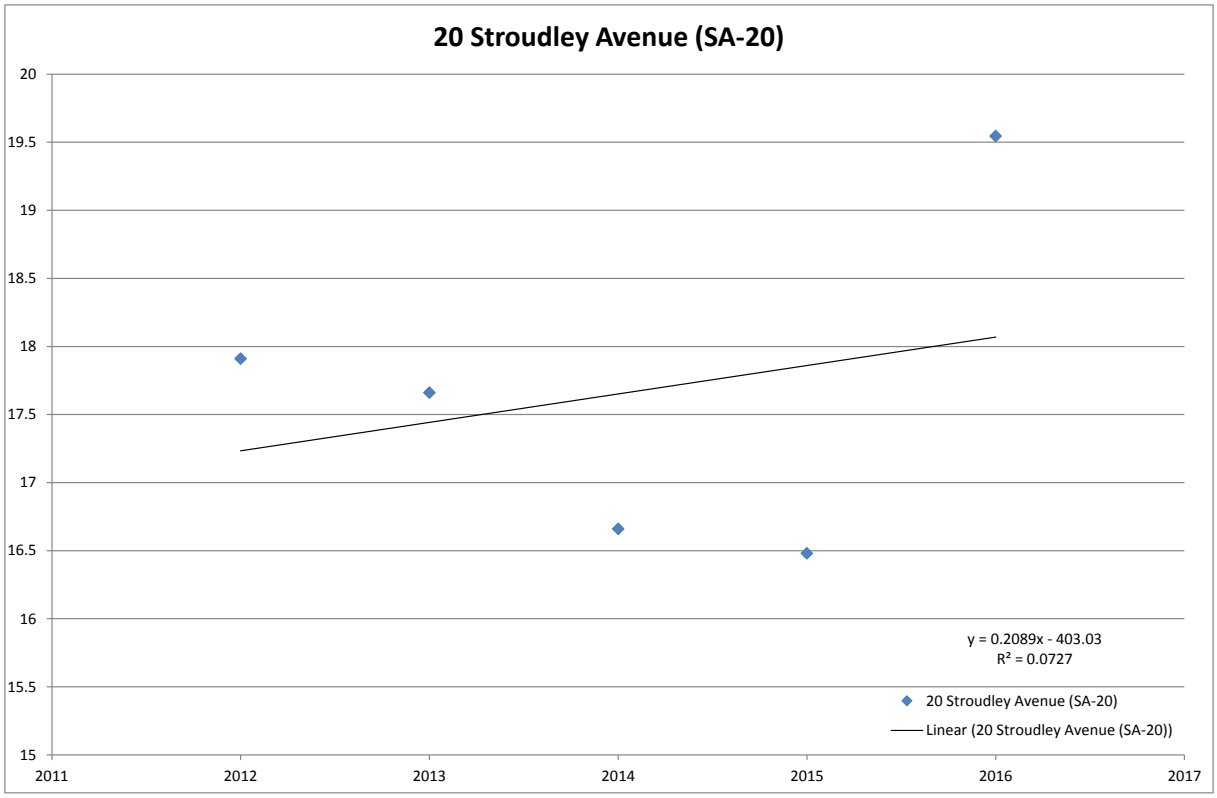

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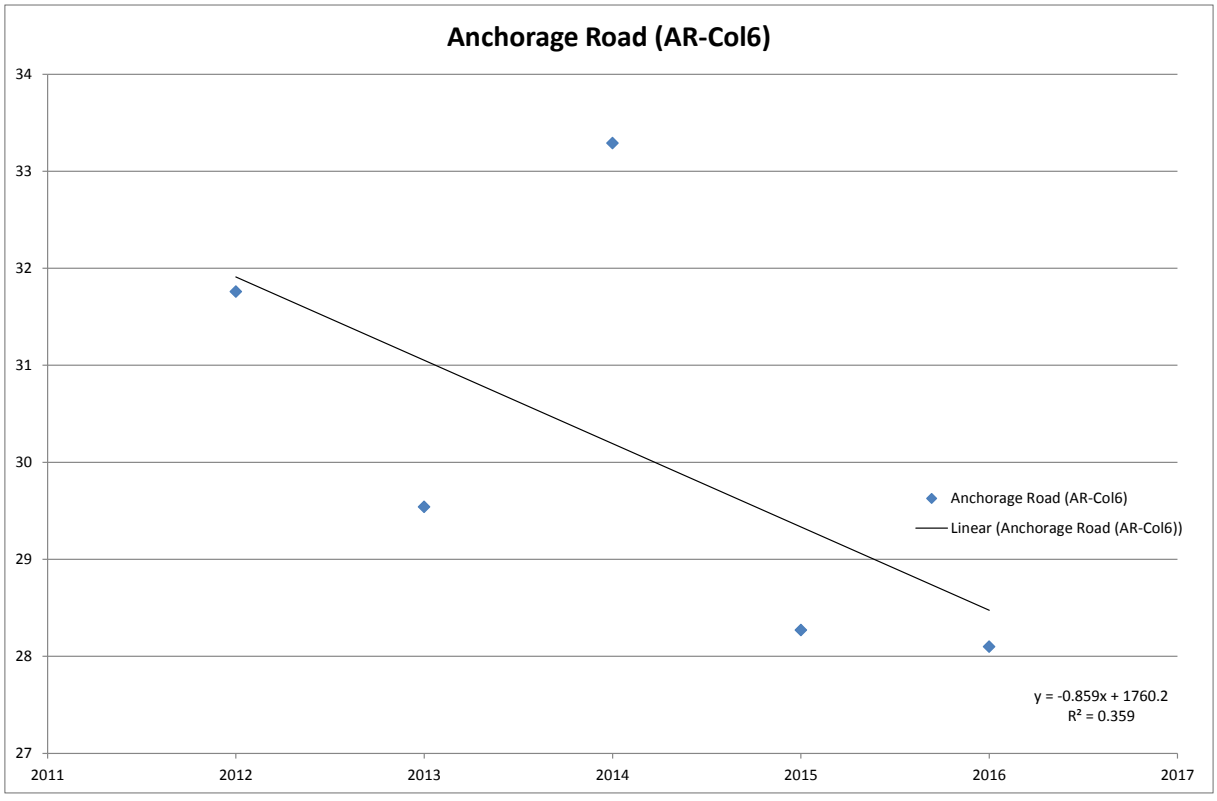

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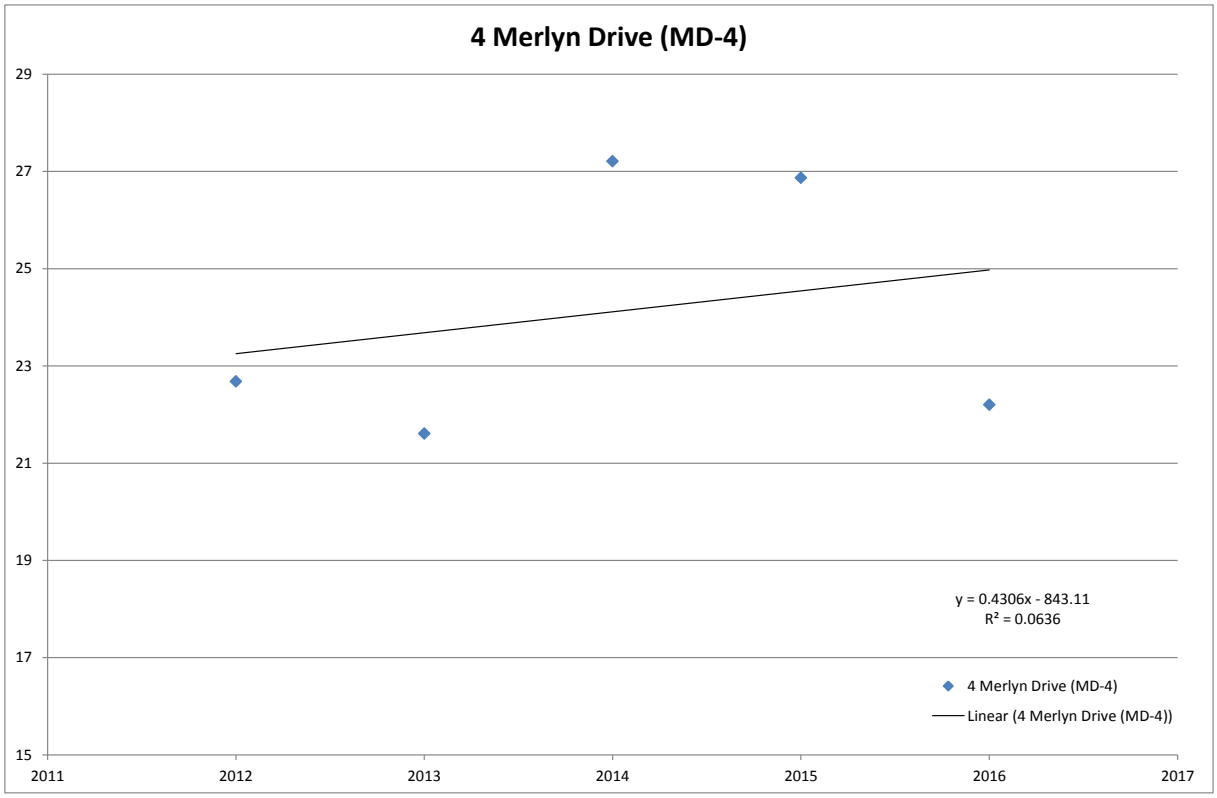

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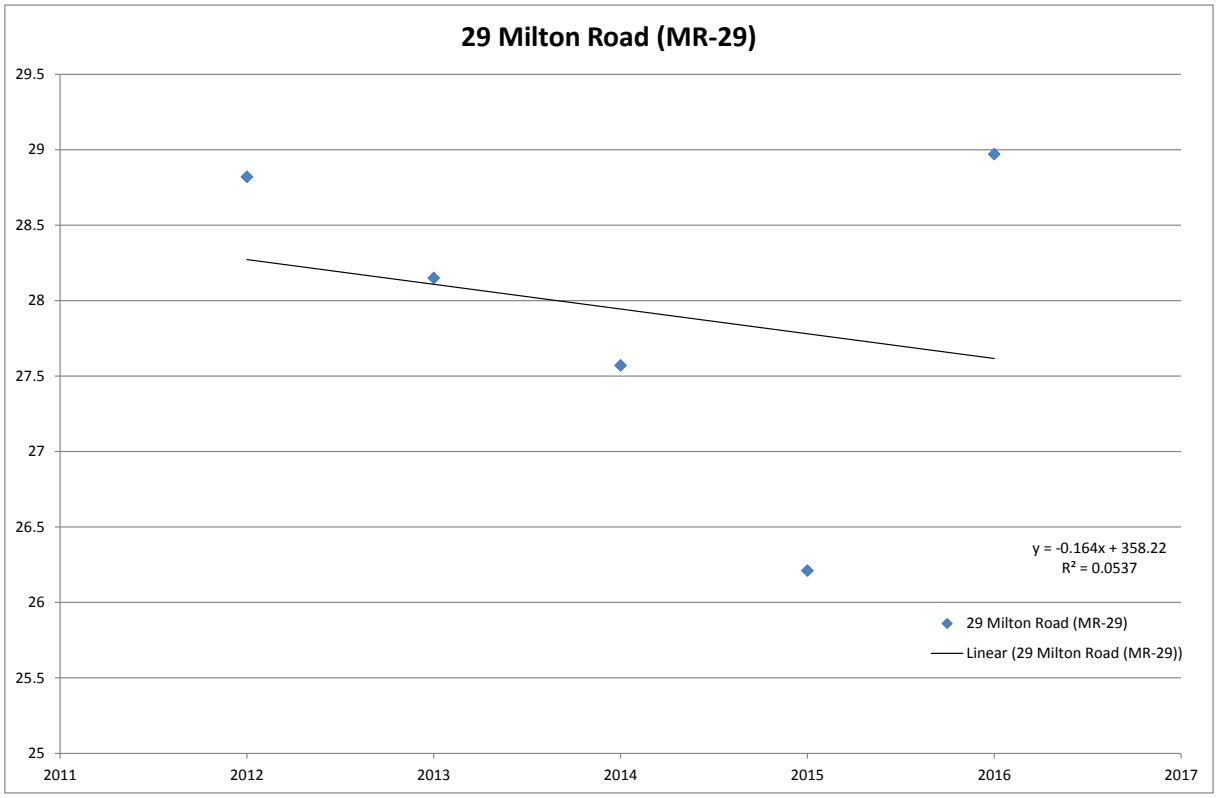

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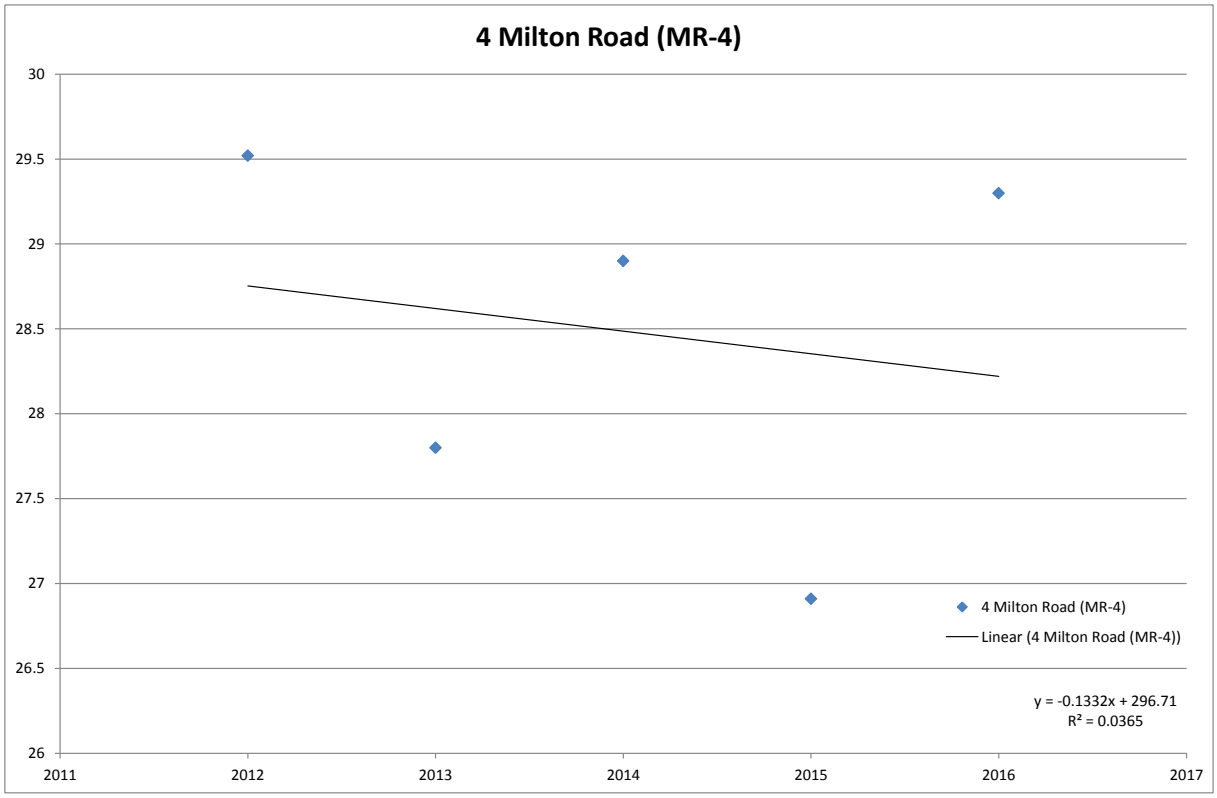

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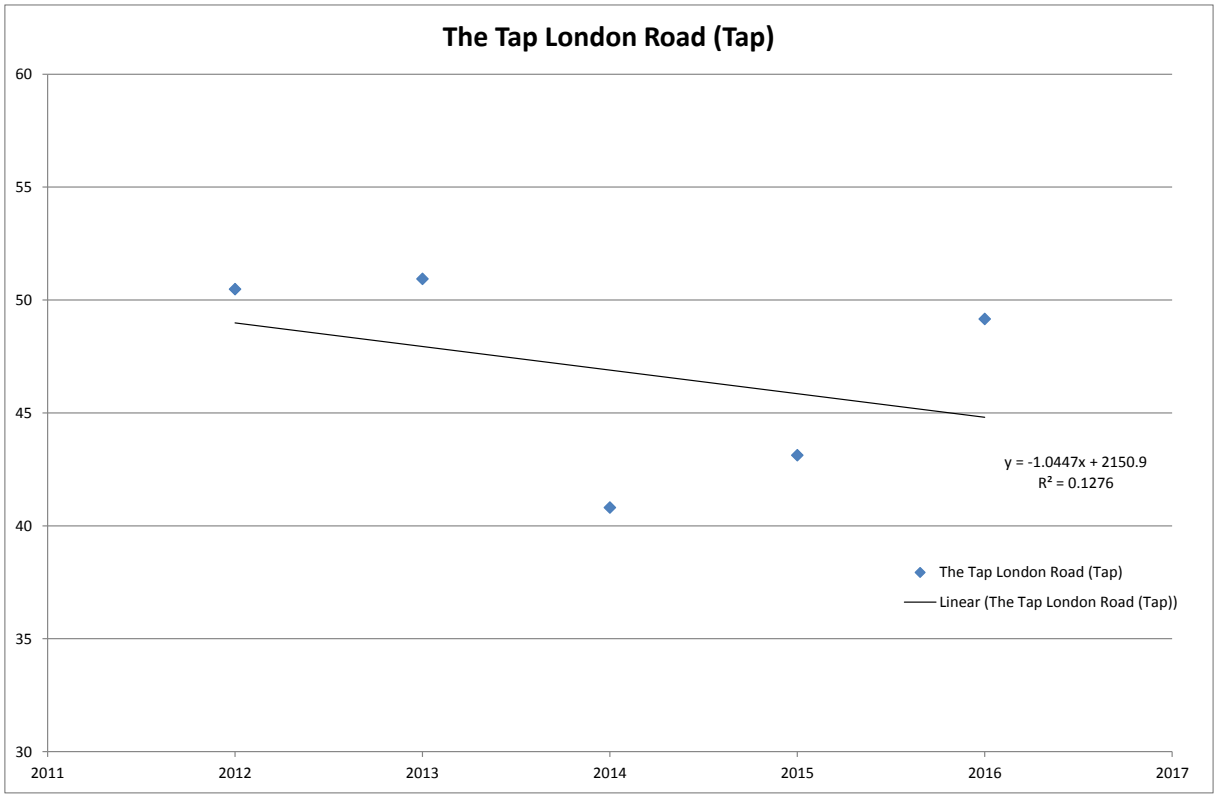

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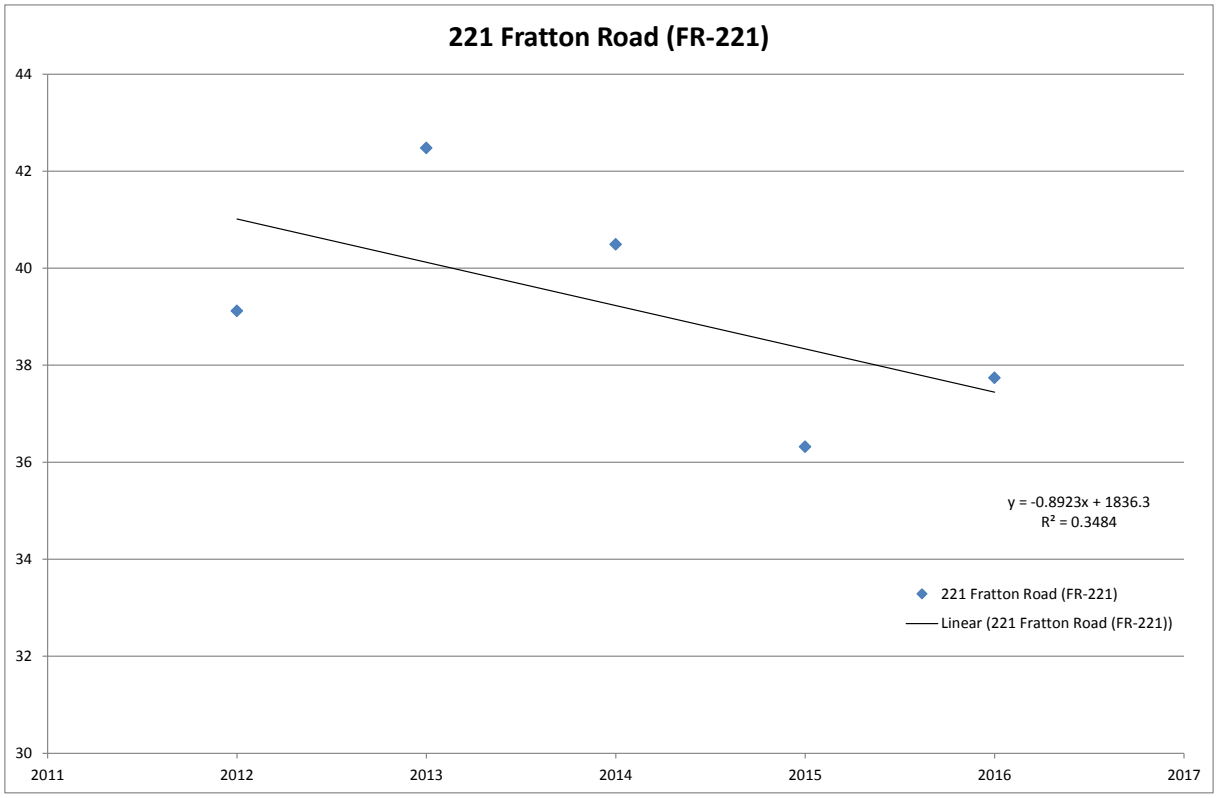

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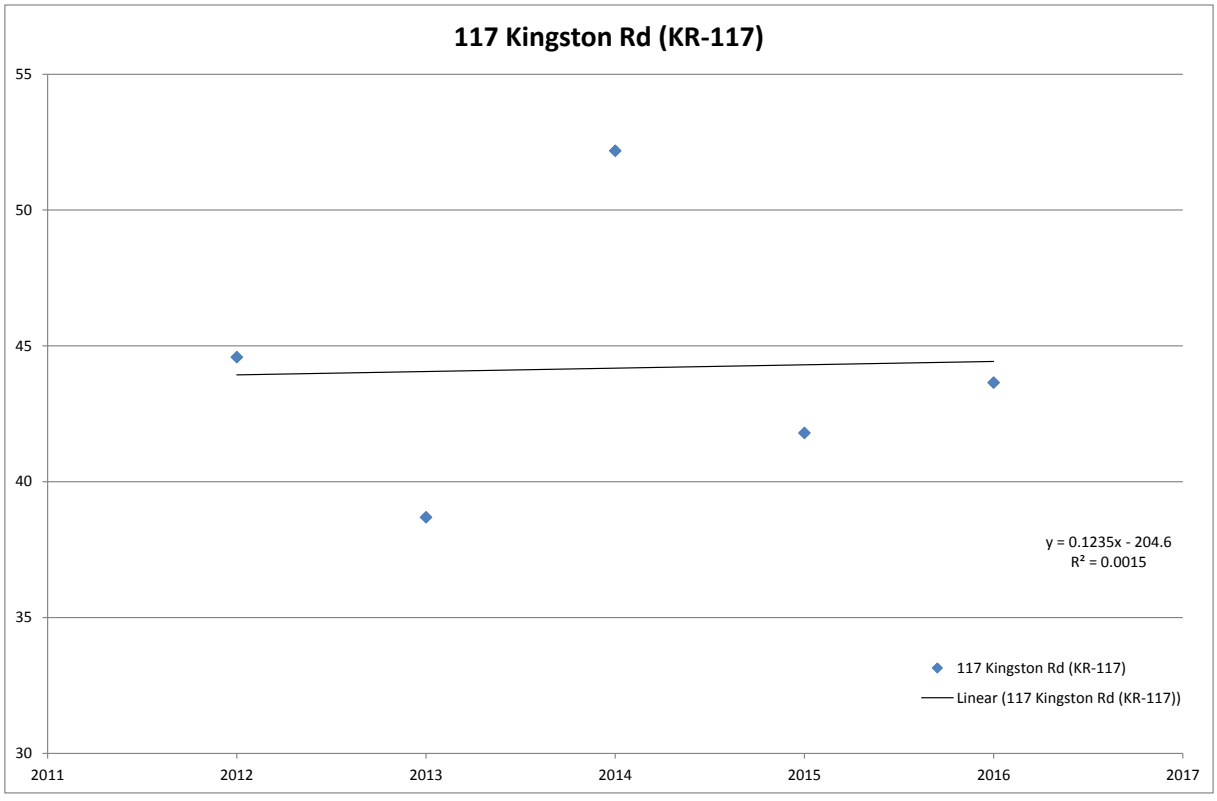

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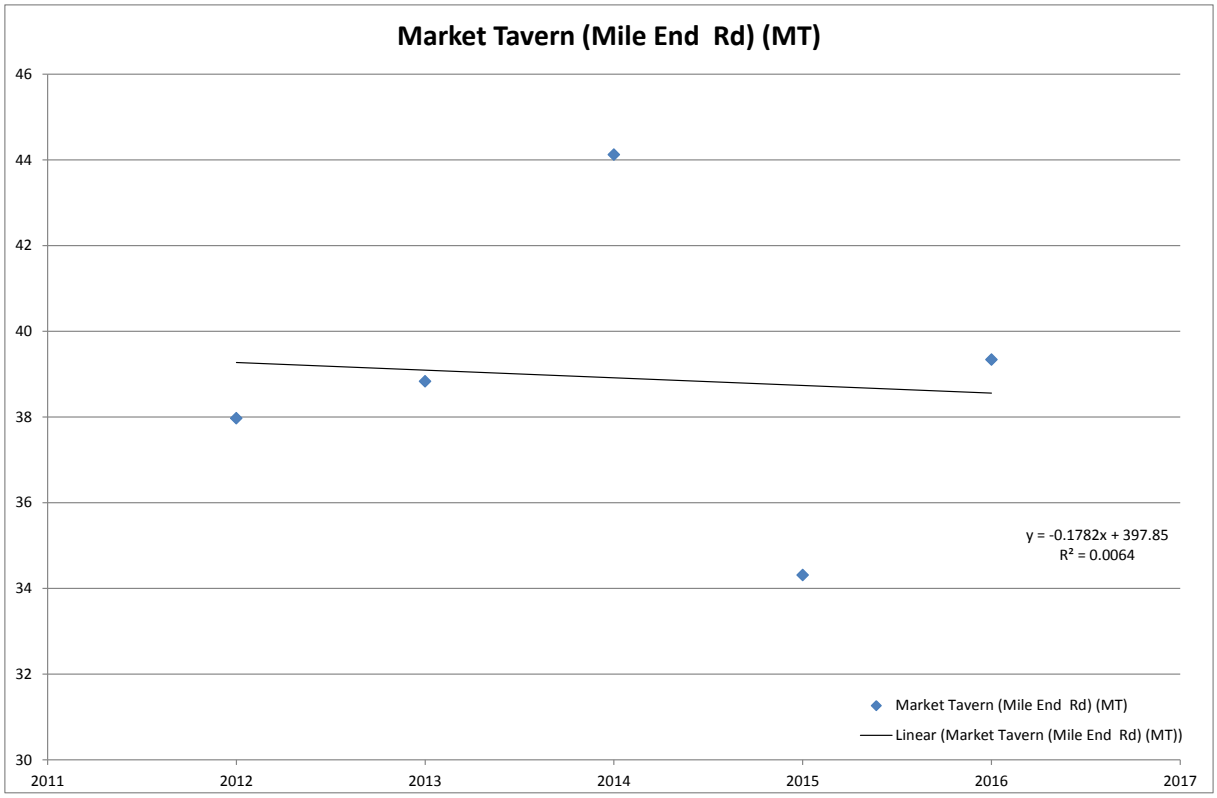

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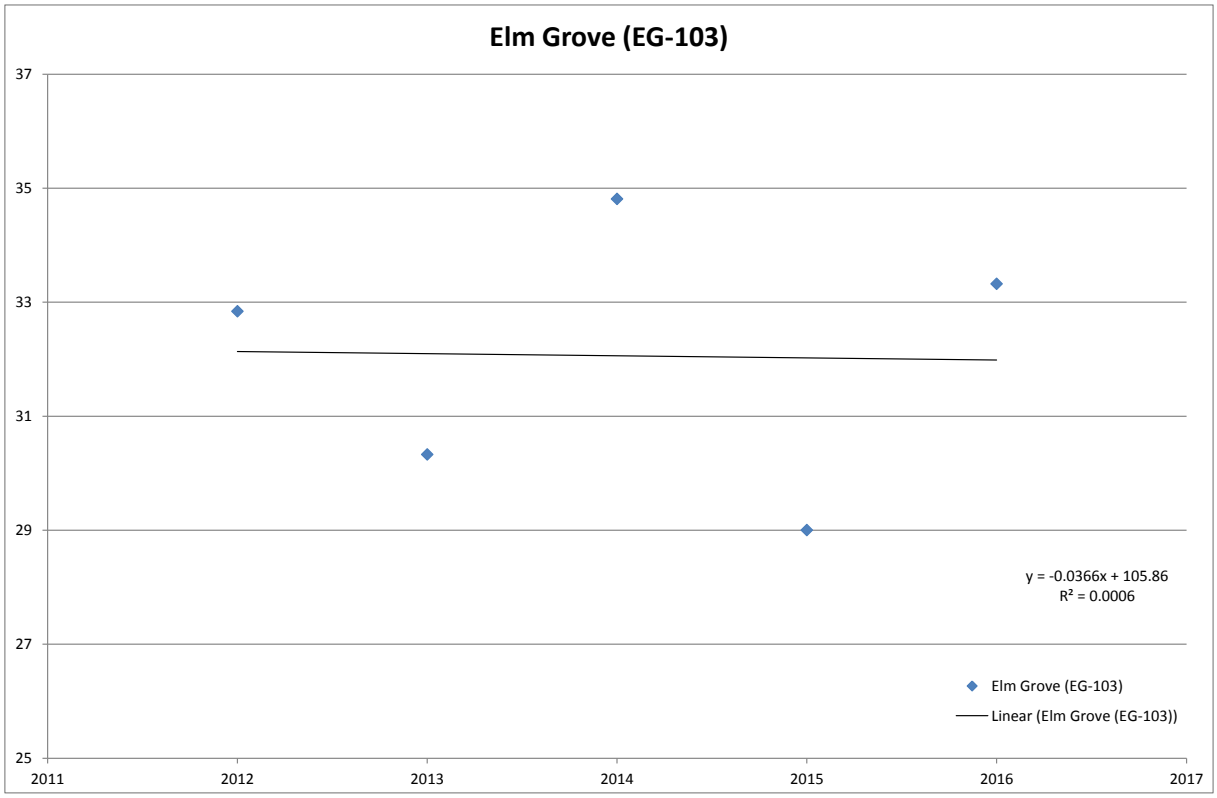

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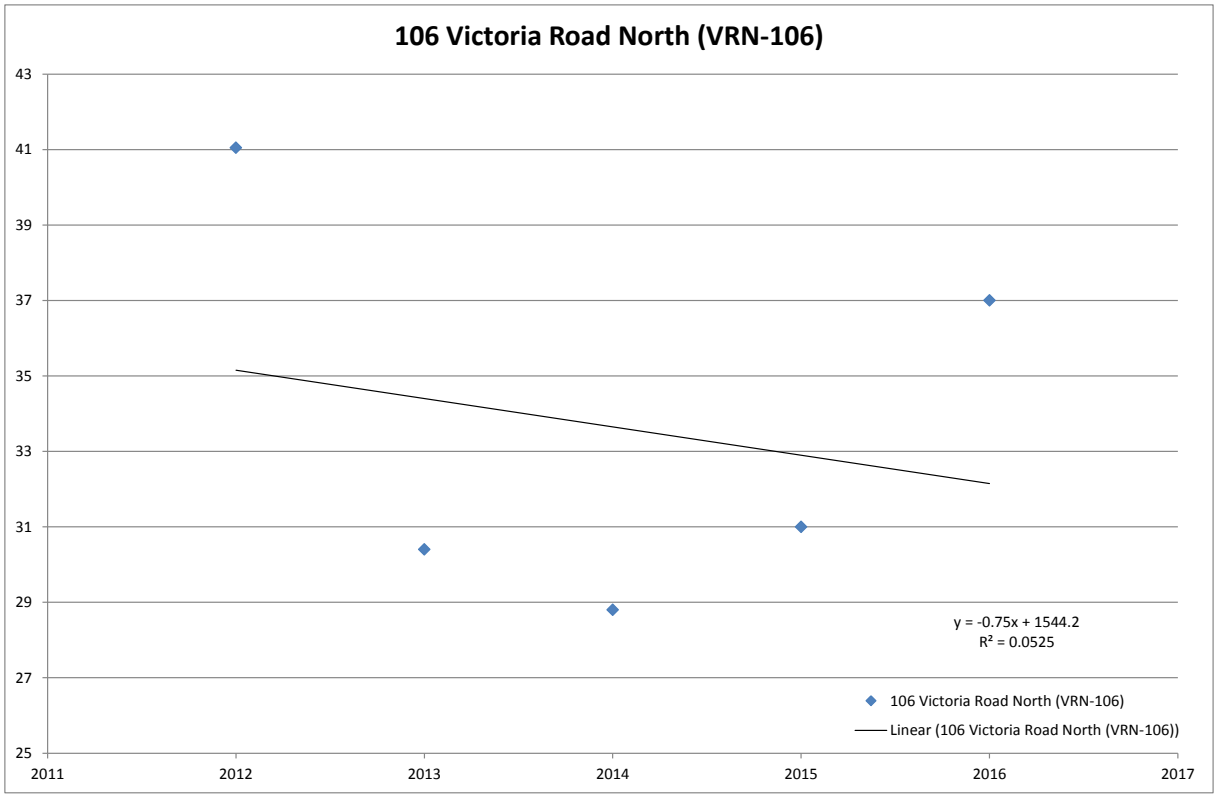

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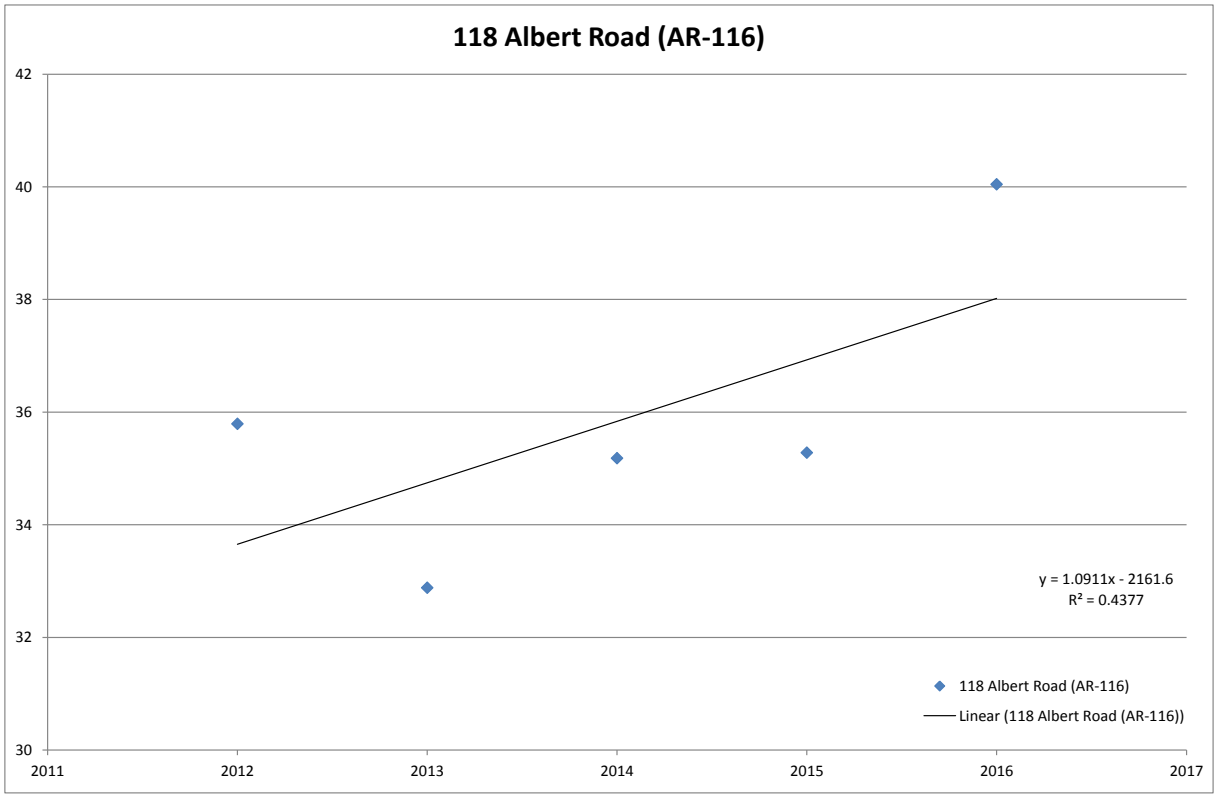

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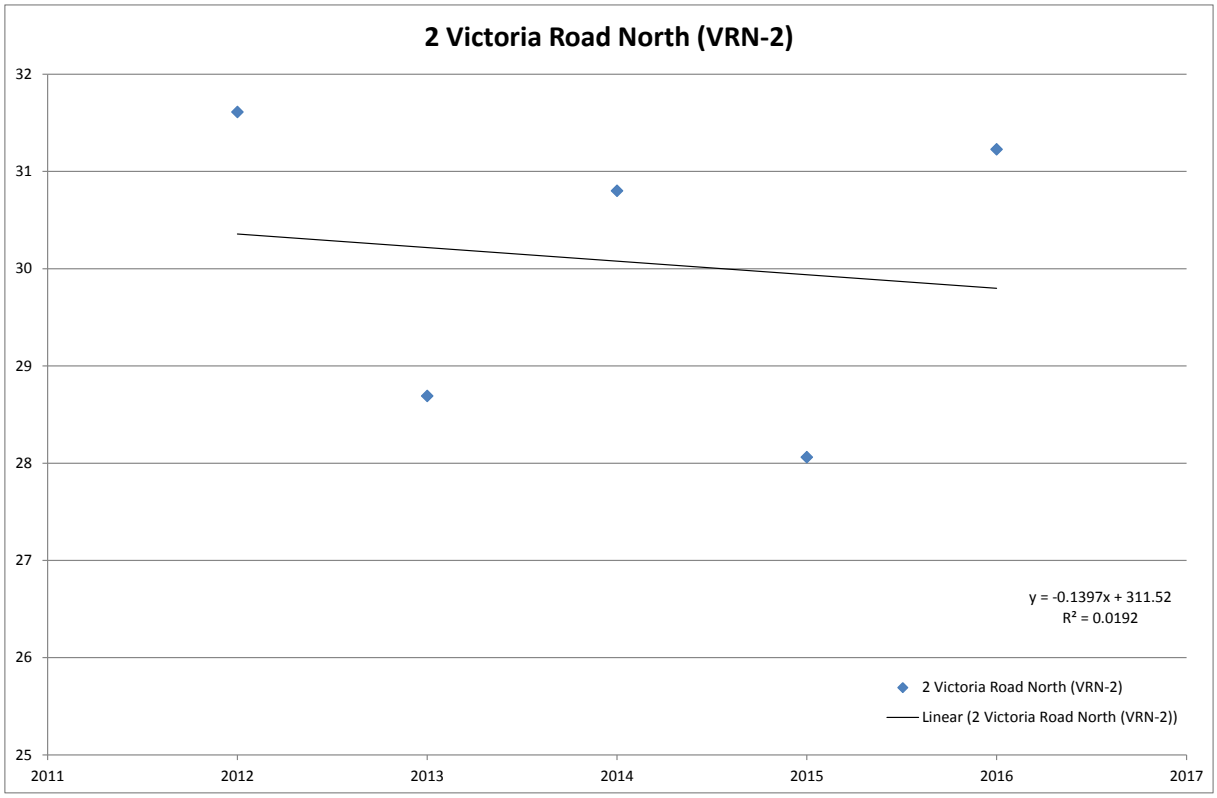

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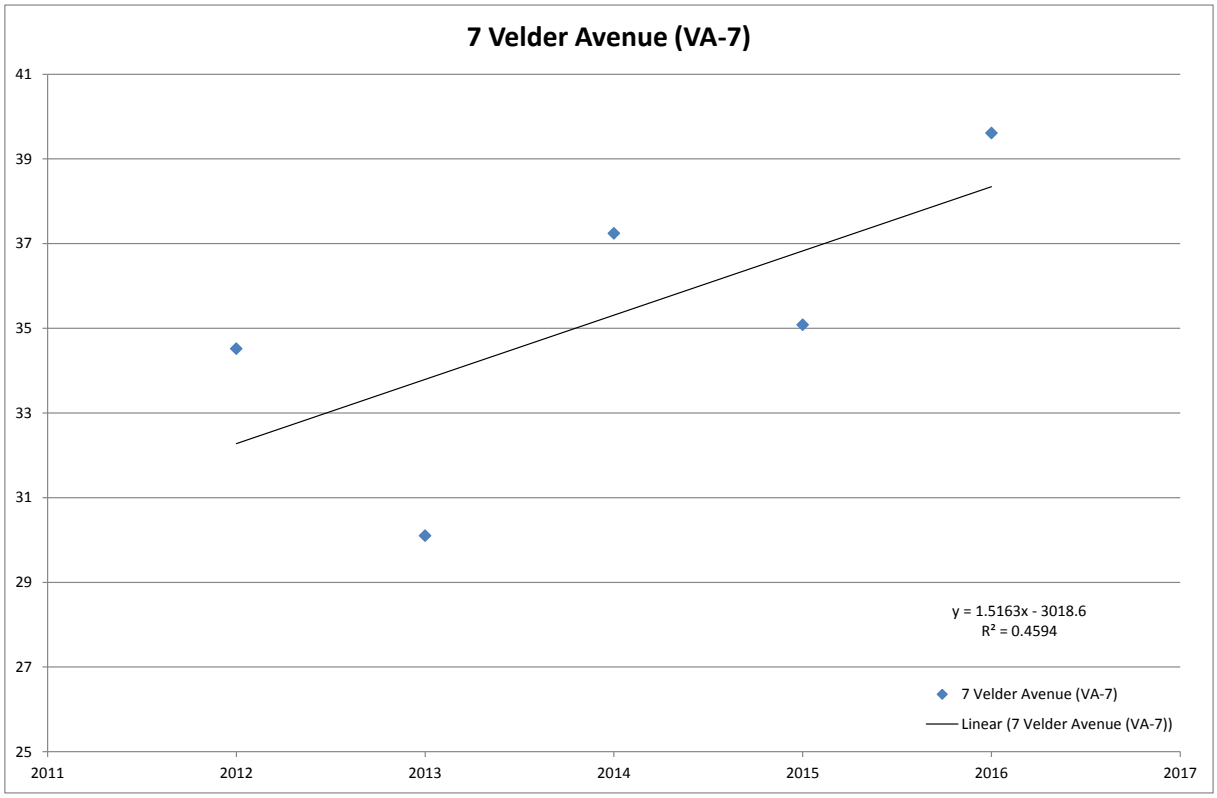

