HS2

December 2021

Air Quality and Dust Monitoring Monthly Report – December 2021

Buckinghamshire Council

gov.uk/hs2

Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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A report prepared by EWCs and MWCCs on behalf of HS2 Ltd.

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Monthly Summary

1.1.1 This Summary Report is published in fulfilment of commitments detailed in the High Speed Rail (London-West Midlands) Environmental Minimum Requirements, Annex 1: Code of Construction Practice, for the nominated undertaker to present the results of dust monitoring undertaken in the Buckinghamshire Council (BC) during December 2021.

1.1.2 Figure 1 to Figure 7 in Appendix A indicate the current worksites together with the dust monitoring locations.

1.1.3 This summary should be read in conjunction with the overview monitoring report available from www.gov.uk/government/collections/monitoring-the-environmental-effects-of-hs2, which highlights the applicable standards and guidance, as well as the air quality and dust monitoring methodologies to be implemented by nominated undertakers throughout construction.

1.1.4 The current phase of works commenced in January 2020. The current worksites, as presented in Appendix A, Figure 1 to 7, include:

CVV LTP1

- Jetty piling: piling plant form, platforms, support plant and compound;
- Cofferdam sheet piling: piling plant and support plant;
- Permanent main piling works: boring pile, de-sanding pile bore at pile position, installing reinforcement cage and concreting pile, bored pile break-down to prepare pile surface, grout curtain around viaduct pile groups maintenance plant and clean up around piles;
- Haul road 28,150 - 29,400: finishing and fencing works;
- Haul road 28,220 - 29,200: preparation works;
- North Embankment Compound: compound operation;
- Ground Investigation works: GI works and overwater GI works;
- DWSC Compound: compound operation and de-sanding compound;
- River Colne Realignment;
- Core Drilling of Concrete;
- North Abutment: slab & wall construction, backfilling at abutment walls and masking walls /staircases /apron slab;
- Pumping water management from ch 25.900 to 29.500;
- Maintenance of the haul road from ch 25.900 to 29.500;
- Satellite welfares;
- Generator farms;
- Core Drilling of Concrete;
- Pile Trimming;
- SCS Material Storage;
- Fencing Finishing Works;
- Utility Diversion;

- Environmental Maintenance;
- Cofferdam Excavation; and
- Utilities.

Chalfont St Peter Vent Shaft

- General plant;
- Basement secant piling works: shallow box retaining wall contiguous & secant piles, excavate & cut contiguous & secant piles;
- Road maintenance works;
- Stockpile management; and
- Shaft dewatering.

Amersham Vent Shaft

- General site activity: general plant;
- Earthworks: stockpile management;
- Ground post treatment: drilling and grouting;
- Dewatering;
- Temporary Capping Beam: ground monitoring;
- Shaft Excavation; and
- Basement Secant Piling: extended hours working.

Chalfont St Giles Vent Shaft

- General site activity: general plant;
- Stockpile Management;
- Collar Construction;
- Dewatering;
- Secant piling: secant piling, excavate and cut piles; and
- Basement Secant Piling: extended hours working.

Little Missenden Vent Shaft

- General site activity: general plant;
- Earthworks: stockpile management;
- D-Wall works: excavation, concreting, desanding and mud treatment; and
- Water treatment.

Chesham Road Vent Shaft

- General site activity: general compound power; and
- Shaft construction using In-Situ Casson Method: installation of sheet piles, construction of guide collar & excavate to initial formation level and set-up cutting shoe.

Lower Bottom House Farm Lane

- Earthworks covering an area roughly 25,000 m2
- Excavation, stockpiling, use of dumper trucks, excavators, dozers etc.
- Subject to soil classification, the fill will be used from site won material
- Reconstruction and widening of the existing Bottom House Farm Lane, made up of an asphalt surface over compacted sub-base. Construction activities comprise:
- Topsoil strip;
- Cut/fill placing and compaction. Imported fill where required;
- Utility diversions;
- Install ducting and drainage;
- Lay and compact CBGM and/or engineered fill;
- Lay asphalt and compact;
- Road lining;
- Road signage and landscaping;
- Track out

North Chilterns Area

- South Heath Earworks;
- Great Missenden Compound;
- Mulberry Park Demolition Works;
- Durham Farm Demolition and De-vegetation Works;
- Surface Water Management Works (Attenuation ponds)
- Small Dean Compound;
- Sheet Piling;
- Wendover Compound;
- Wendover Batching Plant; and
- Nash Lee Road Diversion.

Twyford to Greatworth

- Slab crossing for haul and access road;
- Access road stabilisation;
- Culvert Crossing;
- Pond and drainage;
- Stockpiling;
- Stone deliveries;
- Twyford Piling Platform

Aylesbury

- Construction of the A418 Oxford Road Main Compound
- Piling platform (excavation, aggregate base) for the A418 Overbridge

- Piling (rotary bore) for the A418 Overbridge
- Break from highway (located on north side of the A418 Oxford Road, opposite Glebe House)
- Earthworks (Aylesbury South Cutting excavation, stockpile construction)

Calvert Area

- West Street Compound mobilisation;
- School Hill Batching Plant Compound mobilisation;
- Addison Road overbridge enabling works;
- East West Rail overbridge;
- Charndon Lodge underbridge;
- Perry Hill overbridge;
- Calvert North site access road;
- OXD line earthworks;
- Calvert Cutting earthworks;
- FCC offloading platform;
- FCC bridleway upgrades; and
- Calvert South site access road.

1.1.5 Twenty five (25) dust monitors are installed around the worksites, where works are underway. These sites returned a medium dust risk rating.

1.1.6 Dust monitoring locations and results are presented in Appendix B, Table 1, together with line charts of monthly data from each dust monitor, in Figure 8. All continuous dust monitoring is undertaken using indicative monitors. Despite being Environment Agency (MCERTS) certified, indicative monitors carry a higher level of uncertainty than reference monitors, and therefore cannot be strictly compared with Air Quality Standards for human health and the environment. The purpose of the monitoring undertaken is to ensure the effectiveness of the on-site mitigation.

1.1.7 The trigger level for PM_{10} concentrations of 190 µg/m^3, measured as a 1-hour mean, in accordance with the updated guidance document '*Guidance on Monitoring in the Vicinity of Demolition and Construction Sites – (October 2018)*' has been applied.

1.1.8 No (0) dust trigger alerts were recorded during the monitoring period.

1.1.9 Data capture was below 90% for multiple monitors in December 2021 due to technical issues and power faults.

1.1.10 There were no (0) complaints were received during the monitoring period.

Appendix A – Worksite and Dust Monitoring Locations

Figure 1 to 7: Worksite and monitoring locations within the BC

Legend

- Dust Monitor
- District Borough Unitary Boundaries

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map Number

Map Name

Monitoring Locations In BC (Sheet 1)

