

# Overview and Scrutiny Committee

20 November 2018



<b>Title</b>	Review of Air Quality		
<b>Purpose of the report</b>	To note		
<b>Report Author</b>	Olivia Flint, Principal Pollution Control Officer		
<b>Cabinet Member</b>	Councillor Daxa Patel	<b>Confidential</b>	No
<b>Corporate Priority</b>	Clean and Safe Environment		
<b>Recommendations</b>	<b>To note the information contained within the report</b>		

## 1. Key Issues

### Background

- 1.1 In England there are national air quality objectives for seven pollutants. Previous assessments of local air quality in Spelthorne have enabled the Council to conclude that concentrations of carbon monoxide, benzene, 1,3-butadiene, lead, sulphur dioxide and PM<sub>10</sub> are compliant with the relevant national and European objectives.

**Table 1 National Air Quality Objectives**

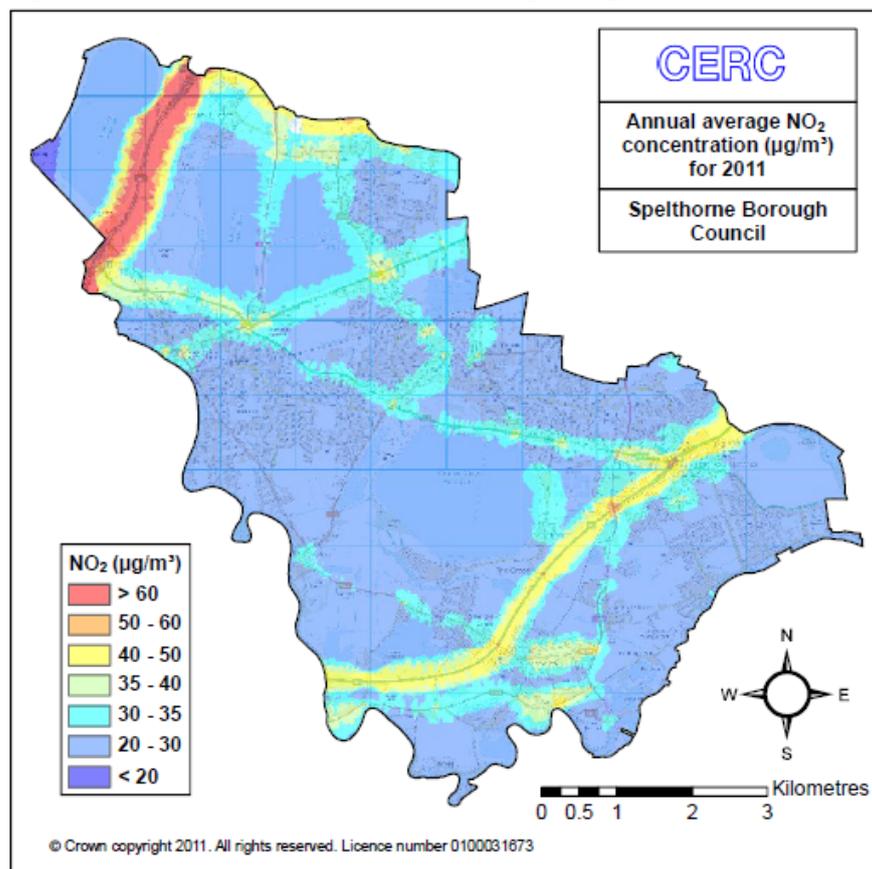
Pollutant	Air Quality Objective	
	Concentration	Measured as
<b>Nitrogen dioxide (NO<sub>2</sub>)</b>	200 µg/m <sup>3</sup> (not more than 18 times a year) 40 µg/m <sup>3</sup>	1 hour mean Annual mean
<b>Particles (PM<sub>10</sub>)</b>	50 µg/m <sup>3</sup> (not more than 35 times a year) 40 µg/m <sup>3</sup>	1 hour mean Annual mean

- 1.2 Monitoring of local air quality for levels of nitrogen dioxide, the principal pollutant of concern in Spelthorne, has been ongoing since 1996. In 2000 the Council declared the whole Borough of Spelthorne to be an air quality management area (AQMA) for both hourly and annual mean levels of nitrogen dioxide due to predicted exceedances of the national objectives. These objectives are shown in Table 1. Following further assessment in 2003 it was found that levels of hourly mean nitrogen dioxide were unlikely to result in members of the public being exposed to elevated levels of nitrogen dioxide above the objective, and so the AQMA for hourly mean nitrogen dioxide was withdrawn.
- 1.3 Since 2004 the annual levels of nitrogen dioxide have typically continued to exceed the standard at some, but not all monitoring locations around the Borough, especially alongside

major roads and busy junctions. Levels of air quality pollutants that residents are exposed to come from pollution generated within the Borough but also 'background' levels blown in from outside the area. For oxides of nitrogen up to around 25% of levels recorded at locations away from main roads can be from these background sources. The main source of nitrogen dioxide produced within the Borough is from road traffic exhaust fumes, accounting for about 80% of all oxides of nitrogen produced here. In contrast, for particulate matter up to 90% of levels monitored in the Borough actually come from background sources, produced elsewhere. Even at the busiest road junction only about a fifth of particles come from local road traffic. This presents a particular challenge for Spelthorne Borough Council to impact and influence local levels.

- 1.4 Modelling of annual nitrogen dioxide levels for 2011 is depicted in Figure 1, and shows the influence of road traffic on levels across the Borough, with major trunk routes such as the M25 and M3 motorways and A roads such as the A30, A308 and A244 being clearly demarcated with higher levels above the national air quality objective along the road corridors and junctions, and approaching the river crossings. This type of modelling is currently being repeated and the results will be published in early 2019.

**Figure 1 Modelled Annual Average NO<sub>2</sub> concentration for 2011**



### Air Quality Monitoring in Spelthorne

- 1.5 Spelthorne Borough Council undertakes non- automatic (passive) diffusion tube monitoring of NO<sub>2</sub> at 44 locations around the Borough shown in Appendix 1, Figure A1. Monthly results are used to calculate annual mean levels of nitrogen dioxide.
- 1.6 There are currently three continuous monitoring stations running in the Borough:
- Oaks Road, Stanwell – maintained by consultants from Riccardo-AEA on behalf of Heathrow Airport Ltd;

- Sunbury Cross – maintained by consultants from Riccardo-AEA and funded until December 2018 by the Council. A growth bid has been submitted to request continued funding of this monitoring site beyond December 2018;
- Haslett Road, Upper Halliford – maintained by consultants TRL and Fichtner on behalf of Suez, developers of the EcoPark incinerator.

1.7 A continuous monitoring station is a generic term for a cabinet which can contain a number of different analysers depending on which pollutants are to be monitored. Results from continuous monitoring can generate short-term averages such as 15 minute, hourly or daily averages, but also annual averages. Each of the three continuous monitoring stations in Spelthorne are set up to monitor nitrous oxides (reported as nitrogen dioxide) and particulates, as both PM<sub>10</sub> and PM<sub>2.5</sub>. There are no PM<sub>2.5</sub> monitors elsewhere in the whole of Surrey and PM<sub>10</sub> monitoring is only undertaken by Waverley at Farnham and Reigate & Banstead near Gatwick Airport.

### **Air Quality Monitoring Results in 2017**

- 1.8 In 2017, there were 4 monitoring locations where annual average nitrogen dioxide levels exceeded the national air quality objective, of 40 µg/m<sup>3</sup>. These locations were alongside busy roads and/ or near major junctions - SP8 and SP9 on the A308 Staines Road West approaching the junction with the M3 and A316 at Sunbury Cross; at SP29 on the Crooked Billet A30/A308/A3044 Staines Bypass junction; and at SP36 on Green Street, south of Sunbury Cross.
- 1.9 Nitrogen dioxide levels drop off significantly in a short distance from a road. A simple model can be used to predict air quality levels at the nearest relevant sensitive receptors to those monitoring locations in exceedance. Having done this, the level of nitrogen dioxide was estimated to drop below the 40 µg/m<sup>3</sup> objective at these locations in 2017.
- 1.10 There were four further locations, while below the objective in 2017, which were within 10% of the objective: SP5 Church Road, Ashford; SP34 School Road, Ashford; SP35 Vicarage Road, Sunbury; and SP51 Fairfield Avenue, Staines. The exceedances and these borderline locations are geographically spread across the 3 major towns of the Borough on main through roads close to major junctions.
- 1.11 Over a five year period there has been large inter-annual variations in results – in 2016 there were 13 monitoring locations where annual average nitrogen dioxide levels were in exceedance; 2015 being a good air quality year with only 4 exceedances preceded by two years that had elevated nitrogen dioxide levels, with 18 and 19 monitoring locations recording concentrations greater than the 40 µg/m<sup>3</sup> annual average objective in 2013 and 2014, respectively. For diffusion tubes, particularly roadside sites, the long term annual mean trend indicate little improvement in pollution levels for nitrogen as shown in **Appendix 2, figure A2.1**.
- 1.12 There were no recorded exceedances of the nitrogen dioxide hourly mean objective at any of the three operational continuous monitoring stations in 2017. The Oaks Road monitoring station has not recorded any exceedances of the hourly mean objective within the past 5 years.
- 1.13 Levels of annual mean PM<sub>10</sub> concentrations at each of the three continuous monitoring stations are well below the annual average air quality objective of 40µg/m<sup>3</sup>, at 33% to 52% of the air quality action level.
- 1.14 Results of monitoring over the past fifteen years indicate that there has been a noticeable trend of reducing concentrations of particulate matter (as PM<sub>10</sub>) as an annual average and in the number of days where the mean concentration is elevated above 50 µg/m<sup>3</sup> between 2003 and 2015. Since 2015 the particulate matter trend appears to have levelled out. This is shown in **Figures A2.3 and A2.4 in Appendix 2**.

