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AIR SCIENCES

HUNTER VALLEY OPERATIONS ANNUAL DATA REVIEW 2021

Hunter Valley Operations

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1 INTRODUCTION

Todoroski Air Sciences have conducted an annual review of the 2021 measured dust levels at monitors which are part of the Hunter Valley Operations (HVO) North and South air quality monitoring network. Elevated short term (i.e. 24-hour average) levels are investigated routinely throughout the year, hence the focus of this review is to present and assess any elevated annual average readings recorded in 2021.

This investigation has analysed the following elevated levels in detail:

- ✦ An annual average deposited dust level of $9.3\text{g/m}^2/\text{month}$ recorded at the Warkworth deposited dust gauge monitor.
- ✦ An annual average TSP level of $94.6\mu\text{g/m}^3$ recorded at the Warkworth TSP HVAS monitor.
- ✦ An annual average $\text{PM}_{2.5}$ level of $9.6\mu\text{g/m}^3$ recorded at the Maison Dieu $\text{PM}_{2.5}$ HVAS monitor.
- ✦ It is noteworthy that the criteria for HVO North differ to those for HVO South. As outlined below, HVO South has more stringent criteria for some pollutants and averaging periods. This is normal, and arises due to the criteria applicable to new or modified projects becoming more stringent over time.

2 ANNUAL AIR QUALITY CRITERIA

2.1 HVO North

2.1.1 Air Quality Criteria

As per HVO North consent DA 450-10-2003 "Except for the air-affected land referred to in Table 1, the Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the particulate matter emissions generated by the development do not exceed the criteria listed in Tables 2, 3 or 4 at any residence on privately-owned land or on more than 25 percent of any privately-owned land. In this condition 'reasonable and feasible avoidance and mitigation measures' includes, but is not limited to, the operational requirements in Condition 5 of Schedule 4 and the requirements in Conditions 5 and 6 of Schedule 4 to develop and implement a real-time air quality management system that ensures effective operational responses to the risks of exceedance of the criteria."

The criteria from Tables 2 to 4 are set out below:

Table 2: Long term criteria for particulate matter

Pollutant	Averaging period	^a Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources)

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed to by the Secretary.

Table 3: Short term criteria for particulate matter

Pollutant	Averaging period	^a Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources)

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed to by the Secretary.

Table 4: Long term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to other sources)

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own)

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method

When the measured cumulative annual average deposited dust level at compliance monitors is below the criterion of 4g/m²/month in Table 4 it is inferred that compliance is achieved. If this criterion is exceeded, the applicant must demonstrate compliance with the maximum increase in the deposited dust level of 2g/m²/month.

2.1.2 Air Quality Acquisition Criteria

"If particulate matter emissions generated by the development exceed the criteria in Tables 5, 6 or 7 on a systemic basis at any residence on privately-owned land or on more than 25 percent of any privately-owned land, then upon receiving a written request for acquisition from the landowner the Applicant must acquire the land in accordance with the procedures in Conditions 7 and 8 of Schedule 5."

Table 5: Long term acquisition criteria for particulate matter

Pollutant	Averaging period	^a Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources)

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed to by the Secretary.

Table 6: Short term acquisition criteria for particulate matter

Pollutant	Averaging period	^a Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 150 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	24 hour	^b 50 µg/m ³

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources)

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own)

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed to by the Secretary.

Table 7: Long term acquisition criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to other sources)

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own)

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method

When the measured cumulative annual average deposited dust level at compliance monitors is below the criterion of 4g/m²/month in Table 4 it is inferred that compliance is achieved. If this criterion is exceeded, the applicant must demonstrate compliance with the maximum increase in the deposited dust level of 2g/m²/month.

2.2 HVO South

2.2.1 Air Quality Criteria

As per HVO South consent PA 06_0261 "The Proponent must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not exceed the air quality impact assessment criteria listed in Table 8 at any residence on privately-owned land, the Hunter Valley Gliding Club (when in use) or on more than 25 percent of any privately-owned land."