Buckinghamshire County

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

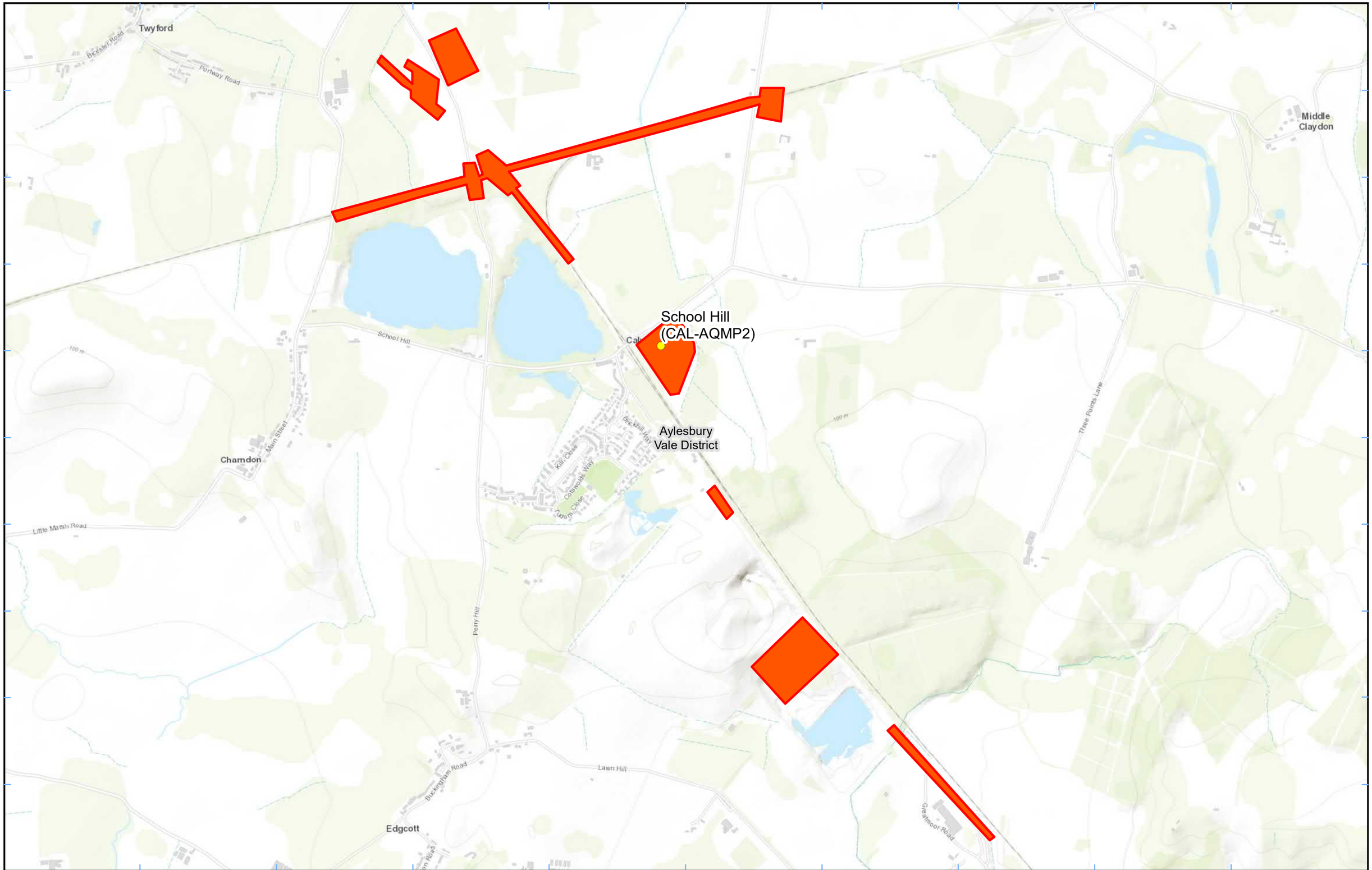
Scale at A3: 1:14,000

0 140 280 420 560

Metres

Doc Number:

Date: 13/01/22



Legend

- Dust Monitor
- Worksite
- District Borough Unitary Boundaries

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map Number

Map Name

Worksite and Monitoring Locations In BC (Sheet 2)

Buckinghamshire County

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

Scale at A3: 1:17,000

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Metres

Doc Number:

Date: 13/01/22

Legend

- Dust Monitor
- District Borough Unitary Boundaries

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map Number

Map Name

Monitoring Locations In BC (Sheet 3)

Buckinghamshire County

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

Scale at A3: 1:5,000

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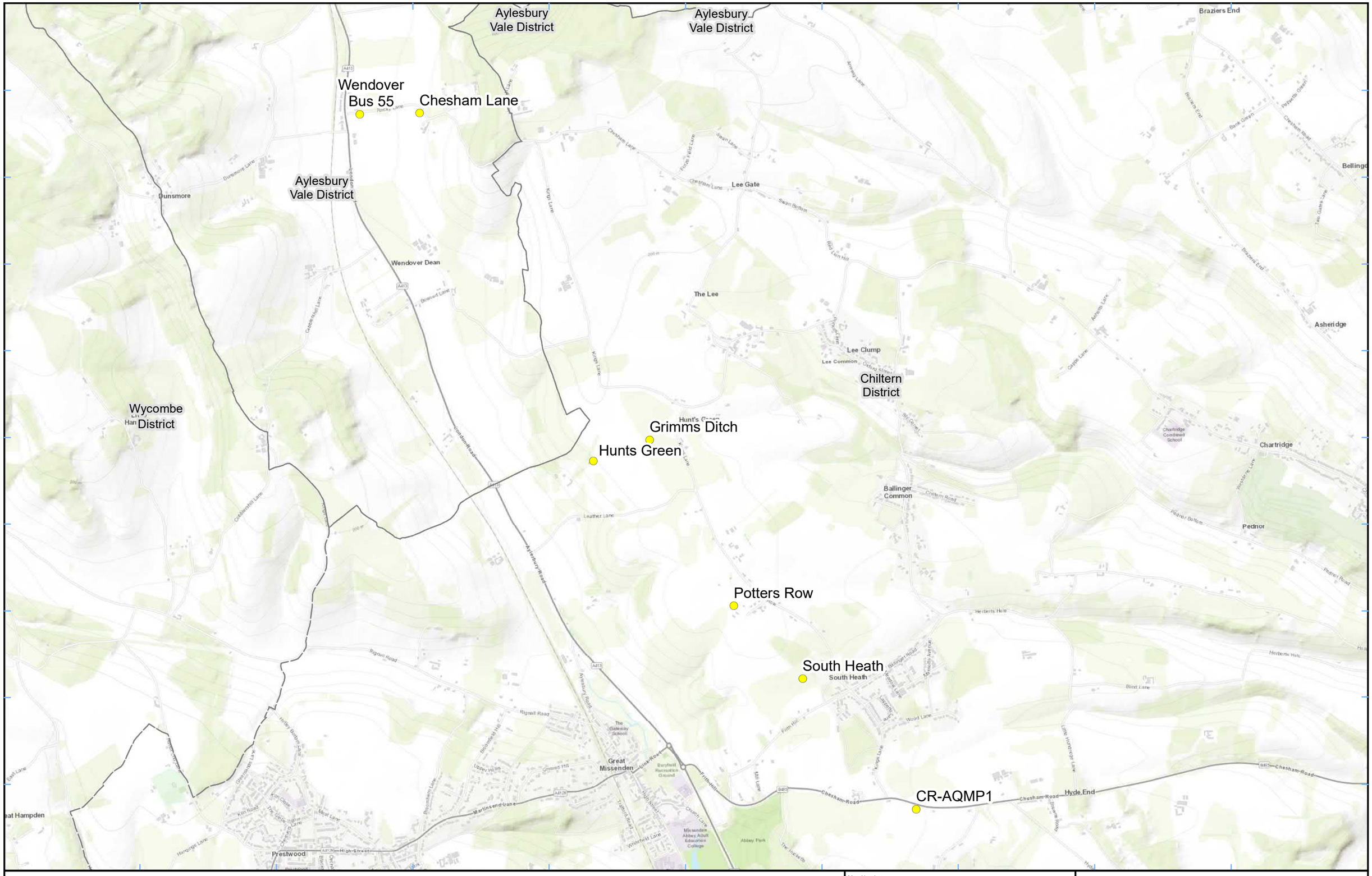
Metres

Doc Number:

Date: 13/01/22



Legend

- Dust Monitor
- District Borough Unitary Boundaries

Map Number

Map Name

Monitoring Locations In BC (Sheet 4)

Buckinghamshire County

Scale at A3: 1:23,000

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Doc Number:

Date: 13/01/22

Legend

- Dust Monitor
- Worksite
- District Borough Unitary Boundaries

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map Number

Map Name

Worksite and Monitoring Locations In BC (Sheet 5)