- 1.15 There is no statutory obligation on councils to monitor fine particles (less than 2.5µm diameter), though it has been monitored at the Oaks Road site since 2003 with an annual average concentration of 9.21µg/m<sup>3</sup> in 2017. This result is well below the Government's proposed objective of 25µg/m<sup>3</sup>, and below the WHO guideline of 10µg/m<sup>3</sup>, albeit slightly higher than levels in 2015. Longer term levels of PM<sub>2.5</sub> at Oaks Road, like PM<sub>10</sub>, appear to show a gradual decline since 2003 as illustrated below, though this trend is less discernible over the last 5 years as shown in **Appendix 2, Figure A2.5**.
- 1.16 A full summary of monitoring results for 2017 is available on the Council's website: <https://www.spelthorne.gov.uk/article/2108/Air-quality---latest-reports> . Results of the continuous monitoring stations at Oaks Road and Sunbury Cross are reported in real-time on the Heathrow Airwatch website: <http://www.heathrowairwatch.org.uk/latest> .
- 1.17 Monitoring for 2018 at the continuous monitoring stations up to October 2018 is shown in **Appendix 2 Table A2.1** and indicates levels broadly consistent with those of 2017, though slightly worse for particulates (as PM<sub>10</sub>) at Oaks Road and Sunbury Cross. It is important to note that these figures are liable to change as seasonality of air quality means that higher levels are typically recorded over winter months, raising the final annual mean results.

## **2. How air quality impacts on health of residents.**

- 2.1 There is good evidence that nitrogen dioxide is harmful to health. The most common outcomes are respiratory symptoms such as shortness of breath and cough. Nitrogen dioxide inflames the lining of the lung and reduces immunity to lung infections such as bronchitis. Studies also suggest that the health effects are more pronounced in people with pre-existing respiratory and heart conditions such as asthma, bronchitis, and Chronic obstructive pulmonary disease (COPD), compared to healthy individuals. Symptoms are usually only observed when NO<sub>2</sub> levels are very high, usually in short-term pollution incidents where hourly mean levels exceed the 200 µg/m<sup>3</sup> objective. This objective is not exceeded in Spelthorne (from comparison of both monitoring and modelling results). Nitrogen dioxide also reacts with hydrocarbons in the presence of sunlight to create ozone, and contributes to the formation of particles.
- 2.2 Particles or particulate matter (PM) are tiny bits of solids or liquids suspended in the air. They are a complex group of pollutants that vary in size, shape, composition and origin. These properties can also vary from place to place and time to time. Particles originating from road traffic include carbon emissions from engines, small bits of metal and rubber from engine wear and braking as well as dust from road surfaces. Others sources of particulates include material from building and industry as well as wind-blown dust, sea salt, pollens and soil particles.
- 2.3 Levels of particulates (as PM<sub>10</sub>, particles smaller than 10 micrometers) in Spelthorne are typically less than half the National Air Quality Objective for annual mean PM<sub>10</sub>. However, for particulates there is no threshold concentration below which there are no adverse effects on health. These particles are too small to see and cannot be filtered by the nose and throat, settling in the airway and deep in the lungs. Therefore, locally and nationally, there remains focus on continuing to reduce particulate levels. The health effects of particle air pollution have been widely studied, and include premature death and the worsening of heart and lung disease, often increasing admissions to hospital.

### **Health Impacts at a National Scale**

- 2.4 Research from 2009 by the Committee on the Medical Effects on Air Pollutants (COMEAP), an independent governmental advisory body, estimated the mortality burden of human-made air pollution in the UK at an annual effect equivalent to nearly 29,000 deaths. In July 2018 the Committee published an updated report with the range of estimates of the annual mortality burden of human-made air pollution in the UK estimated as an effect equivalent to 28,000 to 36,000 deaths per year.
- 2.5 The total NHS and social care cost in England due to PM<sub>2.5</sub> and NO<sub>2</sub> combined in 2017 was estimated to be £42.88 million (based on data where there is more robust evidence for an

association), increasing to £157 million when diseases are included where there is currently less robust or emerging evidence for an association.

- 2.6 Between 2017 and 2025, the total cost to the NHS and social care of air pollution for where there is more robust evidence for an association, is estimated to be £1.60 billion for PM<sub>2.5</sub> and NO<sub>2</sub> combined increasing to £5.56 billion if we include other diseases for which there is currently less robust evidence for an association
- 2.7 When all diseases are included (i.e. where there is robust and less robust evidence):
- In England, an estimated 2,248 new cases of disease per 100,000 population attributable to PM<sub>2.5</sub> is predicted between 2017 and 2035.
  - In England, an estimated 1,933 new cases of disease per 100,000 population attributable to NO<sub>2</sub> is predicted between 2017 and 2035.
- 2.8 In Autumn/ Winter 2018, detailed modelling is being undertaken by specialist consultants on behalf of the Council to provide:
- new pollutant maps (as per Figure 1) for nitrogen dioxide and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>),
  - to estimate the proportional sources of pollution; and also
  - to calculate health impacts of air pollution via calculation of the local mortality burden for each ward of the Borough.

This is a joint project of the Surrey Air Alliance, an air quality officers group of all eleven districts and borough Councils across Surrey and Surrey County Council, to provide consistent air quality information across the whole of Surrey. The health impact calculations shall comprise attributable deaths by ward; associated life-years lost by ward; and attributable health cost by pollutant.

- 2.9 Traffic modelling for the project is currently being undertaken by Surrey County Council with outputs to be provided to the specialist air quality consultant in November 2018. Outputs are anticipated to be available by Spring 2019.

### **3. What action can the Council take to raise awareness of air quality? Surrey AQ Schools Project**

- 3.1 In April 2018, Spelthorne Borough Council, as lead authority for a Surrey Air Alliance joint project, was awarded an Air Quality Grant of £145,188 by the Department of Food, Environment and Rural Affairs (defra) to implement a programme of air quality awareness within 40 schools in proximity to the Air Quality Management Areas (AQMA) in Surrey.
- 3.2 The project will deliver a package of complimentary measures designed to raise awareness of air quality issues with primary and secondary school children (and their parents, staff and local communities around schools), encourage behaviour change and mode shift, and reduce vehicle idling particularly outside schools. Some of our measures such as the media campaign and the EcoSchools Summit on Air Quality issues will be countywide, and impact on all schools and/or all primary schools, but most will target children within the selected 40 schools with proximity to the AQMA in the following administrative areas: Spelthorne Borough Council, Runnymede Borough Council, Elmbridge Borough Council, Woking Borough Council, Waverley Borough Council, Epsom & Ewell Borough Council, and Reigate & Banstead Borough Council.
- 3.3 The project's media campaign ran between 17 September and 14 October 2018 including
- Adverts on bus backs across Surrey;
  - Adverts at six bus stops outside schools in Spelthorne, Runnymede and Elmbridge;
  - Editorial articles in magazines such as Primary Times, Surrey Matters and other family magazines;

- Digital media including Facebook and Twitter accounts of Surrey County Council, participating schools and the Surrey districts and boroughs, including Spelthorne; and
- Radio adverts on Radio Heart, Jackie and Eagle.

3.4 In November 2018, a bespoke air quality themed Theatre in Education performing arts show will tour the participating schools to introduce the air quality issue to pupils and provide an anti-idling message. Past productions on recycling and road safety have been very effective at getting key messages to pupils and through them ('pester power') to their parents. This will be followed in January 2019 with an education package where a specialist contractor will provide education resources and deliver interactive activities and lessons, including air quality monitoring, at participating schools. There will also be additional cycle training offered to participating schools and an air quality themed Golden Boot sustainable travel to school challenge in June 2019.

**Figure 2 Photographs of Bus Stop Adshells**



3.5 All schools in Spelthorne qualify for the project, but only a handful are currently signed up. Officers continue to reach out to local schools through the Spelthorne Schools Federation to encourage our schools to participate in the project.

### **AirAlert**

3.6 Since 2015 Spelthorne has been part of the AirAlert scheme ([www.airalert.info/Surrey](http://www.airalert.info/Surrey)), a free service provided by the Council to help those with respiratory conditions manage their health when air quality is poor. On 20 to 30 days per year pollution levels are reached, usually for particulates or ozone, that are capable of causing short term health symptoms for people with pre-existing respiratory conditions. People who register for the free service receive an email, text or voicemail message, informing them the day before of an expected elevation of air pollution in their area. This enables them to make choices about what they do and how they manage their medication, so they can stay in control of their own health. Health advice in the AirAlert message is approved by UK experts and varies according to a simple air pollution index (low, moderate, high and very high).

3.7 Spelthorne currently has 98 residents signed up to the scheme. While this is the third highest total of the seven participating Surrey local authorities, further promotion of the scheme is needed. Participation in the scheme has been funded thus far by S.106 developer contributions to air quality mitigation. This funding has now been exhausted and future funding will be required from revenue budgets.

3.8 A survey of AirAlert users showed that 88% of survey respondents found AirAlert a useful or very useful service, and two thirds had recommended it to someone else. They found the service helped them manage their symptoms and reduce their exposure to air pollution. They also reported increased confidence to participate in social and recreational activities.