Table 8: Air quality impact assessment criteria

Pollutant	Averaging period	^a Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^{a,c} 25 µg/m ³
	24 hour	^b 50 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^{a,c} 8 µg/m ³
	24 hour	^b 25 µg/m ³
Total suspended particulate (TSP) matter	Annual	^{a,c} 90 µg/m ³

Air quality impacts at HVGC are to be assessed in the immediate vicinity of its residential facilities and/or clubhouse. Air quality limits are only applicable during times of use that have been notified by HVGC to the Proponent.

^a Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the project on its own).

^c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed to by the Secretary.

"However, if the Proponent has a written negotiated air quality agreement with any landowner or HVGC to exceed the air quality limits in Table 8 and a copy of this agreement has been forwarded to the Department and EPA, then the Proponent may exceed the air quality limits in Table 8 in accordance with the negotiated air quality agreement."

2.3 Air Quality Criteria Summary

The monitoring locations and annual average criteria for HVO North and HVO South set out in the relevant approvals are presented in **Table 2-1**.

Table 2-1: Annual air quality criteria

Location	HVO North		HVO South
Deposited Dust Gauges (g/m²/month)			
D112*	-	-	-
D118	2 ¹	4 ²	-
D119	2 ¹	4 ²	-
D122	2 ¹	4 ²	-
DL14	2 ¹	4 ²	-
DL2*	-	-	-
DL21	2 ¹	4 ²	-
DL22	2 ¹	4 ²	-
DL30	2 ¹	4 ²	-
Knodlers Lane	2 ¹	4 ²	-
Warkworth	2 ¹	4 ²	-
PM₁₀ TEOM (µg/m³)			
Wandewoi*	30		25
Golden Highway*	-		-
Howick*	-		-
Knodlers Lane	-		25
Warkworth	-		25
Jerrys Plains	30		25
Maison Dieu	-		25
PM₁₀ HVAS (µg/m³)			
Cheshunt East	30		-
Gliding Club	-		25
Long Point	-		25
Kilburnie South	30		25
PM_{2.5} HVAS (µg/m³)			
Maison Dieu	-		8
Kilburnie South	-		8
TSP HVAS (µg/m³)			
Cheshunt East	90		-
Warkworth	-		90
Wandewoi*	-		-
Maison Dieu	-		90
Long Point	-		90
Knodlers Lane	-		90
Kilburnie South	90		90

¹ Maximum increase in deposited dust level, ² Maximum total deposited dust level

*Per HVO's Air Quality Management Plan Table 5: HVO Air Quality Monitoring – Planning Approval Compliance Assessment, D112, DL2, Golden Highway and Howick are not compliance monitors. D112, DL2 and Wandewoi are used as representative monitoring locations for mine-owned land.

2.4 Deposited Dust Data

Table 2-2 and **Figure 2-1** summarise the HVO deposited dust monitoring data for the 2021 period.

The Warkworth monitor recorded a total annual average level above the criterion of 4g/m²/month.

Table 2-2: HVO monthly deposited dust monitoring data (g/m²/month) – 2021

Month	D112	D118	D119	D122	DL14	DL2	DL21	DL22	DL30	Knodlers Lane	Warkworth
Jan	2.8	1.0	1.1	1.6	1.4	0.7	2.2	6.2c	1.8	1.7	4.6
Feb	2.6	2.2	1.2	1.0	1.2	2.5	1.5	2.4	3.6	1.0	6.7
Mar	3.3	1.7	1.4	1.5	1.8	5.0c	1.1	1.0	2.4	0.8	4.1
Apr	1.1	0.9	1.2	0.9	3.3c	0.7	4.2	3.0	3.9	0.6	4.8
May	1.0	0.8	2.1	1.3	2.7	0.8	1.9	1.9	5.8	4.6c	11.3
Jun	1.1	0.8	0.7	1.1	0.9	3.6	5.8	1.2	4.0	4.1	7.1
Jul	0.5	0.6	2.5	0.8	1.4	0.7	ND	1.3	1.9	1.3c	33.4x
Aug	0.8	0.8	1.5	2.4	4.7	1.4	14.3	2.8	6.3	2.1	18.7
Sep	0.7	0.8	1.6	1.3	1.4	2.4	1.3	1.9	5.0	3.4	13.1
Oct	1.6	1.2	3.1	1.1	5.8c	0.7	2.7	1.5	3.9	4.6c	12.1
Nov	2.9	1.7	1.5	1.3	1.2	1.0	1.5	4.4c	3.0	7.4c	10.1
Dec	3.8c	1.5	2.2	5.2	1.6	1.9	1.2	6.7c	2.2	5.8c	9.3
Annual Average	1.7	1.2	1.7	1.6	1.8	1.5	3.4	1.9	3.7	2.0	9.3