Buckinghamshire County

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

Scale at A3: 1:11,000

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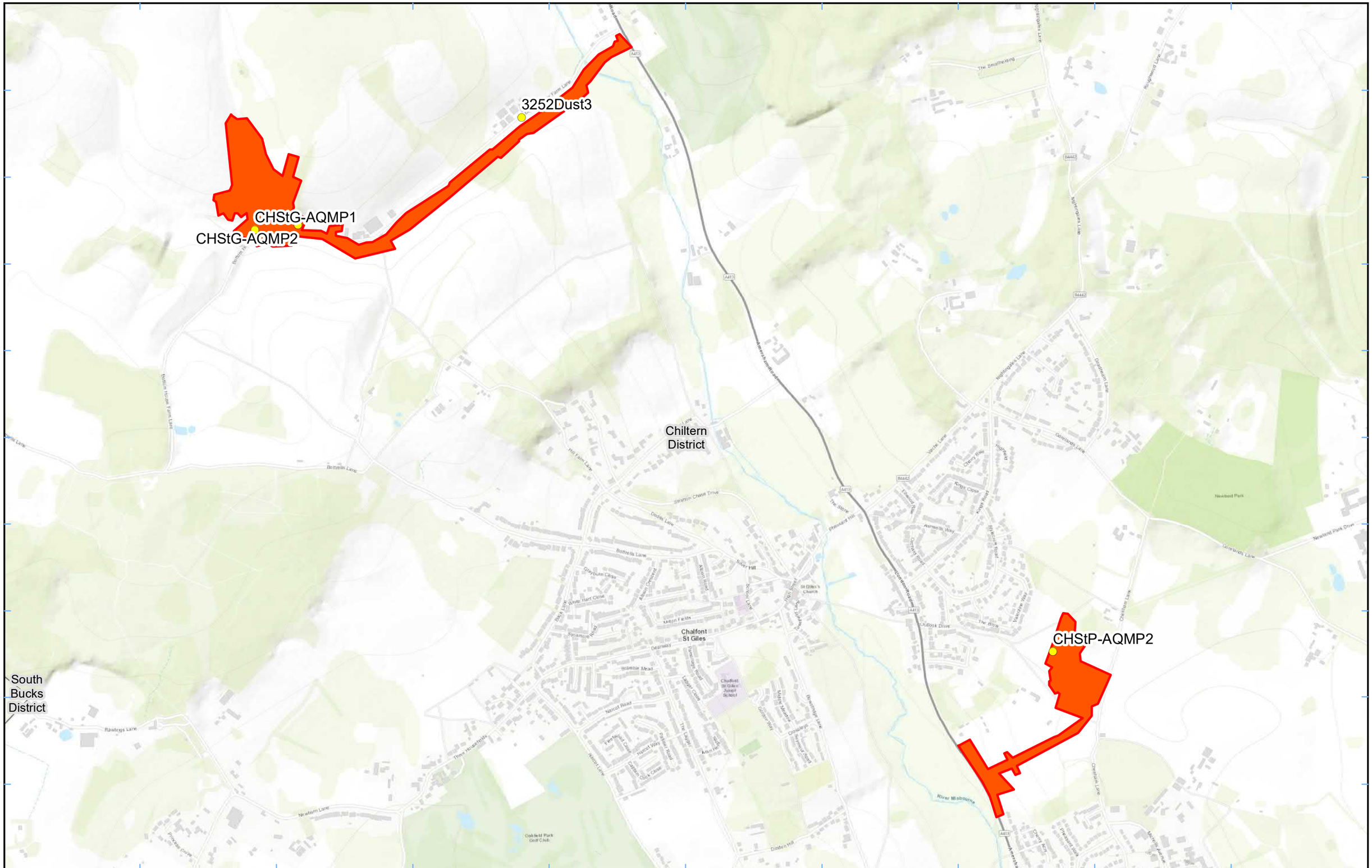
Metres

Doc Number:

Date: 13/01/22



Legend

- Dust Monitor
- Worksite
- District Borough Unitary Boundaries

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map Number

Map Name

Worksite and Monitoring Locations In BC (Sheet 6)

Buckinghamshire County

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

Scale at A3: 1:12,000

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Doc Number:

Date: 13/01/22

Legend

- Dust Monitor
- Worksite
- District Borough Unitary Boundaries

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Map Number

Map Name

Worksite and Monitoring Locations In BC (Sheet 7)

Buckinghamshire County

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

Scale at A3: 1:5,000

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Doc Number:

Date: 13/01/22

Appendix B – Dust Monitoring Results

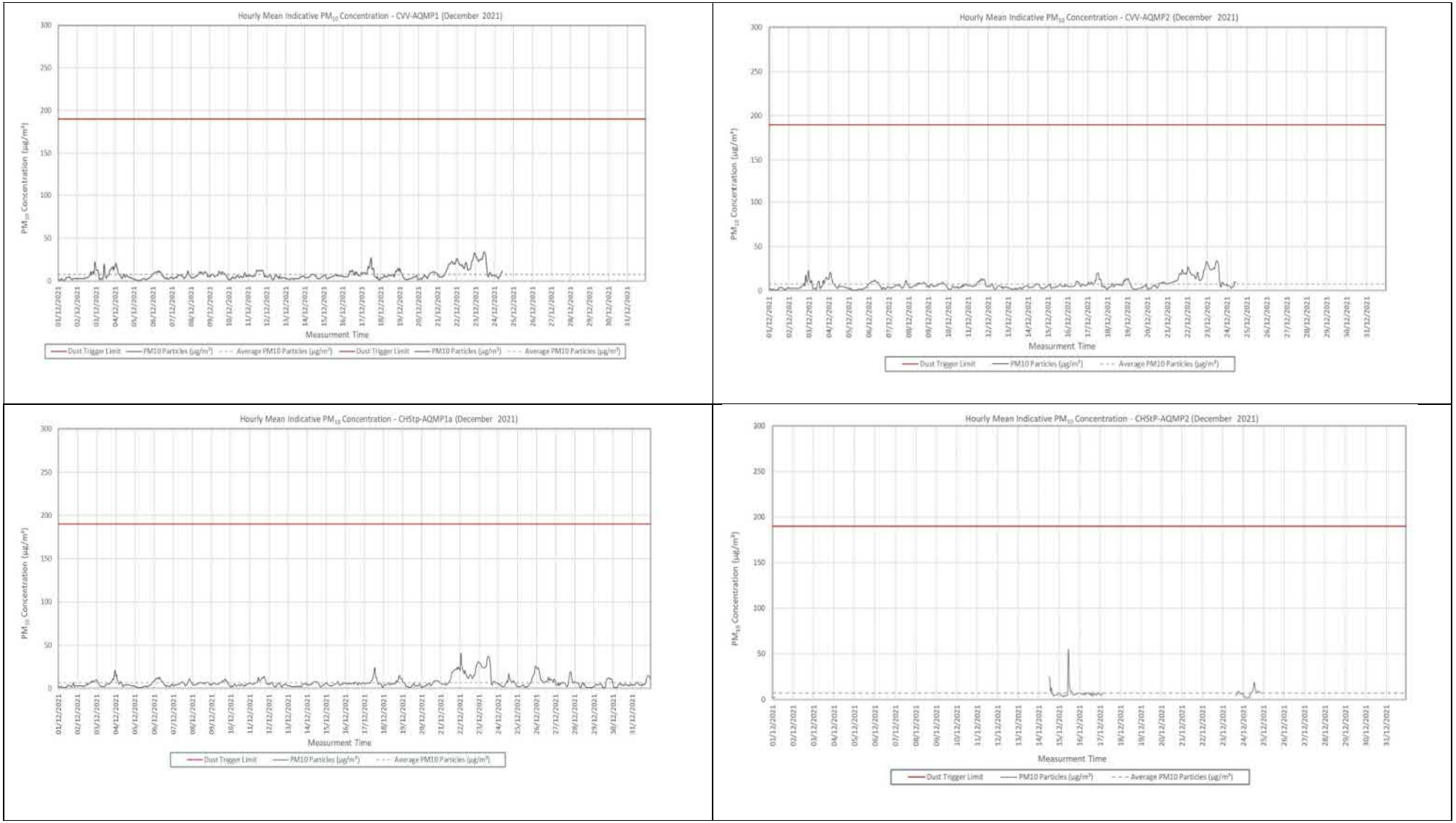
Table 1: Dust monitoring locations and December 2021 Results