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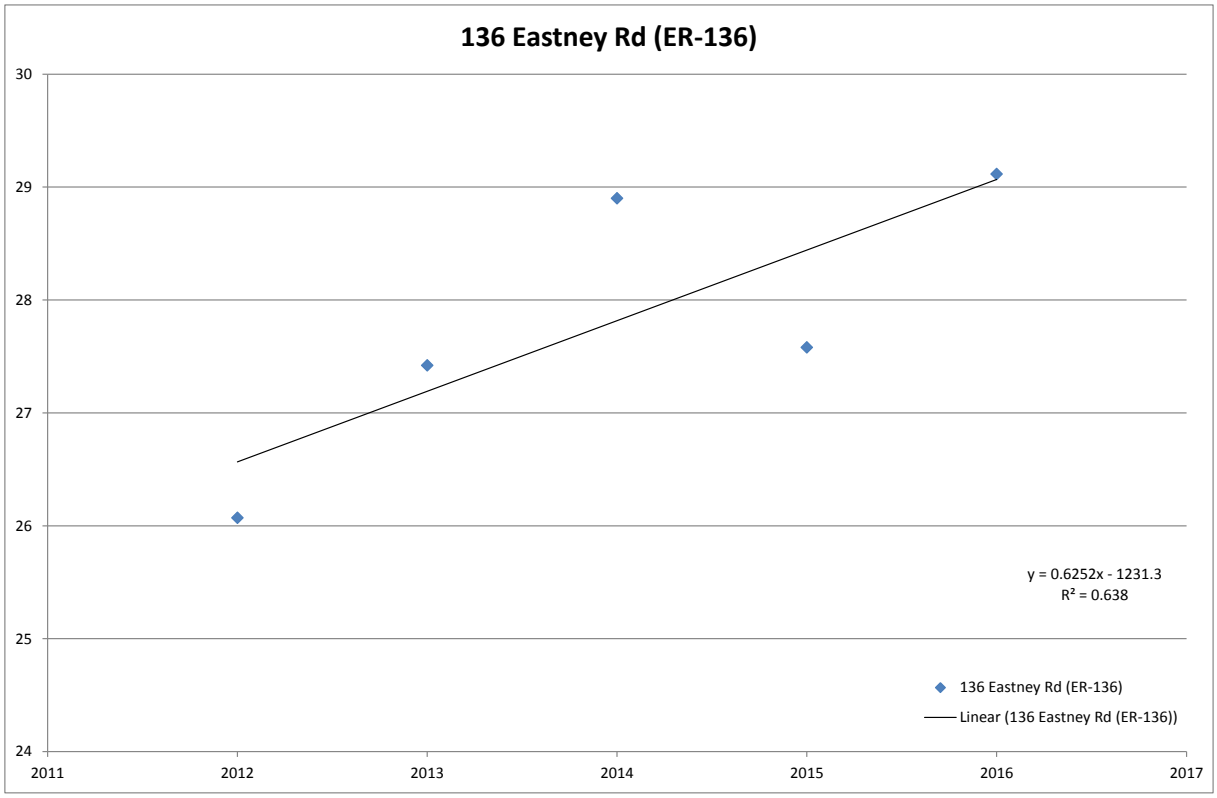

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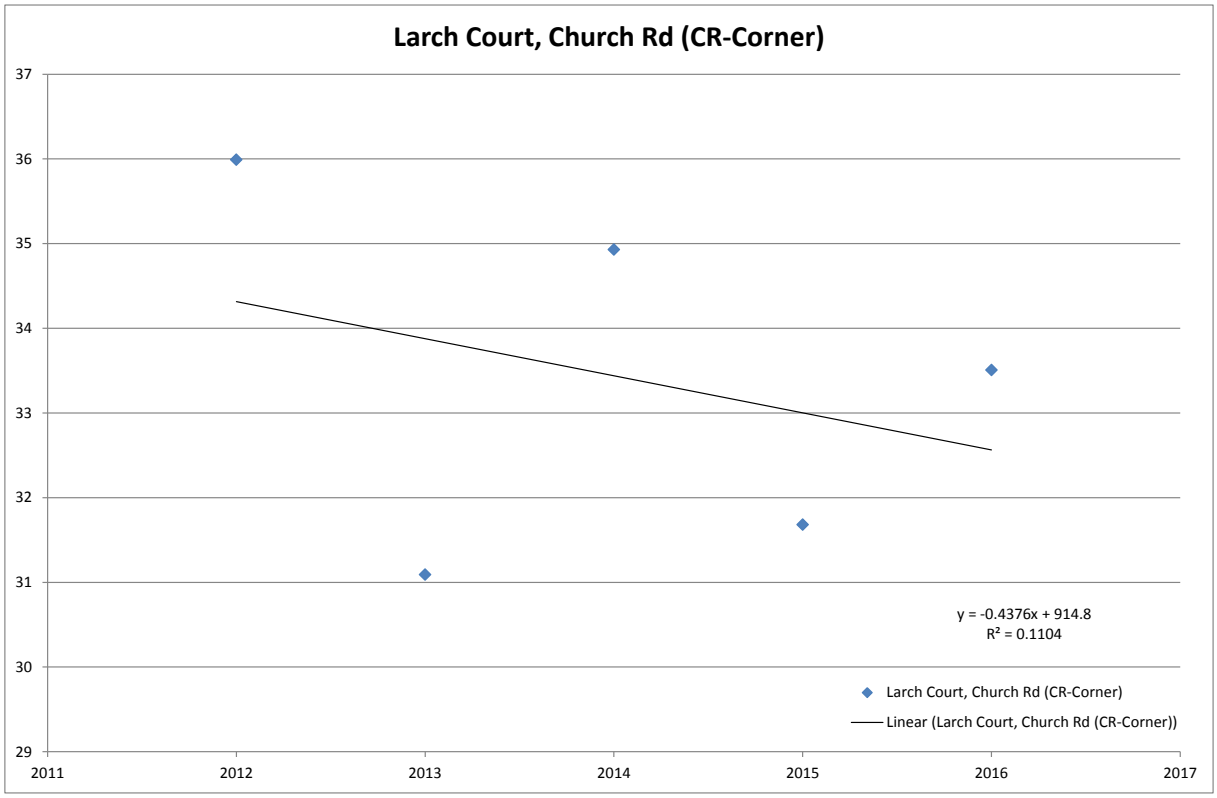

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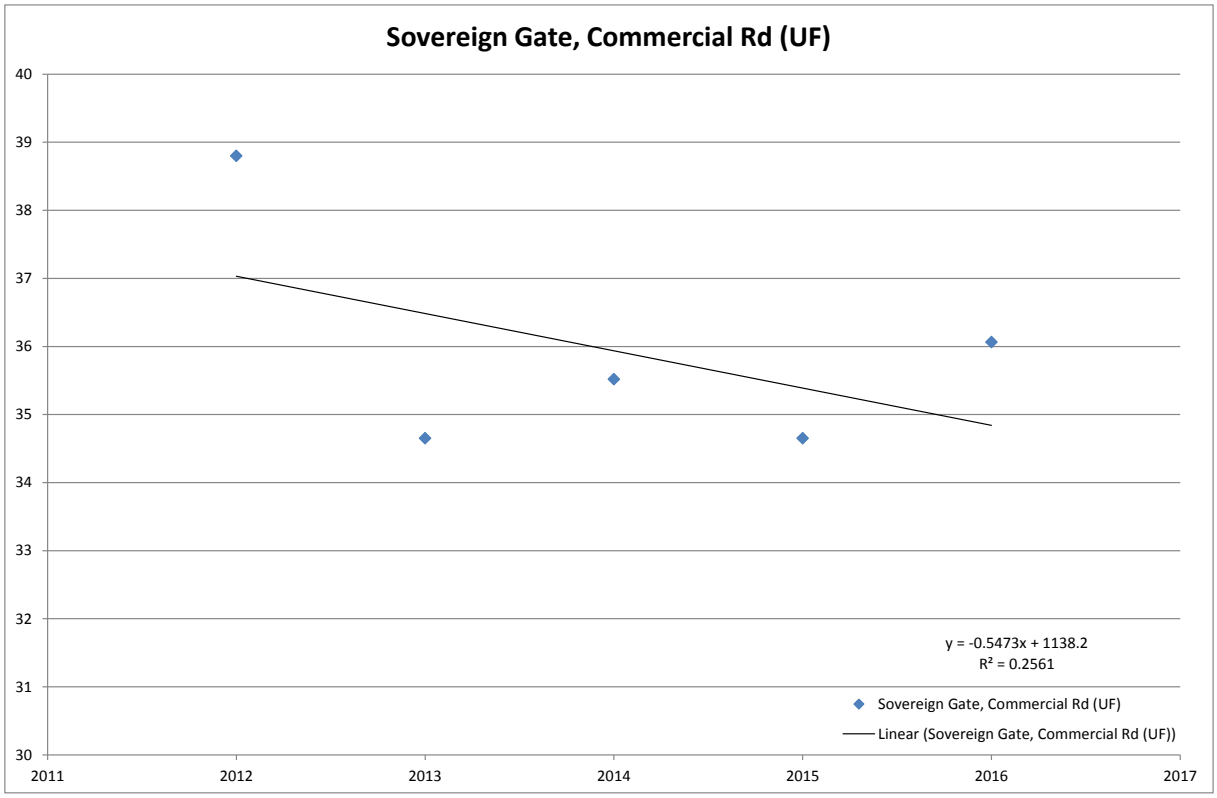

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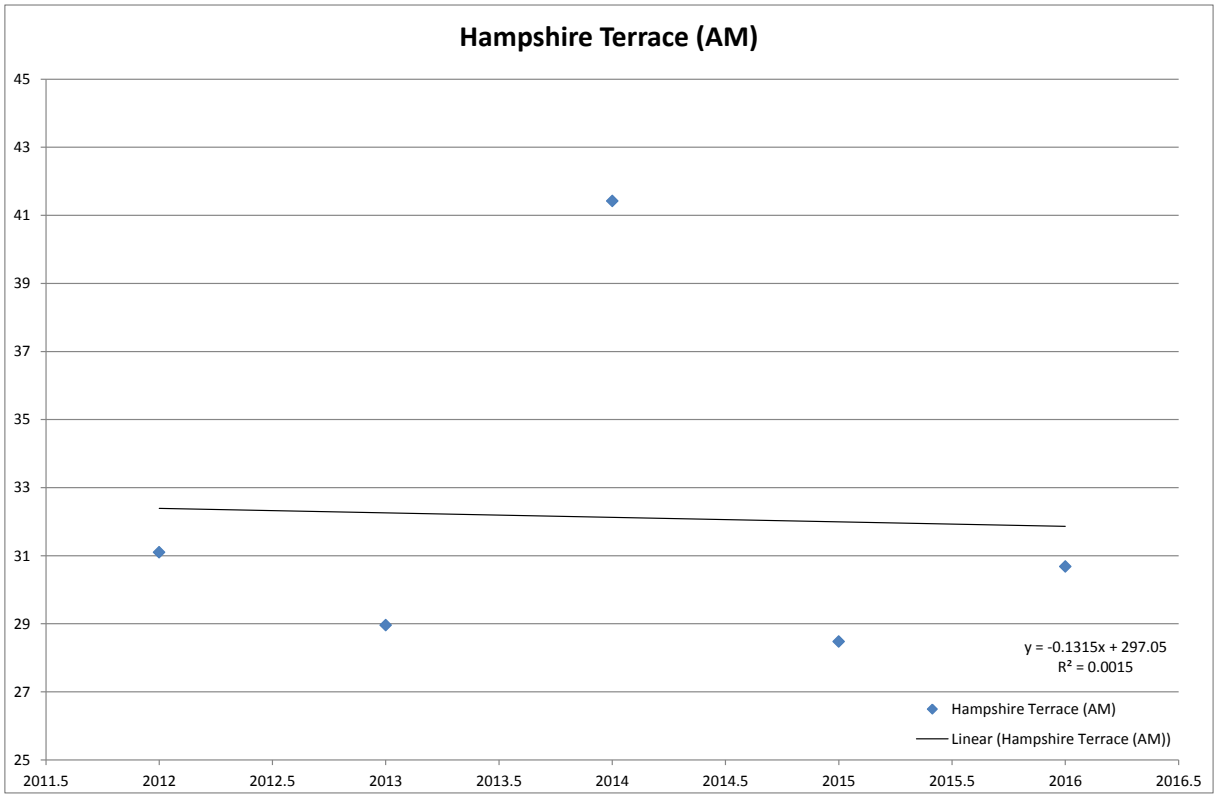

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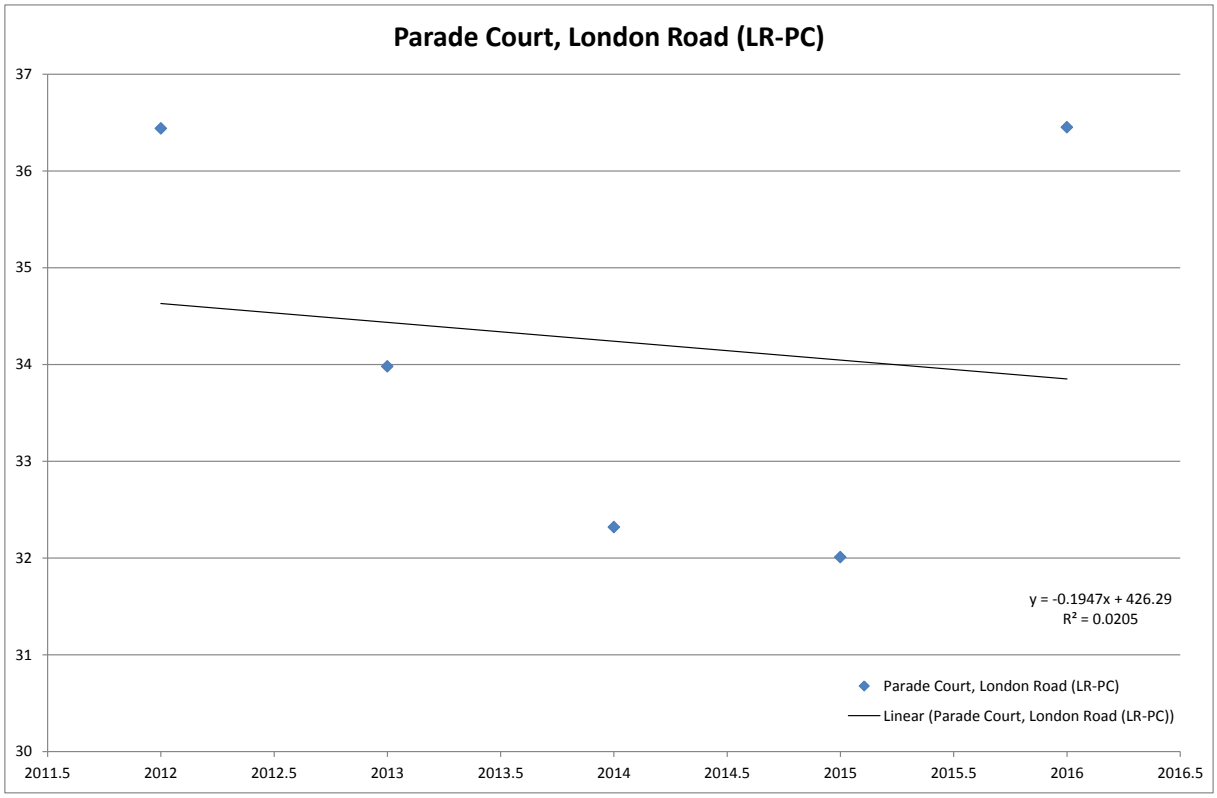

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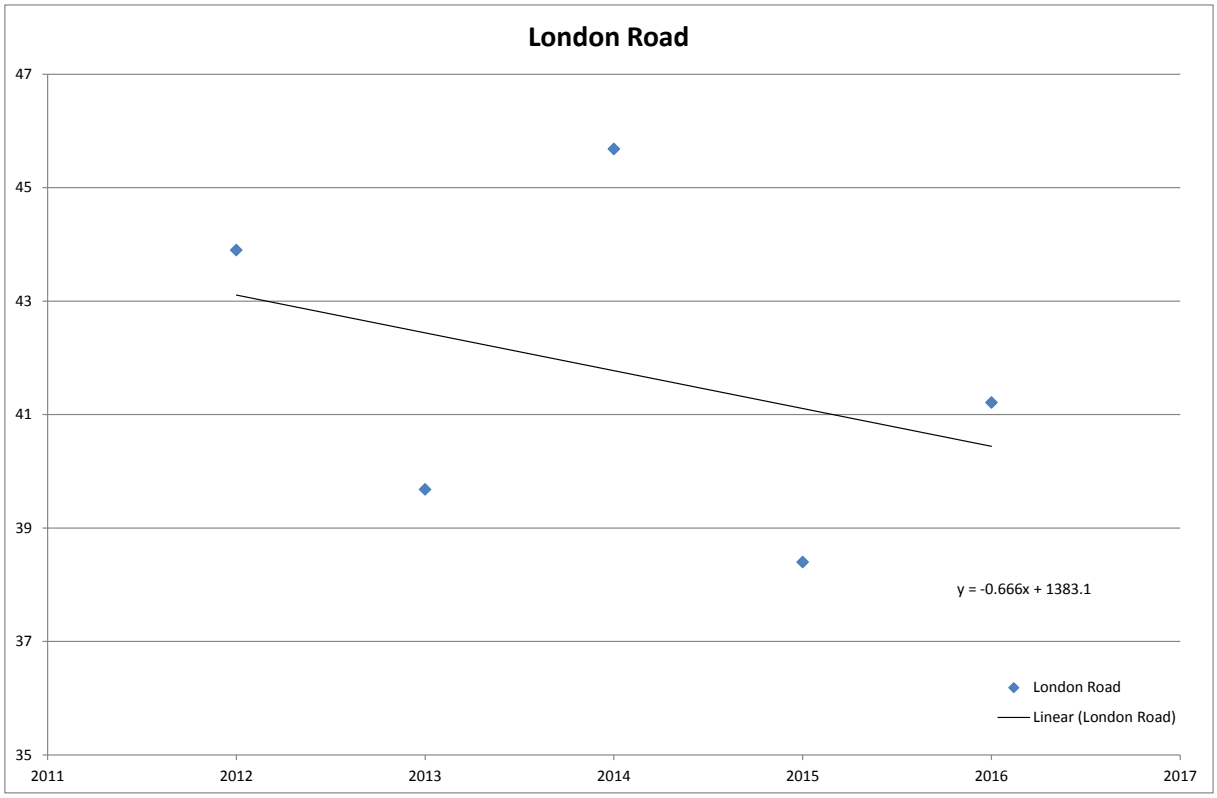

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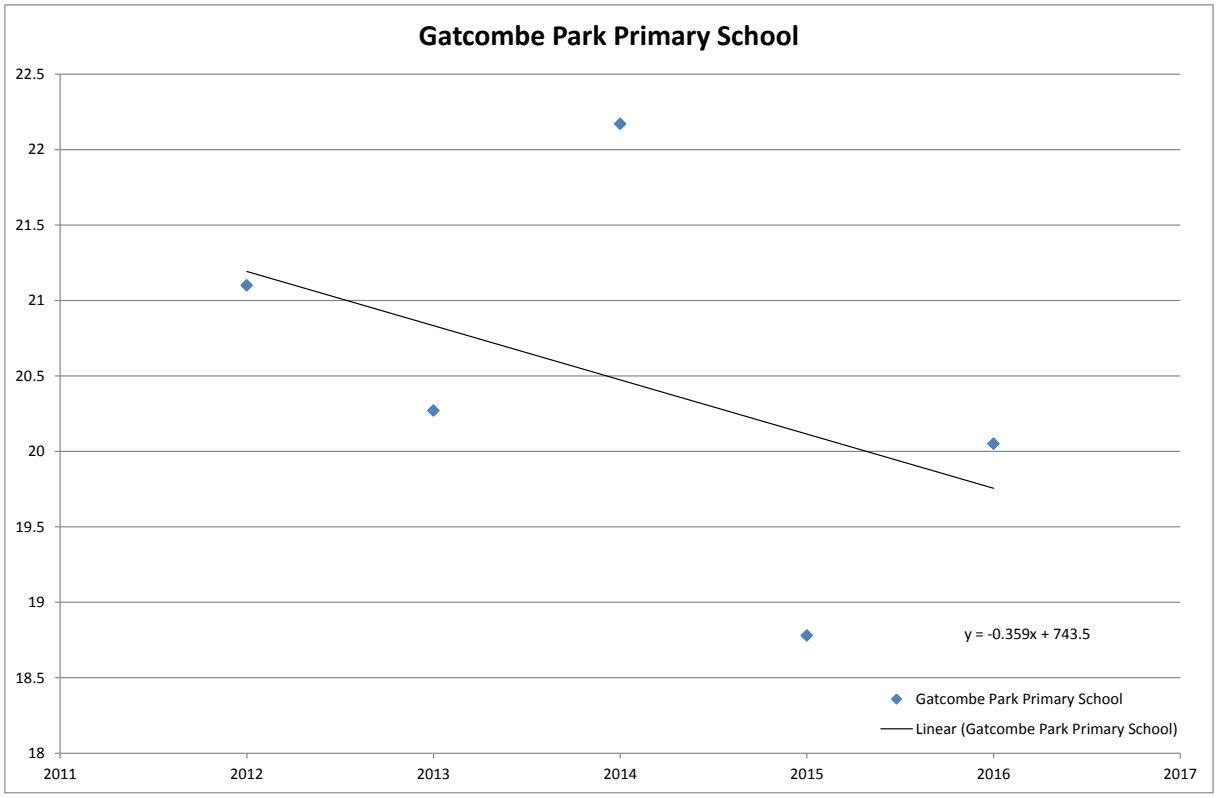

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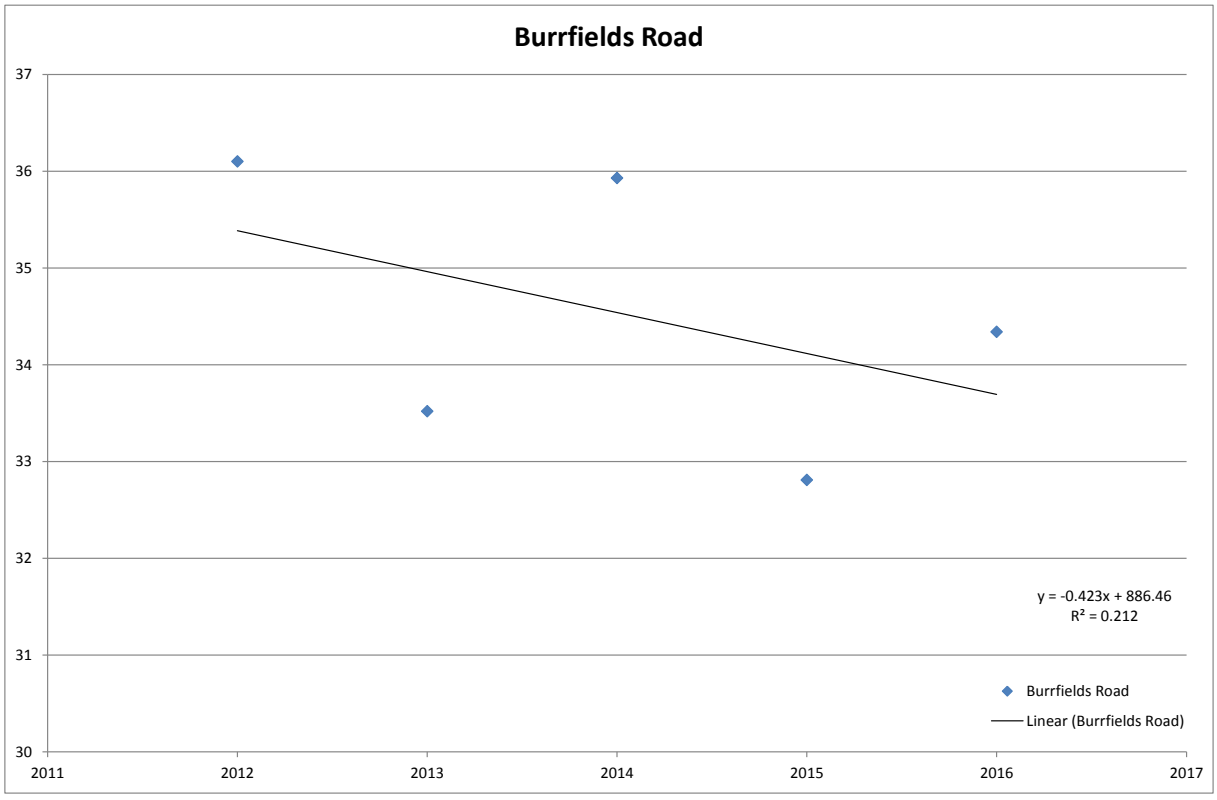

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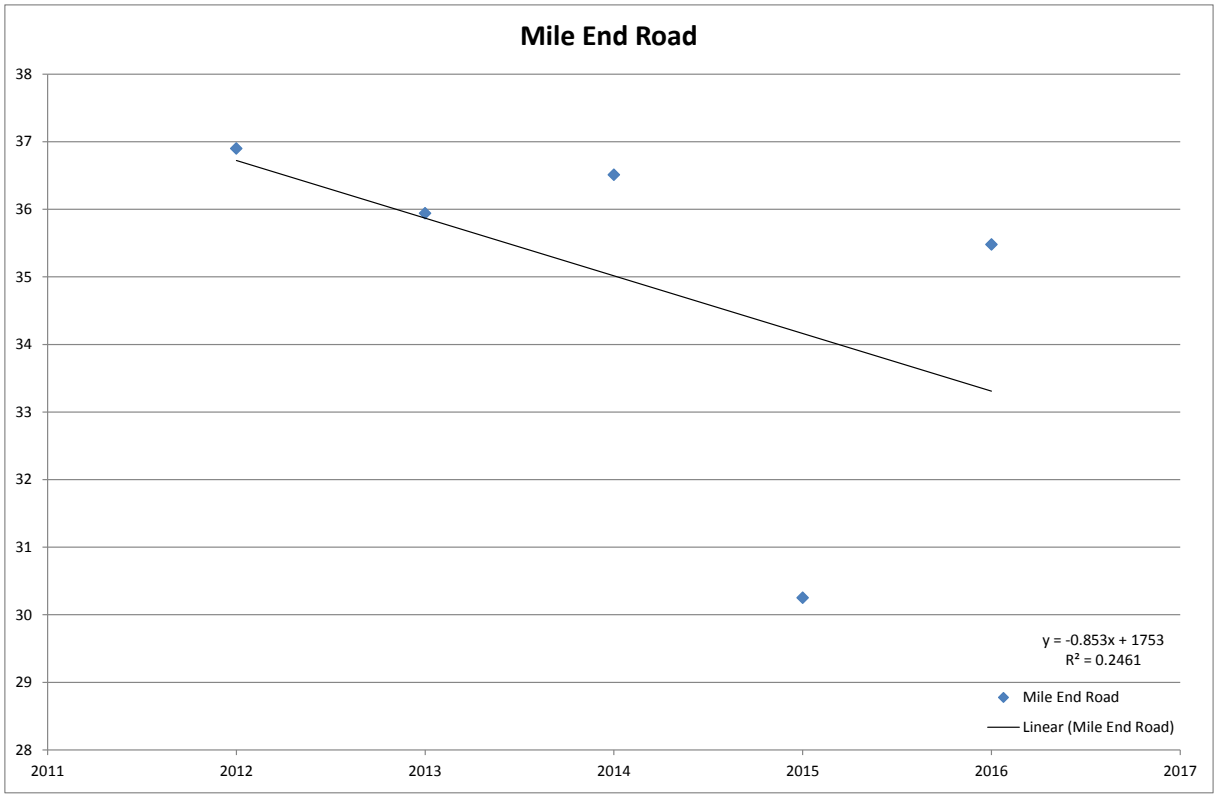

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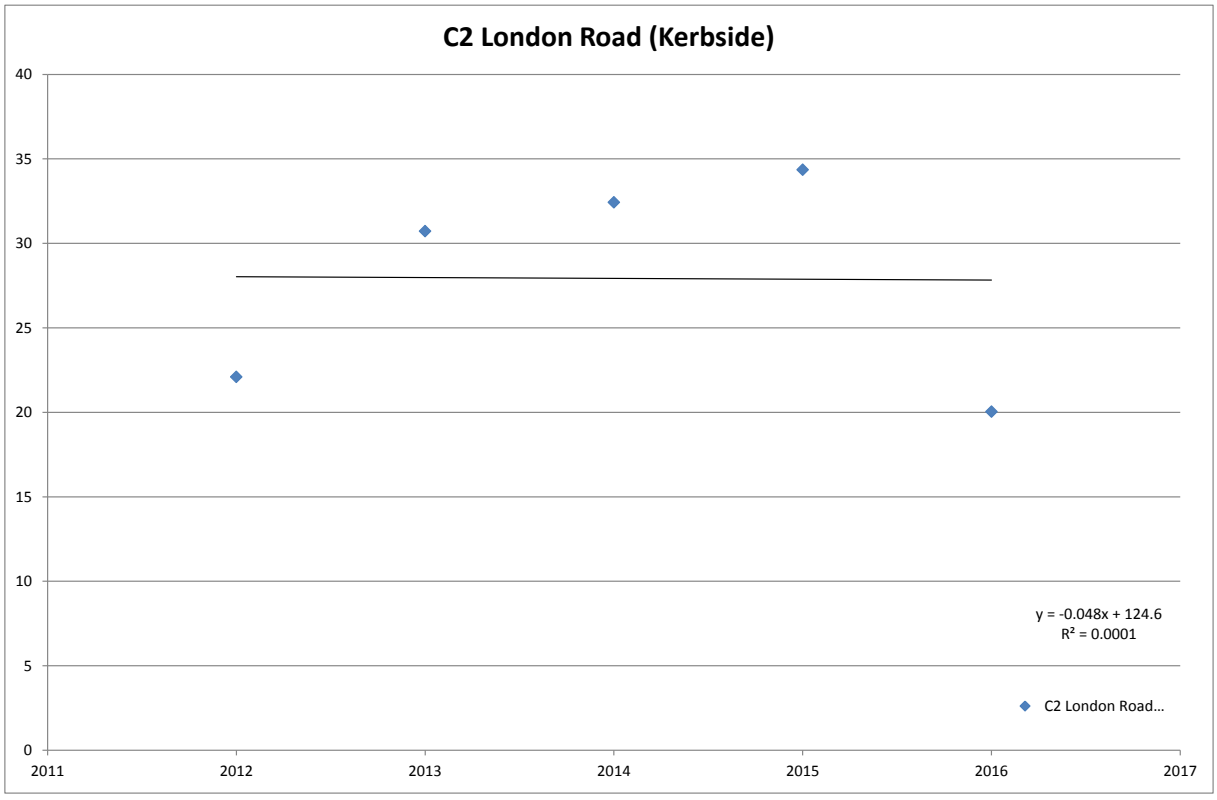

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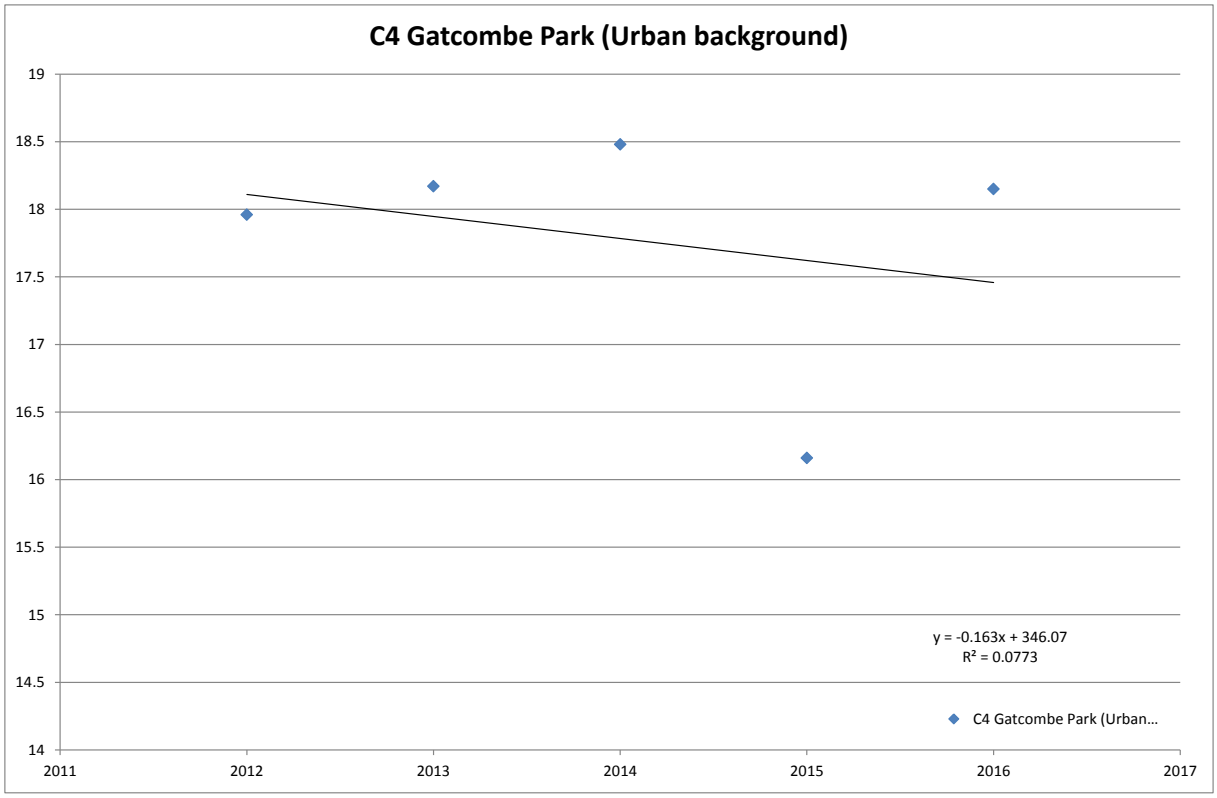

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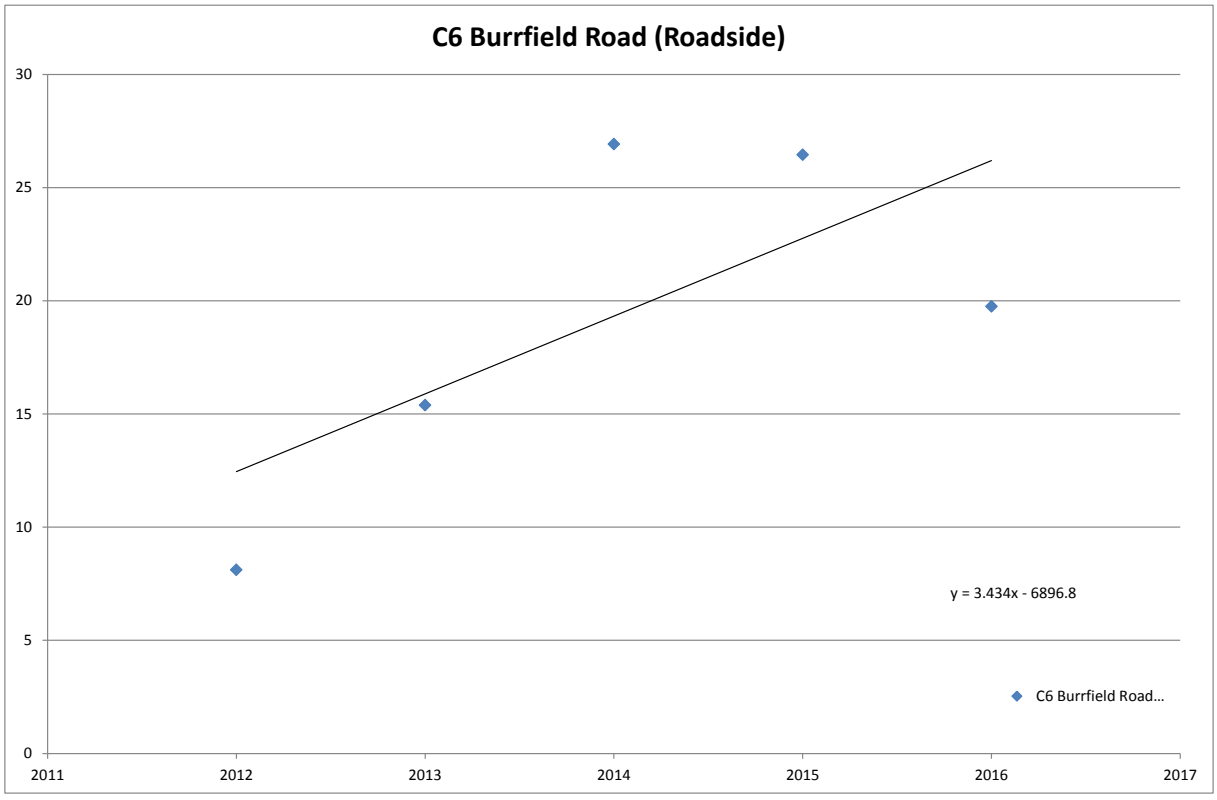

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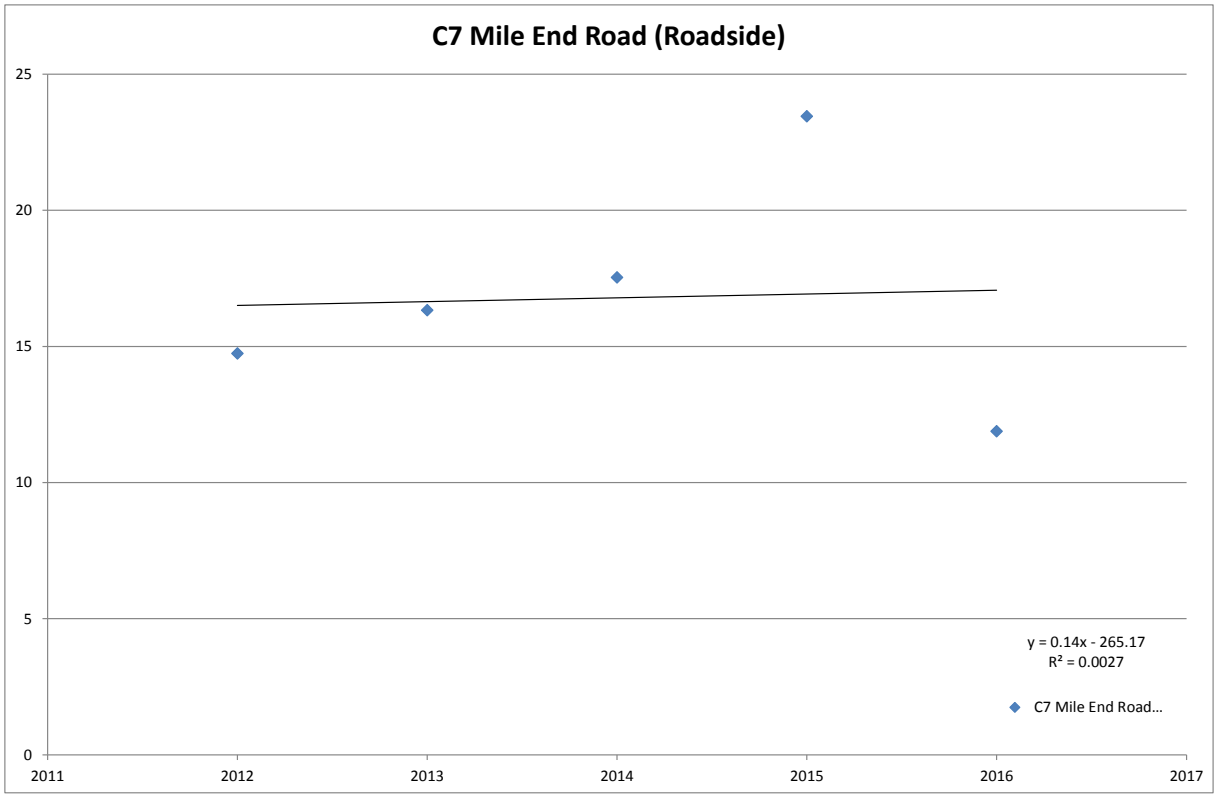

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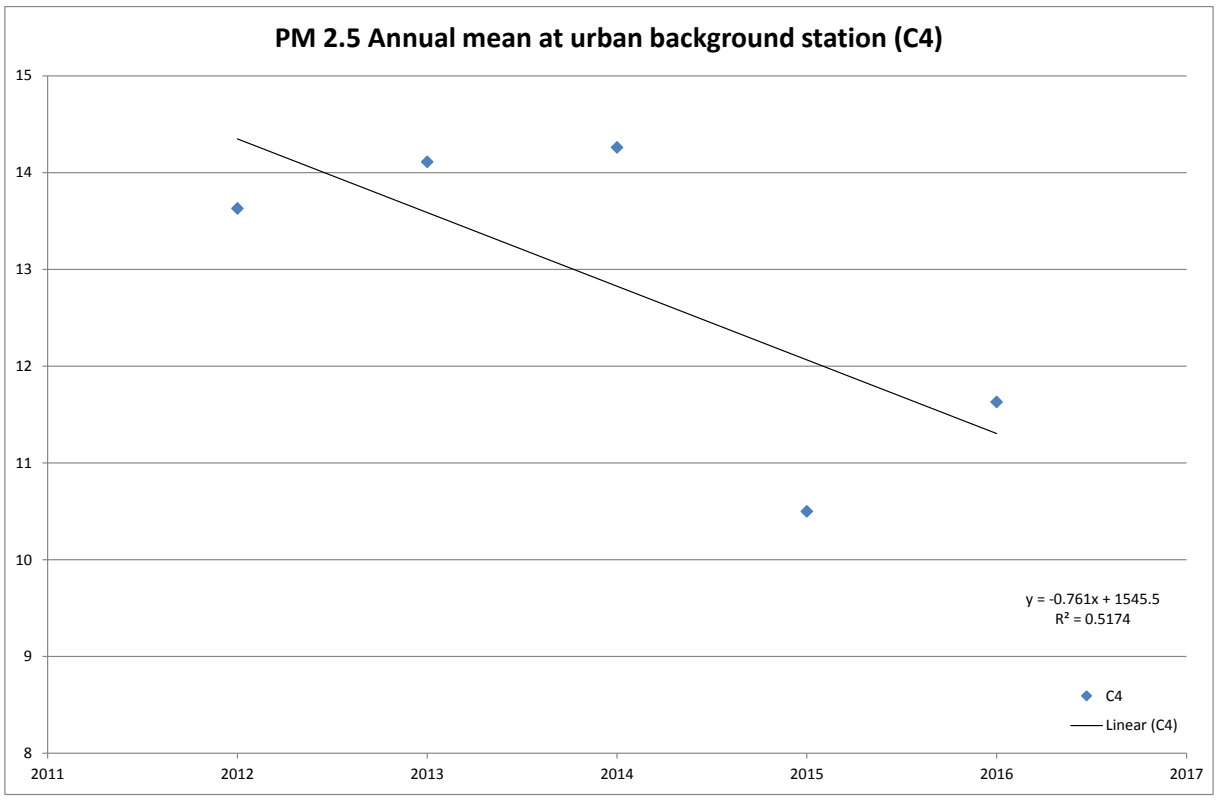

Glossary of Terms

Abbreviation	Description
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
DEFRA	Department for Environment Food & Rural Affairs
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
ASR	Annual Status Report
ARUN	Automatic Urban and Rural Network
CAQMS	Continuous Air Quality Monitoring Station
CAQMS	Continuous Air Quality Monitoring Station
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
FA	Further Assessment
LA	Local Authority
LAQ	Local Air Quality
LAQM	Local Air Quality Management
LAQRA	Local Air Quality Review and Assessment
LAQAP	Local Authority Air Quality Action Plan
NAQO	National Air Quality Objective
NDDT	Nitrogen Dioxide Diffusion Tubes
NDDTS	Nitrogen Dioxide Diffusion Tubes Survey
NO_x	Nitrogen Oxides
PCC	Portsmouth City Council
QA / QC	Quality Assurance and Quality Control
SAS	Source Apportionment Study
SO_2	Sulphur Dioxide

Source Apportionment Study 2017

Air Quality in Portsmouth

Portsmouth City Council

August 2017

Quality information

Prepared by	Checked by	Approved by
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Revision	Revision date	Details	Authorized	Name	Position
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1. Introduction

AECOM was commissioned by Portsmouth City Council (PCC) to undertake a Source Apportionment Study of road traffic sources as part of the ongoing Local Air Quality Management Review and Assessment process.

Detailed dispersion modelling has been carried out in accordance with Defra's Technical Guidance LAQM.TG(16)[1], using the AAQuIRE detailed dispersion model, to identify geographical areas of the city where ambient pollutant concentrations exceed or are likely to exceed the relevant UK Air Quality Objectives (AQO). Source apportionment calculations have been carried out to quantify the contributions of different road vehicle types to ambient pollutant concentrations in the areas of likely exceedance, to determine the emissions reductions required to achieve compliance, and to identify the likely year of compliance.

