



2020 Air Quality Annual Status Report (ASR)

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

November 2020

Welwyn Hatfield Borough Council

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Executive Summary: Air Quality in Our Area

Air Quality in Welwyn Hatfield Borough Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

Welwyn Hatfield do not have an air quality action area. We currently monitor nitrogen dioxide by the use of diffusion tubes and particulate matter PM_{2.5} with a road side analyser. At this present time we are in the process of installing a roadside nitrogen dioxide analyser. This analyser has been located in an area in the borough where monitored levels by the use of diffusion tubes have shown levels to be close to the limit value after distance corrections have been applied.

The monitored results from diffusion tubes for 2019 data show that all locations are below the limit value (after mandatory corrections have been applied). Areas that are presenting low results will be considered for relocation to areas where results could be higher. There is commitment to ensure that locations are changed as regularly as possible. Where results demonstrate that concentrations are elevated, these diffusion tube monitoring locations will remain. One of the key locations remains to be West View in Hatfield. Once the roadside nitrogen dioxide analyser is operational, this will provide us with some very useful data.

The data captured by the PM_{2.5} analyser has shown that the majority of the days (344) throughout 2019 were in the low index band with some days (8) in the moderate band. The data capture rate for 2019 was 97% which is very good. The annual mean has reduced from 2018 from 11 Micrograms to 10 in 2019.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

² Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

The overall trend for diffusion tube results shows that results are fluctuating. There is not a specific trend in increases or decreases. Some results have increased, some have stayed static and some have decreased. Despite this, the changes in concentration levels have not changed dramatically.

Actions to Improve Air Quality

The council still operate the electric scheme run by e car. We ensure that the cars are used for as many operational site visits as possible. The cars are booked in advance for each monthly diffusion tube run throughout the year.

The scheme is promoted to council staff with training days to encourage their use and make people feel more comfortable using them.

We are a member of the Hertfordshire and Bedfordshire air quality group. This group is made of all of the local authorities within the counties and we meet on a quarterly basis. We also link in with Hertfordshire County Council Public Health who attend the meetings also. This allows us to share experiences, data and ideas and to ensure that air quality is managed county wide. Ricardo AEA provide the group with data collection and management services so that the group's data is located on one website <http://www.airqualityengland.co.uk/> The group is extremely useful and demonstrates good partnership working practices.

In February 2019, the air text alert scheme became active. This scheme was set up by the Hertfordshire and Bedfordshire air quality group. Ricardo AEA run this alert system. The service can be accessed online <https://www.airqualityengland.co.uk/local-authority/knr-subscription> through the air quality England website. This allows people to sign up to the service and receive local air quality alerts from our own monitoring station. This is a huge leap in terms of local knowledge and keeping the local community updated and aware of pollution related issues.

The public health and protection team at Welwyn Hatfield always work to minimise pollution through our LAPPC permitting regime whereby commercial operations that can produce pollution are inspected and regulated accordingly.

The team come across a number of pollution incidents relating to bonfires both commercial and domestic and these are dealt with via appropriate legislation and actions with a view to reduce pollution and harm to others.

2020 is the year of the Welwyn Garden City Centenary. During 2019 a number of organisations came together to promote a scheme to improve air quality near schools. The organisations involved are, Welwyn Garden City Centenary, Welwyn Hatfield Borough Council, Hertfordshire County Council (Active Safer Travel Team) and Groundworks.

Our aim is to initiate and advance with our proposed school air quality improvement project. It is well known and documented that the school run, where parents take children to school, produces significant congestion when parents decide to drive. This project initially aims to work with three schools within the Borough.

We are proposing to work closely with the schools to engage with parents, the children and the teachers in order to try and instigate a habitual change in behaviour. It is often the case that the majority of car journeys to and from schools are not necessary. To add to this, vehicles are often left idling whilst parents are dropping children off or waiting for them to come out of the school.

This project will focus on the improvement and reduction of Nitrogen Dioxide, from the activity of the school run by the use of the motor vehicle. We intend to locate multiple diffusion tubes within or close to the school grounds to provide us with a base data set. We will continue to monitor nitrogen dioxide levels as the scheme progresses. This will not only provide a baseline data set but it will also be incorporated in our annual status reports. The data will be sent to DEFRA and will make up part of our monitoring network.

The key for this project to be successful will be continuous engagement with the schools. We intend to carry out presentations, focused engagement with parents, teachers and the children. The message will be focused around education and active travel and encouragement to parents to walk their children to school. To highlight that in a lot of circumstances using a vehicle to travel to school is not necessary.

The project will promote travel alternatives, cycling, walking, car sharing and the use of electric vehicles. The focus will be to intensively highlight the improvements that can be made by having some consideration to active travel. All of the partners have a

dedicated role related to public health and we actively encourage healthy living and green transport. This scheme will incorporate with our other public health promotion roles and we feel that we can make a big difference.

Initially we need to target the schools and assess the site for the suitability of monitoring. At the same time, we intend to engage with school management staff to discuss the suitability of the project. It appears at this moment in time after initial engagement that the schools are willing to work with us.

We are keen to identify the effects of pollution to the children, and use this opportunity to educate them on how pollution monitoring is undertaken and demonstrate how pollution is monitored and what we do with the information. Education is a key part of this project and we see it as an exciting opportunity to interact with the schools and to make a difference.

Objectives:

The main objective is to try and improve air quality levels in and around schools and to encourage a behavioural change towards green travel. This will hopefully expand to other areas of their lives and encourage active travel elsewhere not just to school.

The project has the fundamental aim of reducing air quality concentrations and to encourage behavioural change. It also proposes to raise awareness. In recent years air quality awareness has been pushed in the media significantly. This is a very positive step. However, there is still a very ingrained culture that vehicles are used on short journeys to schools.

We feel that this will bring a noticeable benefit to the schools and those living in the community. There are inevitably houses close to schools and there will be situations whereby those households do not have children that attend the school. This can often cause frustration for those households when they see congested traffic due to the school run. We are directly aware of such frustrations and know that this occurs.

The reduction in congestion and school vehicle travel could not only improve air quality concentrations locally it could also reduce stress and tension. This would be a project that aims to not just target one issue but a multitude of issues to make things more pleasant for everyone.

The direct result of targeting schools, is that it will also target parents and those not just living right next to the school but further afield. This will include a wide range of

our diverse community. It should be considered that whilst this project is focused on reduction in pollution from nitrogen dioxide, it will also reduce pollution from particulate matter, due to reduced vehicle use.

As part of Welwyn Hatfield Borough Councils air quality monitoring regime, we monitor air quality at multiple sites across the borough. We currently only have one roadside PM2.5 analyser. Funding for this analyser was secured through public health monies provided by Hertfordshire County Council.

Through our most recent air quality annual status report, we identified a concern in relation to the Public Health Outcomes Framework - Fraction of mortality attributable to particulate air pollution 2017. This provided a comparison for the East of England, England and regional areas for the attributable mortality rates due to particulate air pollution in 2017. The region of Welwyn and Hatfield has a value of 5.9% and this compares to the whole of England which is 5.1% and the East of England region which is 5.5%.

We feel the best way to evidence by way of monitoring and active engagement with the community. We believe that engaging with people and promoting project schemes really does make a difference. This clearly does come at a cost and has an impact on resource. This project has the potential to really enhance our air quality monitoring network and we feel that it will have a positive impact.

Conclusions and Priorities

The council are dedicated to working towards a target of reducing emissions. Actively encouraging people out of cars, promoting health and fitness and working towards a healthy community.

The air quality monitoring network is a key part of the role we play in obtaining accurate data across the borough to keep the community informed. We are dedicated to pollution control and actively reducing emissions.

We are keen to improve our monitoring network and the commissioning of a new roadside analyser is a significant step forward. This will provide us with more accurate and real time data for nitrogen dioxide.

The monitoring network will continue to be reviewed and active changes will commence going forward.

Local Engagement and How to get involved

The Hertfordshire and Bedfordshire air quality group work closely with Hertfordshire County Council and we are therefore able to engage with a wider audience and knowledge base through community engagement and social media. Partnership working is key and helps us promote our messages to our communities. We engage with our communications team and promote matters relating to air quality via social media.

The air quality alert scheme is publicised via social media in order to raise its profile and get more people engaged to sign up.

Improving the health of the public and raising awareness of issues that impact on the community's health is a key part of our work. We have regular contact with the community on a day to day basis and health promotion is always a major part of our focus.

The proposed air quality schools project, is a major part of how we intend to become more involved with the local community. Not only will it target school children but it will also be focussed at parents. This project aims to encourage behavioural change, this something that is required and we are passionate about making this happen. We are hoping that if this project is successful, it can be publicised via social media and be adopted by other schools in the area. This is just the beginning of an exciting new way to engage with the community and make improvements.

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1 Local Air Quality Management

This report provides an overview of air quality in Welwyn Hatfield Borough Council during 2019. It fulfils the requirements of Local Air Quality Management (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 to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Welwyn Hatfield Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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 Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

Welwyn Hatfield Borough Council currently does not have any AQMAs. For reference, a map of Welwyn Hatfield Borough Councils' monitoring locations is available in Appendix D.

Table 2.1 – Declared Air Quality Management Areas

Welwyn Hatfield Borough Council do not have an air quality management area.

2.2 Progress and Impact of Measures to address Air Quality in Welwyn Hatfield Borough Council

Defra's appraisal of last year's ASR concluded: - This information is also published on the councils website.

The Report sets out the Annual Status Report, which forms part of the Review & Assessment process required under the Environment Act 1995 and subsequent Regulations.

Welwyn Hatfield Borough Council does not have any declared air quality management areas (AQMAs). As such there is no formal requirement to develop and publish an air quality action plan (AQAP). However, the Council still provide a discussion on the measures they are implementing to improve air quality in the area. This demonstrates the Council's active engagement to improving air quality.

In 2018, NO₂ was monitored across a network of 33 passive diffusion tube sites. PM_{2.5} was also monitored at one automatic site, with concentrations well below the annual mean target. There were three exceedances of the annual mean NO₂ objective **prior** to distance correction, these were at WH19, WH25 and W26 measuring at 44 µg/m³, 40 µg/m³ and 45 µg/m³, respectively. Once distance correction was applied there were **no** measured exceedances.

QA/QC procedures have been applied for bias adjustment (using a national factor), annualisation and distance correction with calculations provided. The Council have no specific measures to target PM_{2.5} however they do take the pollutant into account when implementing strategies within the Borough. The Council also make reference to the Public Health Outcome Framework indicators for PM_{2.5}.

On the basis of the evidence provided by the Local Authority, the conclusions reached are acceptable for all sources and pollutants. Following the completion of this report, Welwyn Hatfield Borough Council should submit an Annual Status Report in 2020.

Commentary

The report is well structured, detailed and provides the information specified in the Guidance, following the latest reporting template.

1. It is encouraging to see that the Council have reviewed their monitoring programme and have introduced new monitoring locations. The Council should continue to review the monitoring programme on a regular basis, to ensure that monitoring takes place at any sites of potential exceedance with relevant exposure.

Monitoring locations are now reviewed on an annual basis. The project plan tries to ensure that new locations are in place by January each year. This is to try and obtain a full 12 months of monitoring data for each new location.

2. It would be beneficial for the Council to only include 5 years' worth of data in Figure A.1, this will help reduce overcrowding and make the graph easier to read.

This has been noted and rectified in this report, the layout of the graph has also been modified to try and make it easier to read.

3. With regards to the maps in Appendix D, it would be beneficial for the Council to also include a single map displaying all the monitoring locations. Therefore, the reader is able to understand how the monitoring locations relate to one another geographically.

Significant changes have been made to the way the maps are presented in this report. Each site is labelled and the data is presented in a way that you can see

other monitoring sites in the locality. The overall borough map has also been included.

4. As there are multiple monitoring locations on the map on page 74, it would be extremely beneficial for the Council to label the monitoring locations.

The maps now shows labels of each monitoring location to try and assist the reader in identifying which location refers to specific results.

This commentary is not designed to deal with every aspect of the report. It highlights a number of issues that should help the local authority either in completing the Annual Status Report adequately (if required) or in carrying out future Review & Assessment work.

Issues specifically related to this appraisal can be followed up by returning the attached comment form to Defra, Welsh Assembly Government, Scottish Government or DOE, as appropriate.

For any other queries please contact the Local Air Quality Management Helpdesk:

Telephone: 0800 0327 953

Email: LAQMHelpdesk@uk.bureauveritas.com

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Date Measure Introduced	Organisations involved	Funding Source	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Electric cars	Alternatives to private vehicle use	Car Clubs	Jun-17	E car and Welwyn Hatfield Council	Council budget	85%	Try to encourage green travel for council staff and members of the public	Cars are in use	Ongoing	The e cars are booked a year in advance for all of the diffusion tube collection and distribution days. The use of the e cars has increased and they are quite often booked. There have been times when the e cars have not been used for air quality diffusion tube runs because there has been a fault with the vehicle. This has been namely a flat tyre. In these instances a member of staff has used their own vehicle. On these occasions we have made sure that we have used a petrol vehicle rather than a diesel. The scheme is actively encouraged to staff via internal communications. The vehicles are available for members of the public to use outside of office hours.
2	Installing roadside Nox analyser	Public Information	Other	2018	Welwyn Hatfield Borough Council and Hertfordshire County Council (Public Health and Protection).	Council budget	90%	This will allow us to monitor more accurate Nox levels in suspected areas of poor air quality. Improvements can then be made if required. It may result in an air quality action area being declared.	Ongoing	2020	The project has presented some very challenging issues. The nox analyser and box are installed. An electrical power supply has been installed and wiring has been run to the electrical feeder pillar adjacent to the analyser box. There have been some very lengthy and unfortunate delays

											<p>with this project. These delays have been related to, companies not willing to undertake contract works to install a concrete base, this took a number of months, delays in relation to the ducting installation for the electrical cables, The electrical feeder pillar box was also driven into by a vehicle and significant damage occurred, we have had to arrange for this to be repaired. Just prior to lockdown we arranged for N power to install an electricity meter in the feeder pillar and then connect the analyser to the live supply. N Power has stated that this work cannot be carried out during lockdown because it is not considered as essential or emergency works. We are awaiting instruction from them as to when they can carry out the work for us. This means a further delay which is very unfortunate.</p>
3	Relocating PM2.5 monitor	Public Information	Other	2016	Welwyn Hatfield Borough Council and Hertfordshire County Council (Public Health and Protection).	Hertfordshire County Council Public Health	30%	PM2.5 - this allows us to accurately monitor emissions from traffic sources and other particulate sources. It enables us to keep a track on PM2.5 levels and to plan reduction in emissions.	Complete	Unknown	<p>We have the intention to relocate the PM2.5 analyser to another location once the Nox analyser project has been completed. Due to the fact that this project has encountered several long delays, and has raised a number of practical issues, we will have to evaluate our decision going forward and ensure that any plans to relocate the analyser</p>

											are considered carefully.
4	Relocating diffusion tubes	Public Information	Other	2019	Welwyn Hatfield Borough Council	Council budget	100%	Following on from feedback from DEFRA. We now relocate diffusion tubes every January. Previously diffusion tubes were being relocated midway through the year. This was effecting data capture, meaning presenting data was more complicated. Relocating monitoring sites more frequently provides with a greater data set and allows us to not only monitor Nox across the borough but identify areas where emission reduction measures are required.	Implementation ongoing	Ongoing	A project plan has been implemented and relocation of sites will continue to occur every January. This will always allow a full year data capture, except on occasions where diffusion tubes are stolen.
5	Air quality - local plan development control - Planning	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Welwyn Hatfield Borough Council	Council budget	100%	Ensuring that we factor in and deal with air quality matters relating to developments. Encourage good design, active travel, implementation of electric vehicle charging points, ability to cycle and use public transport. Implementation of a change in behaviour via development design.	Ongoing	Ongoing	More information is being provided regarding some sites. Therefore, they are being looked into with more detail in relation to requirements for air quality impact assessments at the time an application is made.
6	Council Pool bike scheme	Alternatives to private vehicle use	Other	2012	Welwyn Hatfield Borough Council	Council budget	100%	Encourage green travel and to minimise staff vehicle use for council visits to reduce emissions.	Ongoing	Ongoing	Some staff members do use the hire bikes. However, the borough is extensive and a number of visits are too far to

											cycle or would mean that visits would take an unreasonable length of time. There are proposals put forward to try and introduce an electric bike scheme. This may well encourage uptake of the scheme because it would mean that distance to visits would not be as much of an issue.
7	Cycle to work scheme	Alternatives to private vehicle use	Other	2016	Welwyn Hatfield Borough Council & Cycle Solutions.	Council funding	100%	Provide an opportunity to staff to purchase a bicycle to cycle to and from work on. This is especially aimed at employees that live local enough to work to cycle. Reducing congestion and emissions by cycling to work rather than driving.	Ongoing - the scheme operates every 6 months	Ongoing	Trying to encourage use of the scheme - promoted through council staff literature - scheme is active every 6 months
8	Promoting travel alternatives	Alternatives to private vehicle use	Other	2015	Welwyn Hatfield Borough Council	Council funding	70%	Promote and participate in health walks and walking clubs, encouraging people to not drive as much and to think about why they are making their journey. With the view to reduce travel by use of a motor vehicle.	Ongoing	Ongoing	Trying to encourage use of the scheme
9	Development framework	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Welwyn Hatfield Borough Council	Council funding	100%	Environmental health have been consulting on planning applications during 2019. Air quality is always given consideration with regards to effects on pollution and relevance to our monitoring network. When mitigation is required we ask for the implementation of	Ongoing	Ongoing	Workload management and priority for planning consultations

								green travel, electric vehicle charging points and access to public transport. This is with a view to reduce motor vehicle use.			
10	Working partnership s with county council, other agencies and herts and beds local authorities - consultation on proposed travel plans	Other	Other	ongoing	Welwyn Hatfield Borough Council	Council funding	90%	Working with other agencies	Ongoing	Ongoing	Communications and officer availability
11	Promoting travel alternatives	Promoting Low Emission Transport	Other	Ongoing	Welwyn Hatfield Borough Council	Council funding	30%	Extension of cycle paths/routes	Planning	Ongoing	Planning/consultation /implementation
12	Air alet scheme	Public Information	Via other mechanisms	2019	Welwyn Hatfield Borough Council	Council funding	100%	Key local public information providing alerts from local air quality monitors from the herts and beds air quality network	Contract awarded	Active 2019	This scheme is promoted via various social media channels including the council website.
13	Permitted processes (LAPPC)	Promoting Low Emission Plant	Emission control equipment for small and medium sized stationary combustion sources / replacement of combustion sources	Ongoing	Welwyn Hatfield Borough Council	Council funding	100%	Regulating of permitted processes to ensure adequate pollution control and pollution prevention	Ongoing	Ongoing	We have had assistance from an external contractor to assist with the LAPPC function.
14	Herts & Beds Air Quality Forum - including tranport planners and public health from hertfordshir e county council	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Ongoing	Various Herts and Beds local authorities	Council funding	Not defined	A forum making up a large number of authorities that is well established - sharing ideas, plans and information. This is with a view to exchange information regarding ways in which to implement	Ongoing	Ongoing	The group requires a chair to organise and plan the quarter meetings plus information sharing. This does involve significant resource.