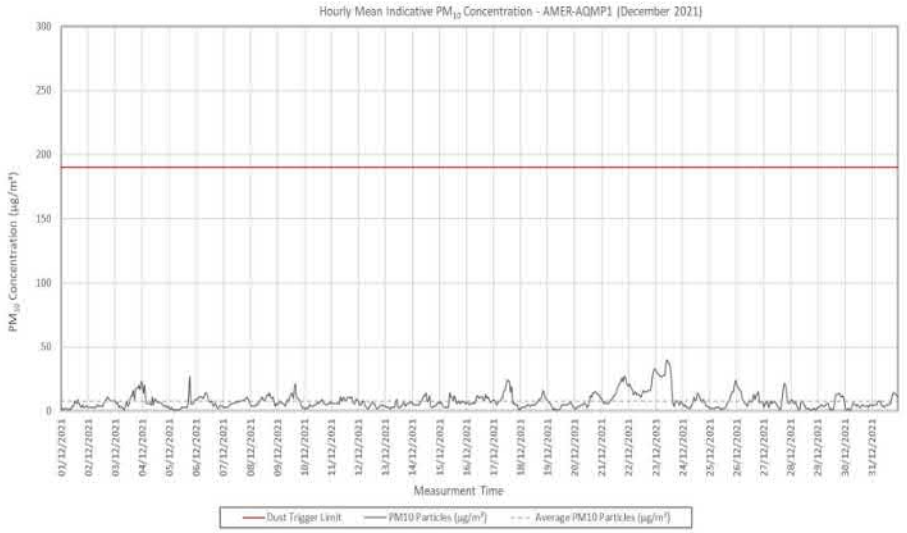
Monitoring site ID	Coordinates (X,Y)	Location description	Dust risk rating for site	Monitoring site active during period	Change to site since previous period report	Mean 1-hour PM_{10} concentration ($\mu g/m^3$)	Minimum 1-hour PM_{10} concentration ($\mu g/m^3$)	Maximum 1-hour PM_{10} concentration ($\mu g/m^3$)	Number of 1-hour periods exceeding trigger level of 190 $\mu g/m^3$	Data capture (%)
CVV-AQMP1	503612, 189846	On the north boundary of LTP1	M	Yes until 20/12/2021	Yes	7.8	1.0	34.0	0	75.4
CVV-AQMP2	503662, 189775	On the south boundary of LTP1	M	Yes until 20/12/2021	Yes	7.5	1.0	34.0	0	74.2
CHStP-AQMP1a	500093, 192996	Relocated from CHStP-NMP1 to site-boundary outside residence	M	Yes until 20/12/2021	Yes	6.8	1.0	41.0	0	99.5
CHStP-AQMP2	499951, 193282	On the western boundary of the site	M	Yes until 20/12/2021	Yes	6.9	1.0	55.0	0	12.9
AMER-AQMP1	495367, 196722	On the north-eastern boundary of Amersham	M	Yes until 20/12/2021	Yes	7.8	1.0	40.0	0	98.5
AMER-AQMP2	495263, 196590	On the south-western boundary of Amersham	M	Yes until 20/12/2021	Yes	7.1	1.0	52.0	0	97.2
CHStG-AQMP1	497170, 194752	On the southern boundary close to Hobbs Hole Cottage	M	Yes until 20/12/2021	Yes	6.8	1.0	37.0	0	100.0
CHStG-AQMP2	497320, 194770	On southern boundary next to carpark	M	Yes until 20/12/2021	Yes	7.0	1.0	40.0	0	100.0
LMS-AQMP1	493190, 198848	On the south-west of the site	M	Yes until 20/12/2021	Yes	7.4	1.0	97.0	0	94.8

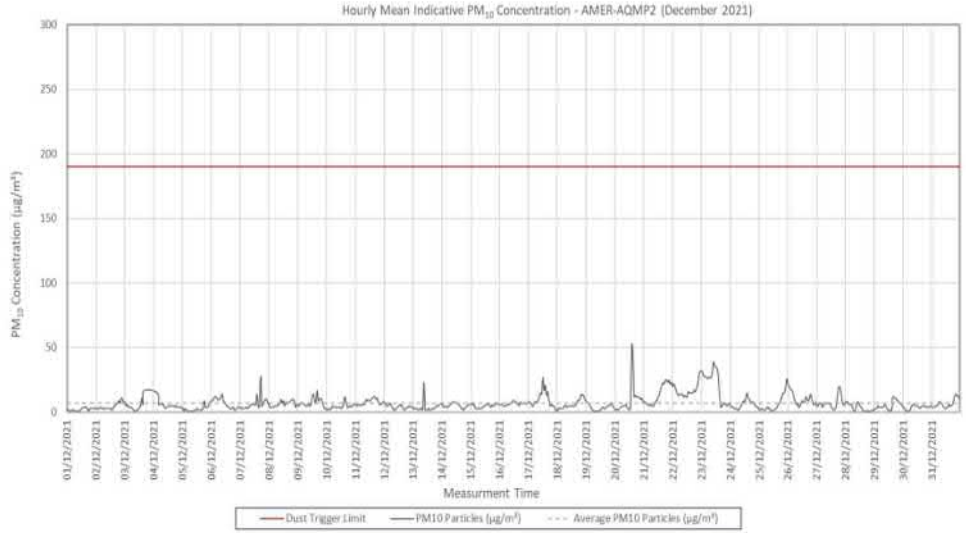
Monitoring site ID	Coordinates (X,Y)	Location description	Dust risk rating for site	Monitoring site active during period	Change to site since previous period report	Mean 1-hour PM_{10} concentration ($\mu g/m^3$)	Minimum 1-hour PM_{10} concentration ($\mu g/m^3$)	Maximum 1-hour PM_{10} concentration ($\mu g/m^3$)	Number of 1-hour periods exceeding trigger level of 190 $\mu g/m^3$	Data capture (%)
LMS-AQMP2	493407, 198731	On the south-east of the site	M	Yes until 20/12/2021	Yes	6.9	1.0	45.0	0	100.0
CR-AQMP1	491291, 201143	On the Chesham Road Vent Shaft	M	Yes until 20/12/2021	Yes	7.6	1.0	117.0	0	100.0
3252Dust3	498100, 195145	On the site boundary opposite Lower Bottom House Farm	M	Yes	No	5.5	0.2	33.3	0	79.2
School Hill (CAL-AQMP2) - Dust	469003, 224740	School Hill Compound	M	Yes	Yes	5.6	1.0	32.0	0	38.6
School End – Dust	463666, 230049	School End, Chetwode	M	Yes	Yes	6.1	1.0	113.0	0	43.7
Rosehill Farm – Dust	464368, 228939	Rosehill Farm, Chetwode	M	Yes	Yes	9.7	0.6	113.9	0	98.3
South Heath – Dust	490534, 202014	Bury Farm, South Heath	M	Yes	Yes	4.5	1.0	10.0	0	10.3
Potters Row – Dust	490075, 202502	Potters Row, South Heath	M	Yes	Yes	6.3	1.0	71.0	0	24.1
Hunts Green – Dust	489135, 203468	Leather Lane, The Lee, South Heath	M	Yes	Yes	5.4	1.0	26.0	0	46.8
Grimms Ditch – Dust	489511, 203611	The Lee, South Heath	M	Yes	Yes	4.0	3.0	5.0	0	0.8
Chesham Lane - Dust	487974, 205794	Chesham Lane, The Lee, Wendover	M	Yes	Yes	4.2	1.0	11.0	0	18.5
Wendover Bus 55 - Dust	487574, 205787	Chesham Lane, The Lee, Wendover	M	Yes	Yes	5.6	1.0	57.0	0	25.0
Meadoway – Dust	479803, 212178	Aylesbury, Buckinghamshire	M	Yes	Yes	4.0	1.0	11.0	0	15.3
Oat Close – Dust	481237 , 211384	Oat Close, Bishopstone, Aylesbury	M	Yes	Yes	5.4	1.0	17.0	0	76.1

Monitoring site ID	Coordinates (X,Y)	Location description	Dust risk rating for site	Monitoring site active during period	Change to site since previous period report	Mean 1-hour PM_{10} concentration ($\mu g/m^3$)	Minimum 1-hour PM_{10} concentration ($\mu g/m^3$)	Maximum 1-hour PM_{10} concentration ($\mu g/m^3$)	Number of 1-hour periods exceeding trigger level of 190 $\mu g/m^3$	Data capture (%)
Twyford - Dust	466544 , 226883	Twyford, Buckinghamshire	M	Yes	Yes	5.4	1.0	33.0	0	36.0
Chetwode/Hermitage – Dust	463936, 229521	Hermitage, Chetwode	M	Yes	Yes	5.0	1.0	52.0	0	24.1