### Participation in National Air Quality Campaigns

- 3.9 In June 2017, Spelthorne ran an event to support the first National Clean Air Day which included promotional messages via Facebook, Twitter and the Council's electronic newsletters; free cycling maintenance for Council staff and the opportunity to test drive an electric Nissan Leaf or Nissan Van.
- 3.10 The message of the National Clean Air Day was also promoted by Council staff at a stall at the Staines-upon-Thames Day event on 25 June 2017. We estimate that we were able to engage with in excess of 150 residents during the event day.
- 3.11 In early June 2018, Spelthorne ran a staff event to support National Cycling Week, again with free cycle check-ups and the opportunity to test drive a 100% electric Nissan Leaf.
- 3.12 On Clean Air Day in 2019 we can support the campaign through promotion on our social media and electronic publications. On 21 June 2018, #cleanairday trended on Twitter for eight hours. Subject to officer resources and budgetary funding in June 2019 we could host staff and/ or public events and activities. At least 550 events happened on the day in 2018, while some 1,750 broadcasts and press items were generated by the national campaign.

**Figure 3 National Clean Air Day 2018**



**Source:** Global Action Plan, Celebrating the impact of the UK's largest air quality campaign. Available at <https://www.cleanairday.org.uk/Handlers/Download.ashx?IDMF=88367ca5-e3df-45a6-86bf-9d9f62496f3e>

### Electric Vehicle Charging

- 3.13 One of the air quality main actions by officers over the past two years has been in trying to establish a network of electric vehicle (EV) charging infrastructure around the Borough. The Government aspires that by 2040 every new car in the UK will be an ultra-low emission vehicle. Electric vehicles produce lower emissions (NOx) at the point of use (i.e. roadside) and overall carbon savings (~20%) even when electricity generation is factored in. Ultra-low emission vehicles can also reduce noise in urban areas. Spelthorne is lagging behind neighbouring authorities in statistics of new electric plug-in hybrid vehicle registrations as shown in **Appendix 3, Figure A3.1**. Published research shows that existing private EV owners rely mostly on home and workplace charging but public charging infrastructure is a key factor in purchase of EVs by both private and organisational buyers.
- 3.14 For every major new development in Spelthorne (>10 residential units and/or >1,000 sq.m. commercial floor space), Environmental Health recommend to the Local Planning Authority

that EV charging is provided in compliance with standards set out in the Surrey County Council Vehicular and Cycling Parking Guidance (January 2018). These standards are set out in **Appendix 3, Figure A3.2**.

- 3.15 Officers have been liaising with local businesses and charging installers to keep abreast of what electric charging provision is being driven by the private sector. From this work we are aware of proposals for rapid chargers at a number of petrol stations across the Borough and new fast charging at the Two Rivers Car Park in Staines-upon-Thames.
  - 3.16 There remains a role for the Council in facilitating rapid charging, providing destination charging and promoting uptake of ultra-low emission vehicles (ULEV) by local residents and businesses. Destination charging gives users an opportunity to top up whilst parked for 2-3 hours on an existing vehicle trip, such as at shopping centres, public car parks, leisure centres and supermarkets.
  - 3.17 To this end funding bids have been made to Defra's Air Quality Grant Fund (November 2016), Heathrow's Sustainable Transport Levy Fund (May 2017) and the Enterprise M3 Local Enterprise Partnership (LEP) Growth Fund (April 2018) to install fast chargers in selected Council car parks and some rapid chargers at strategic locations. Each of the applications were judged to be strong bids but were ultimately unsuccessful in over-subscribed grants.
  - 3.18 To date we have only been able to fund small scale electric vehicle charging infrastructure schemes in a piecemeal approach as and when funds have become available. In June 2017 eight public charge points were installed in the Elmsleigh and Tothill multi-storey car parks in Staines-upon-Thames. These were paid for by a small capital pot that had been allocated as match funding for the unsuccessful Defra funding application. In April 2018 a dual fast charger was installed at the main Council Offices at Knowle Green for workplace charging for Council employees. This was funded by a pooling of revenue funds from Environment Services, Environmental Health and Asset Management. As demand increases additional charging units can be connected to the new electrical infrastructure. Future funding will be needed to provide further charging units at Knowle Green and make provision at other Council buildings and operational bases.
  - 3.19 By providing a charging network in Spelthorne, businesses, visitors and residents can be confident about making an early switch to EV technology. The bid for grant funding from the Enterprise M3 LEP included a scheme to provide grants to Spelthorne businesses so that they could benefit sooner from fuel savings and achieving corporate and environmental/ low carbon aspirations. Selected low emission vehicles (vans, cars and motorcycles) are eligible for a plug-in grant from Government to reduce purchase costs. The Office of Low Emission Vehicles (OLEV) operate a workplace charging scheme with a small grant (£300) for installing EV chargers points dedicated for staff or fleet use. This though represents as little as 5-10% of costs to a business of installing charging infrastructure - making this a considerable disincentive for businesses to switch. Our scheme was to offer grants up to £4,500 towards the shortfall and help Spelthorne businesses realise a competitive edge. The bid application was match funded with money from the business rates retention fund. There is potential to explore whether the Council could proceed with the business grant scheme.
  - 3.20 Whilst officers can continue to seek external funding opportunities for development of a destination charging network, the Council may need to consider provision of EV charging in future upgrades to Council car parks to maintain attractiveness and compete with third party parking offerings.
4. **What is the potential impact on air quality of Heathrow expansion?**
- 4.1 In the first quarter of 2018, Heathrow Airport Ltd (HAL) consulted on its proposal to expand the airport through construction of a third runway, new terminal capacity and other supporting infrastructure. At the end of June 2018, Parliament voted to pass the Airports National Policy Statement, new policy that sets out the criteria under which consent will be given for expansion of the airport. In Spring/ early Summer 2019 there will be a second

public consultation on expansion plans, ahead of HAL's application to the Planning Inspectorate for a Development Consent Order (DCO), a type of planning consent for nationally significant infrastructure, in 2020. The DCO process is expected to take about 18 months. If Heathrow is granted development consent, construction would begin in 2021 ahead of the new runway opening in 2026.

- 4.2 Aircraft make a very small to negligible contribution to local air quality once they reach a height of 1,000ft, which can occur rapidly after take-off. However, aircraft taxiing, the early stages of take-off, airport related traffic and airside vehicles and plant do contribute to local emissions.
- 4.3 Spelthorne supports, in principle, Heathrow Expansion because of the potential economic benefits and opportunities it is likely to bring to the local area. However, that support is entirely dependent on HAL making sure that any scheme comprehensively and effectively mitigates against impacts on noise, traffic, air quality, the wider environment, infrastructure and local road networks. Heathrow's consultation documents show that expansion will bring airport-related development into Spelthorne, impacting the communities of Stanwell Moor and Stanwell in particular.
- 4.4 While the new runway will be built to the north west of the existing airport boundary, some airport-related businesses currently located there (plus new supporting facilities and infrastructure required to serve an expanded airport, such as freight warehouses, hotels and offices) will be displaced to the south of the airport. Provision of taxiways and terminal capacity to the west of Terminal 5 will sever local roads and impact on the alignment and junctions of the M25. The main surface access to the expanded airport will be via Junction 14 of the M25, on the north west corner of our Borough. Airport parkway car parking for up to 25,000 cars is currently being proposed for land at Stanwell Moor in Spelthorne. Taxi feeder parks and car rental businesses (equivalent to a further 4,000 parking spaces) will also be relocated to the south of the airport. HAL have pledged that expansion will not increase airport related traffic from today's levels and that the current surface access proposals can increase the share of passengers accessing the airport via sustainable transport to at least 50% by 2030. Spelthorne is sceptical that this can be achieved, particularly without Southern Rail access. Even with no increase in overall traffic, with the main access to the airport being from J14 there will be a significant increase in traffic flows across the north of Spelthorne. The Council is concerned that there could be significant adverse impacts on local air quality and noise from this increased levels of road traffic in the north of the Borough, but also at existing air quality hotspots at key road junctions as additional vehicle journeys cut across the Borough and increase traffic congestion.
- 4.5 At this point HAL have not shared any air quality modelling or traffic flow data/ modelling. They have stated that they do not need any additional air quality monitoring to validate air quality modelling of a preferred scheme. Officers are liaising with independent air quality consultants about the need for additional air quality monitoring in Stanwell, Stanwell Moor and Staines-upon-Thames to support modelling work but also to provide monitoring throughout construction and operational phases of expansion. Officers have particular concerns about increased traffic flows through the A30 Crooked Billet roundabout junction (Staines-upon-Thames), the A30 through Ashford, and onto northern radial routes to the airport including the A3044, B378 and Long Lane/Short Lane. There is likely to be a need for additional continuous monitoring in some locations, which HAL may not recognise (nor fund). Any monitoring to inform traffic and air quality modelling will need to be in-situ as soon as possible (by early 2019). Costs to run each new continuous monitoring station would be between £10,000 – £20,000 depending on the pollutants monitored.
- 4.6 If the Development Consent Order is granted, the main construction period would commence in 2021. Some development works would occur prior to this date. Earthworks and runway construction would be on-going for 5 years, with the runway scheduled to open by the end of 2026. Construction of terminals and other ancillary sites (hotels, offices, freight warehouses, and car parks, for example) would be constructed over a 7 to 9 year period, through to at least 2030. As a consequence some off-site construction sites and contractors compounds in Spelthorne could be occupied for in excess of 9 years. As a

consequence, the Council is concerned about the potential land use and environmental impacts of the construction phase.