The main pollutant of concern is nitrogen dioxide (NO_2) as monitored concentrations of this pollutant in recent years have exceeded the annual mean AQO at a number of locations throughout the city. PCC currently has five Air Quality Management Areas (AQMAs) declared on the grounds of monitored or modelled exceedances of the UK annual mean NO_2 AQO. Particulate matter (PM_{10} and $PM_{2.5}$) concentrations are considered to be well below the relevant UK Air Quality Objectives throughout the city. These pollutants have also been assessed as part of this study.

[1] Defra Local Air Quality Management Technical Guidance TG(16). https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf

2. Policy and Legislation

2.1 UK Air Quality Strategy

The UK Air Quality Strategy identifies nine ambient air pollutants that have the potential to cause harm to human health. These pollutants are associated with local air quality problems, with the exception of ozone, which is instead considered to be a regional issue.

The Air Quality (Standards) Regulations 2010 set Air Quality Objectives (AQO) for the seven pollutants that are associated with local air quality, transposing the mandatory EU Limit Values, set out in EU Directives 2008/50/EC and 2004/107/EC on ambient air quality, into English law. The AQOs and EU Limit Values aim to reduce the health impacts of those pollutants to negligible levels.

The English Air Quality Strategy AQOs and EU Limit Values of relevance to this assessment can be found in Appendix A.

2.2 Portsmouth City Council Air Quality Action Plan (AQAP)

As part of the 2004 Detailed Assessment, PCC modelled NO_2 concentrations across Portsmouth. The results indicated that the annual mean NO_2 objective would be exceeded at 13 hotspot areas across the city. These findings led to the declaration of 13 AQMAs.

In 2007, PCC developed the first draft of their AQAP and although not formally adopted, many of the proposed actions were implemented as part of the Local Transport Plan (LTP) 1. In 2009, PCC undertook a Further Assessment, which indicated that air quality in Portsmouth had improved sufficiently to enable the revocation of 8 of the 13 AQMAs. The remaining five AQMAs are discussed in greater detail in Section 3.1.

In 2010, PCC reviewed the 2007 draft AQAP to target the remaining AQMAs. The revised AQAP set out measures in pursuit of achieving the national AQOs to deliver cleaner ambient air. Although aiming to deliver city wide improvements in air quality, the primary purpose of the AQAP was to explore measures which would combat the areas of poor air quality within Portsmouth's remaining five AQMAs. As part of the 2009 Further Assessment, a source apportionment study was undertaken. This concluded that:

- In 2007, the predominant source of NOx emissions was determined to be heavy goods vehicles (HGVs), closely followed by car emissions; and
- In 2010, the influence of cars and background concentrations was greater than those of 2007 but HGVs remained the highest polluter comparatively when considering the number of each type of vehicle.

The results of the source apportionment study enabled PCC to identify the sources that cause the highest level of pollution and those upon which the AQAP should focus and prioritise.

The following were considered to be priorities of the AQAP:

Priority 1: HGVs: In 2010, HGVs were predicted to contribute between 23.2% and 24.5% of the NO_X within AQMAs 6 and 11. Therefore, any percentage decrease in HGVs passing through these areas would have a significant beneficial impact upon local air quality. Another factor to address is the implications of HGVs' reduced speed, as the very lowest speeds are disproportionately more polluting. Congestion impairing HGV movement is therefore highly significant and needs to be reduced. Furthermore, HGVs contribute directly to the problem of congestion when making deliveries. This is particularly relevant on the London Road / Kingston Road / Fratton Road corridor (AQMA No. 6).

Measures:

- Applying a weight restriction to prevent HGV's entering London Road, south of Stubbington Road, to ensure that Stamshaw Avenue is not used as an alternative route by HGVs;
- Improving traffic light signals to speed traffic movement at the junction of Kingston Crescent and London Road. These would be more responsive to vehicle demand and be able to

immediately react to changing vehicle flows, reducing queuing and congestion and leading to an improvement in air quality;

- Removing the on-street parking bays to the north of the junction with Kingston Crescent to improve the movement of traffic; and
- Improving signage to car parks. Currently Stubbington Avenue car park is only operating at around 40%–50% capacity. A review of pricing policies, improve signage, lighting and security should be undertaken in order to increase take up of this underused facility.

Priority 2: Car traffic: In 2010, cars were predicted to contribute between 24.3% and 32.0% of NO_X emissions within AQMA No. 6 and No. 11. Reducing congestion across the road network is essential if air quality is to improve.

Measures:

- Introduction of new traffic management systems at key locations to reduce congestion and pollution, such as the use of MOVA (Microprocessor Optimised Vehicle Actuation);
- Junction improvements on the St Michael's Gyratory as during the afternoon peak hour, large queues form on Hampshire Terrace due to the large quantities of vehicles exiting Portsmouth and the pedestrian crossing signals. Traffic signal control should be introduced to improve traffic flow on Hampshire Terrace; and
- Introduction of a Park-and-Ride scheme and a review of parking charges.

Priority 3: Buses: In 2010, buses were predicted to contribute between 4.9% and 14.4% of the NO_X emissions within AQMA No. 6 and No. 11. The continued introduction of bus priority measures and introduction of improved bus exhaust technology therefore plays an important part in ensuring public transport can offer a realistic and sustainable alternative to the private car.

Measures:

- Targeted schemes to improve bus services, to increase usage and reduce emission levels in co-ordination with bus operators and partner authorities.

Priority 4: Domestic, commercial and background sources: As background concentrations are influenced by pollution generated from outside Portsmouth's boundaries, emissions are difficult to specify or control. The AQAP states that wherever possible, PCC needs to encourage a reduction of unnecessary discharges from residential and industrial premises and encourage the use of more efficient heating systems.

Priority 5: Shipping sources: The 2009 Further Assessment confirmed that the emissions from shipping did not exceed 10% of the total NO_X contribution in AQMA No. 11. This contribution is relatively small given the economic importance of shipping to Portsmouth.

Priority 6: Industrial sources: In 2007, industrial sources were found to contribute between 0.2% and 0.4% to the NO_X levels in AQMA No. 6 and No. 11.

Priority 7: Continuous improvement: Although the current legal limits on ambient air quality are now met across the majority of Portsmouth, the remaining NO_2 'hotspots' within the 5 AQMAs mean that exposure in these areas is still highly significant. However, even where the objectives have been achieved, effort is needed to maintain air quality given pressures from Portsmouth's increasing population and demands on transport and land use.

3. Local Air Quality in Portsmouth

3.1 Air Quality Management Areas (AQMAs)

The main pollutant of concern in Portsmouth is NO_2 and the main source of this pollutant is tailpipe emissions from road vehicles. In 2005, PCC declared 13 AQMAs for monitored and modelled exceedances of the annual mean NO_2 AQO. The 2009 Further Assessment indicated that air quality had improved sufficiently to permit the revocation of 8 of the 13 AQMAs. The 5 remaining AQMAs, which are still effective, are as follows:

- AQMA 6 extends north along Fratton Road from Fratton Bridge to Kingston Road, continuing into London Road until the roundabout junction with Stubbington Road and Gladys Avenue;
- AQMA 7 covers Hampshire Terrace and the St. Michael's Road gyratory;
- AQMA 9 covers the southernmost section of Eastern Road from Sword Sands Road south into Velder Avenue and its junction with Milton Road;
- AQMA 11 extends from Rudmore roundabout south to the Church Street roundabout; and
- AQMA 12: Encompassing the greater part of Queen Street from The Hard to St. James's Road.

A map showing the AQMA boundaries is included in Appendix B. Further information relating to the AQMAs in Portsmouth can be found at Defra's AQMA webpages[2].

3.2 Local Air Quality Monitoring

Continuous air quality monitoring is currently carried out at four automatic monitoring stations in Portsmouth:

- London Road;
- Gatcombe Park Primary School;
- Burrfields Road; and
- Mile End Road.

All of the continuous monitoring stations measure NO_2 and PM_{10}. The Gatcombe Park Primary School site additionally monitors $PM_{2.5}$ and ozone. Details of the monitoring stations are provided in Appendix B, including a map of the locations. Summaries of recent years' monitoring results, including annual mean concentrations and relevant short-term exceedance statistics, are shown in Table 1 to Table 3.

Annual mean NO_2 concentrations have been within the annual mean NO_2 AQO in recent years at all locations except London Road, where the AQO was exceeded in 2011, 2012 and 2014. The London Road monitoring station is situated within AQMA 6. The highest annual mean NO_2 concentration at London Road was 46.0 µg/m^3 in 2011. There has been no consistent upward or downward trend in annual mean NO_2 concentrations during the 2011 to 2015 period. London Road has been the only monitoring station to record exceedances of the 1-hour NO_2 standard. The greatest number of hourly exceedances was 7 hours in 2012; this is within the 18 permitted hours of exceedance for compliance with the AQO.

[2] Defra AQMA webpage for Portsmouth City Council. https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=198

Table 1 NO_2 Monitoring Results for Continuous Monitoring Stations in Portsmouth

Site ID	Site Name	AQMA	Annual Mean NO_2 Concentration (µg/m^3)				
			2011	2012	2013	2014	2015
C2	London Road	AQMA No. 6	**46.0** (0)	**43.9** (7)	39.7 (0)	**45.7** (1)	38.4 (0)
C4	Gatcombe Park Primary School	-	19.0 (0)	21.2 (0)	20.3 (0)	22.1 (0)	18.8 (0)
C6	Burrfields Road	-	31.5 (0)	36.1 (0)	33.5 (0)	35.9 (0)	32.8 (0)
C7	Mile End Road	AQMA No. 11	35.0 (0)	36.9 (0)	35.9 (0)	36.5 (0)	30.3 (0)

Note: Exceedances of the AQOs marked in bold. Numbers in brackets alongside annual mean NO_2 concentrations are the numbers of hours exceeding the 1-hour NO_2 standard of 200 µg/m^3. Data obtained from PCC's 2016 Annual Status Report[3]

Annual mean PM_{10} concentrations have been well below the annual mean PM_{10} AQO in recent years at all locations. The highest annual mean PM_{10} concentration was 34.4 µg/m^3 in 2015 at London Road. At roadside and kerbside monitoring locations there is evidence of increases in annual mean PM_{10} concentrations between 2012 and 2015. All monitoring sites have measured exceedances of the 24-hour mean PM_{10} standard of 50 µg/m^3 during the 2011 to 2015 period. The maximum number of daily exceedances was 9 days at Gatcombe Park Primary School in 2012; this is within the 35 permitted days of exceedance for compliance with the AQO.

Table 2 PM_{10} Monitoring Results for Continuous Monitoring Stations in Portsmouth

Site ID	Site Name	AQMA	Annual Mean PM_{10} Concentration (µg/m^3)				
			2011	2012	2013	2014	2015
C2	London Road	AQMA No. 6	27.3 (3)	22.1 (1)	30.7 (0)	32.4 (0)	34.4 (1)
C4	Gatcombe Park Primary School	-	18.0 (1)	18.0 (9)	18.2 (2)	18.5 (0)	16.2 (2)
C6	Burrfields Road	-	-	8.1 (1)	15.4 (0)	26.9 (7)	26.5 (4)
C7	Mile End Road	AQMA No. 11	21.1 (6)	14.7 (2)	16.3 (0)	17.5 (0)	23.5 (1)

Note: Exceedances of the AQOs marked in bold. Numbers in brackets alongside annual mean PM_{10} concentrations are the numbers of days exceeding the 24-hour PM_{10} standard of 50 µg/m^3

Gatcombe Park Primary School is the only monitoring station where $PM_{2.5}$ concentrations are monitored. Annual mean $PM_{2.5}$ concentrations have been well below the annual mean $PM_{2.5}$ AQO of 25 µg/m^3 in recent years at this location. The highest annual mean $PM_{2.5}$ concentration was 15.9 µg/m^3 in 2011.

Table 3 $PM_{2.5}$ Monitoring Results for Continuous Monitoring Stations in Portsmouth

Site ID	Site Name	AQMA	Annual Mean $PM_{2.5}$ Concentration (µg/m^3)				
			2011	2012	2013	2014	2015
C4	Gatcombe Park Primary School	-	15.9	13.6	14.1	14.3	10.5

Note: Exceedances of the AQOs marked in bold.

In addition to the continuous monitoring stations, PCC monitors concentrations of NO_2 across a network of diffusion tubes. Details of the monitoring locations are provided in Appendix B. Recent years' annual mean NO_2 concentrations at the diffusion tube monitoring sites are shown in Table 4.

The results illustrate that the annual mean NO_2 AQO has been exceeded or close to being exceeded at monitoring locations along the London Road – Kingston Road – Fratton Road corridor in all years between 2011 and 2015. In 2015, annual mean NO_2 concentrations exceeded the annual mean NO_2 AQO at 4 diffusion tube locations; the highest NO_2 concentration in 2015 (46.1 µg/m^3) was monitored at 88 Stanley Road. All of the monitoring sites exceeding the AQO in 2015 are within AQMAs.

[3] Portsmouth City Council 2015 Annual Status Report (2016). https://www.portsmouth.gov.uk/ext/documents-external/env-portsmouth-aqasr.pdf

Table 4 NO_2 Monitoring Results for Diffusion Tube Sites in Portsmouth

Site ID	Site Name	AQMA	Annual Mean NO_2 Concentration (µg/m^3)				
			2011	2012	2013	2014	2015
DT1	Lord Montgomery Way (FST)	AQMA No. 7	39.5	**42.5**	**41.9**	**42.6**	**44.3***
DT2	12 Chadderton Gardens (CG-12)	-	17.4	17.5	16.5	16.6	15.7
DT3	High Street (HS-121A)	AQMA No. 7	26.2	26.6	22.1	25.7	24.1
DT4	Queen Street (QS-Col 30)	AQMA No. 12	32.9	36.4	31.5	28.0	30.5*
DT5	119 Whale Island Way (WIW-119)	AQMA No. 11	28.9	28.6	27.5	28.9	27.5
DT6	88 Stanley Road (SR-88)	AQMA No. 11	34.8	35.6	38.3	34.9	**46.1***
DT7	138 Lower Derby Road (LDR-138)	-	27.2	29.8	30.0	26.5	26.1
DT8	492 Hawthorn Crescent (HC-492)	-	28.6	28.8	27.2	28.4	28.4
DT9	6 Northern Road (NR-6)	-	36.1	35.1	32.0	33.9	35.0
DT10	20 Stroudley Avenue (SA-20)	-	18.5	17.9	17.7	16.7	16.5
DT11	Anchorage Road (AR-Col6)	-	32.7	31.8	29.5	33.3	28.3*
DT12	2 Hobby Close (HC-2)	-	ND	ND	33.4	30.9	ND
DT14	4 Merlyn Drive (MD-4)	-	21.7	22.7	21.6	27.2	26.9
DT15	29 Milton Road (MR-29)	-	28.5	28.8	28.2	27.6	26.2
DT16	Parade Court, London Road (LR-PC)	-	35.0	36.4	34.0	32.3	32.0
DT18	4 Milton Road (MR-4)	-	27.8	29.5	27.8	28.9	26.9
DT19	7 Velder Avenue (VA-7)	AQMA No. 9	**44.7**	34.5	30.1	37.2	35.1
DT20	136 Eastney Rd (ER-136)	-	28.7	26.1	27.4	28.9	27.6
DT21	118 Albert Road (AR-116)	-	38.6	35.8	32.9	35.2	35.3
DT22	2 Victoria Road North (VRN-2)	-	29.0	31.6	28.7	30.8	28.1
DT23	106 Victoria Road North (VRN-106)	-	35.8	41.1	30.4	28.8	31.0*
DT24	221 Fratton Road (FR-221)	AQMA No. 6	38.3	39.1	**42.5**	**40.5**	36.3
DT25	117 Kingston Rd (KR-117)	AQMA No. 6	**41.4**	**44.6**	38.7	**52.2**	**41.8**
DT26	The Tap London Road (Tap)	AQMA No. 6	**48.8**	**50.5**	**50.9**	**40.8**	**43.1**
DT28	65 Kingston Crescent (KR-65)	AQMA No. 6	39.2	ND	ND	ND	ND
DT29	Estella Road (ER-74)	AQMA No. 11	31.1	ND	ND	ND	ND
DT30	Market Tavern (Mile End Rd) (MT)	AQMA No. 11	**43.2**	38.0	38.8	**44.1**	34.3
DT32	Larch Court, Church Rd (CR-Corner)	-	33.6	36.0	31.1	34.9	31.7
DT34	Sovereign Gate, Commercial Rd (UF)	AQMA No. 11	**40.2**	38.8	34.7	35.5	34.7
DT35	Hampshire Terrace (AM)	-	32.9	31.1	29.0	**41.4**	28.5
DT36	Elm Grove (EG-103)	-	32.1	32.8	30.3	34.8	29.0

Note: Exceedances of the Annual mean NO_2 AQO marked in bold. * Data capture in 2015 less than 75%. "ND" = No data

4. Methodology

This Source Apportionment Study has been carried out to build upon previous LAQM Review and Assessment work undertaken by PCC. Detailed dispersion modelling of NO_2, PM_{10} and $PM_{2.5}$ concentrations was performed using AAQuIRE. AAQuIRE uses the CALINE4 model for the dispersion of road-traffic emissions and has been validated and used extensively worldwide for local air quality modelling.

The following scenarios were modelled:

1. A base year (2015) scenario for the purpose of model verification and to examine current pollutant concentrations in the city
2. A future year scenario (2020) when it is anticipated that pollutant concentrations will be within the UK Air Quality Objectives at all locations of relevant exposure throughout the city
3. Scenario testing of intermediate years to determine the likely earliest year of compliance with the UK Air Quality Objectives

4.1 Study Area

The study area covers the main north-south route corridors and junctions that link the M27/A27 to Portsea Island, including:

- From Anglesea Road to M275, via Marketway, Commercial Road, and Mile End Road;
- From Victoria Road North to Portsbridge roundabout, via Fratton road, Kingston Road, and London Road;
- From Eastney Road to Norway Road, via Milton Road and Copnor Road;
- A3 Southampton Road/A397 Northern Road, Cosham, located to the north of the M27; and
- B2154 Elm Grove and B2154 Albert Road, Southsea.

The study area incorporates the five AQMAs, declared for exceedances of the annual mean NO_2 AQO.

4.2 Traffic Data

Traffic data for each modelled scenario were provided by PCC's Traffic team, combining information from Automatic Traffic Count (ATC) points and modelled traffic flows developed for the Optimisation of Road Traffic Management Control Systems (ORTMCS) project. Annual average daily traffic (AADT) flows and average vehicle speeds were provided for all major road links in the study area, along with the following breakdown of vehicle types:

- Cars and Taxis;
- Light Goods Vehicles (LGVs);
- Other Goods Vehicles Class 1 (OGV1) – rigid and articulated Heavy Goods Vehicles (HGVs) with 3 or fewer axles);
- Other Goods Vehicles Class 1 (OGV2) – rigid and articulated HGVs with more than 3 axles); and
- Public Service Vehicles (Buses).

Full details of the traffic data used in the study are provided in Appendix C. A map of the study area showing the modelled route corridors is presented in Appendix C.4.

To facilitate the source apportionment of road traffic sources according to vehicle type, each vehicle type was modelled independently in AAQuIRE. Section 4.9 describes the Source Apportionment process in more detail.

4.3 Modelled Receptors

Annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations were predicted at sensitive receptor locations across the study area. The receptor locations were chosen to be representative of human exposure (e.g. residential properties, care homes, schools) or worst-case conditions in a particular area, based on their proximity to busy road links and / or areas of congestion. A number of the receptors were chosen to represent worst-case locations within the AQMAs. Details of the modelled receptors are presented in Table 5, and a map of their locations is provided in Appendix D.1.

In addition to discrete receptor locations, NO_2 concentrations were predicted over a Cartesian grid of points within 200 metres of all modelled road links. This grid was used to create contour plots of NO_2 concentrations to illustrate patterns across the wider area and to identify the potential geographic extents of areas of exceedance. Concentrations were predicted at a height of 1.5 metres to represent typical human exposure.

Table 5 Modelled Sensitive Receptors

Receptor Number*	Receptor Name	AQMA	X (OS-GB)	Y (OS-GB)
1	133 Lower Derby Road	AQMA No. 11	464303	102242
2	57 Stanley Road	AQMA No. 11	464375	102164
3	St. John's Court	AQMA No. 11	464437	102106
4	Rudmore Court	AQMA No. 11	464472	102081
5	The Admiral PH	AQMA No. 11	464553	101940
6	Peninsular House	AQMA No. 11	464440	101912
7	162-189 Mile End Road	AQMA No. 11	464547	101764
8	The Air Balloon	AQMA No. 11	464545	101836
9	Ferry Lodge House	AQMA No. 11	464474	101464
10	72-126 Grafton Street	AQMA No. 11	464457	101376
11	373-375 Commercial Road	AQMA No. 11	464405	101147
12	239-241 Commercial Road	AQMA No. 11	464367	100805
13	Hallowell House	AQMA No. 11	464423	100864
14	St. Edmund House	-	463924	100502
15	Arts Lodge Park Cafe	-	463843	100417
16	Barham House	-	463881	100502
17	122-128 Lake Road	AQMA No. 11	464761	100906
18	314-316 Fratton Road	AQMA No. 6	465163	101064
19	Hale Court	AQMA No. 6	465150	101138
20	7 Fawcett Road	-	465186	99976
21	Priory School	-	465142	99951
22	Pounds Gate	AQMA No. 12	463535	100404
23	Priory View	-	465085	99971
24	Pink Court	AQMA No. 6	465141	100443
25	Jacob House	AQMA No. 6	465130	100930
26	48-50 Kingston Road	AQMA No. 6	465119	101338
27	89 Kingston Road	AQMA No. 6	465077	101482
28	156 Kingston Road	AQMA No. 6	464991	101644
29	192-194 Kingston Road	AQMA No. 6	464946	101744
30	Kingsbury Mansions	AQMA No. 6	464911	101899
31	61 Kingston Crescent	AQMA No. 6	464815	101931

Receptor Number*	Receptor Name	AQMA	X (OS-GB)	Y (OS-GB)
32	16 London Road	AQMA No. 6	464912	101967
33	Ross Apartments	AQMA No. 6	464942	102229
34	156 London Road	AQMA No. 6	465004	102492
35	589 London Road	-	465575	103748
36	60-62 Northern Road	-	465657	105574
37	84 Northern Road	-	465714	105694
38	Victoria House A3	AQMA No. 7	463848	99834
39	115 Eastern Road	AQMA No. 9	466878	100861
40	Lacey Road	AQMA No. 9	466761	100662
41	53 Velder Avenue	-	466589	100324
42[A]	7 Velder Avenue	AQMA No. 9	466392	100226
43	195-197 Milton Road	AQMA No. 9	466348	100190
44	233 Milton Road	AQMA No. 9	466388	100093
45	1 Goldsmith Avenue	-	466578	99587
46	Victoria House, Victoria Road North	-	464770	99287
47	Keyes Court	-	464893	99014
48	Brandon House	-	465185	98981
49	110-110A Albert Road	-	465196	98965
50	Craneswater School	-	465552	98940
51	109 Highland Road	-	465955	99024
52	St. Andrew's Court	AQMA No. 7	463849	99987
53	1-4 Charter House	AQMA No. 7	463941	99930
54	Mill Pond Apartments	-	463651	100410

* Corresponds to the labels used in the map of receptor locations (see Appendix D.1). [A] Receptor 42 (7 Velder Avenue) coincides with diffusion tube monitoring location DT19 (see Appendix B.2)

4.4 Pollutant Emission Rates

Vehicle pollutant emission rates used in the 2015 base year model were taken from Defra's Emission Factor Toolkit Version 7.0[4], which incorporates the latest NO_X, PM_{10} and $PM_{2.5}$ emission factors and vehicle fleet information.

The Emission Factors Toolkit was also used to generate PM_{10} and $PM_{2.5}$ emission rates for the future year (2020) assessment.

In the case of NO_X, future year emission rates were derived using Air Quality Consultants' "Calculator Using Realistic Emissions for Diesels" (CURED). Version 2A, released in August 2016 was used in this study. CURED is a spreadsheet-based tool that is designed to provide more realistic estimates of emissions from diesel vehicles by applying uplift factors to the NO_X emission rates that are calculated by Defra's Emission Factors Toolkit. For example, NO_X emission rates in 2020 are approximately 44% higher using CURED than using the Emission Factors Toolkit.

Further information on CURED is available at Air Quality Consultants' website[5].

[4] Defra Emission Factors Toolkit Version 7. https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html
[5] Air Quality Consultants (2016). Calculator Using Realistic Emissions for Diesels (CURED) http://www.aqconsultants.co.uk/News/August-2016/Updated-CURED-to-V2A.aspx

4.5 Background Pollutant Concentrations

A large number of sources of air pollutants exist which individually may not be significant, but collectively, over a large area, need to be considered. The concentrations calculated by the model due to vehicle emissions can then be added to these background concentrations to give the total concentration.

Background NO_2, PM_{10} and $PM_{2.5}$ concentrations used in the modelling were derived from the Defra background mapping datasets[6]. The maps provide background pollutant concentrations for each 1km × 1km grid square across the UK for all years from the reference year of 2013 up to 2030.

The study area extends across thirty-one 1km grid squares. For both the discrete receptor and Cartesian grid modelling background concentrations were taken from the 1km grid square within which the receptor point / grid point was located. To avoid double-counting, background contributions from those sources explicitly modelled within each grid square (i.e. motorways and primary A-roads) were subtracted from the total background concentrations, in accordance with LAQM.TG(16) guidance, and adjusted background concentrations calculated.

Background pollutant concentrations were downloaded for each assessment year. Future year background PM_{10} and $PM_{2.5}$ concentrations were assumed to decrease as per the mapped projections. Adjusted base year (2015) and future year (2020) background NO_2 concentrations were calculated from the Defra mapped background values in accordance with Air Quality Consultants' CURED methodology[7].

The background NO_2, PM_{10} and $PM_{2.5}$ concentrations used in the Source Apportionment Study are included in Appendix D.2.

4.6 Meteorological Data

The meteorological dataset used in the study was derived from Thorney Island meteorological station for 2015. This meteorological station is located approximately 12 km away from Portsmouth and considered to be most representative of the meteorological conditions in Portsmouth.

The wind rose for this site and further details of the preparation of meteorological data for use in dispersion modelling are provided in Appendix D.3.

4.7 Conversion of NO_X to NO_2

The proportion of NO_2 in NO_X varies greatly with location and time according to a number of factors including the amount of ozone available and the distance from the emission source.

The NO_X to NO_2 Calculator spreadsheet tool[8] (Defra, July 2016b) provides a methodology for converting NO_X concentrations to NO_2 concentrations for any given year up to 2030. This conversion methodology has been used for the purpose of this study for all scenarios as the best representation of the NO_2/NO_X relationship for Portsmouth.

The latest version of the NO_X to NO_2 Calculator is v5.1 and is designed to be used in combination with the 2013-reference year background maps and Emission Factors Toolkit version 7.0. The local authority area used was 'Portsmouth' and the traffic mix used was the 'All other urban UK traffic' option.

4.8 Model Verification

For detailed dispersion modelling studies, it is necessary to consider and account for random errors in both the modelling and the monitoring data used. The modelling results discussed in this section were verified by a consideration of the errors associated with the modelling process and the model input data.

[6] Defra Background Concentration Maps of Air Pollutants https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2013
[7] Air Quality Consultants. "Deriving Background Concentrations of NO_X and NO_2 for Use with CURED V2A. September 2016. http://www.aqconsultants.co.uk/getattachment/Resources/Download-Reports/Adjusting-Background-NO2-Maps-for-CURED-September-2016.pdf.aspx
[8] Defra NO_X to NO_2 Calculator Version 5.1 https://laqm.defra.gov.uk/documents/no2tonox9_ja-forweb_june2016.xls

Systematic errors in modelling results can arise from many factors, such as uncertainties in vehicle flows, speeds and the composition of the vehicle fleet. Such errors can be addressed and corrected for by making comparisons with monitoring data. The accuracy of the future year modelling results is relative to the accuracy of the base year results; therefore greater confidence can be placed in the future year concentrations if good agreement is found for the base year.

Annual average NO_2 concentrations modelled using the AAQuIRE model were verified against monitored data collected by PCC in 2015. Modelled concentrations were compared with monitored concentrations for all roadside monitoring sites achieving at least 75% data capture and where reliable traffic data were available for nearby roads.

Initially, the AAQuIRE model under-predicted NO_2 concentrations at the monitoring locations by, on average, 18%. In accordance with the methodology set out in LAQM.TG(16) adjustment factors were calculated in order to adjust modelled concentrations and improve the agreement between modelled and monitored concentrations.

Preliminary inspection of the verification results revealed that the model performed differently at 5 of the monitoring locations to the remaining monitoring locations. A review of these 5 monitoring locations showed 4 of the 5 locations to be within street-canyons (118 Albert Road (AR-116), 221 Fratton Road (FR-221), 117 Kingston Rd (KR-117) and The Tap London Road (Tap)) where dispersion is likely to be restricted. The remaining monitoring location (7 Velder Avenue) is situated on the façade of a continuous row of terraced houses near to a busy junction where traffic flow tends to be stop-start. Consequently, adjustment factors for road contribution NO_X were calculated separately for general urban (Group 1) sites and the street-canyon like / stop-start traffic (Group 2) locations (see Figure 4.1).

The adjustment factors were used to adjust all modelled road NO_X contributions before conversion to NO_2 concentrations. The Group 2 adjustment factor was applied to all modelled receptor points within 200 metres of the road links identified as street canyons or experiencing stop-start traffic conditions; the general urban (Group 1) factor was applied elsewhere. To further improve the agreement between modelled and measured NO_2 concentrations, a second set of adjustment factors were calculated and applied to the adjusted modelled NO_2 concentrations.

A map showing the zones in which the Group 1 and Group 2 adjustment factors have been applied is provided in Appendix C.4. The extents of these zones where the Group 1 and Group 2 adjustment factors have been applied are based on professional judgement and local knowledge of road geometries and typical traffic conditions. The zoning also takes into consideration the presence of AQMAs to ensure that predicted pollutant concentrations within the AQMAs are not underestimated.

A summary of the comparison between monitored and modelled NO_2 concentrations (adjusted and unadjusted) is shown in Table 6. Adjustment factors are presented in Table 7. After the adjustment of the modelled road NO_X contributions and modelled NO_2 concentrations, there was found to be good agreement between modelled and measured NO_2 concentrations. At 16 of the 19 monitoring locations modelled concentrations were within 9% of monitored concentrations[9]. At the remaining 3 sites modelled concentrations were within 12% of monitored concentrations[10] (Table 6 and Figure 4.2).

In the absence of suitable continuous monitoring locations for the adjustment of PM_{10} and $PM_{2.5}$, the adjustment factors determined for NO_2 have been applied to modelled PM_{10} and $PM_{2.5}$ concentrations.

[9] Modelled concentrations at these locations are within the 10% threshold defined in LAQM.TG(16) as representing good model performance

[10] Modelled concentrations at these locations are well within the 25% threshold defined in LAQM.TG(16) as representing the minimum acceptable level of model performance.

Table 6 Summary of Model Verification for NO_2

Site ID	Site Name	Grid Reference (X, Y OS-GB)	AQMA	Adjustment Factor	Annual Mean NO_2 Concentration			% Difference (Monitored vs. Modelled (Adjusted))
					2015 Monitored	Modelled (Unadjusted)	Modelled (Adjusted)	
DT9	6 Northern Road (NR-6)	465621, 105528	-	Group 1	35.0	29.3	35.2	1
DT14	4 Merlyn Drive (MD-4)	466109, 103736	-	Group 1	26.9	27.7	29.8	11
DT15	29 Milton Road (MR-29)	466120, 101324	-	Group 1	26.2	22.8	25.5	-3
DT16	Parade Court, London Rd (LR-PC)	465474, 104205	-	Group 1	32.0	24.7	28.5	-11
DT18	4 Milton Road (MR-4)	466097, 101332	-	Group 1	26.9	22.1	24.5	-9
DT20	136 Eastney Rd (ER-136)	466712, 99415	-	Group 1	27.6	22.3	25.1	-9
DT22	2 Victoria Road North (VRN-2)	464778, 99306	-	Group 1	28.1	26.2	29.3	5
DT30	Market Tavern (Mile End Rd) (MT)	464478, 101457	AQMA No. 11	Group 1	34.3	29.3	34.4	0
DT32	Larch Court, Church Rd (CR-Corner)	464559, 100980	-	Group 1	31.7	27.5	31.0	-2
DT34	Sovereign Gate, Commercial Rd (UF)	464425, 100893	AQMA No. 11	Group 1	34.7	31.4	37.1	7
DT35	Hampshire Terrace (AM)	463837, 99759	-	Group 1	28.5	26.3	29.1	2
DT36	Elm Grove (EG-103)	464501, 99329	-	Group 1	29.0	25.2	27.6	-5
C6	Burrfields Road	466004, 102348	-	Group 1	32.8	26.7	30.5	-7
C7	Mile End Road	464397, 101270	AQMA No. 11	Group 1	30.3	28.9	33.8	12
DT19	7 Velder Avenue (VA-7)	466392, 100226	AQMA No. 9	Group 2	35.1	23.7	34.6	-1
DT21	118 Albert Road (AR-116)	465213, 98964	-	Group 2	35.3	23.2	34.0	-4
DT24	221 Fratton Road (FR-221)	465111, 100737	AQMA No. 6	Group 2	36.3	25.8	37.5	3
DT25	117 Kingston Rd (KR-117)	465036, 101547	AQMA No. 6	Group 2	41.8	28.1	41.5	-1
DT26	The Tap London Road (Tap)	464900, 101976	AQMA No. 6	Group 2	43.1	29.1	43.9	2
				RMSE	**-**	**7.39**	**1.87**	**-**
				Fractional Bias	**-**	**0.21**	**0.00**	**-**
				Correlation Coefficient	**-**	**0.46**	**0.93**	**-**

Table 7 Summary of Adjustment Factors Used in the Study

Area	Adjustment Factor 1	Adjustment Factor 2
Group 1	1.649	0.999
Group 2	2.935	1.010

Notes: Adjustment factor 1 is applied to modelled road NO_X contributions before conversion to NO_2 concentrations. Adjustment factor 2 is applied to the modelled NO_2 concentrations.

Figure 4.1 Model Verification for NO_2: Modelled Road NO_X Versus Monitored Road NO_X

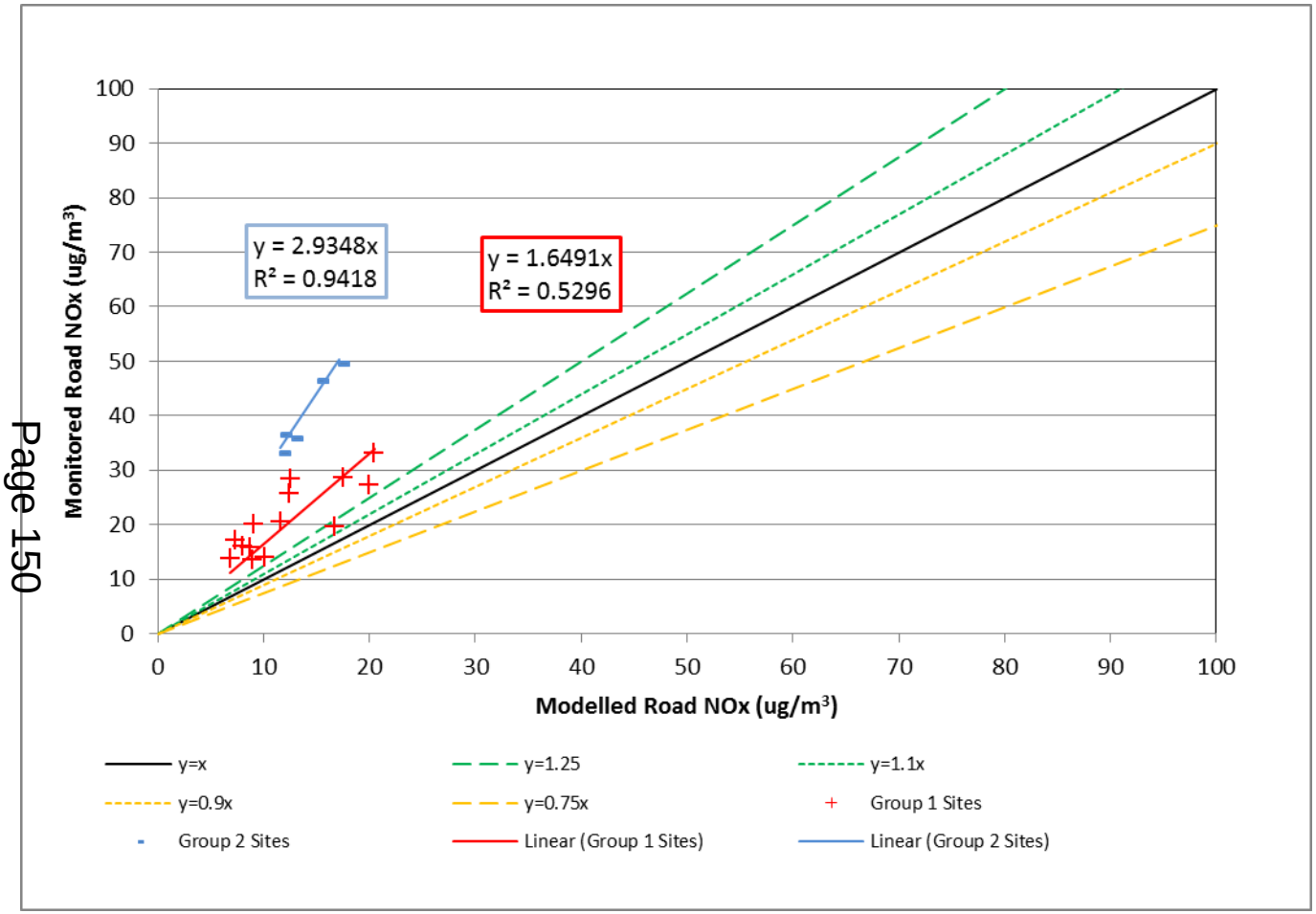
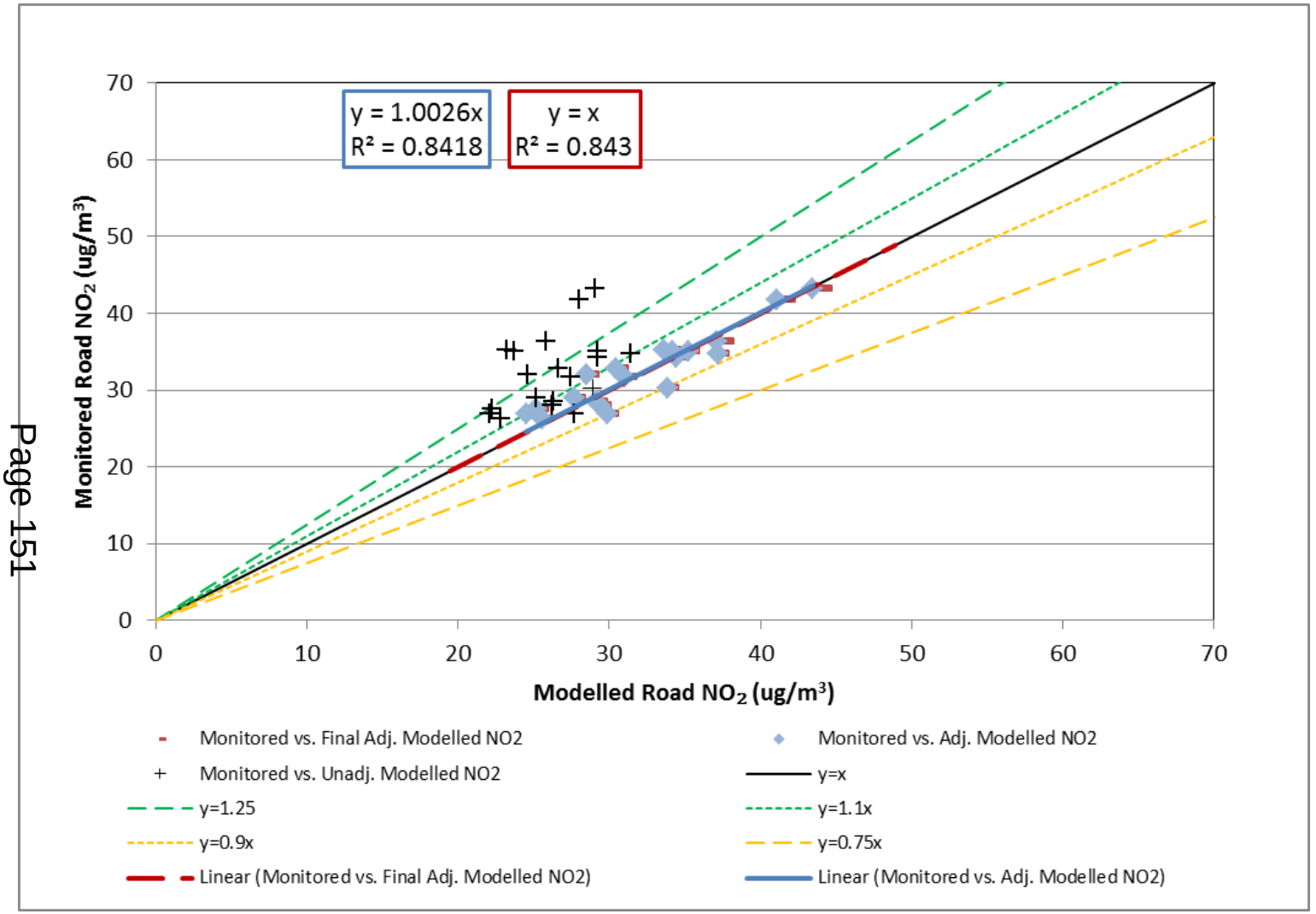


Figure 4.2 Model Verification for NO_2: Modelled Versus Monitored NO_2 Concentrations



4.9 Source Apportionment

Source apportionment of air pollution has been carried out in accordance with LAQM Technical Guidance to identify the predominant sources that contribute to exceedances of the AQOs in the 5 AQMAs and other areas where model predictions indicate elevated pollutant concentrations.

The relative contributions of the following categories were determined from the results of the detailed dispersion modelling:

- Regional Background sources;
- Local Background sources; and
- Local Sources.

The contributions of regional and local background sources were derived using Defra's background maps of air pollution. In the context of this study the Local Sources component is entirely associated with road traffic emissions, and was further broken down according to vehicle type:

- Cars and taxis;
- LGVs;
- OGV1;
- OGV2; and
- Buses.

For locations where model predictions indicated potential exceedances of the annual mean NO_2 AQO calculations were also carried out to determine the required reductions in road NO_X emissions in order to attain the AQO.

For full details of the Source Apportionment methodology and the calculation of required emission reductions the reader is referred to Chapter 7 of LAQM.TG(16). Box 7.5 of LAQM.TG(16) presents a worked example of source apportionment for NO_2 whilst Box 7.6 provides an example of the calculated required reduction in road NO_X emissions in order to attain the AQO.

5. Results

The results of the Source Apportionment Study are presented in the following sections. Section 5.1 presents the sensitive receptor modelling results and Section 5.2 presents aggregated results for the AQMAs.

5.1 Sensitive Receptors

Annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations were predicted at 54 sensitive receptor locations across the study area. The receptor locations were chosen to be representative of human exposure (e.g. residential properties, care homes, schools) or worst-case conditions in a particular area, based on their proximity to busy road links and / or areas of congestion. A number of the receptors were chosen to represent worst-case locations within the AQMAs.

5.1.1 NO_2 – 2015

Predicted annual mean NO_2 concentrations in the 2015 baseline year are shown in Table 8 along with the source contributions from regional and local background emissions sources and local traffic emissions.

5.1.1.1 Comparison with AQO

Predicted annual mean NO_2 concentrations in 2015 exceed the annual mean NO_2 AQO at 11 of the 54 modelled receptors (Table 8). Nine of these 11 receptors are located along the London Road / Kingston Road / Fratton Road route corridor and are within the existing AQMA No.6. The two remaining receptors (239-241 Commercial Road (Receptor 11) and 373-375 Commercial Road (Receptor 12)) are located within AQMA No. 11.