Figure 8: Continuous dust 1-hour mean indicative PM_{10} concentration for all dust monitors




Hourly Mean Indicative PM10 Concentration - AMER-AQMP1 (December 2021)
PM10 Concentration (µg/m³)
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)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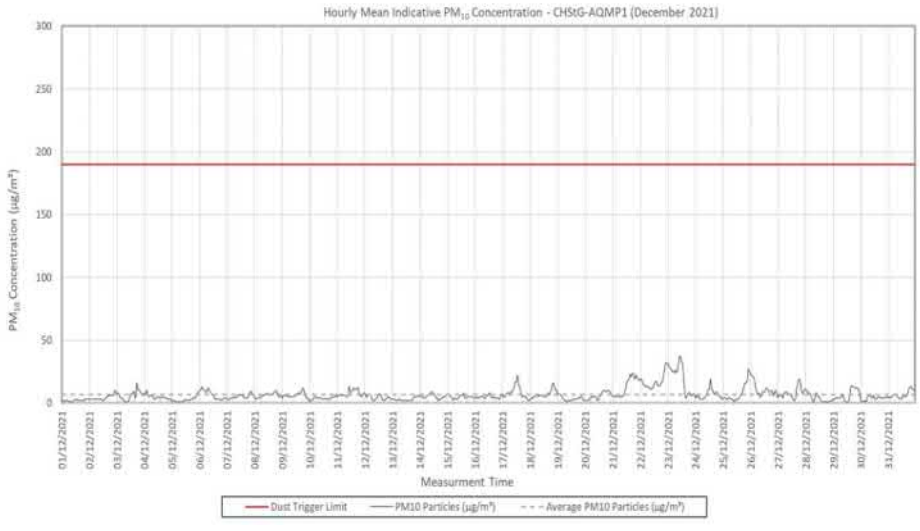
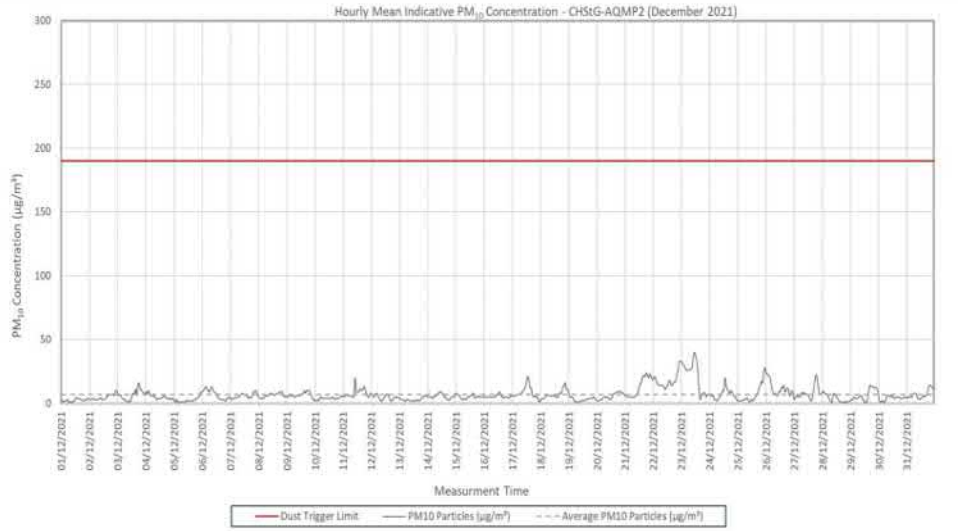
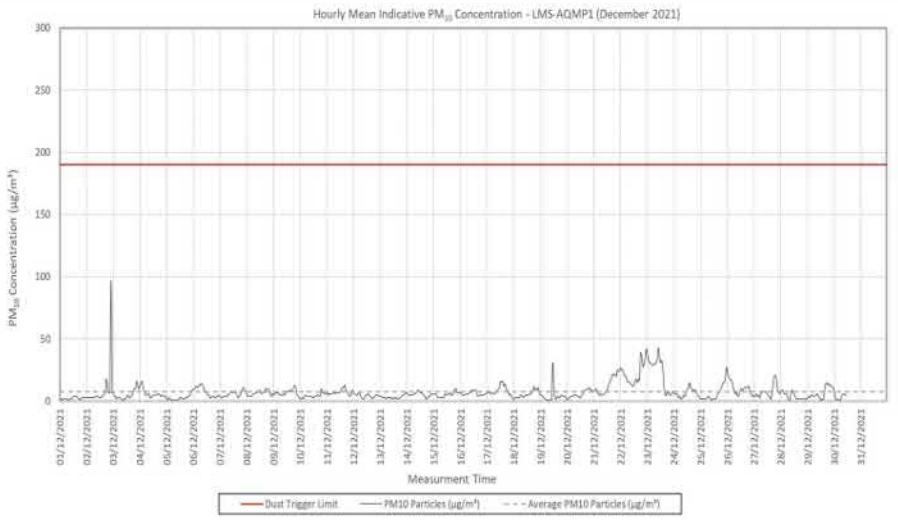
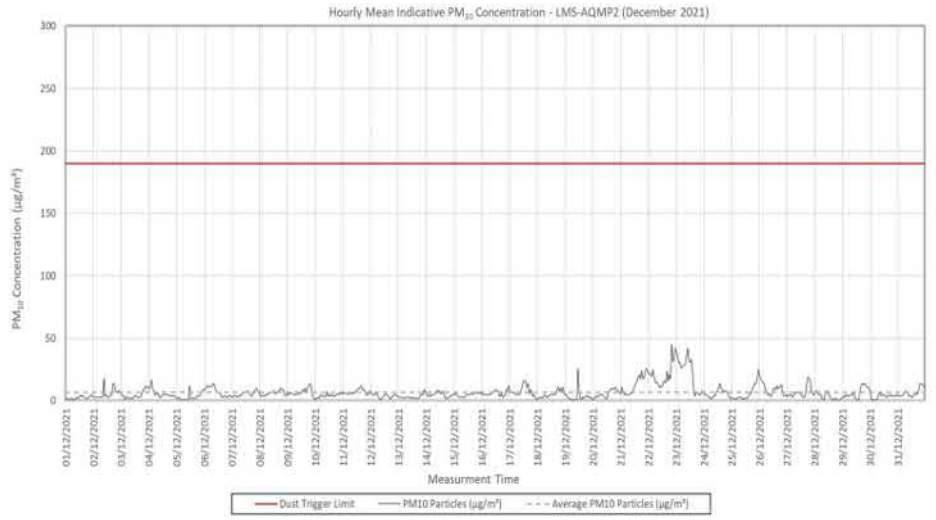
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)


Hourly Mean Indicative PM10 Concentration - CHStG-AQMP1 (December 2021)
PM10 Concentration (µg/m³)
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)


Hourly Mean Indicative PM10 Concentration - CHStG-AQMP2 (December 2021)
PM10 Concentration (µg/m³)
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)