- 4.7 If Heathrow expansion proceeds, the Council will need to push HAL to ensure sufficient mitigation is provided to protect residents and minimise impacts from increased emissions resulting from expansion. It is likely that the Council will also need to engage with other stakeholders to introduce additional and/ or upgraded measures into its Air Quality Action Plan to further offset impacts.
- 4.8 Spelthorne is a member of the Heathrow Strategic Planning Group (HSPG), a group of public bodies and stakeholders responsible for the area most directly impacted by the future operation of Heathrow Airport. Through the HSPG and in its own right, the Council is working hard to secure the best possible outcomes for our residents and businesses. The Council's consultation responses to public consultations have been published on our dedicated Heathrow Expansion webpages: <https://www.spelthorne.gov.uk/heathrow> .
- 4.9 There are several other major schemes being proposed in the region that also have the potential to environmentally impact on Spelthorne, including:
- Western Rail Link to Heathrow – This Network Rail scheme is the new western rail access to Heathrow Airport, which involves the construction of a new 6.5km rail link between Langley Station (near Slough), on the Great Western Main Line, and Heathrow T5. One of the four construction compounds will be located at Bedfont Court – about 200m north of the Spelthorne boundary, just west of Heathrow Terminal 5. If consented, construction works here would be anticipated to start in 2022, through to the end of 2026. The new rail line and tunnelling will be entirely outside the area of Spelthorne, but some properties in the north of Stanwell Moor are within an area where they could be affected by dust if best practices are not followed. And whilst HGV routing will not pass through the Borough, there could still be traffic and air quality impacts in Spelthorne, especially as the construction works for the new rail line would overlap (in location and timeframe) with construction at Heathrow Airport if expansion for the third runway is permitted.
  - Southampton to London Pipeline – Esso are proposing to replace 56 miles of the 65 mile Southampton to London Pipeline. The existing underground pipeline crosses the River Thames at Chertsey into Spelthorne and runs north past Laleham, through Ashford and into the West London Oil Terminal at the Borough boundary with the London Borough of Hounslow. The preferred route of the new pipeline is being consulted on in autumn 2018, with a Development Consent Order application in 2019. If consented the project would start in 2021, again overlapping with proposed airport expansion.

## 5. **What is the potential impact on air quality of the EcoPark?**

- 5.1 The application for an Environmental Permit to operate the EcoPark gasification plant was accompanied by an air quality assessment based on detailed air quality modelling. This was undertaken to assess the impact of the operations of the proposed fluidised bed gasifier, gas engines and flare. The 2013 assessment included a review of baseline pollution levels, dispersion modelling of emissions from a number of sources on-site and determination of the significance of the impact of these emissions on local air quality. A review of the existing pollution levels showed that the annual mean concentrations of nitrogen dioxide are elevated in some areas close to the plant.
- 5.2 Under the conditions of the Environmental Permit, the gasification plant will have both daily and half hourly average limit values on emissions to air. The air quality assessment was undertaken on a worst case assumption that plant would continually operate at the proposed limits.
- 5.3 Emissions from the facility were not predicted to cause a breach of any assessment level for the protection of human health or ecosystems. The contribution of the gasification plant in operation was predicted to be insignificant for particulate pollution – 0.10% of the annual

mean standard for PM<sub>10</sub> and 0.16% for PM<sub>2.5</sub>. For nitrogen dioxide the process contribution was modelled to be just over 1% of the annual mean air quality objective.

- 5.4 The Environmental Permit for the EcoPark site has been granted by the Environment Agency, who will regulate compliance with pre-operational requirements and environmental conditions. The Anaerobic Digestion plant and gasifier are not operational yet and no Environment Agency required monitoring is underway.
- 5.5 A continuous monitoring station (recording levels of nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub>) was installed in Upper Halliford from March 2016 to monitor ambient air quality levels downwind of the EcoPark site – a legacy of the efforts of the late Councillor Watts. This monitor will be in place throughout the ongoing construction phase, commissioning and for at least two years into the operational phase, i.e. to at least 2021.
- 5.6 Results from the continuous monitoring station at Haslett Road are higher than the Oaks Road and Sunbury Cross sites for particulates, but are still well below the annual mean objective, at 52% of the Air Quality Objective.
- 5.7 At Haslett Road there was an increase in the annual mean and number of days exceeding the daily mean in 2017 compared to 2016. A daily mean level of 50 µg/m<sup>3</sup> was exceeded on 10 days in 2017, compared to the objective requiring this level not to be exceeded more than 35 times per year.
- 5.8 Provision results at Haslett Road for the period up to the end of September 2018 indicate only three exceedances of the daily mean standard. Two of the days (2 and 3 March 2018) coincide with regionally elevated results associated with the 'Beast from the East' cold snap from the continent. The third daily exceedance (11 April 2018) also saw slightly elevated levels at Oaks Road and Sunbury Cross indicating a regional source rather than a local issue.
- 5.9 The average diurnal profiles of PM<sub>10</sub> and PM<sub>2.5</sub> indicate a peak during the overnight hours, which could be influenced by possible contributions from increased emissions from domestic heating (i.e. wood and solid fuel stoves) during the evenings.

**Background papers:** There are none

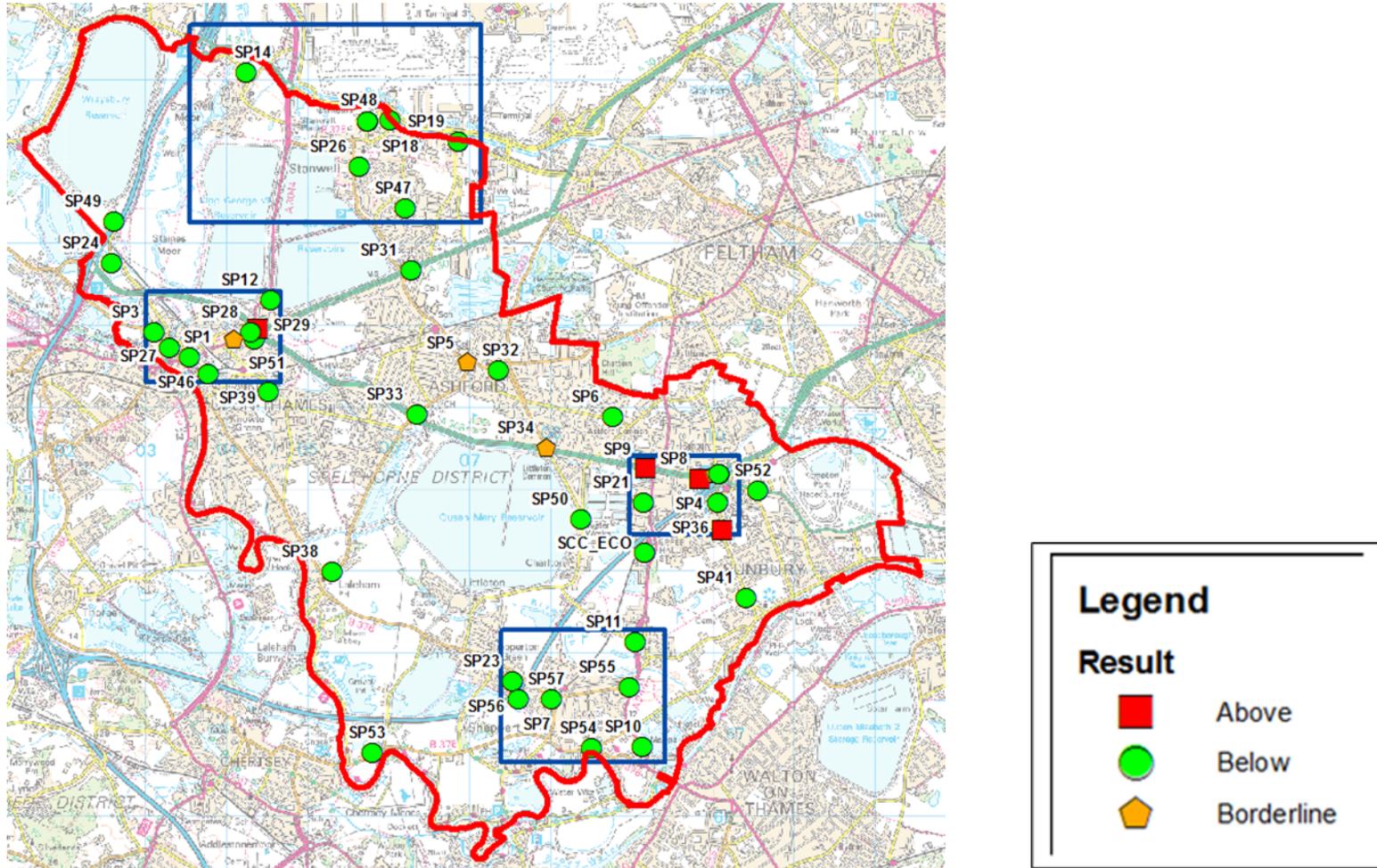
**Appendices:** Appendix 1 Plans of Air Quality Monitoring Locations