ND – no data, dust gauge broken

c - Sample contaminated, not included in annual average calculation

x – An investigation indicated that the reading was anomalous and thus has been excluded from annual average calculation

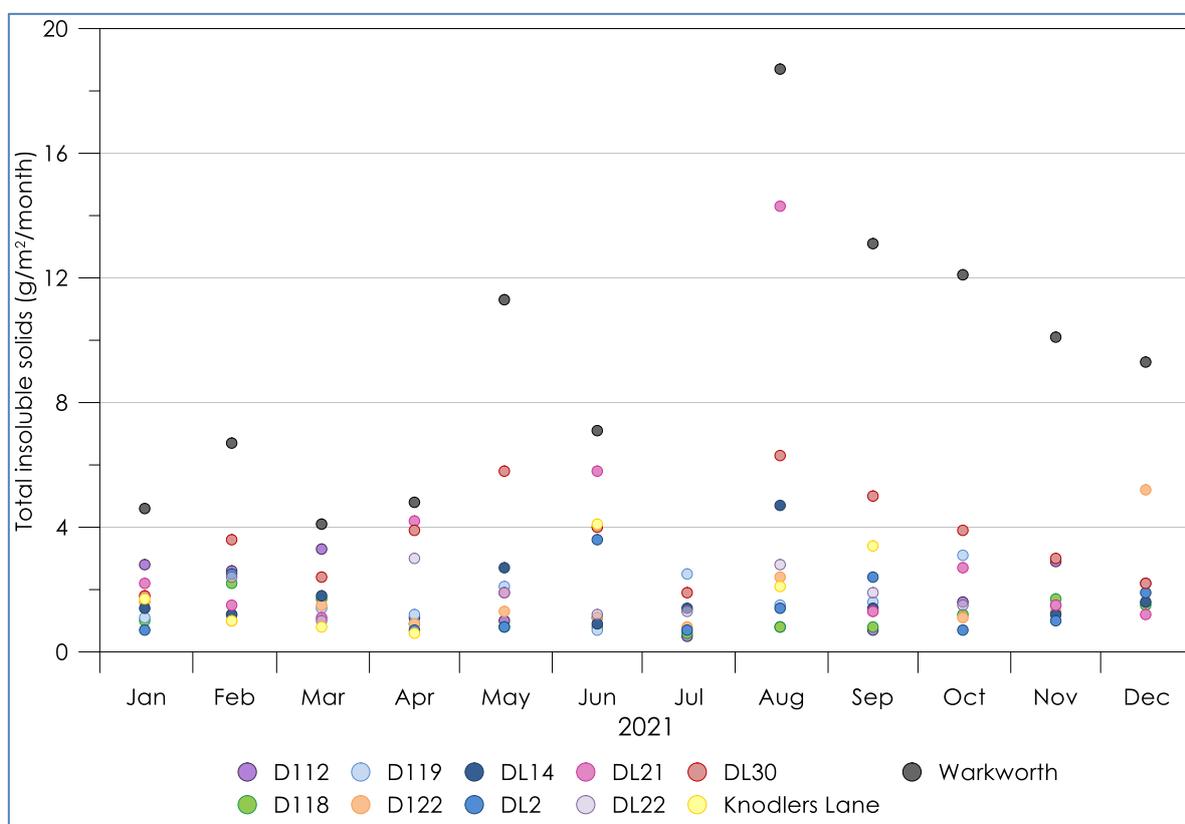


Figure 2-1: Monthly deposited dust results for 2021

Figure 2-2 presents a plan of the dust gauge monitoring locations in the area around HVO and the annual average deposited dust levels. The figure includes annual windrose plots of the meteorological data collected at the Cheshunt and HVO Corp Automatic Weather Stations (AWS) during 2021. Winds predominantly originated along a northwest/west-northwest and southeast/south-southeast axis at Cheshunt, and a west/west-northwest and southeast/east-southeast axis at HVO Corp.