								changes to reduce emissions.			
15	Domestic and commercial pollution control	Other	Other	Ongoing	Welwyn Hatfield Borough Council	Council funding	Ongoing	Respond to and deal with complaints of bonfires and the illegal disposal of commercial waste by burning - Advice given and enforcement action taken when necessary. Advice and enforcement ensures a reduction in pollution control as a reduction in the number of bonfires.	Ongoing	Ongoing	This involves an investigation process and requires officers visiting and gathering/witnessing evidence
16	Clean air day	Alternatives to private vehicle use	Car & lift sharing schemes	Annually	Welwyn Hatfield Borough Council	Hertfordshire County Council Public Health	Ongoing	Promote and liaise with schools and the public with regards to national clean air day - work with the Hertfordshire and Bedfordshire air quality group and Hertfordshire county council - promotion of green travel to try and encourage people out of their vehicles.	Ongoing	Ongoing	Issues with the provision of other modes of transport depending upon location
17	School air quality project	Promoting Travel Alternatives	School Travel Plans	2019/2020	Welwyn Hatfield Borough Council - WGC Centenary - Hertfordshire County Council - Groundworks	Multiiple agency	Ongoing	To celebrate the centenary, multiple agencies have come together to work with three schools in borough promoting air quality awareness. This is to encourage greener travel	Ongoing	2020	The current project has been halted due to the lockdown. Covid 19.

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

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

Welwyn Hatfield Borough Council is taking the following measures to address PM_{2.5}: The council still operate the electric scheme run by e car. We ensure that the cars are used for as many operational site visits as possible. The cars are booked in advance for each monthly diffusion tube run throughout the year.

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dedicated role related to public health and we actively encourage healthy living and green transport. This scheme will incorporate with our other public health promotion roles and we feel that we can make a big difference.

Initially we need to target the schools and assess the site for the suitability of monitoring. At the same time, we intend to engage with school management staff to discuss the suitability of the project. It appears at this moment in time after initial engagement that the schools are willing to work with us.

We are keen to identify the effects of pollution to the children, and use this opportunity to educate them on how pollution monitoring is undertaken and demonstrate how pollution is monitored and what we do with the information. Education is a key part of this project and we see it as an exciting opportunity to interact with the schools and to make a difference.

Objectives:

The main objective is to try and improve air quality levels in and around schools and to encourage a behavioural change towards green travel. This will hopefully expand to other areas of their lives and encourage active travel elsewhere not just to school.

The project has the fundamental aim of reducing air quality concentrations and to encourage behavioural change. It also proposes to raise awareness. In recent years air quality awareness has been pushed in the media significantly. This is a very positive step. However, there is still a very ingrained culture that vehicles are used on short journeys to schools.

We feel that this will bring a noticeable benefit to the schools and those living in the community. There are inevitably houses close to schools and there will be situations whereby those households do not have children that attend the school. This can often cause frustration for those households when they see congested traffic due to the school run. We are directly aware of such frustrations and know that this occurs.

The reduction in congestion and school vehicle travel could not only improve air quality concentrations locally it could also reduce stress and tension. This would be a project that aims to not just target one issue but a multitude of issues to make things more pleasant for everyone.

The direct result of targeting schools, is that it will also target parents and those not just living right next to the school but further afield. This will include a wide range of

our diverse community. It should be considered that whilst this project is focused on reduction in pollution from nitrogen dioxide, it will also reduce pollution from particulate matter, due to reduced vehicle use.

As part of Welwyn Hatfield Borough Councils air quality monitoring regime, we monitor air quality at multiple sites across the borough. We currently only have one roadside PM2.5 analyser. Funding for this analyser was secured through public health monies provided by Hertfordshire County Council.

Through our most recent air quality annual status report, we identified a concern in relation to the Public Health Outcomes Framework - Fraction of mortality attributable to particulate air pollution 2017. This provided a comparison for the East of England, England and regional areas for the attributable mortality rates due to particulate air pollution in 2017. The region of Welwyn and Hatfield has a value of 5.9% and this compares to the whole of England which is 5.1% and the East of England region which is 5.5%.

We feel the best way to evidence by way of monitoring and active engagement with the community. We believe that engaging with people and promoting project schemes really does make a difference. This clearly does come at a cost and has an impact on resource. This project has the potential to really enhance our air quality monitoring network and we feel that it will have a positive impact.

These measures are not just to target the reduction of PM2.5 but all pollutants of concern.

Public Health Outcomes Framework - Fraction of mortality attributable to particulate air pollution 2018:

Table extract from: <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/qid/1000043/pat/6/par/E12000006/ati/101/are/E07000241/iid/30101/age/230/sex/4/cid/4/page-options/car-do-0>

Compared with benchmark: ■ Better ■ Similar ■ Worse ■ Not compared

D01 - Fraction of mortality attributable to particulate air pollution 2018				Proportion - %	
Area	Recent Trend	Count	Value	95% Lower CI	95% Upper CI
England	—	-	5.2	-	-
East of England region	—	-	5.5	-	-
Thurrock	—	-	6.2	-	-
Luton	—	-	6.1	-	-
Watford	—	-	6.0	-	-
Ipswich	—	-	5.9	-	-
Epping Forest	—	-	5.9	-	-
Hertsmere	—	-	5.8	-	-
Broxbourne	—	-	5.8	-	-
Brentwood	—	-	5.7	-	-
Welwyn Hatfield	—	-	5.7	-	-
Basildon	—	-	5.7	-	-
Three Rivers	—	-	5.7	-	-
St Albans	—	-	5.7	-	-
Chelmsford	—	-	5.7	-	-
Harlow	—	-	5.6	-	-
Cambridge	—	-	5.6	-	-
Norwich	—	-	5.6	-	-
Colchester	—	-	5.5	-	-
Southend-on-Sea	—	-	5.5	-	-
Bedford	—	-	5.5	-	-
Castle Point	—	-	5.5	-	-
Stevenage	—	-	5.5	-	-
Central Bedfordshire	—	-	5.5	-	-
Peterborough	—	-	5.5	-	-
Dacorum	—	-	5.5	-	-
Braintree	—	-	5.5	-	-
North Hertfordshire	—	-	5.4	-	-
East Hertfordshire	—	-	5.4	-	-
Huntingdonshire	—	-	5.4	-	-
Rochford	—	-	5.4	-	-
Babergh	—	-	5.4	-	-
South Cambridgeshire	—	-	5.4	-	-
Fenland	—	-	5.4	-	-
St. Edmundsbury	—	-	5.3	-	-
Mid Suffolk	—	-	5.3	-	-
East Cambridgeshire	—	-	5.3	-	-
Uttlesford	—	-	5.3	-	-
Waveney	—	-	5.3	-	-
Forest Heath	—	-	5.3	-	-
Great Yarmouth	—	-	5.3	-	-
Maldon	—	-	5.2	-	-
King's Lynn and West Norfolk	—	-	5.2	-	-
Tendring	—	-	5.2	-	-
Broadland	—	-	5.2	-	-
Breckland	—	-	5.2	-	-
Suffolk Coastal	—	-	5.2	-	-
South Norfolk	—	-	5.2	-	-
North Norfolk	—	-	4.9	-	-

This table shows a comparison for the East of England, England and regional areas for the attributable mortality rates due to particulate air pollution in 2018.

The region of Welwyn and Hatfield has a value of 5.7% (which is a reduction from 5.9% in 2017) and this compares to the whole of England which is 5.2% and the East of England region which is 5.5%.

With the table sorted into rates of increasing values, it is clear to see that the percentage increases as the landscape becomes more congested and towns are closer together. The region of Welwyn Hatfield has a similar result when compared to the Eastern region as a whole.

Whilst the decrease is small, it can only be considered positive that the reported figure has decreased since last year.

We were keen to understand more about this figure when it was reported for the first time in the annual status report last year. Contact was made with public health colleagues at Hertfordshire County Council. It transpires that this figure does not take into account locations of previous residences or locations of where people work, or indeed ongoing health conditions. Therefore, it is not overall clear how much local factors have on the overall mortality rate.

Mortality attributed to pollution must be taken seriously and it is a subject that is high on the agenda for the council. This is why matters regarding reducing emissions and having a robust monitoring network is vital to do everything we can to reduce and control emissions. Health promotion is a key target as well as trying to manage emissions via the planning consultation process and the local plan.

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 objectives.

Welwyn Hatfield Borough Council undertook automatic (continuous) monitoring at one site during 2019. Table A.1 in Appendix A shows the details of the site.

Maps showing the location of the monitoring sites are provided in Appendix D. Further 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

Welwyn Hatfield Borough Council undertook non- automatic (passive) monitoring of NO₂ at 33 sites during 2019. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias⁴, “annualisation” (where the data capture falls below 75%), and distance correction⁵. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

For diffusion tubes, the full 2019 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

⁴ <https://laqm.defra.gov.uk/bias-adjustment-factors/bias-adjustment.html>

⁵ Fall-off with distance correction criteria is provided in paragraph 7.77, LAQM.TG(16)

3.2.2 Particulate Matter (PM₁₀)

Welwyn Hatfield Borough Council do not monitor this pollutant.

3.2.3 Particulate Matter (PM_{2.5})

Table A.7 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past 5 years.

3.2.4 Sulphur Dioxide (SO₂)

Welwyn Hatfield Borough Council do not monitor this pollutant.

Appendix A: Monitoring Results

Table A.1 - Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
WHBAM	Great North Rd/A1000	Roadside	51.767657	0.214671	PM2.5	No	Beta Attenuation	10	8	1.5

Notes:

(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

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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)
WH1	Codicote Road Welwyn	Roadside	522941	216641	NO ₂	No	10	3	NO	2
WH2	Wigmores North, WGC	Urban Background	523804	213092	NO ₂	No	13	5	NO	2
WH3	A1000 Brookmans Park	Roadside	525936	203842	NO ₂	No	19	3	NO	2
WH4	New Barnfield	Urban Background	522863	206489	NO ₂	No	20	2	NO	2
WH5	Cuffley High Street 1	Roadside	530614	202725	NO ₂	No	16	5	NO	2
WH6	Cuffley High Street 2	Roadside	530554	202715	NO ₂	No	6	5	NO	2
WH7	Parkhouse Court, Hatfield	Roadside	521575	208645	NO ₂	No	11	5	NO	2
WH8	Black Fan Rd, Opp Morrisons	Roadside	525688	212769	NO ₂	No	14	3	NO	2
WH9	Great North Rd Adjacent to A1M	Kerbside	522429	212150	NO ₂	No	13	1	NO	2
WH10	B197, Welwyn	Roadside	524605	217495	NO ₂	No	16	4	NO	2
WH11	Digswell Rd, WGC	Roadside	523765	213540	NO ₂	No	41	2	NO	2

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WH12	St Albans Rd East/Heyford Way	Roadside	523148	209148	NO ₂	No	6	2	NO	2
WH13	St Albans Rd West, Hatfield	Urban Background	520757	208185	NO ₂	No	13	17	NO	2
WH14	Green Lanes, Hatfield	Kerbside	522013	209707	NO ₂	No	14	1	NO	2
WH15	Great North Rd, Hatfield	Roadside	522604	210859	NO ₂	No	7	5	NO	2
WH16	Stanborough Rd, Near Stanborough Close	Roadside	523358	211931	NO ₂	No	9	3	NO	2
WH17	Great North Rd, Hatfield A1000	Roadside	523293	209164	NO ₂	No	15	5	NO	2
WH18	B195/Boadwater Rd, WC	Roadside	524285	212988	NO ₂	No	16	5	NO	2
WH19	Comet Way on A1001 & A1M	Roadside	522144	209516	NO ₂	No	50	5	NO	2
WH20	Link Drive, Hatfield	Roadside	522527	208490	NO ₂	No	14	5	NO	2
WH21	Roadside Layby A414, Essendon	Urban Background	527258	210364	NO ₂	No	7	5	NO	2
WH22	Garden Village, Hatfield	Kerbside	521801	209471	NO ₂	No	20	1	NO	2
WH23	Raymonds Plain, WGC	Roadside	523988	211574	NO ₂	No	28	5	NO	2
WH24	Ellenbrook Lane, A1001	Urban Centre	521164	207740	NO ₂	No	40	5	NO	2
WH25	West View 1	Roadside	522093	209431	NO ₂	No	8	5	NO	2

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WH26	West View 2	Roadside	522059	209349	NO ₂	No	24	5	NO	2
WH27	West View 3	Roadside	522060	209289	NO ₂	No	8	5	NO	2
WH28	Taxi Rank, WGC	Roadside	523815	212960	NO ₂	No	15	5	NO	2
WH29	Taxi Rank, Hatfield	Roadside	523267	208803	NO ₂	No	25	5	NO	2
WH30	Woods Avenue, Hatfield	Roadside	522579	208173	NO ₂	No	25	5	NO	2
WH31	B197, WGC	Roadside	522579	211012	NO ₂	No	9	2	NO	2
WH32	Clock Hotel, Welwyn	Roadside	523438	216512	NO ₂	No	12	5	NO	2
WH33	Welwyn High Street	Roadside	523079	216150	NO ₂	No	1	1	NO	2

Notes:

(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.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ^{(3) (4)}				
							2015	2016	2017	2018	2019
WH1 - Dicket Mead	523439	216315	Roadside	Diffusion Tube			23	22	22	22	
WH1 - Codicote Rd	522941	216641	Roadside	Diffusion Tube		100				26	26
WH2 - Parkway, WGC	523656	213133	Urban Background	Diffusion Tube			24	24			
WH2 - Bus Station (2017) & Wigmores North (2018)	523918	213069	Urban Background	Diffusion Tube				43	35	21	
WH2 Wigmores North WGC	523804	213092	Urban Background	Diffusion Tube		92					22
WH3 - Great North Rd, Bell Bar	524991	205525	Urban Background	Diffusion Tube			26	28	27	21	
WH3 - A1000 Brookmans Pk	525936	203842	Roadside	Diffusion Tube		100				27	24
WH4 - New Barnfield, Hatfield	522863	206489	Urban Background	Diffusion Tube		100	27	31	22	17	19
WH5 - Coopers Lane Rd, Northaw	529402	200929	Roadside	Diffusion Tube			20	21	18		
WH5 - Cuffley High Street 1	530614	202725	Roadside	Diffusion Tube		100			33	28	33

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WH6 - Bradgate, Cuffley	529933	203654	Roadside	Diffusion Tube			17	18	18		
WH6 - Cuffley High Street 2	530554	202715	Roadside	Diffusion Tube		100			36	30	27
WH7 - Parkhouse Court, Hatfield	521575	208645	Roadside	Diffusion Tube		100	30	31	30	28	28
WH8 - Far End, Hatfield	522609	206718	Urban Background	Diffusion Tube			20	20	20	17	
WH8 - Black Fan Rd Opp Morrisons	525688	212769	Roadside	Diffusion Tube		100					27
WH9 - Mount Pleasant Close, Hatfield	523519	209890	Urban Background	Diffusion Tube			21	22	21	19	
WH9 - Great North Rd Adjacent to A1M	522429	212150	Kerbside	Diffusion Tube		100					35
WH10 - The Ryde, Hatfield	523377	209858	Urban Background	Diffusion Tube			20	22	21	17	
WH10 - B197 Op North Star, Welwyn	524605	217495	Roadside	Diffusion Tube		100				25	26
WH11 - Thistle Grove, WGC	526249	211617	Urban Background	Diffusion Tube			15	18	18	15	
WH11 - Digswell Rd, WGC	523765	213540	Roadside	Diffusion Tube		100				28	29
WH12 - The Commons, WGC	525852	211187	Urban Background	Diffusion Tube			15	18	17	15	