Hourly Mean Indicative PM10 Concentration - LMS-AQMP1 (December 2021)
PM10 Concentration (µg/m³)
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)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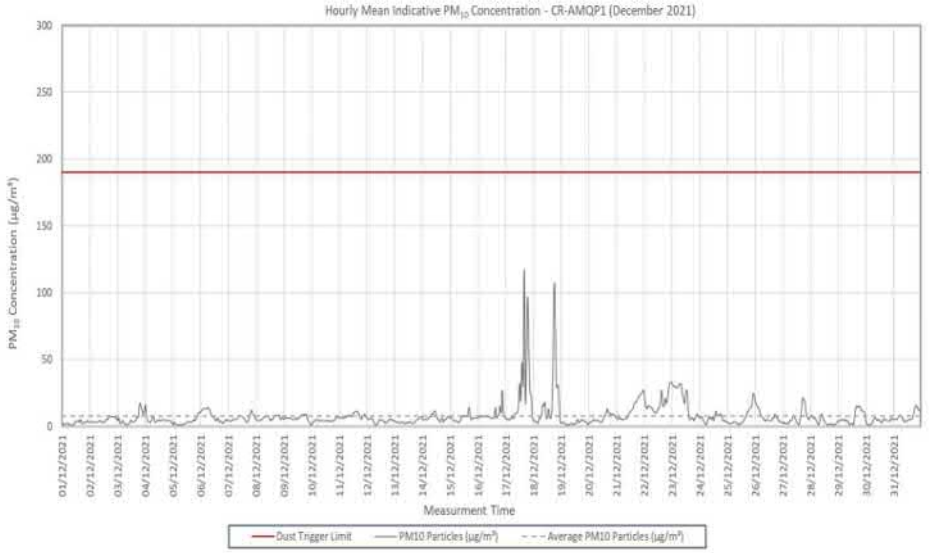
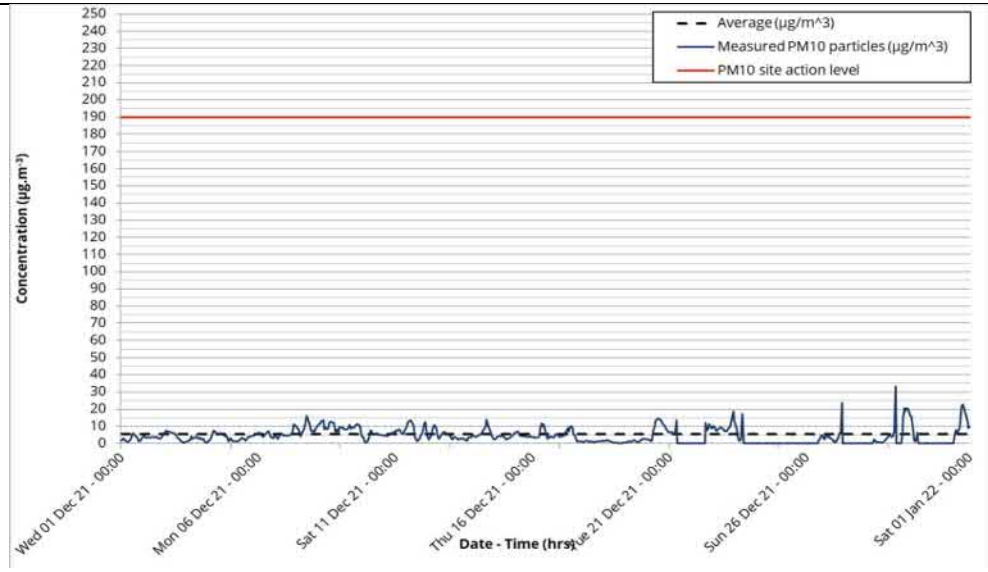
PM10 Concentration (µg/m³)
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)


Hourly Mean Indicative PM10 Concentration - CR-AMQP1 (December 2021)
PM10 Concentration (µg/m³)
Measurment Time
Dust Trigger Limit
PM10 Particles (µg/m³)
Average PM10 Particles (µg/m³)