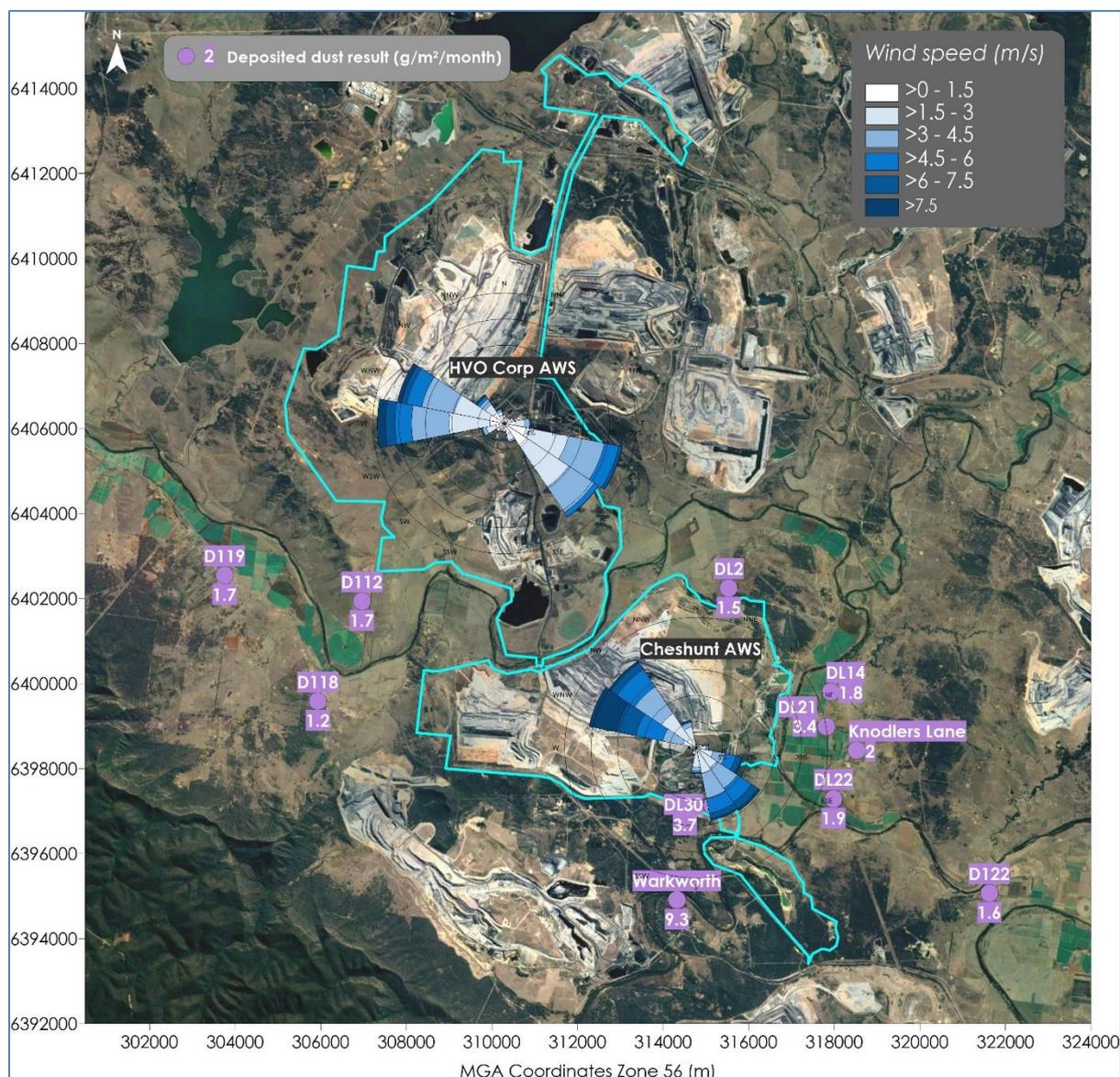


Figure 2-2: Annual deposited dust results for 2021

As set out in the Air Quality Criteria section, deposited dust criteria are applicable for HVO North as per DA 450-10-2003. It is important to note that, there are no criteria applicable to HVO South for deposited dust levels per PA 06_0261.

When the measured cumulative annual average deposited dust level is below the criterion of $4\text{g/m}^2/\text{month}$ it is generally inferred that compliance is achieved. The majority of dust which deposits on surfaces will not travel significant distances, and thus deposited dust levels are most affected by any very near sources. Hence if the cumulative criterion is exceeded, the applicant would need to show

compliance with the maximum (incremental) increase in the deposited dust level of $2\text{g}/\text{m}^2/\text{month}$ due to their activities, (which means there is a closer "other source" affecting the cumulative total reading). When the deposited dust level exceeds the criteria, the operator would need to further evaluate their compliance.

Figure 2-2 indicates that the Warkworth monitor recorded an annual average of $9.3\text{g}/\text{m}^2/\text{month}$ in 2021 which is above the total criterion of $4\text{g}/\text{m}^2/\text{month}$.

Figure 2-2 shows that most of the deposited dust monitors are located in close proximity to HVO South, on the opposite side of HVO South from HVO North. Given the significant separation distances between HVO North and these monitors, HVO North's contribution to these monitoring sites would be low and likely indiscernible from background concentrations and the influences of other mines. Therefore, HVO North could only reasonably have a tangible impact at its nearest monitors which include D112, D119 and DL2 and as such, it is considered that HVO North could not have had significant contribution to the Warkworth deposited dust level.