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WH12 - St Albans Rd East/Heyford Way, Hatfield	523148	209148	Roadside	Diffusion Tube		100					27
WH13 - Alconbury, WGC	527150	212966	Urban Background	Diffusion Tube			14	16	17	15	
WH13 - St Albans Rd West, Hatfield	520757	208185	Urban Background	Diffusion Tube		83					20
WH14 - Green Lanes, Hatfield	522013	209707	Kerbside	Diffusion Tube		100	28	29	28	21	25
WH15 - Great North Rd, Hatfield	522604	210859	Roadside	Diffusion Tube		100	22	24	22	21	20
WH16 - The Runway, Hatfield	521052	208998	Urban Background	Diffusion Tube			21	26	21	20	
WH16 - Stanborough Rd/Near Standborough Close, WGC	523358	211931	Roadside	Diffusion Tube		100					38
WH17 - Great North Rd, Hatfield A1000	523293	209164	Roadside	Diffusion Tube		92	34	30	32	27	29
WH18 - B195 Broadwater Rd, WGC	524285	212988	Roadside	Diffusion Tube		100	35	40	37	35	31
WH19 - Comet Way, A1001, A1M	522144	209516	Roadside	Diffusion Tube		100	55	56	49	44	42
WH20 - Link Drive, Hatfield	522527	208490	Roadside	Diffusion Tube		100	31	31	27	23	23

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WH21 - A414 Layby, Essendon	527258	210364	Urban Background	Diffusion Tube		100	30	32	34	31	29
WH22 - Garden Village, Hatfield	521801	209471	Roadside	Diffusion Tube		100	37	37	43	35	37
WH23 - South Way, Bishops Rise	521998	206243	Roadside	Diffusion Tube			28	22	22	17	
WH23 - Raymonds Plain	523988	211574	Roadside	Diffusion Tube		100				24	23
WH24 - Ellenbrook Lane, A1002	521164	207740	Roadside	Diffusion Tube		100	39	44	40	38	36
WH25 - West View 1	522093	209431	Roadside	Diffusion Tube		100		44	46	40	36
WH26 - West View 2	522064	209328	Roadside	Diffusion Tube		100		37	39	45	48
WH27 - West View 3	522060	209289	Roadside	Diffusion Tube		100		37	40	34	34
WH28 - Taxi Rank, WGC	523815	212960	Roadside	Diffusion Tube		100		33	27	25	24
WH29 - Taxi Rank, Hatfield	523267	208803	Roadside	Diffusion Tube		100		44	40	35	34
WH30 - Woods Avenue, Hatfield	522579	208173	Roadside	Diffusion Tube		100				23	21
WH31 - Herts Lane, WGC	525553	213056	Roadside	Diffusion Tube		100				21	
WH31 - B197, WGC	522579	211012	Roadside	Diffusion Tube		100					34

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WH32 - Clock Hotel, Welwyn	523438	216512	Roadside	Diffusion Tube		100				31	31
WH33 - Welwyn High Street	523079	216150	Roadside	Diffusion Tube		100				21	20

- ☒ Diffusion tube data has been bias corrected (**confirm by selecting in box**)
- ☒ Annualisation has been conducted where data capture is <75% (**confirm by selecting in box**)
- ☒ Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance adjustment (**confirm by selecting in box**)

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

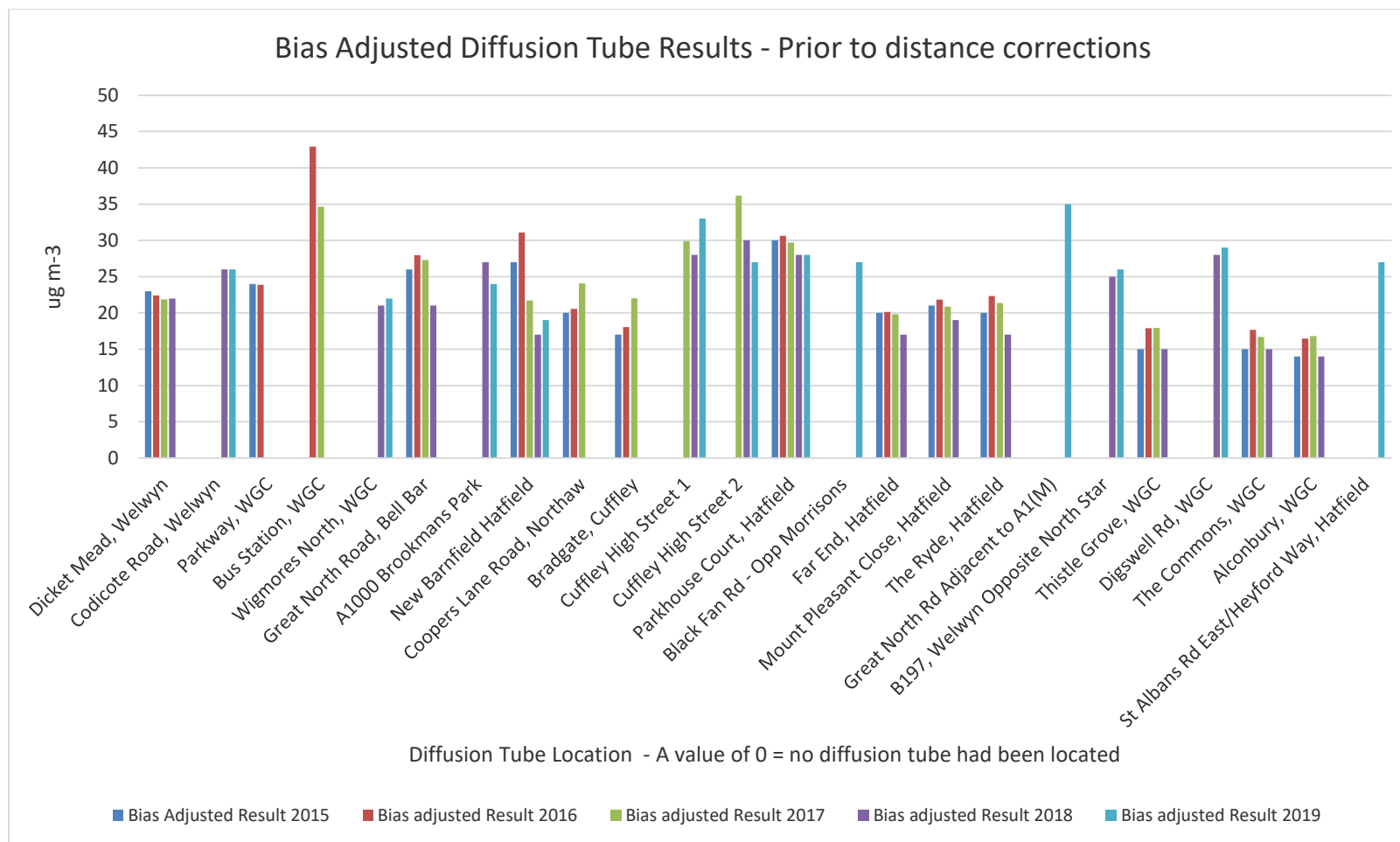
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(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 Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(4) Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

Figure A.1 – Trends in Annual Mean NO₂ Concentrations



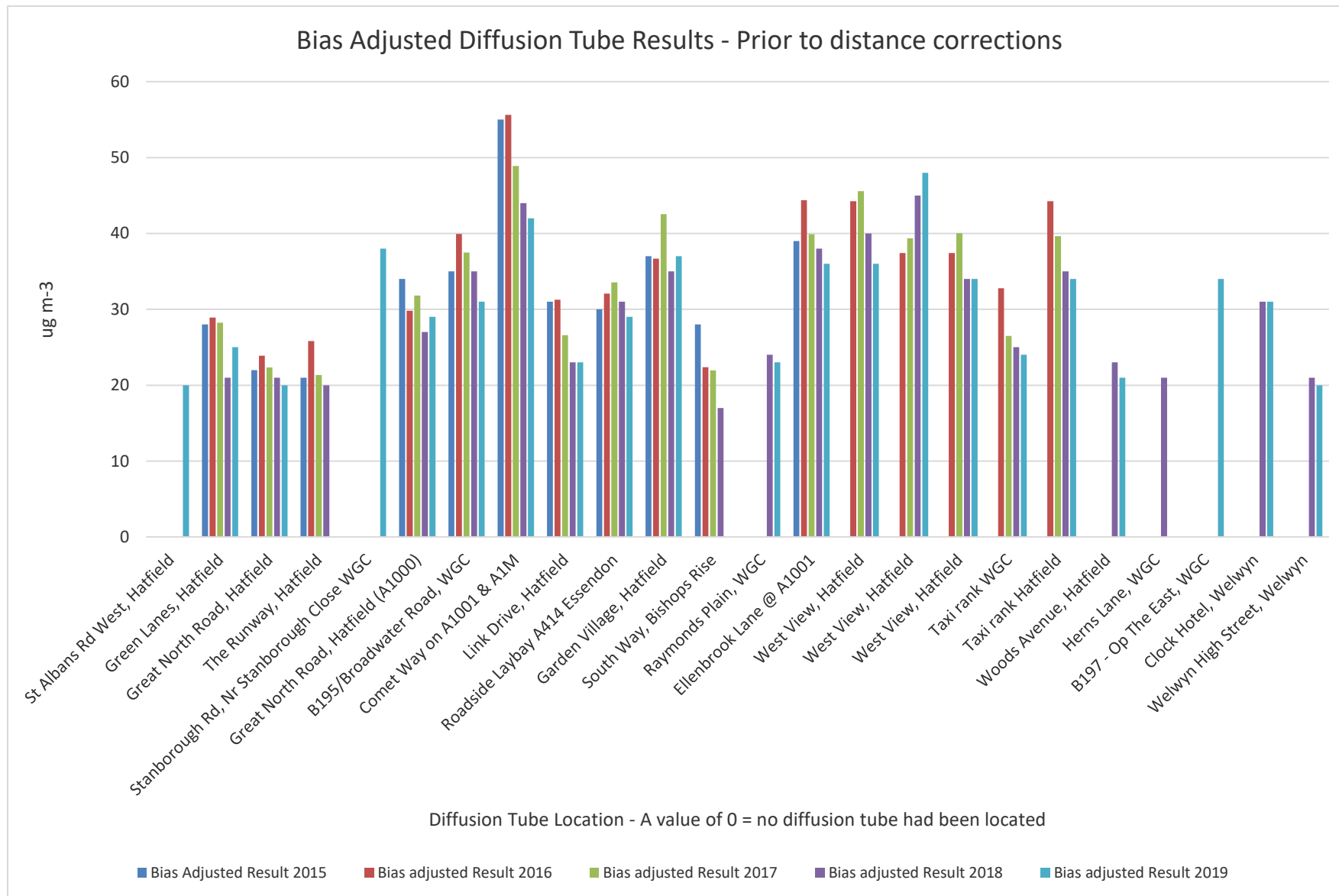


Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Welwyn Hatfield Council do not currently have an automatic analyser monitoring for this pollutant so this data is not available.

Figure A.2 – Trends in Number of NO₂ 1-Hour Means > 200µg/m³

Welwyn Hatfield Borough Council do not currently have an automatic analyser monitoring for this pollutant so this data is not available.

Table A.5 – Annual Mean PM₁₀ Monitoring Results

Welwyn Hatfield Borough Council do not monitor this pollutant.

Figure A.3 – Trends in Annual Mean PM₁₀ Concentrations

Welwyn Hatfield Borough Council do not monitor this pollutant.

Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Welwyn Hatfield Borough Council do not monitor this pollutant.

Figure A.4 – Trends in Number of 24-Hour Mean PM₁₀ Results >50µg/m³

Welwyn Hatfield Borough Council do not monitor this pollutant.

Table A.7 – PM_{2.5} Monitoring Results

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2019 (%) ⁽²⁾	PM _{2.5} Annual Mean Concentration (µg/m ³) ⁽³⁾				
						2015	2016	2017	2018	2019
WHBAM	51.767657	0.214671	Roadside		97		9	13	11	10

☒ Annualisation has been conducted where data capture is <75% (confirm by selecting in box)

Notes:

(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 Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.5 – Trends in Annual Mean PM_{2.5} Concentrations

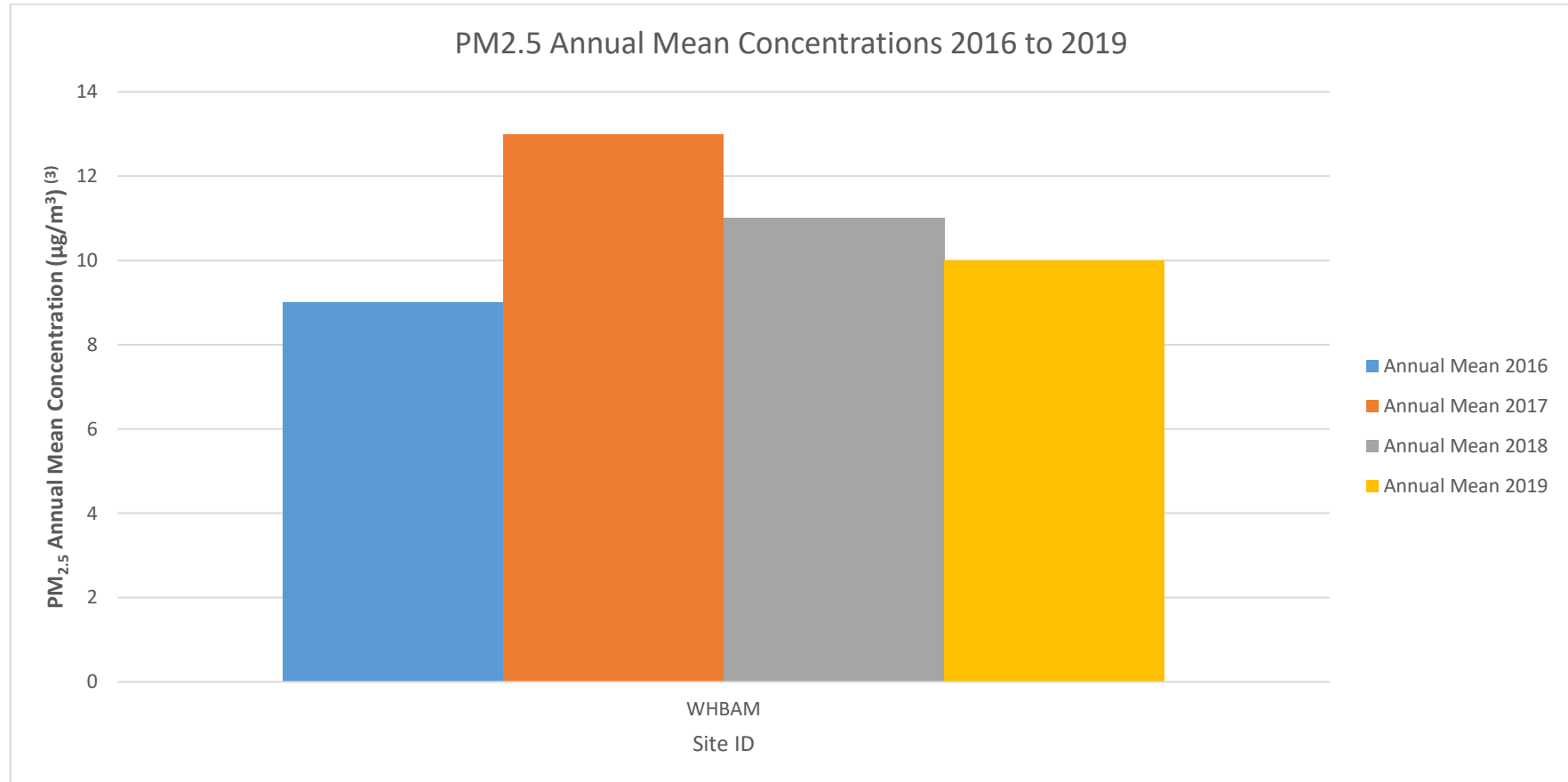


Table A.8 – SO₂ Monitoring Results

Welwyn Hatfield Borough Council do not monitor this pollutant.

Figure A.6 – Trends in SO₂ Concentrations

Welwyn Hatfield Borough Council do not monitor this pollutant.