Appendix 2 Air Quality Monitoring Results Charts

Appendix 3 Electric Vehicle Figures

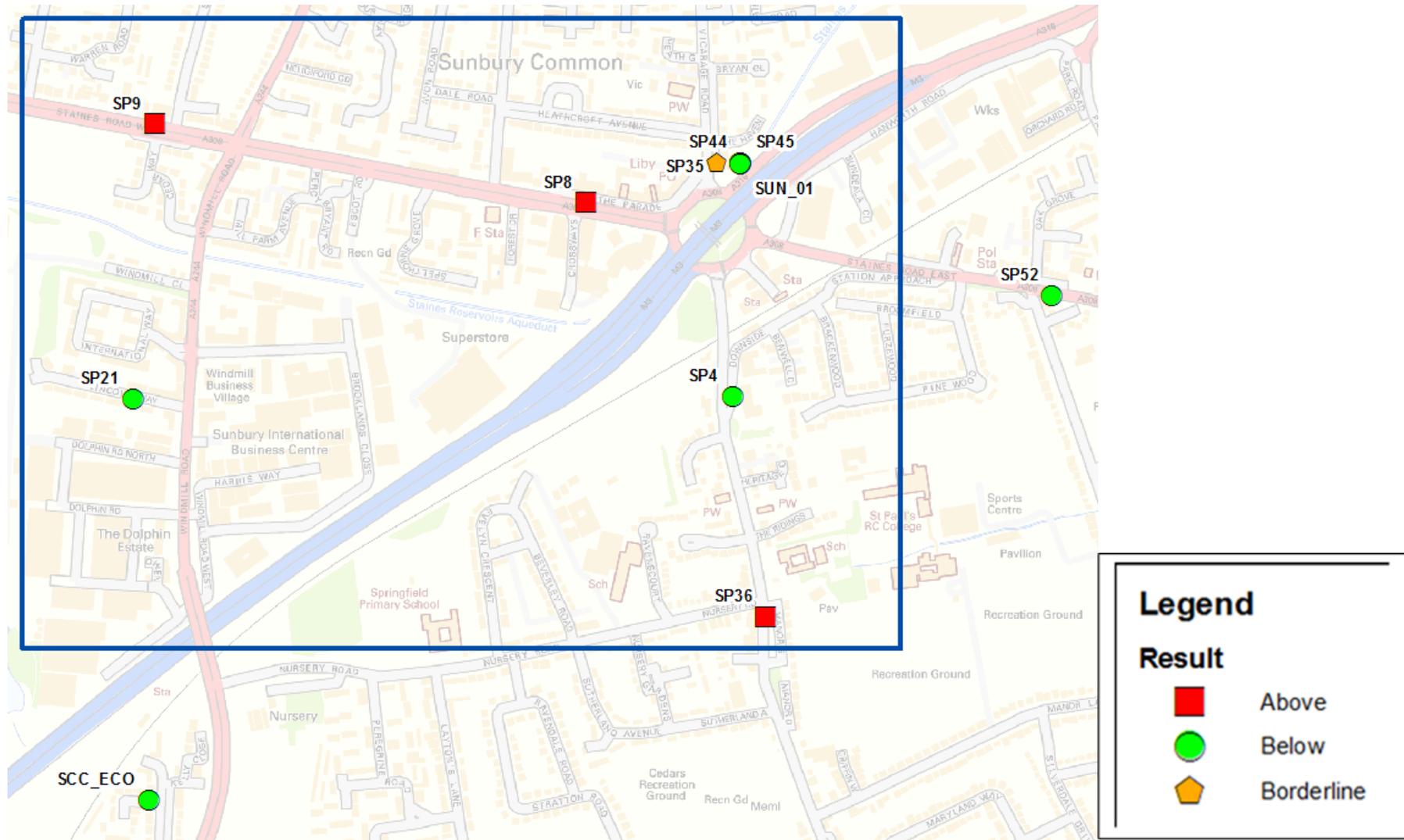
**APPENDIX 1 Plans of Air Quality Monitoring Sites in Spelthorne**

**Figure A1.1 Spelthorne wide monitoring locations**



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**Figure A1.2 Inset of Air Quality Monitoring in Sunbury**

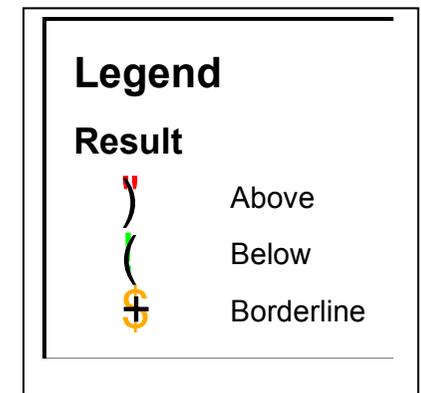
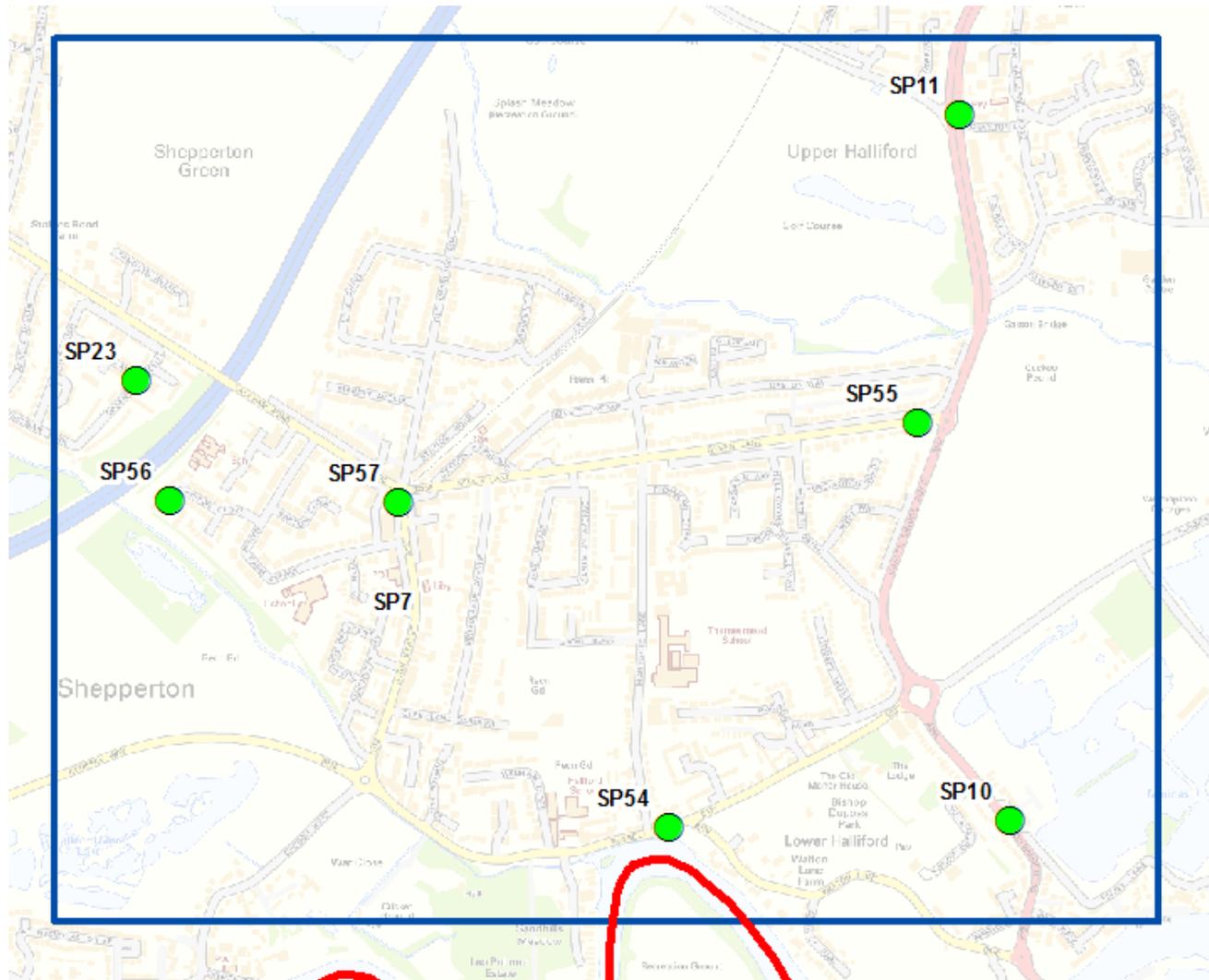