Table 2-2 and **Figure 2-2** show that D112, D119 and DL2 recorded annual average deposited dust levels below both the incremental and cumulative criteria and because dust from a mine cannot "leap frog" a monitor and cause higher impacts beyond the monitor it can be inferred that HVO North was compliant per DA 450-10-2003 at these and all other locations beyond. Note that D112 and DL2 are not compliance monitoring locations, however DL2 is on a prevailing wind axis relative to the HVO North operations, and is perhaps the best sited monitor to indicate the deposited dust levels due to the operation at that distance downwind.

2.4.1 Deposited Dust Investigation

A simple and conservative approach has been adopted in order to calculate HVO North's contribution to the levels recorded at the deposited dust gauges. If monitors were downwind of HVO North for less than 5% of the time, HVO North's contribution to the monitor was assumed to be zero for that monthly sampling period. If the monitors were downwind of HVO North for at least 5% of the time, then HVO North's contribution was assumed to be the total recorded level minus the minimum recorded monthly value in the monitoring network. This estimation is likely to overestimate the contribution from HVO North as it assumes the total difference between the recorded value and the low background level is due to HVO North and does not account for the likely impact of other sources such as neighbouring mines or localised sources. For monitors outside HVO North's reasonable range of impact (as discussed above), HVO North's contribution was estimated to be less than or equal to the nearest intermediate monitor's contribution (D112, D119 or DL2). Monthly contributions were not calculated for monitors where the relevant monthly sample was invalid.

Table 2-3 presents the annual average deposited levels recorded in 2021 and HVO North's estimated contribution to the annual average deposited dust levels. The analysis shows that the estimated incremental contributions from HVO North to all monitors, including the elevated annual level at the Warkworth would be below the incremental annual average criterion of $2\text{g}/\text{m}^2/\text{month}$.