Appendix B: Full Monthly Diffusion Tube Results for 2019

Table B.1 - NO₂ Monthly Diffusion Tube Results - 2019

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	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 (0.75) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
WH1 Codicote Road, Welwyn	522941	216641	41	41	46	34	31	32	21	19	28	35	46	35	34	26	N/A
WH2 Wigmores North, WGC	523804	213092	33	38		28	20	23	20	20	32	31	42	34	29	22	N/A
WH3 A1000 Brookmans Park	525936	203842	42	30	24	36	28	31	27	26	26	36	48	37	33	24	N/A
WH4 New Barnfield Hatfield	522863	206489	38	34	22	21	19	17	21	23	28	32	2	40	25	19	N/A
WH5 Cuffley High Street 1	530614	202725	49	58	37	42	34	35	35	43	41	43	56	50	44	33	N/A
WH6 Cuffley High Street 2	530554	202715	47	48	31	35	28	29	32	31	32	38	45	43	37	27	N/A
WH7 Parkhouse Court, Hatfield	521575	208645	53	49	31	33	33	28	27	31	33	39	45	42	37	28	N/A
WH8 Black Fan Road - Opposite Morrisons	525688	212769	49	40	34	25	30	31	33	32	35	34	50	44	36	27	N/A
WH9 Great North Rd Adjacent to A1(M)	522429	212150	58	45	34	48	43	48	40	38	49	50	67	47	47	35	N/A

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WH10 B197, Welwyn opposite North Star PH	524605	217495	44	40	26	31	30	25	27	28	32	39	47	39	34	26	N/A
WH11 Digswell Road, WGC	523765	213540	44	45	36	28	34	35	34	35	39	41	48	44	39	29	N/A
WH12 St Albans Road East/Heyford Way, Hatfield	523148	209148	47	51	32	32	24	26	27	29	33	39	47	43	36	27	N/A
WH13 St Albans Road West, Hatfield	520757	208185	40			26	20	19	21	19	22	27	38	29	26	20	N/A
WH14 Green Lanes, Hatfield	522013	209707	43	51	31	29	27	30	24	31	38	39	49	3	33	25	N/A
WH15 Great North Road, Hatfield	522604	210859	32	34	22	27	22	22	20	22	28	27	41	30	27	20	N/A
WH16 Standborough Road, Near Stanborough Close	523358	211931	56	52	46	48	40	52	49	47	53	55	54	54	51	38	30
WH17 Great North Road, Hatfield (A1000)	523293	209164	50	47	36	30		31	28	32	35	38	49	44	38	29	N/A
WH18 B195/Broadwater Road, WGC	524285	212988	53	52	37	49	31	40	29	26	32	42	55	49	41	31	N/A
WH19 Comet Way on A1001 & A1M	522144	209516	72	58	52	44	56	49	53	49	59	54	69	56	56	42	26
WH20 Link Drive, Hatfield	522527	208490	48	35	31	21	23	24	23	25	29	34	45	33	31	23	N/A
WH21 Roadside Laybay A414 Essendon	527258	210364	40	38	40	38	40	36	33	30	37	41	52	36	38	29	N/A

Welwyn Hatfield Borough Council

WH22 Garden Village, Hatfield	521801	209471	70	57	44	40	39	38	41	45	46	46	62	62	49	37	25
WH23 Raymonds Plain, WGC	523988	211574	44	41	29	20	25	27	22	25	28	29	43	34	31	23	N/A
WH24 Ellenbrook Lane @ A1001	521164	207740	52	54	36	65	43	44	37	37	44	47	62	54	48	36	25
WH25 West View, Hatfield	522093	209431	60	58	48	35	44	40	41	44	51	47	61	50	48	36	31
WH26 West View, Hatfield	522064	209328	79	67	62	41	55	52	52	101	58	56	72	71	64	48	32
WH27 West View, Hatfield	522060	209289	60	54	44	38	36	34	33	40	41	48	57	57	45	34	N/A
WH28 Taxi rank WGC	523815	212960	41	41	27	31	23	26	22	26	31	34	46	42	33	24	N/A
WH29 Taxi rank Hatfield	523267	208803	59	53	41	34	34	35	36	38	43	52	61	57	45	34	N/A
WH30 Woods Avenue, Hatfield	522579	208173	39	35	28	27	28	22	20	22	26	23	43	30	29	21	N/A
WH31 B197 - Opp The East WGC	522579	211012	41	49	40	53	44	46	38	37	44	45	56	44	45	34	N/A
WH32 Clock Hotel, Welwyn	523438	216512	48	46	41	40	34	37	33	34	42	42	58	47	42	31	N/A
WH33 Welwyn High Street	523079	216150	35	36	23	24	20	24	18	21	25	28	40	32	27	20	N/A

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM EXCEL TEMPLATE

- ☐ Local bias adjustment factor used (confirm by selecting in box)
- ☒ National bias adjustment factor used (confirm by selecting in box)
- ☒ Annualisation has been conducted where data capture is <75% (confirm by selecting in box)
- ☒ Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box)

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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

(2) Distance corrected to nearest relevant public exposure.

Where a result has been left blank in table B1, this means that the diffusion tube had either been stolen or was damaged.

Technical note regarding distance corrections

DEFRA Local Air Quality Management Technical Guidance (TG16) February 2018

7.78 Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated, using the NO₂ fall-off with distance calculator available on the LAQM Support website⁶⁰. In such circumstances it is recommended that as a minimum the distance correction should be applied to all monitoring locations that record an annual mean concentration that is above either the NO₂ annual objective of 40µg/m³. Consideration may also be given to applying the calculation to monitoring locations that record an annual mean concentration that is within 10% of the NO₂ annual objective of 40µg/m³ (i.e. above 36µg/m³), to account for the inherent uncertainty in diffusion tube monitoring concentration data.

As per the above extract from the technical guidance, distance corrections have only been applied in table B1 when concentrations are above 36µg/m³.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

Diffusion Tubes:

The samples have been analysed in accordance with Socotec (Didcot) standard operating procedure ANU/SOP/1015 Issue 1. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes For Ambient NO₂ Monitoring: Practical Guidance.'

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection.

All samples were received in good condition, unless otherwise stated in the comments field of results table. Please note:

(i) As set out in the practical guidance, the results were initially calculated assuming an ambient temperature of 11°C, the reported values **have** been adjusted to 20°C to allow for direct comparison with EU limits.

(ii) The reported results have not been bias adjusted.

This analysis of diffusion tube samples to determine the amount of nitrogen dioxide present on the tube is within the scope of our UKAS schedule. Any further calculations and assessments requiring exposure details and conditions fall outside the scope of our accreditation. In the WASP intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, Socotec currently holds the highest rank of a satisfactory laboratory.

QA/QC of automatic monitoring

Automatic measurements of PM_{2.5} were made using a BAM-1020, a beta attenuation mass monitor.

All measurements were logged by the instruments themselves and collected by Ricardo AEA hourly. Measurements from the monitoring site were validated by Ricardo using the most up to date calibration factors and publicly disseminated in near real time on the HBAQN web page http://www.airqualityengland.co.uk/local-authority/?la_id=408

Fall off with distance calculations:



Enter data into the pink cells

Site Name/ID	Distance (m)		NO ₂ Annual Mean Concentration (µg/m ³)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
WH16 Stanborough Rd	3.0	12.0	15.4	38.0	29.9	
WH19 Comet Way	5.0	50.0	18.2	42.0	25.7	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
WH22 Garden Village	1.0	21.0	16.7	37.0	24.5	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
WH24 Ellenbrook	5.0	45.0	19.1	36.0	24.9	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
WH25 West View 1	5.0	13.0	18.2	36.0	30.9	

WH26 West View 2	5.0	29.0	18.2	48.0	32.4	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.
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Distances regarding fall off calculations:

It is unfortunate that on occasion, members of the public decide to remove, or damage diffusion tubes. Due to the fact that their cost is minimal and the nature of the offence being minor, there is little that can be done to stop this in terms of enforcement. We do not report this to the police.

We do take measures to try and make it more difficult to remove the diffusion tubes. However, there needs to be a balance between how secure the tubes are, health and safety and ease of access for the officers distributing and collecting the diffusion tubes on a monthly basis.

In circumstances where our measures fail, we tend to relocate the diffusion tube within close proximity of its original location but somewhere more discreet. This could account for differences in the measurements in the above table when compared to previous reports.

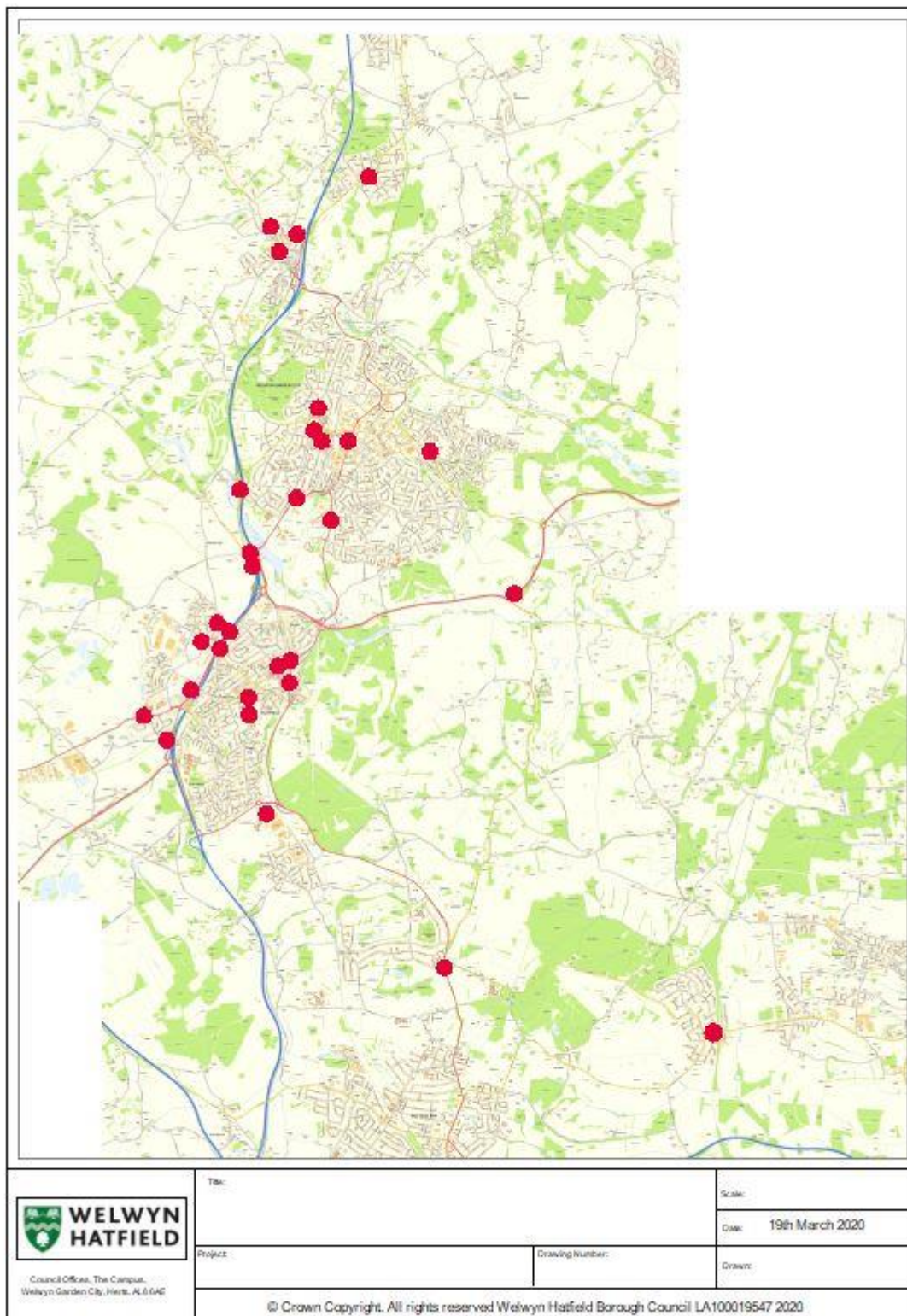
When locating diffusion tubes, the first option is to locate them as per the worst case scenario. However this can cause problems with how obvious they are and how likely they are to be removed or tampered with.

National bias adjustment factor :

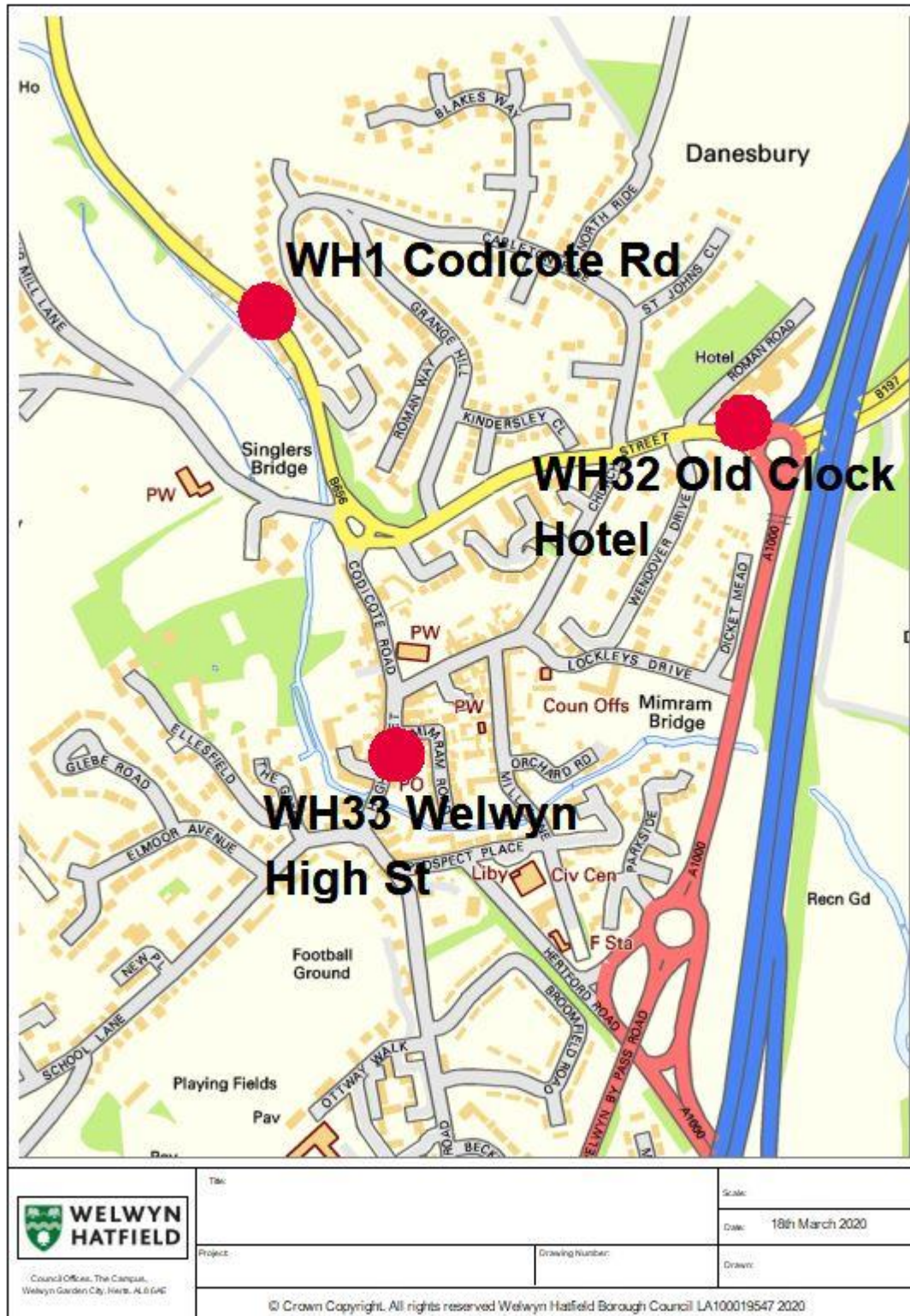
National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/20				
<p>Follow the steps below in the correct order to show the results of relevant co-location studies</p> <p>Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods</p> <p>Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet</p> <p>This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.</p> <p>The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.</p> <p>Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.</p>						<p>This spreadsheet will be updated at the end of June 2020</p> <p>Go to the spreadsheet (Website)</p>				
<p>Step 1:</p> <p>Select the Laboratory that Analyses Your Tubes from the Drop-Down List</p>		<p>Step 2:</p> <p>Select a Preparation Method from the Drop-Down List</p>		<p>Step 3:</p> <p>Select a Year from the Drop-Down List</p>		<p>Step 4:</p> <p>Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor³ shown in blue at the foot of the final column.</p> <p>If you have your own co-location study then see footnote¹. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953</p>				
<p>If a laboratory is not chosen, we have no data for this laboratory.</p>		<p>If a preparation method is not chosen, we have no data for this method at this laboratory.</p>		<p>If a year is not chosen, we have no data.</p>						
Analysed By ¹	Method	Year ²	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁴	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2019	UB	Kingston upon Hull City Council	12	30	23	32.2%	G	0.76
Socotec Didcot	50% TEA in acetone	2019	O	Kingston upon Hull City Council	11	32	26	19.1%	G	0.84
Socotec Didcot	50% TEA in acetone	2019	R	Vale of Glamorgan	11	40	24	68.0%	G	0.60
Socotec Didcot	50% TEA in acetone	2019	R	Watford Borough Council	12	35	30	16.8%	S	0.86
Socotec Didcot	50% TEA in acetone	2019	R	Dumfries & Galloway Council	13	35	31	11.9%	G	0.89
Socotec Didcot	50% TEA in acetone	2019	KS	Marblebone Road Intercomparison	12	92	65	40.5%	G	0.71
Socotec Didcot	50% TEA in acetone	2019	UB	City of York Council	12	22	16	35.6%	G	0.74
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	12	33	26	26.8%	G	0.79
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	9	32	23	37.2%	G	0.73
Socotec Didcot	50% TEA in acetone	2019	R	City of York Council	11	40	28	43.4%	G	0.70
Socotec Didcot	50% TEA in acetone	2019	R	Ipswich Borough council	11	34	26	34.1%	G	0.75
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	51	39	31.7%	G	0.76
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	33	27	23.9%	G	0.81
Socotec Didcot	50% TEA in acetone	2019	R	Swale BC	12	40	31	26.7%	G	0.79
Socotec Didcot	50% TEA in acetone	2019	R	Wrexham County Borough Council	10	20	16	22.2%	G	0.82
Socotec Didcot	50% TEA in acetone	2019	R	City of Wolverhampton Council	12	39	27	48.4%	G	0.67
Socotec Didcot	50% TEA in acetone	2019	R	North Herts DC	12	59	46	28.5%	G	0.78
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	12	30	24	24.5%	G	0.80
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	11	31	22	44.5%	G	0.69
Socotec Didcot	50% TEA in acetone	2019	R	Horsham District Council	11	32	24	34.4%	G	0.74
Socotec Didcot	50% TEA in acetone	2019	B	Medway Council	10	21	13	59.5%	P	0.63
Socotec Didcot	50% TEA in acetone	2019	R	Medway Council	12	33	24	35.1%	G	0.74
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	10	38	30	27.5%	G	0.78
Socotec Didcot	50% TEA in acetone	2019	R	Waverley Borough Council	12	35	24	44.7%	G	0.69
Overall Factor ³ (24 studies)								Use		0.75