The highest predicted annual mean NO_2 concentration in 2015 is 48.9 µg/m^3 at 16 London Road (Receptor 32). The second and third highest concentrations are predicted at Kingsbury Mansions (Receptor 30; 48.3 µg/m^3) and 48-50 Kingston Road (Receptor 26; 47.7 µg/m^3).

Annual mean NO_2 concentrations within AQMAs No. 7, 9 and 12 are predicted to be below the annual mean NO_2 AQO at locations of relevant exposure in 2015. The predicted annual mean NO_2 concentrations at worst-case receptor locations within each of these AQMAs are as follows:

- AQMA No. 7: 35.4 µg/m^3 at Victoria House A3 (Receptor 38);
- AQMA No. 9: 35.8 µg/m^3 at 195-197 Milton Road (Receptor 43); and
- AQMA No. 12: 32.9 µg/m^3 at Pounds Gate (Receptor 22).

5.1.1.2 Source Apportionment

The contributions of local road traffic sources to annual mean NO_2 concentrations at sensitive receptor locations range between 7.7 µg/m^3 and 28.3 µg/m^3 (Table 8). Expressed as percentages, local traffic source contributions are predicted to account for 27% to 58% of annual mean NO_2 concentrations, with 42% to 73% attributable to background sources (regional and local; Table 9).

At the 11 sensitive receptor locations predicted to exceed the annual mean NO_2 AQO in 2015, the contributions of local road traffic sources to annual mean NO_2 concentrations range between 18.8 µg/m^3 and 28.3 µg/m^3 (Table 8). Expressed as percentages, local traffic source contributions are predicted to account for 46% to 58% of annual mean NO_2 concentrations, with 42% to 54% attributable to background sources (regional and local; Table 9). The largest local traffic source contributions are predicted at receptors located within AQMA No. 6 along the London Road / Kingston Road / Fratton Road route corridor.

At the receptors where exceedance of the annual mean NO_2 AQO is predicted, cars and taxis are estimated to be the largest local source contributors, accounting for 8.0 µg/m^3 to 13.0 µg/m^3 (20% to 29%) of total annual mean NO_2 concentrations. The largest contributions due to cars and taxis are:

- 48-50 Kingston Road (Receptor 26; 14.0 µg/m^3; 27% of total annual mean NO_2);

- 373-375 Commercial Road (Receptor 11; 12.5 µg/m^3; 29% of total annual mean NO_2); and
- 314-316 Fratton Road (Receptor 18; 12.2 µg/m^3; 26% of total annual mean NO_2).

Buses are estimated to be the largest local source contributor after cars and taxis, accounting for between 2.7 µg/m^3 and 9.5 µg/m^3 (6% to 19%) of total annual mean NO_2 concentrations at those receptors where exceedance of the annual mean NO_2 AQO is predicted.

Light-goods vehicles (LGVs) are the third largest contributing vehicle type in areas of exceedance (2.4 µg/m^3 to 4.7 µg/m^3; 6% to 10%), whilst the Other Goods Vehicles classifications typically account for the smallest proportions of local source contributions.

5.1.1.3 Required Reductions to Achieve the AQO

Table 10 shows the calculation of the necessary reductions in road NO_X required to achieve the annual mean NO_2 AQO in 2015. The largest reductions required to meet the AQO are estimated at sensitive receptor locations along the London Road / Kingston Road / Fratton Road corridor within AQMA No. 6.

It is estimated that reductions in road NO_X emissions of up to 35% would be required in order to achieve the AQO at all modelled receptor locations within AQMA No. 6. Reductions in road NO_X emissions of around 14% are likely to be needed to attain the AQO at all receptor locations in AQMA No. 11 (Receptor 11, 239-241 Commercial Road and Receptor 12, 373-375 Commercial Road).

Table 8 Predicted Annual Mean NO_2 Concentrations at Modelled Receptor Locations in 2015

Receptor Number	Receptor Name	AQMA	Annual Mean NO_2 Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	28.2	20.4	5.5	14.9	4.1	1.6	0.7	0.7	0.5	7.7
2	57 Stanley Road	AQMA No. 11	28.7	20.4	5.5	14.9	4.4	1.7	0.8	0.8	0.6	8.3
3	St. John's Court	AQMA No. 11	28.7	20.4	5.5	14.9	4.3	1.7	0.8	0.8	0.7	8.2
4	Rudmore Court	AQMA No. 11	28.6	20.4	5.5	14.9	4.3	1.6	0.8	0.8	0.7	8.2
5	The Admiral PH	AQMA No. 11	34.0	20.7	5.5	15.1	6.9	2.5	1.3	1.2	1.3	13.3
6	Peninsular House	AQMA No. 11	32.7	20.7	5.5	15.1	5.6	2.0	1.3	1.9	1.2	12.1
7	162-189 Mile End Road	AQMA No. 11	30.8	20.7	5.5	15.1	5.1	1.9	0.9	1.0	1.1	10.1
8	The Air Balloon	AQMA No. 11	31.8	20.7	5.5	15.1	5.7	2.1	1.1	1.0	1.3	11.2
9	Ferry Lodge House	AQMA No. 11	34.9	20.7	5.5	15.1	7.9	2.7	1.3	0.7	1.6	14.3
10	72-126 Grafton Street	AQMA No. 11	31.3	20.7	5.5	15.1	5.8	2.0	1.0	0.5	1.3	10.7
11	373-375 Commercial Road	AQMA No. 11	**42.7**	20.7	5.5	15.1	12.5	3.8	2.2	0.8	2.7	22.1
12	239-241 Commercial Road	AQMA No. 11	**40.5**	21.7	5.5	16.2	9.0	2.4	1.7	0.6	5.2	18.8
13	Hallowell House	AQMA No. 11	36.7	21.7	5.5	16.2	7.8	2.1	1.4	0.5	3.2	15.0
14	St. Edmund House	-	39.4	23.0	5.4	17.6	9.0	2.4	1.6	0.6	2.7	16.4
15	Arts Lodge Park Cafe	-	39.0	23.0	5.4	17.6	7.8	2.0	1.6	0.7	3.9	16.0
16	Barham House	-	33.5	23.0	5.4	17.6	5.4	1.5	1.0	0.4	2.2	10.5
17	122-128 Lake Road	AQMA No. 11	35.1	21.7	5.5	16.2	6.1	1.8	0.7	0.3	4.6	13.4
18	314-316 Fratton Road	AQMA No. 6	**46.4**	20.6	5.7	14.8	12.2	4.1	1.7	0.5	7.4	25.8
19	Hale Court	AQMA No. 6	**40.0**	20.6	5.7	14.8	9.2	3.2	1.3	0.4	5.4	19.5
20	7 Fawcett Road	-	31.5	19.6	5.7	13.9	6.8	2.3	0.8	0.2	1.8	11.9
21	Priory School	-	31.3	19.6	5.7	13.9	6.7	2.3	0.8	0.2	1.8	11.7
22	Pounds Gate	AQMA No. 12	32.9	23.0	5.4	17.6	3.0	0.9	0.4	0.2	5.4	9.9
23	Priory View	-	28.9	19.6	5.7	13.9	5.3	1.8	0.6	0.2	1.4	9.3
24	Pink Court	AQMA No. 6	37.2	19.5	5.8	13.7	9.8	3.5	1.4	0.4	2.7	17.8

Receptor Number	Receptor Name	AQMA	Annual Mean NO_2 Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	32.8	19.5	5.8	13.7	7.1	2.5	1.0	0.3	2.4	13.3
26	48-50 Kingston Road	AQMA No. 6	**47.7**	20.6	5.7	14.8	13.0	4.7	1.9	0.6	6.8	27.1
27	89 Kingston Road	AQMA No. 6	**40.8**	20.6	5.7	14.8	9.0	3.4	1.5	0.5	5.9	20.3
28	156 Kingston Road	AQMA No. 6	**42.4**	20.7	5.5	15.1	9.6	3.6	1.6	0.6	6.3	21.7
29	192-194 Kingston Road	AQMA No. 6	**43.9**	20.7	5.5	15.1	10.3	3.9	1.8	0.6	6.6	23.2
30	Kingsbury Mansions	AQMA No. 6	**48.3**	20.7	5.5	15.1	11.5	4.5	2.2	0.8	8.8	27.7
31	61 Kingston Crescent	AQMA No. 6	36.5	20.7	5.5	15.1	7.8	3.1	1.7	0.9	2.4	15.8
32	16 London Road	AQMA No. 6	**48.9**	20.7	5.5	15.1	11.4	4.4	2.2	0.8	9.5	28.3
33	Ross Apartments	AQMA No. 6	**40.1**	20.4	5.5	14.9	8.0	3.3	1.5	0.4	6.4	19.6
34	156 London Road	AQMA No. 6	36.3	21.2	5.7	15.5	6.2	2.7	1.6	0.6	4.2	15.2
35	589 London Road	-	33.8	20.1	5.7	14.4	5.9	2.7	1.6	0.6	2.9	13.7
36	60-62 Northern Road	-	35.9	19.2	5.8	13.4	7.9	2.7	1.2	0.3	4.6	16.7
37	84 Northern Road	-	34.0	19.2	5.8	13.4	7.3	2.5	1.3	0.6	3.1	14.8
38	Victoria House A3	AQMA No. 7	35.4	21.9	5.4	16.5	6.8	2.2	1.2	0.5	2.8	13.5
39	115 Eastern Road	AQMA No. 9	28.9	17.8	5.8	11.9	6.2	2.7	1.1	0.5	0.7	11.2
40	Lacey Road	AQMA No. 9	32.9	17.8	5.8	11.9	8.5	3.6	1.5	0.7	0.8	15.2
41	53 Velder Avenue	-	34.0	17.8	5.8	11.9	9.1	3.9	1.6	0.7	0.9	16.2
42	7 Velder Avenue	AQMA No. 9	34.6	17.8	5.8	11.9	9.9	3.7	1.5	0.7	1.1	16.8
43	195-197 Milton Road	AQMA No. 9	35.8	17.8	5.8	11.9	9.8	4.0	1.5	0.6	2.1	18.0
44	233 Milton Road	AQMA No. 9	32.9	17.8	5.8	11.9	8.4	3.3	1.2	0.5	1.9	15.2
45	1 Goldsmith Avenue	-	35.0	17.6	5.7	11.9	8.1	2.9	1.1	0.5	4.6	17.3
46	Victoria House, Victoria Road North	-	31.5	21.2	5.5	15.7	5.8	1.8	0.8	0.2	1.8	10.3
47	Keyes Court	-	30.3	21.2	5.5	15.7	4.7	1.6	0.6	0.2	2.0	9.2
48	Brandon House	-	33.3	17.3	5.8	11.6	8.3	3.0	1.1	0.3	3.3	15.9

Receptor Number	Receptor Name	AQMA	Annual Mean NO_2 Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	37.0	17.3	5.8	11.6	9.8	3.5	1.2	0.3	4.8	19.6
50	Craneswater School	-	29.4	17.3	5.8	11.6	5.9	2.1	0.7	0.3	3.1	12.0
51	109 Highland Road	-	30.7	19.6	5.7	13.9	5.4	1.9	0.7	0.3	2.9	11.1
52	St. Andrew's Court	AQMA No. 7	34.3	21.9	5.4	16.5	6.3	2.0	1.3	0.6	2.3	12.4
53	1-4 Charter House	AQMA No. 7	32.7	21.9	5.4	16.5	5.0	1.6	1.0	0.4	2.8	10.8
54	Mill Pond Apartments	-	33.5	23.0	5.4	17.6	3.2	1.0	0.5	0.2	5.6	10.5

Table 9 Source Apportionment of Annual Mean NO_2 Concentrations at Modelled Receptor Locations in 2015

Receptor Number	Receptor Name	AQMA	Total Modelled NO_2	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	28.2	20	53	73	15	6	2	3	2	27
2	57 Stanley Road	AQMA No. 11	28.7	19	52	71	15	6	3	3	2	29
3	St. John's Court	AQMA No. 11	28.7	19	52	71	15	6	3	3	2	29
4	Rudmore Court	AQMA No. 11	28.6	19	52	71	15	6	3	3	3	29
5	The Admiral PH	AQMA No. 11	34.0	16	45	61	20	7	4	4	4	39
6	Peninsular House	AQMA No. 11	32.7	17	46	63	17	6	4	6	4	37
7	162-189 Mile End Road	AQMA No. 11	30.8	18	49	67	17	6	3	3	4	33
8	The Air Balloon	AQMA No. 11	31.8	17	48	65	18	7	3	3	4	35
9	Ferry Lodge House	AQMA No. 11	34.9	16	43	59	23	8	4	2	5	41
10	72-126 Grafton Street	AQMA No. 11	31.3	18	48	66	19	6	3	2	4	34
11	373-375 Commercial Road	AQMA No. 11	**42.7**	13	35	48	29	9	5	2	6	52
12	239-241 Commercial Road	AQMA No. 11	**40.5**	14	40	54	22	6	4	1	13	46
13	Hallowell House	AQMA No. 11	36.7	15	44	59	21	6	4	1	9	41
14	St. Edmund House	-	39.4	14	45	58	23	6	4	2	7	42
15	Arts Lodge Park Cafe	-	39.0	14	45	59	20	5	4	2	10	41
16	Barham House	-	33.5	16	53	69	16	5	3	1	6	31
17	122-128 Lake Road	AQMA No. 11	35.1	16	46	62	17	5	2	1	13	38
18	314-316 Fratton Road	AQMA No. 6	**46.4**	12	32	44	26	9	4	1	16	56
19	Hale Court	AQMA No. 6	**40.0**	14	37	51	23	8	3	1	13	49
20	7 Fawcett Road	-	31.5	18	44	62	22	7	2	1	6	38
21	Priory School	-	31.3	18	44	63	21	7	2	1	6	37
22	Pounds Gate	AQMA No. 12	32.9	16	54	70	9	3	1	0	16	30
23	Priory View	-	28.9	20	48	68	18	6	2	1	5	32
24	Pink Court	AQMA No. 6	37.2	15	37	52	26	9	4	1	7	48

Receptor Number	Receptor Name	AQMA	Total Modelled NO_2	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	32.8	18	42	59	22	8	3	1	7	41
26	48-50 Kingston Road	AQMA No. 6	**47.7**	12	31	43	27	10	4	1	14	57
27	89 Kingston Road	AQMA No. 6	**40.8**	14	36	50	22	8	4	1	15	50
28	156 Kingston Road	AQMA No. 6	**42.4**	13	36	49	23	9	4	1	15	51
29	192-194 Kingston Road	AQMA No. 6	**43.9**	13	35	47	23	9	4	1	15	53
30	Kingsbury Mansions	AQMA No. 6	**48.3**	11	31	43	24	9	4	2	18	57
31	61 Kingston Crescent	AQMA No. 6	36.5	15	41	57	21	8	5	2	7	43
32	16 London Road	AQMA No. 6	**48.9**	11	31	42	23	9	4	2	19	58
33	Ross Apartments	AQMA No. 6	**40.1**	14	37	51	20	8	4	1	16	49
34	156 London Road	AQMA No. 6	36.3	16	43	58	17	7	4	2	11	42
35	589 London Road	-	33.8	17	43	59	17	8	5	2	9	41
36	60-62 Northern Road	-	35.9	16	37	53	22	8	3	1	13	47
37	84 Northern Road	-	34.0	17	39	57	22	7	4	2	9	43
38	Victoria House A3	AQMA No. 7	35.4	15	47	62	19	6	4	1	8	38
39	115 Eastern Road	AQMA No. 9	28.9	20	41	61	21	9	4	2	2	39
40	Lacey Road	AQMA No. 9	32.9	18	36	54	26	11	5	2	2	46
41	53 Velder Avenue	-	34.0	17	35	52	27	12	5	2	3	48
42	7 Velder Avenue	AQMA No. 9	34.6	17	35	51	29	11	4	2	3	49
43	195-197 Milton Road	AQMA No. 9	35.8	16	33	50	28	11	4	2	6	50
44	233 Milton Road	AQMA No. 9	32.9	18	36	54	25	10	4	1	6	46
45	1 Goldsmith Avenue	-	35.0	16	34	50	23	8	3	2	13	50
46	Victoria House, Victoria Road North	-	31.5	18	50	67	18	6	2	1	6	33
47	Keyes Court	-	30.3	18	52	70	16	5	2	1	6	30
48	Brandon House	-	33.3	17	35	52	25	9	3	1	10	48

Receptor Number	Receptor Name	AQMA	Total Modelled NO_2	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	37.0	16	31	47	27	9	3	1	13	53
50	Craneswater School	-	29.4	20	39	59	20	7	2	1	11	41
51	109 Highland Road	-	30.7	18	45	64	18	6	2	1	9	36
52	St. Andrew's Court	AQMA No. 7	34.3	16	48	64	18	6	4	2	7	36
53	1-4 Charter House	AQMA No. 7	32.7	17	50	67	15	5	3	1	9	33
54	Mill Pond Apartments	-	33.5	16	53	69	10	3	1	1	17	31

Table 10 Required Reductions in Road NO_X Emissions to Achieve the Annual Mean NO_2 AQO in 2015

Receptor Number	Receptor Name	AQMA	Annual Mean Concentrations (µg/m³)				Reduction in Road NO_X to Achieve AQO	
			Total Modelled NO_2	Background NO_2	Total Modelled Road NO_X	Road NO_X at 40 µg/m³ NO_2	µg/m³	As % of Modelled Road NO_X
11	373-375 Commercial Road	AQMA No. 11	**42.7**	20.7	48.6	42.0	6.6	14
12	239-241 Commercial Road	AQMA No. 11	**40.5**	21.7	41.0	39.7	1.3	3
18	314-316 Fratton Road	AQMA No. 6	**46.4**	20.6	56.9	41.2	15.7	28
19	Hale Court	AQMA No. 6	**40.0**	20.6	41.3	41.2	0.1	<1
26	48-50 Kingston Road	AQMA No. 6	**47.7**	20.6	60.2	41.2	19.0	32
27	89 Kingston Road	AQMA No. 6	**40.8**	20.6	43.2	41.2	2.0	5
28	156 Kingston Road	AQMA No. 6	**42.4**	20.7	46.7	41.0	5.8	12
29	192-194 Kingston Road	AQMA No. 6	**43.9**	20.7	50.4	41.0	9.4	19
30	Kingsbury Mansions	AQMA No. 6	**48.3**	20.7	61.6	41.0	20.7	34
32	16 London Road	AQMA No. 6	**48.9**	20.7	63.2	41.0	22.3	35
33	Ross Apartments	AQMA No. 6	**40.1**	20.4	41.6	41.4	0.1	<1

5.1.2 NO_2 – 2020

Predicted annual mean NO_2 concentrations in 2020 are shown in Table 8 along with the source contributions from regional and local background emissions sources and local traffic emissions. It should be noted that road NO_X emission rates in 2020 have been calculated using Air Quality Consultants' CURED tool, which is considered to provide more realistic, conservative estimates of road NO_X emissions in 2020.

5.1.2.1 Comparison with AQO

Predicted annual mean NO_2 concentrations in 2020 exceed the annual mean NO_2 AQO at 4 of the 54 modelled receptors (Table 11). All of these receptors are located along the London Road / Kingston Road / Fratton Road route corridor and are within the existing AQMA No.6. The highest predicted annual mean NO_2 concentration in 2020 is 43.2 µg/m^3 at 16 London Road (Receptor 32). The second and third highest concentrations are predicted at Kingsbury Mansions (Receptor 30; 42.5 µg/m^3) and 48-50 Kingston Road (Receptor 26; 41.4 µg/m^3).

Annual mean NO_2 concentrations within AQMAs No. 7, 9, 11 and 12 are predicted to be below the annual mean NO_2 AQO at locations of relevant exposure in 2020. The predicted annual mean NO_2 concentrations at worst-case receptor locations within each of these AQMAs are as follows:

- AQMA No. 7: 31.8 µg/m^3 at Victoria House A3 (Receptor 38);
- AQMA No. 9: 31.4 µg/m^3 at 195-197 Milton Road (Receptor 43);
- AQMA No. 11: 38.0 µg/m^3 at 373-375 Commercial Road (Receptor 11); and
- AQMA No. 12: 29.3 µg/m^3 at Pounds Gate (Receptor 22).

5.1.2.2 Source Apportionment

The contributions of local road traffic sources to annual mean NO_2 concentrations range between 6.4 µg/m^3 and 23.7 µg/m^3 (Table 11). Expressed as percentages, local source contributions are predicted to account for 25% to 55% of annual mean NO_2 concentrations at those receptor locations predicted to exceed the annual mean AQO, with 45% to 75% attributable to background sources (regional and local; Table 12).

At the 4 sensitive receptor locations predicted to exceed the annual mean NO_2 AQO in 2020, the contributions of local road traffic sources to annual mean NO_2 concentrations range between 21.6 µg/m^3 and 23.7 µg/m^3 (Table 11). Expressed as percentages, local source contributions are predicted to account for 54% to 55% of annual mean NO_2 concentrations at those receptor locations predicted to exceed the annual mean AQO, with 45% to 46% attributable to background sources (regional and local; Table 12).

The largest local source contributions are predicted at receptors located within AQMA No. 6 along the London Road / Kingston Road / Fratton Road route corridor.

At all receptors where exceedance of the annual mean NO_2 AQO is predicted, cars and taxis are estimated to be the largest local source contributors, accounting for 10.4 µg/m^3 to 12.0 µg/m^3 (24% to 29%) of total annual mean NO_2 concentrations. The largest contributions due to cars and taxis are:

- 48-50 Kingston Road (Receptor 26; 12.0 µg/m^3; 29% of total annual mean NO_2);
- 314-316 Fratton Road (Receptor 18; 11.2 µg/m^3; 28% of total annual mean NO_2); and
- Kingsbury Mansions (Receptor 30; 10.5 µg/m^3; 25% of total annual mean NO_2).

Buses are estimated to be the largest local source contributor after cars and taxis, accounting for between 5.0 µg/m^3 and 7.8 µg/m^3 (12% to 18%) of total annual mean NO_2 concentrations at those receptors where exceedance of the annual mean NO_2 AQO is predicted.

Light-goods vehicles (LGVs) are the third largest contributing vehicle type in areas of exceedance (3.7 µg/m^3 to 4.4 µg/m^3; 9% to 11%), whilst the Other Goods Vehicles classifications typically account for the smallest proportions of local source contributions.

5.1.2.3 Required Reductions to Achieve the AQO

Table 13 shows the calculation of the necessary reductions in road NO_X required to achieve the annual mean NO_2 AQO in 2020. The largest reductions required to meet the AQO are estimated at sensitive receptor locations along the London Road / Kingston Road / Fratton Road corridor within AQMA No. 6.

It is estimated that reductions in road NO_X emissions of up to 15% would be required in order to achieve the AQO at all modelled receptor locations within AQMA No. 6. Elsewhere annual mean NO_2 concentrations are predicted to be below the AQO and so reductions in road NO_X emissions would not be necessary to achieve AQO.

Table 11 Predicted Annual Mean NO_2 Concentrations at Modelled Receptor Locations in 2020

Receptor Number	Receptor Name	AQMA	Annual Mean NO_2 Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	25.8	19.4	4.5	14.9	3.6	1.5	0.4	0.4	0.4	6.4
2	57 Stanley Road	AQMA No. 11	26.3	19.4	4.5	14.9	3.9	1.6	0.5	0.4	0.5	6.9
3	St. John's Court	AQMA No. 11	26.2	19.4	4.5	14.9	3.8	1.6	0.4	0.4	0.5	6.8
4	Rudmore Court	AQMA No. 11	26.1	19.4	4.5	14.9	3.8	1.5	0.4	0.4	0.6	6.7
5	The Admiral PH	AQMA No. 11	30.2	19.5	4.5	14.9	6.2	2.4	0.7	0.5	1.0	10.7
6	Peninsular House	AQMA No. 11	28.8	19.5	4.5	14.9	5.1	1.9	0.7	0.8	0.9	9.4
7	162-189 Mile End Road	AQMA No. 11	27.7	19.5	4.5	14.9	4.6	1.8	0.5	0.5	0.9	8.2
8	The Air Balloon	AQMA No. 11	28.6	19.5	4.5	14.9	5.1	2.0	0.6	0.5	1.0	9.1
9	Ferry Lodge House	AQMA No. 11	31.5	19.5	4.5	14.9	7.1	2.6	0.7	0.4	1.2	12.0
10	72-126 Grafton Street	AQMA No. 11	28.3	19.5	4.5	14.9	5.2	1.9	0.5	0.2	1.0	8.9
11	373-375 Commercial Road	AQMA No. 11	38.0	19.5	4.5	14.9	11.5	3.5	1.1	0.3	2.1	18.5
12	239-241 Commercial Road	AQMA No. 11	35.4	20.1	4.6	15.6	8.3	2.2	0.8	0.2	3.8	15.3
13	Hallowell House	AQMA No. 11	32.4	20.1	4.6	15.6	7.1	1.9	0.7	0.2	2.4	12.3
14	St. Edmund House	-	35.0	21.5	4.4	17.1	8.3	2.2	0.8	0.2	2.0	13.5
15	Arts Lodge Park Cafe	-	34.5	21.5	4.4	17.1	7.1	1.9	0.8	0.3	2.9	12.9
16	Barham House	-	30.1	21.5	4.4	17.1	4.9	1.4	0.5	0.1	1.6	8.5
17	122-128 Lake Road	AQMA No. 11	31.1	20.1	4.6	15.6	5.5	1.6	0.3	0.1	3.4	11.0
18	314-316 Fratton Road	AQMA No. 6	**40.4**	18.8	4.8	14.0	11.2	3.7	0.9	0.2	5.7	21.6
19	Hale Court	AQMA No. 6	34.9	18.8	4.8	14.0	8.5	2.9	0.6	0.2	3.9	16.1
20	7 Fawcett Road	-	27.9	17.9	4.8	13.1	6.2	2.1	0.4	0.1	1.3	10.1
21	Priory School	-	27.8	17.9	4.8	13.1	6.1	2.1	0.4	0.1	1.3	9.9
22	Pounds Gate	AQMA No. 12	29.3	21.5	4.4	17.1	2.7	0.8	0.2	0.1	3.9	7.8
23	Priory View	-	25.7	17.9	4.8	13.1	4.8	1.6	0.3	0.1	1.0	7.8
24	Pink Court	AQMA No. 6	32.9	17.8	4.9	13.0	9.0	3.2	0.7	0.1	2.1	15.1

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Receptor Number	Receptor Name	AQMA	Annual Mean NO_2 Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	28.9	17.8	4.9	13.0	6.4	2.3	0.5	0.1	1.7	11.1
26	48-50 Kingston Road	AQMA No. 6	**41.4**	18.8	4.8	14.0	12.0	4.4	1.0	0.2	5.0	22.6
27	89 Kingston Road	AQMA No. 6	35.4	18.8	4.8	14.0	8.2	3.1	0.8	0.2	4.3	16.6
28	156 Kingston Road	AQMA No. 6	37.3	19.5	4.5	14.9	8.8	3.3	0.8	0.2	4.6	17.8
29	192-194 Kingston Road	AQMA No. 6	38.5	19.5	4.5	14.9	9.4	3.6	0.9	0.3	4.9	19.1
30	Kingsbury Mansions	AQMA No. 6	**42.5**	19.5	4.5	14.9	10.5	4.1	1.1	0.3	6.9	23.0
31	61 Kingston Crescent	AQMA No. 6	32.4	19.5	4.5	14.9	7.1	2.8	0.9	0.3	1.8	12.9
32	16 London Road	AQMA No. 6	**43.2**	19.5	4.5	14.9	10.4	4.1	1.2	0.3	7.8	23.7
33	Ross Apartments	AQMA No. 6	35.5	19.4	4.5	14.9	7.4	3.0	0.7	0.2	4.8	16.1
34	156 London Road	AQMA No. 6	31.6	19.4	4.8	14.6	5.7	2.4	0.8	0.2	3.0	12.2
35	589 London Road	-	29.5	18.5	4.8	13.7	5.4	2.5	0.8	0.2	2.1	11.0
36	60-62 Northern Road	-	31.2	17.3	4.8	12.6	7.3	2.5	0.6	0.1	3.4	13.9
37	84 Northern Road	-	29.5	17.3	4.8	12.6	6.7	2.3	0.6	0.2	2.4	12.2
38	Victoria House A3	AQMA No. 7	31.8	20.7	4.4	16.3	6.2	2.0	0.6	0.2	2.0	11.1
39	115 Eastern Road	AQMA No. 9	25.6	16.3	4.9	11.4	5.6	2.4	0.6	0.2	0.5	9.3
40	Lacey Road	AQMA No. 9	29.0	16.3	4.9	11.4	7.8	3.3	0.8	0.3	0.6	12.7
41	53 Velder Avenue	-	29.9	16.3	4.9	11.4	8.3	3.5	0.8	0.3	0.7	13.6
42	7 Velder Avenue	AQMA No. 9	30.0	16.3	4.9	11.4	8.3	3.5	0.8	0.3	0.9	13.7
43	195-197 Milton Road	AQMA No. 9	31.4	16.3	4.9	11.4	9.0	3.6	0.8	0.2	1.5	15.1
44	233 Milton Road	AQMA No. 9	29.1	16.3	4.9	11.4	7.7	3.0	0.6	0.2	1.4	12.7
45	1 Goldsmith Avenue	-	30.5	16.1	4.8	11.2	7.4	2.7	0.6	0.2	3.5	14.4
46	Victoria House, Victoria Road North	-	28.0	19.4	4.5	14.8	5.2	1.6	0.4	0.1	1.3	8.6
47	Keyes Court	-	26.9	19.4	4.5	14.8	4.3	1.5	0.3	0.1	1.5	7.6
48	Brandon House	-	29.3	15.8	4.9	10.9	7.3	2.7	0.6	0.1	2.8	13.5

Receptor Number	Receptor Name	AQMA	Annual Mean NO_2 Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	32.6	15.8	4.9	10.9	8.7	3.2	0.6	0.1	4.2	16.8
50	Craneswater School	-	25.9	15.8	4.9	10.9	5.3	1.8	0.3	0.1	2.5	10.1
51	109 Highland Road	-	27.2	17.9	4.8	13.1	4.9	1.7	0.3	0.1	2.3	9.4
52	St. Andrew's Court	AQMA No. 7	30.7	20.7	4.4	16.3	5.7	1.8	0.6	0.2	1.7	10.0
53	1-4 Charter House	AQMA No. 7	29.4	20.7	4.4	16.3	4.5	1.5	0.5	0.2	2.0	8.7
54	Mill Pond Apartments	-	29.8	21.5	4.4	17.1	2.9	0.9	0.2	0.1	4.1	8.2

Table 12 Source Apportionment of Annual Mean NO_2 Concentrations at Modelled Receptor Locations in 2020

Receptor Number	Receptor Name	AQMA	Total Modelled NO_2	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	25.8	18	58	75	14	6	2	2	2	25
2	57 Stanley Road	AQMA No. 11	26.3	17	57	74	15	6	2	2	2	26
3	St. John's Court	AQMA No. 11	26.2	17	57	74	15	6	2	2	2	26
4	Rudmore Court	AQMA No. 11	26.1	17	57	74	14	6	2	2	2	26
5	The Admiral PH	AQMA No. 11	30.2	15	49	64	21	8	2	2	3	36
6	Peninsular House	AQMA No. 11	28.8	16	52	68	18	7	2	3	3	32
7	162-189 Mile End Road	AQMA No. 11	27.7	16	54	70	16	6	2	2	3	30
8	The Air Balloon	AQMA No. 11	28.6	16	52	68	18	7	2	2	3	32
9	Ferry Lodge House	AQMA No. 11	31.5	14	47	62	23	8	2	1	4	38
10	72-126 Grafton Street	AQMA No. 11	28.3	16	53	69	18	7	2	1	3	31
11	373-375 Commercial Road	AQMA No. 11	38.0	12	39	51	30	9	3	1	6	49
12	239-241 Commercial Road	AQMA No. 11	35.4	13	44	57	23	6	2	1	11	43
13	Hallowell House	AQMA No. 11	32.4	14	48	62	22	6	2	1	7	38
14	St. Edmund House	-	35.0	13	49	62	24	6	2	1	6	38
15	Arts Lodge Park Cafe	-	34.5	13	50	62	21	5	2	1	8	38
16	Barham House	-	30.1	15	57	72	16	5	2	0	5	28
17	122-128 Lake Road	AQMA No. 11	31.1	15	50	65	18	5	1	0	11	35
18	314-316 Fratton Road	AQMA No. 6	**40.4**	12	35	46	28	9	2	0	14	54
19	Hale Court	AQMA No. 6	34.9	14	40	54	24	8	2	0	11	46
20	7 Fawcett Road	-	27.9	17	47	64	22	8	1	0	5	36
21	Priory School	-	27.8	17	47	64	22	7	1	0	5	36
22	Pounds Gate	AQMA No. 12	29.3	15	58	74	9	3	1	0	13	26
23	Priory View	-	25.7	19	51	70	19	6	1	0	4	30
24	Pink Court	AQMA No. 6	32.9	15	39	54	27	10	2	0	6	46

Receptor Number	Receptor Name	AQMA	Total Modelled NO_2	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	28.9	17	45	62	22	8	2	0	6	38
26	48-50 Kingston Road	AQMA No. 6	**41.4**	12	34	45	29	11	2	1	12	55
27	89 Kingston Road	AQMA No. 6	35.4	14	39	53	23	9	2	1	12	47
28	156 Kingston Road	AQMA No. 6	37.3	12	40	52	24	9	2	1	12	48
29	192-194 Kingston Road	AQMA No. 6	38.5	12	39	51	24	9	2	1	13	49
30	Kingsbury Mansions	AQMA No. 6	**42.5**	11	35	46	25	10	3	1	16	54
31	61 Kingston Crescent	AQMA No. 6	32.4	14	46	60	22	9	3	1	6	40
32	16 London Road	AQMA No. 6	**43.2**	11	35	45	24	9	3	1	18	55
33	Ross Apartments	AQMA No. 6	35.5	13	42	55	21	9	2	1	14	45
34	156 London Road	AQMA No. 6	31.6	15	46	61	18	8	2	1	10	39
35	589 London Road	-	29.5	16	46	63	18	8	3	1	7	37
36	60-62 Northern Road	-	31.2	15	40	56	23	8	2	0	11	44
37	84 Northern Road	-	29.5	16	43	59	23	8	2	1	8	41
38	Victoria House A3	AQMA No. 7	31.8	14	51	65	20	6	2	1	6	35
39	115 Eastern Road	AQMA No. 9	25.6	19	44	64	22	9	2	1	2	36
40	Lacey Road	AQMA No. 9	29.0	17	39	56	27	11	3	1	2	44
41	53 Velder Avenue	-	29.9	16	38	55	28	12	3	1	2	45
42	7 Velder Avenue	AQMA No. 9	30.0	16	38	54	28	12	3	1	3	46
43	195-197 Milton Road	AQMA No. 9	31.4	16	36	52	29	11	2	1	5	48
44	233 Milton Road	AQMA No. 9	29.1	17	39	56	26	10	2	1	5	44
45	1 Goldsmith Avenue	-	30.5	16	37	53	24	9	2	1	12	47
46	Victoria House, Victoria Road North	-	28.0	16	53	69	19	6	1	0	5	31
47	Keyes Court	-	26.9	17	55	72	16	5	1	0	5	28
48	Brandon House	-	29.3	17	37	54	25	9	2	0	9	46

Receptor Number	Receptor Name	AQMA	Total Modelled NO_2	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	32.6	15	33	48	27	10	2	0	13	52
50	Craneswater School	-	25.9	19	42	61	21	7	1	0	10	39
51	109 Highland Road	-	27.2	18	48	66	18	6	1	0	8	34
52	St. Andrew's Court	AQMA No. 7	30.7	14	53	67	18	6	2	1	5	33
53	1-4 Charter House	AQMA No. 7	29.4	15	55	70	15	5	2	1	7	30
54	Mill Pond Apartments	-	29.8	15	57	72	10	3	1	0	14	28

Table 13 Required Reductions in Road NO_X Emissions to Achieve the Annual Mean NO_2 AQO in 2020

Receptor Number	Receptor Name	AQMA	Annual Mean Concentrations (µg/m³)				Reduction in Road NO_X to Achieve AQO	
			Total Modelled NO_2	Background NO_2	Total Modelled Road NO_X	Road NO_X at 40 µg/m³ NO_2	µg/m³	As % of Modelled Road NO_X
18	314-316 Fratton Road	AQMA No. 6	**40.4**	18.8	45.2	44.2	1.0	2
26	48-50 Kingston Road	AQMA No. 6	**41.4**	18.8	47.6	44.2	3.4	7
30	Kingsbury Mansions	AQMA No. 6	**42.5**	19.5	48.6	42.7	5.8	12
32	16 London Road	AQMA No. 6	**43.2**	19.5	50.3	42.7	7.6	15

5.1.3 PM_{10} – 2015

Predicted annual mean PM_{10} concentrations in the 2015 baseline year are shown in Table 14 along with the source contributions from regional and local background emissions sources and local traffic emissions.

5.1.3.1 Comparison with AQO

Predicted annual mean PM_{10} concentrations in 2015 are predicted to be well below the annual mean PM_{10} AQO at all modelled receptor locations (Table 14). The highest predicted annual mean PM_{10} concentration in 2015 is 20.4 µg/m^3 at St. Edmund House (Receptor 14). This receptor is situated alongside A3 Alfred Road and does not lie within any of the AQMAs. The second highest concentration is predicted at 48-50 Kingston Road (Receptor 26; 20.3 µg/m^3), whilst an annual mean PM_{10} concentration of 20.1 µg/m^3 is predicted at two receptor locations (Receptor 30, Kingsbury Mansions and Receptor 32, 16 London Road).

The predicted annual mean PM_{10} concentrations at worst-case receptor locations within each of the AQMAs are as follows:

- AQMA No. 6: 20.3 µg/m^3 at 48-50 Kingston Road (Receptor 26);
- AQMA No. 7: 17.3 µg/m^3 at Victoria House A3 (Receptor 38);
- AQMA No. 9: 18.8 µg/m^3 at 195-197 Milton Road (Receptor 43);
- AQMA No. 11: 19.9 µg/m^3 at 373-375 Commercial Road (Receptor 11); and
- AQMA No. 12: 19.0 µg/m^3 at Pounds Gate (Receptor 22).

5.1.3.2 Source Apportionment

Local road traffic source contributions are predicted to account for up to 4.1 µg/m^3 of total modelled PM_{10} concentrations (Table 14). Expressed as percentages, local source contributions are predicted to account for 6% to 20% of annual mean PM_{10} concentrations at modelled receptor locations, with 80% to 94% attributable to background sources (regional and local; Table 15). The largest local source contributions are predicted at receptors located within AQMA No. 6 along the London Road / Kingston Road / Fratton Road route corridor.

On average, cars and taxis are estimated to be the largest local source contributors, accounting for 0.6 µg/m^3 to 2.7 µg/m^3 (3% to 13%) of total annual mean PM_{10} concentrations. The largest contributions due to cars and taxis are:

- 48-50 Kingston Road (Receptor 26; 2.7 µg/m^3; 13% of total annual mean PM_{10});
- 373-375 Commercial Road (Receptor 11; 2.5 µg/m^3; 12% of total annual mean PM_{10}); and
- 314-316 Fratton Road (Receptor 18; 2.3 µg/m^3; 12% of total annual mean PM_{10}).

LGVs are estimated to be the largest local source contributor after cars and taxis, accounting for between 0.1 µg/m^3 and 0.7 µg/m^3 (1% to 4%) of total annual mean PM_{10} concentrations at modelled receptor locations. Buses are the third largest contributing vehicle type, accounting for up to 0.5 µg/m^3 (3%) of total modelled PM_{10} concentrations. OGV1 and OGV2 are the smallest local contributors, accounting for less than 1% of total PM_{10} concentrations.

5.1.3.3 Required Reductions to Achieve the AQO

Annual mean PM_{10} concentrations in 2015 are predicted to be well below the annual mean PM_{10} AQO at all locations throughout Portsmouth and so reductions to attain the AQO are not required.