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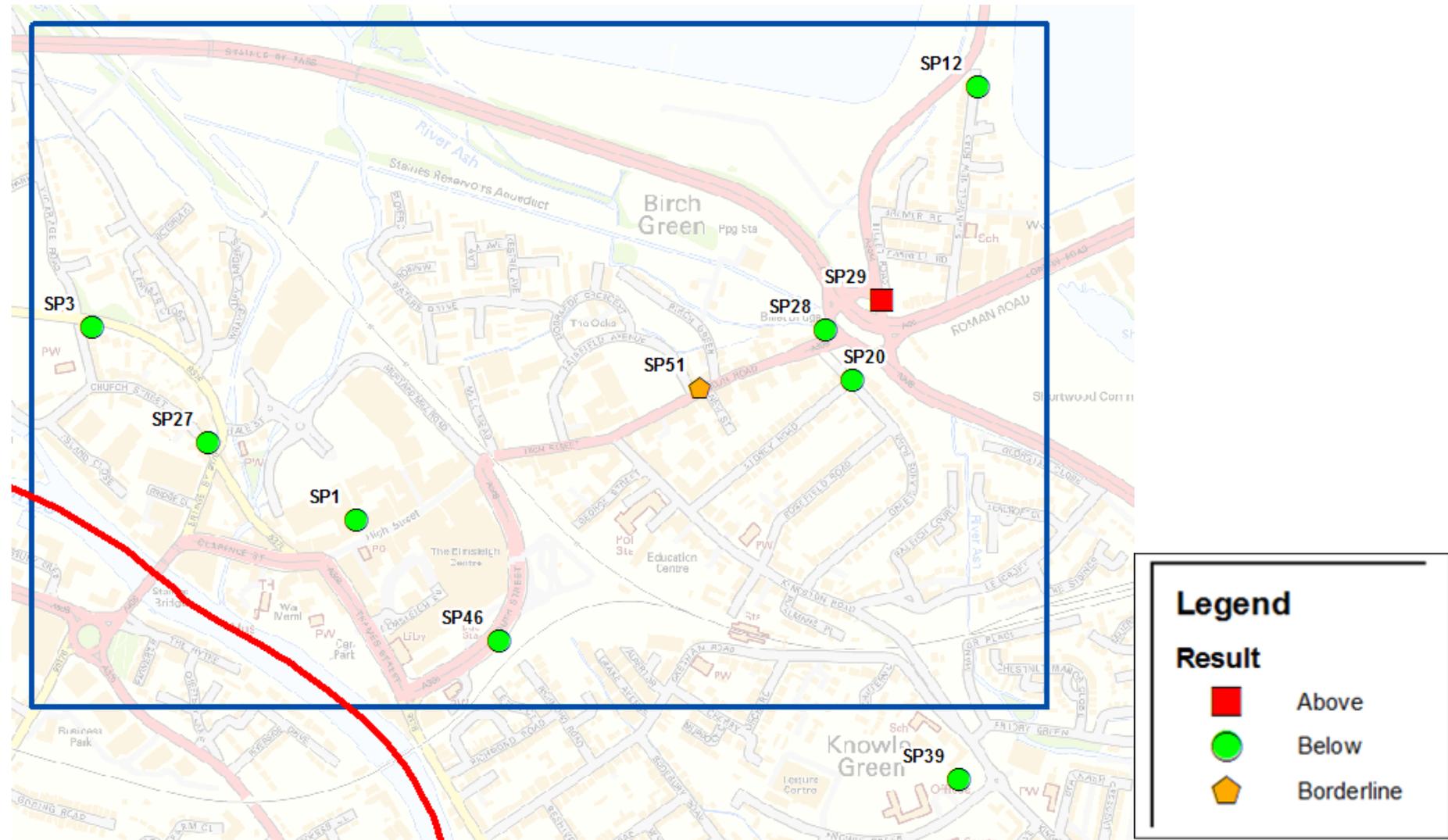
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**Figure A1.3**      **Inset of Air Quality Monitoring in Shepperton**



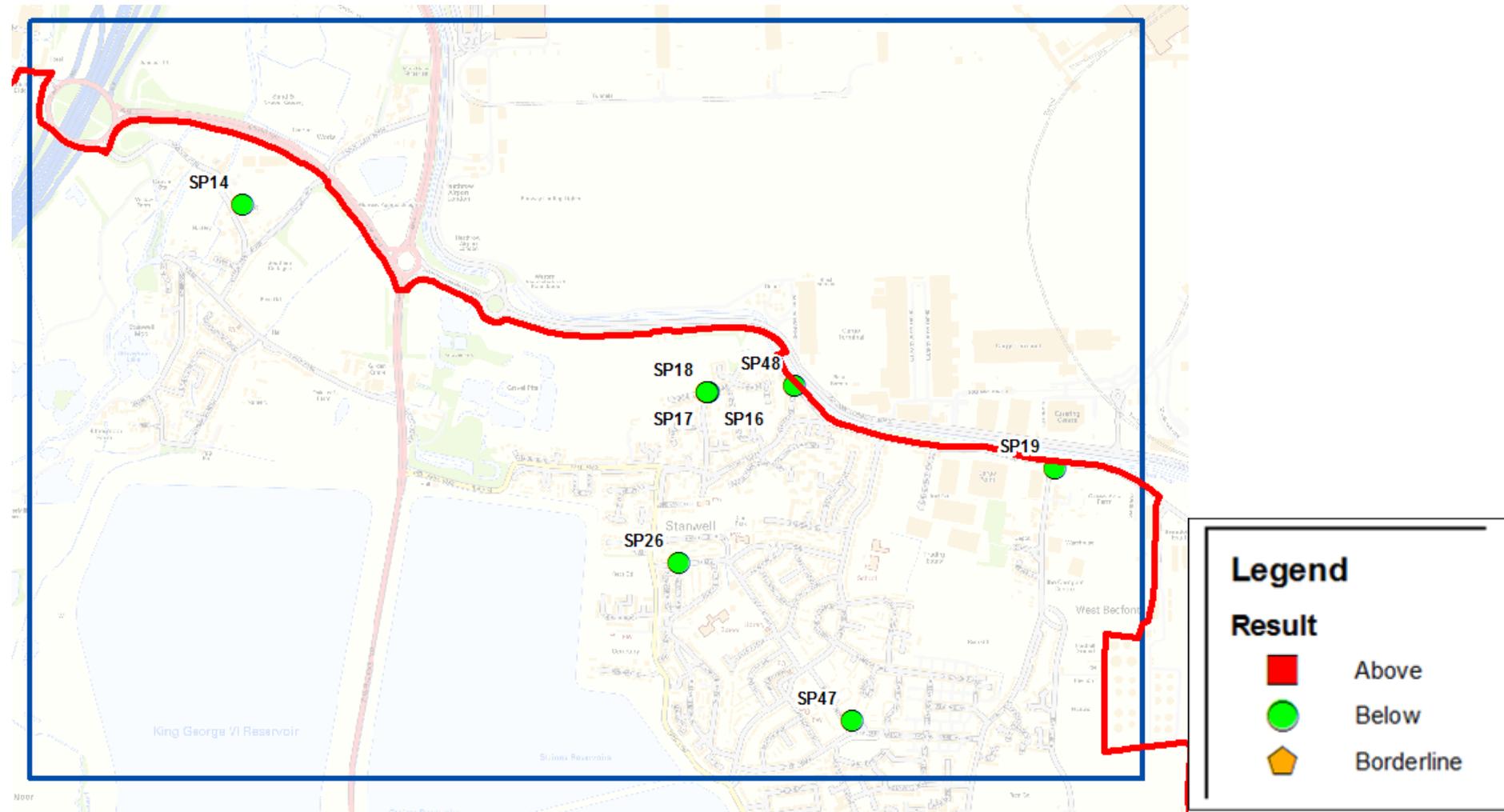
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**Figure A1.4 Inset of Air Quality Monitoring in Staines-upon-Thames**



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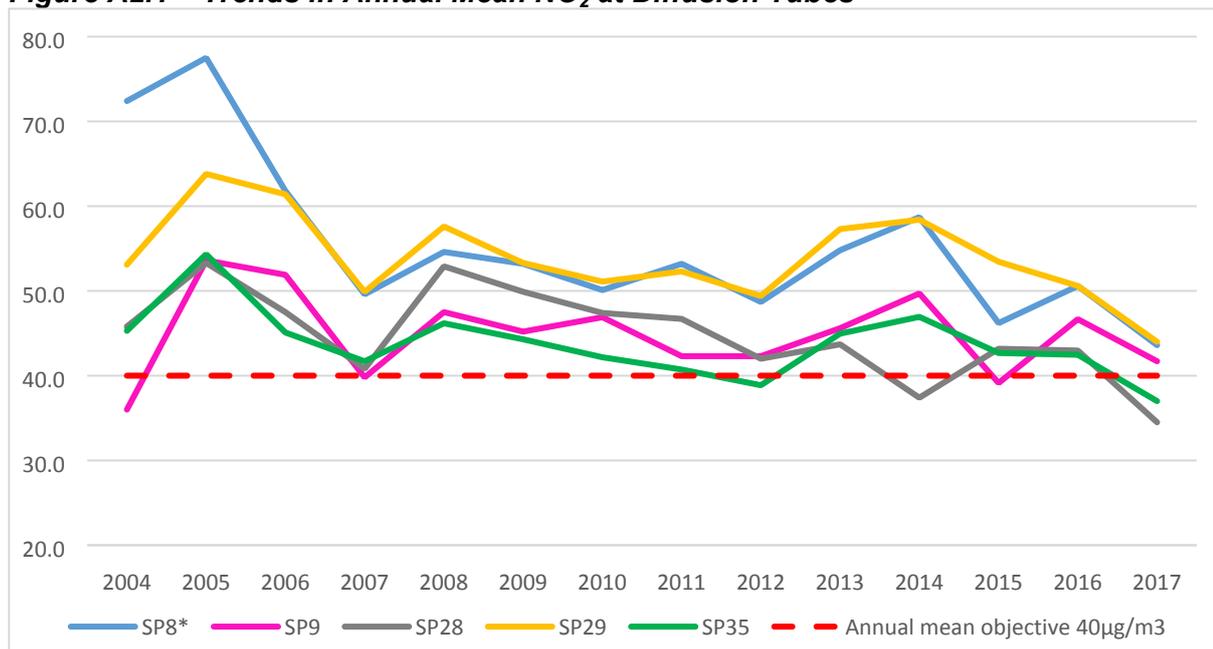
**Figure A1.5 Inset of Air Quality Monitoring in Stanwell and Stanwell Moor**



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## APPENDIX 2 – Monitoring Results

**Figure A2.1 Trends in Annual Mean NO<sub>2</sub> at Diffusion Tubes**



\* Diffusion Tube SP8 was relocated in 2007 – taking it about 70m further from the Sunbury Cross junction but halving the distance from the kerb of the A308 Staines Road West

Figure A2.1 shows that after falling from a peak in 2005 annual mean nitrogen dioxide tubes in Spelthorne do not show a clear long-term trend of decreasing levels as might be expected due to a reduction in background concentrations.