Average (µg/m^3)
Measured PM10 particles (µg/m^3)
PM10 site action level
Concentration (µg.m⁻³)
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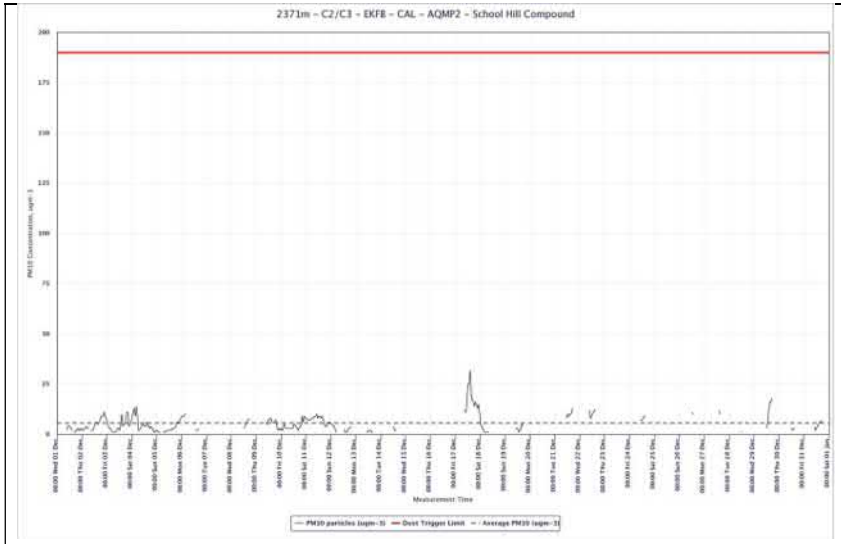
Mon 06 Dec 21 - 00:00
Sat 11 Dec 21 - 00:00
Thu 16 Dec 21 - 00:00
Tue 21 Dec 21 - 00:00
Sun 26 Dec 21 - 00:00
Sat 01 Jan 22 - 00:00
Date - Time (hrs)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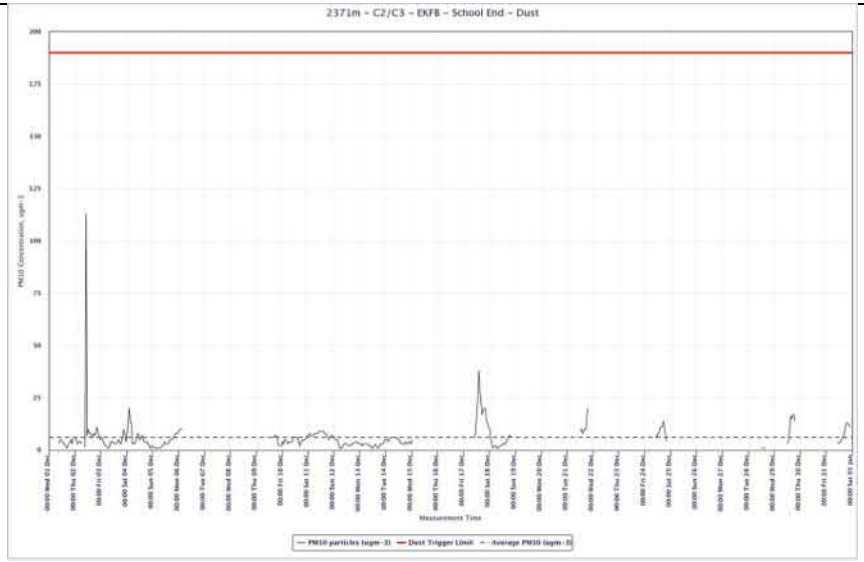
Measurement Time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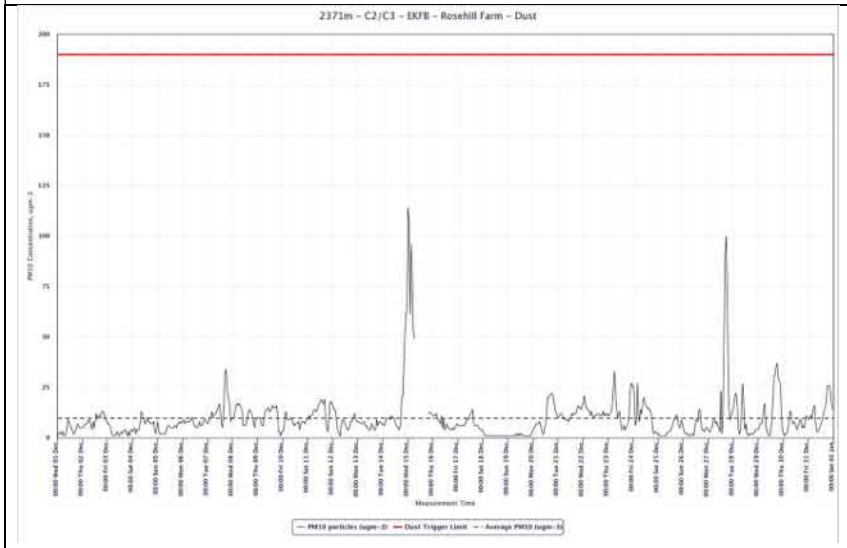
Measurement Time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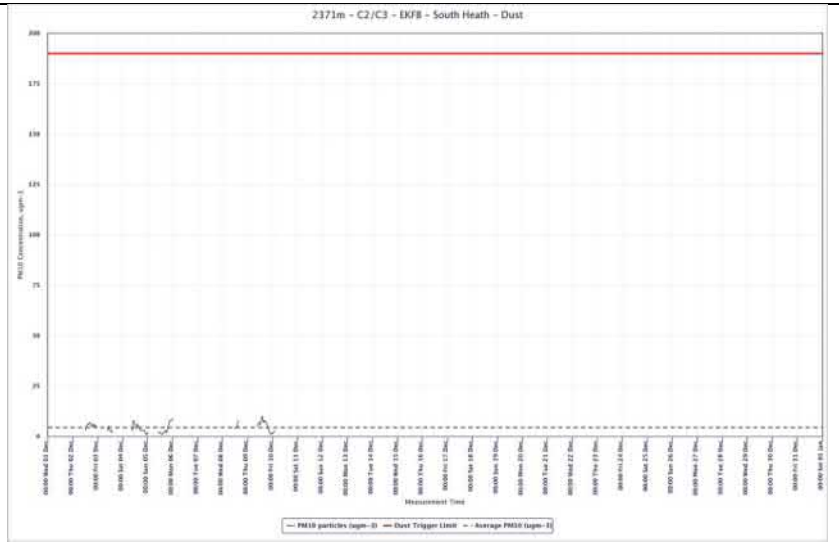
Measurement Time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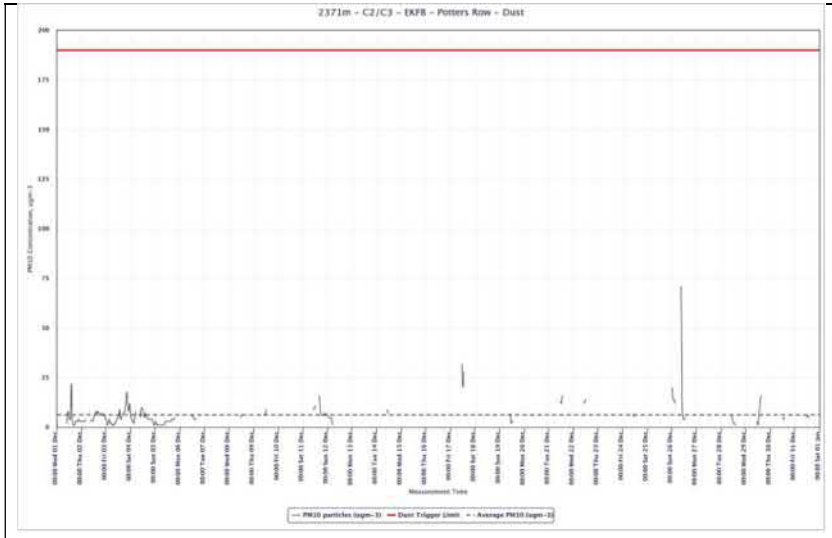
Measurement Time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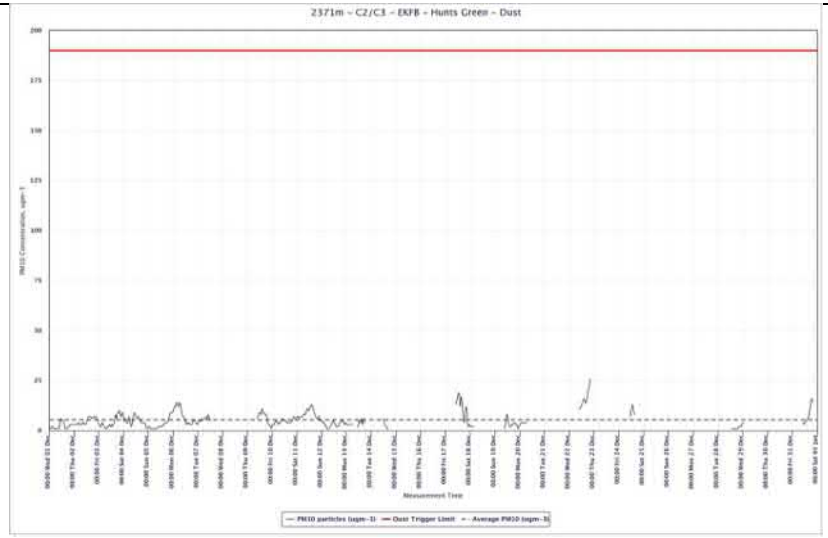
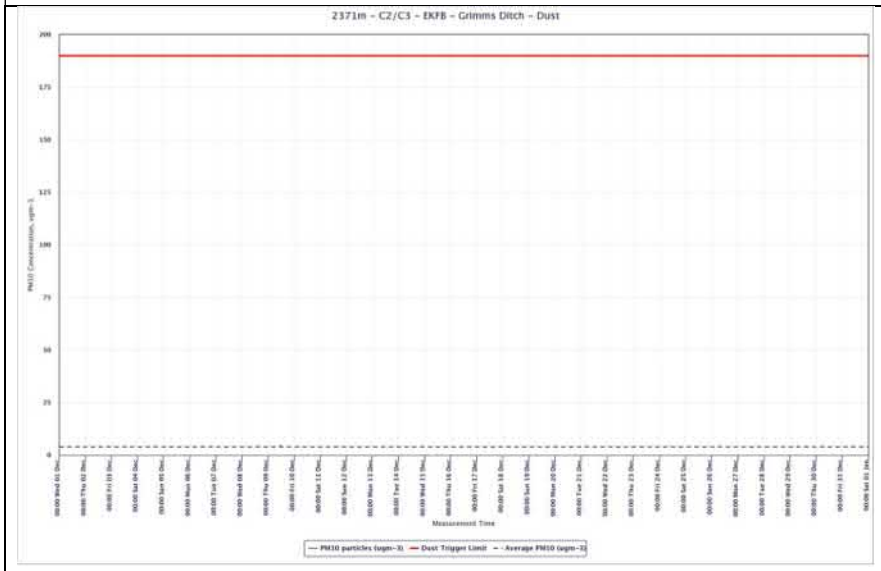
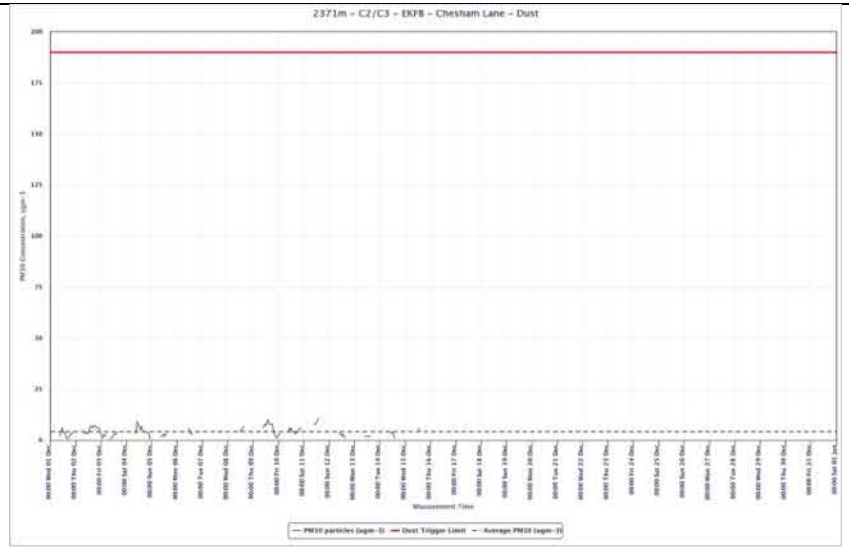
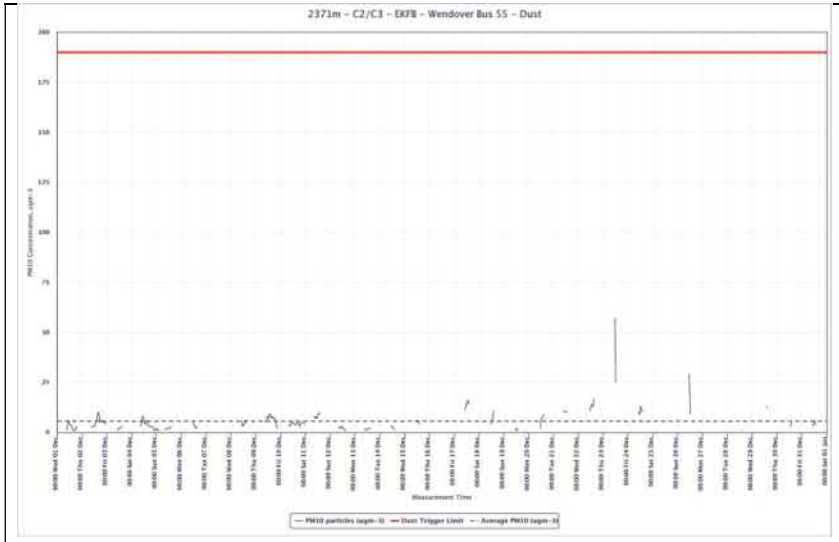
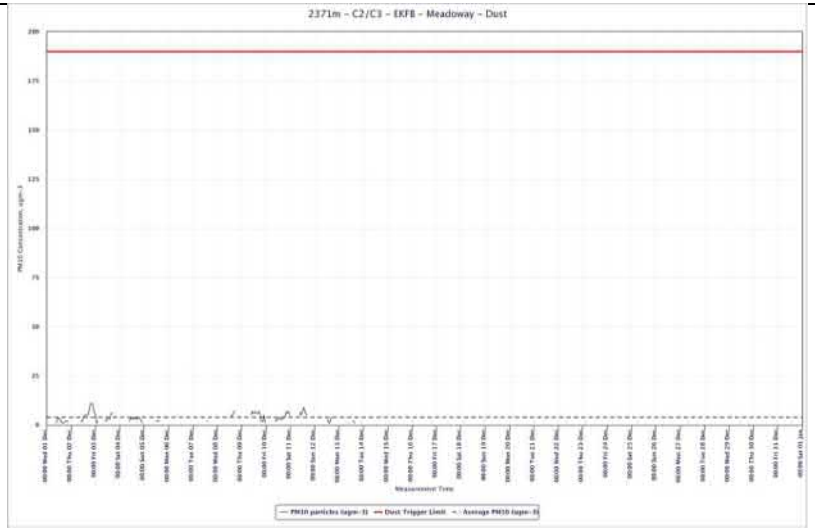
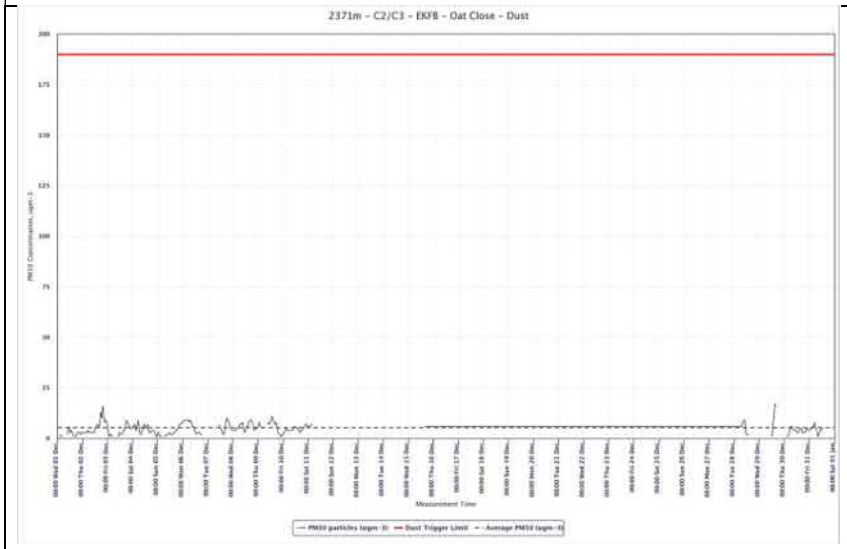