Table 14 Predicted Annual Mean PM_{10} Concentrations at Modelled Receptor Locations in 2015

Receptor Number	Receptor Name	AQMA	Annual Mean PM_{10} Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	18.1	16.7	8.1	8.6	1.0	0.2	0.1	0.1	0.0	1.4
2	57 Stanley Road	AQMA No. 11	18.2	16.7	8.1	8.6	1.0	0.3	0.1	0.1	0.0	1.5
3	St. John's Court	AQMA No. 11	18.2	16.7	8.1	8.6	1.0	0.2	0.1	0.1	0.0	1.5
4	Rudmore Court	AQMA No. 11	18.1	16.7	8.1	8.6	1.0	0.2	0.1	0.1	0.1	1.4
5	The Admiral PH	AQMA No. 11	18.6	16.4	7.7	8.7	1.4	0.4	0.1	0.1	0.1	2.1
6	Peninsular House	AQMA No. 11	18.3	16.4	7.7	8.7	1.2	0.3	0.1	0.2	0.1	1.9
7	162-189 Mile End Road	AQMA No. 11	18.2	16.4	7.7	8.7	1.2	0.3	0.1	0.1	0.1	1.7
8	The Air Balloon	AQMA No. 11	18.4	16.4	7.7	8.7	1.3	0.3	0.1	0.1	0.1	1.9
9	Ferry Lodge House	AQMA No. 11	19.0	16.4	7.7	8.7	1.8	0.4	0.1	0.1	0.1	2.5
10	72-126 Grafton Street	AQMA No. 11	18.2	16.4	7.7	8.7	1.2	0.3	0.1	0.1	0.1	1.8
11	373-375 Commercial Road	AQMA No. 11	19.9	16.4	7.7	8.7	2.5	0.6	0.2	0.1	0.2	3.5
12	239-241 Commercial Road	AQMA No. 11	19.3	16.7	7.5	9.2	1.7	0.4	0.1	0.0	0.3	2.6
13	Hallowell House	AQMA No. 11	18.9	16.7	7.5	9.2	1.5	0.3	0.1	0.0	0.2	2.1
14	St. Edmund House	-	20.4	17.9	7.2	10.7	1.8	0.4	0.1	0.1	0.2	2.5
15	Arts Lodge Park Cafe	-	20.0	17.9	7.2	10.7	1.4	0.3	0.1	0.0	0.2	2.1
16	Barham House	-	19.4	17.9	7.2	10.7	1.0	0.2	0.1	0.0	0.1	1.5
17	122-128 Lake Road	AQMA No. 11	18.4	16.7	7.5	9.2	1.1	0.2	0.1	0.0	0.3	1.7
18	314-316 Fratton Road	AQMA No. 6	19.8	16.2	7.6	8.6	2.3	0.6	0.1	0.0	0.4	3.6
19	Hale Court	AQMA No. 6	19.1	16.2	7.6	8.6	1.9	0.5	0.1	0.0	0.3	2.9
20	7 Fawcett Road	-	17.5	15.8	7.7	8.1	1.3	0.3	0.1	0.0	0.1	1.8
21	Priory School	-	17.5	15.8	7.7	8.1	1.3	0.3	0.1	0.0	0.1	1.8
22	Pounds Gate	AQMA No. 12	19.0	17.9	7.2	10.7	0.6	0.1	0.0	0.0	0.4	1.1
23	Priory View	-	17.1	15.8	7.7	8.1	1.0	0.2	0.0	0.0	0.1	1.4
24	Pink Court	AQMA No. 6	18.8	16.0	7.6	8.4	2.0	0.5	0.1	0.0	0.2	2.8

Receptor Number	Receptor Name	AQMA	Annual Mean PM_{10} Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	18.0	16.0	7.6	8.4	1.4	0.4	0.1	0.0	0.2	2.0
26	48-50 Kingston Road	AQMA No. 6	20.3	16.2	7.6	8.6	2.7	0.7	0.2	0.1	0.5	4.1
27	89 Kingston Road	AQMA No. 6	19.1	16.2	7.6	8.6	1.8	0.5	0.1	0.0	0.4	2.9
28	156 Kingston Road	AQMA No. 6	19.5	16.4	7.7	8.7	2.0	0.6	0.1	0.1	0.4	3.1
29	192-194 Kingston Road	AQMA No. 6	19.8	16.4	7.7	8.7	2.1	0.6	0.2	0.1	0.4	3.4
30	Kingsbury Mansions	AQMA No. 6	20.1	16.4	7.7	8.7	2.3	0.7	0.2	0.1	0.5	3.7
31	61 Kingston Crescent	AQMA No. 6	18.8	16.4	7.7	8.7	1.6	0.5	0.1	0.1	0.1	2.4
32	16 London Road	AQMA No. 6	20.1	16.4	7.7	8.7	2.2	0.7	0.2	0.1	0.5	3.6
33	Ross Apartments	AQMA No. 6	19.5	16.7	8.1	8.6	1.7	0.5	0.1	0.0	0.4	2.8
34	156 London Road	AQMA No. 6	18.8	16.6	7.7	8.9	1.3	0.4	0.1	0.1	0.3	2.2
35	589 London Road	-	19.0	16.9	8.0	8.9	1.2	0.4	0.1	0.1	0.2	2.0
36	60-62 Northern Road	-	18.5	16.1	7.7	8.4	1.6	0.4	0.1	0.0	0.3	2.4
37	84 Northern Road	-	18.1	16.1	7.7	8.4	1.4	0.3	0.1	0.0	0.2	2.0
38	Victoria House A3	AQMA No. 7	17.3	15.4	7.3	8.1	1.3	0.3	0.1	0.0	0.2	1.9
39	115 Eastern Road	AQMA No. 9	17.8	16.0	7.5	8.5	1.3	0.4	0.1	0.0	0.0	1.8
40	Lacey Road	AQMA No. 9	18.5	16.0	7.5	8.5	1.7	0.5	0.1	0.1	0.1	2.5
41	53 Velder Avenue	-	18.7	16.0	7.5	8.5	1.8	0.6	0.1	0.1	0.1	2.7
42	7 Velder Avenue	AQMA No. 9	18.6	16.0	7.5	8.5	1.8	0.6	0.1	0.1	0.1	2.7
43	195-197 Milton Road	AQMA No. 9	18.8	16.0	7.5	8.5	1.9	0.6	0.1	0.1	0.1	2.8
44	233 Milton Road	AQMA No. 9	18.4	16.0	7.5	8.5	1.7	0.5	0.1	0.0	0.1	2.4
45	1 Goldsmith Avenue	-	18.0	15.5	7.7	7.8	1.6	0.4	0.1	0.0	0.3	2.5
46	Victoria House, Victoria Road North	-	17.1	15.7	7.6	8.1	1.0	0.2	0.1	0.0	0.1	1.4
47	Keyes Court	-	17.0	15.7	7.6	8.1	0.9	0.2	0.0	0.0	0.1	1.3
48	Brandon House	-	16.4	14.4	7.1	7.3	1.4	0.4	0.1	0.0	0.2	2.1

Receptor Number	Receptor Name	AQMA	Annual Mean PM_{10} Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	16.8	14.4	7.1	7.3	1.7	0.5	0.1	0.0	0.2	2.5
50	Craneswater School	-	16.0	14.4	7.1	7.3	1.1	0.3	0.1	0.0	0.2	1.6
51	109 Highland Road	-	17.3	15.8	7.7	8.1	1.0	0.3	0.1	0.0	0.2	1.6
52	St. Andrew's Court	AQMA No. 7	17.1	15.4	7.3	8.1	1.2	0.3	0.1	0.0	0.1	1.7
53	1-4 Charter House	AQMA No. 7	16.8	15.4	7.3	8.1	0.9	0.2	0.1	0.0	0.2	1.5
54	Mill Pond Apartments	-	19.1	17.9	7.2	10.7	0.6	0.1	0.0	0.0	0.4	1.2

Table 15 Source Apportionment of Annual Mean PM_{10} Concentrations at Modelled Receptor Locations in 2015

Receptor Number	Receptor Name	AQMA	Total Modelled PM_{10}	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	18.1	45	47	92	5	1	0	1	0	8
2	57 Stanley Road	AQMA No. 11	18.2	45	47	92	6	1	0	1	0	8
3	St. John's Court	AQMA No. 11	18.2	45	47	92	5	1	0	1	0	8
4	Rudmore Court	AQMA No. 11	18.1	45	47	92	5	1	0	0	0	8
5	The Admiral PH	AQMA No. 11	18.6	41	47	89	8	2	1	1	0	11
6	Peninsular House	AQMA No. 11	18.3	42	48	90	7	2	1	1	0	10
7	162-189 Mile End Road	AQMA No. 11	18.2	42	48	90	6	2	1	1	0	10
8	The Air Balloon	AQMA No. 11	18.4	42	48	89	7	2	1	1	1	11
9	Ferry Lodge House	AQMA No. 11	19.0	41	46	87	9	2	1	0	1	13
10	72-126 Grafton Street	AQMA No. 11	18.2	42	48	90	7	2	1	0	1	10
11	373-375 Commercial Road	AQMA No. 11	19.9	39	44	83	12	3	1	0	1	17
12	239-241 Commercial Road	AQMA No. 11	19.3	39	48	87	9	2	1	0	2	13
13	Hallowell House	AQMA No. 11	18.9	40	49	89	8	2	1	0	1	11
14	St. Edmund House	-	20.4	35	53	88	9	2	1	0	1	12
15	Arts Lodge Park Cafe	-	20.0	36	54	89	7	1	1	0	1	11
16	Barham House	-	19.4	37	55	92	5	1	0	0	1	8
17	122-128 Lake Road	AQMA No. 11	18.4	41	50	91	6	1	0	0	1	9
18	314-316 Fratton Road	AQMA No. 6	19.8	39	44	82	12	3	1	0	2	18
19	Hale Court	AQMA No. 6	19.1	40	45	85	10	3	1	0	2	15
20	7 Fawcett Road	-	17.5	44	46	90	7	2	0	0	1	10
21	Priory School	-	17.5	44	46	90	7	2	0	0	1	10
22	Pounds Gate	AQMA No. 12	19.0	38	56	94	3	1	0	0	2	6
23	Priory View	-	17.1	45	47	92	6	1	0	0	1	8
24	Pink Court	AQMA No. 6	18.8	40	45	85	10	3	1	0	1	15

Receptor Number	Receptor Name	AQMA	Total Modelled PM_{10}	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	18.0	42	47	89	8	2	0	0	1	11
26	48-50 Kingston Road	AQMA No. 6	20.3	38	42	80	13	4	1	0	2	20
27	89 Kingston Road	AQMA No. 6	19.1	40	45	85	9	3	1	0	2	15
28	156 Kingston Road	AQMA No. 6	19.5	39	45	84	10	3	1	0	2	16
29	192-194 Kingston Road	AQMA No. 6	19.8	39	44	83	11	3	1	0	2	17
30	Kingsbury Mansions	AQMA No. 6	20.1	38	43	82	11	3	1	0	2	18
31	61 Kingston Crescent	AQMA No. 6	18.8	41	46	87	8	2	1	0	1	13
32	16 London Road	AQMA No. 6	20.1	38	44	82	11	3	1	0	3	18
33	Ross Apartments	AQMA No. 6	19.5	42	44	86	9	3	1	0	2	14
34	156 London Road	AQMA No. 6	18.8	41	47	88	7	2	1	0	2	12
35	589 London Road	-	19.0	42	47	89	6	2	1	0	1	11
36	60-62 Northern Road	-	18.5	41	45	87	9	2	1	0	2	13
37	84 Northern Road	-	18.1	42	46	89	8	2	1	0	1	11
38	Victoria House A3	AQMA No. 7	17.3	42	47	89	7	2	1	0	1	11
39	115 Eastern Road	AQMA No. 9	17.8	42	47	90	7	2	1	0	0	10
40	Lacey Road	AQMA No. 9	18.5	41	46	86	9	3	1	0	0	14
41	53 Velder Avenue	-	18.7	40	45	86	10	3	1	0	0	14
42	7 Velder Avenue	AQMA No. 9	18.6	40	45	86	10	3	1	0	0	14
43	195-197 Milton Road	AQMA No. 9	18.8	40	45	85	10	3	1	0	1	15
44	233 Milton Road	AQMA No. 9	18.4	41	46	87	9	3	1	0	1	13
45	1 Goldsmith Avenue	-	18.0	43	43	86	9	2	1	0	2	14
46	Victoria House, Victoria Road North	-	17.1	44	48	92	6	1	0	0	1	8
47	Keyes Court	-	17.0	44	48	92	5	1	0	0	1	8
48	Brandon House	-	16.4	43	44	88	8	2	0	0	1	13

Receptor Number	Receptor Name	AQMA	Total Modelled PM_{10}	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	16.8	42	43	85	10	3	0	0	1	15
50	Craneswater School	-	16.0	44	45	90	7	2	0	0	1	10
51	109 Highland Road	-	17.3	44	47	91	6	2	0	0	1	9
52	St. Andrew's Court	AQMA No. 7	17.1	43	47	90	7	2	1	0	1	10
53	1-4 Charter House	AQMA No. 7	16.8	43	48	91	6	1	0	0	1	9
54	Mill Pond Apartments	-	19.1	38	56	94	3	1	0	0	2	6

5.1.4 PM_{10} – 2020

Predicted annual mean PM_{10} concentrations in 2020 are shown in Table 16 along with the source contributions from regional and local background emissions sources and local traffic emissions.

5.1.4.1 Comparison with AQO

Predicted annual mean PM_{10} concentrations in 2020 are predicted to be well below the annual mean PM_{10} AQO at all modelled receptor locations (Table 16). The highest predicted annual mean PM_{10} concentration in 2020 is 19.4 µg/m^3 at St. Edmund House (Receptor 14). This receptor is situated alongside A3 Alfred Road and does not lie within any of the AQMAs. The second highest annual mean PM_{10} concentration (19.1 µg/m^3) is predicted at 48-50 Kingston Road (Receptor 26). An annual mean PM_{10} concentration of 19.0 µg/m^3 is predicted at two receptors (Receptor 15, Arts Lodge Park Café and Receptor 30, Kingsbury Mansions).

The predicted annual mean PM_{10} concentrations at worst-case receptor locations within each of the AQMAs are as follows:

- AQMA No. 6: 19.1 µg/m^3 at 48-50 Kingston Road (Receptor 26);
- AQMA No. 7: 16.4 µg/m^3 at Victoria House A3 (Receptor 38);
- AQMA No. 9: 17.8 µg/m^3 at 195-197 Milton Road (Receptor 43);
- AQMA No. 11: 18.9 µg/m^3 at 373-375 Commercial Road (Receptor 11); and
- AQMA No. 12: 18.1 µg/m^3 at Pounds Gate (Receptor 22).

5.1.4.2 Source Apportionment

Local road traffic sources to annual mean PM_{10} concentrations are predicted to account for up to 3.6 µg/m^3 to total modelled PM_{10} concentrations (Table 16). Expressed as percentages, local source contributions are predicted to account for 5% to 19% of annual mean PM_{10} concentrations at modelled receptor locations, with 81% to 95% attributable to background sources (regional and local; Table 17).

The largest local source contributions are predicted at receptors located within AQMA No. 6 along the London Road / Kingston Road / Fratton Road route corridor.

On average, cars and taxis are estimated to be the largest local source contributors, accounting for 0.5 µg/m^3 to 2.5 µg/m^3 (3% to 13%) of total annual mean PM_{10} concentrations. The largest contributions due to cars and taxis are:

- 48-50 Kingston Road (Receptor 26; 2.5 µg/m^3; 13% of total annual mean PM_{10})
- 373-375 Commercial Road (Receptor 11; 2.3 µg/m^3; 12% of total annual mean PM_{10})
- 314-316 Fratton Road (Receptor 18; 2.2 µg/m^3; 12% of total annual mean PM_{10})

LGVs are estimated to be the largest local source contributor after cars and taxis, accounting for between 0.1 µg/m^3 and 0.6 µg/m^3 (1% to 3%) of total annual mean PM_{10} concentrations at modelled receptor locations. Buses are the third largest contributing vehicle type, accounting for up to 0.4 µg/m^3 (2%) of total modelled PM_{10} concentrations. OGV1 and OGV2 are the smallest local contributors, accounting for less than 1% of total PM_{10} concentrations.

5.1.4.3 Required Reductions to Achieve the AQO

Annual mean PM_{10} concentrations in 2020 are predicted to be well below the annual mean PM_{10} AQO at all locations throughout Portsmouth and so reductions to attain the AQO are not required.

Table 16 Predicted Annual Mean PM_{10} Concentrations at Modelled Receptor Locations in 2020

Receptor Number	Receptor Name	AQMA	Annual Mean PM_{10} Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	17.4	16.1	8.1	8.0	0.9	0.2	0.1	0.1	0.0	1.3
2	57 Stanley Road	AQMA No. 11	17.5	16.1	8.1	8.0	1.0	0.2	0.1	0.1	0.0	1.4
3	St. John's Court	AQMA No. 11	17.4	16.1	8.1	8.0	0.9	0.2	0.1	0.1	0.0	1.3
4	Rudmore Court	AQMA No. 11	17.4	16.1	8.1	8.0	0.9	0.2	0.1	0.1	0.0	1.3
5	The Admiral PH	AQMA No. 11	17.7	15.8	7.7	8.1	1.3	0.3	0.1	0.1	0.1	1.9
6	Peninsular House	AQMA No. 11	17.5	15.8	7.7	8.1	1.1	0.2	0.1	0.1	0.1	1.7
7	162-189 Mile End Road	AQMA No. 11	17.4	15.8	7.7	8.1	1.1	0.2	0.1	0.1	0.1	1.6
8	The Air Balloon	AQMA No. 11	17.5	15.8	7.7	8.1	1.2	0.3	0.1	0.1	0.1	1.7
9	Ferry Lodge House	AQMA No. 11	18.1	15.8	7.7	8.1	1.7	0.3	0.1	0.1	0.1	2.3
10	72-126 Grafton Street	AQMA No. 11	17.4	15.8	7.7	8.1	1.2	0.2	0.1	0.0	0.1	1.6
11	373-375 Commercial Road	AQMA No. 11	18.9	15.8	7.7	8.1	2.3	0.5	0.1	0.1	0.1	3.1
12	239-241 Commercial Road	AQMA No. 11	18.3	16.0	7.5	8.5	1.6	0.3	0.1	0.0	0.2	2.3
13	Hallowell House	AQMA No. 11	17.9	16.0	7.5	8.5	1.3	0.2	0.1	0.0	0.1	1.9
14	St. Edmund House	-	19.4	17.2	7.2	10.1	1.6	0.3	0.1	0.0	0.1	2.2
15	Arts Lodge Park Cafe	-	19.0	17.2	7.2	10.1	1.3	0.2	0.1	0.0	0.2	1.8
16	Barham House	-	18.5	17.2	7.2	10.1	0.9	0.2	0.1	0.0	0.1	1.3
17	122-128 Lake Road	AQMA No. 11	17.5	16.0	7.5	8.5	1.0	0.2	0.0	0.0	0.2	1.5
18	314-316 Fratton Road	AQMA No. 6	18.6	15.6	7.6	8.0	2.2	0.5	0.1	0.0	0.3	3.1
19	Hale Court	AQMA No. 6	18.1	15.6	7.6	8.0	1.7	0.4	0.1	0.0	0.3	2.5
20	7 Fawcett Road	-	16.7	15.1	7.6	7.5	1.2	0.3	0.0	0.0	0.1	1.6
21	Priory School	-	16.7	15.1	7.6	7.5	1.2	0.3	0.0	0.0	0.1	1.6
22	Pounds Gate	AQMA No. 12	18.1	17.2	7.2	10.1	0.5	0.1	0.0	0.0	0.3	0.9
23	Priory View	-	16.3	15.1	7.6	7.5	0.9	0.2	0.0	0.0	0.1	1.2
24	Pink Court	AQMA No. 6	17.8	15.3	7.5	7.8	1.8	0.4	0.1	0.0	0.1	2.5

Receptor Number	Receptor Name	AQMA	Annual Mean PM_{10} Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	17.1	15.3	7.5	7.8	1.3	0.3	0.1	0.0	0.1	1.8
26	48-50 Kingston Road	AQMA No. 6	19.1	15.6	7.6	8.0	2.5	0.6	0.1	0.0	0.3	3.6
27	89 Kingston Road	AQMA No. 6	18.1	15.6	7.6	8.0	1.7	0.4	0.1	0.0	0.3	2.5
28	156 Kingston Road	AQMA No. 6	18.5	15.8	7.7	8.1	1.8	0.5	0.1	0.0	0.3	2.7
29	192-194 Kingston Road	AQMA No. 6	18.7	15.8	7.7	8.1	2.0	0.5	0.1	0.0	0.3	2.9
30	Kingsbury Mansions	AQMA No. 6	19.0	15.8	7.7	8.1	2.1	0.5	0.1	0.1	0.3	3.2
31	61 Kingston Crescent	AQMA No. 6	17.9	15.8	7.7	8.1	1.5	0.4	0.1	0.1	0.1	2.1
32	16 London Road	AQMA No. 6	18.9	15.8	7.7	8.1	2.0	0.5	0.1	0.1	0.4	3.1
33	Ross Apartments	AQMA No. 6	18.5	16.1	8.1	8.0	1.6	0.4	0.1	0.0	0.3	2.4
34	156 London Road	AQMA No. 6	17.8	15.9	7.7	8.2	1.2	0.3	0.1	0.0	0.2	1.9
35	589 London Road	-	18.1	16.3	8.0	8.3	1.1	0.3	0.1	0.0	0.2	1.8
36	60-62 Northern Road	-	17.5	15.4	7.6	7.7	1.5	0.3	0.1	0.0	0.2	2.2
37	84 Northern Road	-	17.2	15.4	7.6	7.7	1.3	0.3	0.1	0.0	0.1	1.8
38	Victoria House A3	AQMA No. 7	16.4	14.7	7.3	7.5	1.2	0.3	0.1	0.0	0.1	1.7
39	115 Eastern Road	AQMA No. 9	17.0	15.3	7.5	7.8	1.2	0.3	0.1	0.0	0.0	1.7
40	Lacey Road	AQMA No. 9	17.6	15.3	7.5	7.8	1.6	0.5	0.1	0.0	0.0	2.3
41	53 Velder Avenue	-	17.7	15.3	7.5	7.8	1.7	0.5	0.1	0.1	0.0	2.4
42	7 Velder Avenue	AQMA No. 9	17.7	15.3	7.5	7.8	1.7	0.5	0.1	0.0	0.1	2.4
43	195-197 Milton Road	AQMA No. 9	17.8	15.3	7.5	7.8	1.8	0.5	0.1	0.0	0.1	2.5
44	233 Milton Road	AQMA No. 9	17.5	15.3	7.5	7.8	1.6	0.4	0.1	0.0	0.1	2.2
45	1 Goldsmith Avenue	-	17.1	14.9	7.6	7.2	1.5	0.4	0.1	0.0	0.2	2.2
46	Victoria House, Victoria Road North	-	16.2	15.0	7.5	7.5	0.9	0.2	0.0	0.0	0.1	1.2
47	Keyes Court	-	16.2	15.0	7.5	7.5	0.8	0.2	0.0	0.0	0.1	1.2
48	Brandon House	-	15.5	13.7	7.1	6.7	1.3	0.3	0.0	0.0	0.1	1.8

Receptor Number	Receptor Name	AQMA	Annual Mean PM_{10} Concentrations ($\mu g/m^3$)					Local Source Contributions ($\mu g/m^3$)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	15.9	13.7	7.1	6.7	1.5	0.4	0.1	0.0	0.2	2.1
50	Craneswater School	-	15.2	13.7	7.1	6.7	1.0	0.2	0.0	0.0	0.1	1.5
51	109 Highland Road	-	16.5	15.1	7.6	7.5	1.0	0.2	0.0	0.0	0.1	1.4
52	St. Andrew's Court	AQMA No. 7	16.3	14.7	7.3	7.5	1.1	0.2	0.1	0.0	0.1	1.5
53	1-4 Charter House	AQMA No. 7	16.0	14.7	7.3	7.5	0.9	0.2	0.1	0.0	0.1	1.3
54	Mill Pond Apartments	-	18.2	17.2	7.2	10.1	0.6	0.1	0.0	0.0	0.3	1.0

Table 17 Source Apportionment of Annual Mean PM_{10} Concentrations at Modelled Receptor Locations in 2020

Receptor Number	Receptor Name	AQMA	Total Modelled PM_{10}	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	17.4	47	46	93	5	1	0	0	0	7
2	57 Stanley Road	AQMA No. 11	17.5	46	46	92	6	1	0	0	0	8
3	St. John's Court	AQMA No. 11	17.4	47	46	92	5	1	0	0	0	8
4	Rudmore Court	AQMA No. 11	17.4	47	46	93	5	1	0	0	0	7
5	The Admiral PH	AQMA No. 11	17.7	43	46	89	8	2	1	1	0	11
6	Peninsular House	AQMA No. 11	17.5	44	46	90	7	1	1	1	0	10
7	162-189 Mile End Road	AQMA No. 11	17.4	44	47	91	6	1	0	0	0	9
8	The Air Balloon	AQMA No. 11	17.5	44	46	90	7	1	1	1	0	10
9	Ferry Lodge House	AQMA No. 11	18.1	42	45	87	9	2	1	0	1	13
10	72-126 Grafton Street	AQMA No. 11	17.4	44	47	91	7	1	0	0	0	9
11	373-375 Commercial Road	AQMA No. 11	18.9	41	43	84	12	2	1	0	1	16
12	239-241 Commercial Road	AQMA No. 11	18.3	41	47	88	9	2	1	0	1	12
13	Hallowell House	AQMA No. 11	17.9	42	48	90	8	1	0	0	1	10
14	St. Edmund House	-	19.4	37	52	89	8	2	1	0	1	11
15	Arts Lodge Park Cafe	-	19.0	38	53	90	7	1	0	0	1	10
16	Barham House	-	18.5	39	54	93	5	1	0	0	1	7
17	122-128 Lake Road	AQMA No. 11	17.5	43	49	92	6	1	0	0	1	8
18	314-316 Fratton Road	AQMA No. 6	18.6	41	43	83	12	3	1	0	2	17
19	Hale Court	AQMA No. 6	18.1	42	44	86	10	2	0	0	1	14
20	7 Fawcett Road	-	16.7	46	45	91	7	2	0	0	0	9
21	Priory School	-	16.7	46	45	91	7	2	0	0	0	9
22	Pounds Gate	AQMA No. 12	18.1	39	55	95	3	1	0	0	1	5
23	Priory View	-	16.3	47	46	93	6	1	0	0	0	7
24	Pink Court	AQMA No. 6	17.8	42	44	86	10	2	1	0	1	14

Receptor Number	Receptor Name	AQMA	Total Modelled PM_{10}	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	17.1	44	45	90	8	2	0	0	1	10
26	48-50 Kingston Road	AQMA No. 6	19.1	40	42	81	13	3	1	0	2	19
27	89 Kingston Road	AQMA No. 6	18.1	42	44	86	9	2	1	0	2	14
28	156 Kingston Road	AQMA No. 6	18.5	41	44	85	10	2	1	0	2	15
29	192-194 Kingston Road	AQMA No. 6	18.7	41	43	84	10	3	1	0	2	16
30	Kingsbury Mansions	AQMA No. 6	19.0	40	43	83	11	3	1	0	2	17
31	61 Kingston Crescent	AQMA No. 6	17.9	43	45	88	8	2	1	0	1	12
32	16 London Road	AQMA No. 6	18.9	41	43	84	11	3	1	0	2	16
33	Ross Apartments	AQMA No. 6	18.5	44	43	87	8	2	1	0	2	13
34	156 London Road	AQMA No. 6	17.8	43	46	89	7	2	1	0	1	11
35	589 London Road	-	18.1	44	46	90	6	2	1	0	1	10
36	60-62 Northern Road	-	17.5	44	44	88	8	2	0	0	1	12
37	84 Northern Road	-	17.2	44	45	90	7	2	0	0	1	10
38	Victoria House A3	AQMA No. 7	16.4	44	45	90	7	2	0	0	1	10
39	115 Eastern Road	AQMA No. 9	17.0	44	46	90	7	2	0	0	0	10
40	Lacey Road	AQMA No. 9	17.6	43	45	87	9	3	1	0	0	13
41	53 Velder Avenue	-	17.7	42	44	86	10	3	1	0	0	14
42	7 Velder Avenue	AQMA No. 9	17.7	42	44	87	10	3	1	0	0	13
43	195-197 Milton Road	AQMA No. 9	17.8	42	44	86	10	3	1	0	1	14
44	233 Milton Road	AQMA No. 9	17.5	43	45	88	9	2	0	0	1	12
45	1 Goldsmith Avenue	-	17.1	45	42	87	9	2	0	0	1	13
46	Victoria House, Victoria Road North	-	16.2	46	46	92	6	1	0	0	0	8
47	Keyes Court	-	16.2	46	46	93	5	1	0	0	1	7
48	Brandon House	-	15.5	45	43	89	8	2	0	0	1	11

Receptor Number	Receptor Name	AQMA	Total Modelled PM_{10}	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	15.9	44	42	87	10	2	0	0	1	13
50	Craneswater School	-	15.2	46	44	90	7	2	0	0	1	10
51	109 Highland Road	-	16.5	46	45	92	6	1	0	0	1	8
52	St. Andrew's Court	AQMA No. 7	16.3	45	46	91	7	1	0	0	1	9
53	1-4 Charter House	AQMA No. 7	16.0	45	47	92	5	1	0	0	1	8
54	Mill Pond Apartments	-	18.2	39	55	94	3	1	0	0	2	6

5.1.5 $PM_{2.5}$ – 2015

Predicted annual mean $PM_{2.5}$ concentrations in the 2015 baseline year are shown in Table 18 along with the source contributions from regional and local background emissions sources and local traffic emissions.

5.1.5.1 Comparison with EU Limit Value

Predicted annual mean $PM_{2.5}$ concentrations in 2015 are predicted to be well below the annual mean $PM_{2.5}$ EU Limit Value at all modelled receptor locations (Table 18). The highest predicted annual mean $PM_{2.5}$ concentration in 2015 is 14.1 µg/m^3 at 48-50 Kingston Road (Receptor 26). An annual mean $PM_{2.5}$ concentration of 13.9 µg/m^3 is predicted at two receptor locations (Receptor 30, Kingsbury Mansions and Receptor 32, 16 London Road).

The predicted annual mean $PM_{2.5}$ concentrations at worst-case receptor locations within each of the AQMAs are as follows:

- AQMA No. 6: 14.1 µg/m^3 at 48-50 Kingston Road (Receptor 26);
- AQMA No. 7: 12.1 µg/m^3 at Victoria House A3 (Receptor 38);
- AQMA No. 9: 13.0 µg/m^3 at 195-197 Milton Road (Receptor 43);
- AQMA No. 11: 13.7 µg/m^3 at 373-375 Commercial Road (Receptor 11); and
- AQMA No. 12: 12.9 µg/m^3 at Pounds Gate (Receptor 22).

5.1.5.2 Source Apportionment

Local road traffic sources to annual mean $PM_{2.5}$ concentrations are predicted to account for up to 2.6 µg/m^3 of total modelled $PM_{2.5}$ concentrations (Table 18). Expressed as percentages, local source contributions are predicted to account for 5% to 18% of annual mean $PM_{2.5}$ concentrations at modelled receptor locations, with 82% to 95% attributable to background sources (regional and local; Table 19).

The largest local source contributions are predicted at receptors located within AQMA No. 6 along the London Road / Kingston Road / Fratton Road route corridor.

On average, cars and taxis are estimated to be the largest local source contributors, accounting for 0.3 µg/m^3 to 1.6 µg/m^3 (3% to 12%) of total annual mean $PM_{2.5}$ concentrations. The largest contributions due to cars and taxis are:

- 48-50 Kingston Road (Receptor 26; 1.6 µg/m^3; 12% of total annual mean $PM_{2.5}$);
- 373-375 Commercial Road (Receptor 11; 1.5 µg/m^3; 11% of total annual mean $PM_{2.5}$); and
- 314-316 Fratton Road (Receptor 18; 1.4 µg/m^3; 10% of total annual mean $PM_{2.5}$).

LGVs are estimated to be the largest local source contributor after cars and taxis, accounting for between 0.1 µg/m^3 and 0.5 µg/m^3 (1% to 3%) of total annual mean $PM_{2.5}$ concentrations at modelled receptor locations. Buses are the third largest contributing vehicle type, accounting for up to 0.4 µg/m^3 (3%) of total modelled $PM_{2.5}$ concentrations. OGV1 and OGV2 are the smallest local contributors, accounting for less than 1% of total $PM_{2.5}$ concentrations.

5.1.5.3 Required Reductions to Achieve the EU Limit Value

Annual mean $PM_{2.5}$ concentrations in 2015 are predicted to be well below the annual mean $PM_{2.5}$ EU Limit at all locations throughout Portsmouth and so reductions to attain the Limit Value are not required.

Table 18 Predicted Annual Mean $PM_{2.5}$ Concentrations at Modelled Receptor Locations in 2015

Receptor Number	Receptor Name	AQMA	Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	12.6	11.7	4.6	7.1	0.6	0.1	0.1	0.1	0.0	0.9
2	57 Stanley Road	AQMA No. 11	12.6	11.7	4.6	7.1	0.6	0.2	0.1	0.1	0.0	0.9
3	St. John's Court	AQMA No. 11	12.6	11.7	4.6	7.1	0.6	0.2	0.1	0.1	0.0	0.9
4	Rudmore Court	AQMA No. 11	12.6	11.7	4.6	7.1	0.6	0.1	0.1	0.1	0.0	0.9
5	The Admiral PH	AQMA No. 11	12.9	11.6	4.4	7.1	0.9	0.2	0.1	0.1	0.1	1.3
6	Peninsular House	AQMA No. 11	12.7	11.6	4.4	7.1	0.7	0.2	0.1	0.1	0.1	1.2
7	162-189 Mile End Road	AQMA No. 11	12.6	11.6	4.4	7.1	0.7	0.2	0.1	0.1	0.1	1.1
8	The Air Balloon	AQMA No. 11	12.7	11.6	4.4	7.1	0.8	0.2	0.1	0.1	0.1	1.2
9	Ferry Lodge House	AQMA No. 11	13.1	11.6	4.4	7.1	1.1	0.3	0.1	0.1	0.1	1.5
10	72-126 Grafton Street	AQMA No. 11	12.6	11.6	4.4	7.1	0.7	0.2	0.1	0.0	0.1	1.1
11	373-375 Commercial Road	AQMA No. 11	13.7	11.6	4.4	7.1	1.5	0.4	0.1	0.0	0.1	2.2
12	239-241 Commercial Road	AQMA No. 11	13.5	11.8	4.3	7.5	1.0	0.2	0.1	0.0	0.2	1.6
13	Hallowell House	AQMA No. 11	13.1	11.8	4.3	7.5	0.9	0.2	0.1	0.0	0.1	1.3
14	St. Edmund House	-	13.8	12.2	4.2	8.1	1.1	0.2	0.1	0.0	0.1	1.5
15	Arts Lodge Park Cafe	-	13.6	12.2	4.2	8.1	0.9	0.2	0.1	0.0	0.2	1.3
16	Barham House	-	13.2	12.2	4.2	8.1	0.6	0.1	0.0	0.0	0.1	0.9
17	122-128 Lake Road	AQMA No. 11	12.9	11.8	4.3	7.5	0.7	0.2	0.0	0.0	0.2	1.1
18	314-316 Fratton Road	AQMA No. 6	13.8	11.5	4.4	7.2	1.4	0.4	0.1	0.0	0.3	2.3
19	Hale Court	AQMA No. 6	13.3	11.5	4.4	7.2	1.1	0.3	0.1	0.0	0.2	1.8
20	7 Fawcett Road	-	12.3	11.2	4.4	6.8	0.8	0.2	0.0	0.0	0.1	1.1
21	Priory School	-	12.2	11.2	4.4	6.8	0.8	0.2	0.0	0.0	0.1	1.1
22	Pounds Gate	AQMA No. 12	12.9	12.2	4.2	8.1	0.3	0.1	0.0	0.0	0.2	0.7
23	Priory View	-	12.0	11.2	4.4	6.8	0.6	0.2	0.0	0.0	0.1	0.9
24	Pink Court	AQMA No. 6	13.1	11.3	4.4	7.0	1.2	0.3	0.1	0.0	0.1	1.8

Receptor Number	Receptor Name	AQMA	Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	12.6	11.3	4.4	7.0	0.9	0.2	0.1	0.0	0.1	1.3
26	48-50 Kingston Road	AQMA No. 6	14.1	11.5	4.4	7.2	1.6	0.5	0.1	0.0	0.3	2.6
27	89 Kingston Road	AQMA No. 6	13.4	11.5	4.4	7.2	1.1	0.3	0.1	0.0	0.3	1.8
28	156 Kingston Road	AQMA No. 6	13.5	11.6	4.4	7.1	1.2	0.4	0.1	0.0	0.3	2.0
29	192-194 Kingston Road	AQMA No. 6	13.7	11.6	4.4	7.1	1.3	0.4	0.1	0.0	0.3	2.1
30	Kingsbury Mansions	AQMA No. 6	13.9	11.6	4.4	7.1	1.4	0.5	0.1	0.0	0.4	2.4
31	61 Kingston Crescent	AQMA No. 6	13.1	11.6	4.4	7.1	1.0	0.3	0.1	0.1	0.1	1.5
32	16 London Road	AQMA No. 6	13.9	11.6	4.4	7.1	1.4	0.4	0.1	0.0	0.4	2.3
33	Ross Apartments	AQMA No. 6	13.5	11.7	4.6	7.1	1.0	0.3	0.1	0.0	0.3	1.8
34	156 London Road	AQMA No. 6	13.1	11.7	4.4	7.3	0.8	0.3	0.1	0.0	0.2	1.4
35	589 London Road	-	13.1	11.8	4.6	7.3	0.8	0.3	0.1	0.0	0.1	1.3
36	60-62 Northern Road	-	12.9	11.4	4.4	7.0	1.0	0.3	0.1	0.0	0.2	1.5
37	84 Northern Road	-	12.7	11.4	4.4	7.0	0.8	0.2	0.1	0.0	0.1	1.3
38	Victoria House A3	AQMA No. 7	12.1	10.9	4.2	6.7	0.8	0.2	0.1	0.0	0.1	1.2
39	115 Eastern Road	AQMA No. 9	12.4	11.3	4.3	7.0	0.8	0.3	0.1	0.0	0.0	1.2
40	Lacey Road	AQMA No. 9	12.8	11.3	4.3	7.0	1.0	0.4	0.1	0.0	0.0	1.6
41	53 Velder Avenue	-	12.9	11.3	4.3	7.0	1.1	0.4	0.1	0.0	0.0	1.7
42	7 Velder Avenue	AQMA No. 9	12.9	11.3	4.3	7.0	1.1	0.4	0.1	0.0	0.1	1.7
43	195-197 Milton Road	AQMA No. 9	13.0	11.3	4.3	7.0	1.2	0.4	0.1	0.0	0.1	1.8
44	233 Milton Road	AQMA No. 9	12.8	11.3	4.3	7.0	1.0	0.3	0.1	0.0	0.1	1.5
45	1 Goldsmith Avenue	-	12.5	10.9	4.4	6.5	1.0	0.3	0.1	0.0	0.2	1.6
46	Victoria House, Victoria Road North	-	12.0	11.1	4.3	6.8	0.6	0.2	0.0	0.0	0.1	0.9
47	Keyes Court	-	12.0	11.1	4.3	6.8	0.6	0.2	0.0	0.0	0.1	0.9
48	Brandon House	-	11.5	10.2	4.1	6.1	0.9	0.3	0.0	0.0	0.1	1.3

Receptor Number	Receptor Name	AQMA	Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	11.8	10.2	4.1	6.1	1.0	0.3	0.1	0.0	0.2	1.6
50	Craneswater School	-	11.3	10.2	4.1	6.1	0.7	0.2	0.0	0.0	0.1	1.0
51	109 Highland Road	-	12.1	11.2	4.4	6.8	0.6	0.2	0.0	0.0	0.1	1.0
52	St. Andrew's Court	AQMA No. 7	12.0	10.9	4.2	6.7	0.7	0.2	0.1	0.0	0.1	1.1
53	1-4 Charter House	AQMA No. 7	11.8	10.9	4.2	6.7	0.6	0.1	0.1	0.0	0.1	0.9
54	Mill Pond Apartments	-	13.0	12.2	4.2	8.1	0.4	0.1	0.0	0.0	0.2	0.8

Table 19 Source Apportionment of Annual Mean $PM_{2.5}$ Concentrations at Modelled Receptor Locations in 2015

Receptor Number	Receptor Name	AQMA	Total Modelled $PM_{2.5}$	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	12.6	37	56	93	5	1	0	0	0	7
2	57 Stanley Road	AQMA No. 11	12.6	37	56	93	5	1	0	0	0	7
3	St. John's Court	AQMA No. 11	12.6	37	56	93	5	1	0	0	0	7
4	Rudmore Court	AQMA No. 11	12.6	37	56	93	4	1	0	0	0	7
5	The Admiral PH	AQMA No. 11	12.9	34	55	90	7	2	1	1	0	10
6	Peninsular House	AQMA No. 11	12.7	35	56	91	6	1	1	1	0	9
7	162-189 Mile End Road	AQMA No. 11	12.6	35	57	92	6	1	1	1	0	8
8	The Air Balloon	AQMA No. 11	12.7	35	56	91	6	2	1	1	1	9
9	Ferry Lodge House	AQMA No. 11	13.1	34	55	88	8	2	1	0	1	12
10	72-126 Grafton Street	AQMA No. 11	12.6	35	56	91	6	1	0	0	0	9
11	373-375 Commercial Road	AQMA No. 11	13.7	32	52	84	11	3	1	0	1	16
12	239-241 Commercial Road	AQMA No. 11	13.5	32	56	88	8	2	1	0	2	12
13	Hallowell House	AQMA No. 11	13.1	33	57	90	7	1	1	0	1	10
14	St. Edmund House	-	13.8	30	59	89	8	2	1	0	1	11
15	Arts Lodge Park Cafe	-	13.6	31	60	90	6	1	1	0	1	10
16	Barham House	-	13.2	32	62	93	5	1	0	0	1	7
17	122-128 Lake Road	AQMA No. 11	12.9	34	58	92	5	1	0	0	1	8
18	314-316 Fratton Road	AQMA No. 6	13.8	32	52	84	10	3	1	0	2	16
19	Hale Court	AQMA No. 6	13.3	33	54	86	9	2	1	0	2	14
20	7 Fawcett Road	-	12.3	36	55	91	6	2	0	0	1	9
21	Priory School	-	12.2	36	55	91	6	2	0	0	1	9
22	Pounds Gate	AQMA No. 12	12.9	32	63	95	3	1	0	0	2	5
23	Priory View	-	12.0	37	56	93	5	1	0	0	1	7
24	Pink Court	AQMA No. 6	13.1	33	53	86	9	3	1	0	1	14

Receptor Number	Receptor Name	AQMA	Total Modelled $PM_{2.5}$	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	12.6	34	55	90	7	2	0	0	1	10
26	48-50 Kingston Road	AQMA No. 6	14.1	31	51	82	12	3	1	0	2	18
27	89 Kingston Road	AQMA No. 6	13.4	33	54	86	8	3	1	0	2	14
28	156 Kingston Road	AQMA No. 6	13.5	33	53	85	9	3	1	0	2	15
29	192-194 Kingston Road	AQMA No. 6	13.7	32	52	85	9	3	1	0	2	15
30	Kingsbury Mansions	AQMA No. 6	13.9	32	51	83	10	3	1	0	3	17
31	61 Kingston Crescent	AQMA No. 6	13.1	34	55	88	7	2	1	0	1	12
32	16 London Road	AQMA No. 6	13.9	32	51	83	10	3	1	0	3	17
33	Ross Apartments	AQMA No. 6	13.5	34	53	87	8	2	1	0	2	13
34	156 London Road	AQMA No. 6	13.1	34	56	89	6	2	1	0	2	11
35	589 London Road	-	13.1	35	55	90	6	2	1	0	1	10
36	60-62 Northern Road	-	12.9	34	54	88	7	2	1	0	2	12
37	84 Northern Road	-	12.7	35	55	90	7	2	0	0	1	10
38	Victoria House A3	AQMA No. 7	12.1	35	55	90	7	2	1	0	1	10
39	115 Eastern Road	AQMA No. 9	12.4	35	56	91	6	2	0	0	0	9
40	Lacey Road	AQMA No. 9	12.8	34	54	88	8	3	1	0	0	12
41	53 Velder Avenue	-	12.9	33	54	87	9	3	1	0	0	13
42	7 Velder Avenue	AQMA No. 9	12.9	33	54	87	9	3	1	0	0	13
43	195-197 Milton Road	AQMA No. 9	13.0	33	53	86	9	3	1	0	1	14
44	233 Milton Road	AQMA No. 9	12.8	34	54	88	8	2	1	0	1	12
45	1 Goldsmith Avenue	-	12.5	35	52	87	8	2	0	0	2	13
46	Victoria House, Victoria Road North	-	12.0	36	57	93	5	1	0	0	1	7
47	Keyes Court	-	12.0	36	57	93	5	1	0	0	1	7
48	Brandon House	-	11.5	35	53	89	7	2	0	0	1	11

Receptor Number	Receptor Name	AQMA	Total Modelled $PM_{2.5}$	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	11.8	35	52	87	9	3	0	0	2	13
50	Craneswater School	-	11.3	36	54	91	6	2	0	0	1	9
51	109 Highland Road	-	12.1	36	56	92	5	2	0	0	1	8
52	St. Andrew's Court	AQMA No. 7	12.0	35	56	91	6	2	1	0	1	9
53	1-4 Charter House	AQMA No. 7	11.8	36	57	92	5	1	0	0	1	8
54	Mill Pond Apartments	-	13.0	32	62	94	3	1	0	0	2	6

5.1.6 $PM_{2.5}$ – 2020

Predicted annual mean $PM_{2.5}$ concentrations in 2020 are shown in Table 20 along with the source contributions from regional and local background emissions sources and local traffic emissions.

5.1.6.1 Comparison with EU Limit Value

Predicted annual mean $PM_{2.5}$ concentrations in 2020 are predicted to be well below the annual mean $PM_{2.5}$ EU Limit Value at all modelled receptor locations (Table 20). The highest predicted annual mean $PM_{2.5}$ concentration in 2020 is 13.0 µg/m^3 at 48-50 Kingston Road (Receptor 26). An annual mean $PM_{2.5}$ concentration of 12.8 µg/m^3 is predicted at three receptor locations (Receptor 14, St. Edmund House; Receptor 30, Kingsbury Mansions and Receptor 32, 16 London Road).

The predicted annual mean $PM_{2.5}$ concentrations at worst-case receptor locations within each of the AQMAs are as follows:

- AQMA No. 6: 13.0 µg/m^3 at 48-50 Kingston Road (Receptor 26);
- AQMA No. 7: 11.2 µg/m^3 at Victoria House A3 (Receptor 38);
- AQMA No. 9: 12.1 µg/m^3 at 195-197 Milton Road (Receptor 43);
- AQMA No. 11: 12.7 µg/m^3 at 373-375 Commercial Road (Receptor 11); and
- AQMA No. 12: 12.1 µg/m^3 at Pounds Gate (Receptor 22).

5.1.6.2 Source Apportionment

Local road traffic sources to annual mean $PM_{2.5}$ concentrations are predicted to account for up to 2.1 µg/m^3 of total modelled $PM_{2.5}$ concentrations (Table 20). Expressed as percentages, local source contributions are predicted to account for 4% to 16% of annual mean $PM_{2.5}$ concentrations at modelled receptor locations, with 84% to 96% attributable to background sources (regional and local; Table 21).

The largest local source contributions are predicted at receptors located within AQMA No. 6 along the London Road / Kingston Road / Fratton Road route corridor.

On average, cars and taxis are estimated to be the largest local source contributors, accounting for 0.3 µg/m^3 to 1.4 µg/m^3 (2% to 11%) of total annual mean $PM_{2.5}$ concentrations. The largest contributions due to cars and taxis are:

- 48-50 Kingston Road (Receptor 26; 1.4 µg/m^3; 11% of total annual mean $PM_{2.5}$)
- 373-375 Commercial Road (Receptor 11; 1.3 µg/m^3; 10% of total annual mean $PM_{2.5}$)
- 314-316 Fratton Road (Receptor 18; 1.3 µg/m^3; 10% of total annual mean $PM_{2.5}$)

LGVs are estimated to be the largest local source contributor after cars and taxis, accounting for up to 0.3 µg/m^3 (3%) of total annual mean $PM_{2.5}$ concentrations at modelled receptor locations. Buses are the third largest contributing vehicle type, accounting for up to 0.2 µg/m^3 (2%) of total modelled $PM_{2.5}$ concentrations. OGV1 and OGV2 are the smallest local contributors, accounting for less than 1% of total $PM_{2.5}$ concentrations.