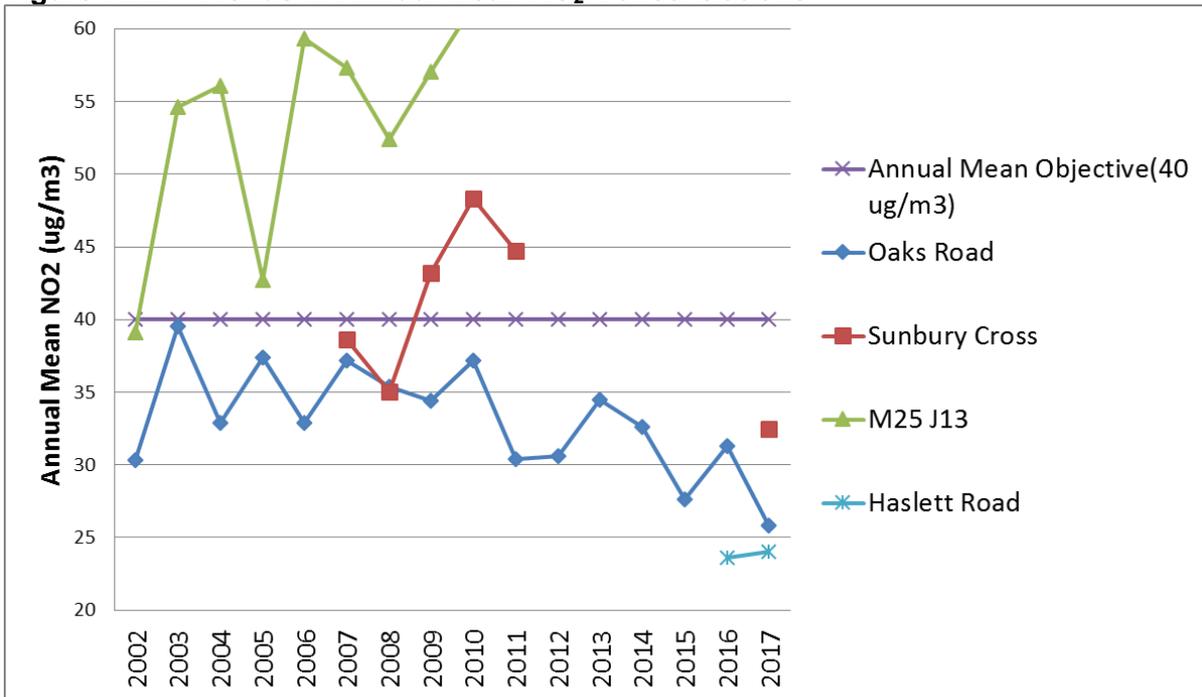
**Table A2.1 Provisional 2018 Period Mean results**

Location	NO <sub>2</sub> Annual Mean Concentrations (µg/m <sup>3</sup> )		PM10 Annual Mean Concentrations (µg/m <sup>3</sup> )		PM2.5 Annual Mean Concentrations (µg/m <sup>3</sup> )	
	2017	2018*	2017	2018*	2017	2018*
Oaks Road *	25.8	27	14.2	16	9.21	10
Sunbury Cross *	32.5	30	13.1	14	8.04	9
Haslett Road #	24.0	20.8	20.7	19.1	13.3	12.3
Objective	40	40	40	40	25	25

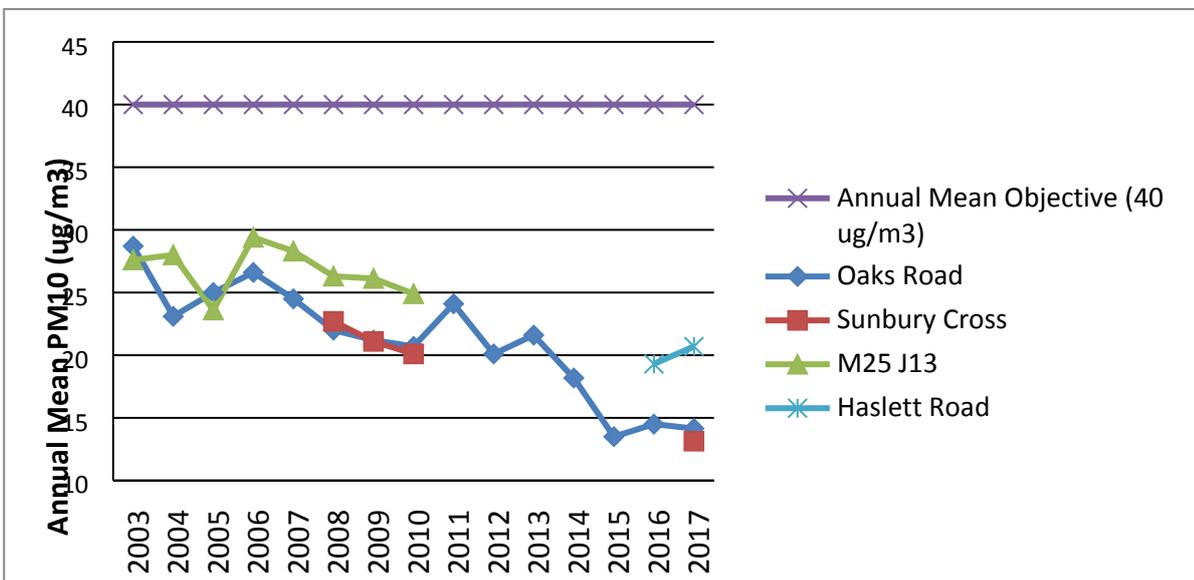
\* Provisional 2018 Period Mean for 1 January to 3 October 2018

# Provision 2018 Period Mean for 1 January to 30 September 2018

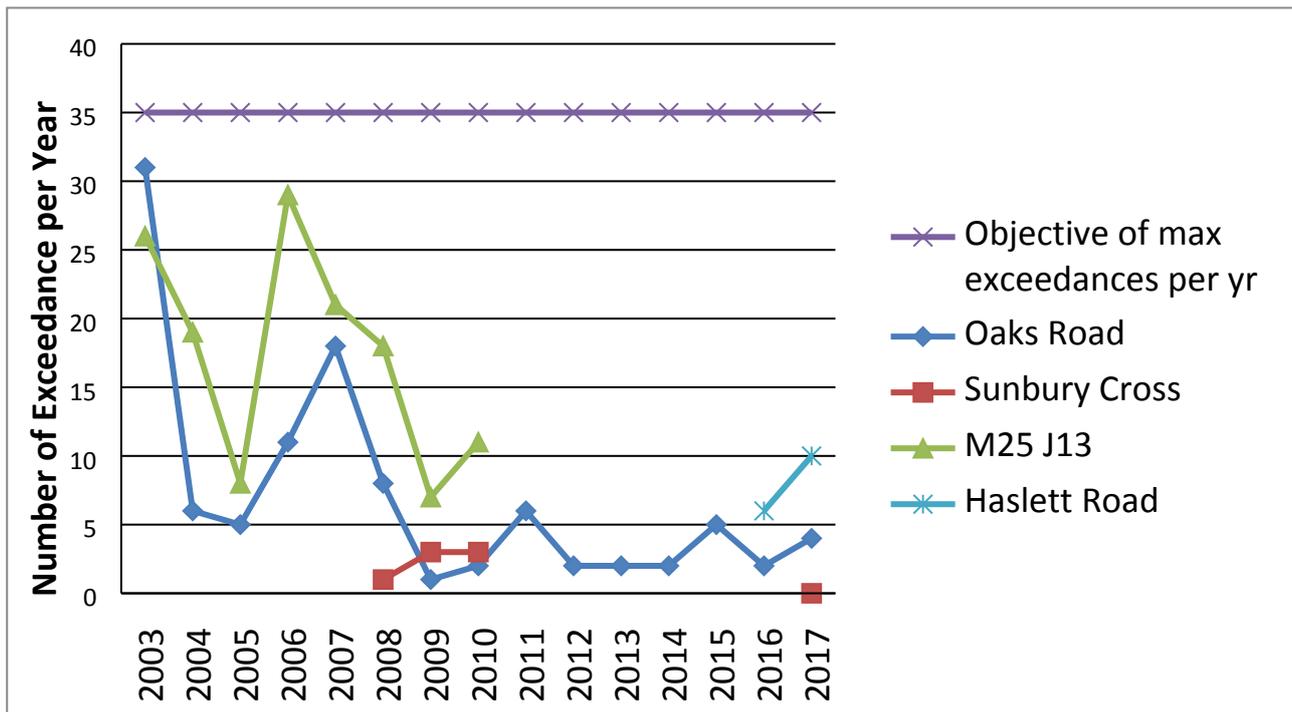
**Figure A2.2 Trends in Annual Mean NO<sub>2</sub> Concentrations**