Appendix D: Map(s) of Monitoring Locations

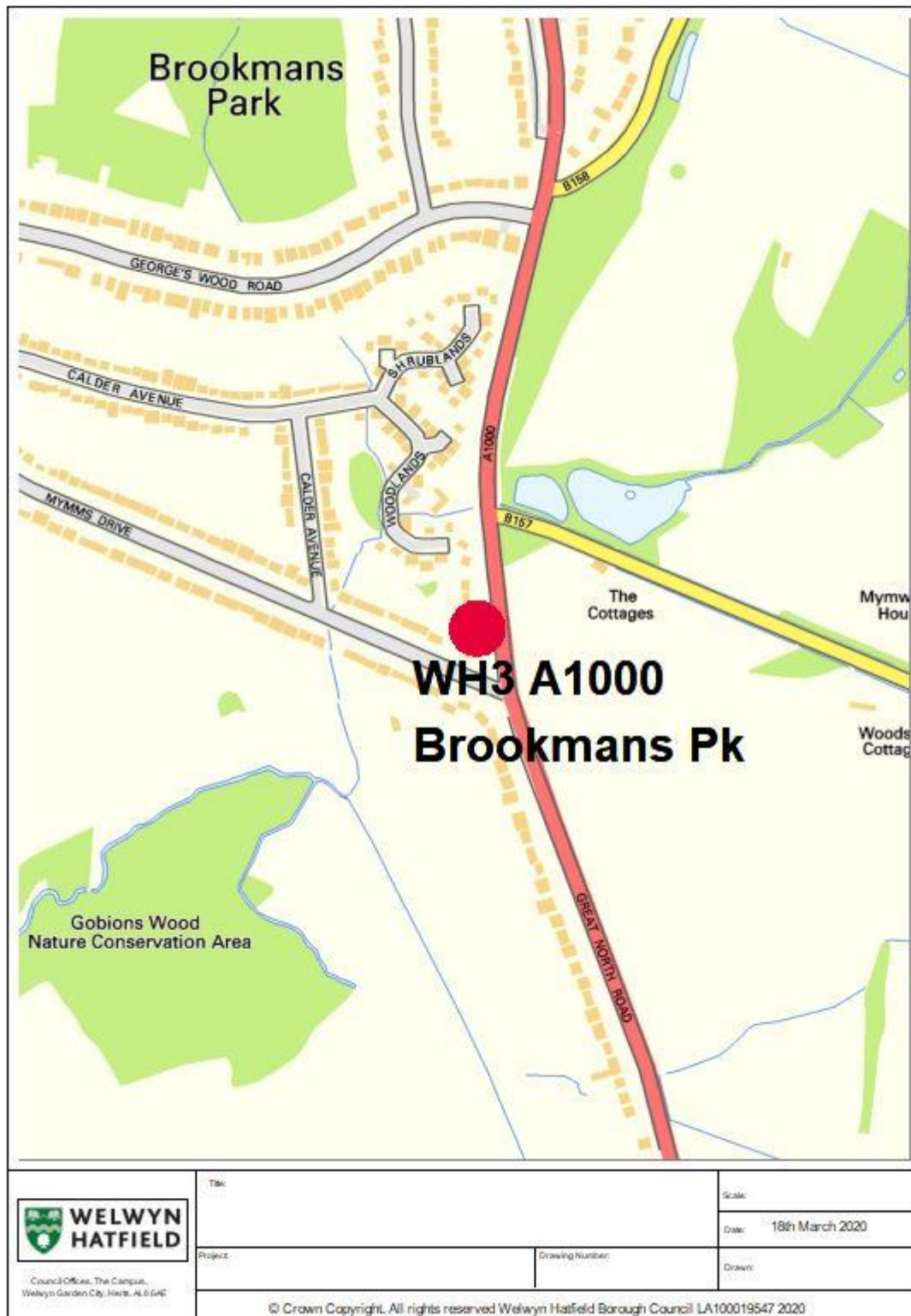
Whole Borough map:



WH1 & WH32 & WH33:



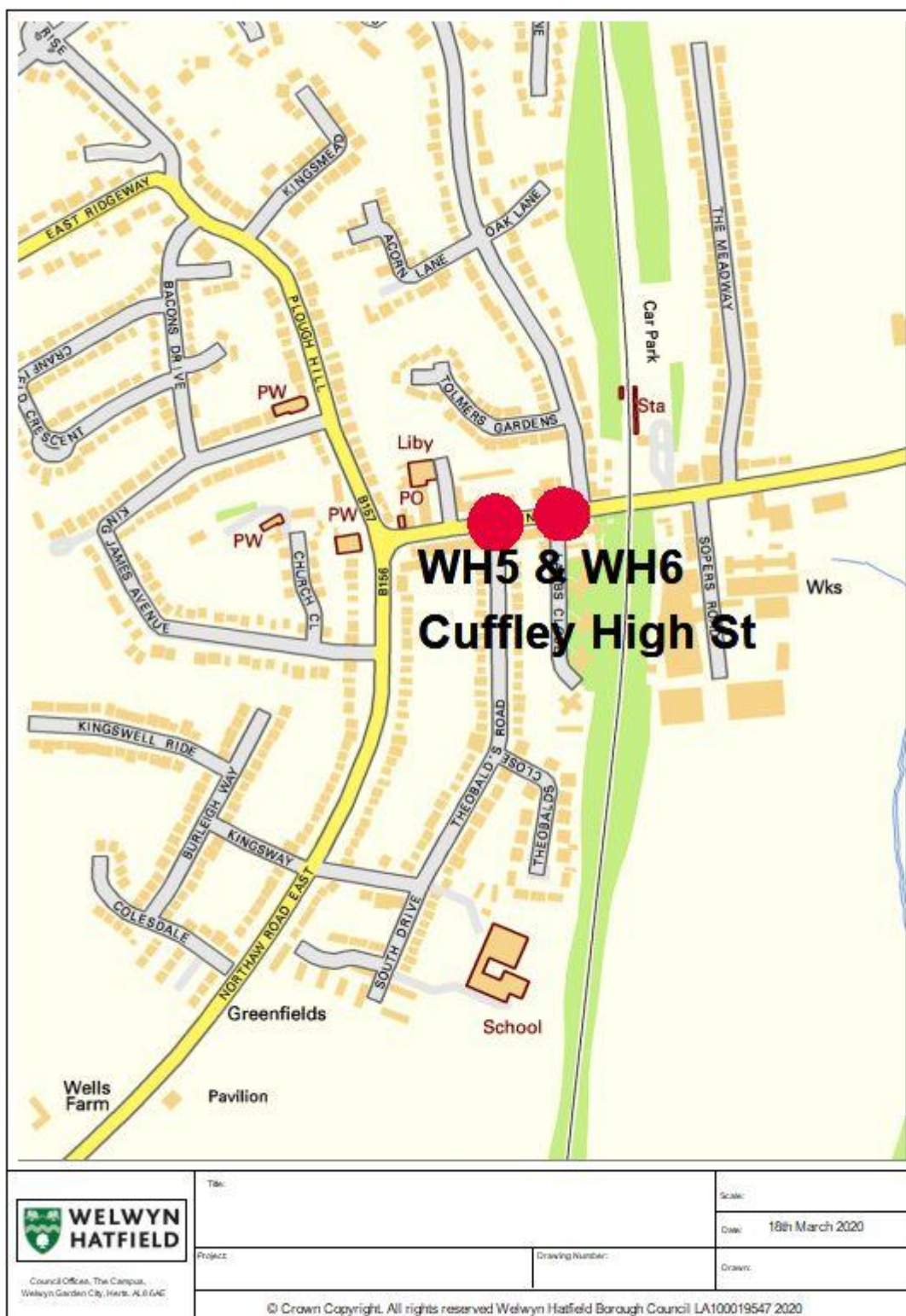
WH3:



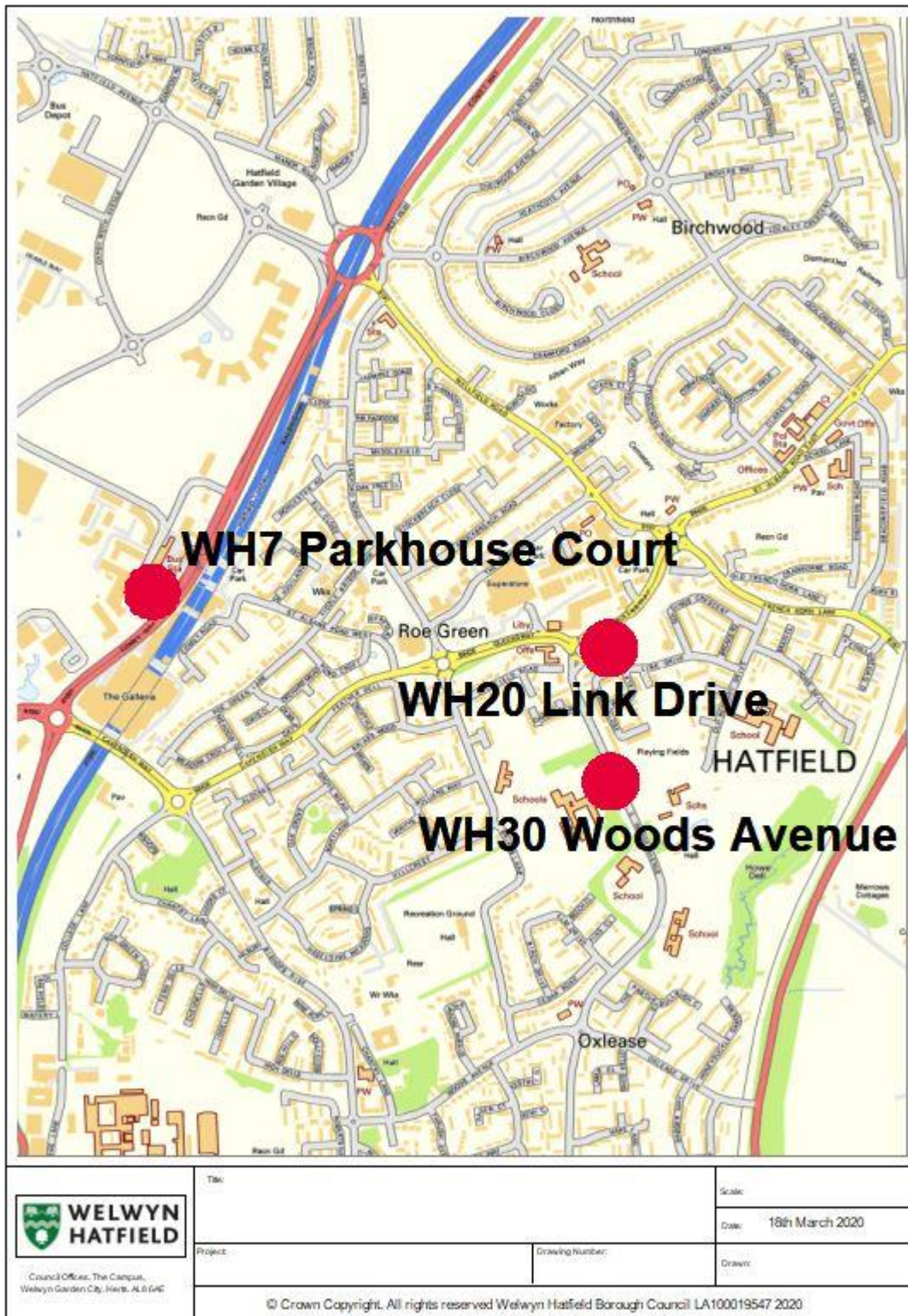
WH4:



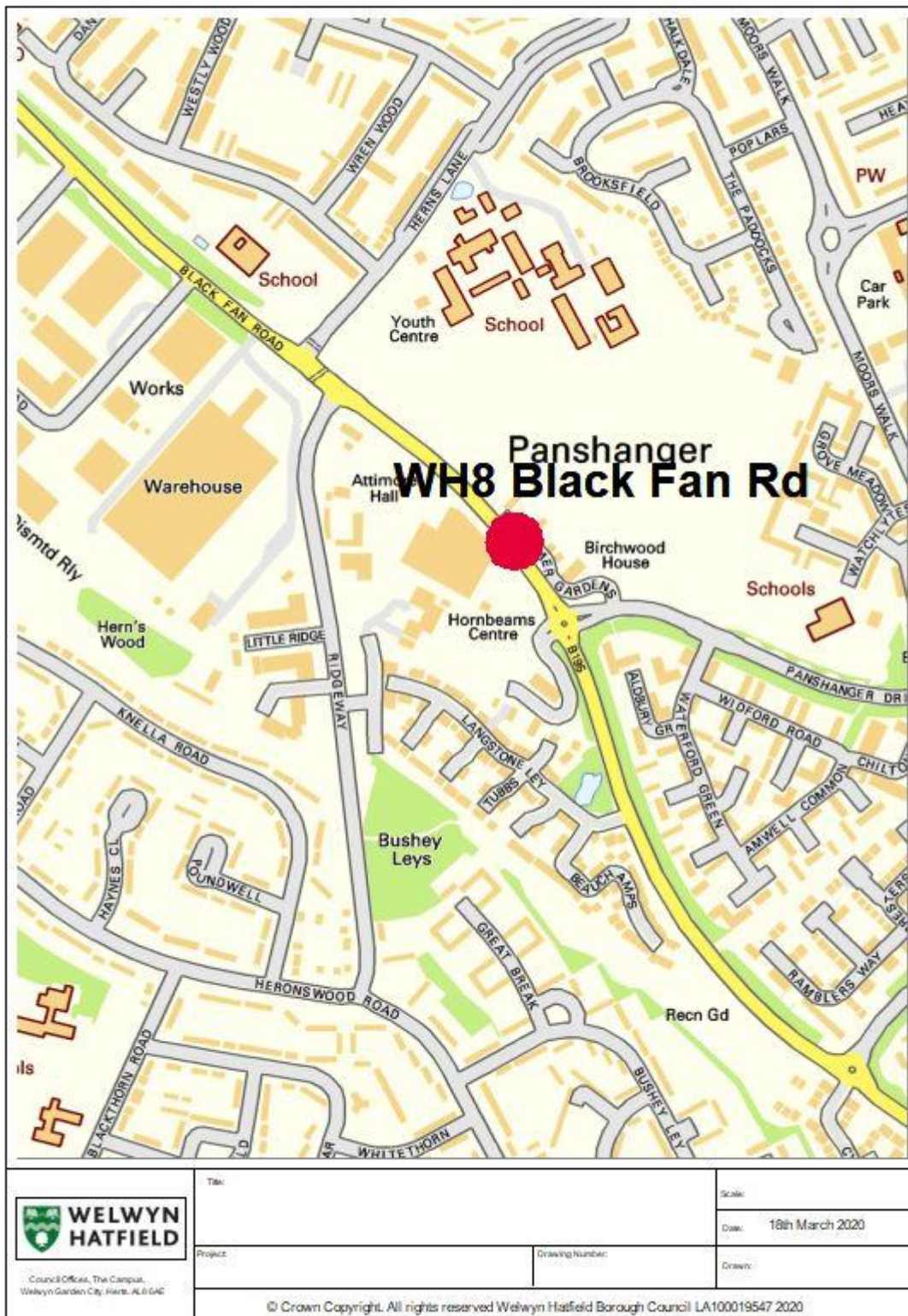
WH5 & WH6:



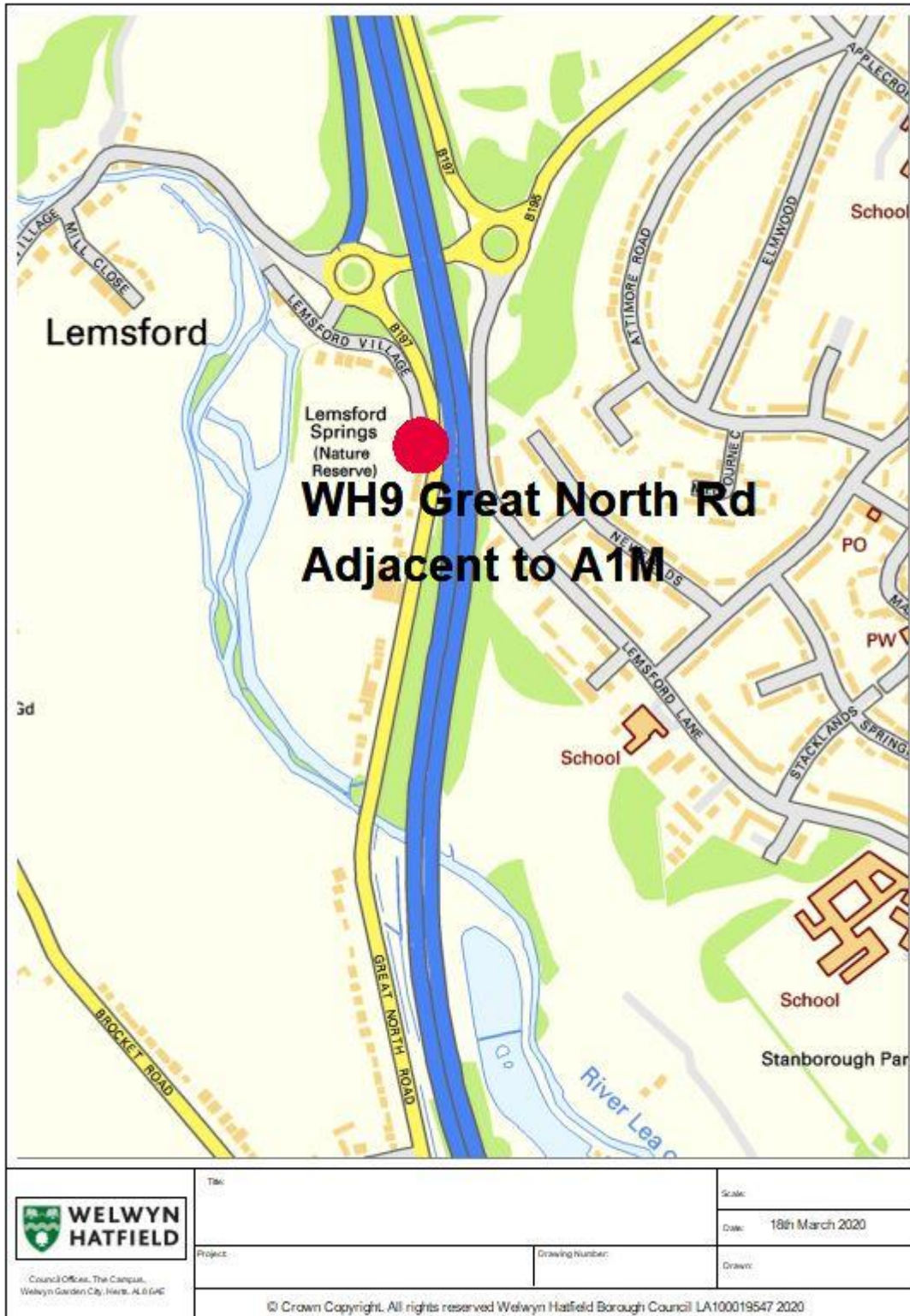
WH7 & WH20 & WH30:



WH8:



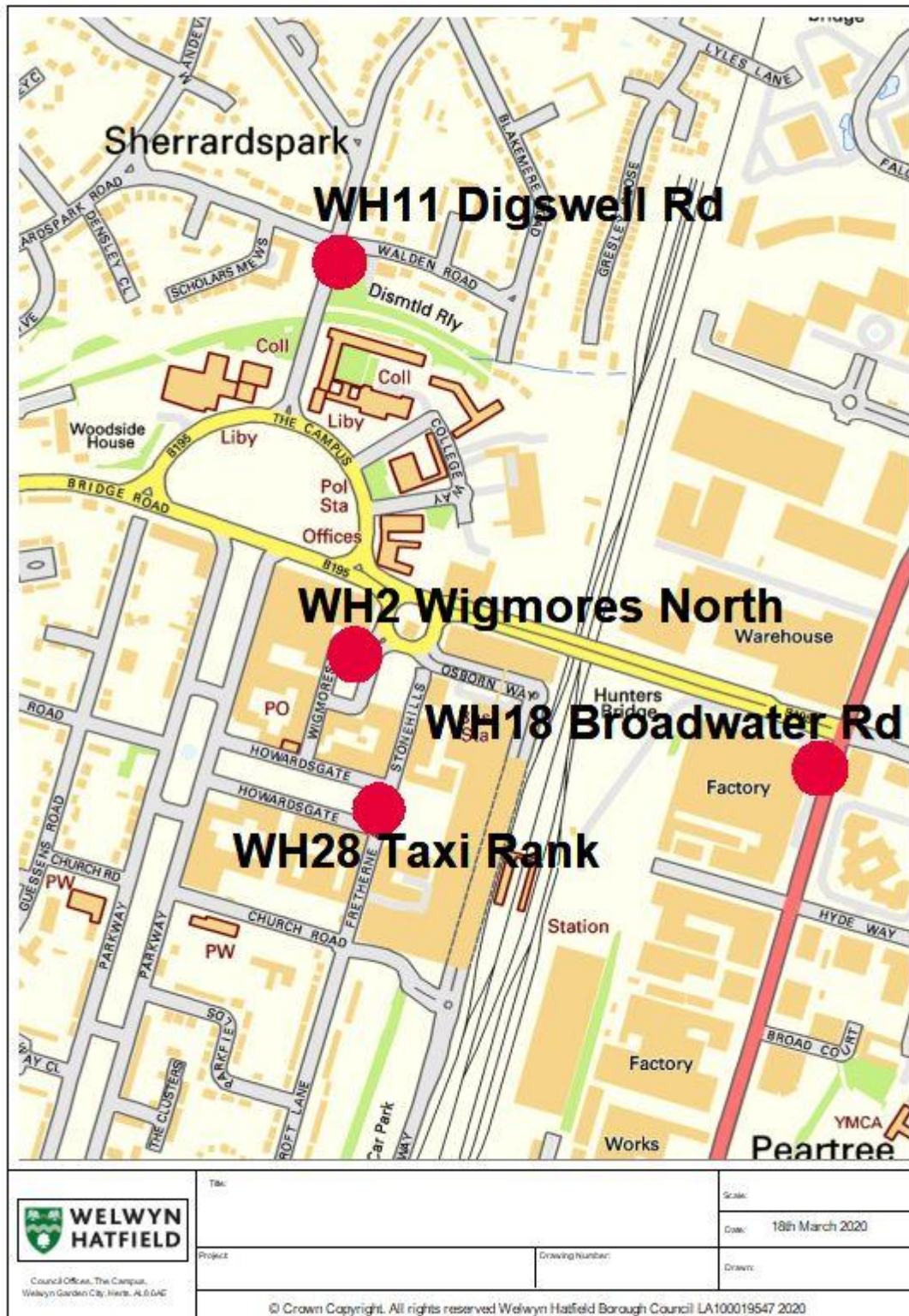
WH9:



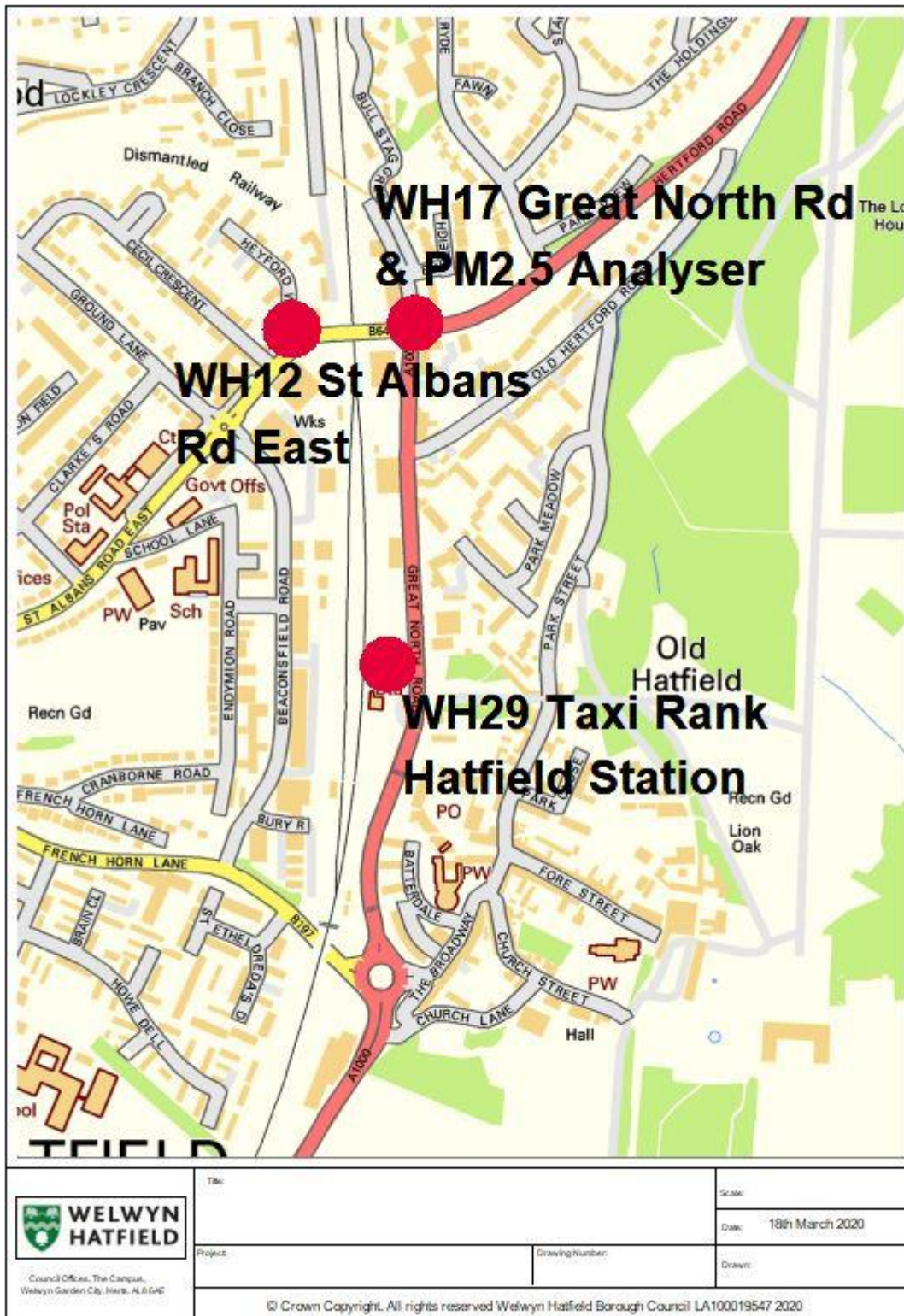
WH10:



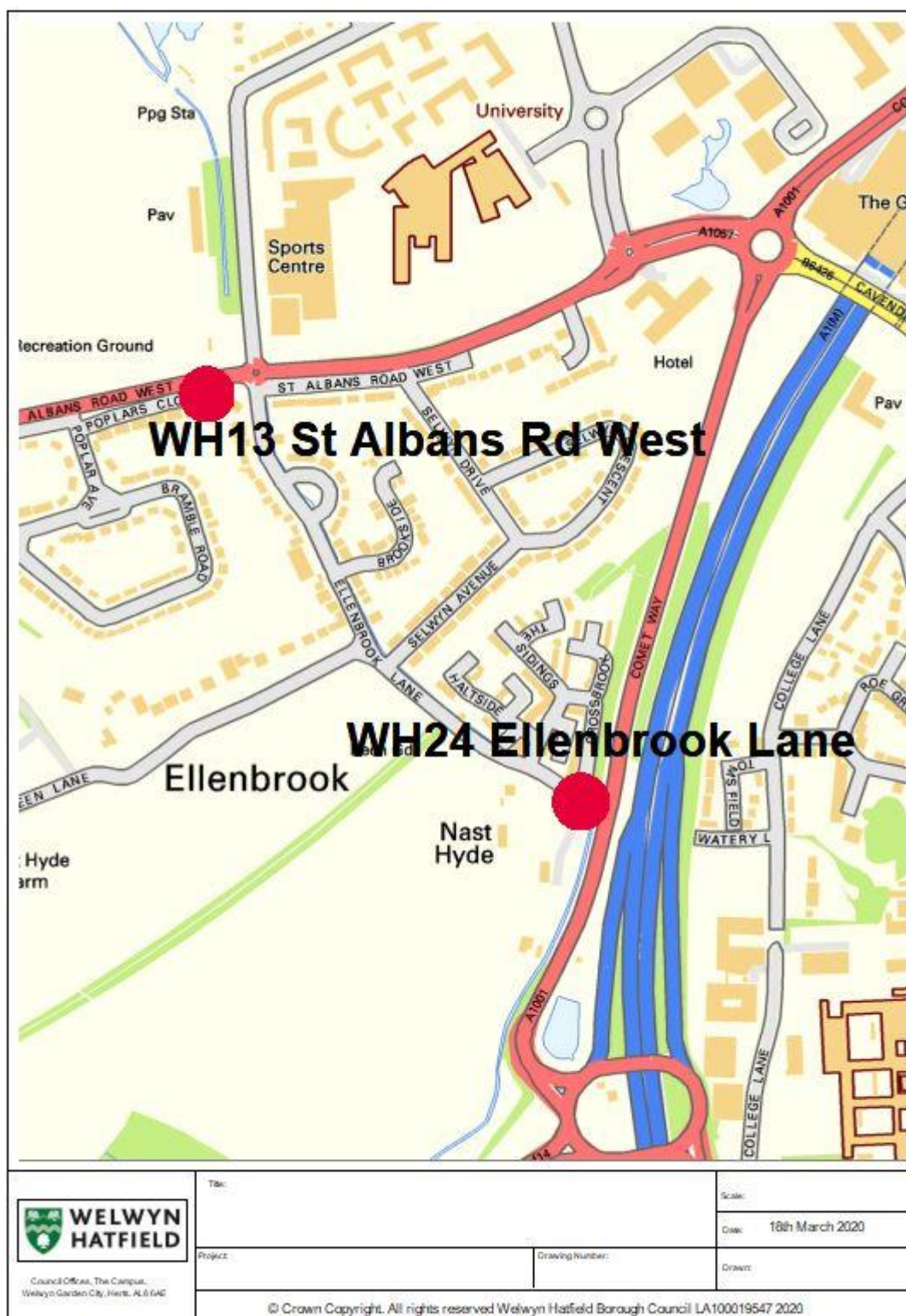
WH11 & WH2 & WH18 & WH28:



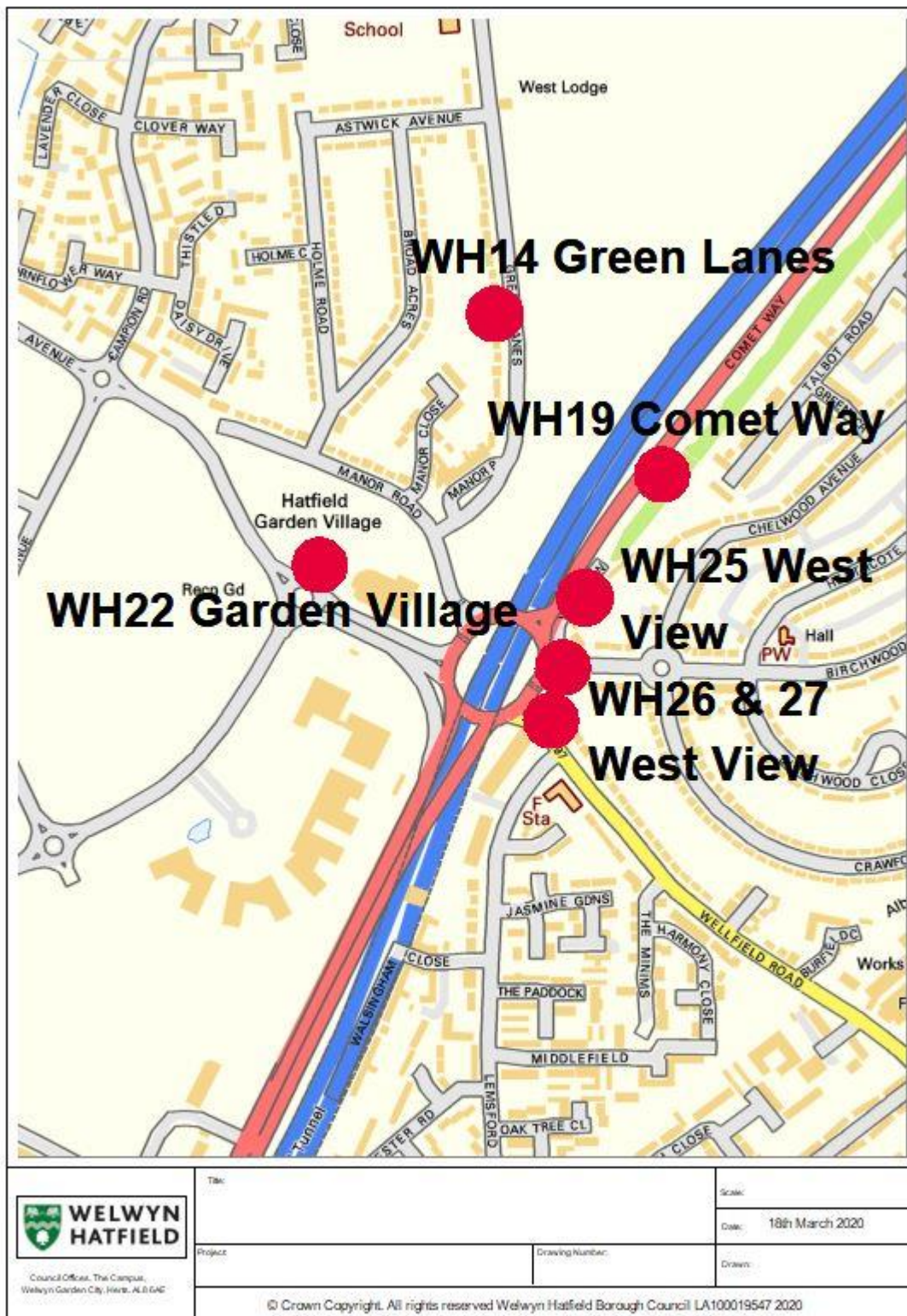
WH12 & WH17 & PM2.5 Analyser & WH29:



WH13:



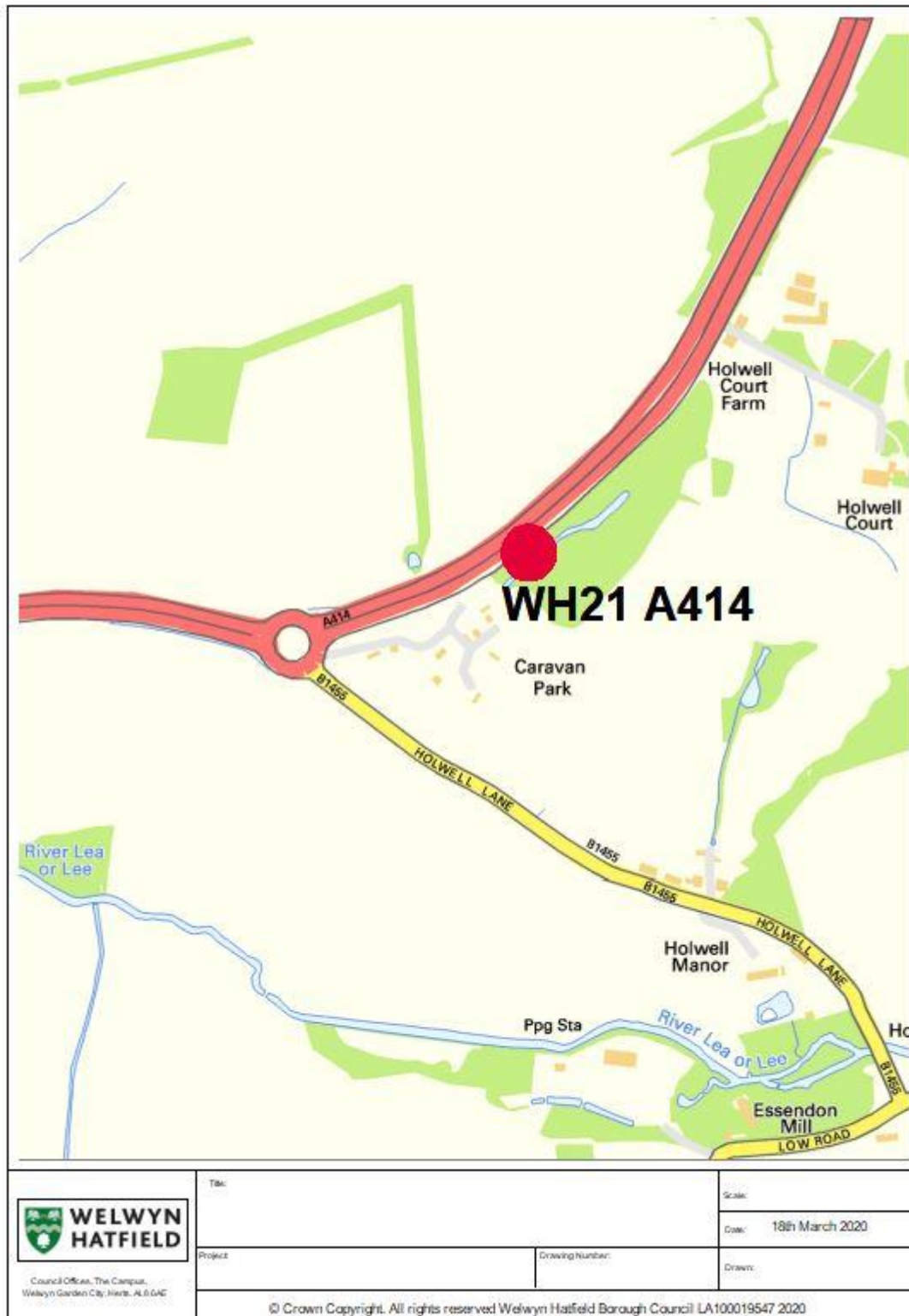
WH14 & WH19 & WH22 & WH25 & WH26 & WH27:



WH16 & WH23:



WH21:



WH31 & WH15:

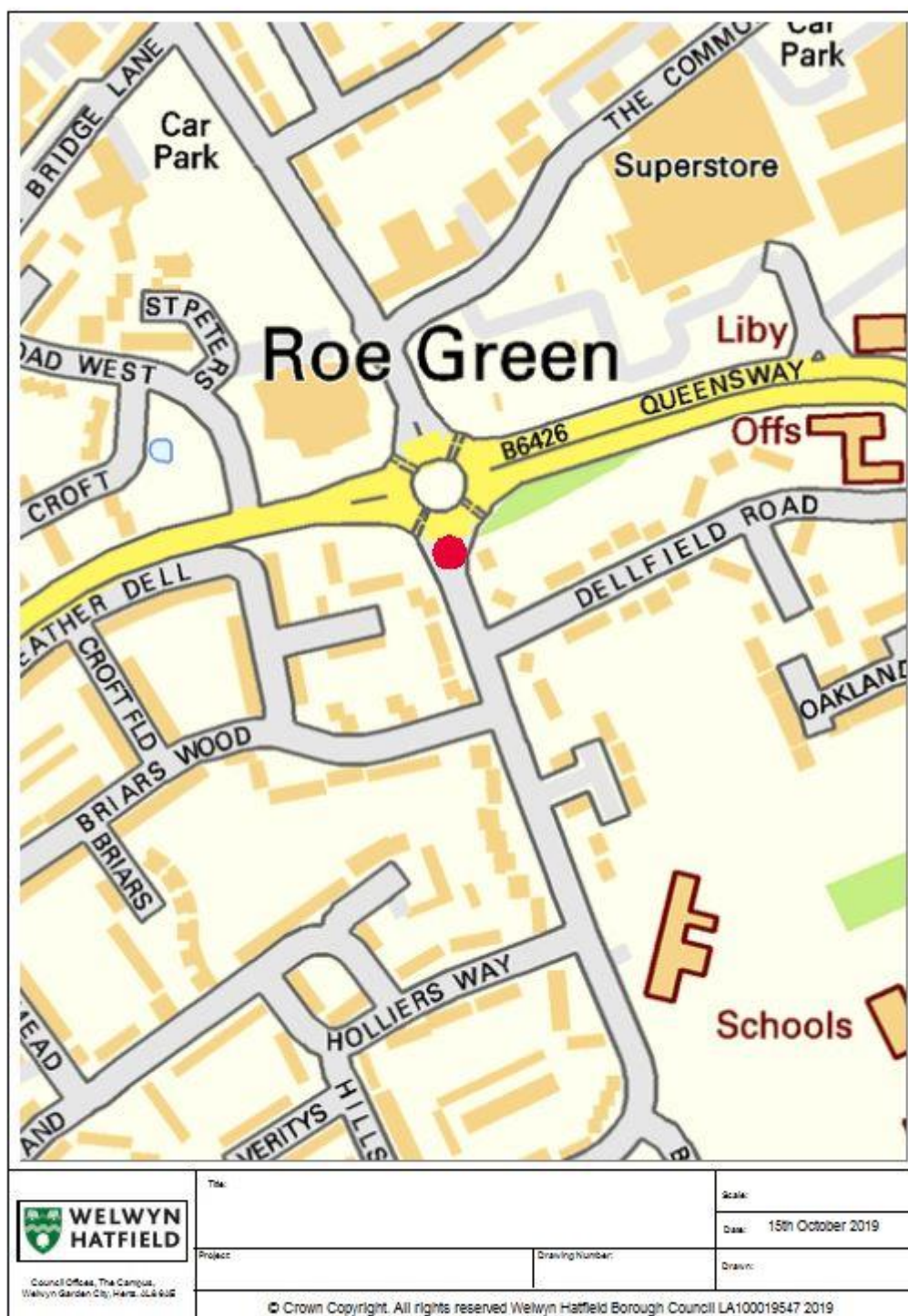


Relocated diffusion tubes January 2020:

Bessemer Rd, WGC



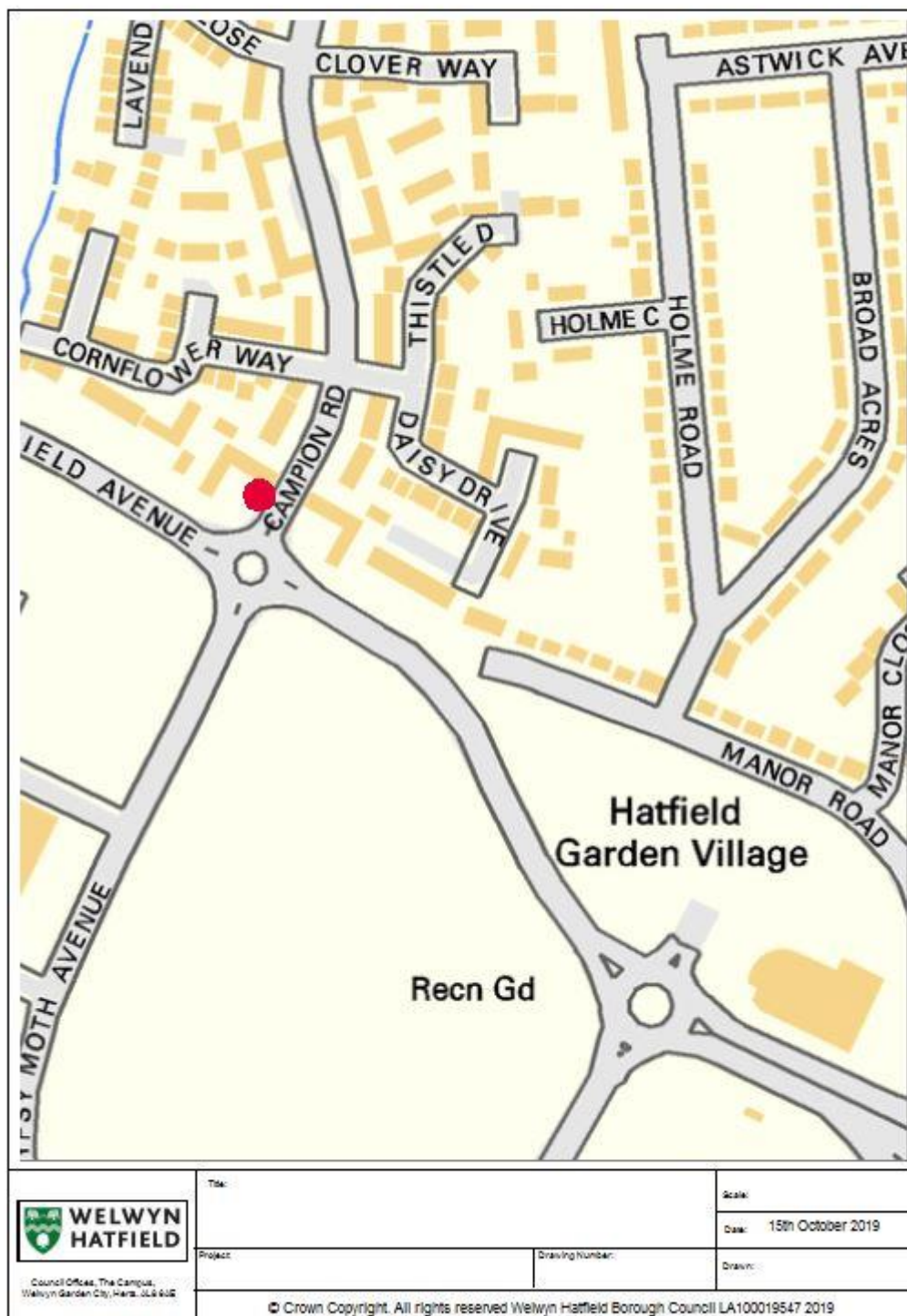
Briars Lane, Hatfield



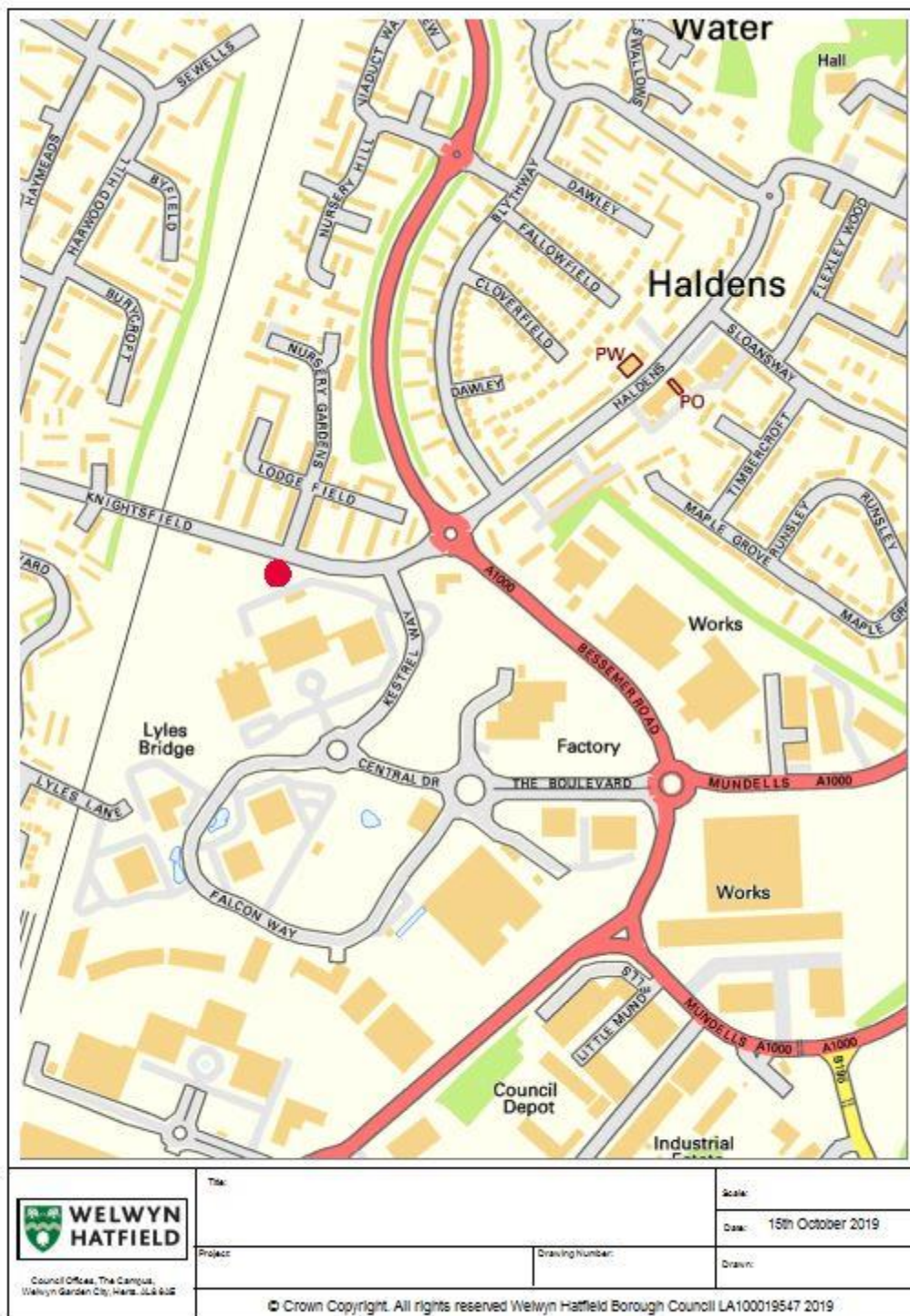
Burrowfield, WGC:



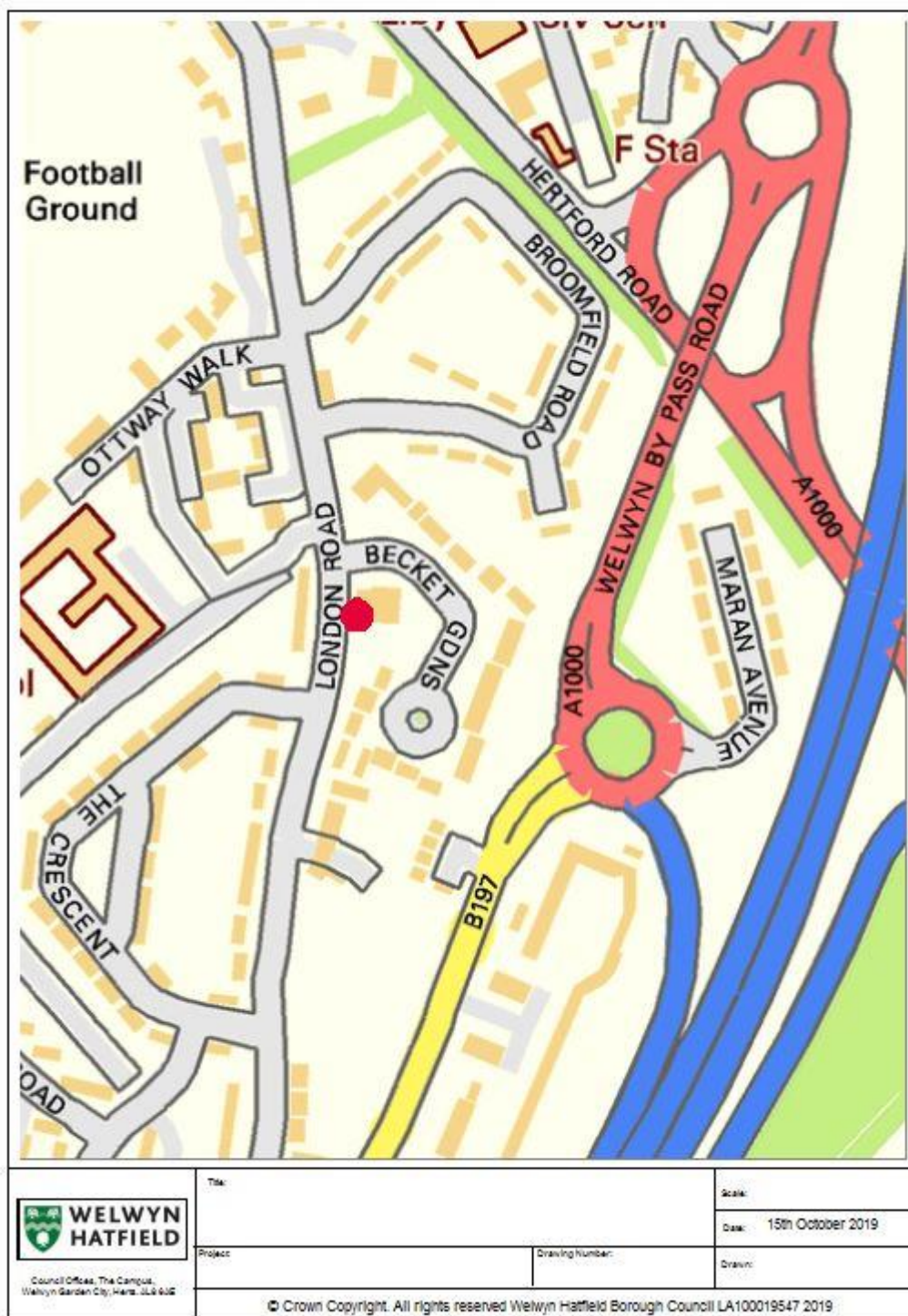
Campion Rd, Hatfield:



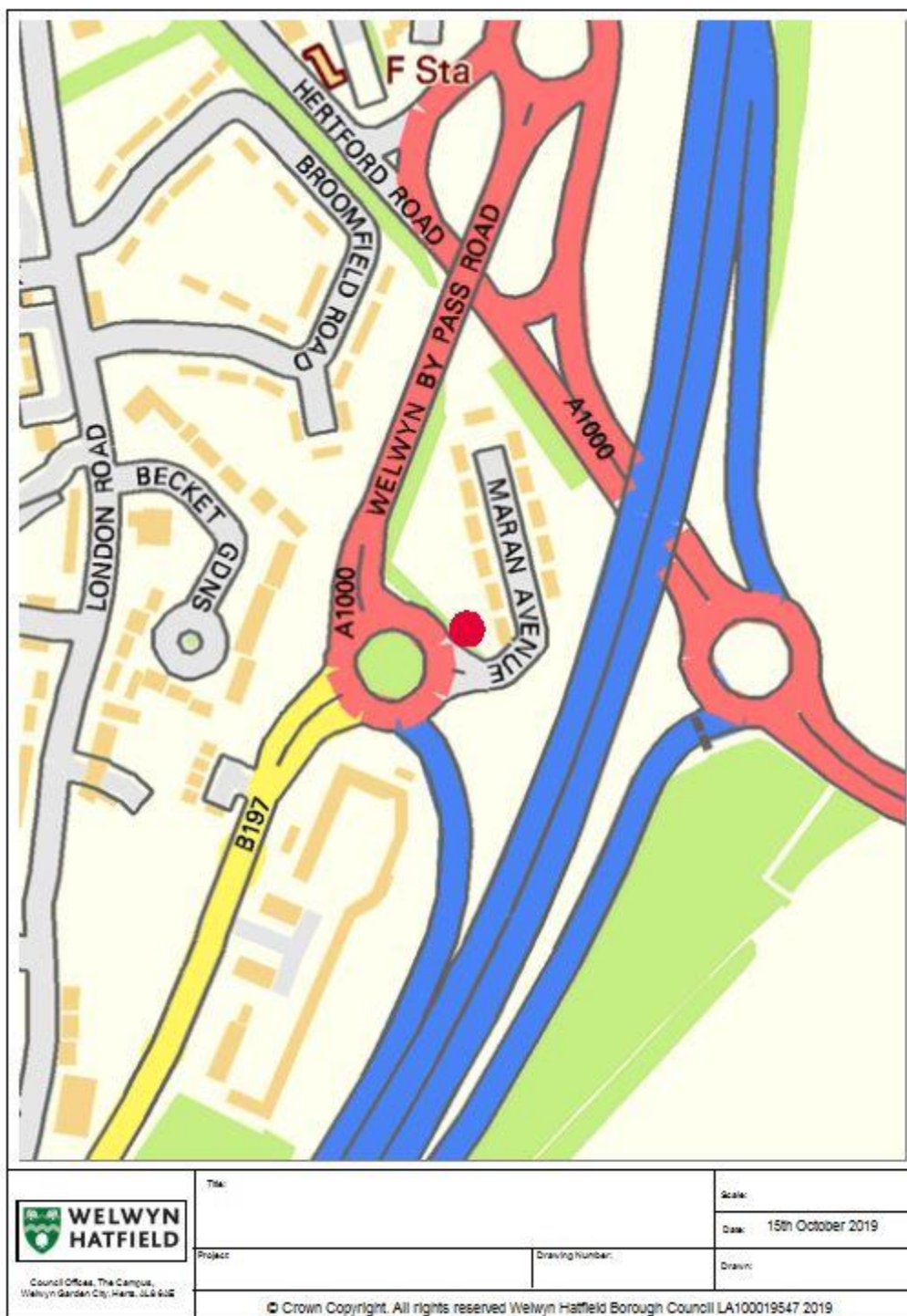
Knightsfield, WGC:



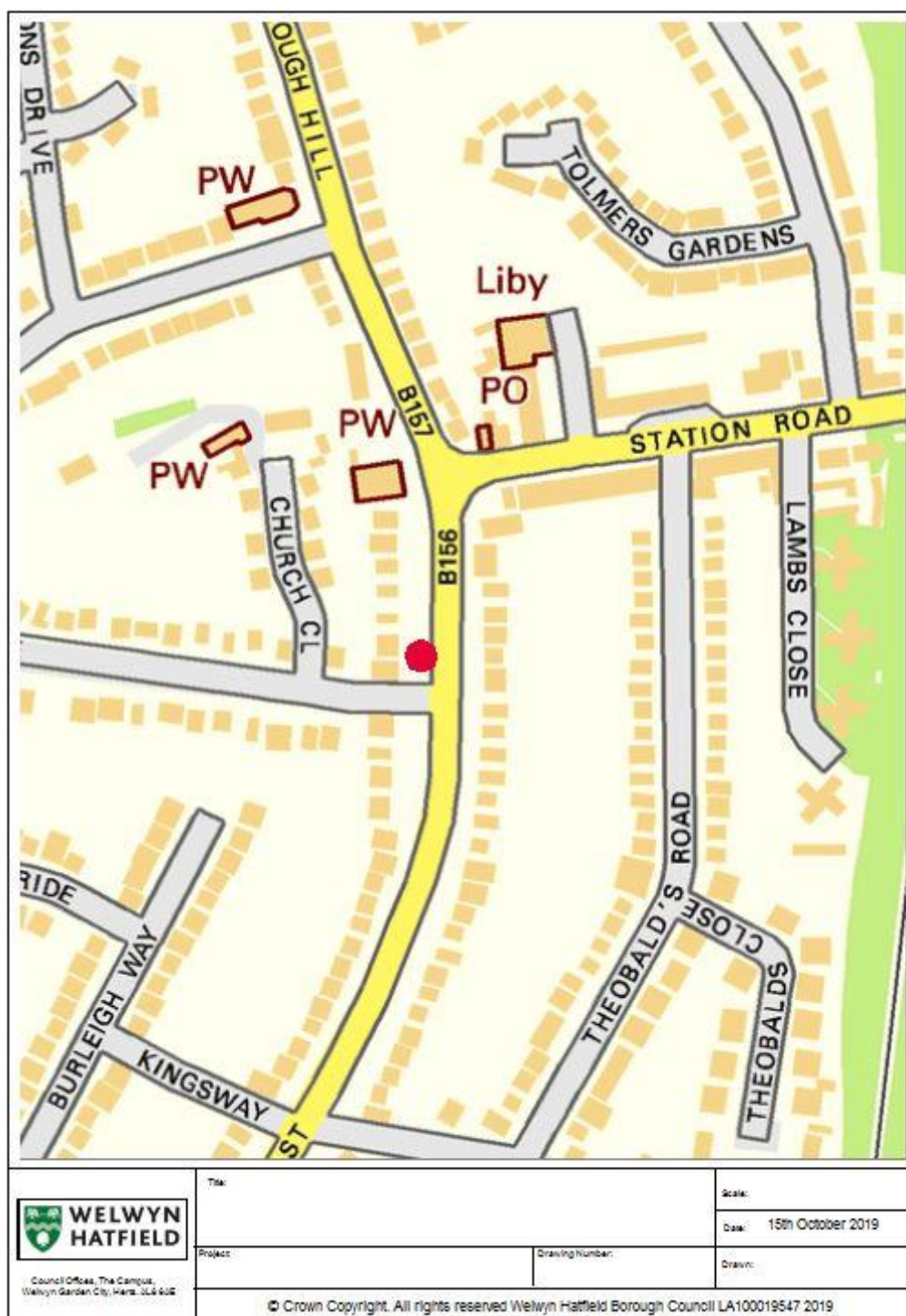
London Rd, Welwyn:



Maran Avenue, Welwyn:



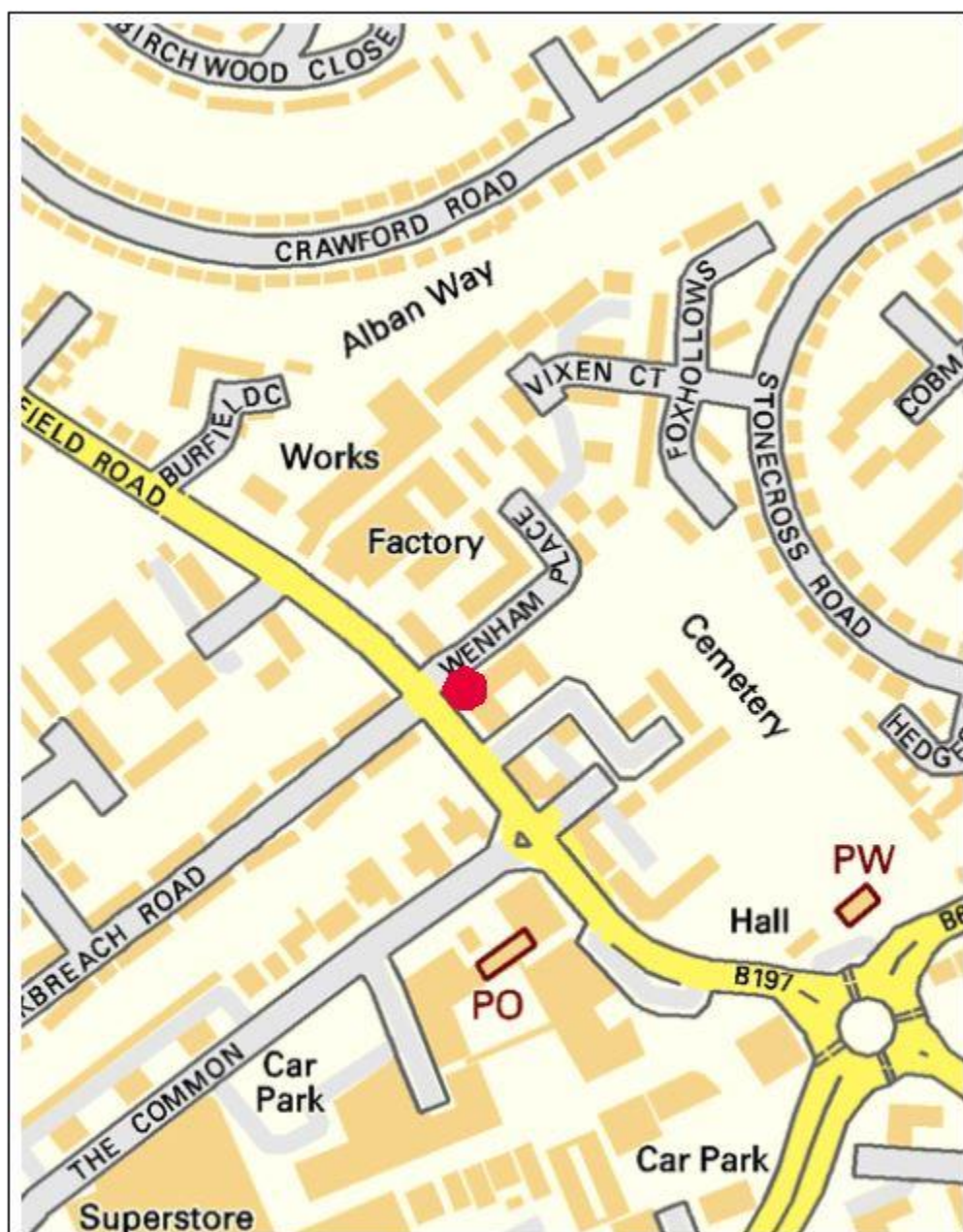
Northaw Rd East, Cuffley:



Parkside, Welwyn:



Wellfield Rd, Hatfield:




 <p>WELWYN HATFIELD</p> <p><small>Council Offices, The Campus, Welwyn Garden City, Herts. SG8 6BQ</small></p>	Title:		Scale:
	Project:		Date: 15th October 2019
	Drawing Number:		Drawn:
	© Crown Copyright. All rights reserved Welwyn Hatfield Borough Council LA100019547 2019		

Table identifying relocated diffusion tube monitoring:

Existing locations to move	Proposed New location	Potential source
Wigmores North	Bessemer Road, WGC	Traffic coming into and out of WGC
New Barnfield	London Road, Welwyn	Traffic coming into and out of Welwyn High Street – Close to School
Parkhouse Court	Briars Lane, Hatfield	At the roundabout with Hatfield Swim Centre – often congested
B197 Op North Star	Parkside, Welwyn	Roundabout on Welwyn By-Pass, congested in rush hour
Green Lanes	Campion Road, Hatfield	HGV traffic serving Hatfield Business Park
Link Drive	Wellfield Rd, Hatfield	Road linking Hatfield Town Centre with Comet Way. Often busy with through traffic
Raymonds Plain	Burrowfields	Industrial estate with multiple pollution sources and lots of HGV traffic – Houses at the entrance to the road
Woods Avenue	Northaw Road, East	Additional Cuffley monitoring location, congested during rush hour traffic trying to access Station Road
Welwyn High Street	Maran Avenue, Welwyn	Close to roundabout leading to Welwyn By-Pass and adjacent to A1M – often congested during rush hour
Digswell Road, WGC	Knightsfield, WGC	Traffic coming into Bessemer Road and the town centre – staff gaining access to Tesco building

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁶	
	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

⁶ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
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
ASR	Air quality Annual Status Report
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
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
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
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide
...	...

References

DEFRA – Bias Adjustment factors/reporting template/guidance and technical documents:

<https://laqm.defra.gov.uk/review-and-assessment/tools/tools.html>

Air quality data collection website:

https://www.airqualityengland.co.uk/local-authority/?la_id=408

Air quality alert scheme:

<https://www.airqualityengland.co.uk/local-authority/knr-subscriptionv>

Diffusion tube supplier and laboratory:

<https://www.socotec.co.uk/services/laboratory-and-analytical-services/>

Public health indicators:

<https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/6/par/E12000006/ati/101/are/E07000241/iid/30101/age/230/sex/4>