5.1.6.3 Required Reductions to Achieve the EU Limit Value

Annual mean PM_{10} concentrations in 2020 are predicted to be well below the annual mean $PM_{2.5}$ EU Limit Value at all locations throughout Portsmouth and so reductions to attain the EU Limit Value are not required.

Table 20 Predicted Annual Mean $PM_{2.5}$ Concentrations at Modelled Receptor Locations in 2020

Receptor Number	Receptor Name	AQMA	Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	11.8	11.1	4.6	6.5	0.5	0.1	0.0	0.0	0.0	0.7
2	57 Stanley Road	AQMA No. 11	11.9	11.1	4.6	6.5	0.5	0.1	0.0	0.0	0.0	0.8
3	St. John's Court	AQMA No. 11	11.9	11.1	4.6	6.5	0.5	0.1	0.0	0.0	0.0	0.7
4	Rudmore Court	AQMA No. 11	11.8	11.1	4.6	6.5	0.5	0.1	0.0	0.0	0.0	0.7
5	The Admiral PH	AQMA No. 11	12.0	10.9	4.4	6.5	0.8	0.2	0.1	0.1	0.0	1.1
6	Peninsular House	AQMA No. 11	11.9	10.9	4.4	6.5	0.6	0.1	0.1	0.1	0.0	1.0
7	162-189 Mile End Road	AQMA No. 11	11.8	10.9	4.4	6.5	0.6	0.1	0.0	0.0	0.0	0.9
8	The Air Balloon	AQMA No. 11	11.9	10.9	4.4	6.5	0.7	0.1	0.1	0.0	0.0	1.0
9	Ferry Lodge House	AQMA No. 11	12.2	10.9	4.4	6.5	0.9	0.2	0.1	0.0	0.1	1.3
10	72-126 Grafton Street	AQMA No. 11	11.8	10.9	4.4	6.5	0.6	0.1	0.0	0.0	0.0	0.9
11	373-375 Commercial Road	AQMA No. 11	12.7	10.9	4.4	6.5	1.3	0.3	0.1	0.0	0.1	1.8
12	239-241 Commercial Road	AQMA No. 11	12.4	11.1	4.3	6.8	0.9	0.2	0.1	0.0	0.1	1.3
13	Hallowell House	AQMA No. 11	12.2	11.1	4.3	6.8	0.8	0.1	0.0	0.0	0.1	1.1
14	St. Edmund House	-	12.8	11.5	4.1	7.4	0.9	0.2	0.1	0.0	0.1	1.3
15	Arts Lodge Park Cafe	-	12.6	11.5	4.1	7.4	0.8	0.1	0.0	0.0	0.1	1.1
16	Barham House	-	12.3	11.5	4.1	7.4	0.5	0.1	0.0	0.0	0.1	0.7
17	122-128 Lake Road	AQMA No. 11	11.9	11.1	4.3	6.8	0.6	0.1	0.0	0.0	0.1	0.8
18	314-316 Fratton Road	AQMA No. 6	12.7	10.9	4.3	6.5	1.3	0.3	0.1	0.0	0.2	1.8
19	Hale Court	AQMA No. 6	12.3	10.9	4.3	6.5	1.0	0.2	0.0	0.0	0.2	1.5
20	7 Fawcett Road	-	11.4	10.5	4.4	6.2	0.7	0.1	0.0	0.0	0.0	0.9
21	Priory School	-	11.4	10.5	4.4	6.2	0.7	0.1	0.0	0.0	0.0	0.9
22	Pounds Gate	AQMA No. 12	12.1	11.5	4.1	7.4	0.3	0.1	0.0	0.0	0.2	0.5
23	Priory View	-	11.2	10.5	4.4	6.2	0.5	0.1	0.0	0.0	0.0	0.7
24	Pink Court	AQMA No. 6	12.2	10.7	4.3	6.4	1.1	0.2	0.1	0.0	0.1	1.5

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Receptor Number	Receptor Name	AQMA	Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	11.7	10.7	4.3	6.4	0.7	0.2	0.0	0.0	0.1	1.0
26	48-50 Kingston Road	AQMA No. 6	13.0	10.9	4.3	6.5	1.4	0.3	0.1	0.0	0.2	2.1
27	89 Kingston Road	AQMA No. 6	12.4	10.9	4.3	6.5	1.0	0.2	0.1	0.0	0.2	1.5
28	156 Kingston Road	AQMA No. 6	12.5	10.9	4.4	6.5	1.1	0.3	0.1	0.0	0.2	1.6
29	192-194 Kingston Road	AQMA No. 6	12.6	10.9	4.4	6.5	1.1	0.3	0.1	0.0	0.2	1.7
30	Kingsbury Mansions	AQMA No. 6	12.8	10.9	4.4	6.5	1.2	0.3	0.1	0.0	0.2	1.9
31	61 Kingston Crescent	AQMA No. 6	12.2	10.9	4.4	6.5	0.9	0.2	0.1	0.0	0.1	1.2
32	16 London Road	AQMA No. 6	12.8	10.9	4.4	6.5	1.2	0.3	0.1	0.0	0.2	1.8
33	Ross Apartments	AQMA No. 6	12.5	11.1	4.6	6.5	0.9	0.2	0.1	0.0	0.2	1.4
34	156 London Road	AQMA No. 6	12.2	11.1	4.4	6.7	0.7	0.2	0.1	0.0	0.1	1.1
35	589 London Road	-	12.3	11.2	4.5	6.7	0.7	0.2	0.1	0.0	0.1	1.1
36	60-62 Northern Road	-	12.0	10.7	4.4	6.4	0.8	0.2	0.0	0.0	0.1	1.2
37	84 Northern Road	-	11.8	10.7	4.4	6.4	0.7	0.2	0.0	0.0	0.1	1.0
38	Victoria House A3	AQMA No. 7	11.2	10.2	4.2	6.1	0.7	0.1	0.0	0.0	0.1	1.0
39	115 Eastern Road	AQMA No. 9	11.6	10.7	4.3	6.4	0.7	0.2	0.0	0.0	0.0	1.0
40	Lacey Road	AQMA No. 9	12.0	10.7	4.3	6.4	0.9	0.3	0.1	0.0	0.0	1.3
41	53 Velder Avenue	-	12.0	10.7	4.3	6.4	1.0	0.3	0.1	0.0	0.0	1.4
42	7 Velder Avenue	AQMA No. 9	12.0	10.7	4.3	6.4	1.0	0.3	0.1	0.0	0.0	1.4
43	195-197 Milton Road	AQMA No. 9	12.1	10.7	4.3	6.4	1.0	0.3	0.1	0.0	0.1	1.4
44	233 Milton Road	AQMA No. 9	11.9	10.7	4.3	6.4	0.9	0.2	0.0	0.0	0.1	1.3
45	1 Goldsmith Avenue	-	11.6	10.3	4.4	6.0	0.9	0.2	0.0	0.0	0.1	1.3
46	Victoria House, Victoria Road North	-	11.1	10.4	4.3	6.1	0.5	0.1	0.0	0.0	0.0	0.7
47	Keyes Court	-	11.1	10.4	4.3	6.1	0.5	0.1	0.0	0.0	0.1	0.7
48	Brandon House	-	10.7	9.6	4.1	5.6	0.8	0.2	0.0	0.0	0.1	1.1

Receptor Number	Receptor Name	AQMA	Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)					Local Source Contributions (µg/m^3)				
			Total Modelled	Total Back-ground	Regional Back-ground	Local Back-ground	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	10.9	9.6	4.1	5.6	0.9	0.2	0.0	0.0	0.1	1.3
50	Craneswater School	-	10.5	9.6	4.1	5.6	0.6	0.1	0.0	0.0	0.1	0.9
51	109 Highland Road	-	11.3	10.5	4.4	6.2	0.6	0.1	0.0	0.0	0.1	0.8
52	St. Andrew's Court	AQMA No. 7	11.1	10.2	4.2	6.1	0.6	0.1	0.0	0.0	0.1	0.9
53	1-4 Charter House	AQMA No. 7	11.0	10.2	4.2	6.1	0.5	0.1	0.0	0.0	0.1	0.7
54	Mill Pond Apartments	-	12.1	11.5	4.1	7.4	0.3	0.1	0.0	0.0	0.2	0.6

Table 21 Source Apportionment of Annual Mean $PM_{2.5}$ Concentrations at Modelled Receptor Locations in 2020

Receptor Number	Receptor Name	AQMA	Total Modelled $PM_{2.5}$	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
1	133 Lower Derby Road	AQMA No. 11	11.8	39	55	94	4	1	0	0	0	6
2	57 Stanley Road	AQMA No. 11	11.9	39	55	94	5	1	0	0	0	6
3	St. John's Court	AQMA No. 11	11.9	39	55	94	4	1	0	0	0	6
4	Rudmore Court	AQMA No. 11	11.8	39	55	94	4	1	0	0	0	6
5	The Admiral PH	AQMA No. 11	12.0	37	55	91	6	1	0	0	0	9
6	Peninsular House	AQMA No. 11	11.9	37	55	92	5	1	0	1	0	8
7	162-189 Mile End Road	AQMA No. 11	11.8	37	55	93	5	1	0	0	0	7
8	The Air Balloon	AQMA No. 11	11.9	37	55	92	6	1	0	0	0	8
9	Ferry Lodge House	AQMA No. 11	12.2	36	54	89	8	2	1	0	0	11
10	72-126 Grafton Street	AQMA No. 11	11.8	37	55	92	5	1	0	0	0	8
11	373-375 Commercial Road	AQMA No. 11	12.7	35	51	86	10	2	1	0	1	14
12	239-241 Commercial Road	AQMA No. 11	12.4	35	55	90	7	1	0	0	1	10
13	Hallowell House	AQMA No. 11	12.2	35	56	91	6	1	0	0	1	9
14	St. Edmund House	-	12.8	32	58	90	7	1	0	0	1	10
15	Arts Lodge Park Cafe	-	12.6	33	59	92	6	1	0	0	1	8
16	Barham House	-	12.3	34	60	94	4	1	0	0	0	6
17	122-128 Lake Road	AQMA No. 11	11.9	36	57	93	5	1	0	0	1	7
18	314-316 Fratton Road	AQMA No. 6	12.7	34	52	86	10	2	0	0	2	14
19	Hale Court	AQMA No. 6	12.3	35	53	88	8	2	0	0	1	12
20	7 Fawcett Road	-	11.4	38	54	92	6	1	0	0	0	8
21	Priory School	-	11.4	38	54	92	6	1	0	0	0	8
22	Pounds Gate	AQMA No. 12	12.1	34	61	96	2	1	0	0	1	4
23	Priory View	-	11.2	39	55	94	5	1	0	0	0	6
24	Pink Court	AQMA No. 6	12.2	36	52	88	9	2	0	0	1	12

Receptor Number	Receptor Name	AQMA	Total Modelled $PM_{2.5}$	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
25	Jacob House	AQMA No. 6	11.7	37	54	91	6	1	0	0	1	9
26	48-50 Kingston Road	AQMA No. 6	13.0	34	51	84	11	3	1	0	2	16
27	89 Kingston Road	AQMA No. 6	12.4	35	53	88	8	2	0	0	1	12
28	156 Kingston Road	AQMA No. 6	12.5	35	52	87	8	2	0	0	1	13
29	192-194 Kingston Road	AQMA No. 6	12.6	35	52	86	9	2	0	0	2	14
30	Kingsbury Mansions	AQMA No. 6	12.8	34	51	85	10	2	1	0	2	15
31	61 Kingston Crescent	AQMA No. 6	12.2	36	54	90	7	2	0	0	1	10
32	16 London Road	AQMA No. 6	12.8	34	51	86	9	2	1	0	2	14
33	Ross Apartments	AQMA No. 6	12.5	37	52	89	7	2	0	0	2	11
34	156 London Road	AQMA No. 6	12.2	36	55	91	6	2	0	0	1	9
35	589 London Road	-	12.3	37	54	91	5	2	0	0	1	9
36	60-62 Northern Road	-	12.0	37	53	90	7	2	0	0	1	10
37	84 Northern Road	-	11.8	37	54	91	6	1	0	0	1	9
38	Victoria House A3	AQMA No. 7	11.2	37	54	91	6	1	0	0	1	9
39	115 Eastern Road	AQMA No. 9	11.6	37	55	92	6	2	0	0	0	8
40	Lacey Road	AQMA No. 9	12.0	36	53	89	8	2	0	0	0	11
41	53 Velder Avenue	-	12.0	36	53	88	8	2	1	0	0	12
42	7 Velder Avenue	AQMA No. 9	12.0	36	53	89	8	2	0	0	0	11
43	195-197 Milton Road	AQMA No. 9	12.1	35	53	88	8	2	0	0	0	12
44	233 Milton Road	AQMA No. 9	11.9	36	53	90	8	2	0	0	0	10
45	1 Goldsmith Avenue	-	11.6	38	52	89	7	2	0	0	1	11
46	Victoria House, Victoria Road North	-	11.1	39	55	94	5	1	0	0	0	6
47	Keyes Court	-	11.1	39	55	94	4	1	0	0	0	6
48	Brandon House	-	10.7	38	52	90	7	2	0	0	1	10

Receptor Number	Receptor Name	AQMA	Total Modelled $PM_{2.5}$	Background Contributions (%)			Local Source Contributions (%)					
				Regional	Local	Total Background Sources	Cars / Taxis	LGV	OGV1	OGV2	Buses	Total Local Sources
49	110-110A Albert Road	-	10.9	37	51	88	8	2	0	0	1	12
50	Craneswater School	-	10.5	39	53	92	6	1	0	0	1	8
51	109 Highland Road	-	11.3	38	54	93	5	1	0	0	1	7
52	St. Andrew's Court	AQMA No. 7	11.1	38	55	92	6	1	0	0	1	8
53	1-4 Charter House	AQMA No. 7	11.0	38	55	93	5	1	0	0	1	7
54	Mill Pond Apartments	-	12.1	34	61	95	3	1	0	0	1	5

5.2 Contour Plots and AQMA Aggregated Source Apportionment

Contour plots of annual mean NO_2 concentrations in 2015 and 2020 have been produced to illustrate the wider spatial patterns in pollutant concentrations in Portsmouth and to provide an indication of areas that are likely to exceed the annual mean NO_2 AQO. In addition to the contour plots, maps have been produced to display the source apportionment of local traffic sources in each of the five AQMAs.

5.2.1 NO_2 – 2015

Figure D.2 displays annual mean NO_2 concentrations across the study area in 2015. The highest annual mean NO_2 concentrations (up to 52 µg/m^3) are predicted along the London Road / Kingston Road corridor. Elevated levels are also predicted along the M275 / A3 route between the Rudmore and Church Street roundabouts.

Areas of exceedance of the annual mean NO_2 AQO along London Road / Kingston Road are predicted to be confined to within a few metres of either side of the road between the junction with Lake Road and the junction with Laburnum Grove. These areas are within the existing boundary of AQMA No. 6.

Areas of exceedance along the M275 / A3 are predicted to cover properties in the immediate vicinity of the Church Street roundabout, and between the junction with Princess Royal Road and the Rudmore roundabout. These areas are within the existing boundary of AQMA No. 11.

There are not predicted to be any areas of exceedance of the annual mean NO_2 AQO within AQMA No. 7, AQMA No. 9 or AQMA No. 12 in 2015.

Figure D.4 shows the aggregated apportionment of 2015 NO_2 concentrations in each of the AQMAs according to vehicle type. The values alongside each pie chart represent the contribution of each vehicle type to local source (i.e. road traffic) NO_2 concentrations in %. With the exception of AQMA No. 12, the largest local contributions to NO_2 concentrations are attributable to cars and taxis. These vehicles are predicted to contribute between 29.1% and 57.0% to NO_2 concentrations in the AQMAs. Within AQMA No. 12 buses are predicted to be the largest contributing local source accounting for 56.6% of the local NO_2 concentration. Buses are predicted to be the second largest contributing local source to NO_2 concentrations in AQMA No. 6 and AQMA No. 7. Cars and taxis are the most significant local contributor to NO_2 concentrations within AQMA No. 9 followed by LGVs.

5.2.2 NO_2 – 2020

Figure D.3 displays annual mean NO_2 concentrations across the study area in 2020. The highest annual mean NO_2 concentrations (up to 45 µg/m^3) are predicted along the London Road / Kingston Road corridor. Elevated levels are also predicted along the M275 / A3 near to the Church Street roundabout and Princess Royal Road.

The predicted areas of exceedance of the annual mean NO_2 AQO in 2020 display a similar pattern to those of 2015 but covering smaller extents. The key areas are along the London Road / Kingston Road and M275 / A3 corridors.

Areas of exceedance along London Road / Kingston Road are predicted to be confined to within a few metres of either side of the road between the junction with Clydebank Road and Heathfield Path. There are also small predicted areas of exceedance around the Kingston Road / New Road junction and Kingston Road / Lake Road junction. These areas are within the existing boundary of AQMA No. 6.

Areas of exceedance along the M275 / A3 are predicted to cover properties in the immediate vicinity of the Church Street roundabout, and a short section of the M275 north of the junction with Princess Royal Road. These areas are within the existing boundary of AQMA No. 11.

There are not predicted to be any areas of exceedance of the annual mean NO_2 AQO within AQMA No. 7, AQMA No. 9 or AQMA No. 12 in 2020.

Figure D.5 shows the aggregated apportionment of 2015 NO_2 concentrations in each of the AQMAs according to vehicle type. The values alongside each pie chart represent the contribution of each vehicle type to local source (i.e. road traffic) NO_2 concentrations in %. With the exception of AQMA No. 12, the largest local contributions to NO_2 concentrations are attributable to cars and taxis. These vehicles are predicted to contribute between 36.3% and 61.4% to NO_2 concentrations in the AQMAs. Within AQMA No. 12 buses are predicted to be the largest contributing local source accounting for 48.4% of the local NO_2 concentration. Buses are predicted to be the second largest contributing local source to annual mean NO_2 concentrations in AQMA No. 6 and AQMA No. 7. Cars and taxis are the most significant local contributor to NO_2 concentrations within AQMA No. 9 followed by LGVs.

6. Conclusions

A Source Apportionment Study has been carried out to determine the relative contributions of local road traffic to ambient concentrations of NO_2, PM_{10} and $PM_{2.5}$ in the city of Portsmouth. Geographical areas of the city where ambient pollutant concentrations exceed or are likely to exceed the relevant UK Air Quality Objectives (AQO) have been identified and the emissions reductions required to achieve compliance have been calculated. Source apportionment calculations have been carried out to quantify the contributions of different road vehicle types to ambient pollutant concentrations in the areas of likely exceedance.

6.1 Nitrogen Dioxide

6.1.1 2015

Local authority monitoring data for 2015 has shown that annual mean NO_2 concentrations exceeded the annual mean NO_2 AQO of 40 µg/m^3 at 4 locations within the city. The monitored exceedances are within the boundaries of the existing AQMAs.

The results of the detailed dispersion modelling for 2015 are consistent with the monitoring data with areas predicted to exceed the annual mean NO_2 AQO being confined to the London Road / Kingston Road / Fratton Road route corridor and the M275 / A3 corridor.

Exceedances of the annual mean NO_2 AQO are predicted at 11 sensitive receptor locations in 2015. All of the predicted exceedances are at locations within the existing AQMA boundaries. The highest predicted annual mean NO_2 concentration in 2015 at modelled receptor locations is 48.9 µg/m^3 at 16 London Road (Receptor 32). This receptor is located within AQMA No. 6. Exceedances are predicted at 8 other receptor locations along the London Road / Kingston Road / Fratton Road corridor within AQMA No. 6. The annual mean NO_2 AQO is also predicted to be exceeded at 2 receptors within AQMA No. 11, located alongside Commercial Road (Receptor 11, 373-375 Commercial Road and Receptor 12, 239-241 Commercial Road). Annual mean NO_2 concentrations at receptor locations within AQMA No. 7, AQMA No. 9 and AQMA No. 12 are predicted to be below the annual mean NO_2 AQO in 2015.

Source apportionment calculations indicate that at those receptors predicted to exceed the AQO, local traffic sources are estimated to account for 46% to 58% of total NO_2 concentrations. Cars and taxis are, on average, the most significant contributor to annual mean NO_2 concentrations at those receptors where NO_2 concentrations are predicted to exceed the AQO, accounting for 20% to 29% of annual mean NO_2 concentrations. Buses are estimated to account for 6% to 19% of annual mean NO_2 whilst LGVs account for 6% to 10%. Heavy goods vehicles (OGV1 and OGV2) are estimated to contribute up to 7% of annual mean NO_2 concentrations at receptors predicted to exceed the AQO.

In order to achieve the annual mean NO_2 AQO at all modelled receptor locations within AQMA No. 6 in 2015, reductions in NO_2 concentrations of up to 8.9 µg/m^3 are required. This corresponds to reductions in road NO_X emissions of up to 35%. Reductions in road NO_X emissions of around 14% are likely to be needed to attain the AQO at all receptor locations in AQMA No. 11. Since the AQO is expected to be achieved within AQMA NO. 7, AQMA No. 9 and AQMA No. 12, no reductions in road NO_X emissions are required in these areas in order to attain the AQO in 2015.

6.1.2 2020

In the 2020 scenario, exceedances of the annual mean NO_2 AQO are predicted at 4 sensitive receptor locations. All of the predicted exceedances are at locations within AQMA No. 6 along the London Road / Kingston Road / Fratton Road corridor. The highest predicted annual mean NO_2 concentration in 2020 at modelled receptor locations is 43.2 µg/m^3 at 16 London Road (Receptor 32). Annual mean NO_2 concentrations at receptor locations within AQMA No. 7, AQMA No. 9, AQMA No. 11 and AQMA No. 12 are predicted to be below the annual mean NO_2 AQO in 2020.

Source apportionment calculations indicate that at those receptors predicted to exceed the AQO local traffic sources are estimated to account for 54% to 55% of total NO_2 concentrations. Cars and taxis are, on average, the most significant contributor to annual mean NO_2 concentrations at those receptors where NO_2 concentrations are predicted to exceed the AQO, accounting for 24% to 29% of

annual mean NO_2 concentrations. Buses are estimated to account for 12% to 18% of annual mean NO_2 whilst LGVs account for 9% to 11%. Heavy goods vehicles (OGV1 and OGV2) are estimated to contribute up to 4% of annual mean NO_2 concentrations at receptors predicted to exceed the AQO.

In order to achieve the annual mean NO_2 AQO at all modelled receptor locations within AQMA No. 6 in 2020, reductions in NO_2 concentrations of up to 3.2 µg/m^3 are required. This corresponds to reductions in road NO_X emissions of up to 15%. Since the AQO is expected to be achieved within AQMA NO. 7, AQMA No. 9, AQMA No. 11 and AQMA No. 12, no further reductions in road NO_X emissions are required in these areas in order to attain the AQO in 2020.

6.1.3 Compliance with the Annual Mean NO_2 AQO

The results of the detailed dispersion modelling of annual mean NO_2 concentrations in Portsmouth indicates that exceedances of the annual mean NO_2 AQO are likely to remain in a few small areas in 2020 if no additional action is taken to improve local air quality.

Making the simplifying assumption that reductions in road NO_X between 2015 and 2020 continue beyond 2020 at the same rate it would be expected that all areas of Portsmouth will achieve compliance with the AQO by 2022.

6.2 Particulate Matter (PM_{10} and $PM_{2.5}$)

6.2.1 2015

Local authority monitoring of PM_{10} and $PM_{2.5}$ has shown that the annual mean UK AQO (PM_{10}) and EU Limit Value ($PM_{2.5}$) have been achieved in Portsmouth in recent years and exceedances are unlikely to occur anywhere within the city.

The results of the detailed dispersion modelling for 2015 are consistent with the monitoring data. Annual mean PM_{10} concentrations in 2015 are predicted to be 22 µg/m^3 and less at all modelled locations within the study area. The highest annual mean PM_{10} concentration at specific receptor locations in 2015 is 20.4 µg/m^3 at St. Edmund House (Receptor 14), which is located alongside Alfred Road to the north of the junction between Alfred Road, Queen Street and Anglesea Road.

Source apportionment calculations indicate that background sources are the largest contributors to annual mean PM_{10} concentrations at modelled receptor locations. Local traffic sources account for 6% to 20% of annual mean PM_{10} concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (3% to 13%). LGVs (1% to 4%) and buses (up to 3%) are the next largest contributing local traffic sources.

Annual mean $PM_{2.5}$ concentrations in 2015 are predicted to be 15 µg/m^3 and less at all modelled locations within the study area. The highest annual mean $PM_{2.5}$ concentration at specific receptor locations in 2015 is 14.1 µg/m^3 at 48-50 Kingston Road (Receptor 26).

Source apportionment calculations indicate that background sources are the largest contributors to annual mean $PM_{2.5}$ concentrations at modelled receptor locations. Local traffic sources account for 5% to 18% of annual mean $PM_{2.5}$ concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (3% to 12%). LGVs (1% to 3%) and buses (up to 3%) are the next largest contributing local traffic sources to annual mean $PM_{2.5}$ concentrations.

6.2.2 2020

Annual mean PM_{10} concentrations in 2020 are predicted to be 21 µg/m^3 and less at all modelled locations within the study area. The highest annual mean PM_{10} concentration at specific receptor locations in 2020 is 19.4 µg/m^3 at St. Edmund House (Receptor 14), which is located alongside Alfred Road to the north of the junction between Alfred Road, Queen Street and Anglesea Road.

Source apportionment calculations indicate that background sources are the largest contributors to annual mean PM_{10} concentrations at modelled receptor locations. Local traffic sources account for 5% to 19% of annual mean PM_{10} concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (3% to 13%). LGVs (1% to 4%) and buses (up to 2%) are the next largest contributing local traffic sources.

Annual mean $PM_{2.5}$ concentrations in 2020 are predicted to be 14 µg/m^3 and less at all modelled locations within the study area. The highest annual mean $PM_{2.5}$ concentration at modelled receptor locations in 2020 is 13.0 µg/m^3 at 48-50 Kingston Road (Receptor 26).

Source apportionment calculations indicate that background sources are the largest contributors to annual mean $PM_{2.5}$ concentrations at modelled receptor locations. Local traffic sources account for 4% to 16% of annual mean $PM_{2.5}$ concentrations at modelled receptor locations, with cars and taxis the most significant contributing vehicle type (2% to 11%). LGVs (1% to 3%) and buses (up to 2%) are the next largest contributing local traffic sources to annual mean $PM_{2.5}$ concentrations.

Appendix A UK Air Quality Objectives and EU Limit Values

Pollutant	Criterion	Date to be achieved by and maintained thereafter	
		UK Air Quality Objective	EU Limit Value
NO_2	1-hour mean concentration not to exceed 200 µg/m^3 more than 18 times per year	31.12.2005	01.01.2010
	Annual mean concentration not to exceed 40 µg/m^3	31.12.2005	01.01.2010
Particulate Matter (PM_{10})	24-hour mean concentration not to exceed 50 µg/m^3 more than 35 times per year	31.12.2004	01.01.2005
	Annual mean concentration not to exceed 40 µg/m^3	31.12.2004	01.01.2005
Particulate Matter ($PM_{2.5}$)	Annual mean concentration not to exceed 25 µg/m^3	-	01.01.2015

Appendix B Air Quality Monitoring in Portsmouth

B.1 Continuous Monitoring Stations Operated by PCC

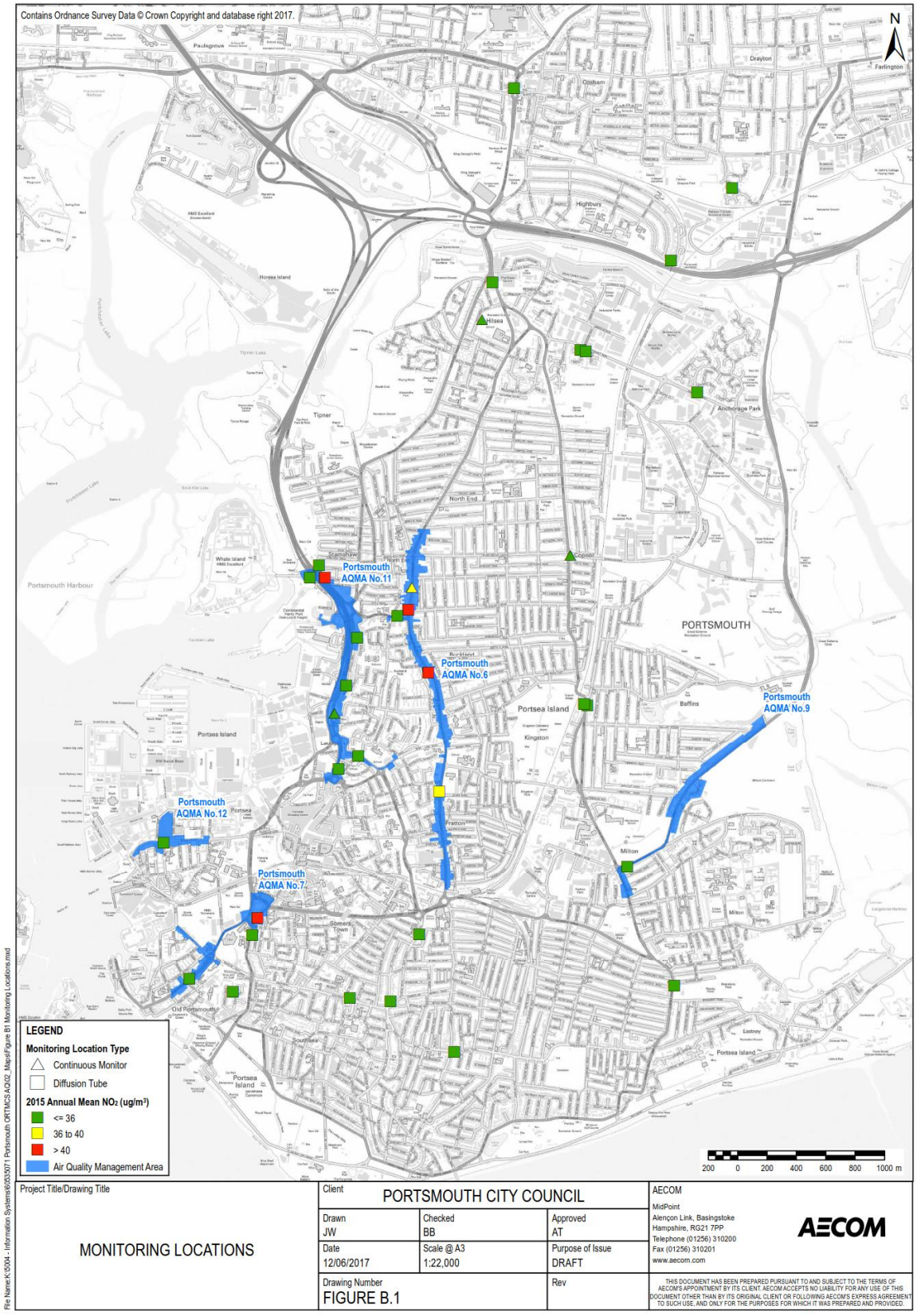
Site ID	Site Name	AQMA	Site Type	X (OS-GB)	Y (OS-GB)
C2	London Road	AQMA No. 6	Kerbside	464925	102129
C4	Gatcombe Park Primary School	-	Urban Background	465403	103952
C6	Burrfields Road	-	Roadside	466004	102348
C7	Mile End Road	AQMA No. 11	Roadside	464397	101270

B.2 NO_2 Diffusion Tube Monitoring Sites Operated by PCC

Site ID	Site Name	AQMA	Site Type	X (OS-GB)	Y (OS-GB)
DT1	Lord Montgomery Way (FST)	AQMA No. 7	Roadside	463872	99874
DT2	12 Chadderton Gardens (CG-12)	-	Urban background	463705	99371
DT3	High Street (HS-121A)	AQMA No. 7	Roadside	463408	99460
DT4	Queen Street (QS-Col 30)	AQMA No. 12	Roadside	463232	100390
DT5	119 Whale Island Way (WIW-119)	AQMA No. 11	Roadside	464230	102194
DT6	88 Stanley Road (SR-88)	AQMA No. 11	Roadside	464331	102197
DT7	138 Lower Derby Road (LDR-138)	-	Urban background	464291	102279
DT8	492 Hawthorn Crescent (HC-492)	-	Urban background	466690	104355
DT9	6 Northern Road (NR-6)	-	Roadside	465621	105528
DT10	20 Stroudley Avenue (SA-20)	-	Urban background	467107	104850
DT11	Anchorage Road (AR-Col6)	-	Roadside	466869	103457
DT12	2 Hobby Close (HC-2)	-	Roadside	466074	103747
DT14	4 Merlyn Drive (MD-4)	-	Roadside	466109	103736
DT15	29 Milton Road (MR-29)	-	Roadside	466120	101324
DT16	Parade Court, London Rd (LR-PC)	-	Roadside	465474	104205
DT18	4 Milton Road (MR-4)	-	Roadside	466097	101332
DT19	7 Velder Avenue (VA-7)	AQMA No. 9	Roadside	466392	100226
DT20	136 Eastney Rd (ER-136)	-	Roadside	466712	99415
DT21	118 Albert Road (AR-116)	-	Roadside	465213	98964
DT22	2 Victoria Road North (VRN-2)	-	Roadside	464778	99306
DT23	106 Victoria Road North (VRN-106)	-	Roadside	464974	99766
DT24	221 Fratton Road (FR-221)	AQMA No. 6	Roadside	465111	100737
DT25	117 Kingston Rd (KR-117)	AQMA No. 6	Roadside	465036	101547
DT26	The Tap London Road (Tap)	AQMA No. 6	Kerbside	464900	101976
DT28	65 Kingston Crescent (KR-65)	AQMA No. 6	Roadside	464825	101933
DT29	Estella Road (ER-74)	AQMA No. 11	Roadside	464551	101787
DT30	Market Tavern (Mile End Rd) (MT)	AQMA No. 11	Roadside	464478	101457
DT32	Larch Court, Church Rd (CR-Corner)	-	Roadside	464559	100980
DT34	Sovereign Gate, Commercial Rd (UF)	AQMA No. 11	Roadside	464425	100893

DT35	Hampshire Terrace (AM)	-	Roadside	463837	99759
DT36	Elm Grove (EG-103)	-	Roadside	464501	99329

B.3 Map of PCC Monitoring Locations and AQMAs



Appendix C Traffic Data

C.1 2015 Annual Average Daily Traffic By Vehicle Type

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J1-NSLIPNB	9,178	1,427	202	364	89	11,261
J1-NSLIPSB	7,953	1,414	185	384	57	9,993
J1-ETAvNB	7,745	1,230	108	6	96	9,186
J1-ESRdSB	7,955	1,165	86	3	86	9,296
J1-EEB	6,751	1,296	100	24	37	8,207
J1-EWB	6,492	1,123	90	25	3	7,733
J1-EKC	12,813	2,383	186	51	64	15,497
J1-EB&T	151	24	1	0	23	199
J1-SSLIPSB	7,031	912	76	10	169	8,198
J1-Flyover	47,240	5,985	767	428	198	54,619
J1-Flyover-SB	23,620	2,993	383	214	99	27,309
J1-Flyover-NB	23,620	2,993	383	214	99	27,309
J1-SSLIPNB	7,454	1,042	109	57	220	8,882
J1-WCFP	6,034	662	283	732	128	7,840
J1-RBT-1	16,513	2,476	309	410	258	19,966
J1-RBT-2	15,981	2,616	327	424	209	19,557
J1-RBT-3	16,638	2,583	295	415	189	20,120
J1-RBT-4	16,326	2,436	277	393	144	19,576
J1-RBT-5	16,966	2,543	304	431	269	20,512
J2-NNB	32,187	4,170	488	330	329	37,504
J2-SNB	29,505	4,002	443	171	306	34,427
J2-SSB	27,110	3,686	395	95	289	31,576
J2-W	7,453	1,154	135	244	42	9,029
J2-NWB	29,533	4,093	460	151	297	34,534
J3-NSB	28,653	3,900	407	102	295	33,357
J3-S	27,030	3,274	390	105	366	31,164
J3-E	11,055	1,691	78	8	2	12,834
J3-W	15,297	2,077	276	90	181	17,923
J3-NNB	23,658	3,233	356	136	248	27,631
J3-RBT-1	38,035	5,142	535	130	373	44,215
J3-RBT-2	30,705	4,013	470	124	371	35,683
J3-RBT-3	17,033	2,200	224	60	190	19,706
J3-RBT-4	32,330	4,275	495	144	362	37,607
J4-N	28,261	3,222	384	114	369	32,350
J4-S	116	12	1	0	335	464
J4-EEB	5,216	647	49	21	510	6,444
J4-EWB	5,322	684	65	32	229	6,332
J4-WEB	3,883	406	31	5	304	4,628
J4-WWB	19,807	2,313	307	63	500	22,991
J4-EEB2	10,538	1,332	114	53	739	12,776
J4-RBT-1	15,193	1,729	199	58	550	17,729

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J4-RBT-2	16,507	1,943	231	74	320	19,075
J4-RBT-3	16,623	1,955	232	74	655	19,540
J4-RBT-4	6,156	693	56	20	560	7,485
J5-NNB	11,435	1,520	170	79	56	13,259
J5-NSB	9,450	1,338	123	52	39	11,002
J5-KRRD	12,974	1,918	215	88	269	15,464
J5-EEB	3,665	537	97	18	202	4,519
J5-EWB	4,848	747	102	13	268	5,979
J5-ESN	14,158	2,128	220	83	335	16,924
J5-ST P RD	1,615	241	9	1	0	1,865
J5-SNW	15,761	2,366	229	84	335	18,776
J5-S	11,713	1,657	165	30	119	13,683
J5-WS	14,573	2,261	250	84	298	17,466
J5-W	9,542	1,114	141	101	509	11,408
J5-WN	16,438	2,357	295	116	314	19,520
J6-SNB	14,685	1,794	235	100	51	16,865
J6-SSB	12,036	1,255	159	65	46	13,562
J6-E	305	7	3	0	1,053	1,367
J6-W	8,749	1,220	104	5	1,212	11,291
J6-NNB	18,614	2,357	280	102	132	21,485
J6-NSB	15,891	1,742	206	67	122	18,027
J7-N	21,976	2,563	167	21	6	24,733
J7-S	17,224	2,302	142	24	156	19,848
J7-EEB	9,848	1,418	84	9	142	11,502
J7-WEB	6,214	859	80	12	211	7,375
J7-WWB	7,186	945	85	17	220	8,453
J7-NSLIP	1,336	159	23	2	0	1,521
J7-RBT-1	17,603	2,261	152	21	241	20,278
J7-RBT-2	15,693	1,955	161	30	295	18,134
J7-RBT-3	16,676	2,132	162	29	242	19,243
J7-RBT-4	15,867	2,108	164	24	244	18,407
J8-N	15,903	2,619	157	28	132	18,839
J8-E	19,380	2,968	163	39	352	22,902
J8-WEB	10,294	1,573	89	10	147	12,113
J8-WWB	11,975	1,736	101	16	156	13,984
J8-S	12,318	1,842	77	37	60	14,334
J8-RBT-1	16,822	2,630	144	28	191	19,815
J8-RBT-2	17,536	2,714	148	32	226	20,657
J8-RBT-3	16,983	2,609	142	35	213	19,982
J8-RBT-4	16,916	2,631	142	28	212	19,929
J9-N	16,288	2,649	199	42	286	19,464
J9-S	13,985	2,494	170	34	130	16,813
J9-E	297	48	3	0	0	348
J9W	6,748	709	81	22	277	7,837
J10-N	15,471	2,659	157	32	124	18,442

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J10-S	16,209	2,643	202	32	281	19,367
J10-E	13,018	1,691	110	2	158	14,980
J11-N	18,634	3,042	192	43	618	22,528
J11-S	15,937	2,751	161	34	126	19,009
J11-W	12,149	1,560	79	19	492	14,298
J12-N	18,184	3,255	233	36	692	22,400
J12-S	19,667	3,476	244	36	759	24,181
J12-E	8,127	1,308	70	3	67	9,575
J13-N	14,991	2,951	222	22	823	19,010
J13-S	17,460	3,284	214	48	692	21,699
J13-E	3,083	499	32	2	58	3,675
J13-W	8,933	1,693	161	42	62	10,891
J13-EW	14,127	2,679	191	20	620	17,637
J14-N	23,385	5,136	604	266	658	30,049
J14-EEB	12,970	2,941	395	174	332	16,811
J14-EEBE	16,724	3,904	548	245	138	21,560
J14-ENOR RD	12,295	3,318	515	239	139	16,507
J14-COP RD	14,290	2,806	198	32	267	17,593
J14-SB	13,463	2,739	264	103	315	16,884
J14-S	11,138	2,310	257	80	496	14,280
J14-NS	12,623	2,756	276	99	327	16,082
J15-N	10,778	2,083	132	17	245	13,256
J15-S	14,353	2,945	187	15	246	17,747
J15-ESLIP	3,367	711	5	0	0	4,083
J15-W	3,519	619	40	1	12	4,191
J15-MAIN	6,376	1,748	165	12	5	8,306
J16-NNB	7,011	1,273	75	0	137	8,494
J16-S	11,749	2,050	97	4	188	14,087
J16-E	2,159	356	14	1	7	2,536
J16-W	12,092	1,839	109	4	143	14,187
J16-NSB	7,066	1,273	66	7	139	8,550
J16-N	14,076	2,545	141	7	275	17,045
J16-RBT-1	10,525	1,796	92	9	170	12,592
J16-RBT-2	10,102	1,725	89	8	168	12,092
J16-RBT-3	9,905	1,697	86	5	155	11,849
J16-RBT-4	9,808	1,617	86	2	135	11,649
J17-N	13,604	2,398	98	6	238	16,344
J17-S	19,644	3,433	215	62	217	23,571
J17-E	18,636	3,746	295	109	53	22,839
J17-W	11,807	2,682	178	54	22	14,744
J17-WS	375	114	5	1	0	495
J18-N	15,198	2,485	171	64	371	18,288
J18-S	13,403	2,263	164	68	378	16,275
J18-W	6,093	936	58	8	297	7,393
J19-NNB	15,836	3,108	277	91	471	19,783

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J19-NSB	18,750	3,714	426	179	506	23,575
J19-SSB	12,135	2,673	366	174	338	15,686
J19-SNB	10,720	2,382	222	88	307	13,719
J19-W	10,923	1,671	112	9	223	12,938
J20-N	18,668	2,835	267	92	393	22,255
J20-S	24,161	3,517	293	41	901	28,913
J20-E	14,300	2,171	174	82	160	16,887
J20-W	22,880	3,501	262	146	396	27,186
J20-RBT-1	20,129	3,035	253	93	417	23,927
J20-RBT-2	19,146	2,891	241	87	377	22,742
J20-RBT-3	20,083	2,997	250	80	541	23,952
J20-RBT-4	20,603	3,098	251	98	479	24,528
J21-N	23,284	3,396	282	35	873	27,870
J21-S	15,680	2,490	246	34	873	19,324
J21-E	10,108	1,022	98	9	87	11,324
J21-W	5,228	1,061	58	1	23	6,372
J21-RBT-1	15,068	2,200	184	21	481	17,955
J21-RBT-2	13,737	2,021	167	19	447	16,391
J21-RBT-3	13,063	1,967	172	20	469	15,691
J21-RBT-4	12,056	1,784	160	19	459	14,478
J22-N	722	142	3	0	0	867
J22-S	4,020	407	41	3	289	4,759
J22-E	9,113	1,117	79	16	102	10,427
J22-W	8,969	1,102	86	13	273	10,443
J23-N	14,181	2,161	145	16	190	16,692
J23-S	14,279	1,976	148	16	187	16,606
J23-E	4,096	495	18	0	87	4,696
J23-W	8,884	1,126	75	13	102	10,201
J24-N	5,327	983	47	0	1	6,359
J24-S	4,415	762	33	0	72	5,283
J24-E	8,713	1,441	77	3	248	10,481
J24-W	8,173	1,362	79	3	174	9,791
J19-21	34,587	6,821	704	270	977	43,358
J4-11	10,538	1,332	114	53	739	12,776
J4-6	38,421	4,670	587	165	632	44,475
J1-13	12,813	2,383	186	51	64	15,497
J16-17	11,749	2,050	97	4	188	14,087
J8 to 18	19,380	2,968	163	39	352	22,902
J5-7	8,513	1,284	199	32	471	10,498
J5-22	11,713	1,657	165	30	119	13,683
J7-3	21,976	2,563	167	21	6	24,733
J8 to 24	5,327	983	47	0	1	6,359