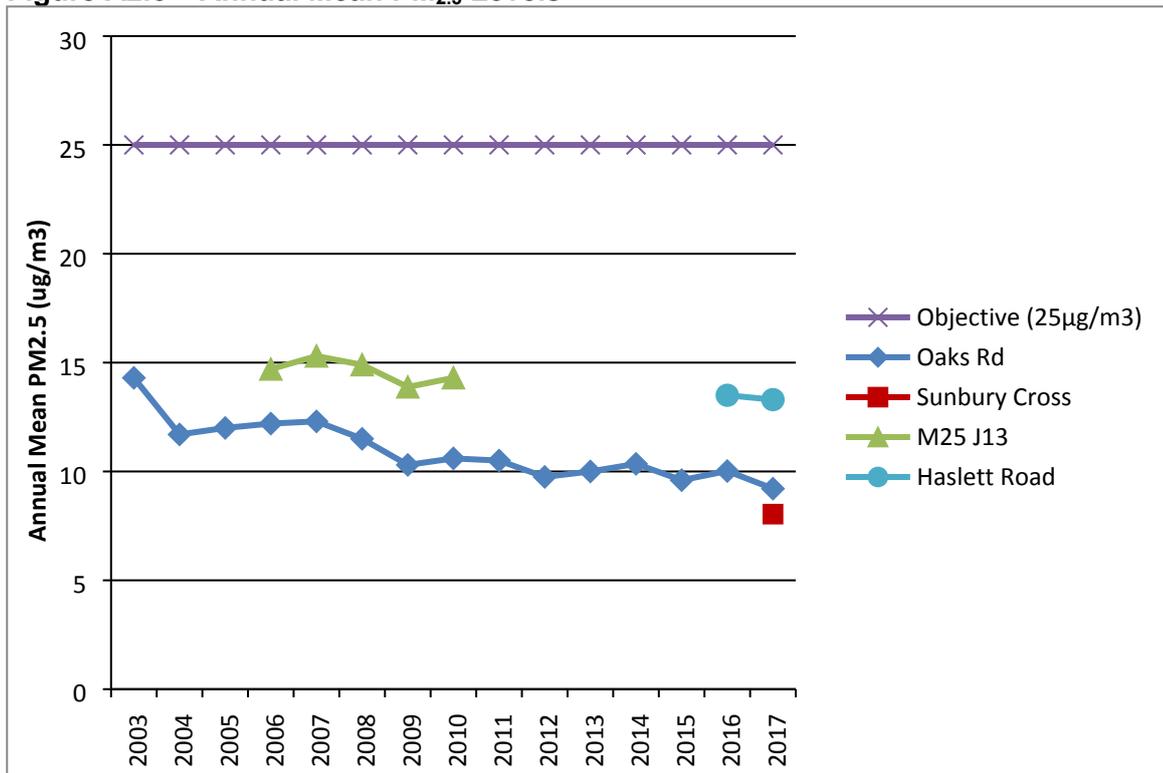
**Figure A2.3 Trends in Annual Mean PM<sub>10</sub> Concentrations**



**Figure A2.4 Trends in Number of 24-Hour Mean PM<sub>10</sub> Results >50µg/m<sup>3</sup>**

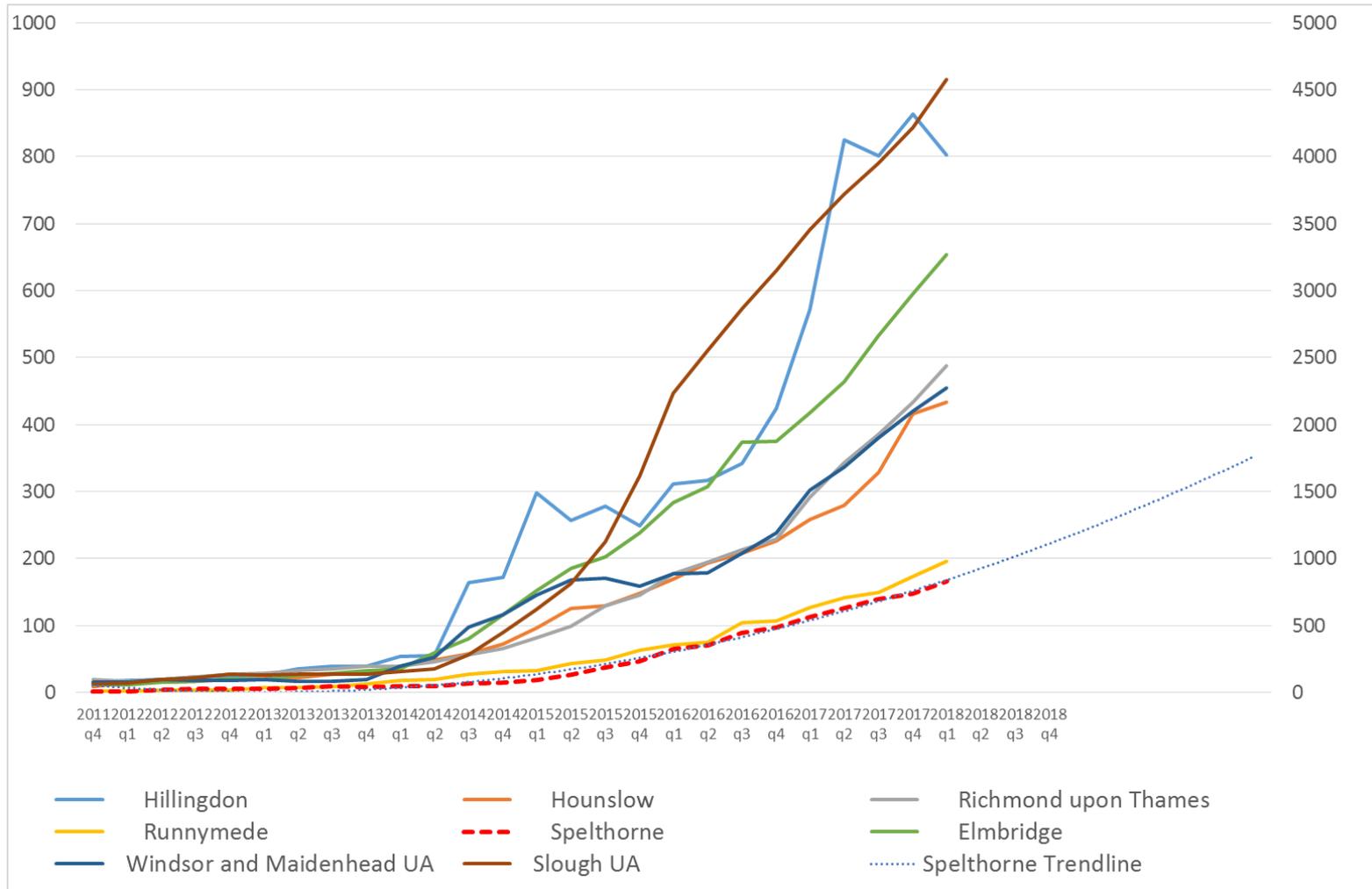


**Figure A2.5 Annual Mean PM<sub>2.5</sub> Levels**



## APPENDIX 3 – Electric Vehicle Figures

Figure A3.1 Vehicle Licensing Statistics for Electric Plug-in Cars, Vans and Quadricycles



**Note:** Slough UA on secondary axis

**Source:** DfT statistics Table VEH0131, Plug-in cars, vans and quadricycles licensed at the end of the quarter, UK, by local authority of registered keeper <https://www.gov.uk/government/collections/vehicles-statistics>.

**Figure A3.2 Surrey Electric Vehicle Charging Standards for Major New Developments**

<b>Residential Development</b>	<b>EV Charging Requirement</b>	<b>Charge Point Specification</b>	<b>Power Requirement</b>
Houses:	1 fast charge socket per house.		
Flats/Apartments	20% of available spaces to be fitted with a fast charge socket	7kw Mode 3 with Type 2 Connector	230v AC 32 Amp Single Phase dedicated supply
C2 Care /Nursing Home			
C3 Elderly (Sheltered)	A further 20% of available spaces to be provided with power supply to provide additional fast charge socket	Feeder pillar or equivalent permitting future connection.	230v AC 32 Amp Single Phase dedicated supply
<b>Commercial Development (Offices / Employment Retail / Leisure Uses)</b>	<b>EV Charging Requirement</b>	<b>Charge Point Specification</b>	<b>Power Requirement</b>
B1 Offices, light Industry 500m>			
B2 General Industrial 500m>			
B8 Storage & Distribution 1000m>	10% of available spaces to be fitted with a fast charge socket	7kw Mode 3 with Type 2 Connector	230v AC 32 Amp Single Phase dedicated supply
D1 Doctors/Dentists practices			
D1 Schools/Colleges	A further 10% of available spaces to be provided with power supply to provide additional fast charge socket	Feeder pillar or equivalent permitting future connection.	230v AC 32 Amp Single Phase dedicated supply
A1 Retail 500m2>			
C1 Hotels			
D2 Sports Clubs, Health Clubs, Leisure Centres, Theatres, Cinemas, Conference Centres, 500m2>			

<b>Sui Generis Uses</b>	<b>EV Charging Requirement</b>	<b>Charge Point Specification</b>	<b>Power Requirement</b>
(Including all other uses not mentioned above).	Individual assessment / justification	Individual assessment/justification	To be determined by charge point specification
<b>High demand, Short Stay Land Uses</b>			
(Development with high demand and short stay characteristics in strategic locations (e.g. motorway service stations, large petrol filling stations).	20 % of available spaces to be fitted with a fast charge socket	7kw Mode 3 with Type 2 Connector	230v AC 32 Amp Single Phase dedicated supply
Large or major development and regeneration projects.	A further 10% of available spaces to be provided with power supply to provide additional fast charge socket	Feeder pillar or equivalent permitting future connection.	230v AC 32 Amp Single Phase dedicated supply
	1 or more rapid charge sockets	50kw Mode 4 (DC) Multi-standard charge point.	400v AC 100Amp Triple Phase dedicated supply

**Source:** Surrey County Council, January 2018, *Vehicular and Cycle Parking Guidance*. Available at: [https://www.surreycc.gov.uk/\\_data/assets/pdf\\_file/0005/155660/January-2018-Parking-Guidance-for-Development.pdf](https://www.surreycc.gov.uk/_data/assets/pdf_file/0005/155660/January-2018-Parking-Guidance-for-Development.pdf)