2371m - C2/C3 - EKFB - Hunts Green - Dust

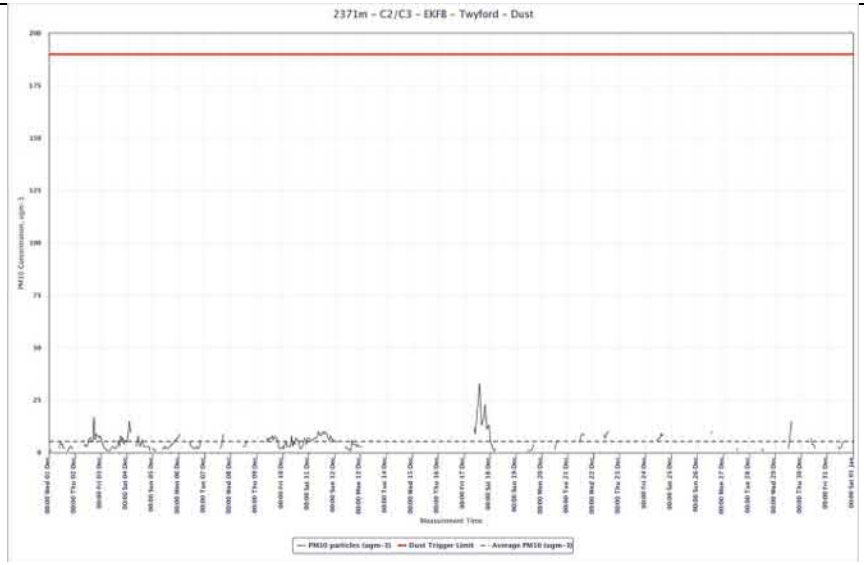

2371m - C2/C3 - EKFB - Grimms Ditch - Dust

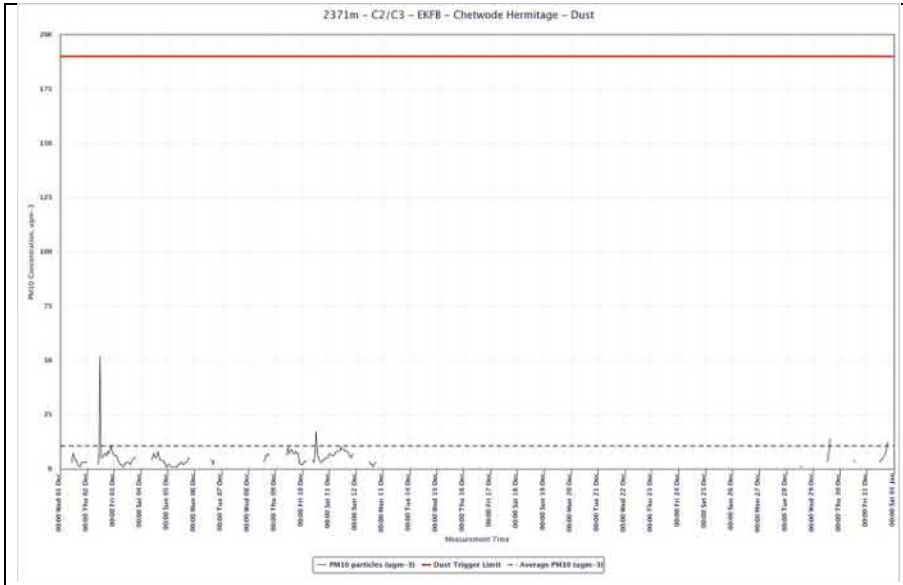

2371m - C2/C3 - EKFB - Chesham Lane - Dust


2371m - C2/C3 - EKFB - Wendover Bus 55 - Dust


2371m - C2/C3 - EKFB - Meadoway - Dust


2371m - C2/C3 - EKFB - Oat Close - Dust


2371m - C2/C3 - EKFB - Twyford - Dust


2371m – C2/C3 – EKFB – Chetwode Hermitage – Dust
PM10 Concentration, ugm-3
Measurement Time
PM10 particles (ugm-3)
Dust Trigger Limit
Average PM10 (ugm-3)