C.2 2020 Annual Average Daily Traffic By Vehicle Type

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J1-NSLIPNB	9,372	1,457	206	372	91	11,499
J1-NSLIPSB	8,121	1,444	189	392	58	10,204
J1-ETAvNB	7,909	1,256	110	6	98	9,380
J1-ESRdSB	8,123	1,190	88	3	87	9,492
J1-EEB	6,893	1,324	102	25	37	8,381
J1-EWB	6,629	1,147	92	26	3	7,897
J1-EKC	13,083	2,434	190	52	66	15,824
J1-EB&T	154	25	1	0	23	203
J1-SSLIPSB	7,179	931	78	10	172	8,371
J1-Flyover	48,238	6,112	783	437	202	55,772
J1-Flyover-SB	24,119	3,056	391	219	101	27,886
J1-Flyover-NB	24,119	3,056	391	219	101	27,886
J1-SSLIPNB	7,611	1,064	111	58	225	9,069
J1-WCFP	6,161	676	289	748	131	8,005
J1-RBT-1	16,861	2,529	315	419	263	20,387
J1-RBT-2	16,318	2,671	334	433	214	19,970
J1-RBT-3	16,989	2,638	301	423	193	20,545
J1-RBT-4	16,671	2,487	282	401	147	19,989
J1-RBT-5	17,324	2,596	311	440	274	20,945
J2-NNB	32,867	4,258	498	337	335	38,296
J2-SNB	30,128	4,086	452	174	312	35,154
J2-SSB	27,683	3,764	404	97	295	32,243
J2-W	7,611	1,178	138	249	43	9,219
J2-NWB	30,156	4,180	469	154	303	35,263
J3-NSB	29,258	3,983	415	104	301	34,062
J3-S	27,600	3,343	398	107	374	31,822
J3-E	11,288	1,727	80	8	2	13,105
J3-W	15,620	2,121	282	92	185	18,301
J3-NNB	24,157	3,301	364	139	253	28,214
J3-RBT-1	38,838	5,251	547	133	381	45,149
J3-RBT-2	31,353	4,098	480	127	379	36,436
J3-RBT-3	17,392	2,247	229	62	194	20,122
J3-RBT-4	33,012	4,365	506	147	370	38,401
J4-N	28,858	3,290	393	116	376	33,033
J4-S	119	12	1	0	342	474
J4-EEB	5,327	661	50	22	520	6,580
J4-EWB	5,434	699	66	32	234	6,466
J4-WEB	3,964	414	31	5	310	4,725
J4-WWB	20,225	2,362	314	65	510	23,476
J4-EEB2	10,761	1,360	117	54	754	13,045
J4-RBT-1	15,514	1,765	203	60	562	18,104
J4-RBT-2	16,855	1,984	235	76	327	19,478
J4-RBT-3	16,974	1,997	237	76	669	19,952

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J4-RBT-4	6,286	707	57	20	572	7,643
J5-NNB	11,676	1,552	173	81	57	13,539
J5-NSB	9,649	1,366	126	53	40	11,234
J5-KRRD	13,248	1,959	220	90	274	15,791
J5-EEB	3,742	549	99	19	207	4,615
J5-EWB	4,951	763	104	14	274	6,105
J5-ESN	14,457	2,173	225	85	342	17,282
J5-ST P RD	1,649	246	9	1	0	1,905
J5-SNW	16,094	2,416	234	86	342	19,172
J5-S	11,961	1,692	168	30	121	13,972
J5-WS	14,881	2,309	255	86	304	17,835
J5-W	9,743	1,137	144	103	520	11,649
J5-WN	16,785	2,407	301	119	321	19,933
J6-SNB	14,995	1,832	240	103	52	17,221
J6-SSB	12,290	1,282	163	67	47	13,849
J6-E	311	7	3	0	1,075	1,396
J6-W	8,934	1,246	107	5	1,238	11,529
J6-NNB	19,007	2,407	286	104	135	21,938
J6-NSB	16,227	1,778	210	68	124	18,408
J7-N	22,440	2,617	170	21	7	25,255
J7-S	17,588	2,350	145	25	159	20,267
J7-EEB	10,056	1,448	86	10	145	11,745
J7-WEB	6,345	877	82	12	215	7,531
J7-WWB	7,338	964	87	18	224	8,631
J7-NSLIP	1,364	163	24	2	0	1,553
J7-RBT-1	17,975	2,308	156	21	246	20,706
J7-RBT-2	16,024	1,997	164	30	302	18,517
J7-RBT-3	17,028	2,177	166	30	248	19,649
J7-RBT-4	16,202	2,153	167	24	250	18,796
J8-N	16,239	2,674	161	29	134	19,237
J8-E	19,789	3,031	166	39	359	23,385
J8-WEB	10,511	1,607	91	10	150	12,369
J8-WWB	12,228	1,773	103	17	159	14,279
J8-S	12,578	1,881	79	37	62	14,637
J8-RBT-1	17,177	2,685	147	29	195	20,233
J8-RBT-2	17,906	2,772	151	33	231	21,093
J8-RBT-3	17,342	2,664	145	35	218	20,404
J8-RBT-4	17,273	2,687	145	28	216	20,350
J9-N	16,632	2,704	203	43	292	19,875
J9-S	14,281	2,547	173	34	133	17,168
J9-E	303	49	3	0	0	355
J9W	6,891	724	83	22	283	8,002
J10-N	15,797	2,715	160	33	126	18,832
J10-S	16,551	2,698	207	33	287	19,776
J10-E	13,293	1,727	113	2	161	15,296

Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J11-N	19,027	3,106	196	44	631	23,004
J11-S	16,273	2,809	165	35	129	19,410
J11-W	12,405	1,593	80	20	502	14,600
J12-N	18,568	3,324	238	37	707	22,873
J12-S	20,082	3,549	249	37	775	24,691
J12-E	8,298	1,336	72	3	68	9,777
J13-N	15,307	3,014	227	23	841	19,412
J13-S	17,829	3,353	219	49	707	22,157
J13-E	3,148	510	33	2	59	3,752
J13-W	9,122	1,729	164	43	64	11,121
J13-EW	14,425	2,736	195	20	633	18,009
J14-N	23,879	5,245	616	271	672	30,683
J14-EEB	13,243	3,003	403	177	339	17,166
J14-EEBE	17,077	3,987	560	251	141	22,015
J14-ENOR RD	12,555	3,388	526	244	142	16,856
J14-COP RD	14,592	2,865	202	32	273	17,964
J14-SB	13,747	2,797	269	106	321	17,240
J14-S	11,373	2,359	262	81	506	14,582
J14-NS	12,890	2,815	282	101	334	16,421
J15-N	11,005	2,127	135	18	251	13,536
J15-S	14,656	3,008	191	16	251	18,121
J15-ESLIP	3,438	726	5	0	0	4,169
J15-W	3,593	632	41	1	12	4,279
J15-MAIN	6,511	1,785	168	12	5	8,482
J16-NNB	7,159	1,299	76	0	140	8,674
J16-S	11,997	2,093	99	4	192	14,384
J16-E	2,205	363	14	1	7	2,590
J16-W	12,348	1,878	111	4	146	14,487
J16-NSB	7,215	1,300	68	7	142	8,731
J16-N	14,373	2,599	144	7	281	17,405
J16-RBT-1	10,747	1,834	94	9	174	12,858
J16-RBT-2	10,315	1,761	91	8	172	12,347
J16-RBT-3	10,114	1,733	88	5	158	12,099
J16-RBT-4	10,015	1,651	88	2	138	11,895
J17-N	13,891	2,448	100	6	243	16,689
J17-S	20,058	3,506	220	63	222	24,069
J17-E	19,029	3,825	301	111	54	23,321
J17-W	12,057	2,739	182	56	23	15,055
J17-WS	383	117	5	1	0	506
J18-N	15,518	2,537	174	65	379	18,674
J18-S	13,686	2,311	168	69	386	16,619
J18-W	6,222	956	60	8	304	7,549
J19-NNB	16,171	3,173	283	93	481	20,201
J19-NSB	19,146	3,792	435	183	517	24,073
J19-SSB	12,391	2,729	374	178	345	16,017

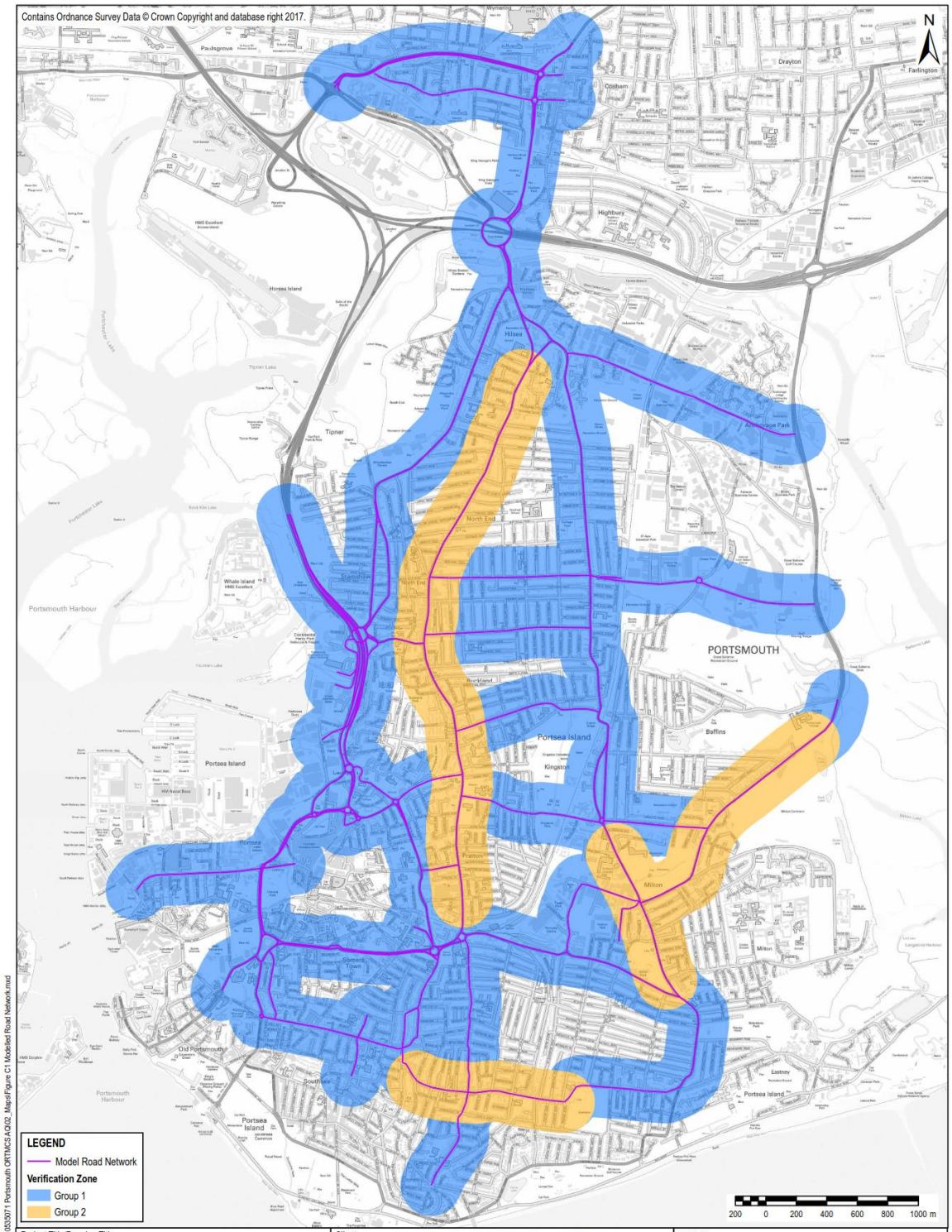
Link	Cars/Taxis	LGVs	OGV1	OGV2	Buses	AADT
J19-SNB	10,946	2,433	227	90	313	14,008
J19-W	11,154	1,707	114	9	228	13,211
J20-N	19,063	2,895	273	94	401	22,725
J20-S	24,671	3,592	299	42	920	29,523
J20-E	14,602	2,217	177	83	163	17,243
J20-W	23,363	3,575	267	149	404	27,760
J20-RBT-1	20,554	3,099	258	95	426	24,432
J20-RBT-2	19,551	2,952	246	89	385	23,222
J20-RBT-3	20,507	3,060	256	82	553	24,458
J20-RBT-4	21,038	3,163	256	100	489	25,046
J21-N	23,776	3,468	288	36	891	28,458
J21-S	16,012	2,543	252	34	891	19,732
J21-E	10,321	1,044	100	9	89	11,564
J21-W	5,338	1,084	59	1	24	6,506
J21-RBT-1	15,386	2,247	188	22	491	18,334
J21-RBT-2	14,027	2,064	171	19	456	16,737
J21-RBT-3	13,339	2,009	176	20	479	16,022
J21-RBT-4	12,310	1,822	163	20	469	14,784
J22-N	738	145	3	0	0	885
J22-S	4,105	415	42	3	295	4,860
J22-E	9,305	1,141	81	16	104	10,647
J22-W	9,158	1,125	88	14	279	10,664
J23-N	14,480	2,206	148	17	194	17,045
J23-S	14,581	2,018	151	17	191	16,957
J23-E	4,183	505	19	0	89	4,795
J23-W	9,072	1,150	76	14	104	10,416
J24-N	5,440	1,004	48	0	1	6,493
J24-S	4,508	779	34	0	74	5,394
J24-E	8,897	1,471	78	3	253	10,702
J24-W	8,346	1,391	80	3	178	9,998
J19-21	35,317	6,965	719	275	997	44,274
J4-11	10,761	1,360	117	54	754	13,045
J4-6	39,233	4,768	600	169	645	45,414
J1-13	13,083	2,434	190	52	66	15,824
J16-17	11,997	2,093	99	4	192	14,384
J8 to 18	19,789	3,031	166	39	359	23,385
J5-7	8,693	1,311	203	32	481	10,720
J5-22	11,961	1,692	168	30	121	13,972
J7-3	22,440	2,617	170	21	7	25,255
J8 to 24	5,440	1,004	48	0	1	6,493

C.3 Traffic Growth Factors

All traffic flow data used in the Source Apportionment Study were provided by PCC's Traffic and Network Team. The baseline (2015) traffic dataset was established based on automatic and manual traffic count data from count points across Portsmouth during 2013 and 2015.

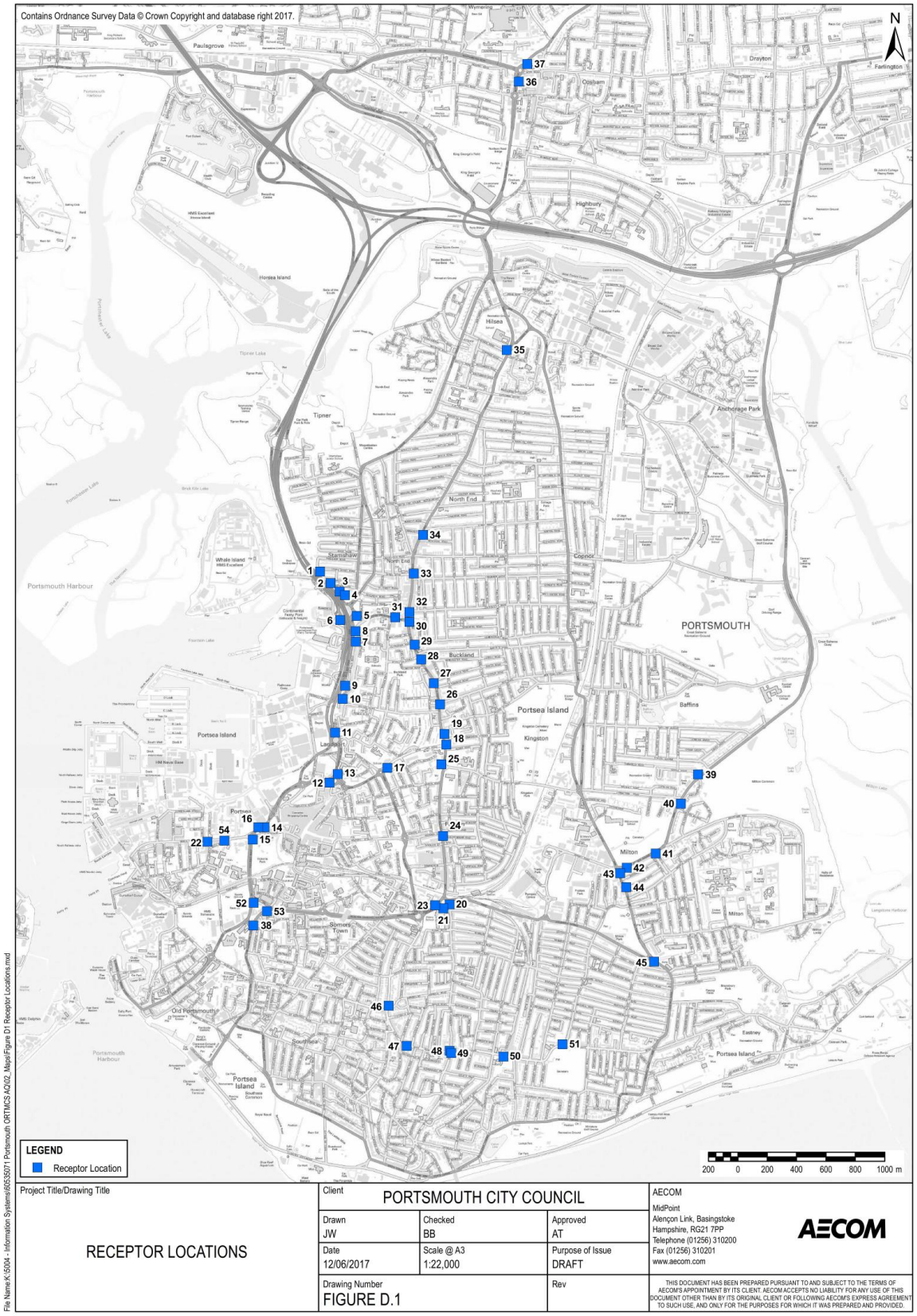
The 2015 traffic flows were scaled forwards to 2020 and 2025 using English and Welsh Regional Traffic Growth and Speed Forecasts (RTFs) and calibrated with local growth factors from TEMPRO 7.2.

C.4 Modelled Road Network and Verification Zones



Appendix D Dispersion Modelling

D.1 Map of Modelled Sensitive Receptors



D.2 Defra Mapped Background Pollutant Concentrations

Grid Square Centre (X,Y OS-GB)	Mapped Background NO_2 Concentration (µg/m^3)		Adjusted Background NO_2 Concentration (µg/m^3)	
	2015	2020	2015	2020
462500, 100500	25.7	24.3	25.7	24.9
463500, 99500	23.0	20.5	21.9	20.7
463500, 100500	23.9	21.2	23.0	21.5
463500, 102500	23.2	21.4	23.2	22.1
464500, 98500	19.4	17.0	19.1	17.6
464500, 99500	21.6	18.5	21.2	19.4
464500, 100500	23.3	19.8	21.7	20.1
464500, 101500	23.4	20.0	20.7	19.5
464500, 102500	24.2	20.4	20.4	19.4
464500, 103500	20.8	17.4	17.7	16.6
464500, 105500	20.5	16.7	18.0	16.5
465500, 98500	17.6	15.1	17.3	15.8
465500, 99500	20.3	17.1	19.6	17.9
465500, 100500	20.3	17.2	19.5	17.8
465500, 101500	21.0	17.9	20.6	18.8
465500, 102500	22.1	18.6	21.2	19.4
465500, 103500	22.4	18.4	20.1	18.5
465500, 104500	24.7	19.7	18.4	17.6
465500, 105500	20.8	16.9	19.2	17.3
465500, 106500	16.3	13.4	16.3	14.3
466500, 98500	15.2	13.0	14.7	13.4
466500, 99500	18.9	15.7	17.6	16.1
466500, 100500	19.4	16.2	17.8	16.3
466500, 101500	18.8	16.0	18.4	16.8
466500, 102500	20.5	17.9	20.5	18.9
466500, 103500	24.4	21.2	24.4	22.2
466500, 105500	19.2	15.8	19.2	17.0
467500, 100500	14.9	12.7	14.8	13.3
467500, 101500	16.0	13.5	14.7	13.5
467500, 102500	16.9	14.6	15.8	14.7
467500, 103500	19.5	16.8	18.6	17.2

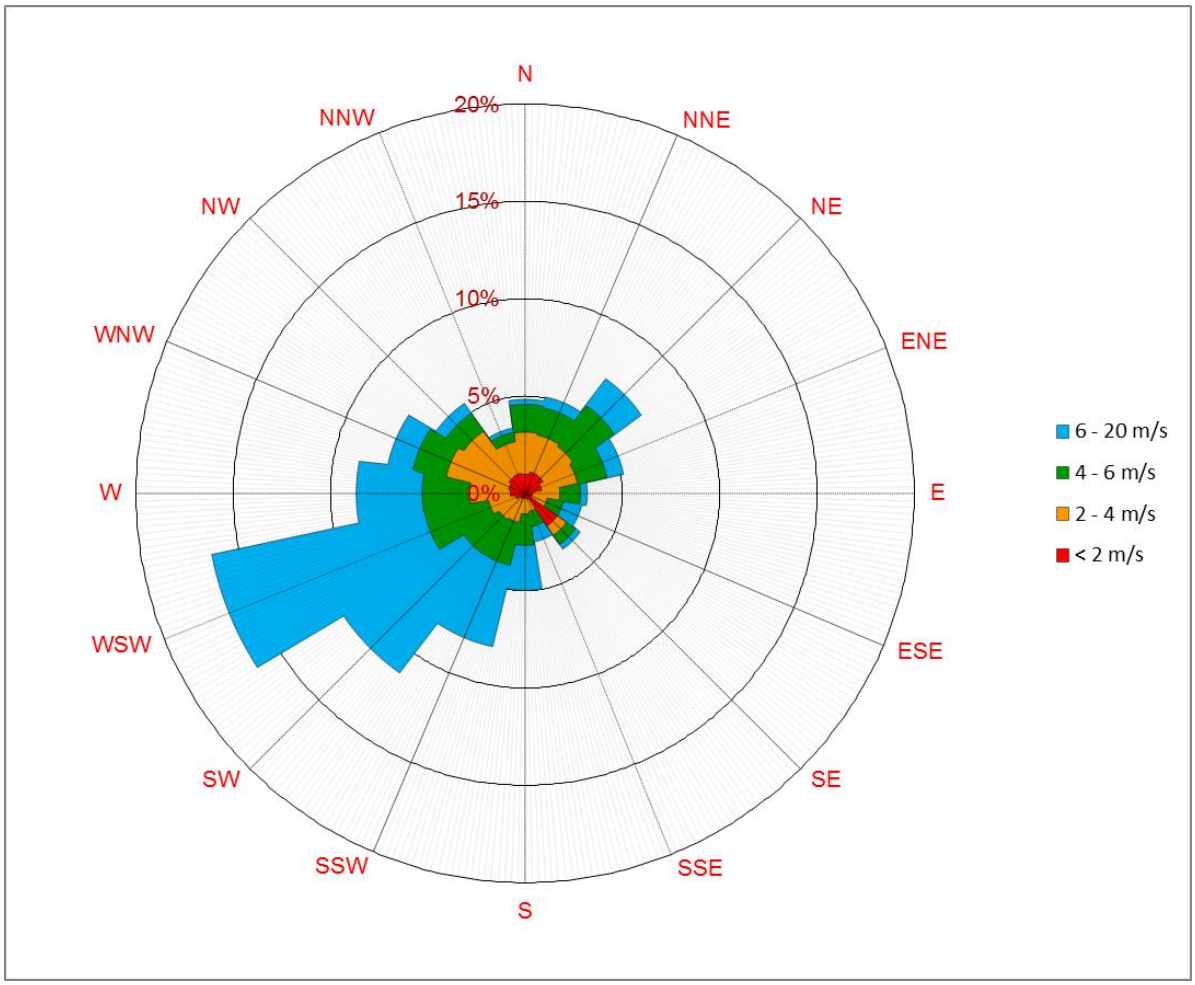
Note: Adjusted background NO_2 concentrations for 2015 and 2020 have been adjusted in accordance with Air Quality Consultants' CURED methodology.

Grid Square Centre (X,Y OS-GB)	Mapped Background PM_{10} Concentration ($\mu g/m^3$)		Adjusted Background PM_{10} Concentration ($\mu g/m^3$)	
	2015	2020	2015	2020
462500, 100500	15.1	14.4	15.1	14.4
463500, 99500	15.4	14.7	15.4	14.7
463500, 100500	17.9	17.2	17.9	17.2
463500, 102500	14.7	14.1	14.7	14.1
464500, 98500	14.5	13.9	14.5	13.9
464500, 99500	15.7	15.0	15.7	15.0
464500, 100500	16.8	16.0	16.7	16.0
464500, 101500	16.5	15.8	16.4	15.8
464500, 102500	16.9	16.1	16.7	16.1
464500, 103500	15.9	15.2	15.8	15.2
464500, 105500	16.5	15.8	16.4	15.8
465500, 98500	14.4	13.8	14.4	13.7
465500, 99500	15.8	15.1	15.8	15.1
465500, 100500	16.0	15.3	16.0	15.3
465500, 101500	16.2	15.6	16.2	15.6
465500, 102500	16.6	15.9	16.6	15.9
465500, 103500	17.0	16.3	16.9	16.3
465500, 104500	18.4	17.6	18.1	17.5
465500, 105500	16.2	15.4	16.1	15.4
465500, 106500	15.6	14.9	15.6	14.9
466500, 98500	13.9	13.3	13.9	13.3
466500, 99500	15.5	14.9	15.5	14.9
466500, 100500	16.0	15.4	16.0	15.3
466500, 101500	15.5	14.9	15.5	14.9
466500, 102500	15.8	15.5	15.8	15.5
466500, 103500	19.5	18.6	19.5	18.6
466500, 105500	15.8	15.1	15.8	15.1
467500, 100500	14.3	13.7	14.3	13.7
467500, 101500	14.6	14.0	14.5	14.0
467500, 102500	14.9	14.3	14.8	14.3
467500, 103500	16.3	15.7	16.3	15.6

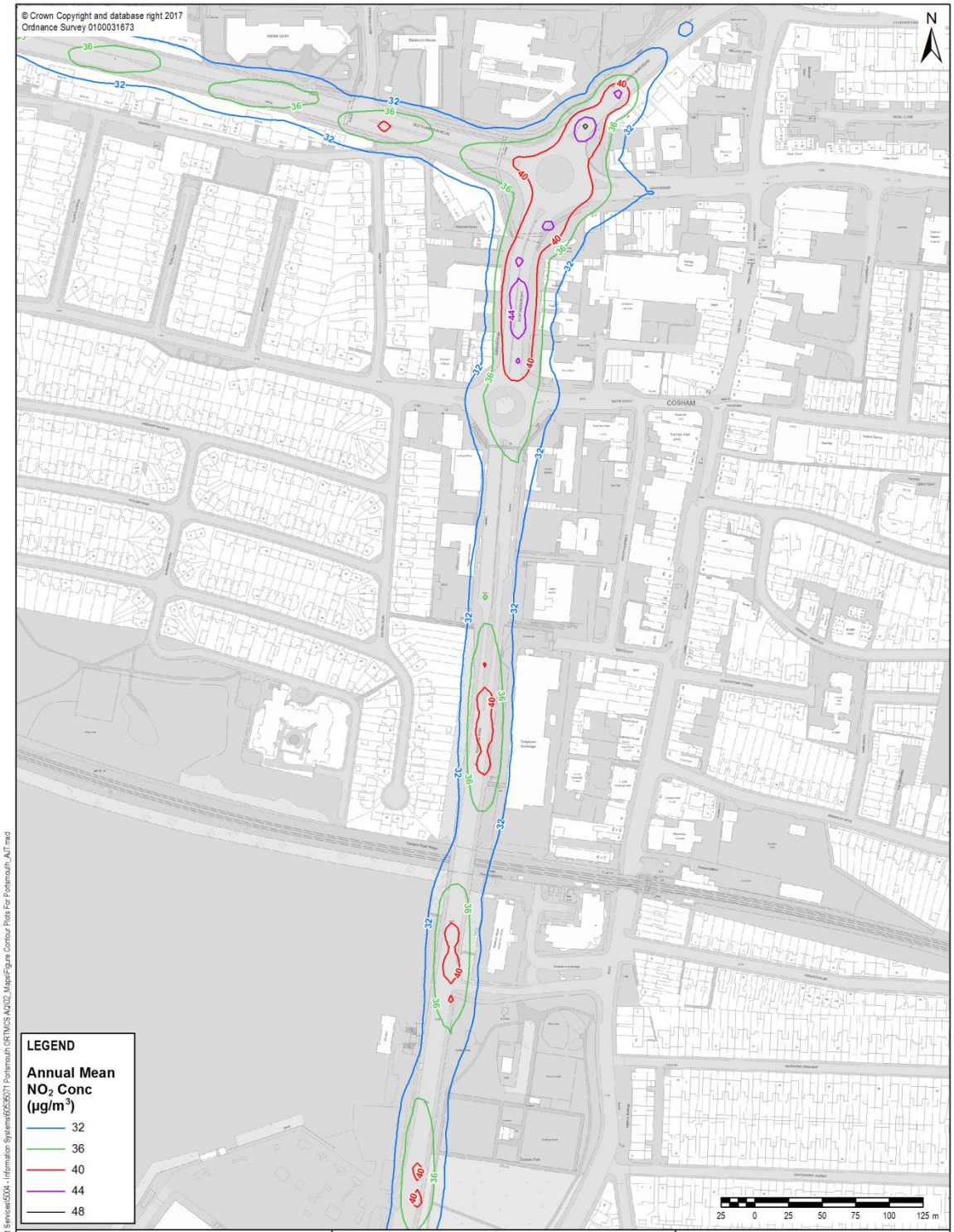
Grid Square Centre (X,Y OS-GB)	Mapped Background $PM_{2.5}$ Concentration (µg/m^3)		Adjusted Background $PM_{2.5}$ Concentration (µg/m^3)	
	2015	2020	2015	2020
462500, 100500	11.0	10.3	11.0	10.3
463500, 99500	10.9	10.2	10.9	10.2
463500, 100500	12.3	11.6	12.2	11.5
463500, 102500	10.7	10.0	10.7	10.0
464500, 98500	10.4	9.7	10.3	9.7
464500, 99500	11.1	10.5	11.1	10.4
464500, 100500	11.9	11.1	11.8	11.1
464500, 101500	11.7	11.0	11.6	10.9
464500, 102500	11.9	11.2	11.7	11.1
464500, 103500	11.2	10.6	11.1	10.5
464500, 105500	11.5	10.9	11.4	10.8
465500, 98500	10.2	9.7	10.2	9.6
465500, 99500	11.2	10.5	11.2	10.5
465500, 100500	11.4	10.7	11.3	10.7
465500, 101500	11.5	10.9	11.5	10.9
465500, 102500	11.8	11.1	11.7	11.1
465500, 103500	11.9	11.2	11.8	11.2
465500, 104500	12.6	11.9	12.4	11.8
465500, 105500	11.5	10.8	11.4	10.7
465500, 106500	11.0	10.4	11.0	10.4
466500, 98500	9.9	9.3	9.8	9.3
466500, 99500	11.0	10.3	10.9	10.3
466500, 100500	11.3	10.7	11.3	10.7
466500, 101500	11.1	10.5	11.1	10.5
466500, 102500	11.2	11.0	11.2	11.0
466500, 103500	13.1	12.4	13.1	12.4
466500, 105500	11.3	10.6	11.3	10.6
467500, 100500	10.2	9.7	10.2	9.7
467500, 101500	10.4	9.9	10.3	9.8
467500, 102500	10.6	10.0	10.5	10.0
467500, 103500	11.4	10.8	11.3	10.8

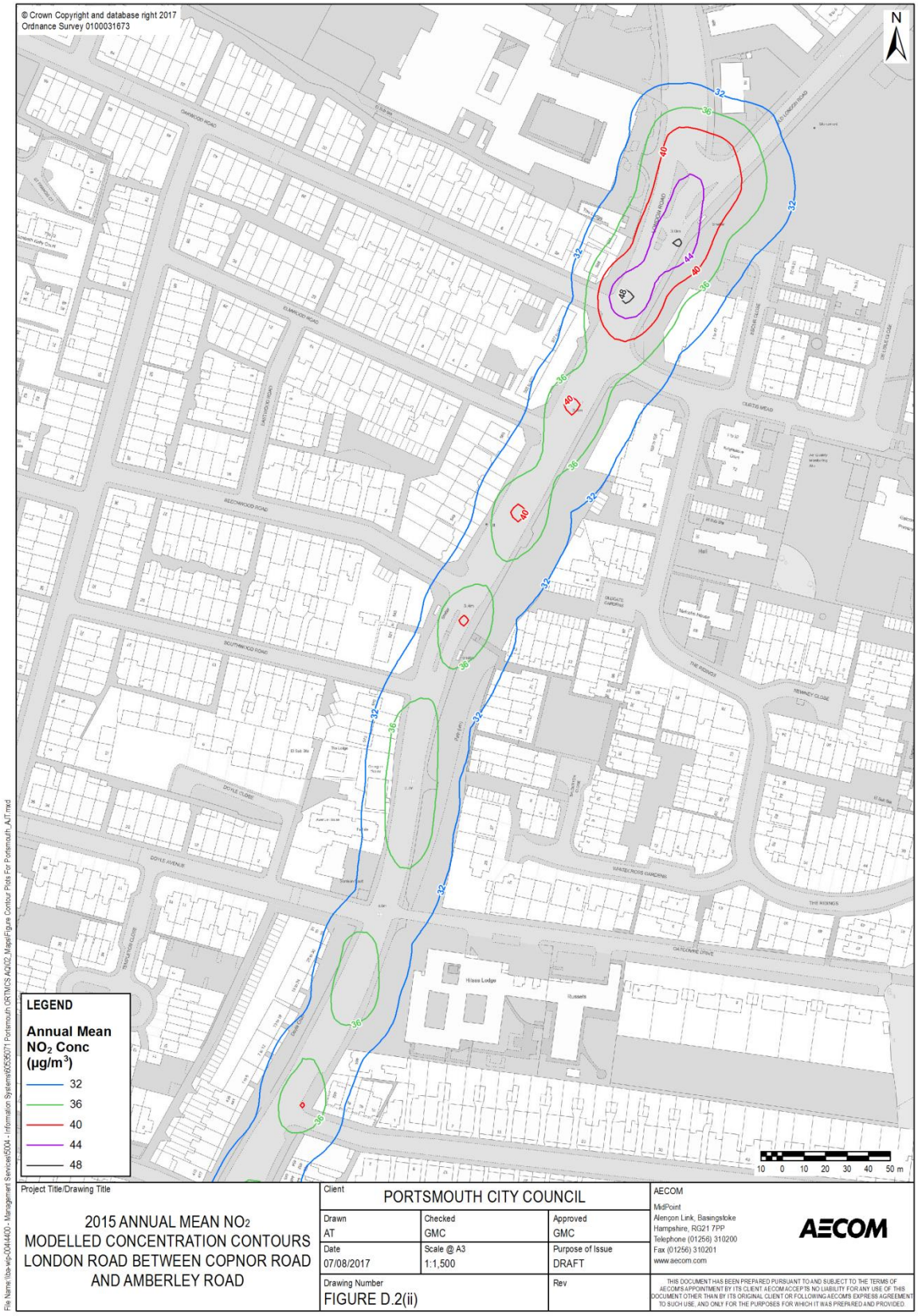
D.3 Meteorological Data

Meteorological data measured at Thorney Island from 2015 were used for this modelling study. The data consisted of the frequencies of occurrence of wind speed, wind direction and Pasquill stability classes. Pasquill stability classes categorise the stability of the atmosphere from A (very unstable) through D (neutral) to G (very stable). The windrose for the Thorney Island meteorological dataset is shown below. Each windrose bar is designed to illustrate three wind properties: the direction the wind is coming from; the relative number of hours the wind is from this direction; and the magnitude of the wind speeds.



D.4 Contour Plots and Source Apportionment Plots

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Client
PORTSMOUTH CITY COUNCIL
Drawn AT
Checked GMC
Approved GMC
Date 07/08/2017
Scale @ A3 1:1,500
Purpose of Issue DRAFT
Drawing Number FIGURE D.2(ii)
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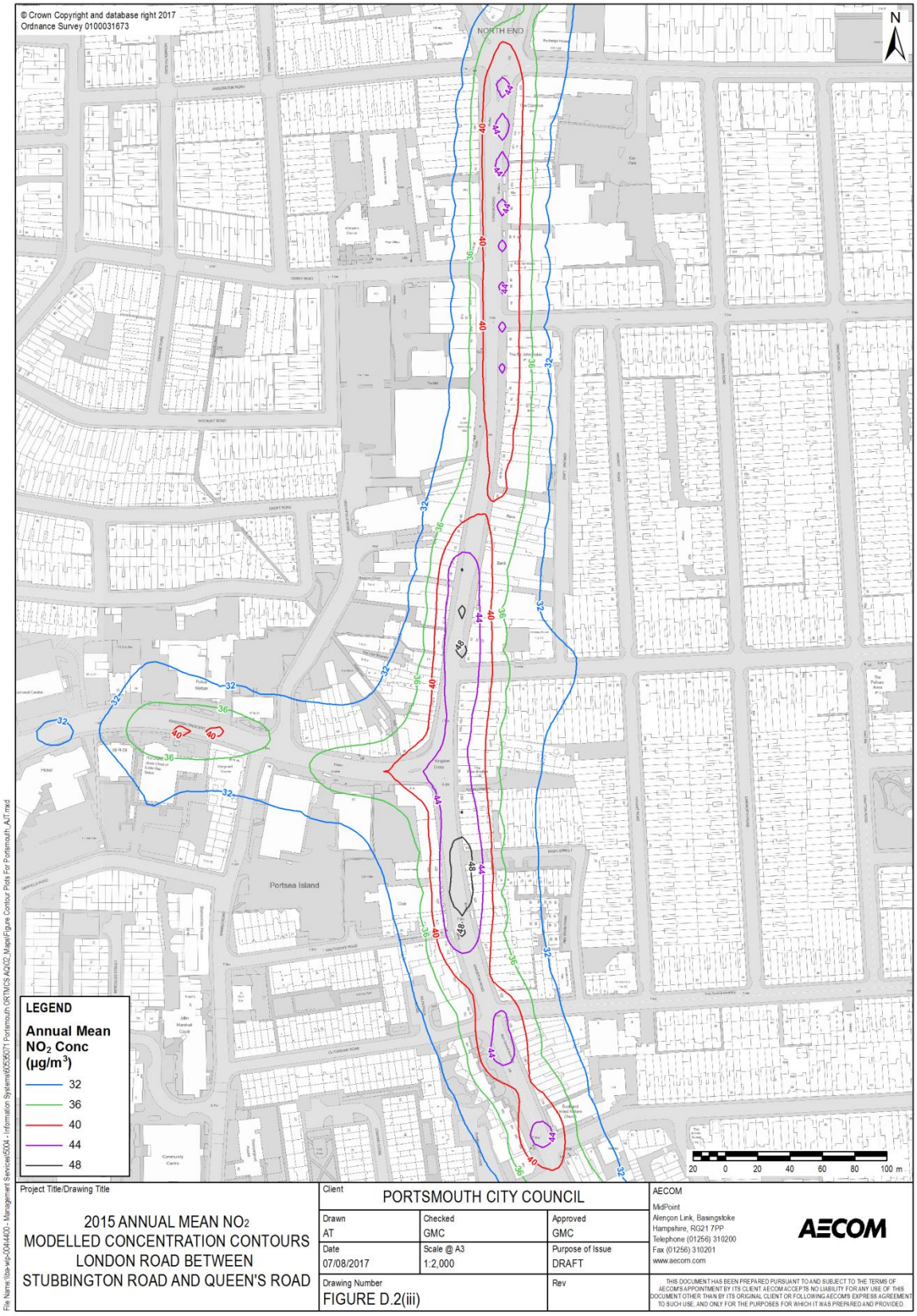
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NORTH END
Portsea Island
N
LEGEND
Annual Mean NO2 Conc (µg/m3)
32
36
40
44
48
20 0 20 40 60 80 100 m
Project Title/Drawing Title
2015 ANNUAL MEAN NO2 MODELLED CONCENTRATION CONTOURS LONDON ROAD BETWEEN STUBBINGTON ROAD AND QUEEN'S ROAD
Client
PORTSMOUTH CITY COUNCIL
Drawn AT
Checked GMC
Approved GMC
Date 07/08/2017
Scale @ A3 1:2,000
Purpose of Issue DRAFT
Drawing Number FIGURE D.2(iii)
Rev
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MidPoint
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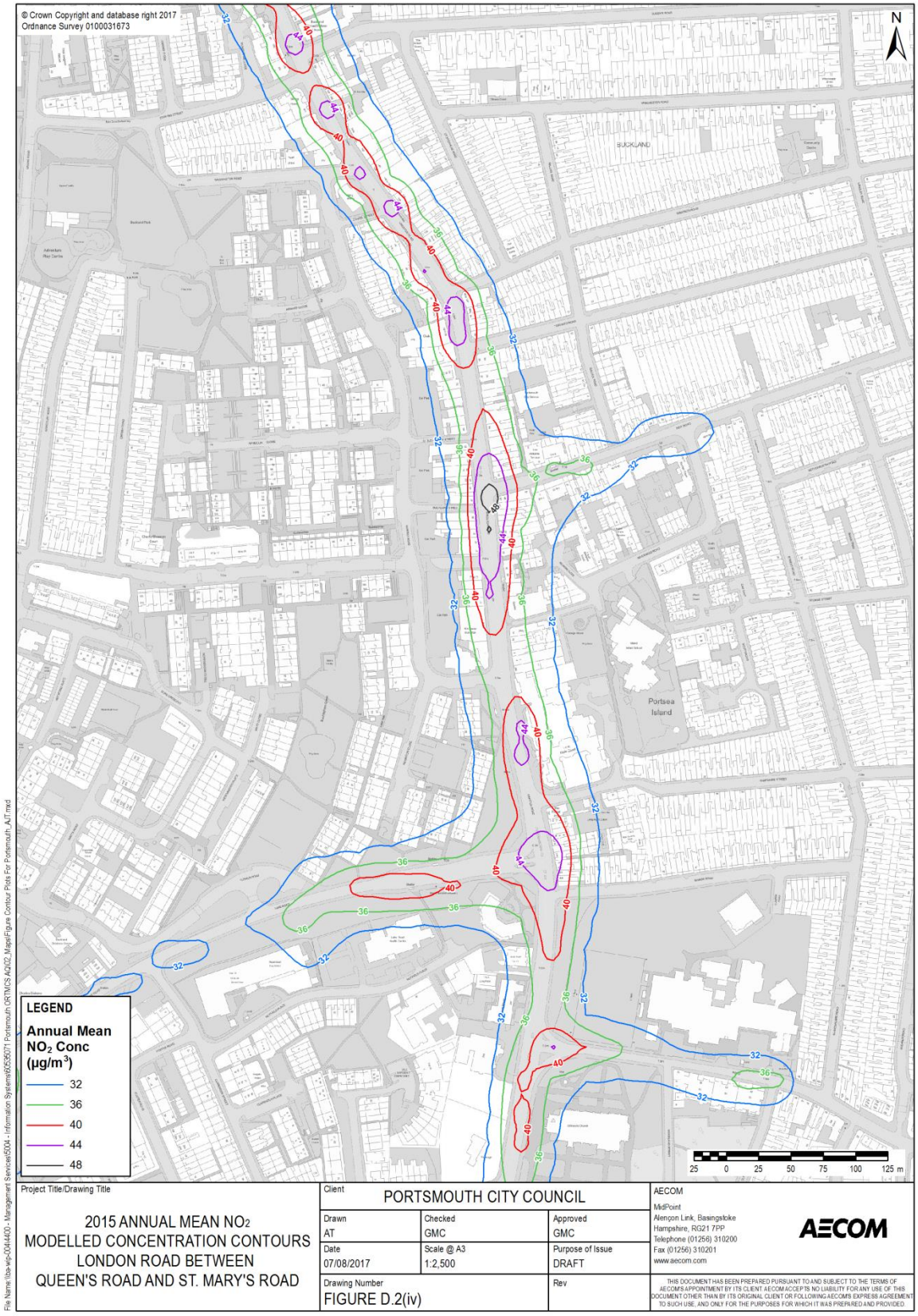
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Ordnance Survey 0100031673
N
BUCKLAND
Portsea Island
LEGEND
Annual Mean NO2 Conc (µg/m3)
32
36
40
44
48
25 0 25 50 75 100 125 m
Project Title/Drawing Title
2015 ANNUAL MEAN NO2 MODELLED CONCENTRATION CONTOURS LONDON ROAD BETWEEN QUEEN'S ROAD AND ST. MARY'S ROAD
Client
PORTSMOUTH CITY COUNCIL
Drawn AT
Checked GMC
Approved GMC
Date 07/08/2017
Scale @ A3 1:2,500
Purpose of Issue DRAFT
Drawing Number FIGURE D.2(iv)
Rev
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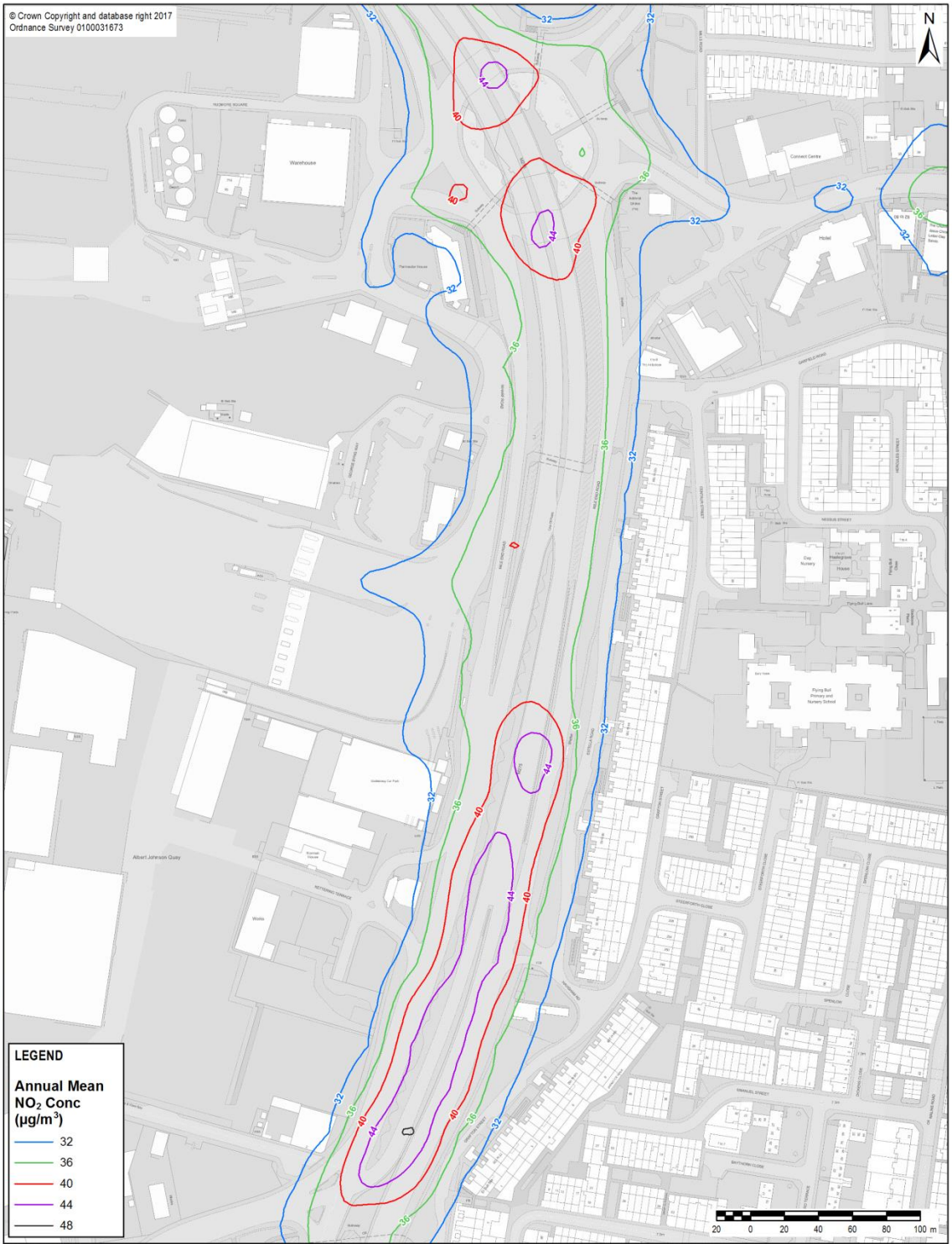

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Project Title/Drawing Title: 2015 ANNUAL MEAN NO_2 MODELLED CONCENTRATION CONTOURS M275 / A3 MILE END ROAD BETWEEN RUDMORE ROUNDABOUT AND PRICESS ROYAL ROAD	Client: PORTSMOUTH CITY COUNCIL		
	Drawn: AT	Checked: GMC	Approved: GMC
	Date: 07/08/2017	Scale @ A3: 1:2,000	Purpose of Issue: DRAFT
	Drawing Number: FIGURE D.2(v)		Rev:

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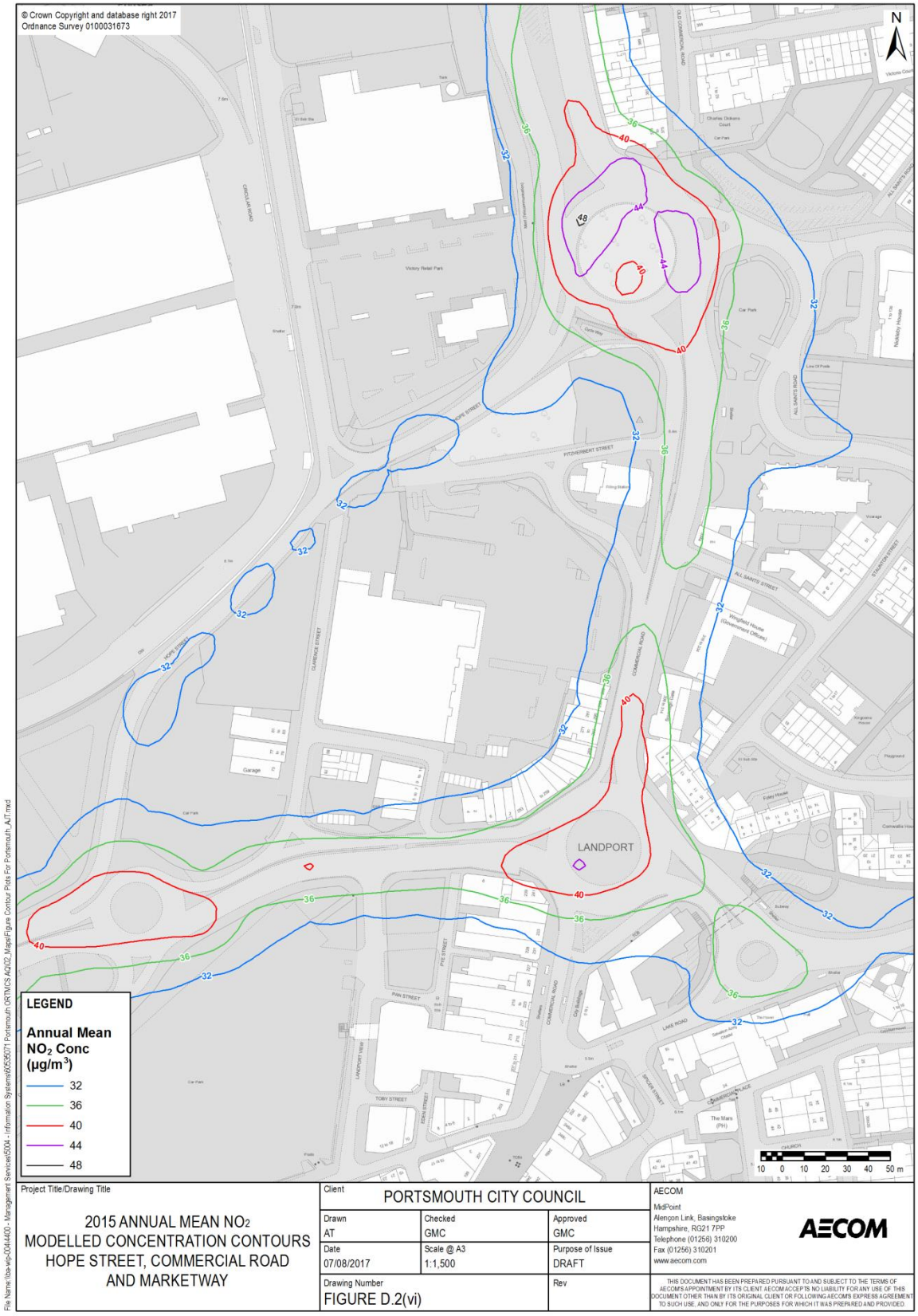

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Project Title/Drawing Title: 2015 ANNUAL MEAN NO_2 MODELLED CONCENTRATION CONTOURS HOPE STREET, COMMERCIAL ROAD AND MARKETWAY	Client: PORTSMOUTH CITY COUNCIL		
	Drawn: AT	Checked: GMC	Approved: GMC
	Date: 07/08/2017	Scale @ A3: 1:1,500	Purpose of Issue: DRAFT
	Drawing Number: FIGURE D.2(vi)		Rev:

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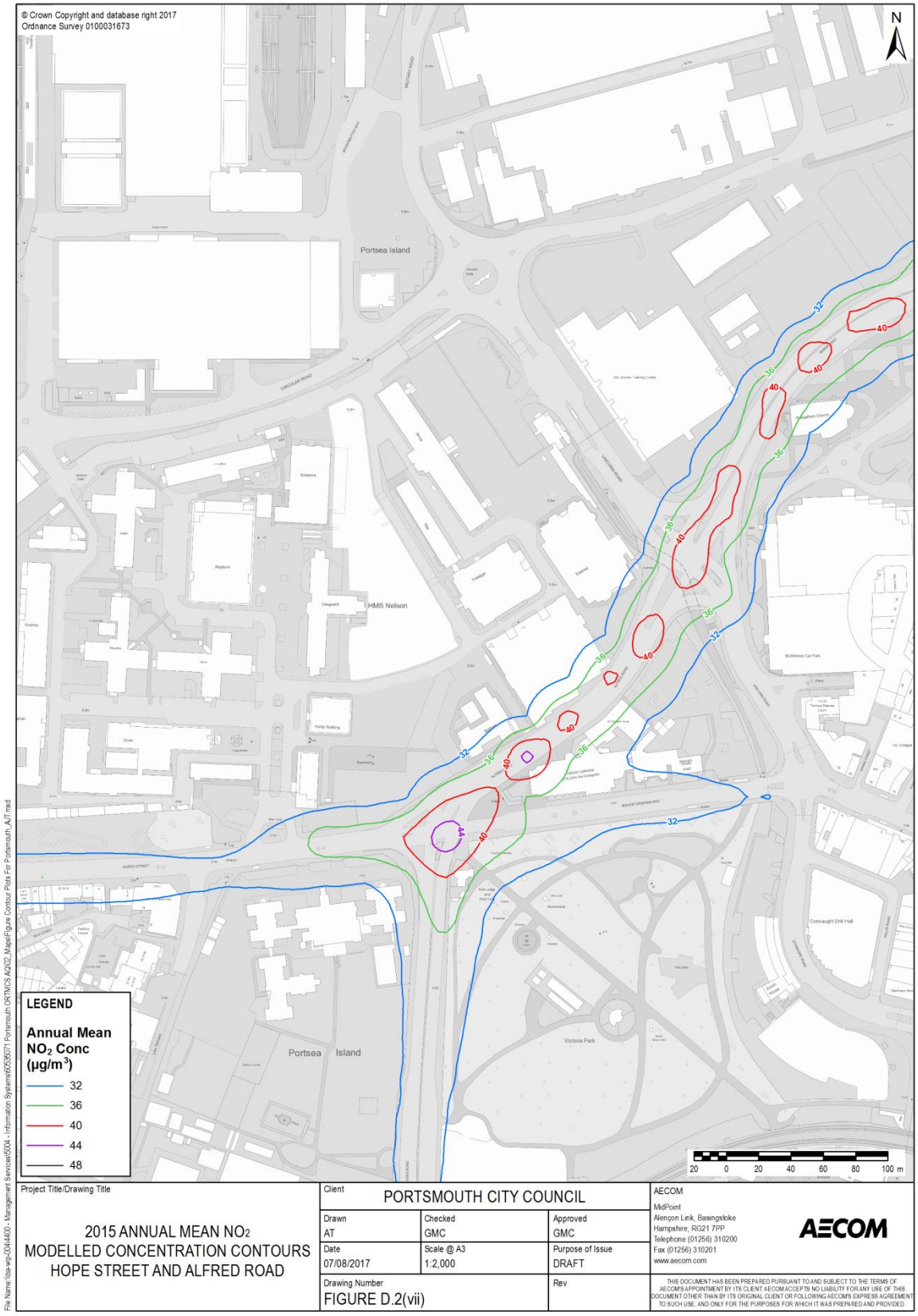
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Ordnance Survey 0100031673
N
Portsea Island
HMS Nelson
Portsea Island
Victoria Park
LEGEND
Annual Mean NO2 Conc (µg/m3)
32
36
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20 0 20 40 60 80 100 m
Project Title/Drawing Title
2015 ANNUAL MEAN NO2
MODELLED CONCENTRATION CONTOURS
HOPE STREET AND ALFRED ROAD
Client
PORTSMOUTH CITY COUNCIL
Drawn AT
Checked GMC
Approved GMC
Date 07/08/2017
Scale @ A3 1:2,000
Purpose of Issue DRAFT
Drawing Number FIGURE D.2(vii)
Rev
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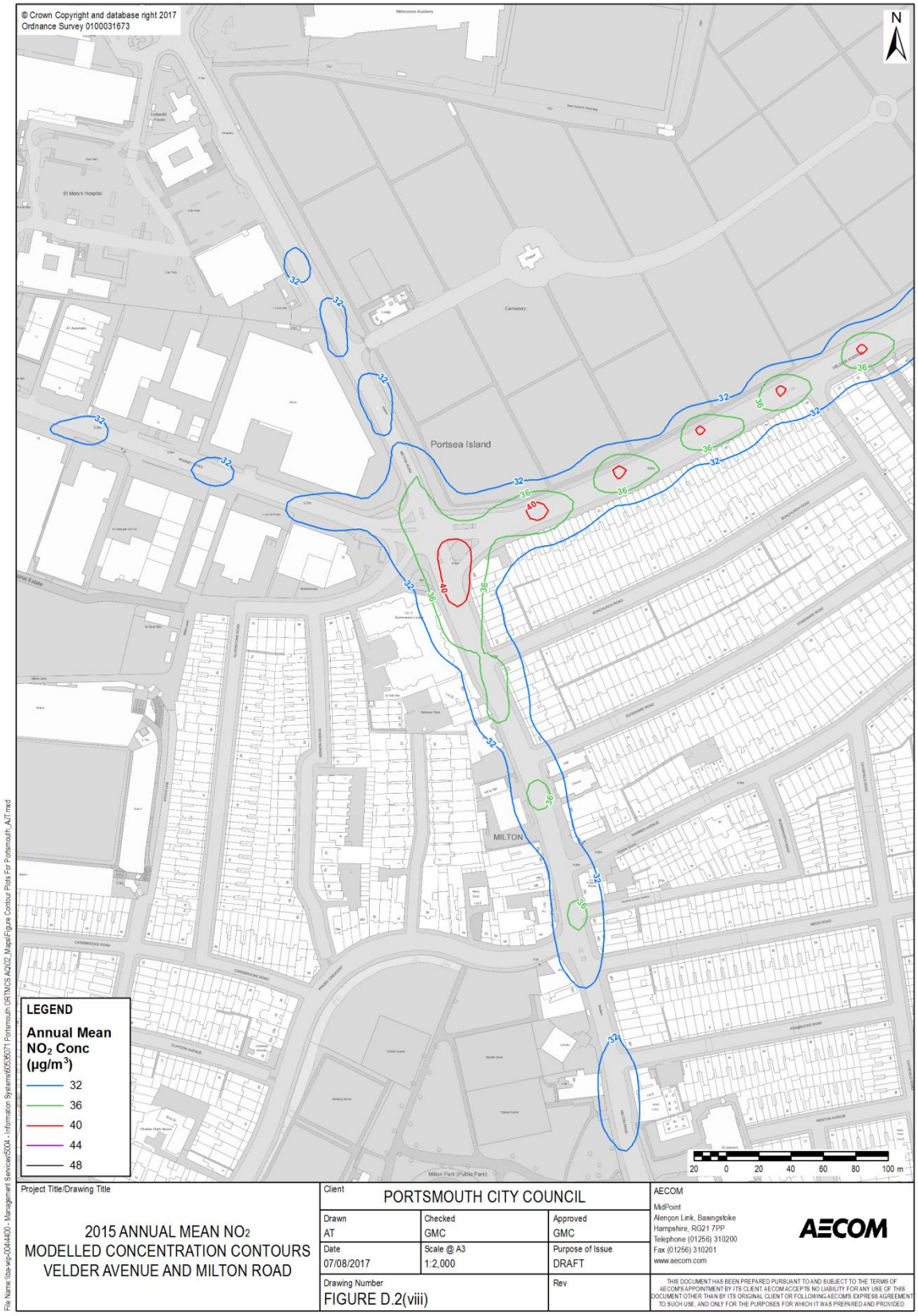
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Portsea Island
MILTON
LEGEND
Annual Mean NO2 Conc (µg/m3)
32
36
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20 0 20 40 60 80 100 m
Project Title/Drawing Title
2015 ANNUAL MEAN NO2
MODELLED CONCENTRATION CONTOURS
VELDER AVENUE AND MILTON ROAD
Client
PORTSMOUTH CITY COUNCIL
Drawn AT
Checked GMC
Approved GMC
Date 07/08/2017
Scale @ A3 1:2,000
Purpose of Issue DRAFT
Drawing Number FIGURE D.2(viii)
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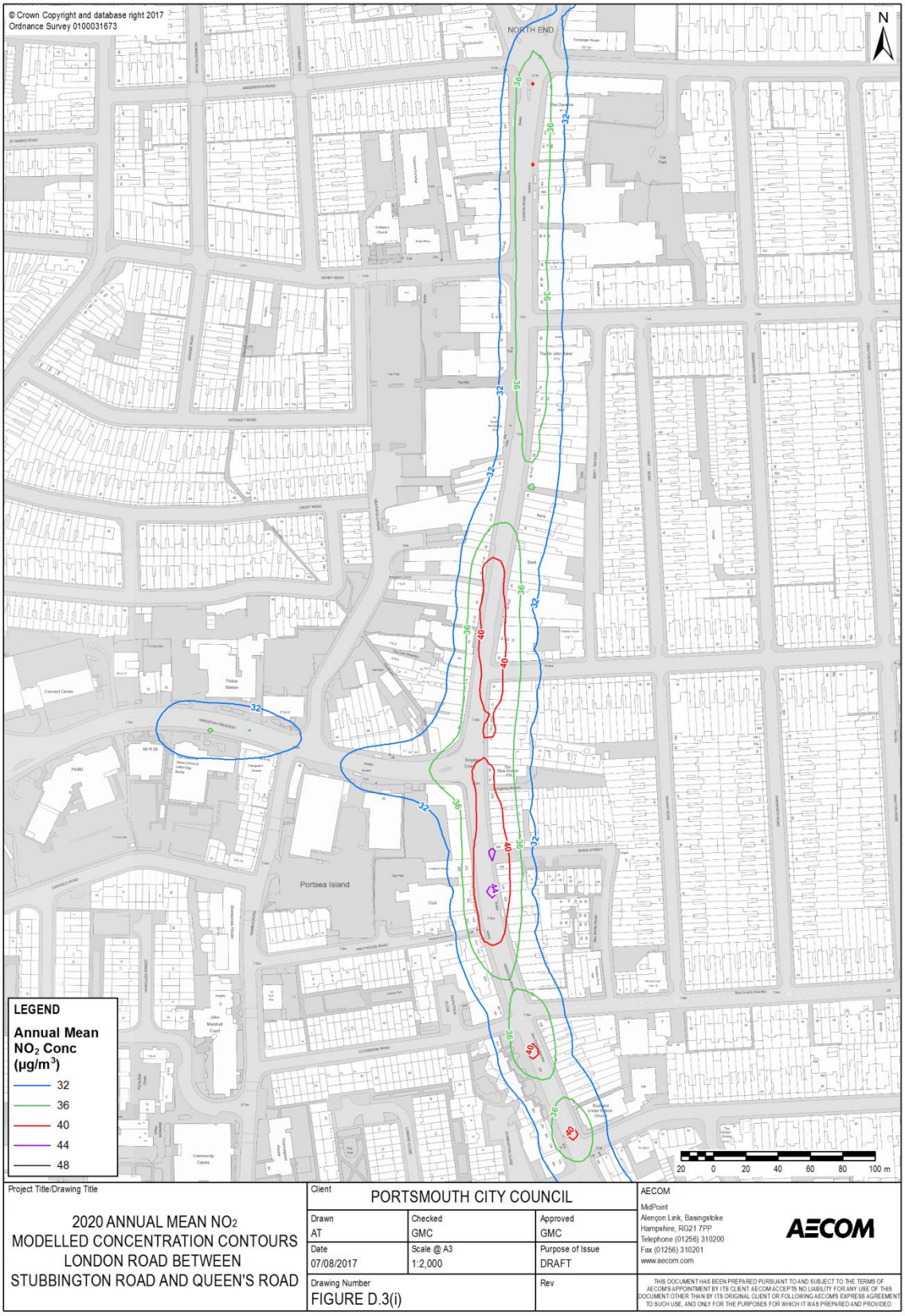
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N
NORTH END
Portsea Island
LEGEND
Annual Mean NO2 Conc (µg/m3)
32
36
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44
48
20 0 20 40 60 80 100 m
Project Title/Drawing Title
2020 ANNUAL MEAN NO2 MODELLED CONCENTRATION CONTOURS LONDON ROAD BETWEEN STUBBINGTON ROAD AND QUEEN'S ROAD
Client
PORTSMOUTH CITY COUNCIL
Drawn AT
Checked GMC
Approved GMC
Date 07/08/2017
Scale @ A3 1:2,000
Purpose of Issue DRAFT
Drawing Number FIGURE D.3(i)
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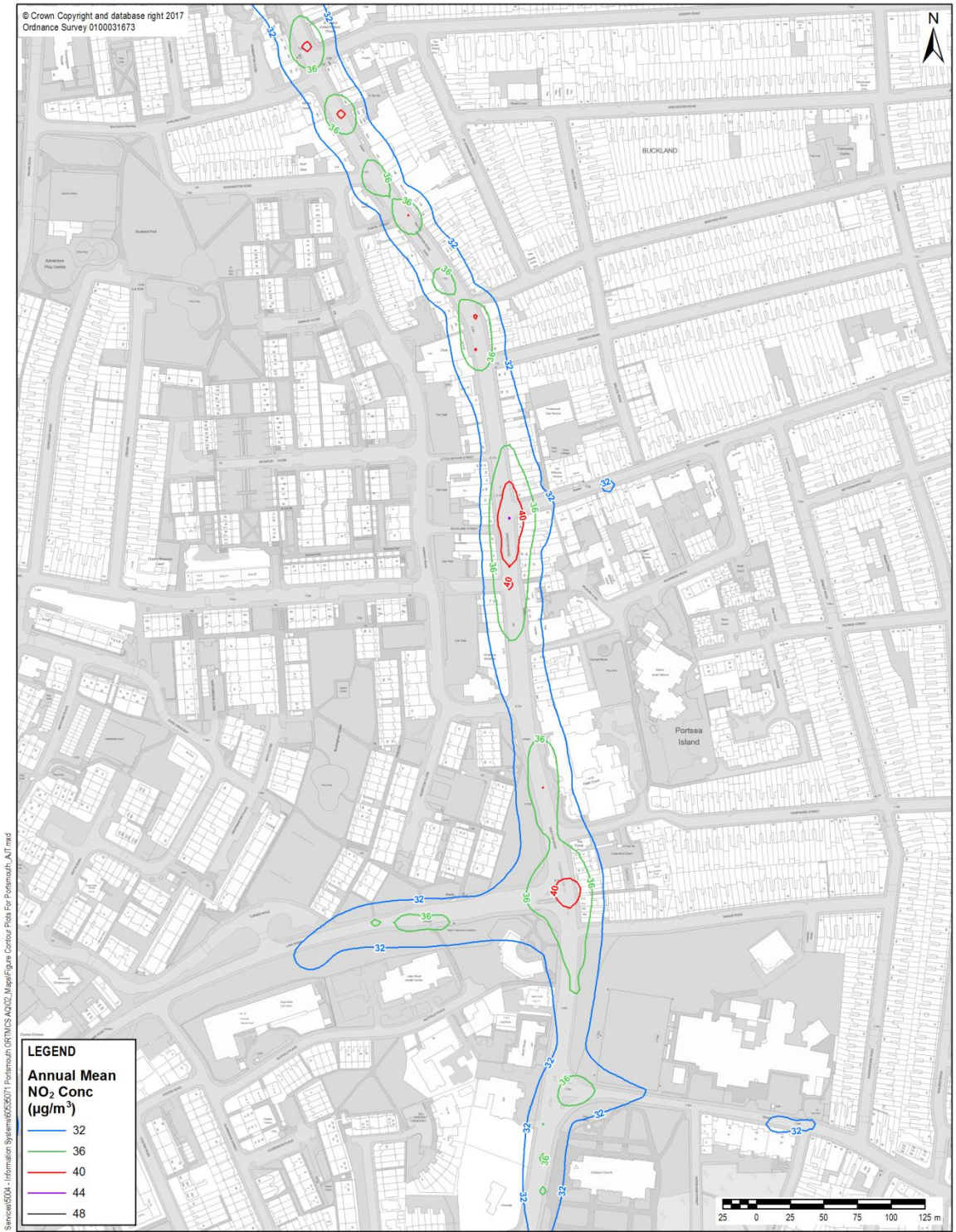

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Project Title/Drawing Title: 2020 ANNUAL MEAN NO_2 MODELLED CONCENTRATION CONTOURS LONDON ROAD BETWEEN QUEEN'S ROAD AND ST. MARY'S ROAD	Client: PORTSMOUTH CITY COUNCIL		
	Drawn: AT	Checked: GMC	Approved: GMC
	Date: 07/08/2017	Scale @ A3: 1:2,500	Purpose of Issue: DRAFT
	Drawing Number: FIGURE D.3(ii)		Rev:

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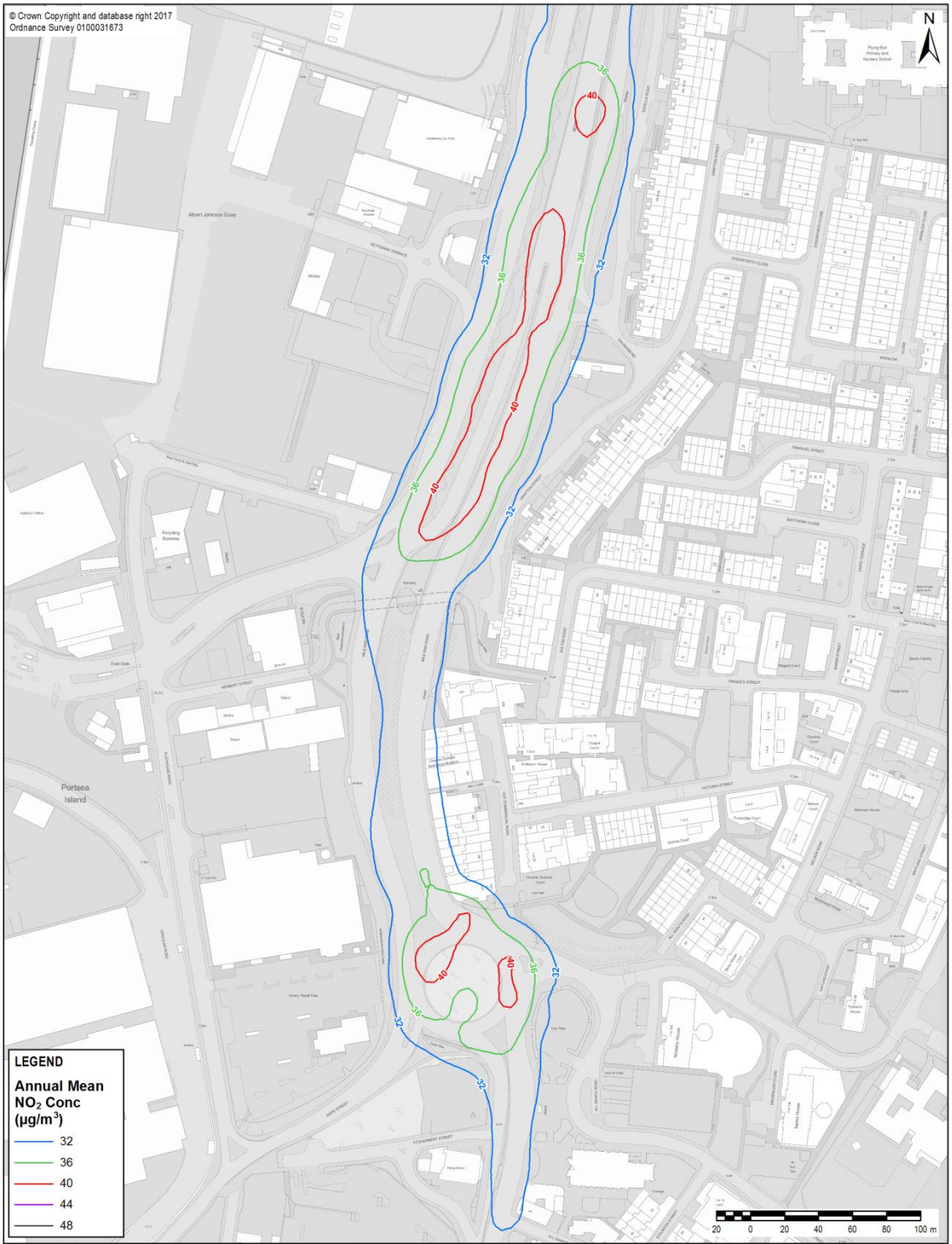

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Project Title/Drawing Title: 2020 ANNUAL MEAN NO_2 MODELLED CONCENTRATION CONTOURS M275 / A3 MILE END ROAD AND CHURCH STREET ROUNDABOUT	Client: PORTSMOUTH CITY COUNCIL		
	Drawn: AT	Checked: GMC	Approved: GMC
	Date: 07/08/2017	Scale @ A3: 1:2,000	Purpose of Issue: DRAFT
	Drawing Number: FIGURE D.3(iii)		Rev:

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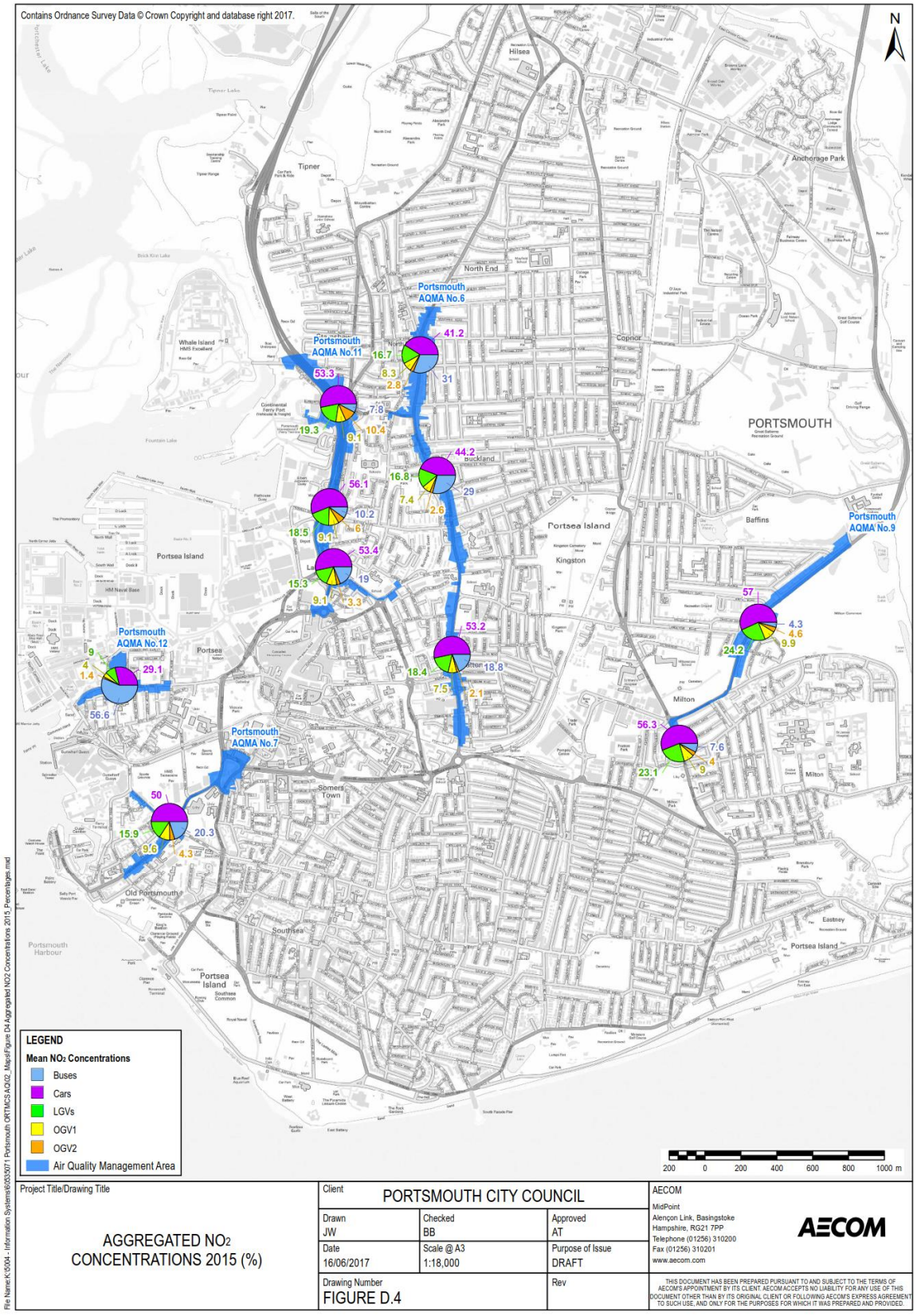

Project Title/Drawing Title: AGGREGATED NO_2 CONCENTRATIONS 2015 (%)	Client: PORTSMOUTH CITY COUNCIL		
	Drawn: JW	Checked: BB	Approved: AT
	Date: 16/06/2017	Scale @ A3: 1:18,000	Purpose of Issue: DRAFT
	Drawing Number: FIGURE D.4		Rev:

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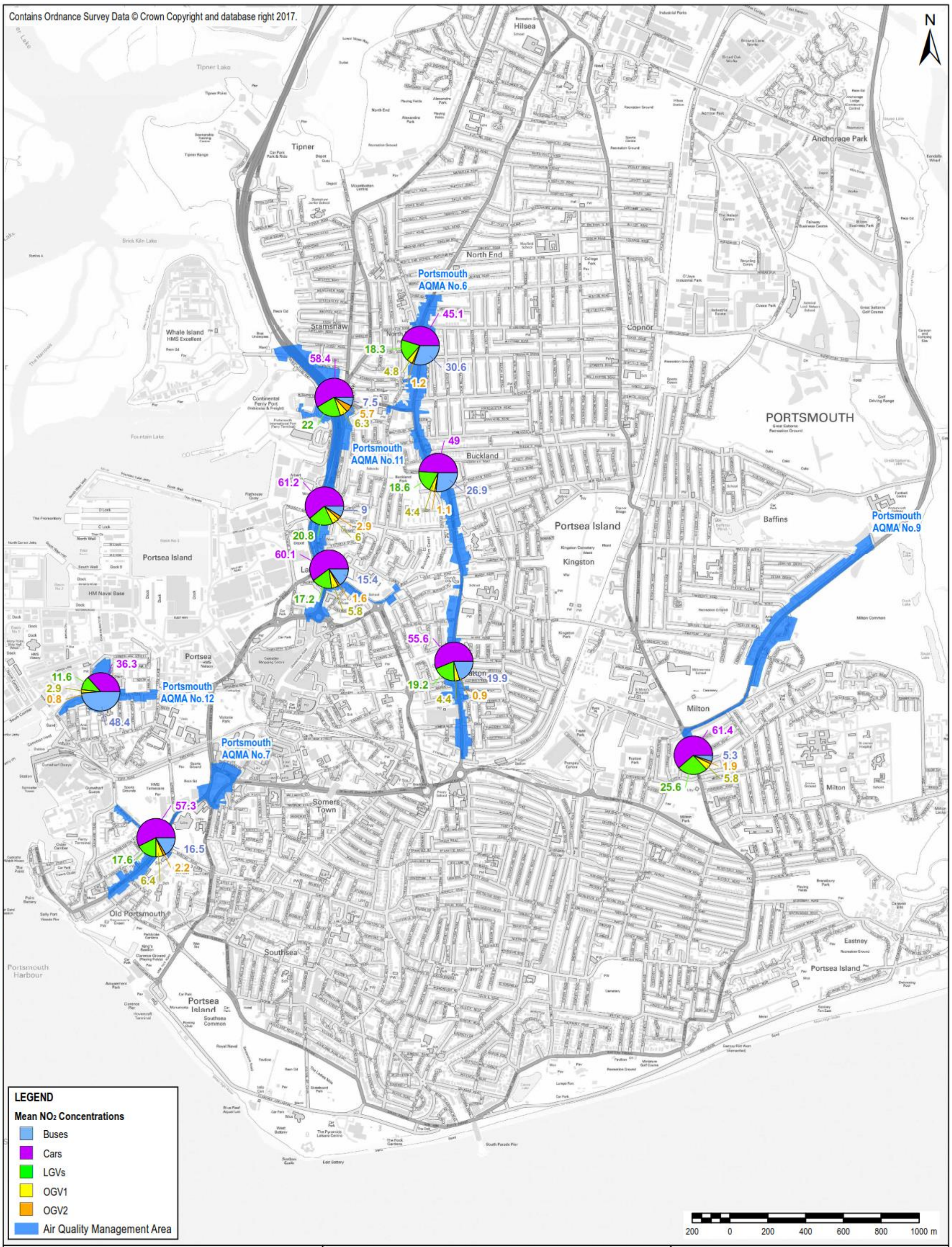

File Name: K:\5004 - Information Systems\60535071 Portsmouth ORTMCS AQ\02_Maps\Figure D5 Aggregated NO2 Concentrations 2020_Percentage.mxd

Project Title/Drawing Title	Client			AECOM
AGGREGATED NO2 CONCENTRATIONS 2020 (%)	PORTSMOUTH CITY COUNCIL			MidPoint Alençon Link, Basingstoke Hampshire, RG21 7PP Telephone (01256) 310200 Fax (01256) 310201 www.aecom.com
	Drawn JW	Checked BB	Approved AT	AECOM
	Date 16/06/2017	Scale @ A3 1:18,000	Purpose of Issue DRAFT	
	Drawing Number FIGURE D.5		Rev	THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

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Equality Impact Assessment

Preliminary assessment form v5 / 2013

www.portsmouth.gov.uk

The preliminary impact assessment is a quick and easy screening process. It should:

- identify those policies, projects, services, functions or strategies which require a full EIA by looking at:
  - negative, positive or no impact on any of the equality groups
  - opportunity to promote equality for the equality groups
  - data / feedback
- prioritise if and when a full EIA should be completed
- justify reasons for why a full EIA is not going to be completed

Directorate: Director of City Development & Culture

Function e.g. HR, IS, carers: Regulatory Services - Environmental Health

Title of policy, service, function, project or strategy (new or old) :

Assessment of air quality - publication of Annual Status Report 2016

Type of policy, service, function, project or strategy:

- ★ Existing
- ☐ New / proposed
- ☐ Changed

Q1 - What is the aim of your policy, service, function, project or strategy?

The aim of the policy is to report upon the:
• review and assessment of air quality in Portsmouth and the publication of the 2016 annual status report
• changes implemented by Department of Environment Food and Rural Affairs (DEFRA) to the annual reporting of air quality and the governments expectations of local authorities in relation to improving air quality
• need to continue to explore options and strategies in order to improve air quality in Portsmouth

Q2 - Who is this policy, service, function, project or strategy going to benefit or have a detrimental effect on and how?

Benefits: Improving air quality by reducing air pollution has positive health impacts for all. It is recognised that poor air quality is a contributing factor in the onset of heart disease and cancer. Air pollution particularly affects the most vulnerable in society: children and older people and those with heart and lung conditions.

Q3 - Thinking about each group below, does, or could the policy, service, function, project or strategy have a negative impact on members of the equality groups below?

Group	Negative	Positive / no impact	Unclear
Age	☐	★	☐
Disability	☐	★	☐
Race	☐	★	☐
Gender	☐	★	☐
Transgender	☐	★	☐
Sexual orientation	☐	★	☐
Religion or belief	☐	★	☐
Pregnancy and maternity	☐	★	☐
Other excluded groups	☐	★	☐

If the answer is "negative" or "unclear" consider doing a full EIA

Q4 - Does, or could the policy, service, function, project or strategy help to promote equality for members of the equality groups?

Group	Yes	No	Unclear
Age	☐	★	☐
Disability	☐	★	☐
Race	☐	★	☐
Gender	☐	★	☐
Transgender	☐	★	☐
Sexual orientation	☐	★	☐
Religion or belief	☐	★	☐
Pregnancy or maternity	☐	★	☐
Other excluded groups	☐	★	☐

If the answer is "no" or "unclear" consider doing a full EIA

Q5 - Do you have any feedback data from the equality groups that influences, affects or shapes this policy, service, function, project or strategy?

Group	Yes	No	Unclear
Age	☐	★	☐
Disability	☐	★	☐
Race	☐	★	☐
Gender	☐	★	☐
Transgender	☐	★	☐
Sexual orientation	☐	★	☐
Religion or belief	☐	★	☐

Pregnancy and maternity	☐	★	☐
Other excluded groups	☐	★	☐

If the answer is "no" or "unclear" consider doing a full EIA

Q6 - Using the assessments in questions 3, 4 and 5 should a full assessment be carried out on this policy, service, function or strategy?

☐ yes ★ No

Q7 - How have you come to this decision?

Improving air quality is positive in terms of protecting human health irrespective of equality group.

The government have produced numerous reports detailing these positive impacts and quantifying the benefits in terms of increased life expectancy and reduced costs (£) in terms of delivering health care.

As the data clearly demonstrates that improved air quality will be a benefit to all it is unnecessary to seek specific data in relation to impact upon any specific equality group.

If you have to complete a full EIA please contact the Equalities and diversity team if you require help Tel: 023 9283 4789 or email:equalities@portsmouthcc.gov.uk

Q8 - Who was involved in the EIA?

Environmental Health practitioners specialising in air quality

This EIA has been approved by: Richard Lee, Regulatory Services Manager

Contact number: 023 9283 4857

Date: August 2017

Please email a copy of your completed EIA to the Equality and diversity team. We will contact you with any comments or queries about your preliminary EIA.

Telephone: 023 9283 4789

Email: equalities@portsmouthcc.gov.uk