The analysis shows that HVO North's conservatively calculated contribution to the Warkworth monitor in 2021 would have been a maximum of $0.5\text{g}/\text{m}^2/\text{month}$ or 5% of the $9.3\text{g}/\text{m}^2/\text{month}$. This indicates that the deposited dust level at Warkworth in 2021 would be over the applicable total criterion of $4\text{g}/\text{m}^2/\text{month}$ regardless of the contribution from HVO North.



Table 2-3: HVO North's estimated contribution and annual average deposited dust levels 2021

Month	D112	D118	D119	D122	DL14	DL2	DL21	DL22	DL30	Knodlers Lane	Warkworth	
	Percentage of time downwind of HVO (north) (%)											
January	6%	2%	4%	11%	22%	24%	19%	15%	11%	17%	5%	
February	7%	3%	5%	7%	14%	16%	13%	10%	7%	11%	4%	
March	4%	2%	3%	10%	20%	22%	17%	13%	9%	14%	4%	
April	6%	3%	5%	18%	37%	43%	32%	25%	17%	27%	7%	
May	9%	5%	6%	27%	47%	52%	42%	36%	24%	37%	11%	
June	7%	4%	4%	23%	54%	62%	43%	29%	19%	33%	8%	
July	5%	3%	3%	27%	62%	73%	50%	34%	20%	40%	7%	
August	4%	2%	1%	28%	62%	73%	50%	35%	22%	41%	8%	
September	5%	3%	3%	23%	49%	60%	40%	29%	17%	33%	7%	
October	7%	4%	5%	16%	41%	52%	33%	21%	14%	25%	7%	
November	7%	4%	5%	6%	18%	27%	13%	8%	5%	10%	3%	
December	11%	5%	6%	6%	13%	16%	11%	7%	5%	8%	2%	
Month	HVO monthly deposited dust monitoring data (g/m ² /month)											
January	2.8	1.0	1.1	1.6	1.4	0.7	2.2	6.2c	1.8	1.7	4.6	
February	2.6	2.2	1.2	1.0	1.2	2.5	1.5	2.4	3.6	1.0	6.7	
March	3.3	1.7	1.4	1.5	1.8	5.0c	1.1	1.0	2.4	0.8	4.1	
April	1.1	0.9	1.2	0.9	3.3c	0.7	4.2	3.0	3.9	0.6	4.8	
May	1.0	0.8	2.1	1.3	2.7	0.8	1.9	1.9	5.8	4.6c	11.3	
June	1.1	0.8	0.7	1.1	0.9	3.6	5.8	1.2	4.0	4.1	7.1	
July	0.5	0.6	2.5	0.8	1.4	0.7	ND	1.3	1.9	1.3c	33.4x	
August	0.8	0.8	1.5	2.4	4.7	1.4	14.3	2.8	6.3	2.1	18.7	
September	0.7	0.8	1.6	1.3	1.4	2.4	1.3	1.9	5.0	3.4	13.1	
October	1.6	1.2	3.1	1.1	5.8c	0.7	2.7	1.5	3.9	4.6c	12.1	
November	2.9	1.7	1.5	1.3	1.2	1.0	1.5	4.4c	3.0	7.4c	10.1	
December	3.8c	1.5	2.2	5.2	1.6	1.9	1.2	6.7c	2.2	5.8c	9.3	
Annual average	1.7	1.2	1.7	1.6	1.8	1.5	3.4	1.9	3.7	2.0	9.3	
Month	Estimated Background	HVO North's maximum estimated contribution to monitor (g/m ² /month)										
Jan	0.7	2.1	0.0	0.0	0.0*	0.0*	0.0	0.0*	-	0.0*	0.0*	0.0
Feb	1.0	1.6	0.0	0.0	1.5*	1.5*	1.5	1.5*	1.5*	1.5*	1.5*	0.0
Mar	0.8	0.0	0.0	0.0	-*	-*	-	-*	-*	-*	-*	0.0
Apr	0.6	0.5	0.0	0.0	0.1*	-	0.1	0.1*	0.1*	0.1*	0.1*	0.1*
May	0.8	0.2	0.0	1.3	0.0*	0.0*	0.0	0.0*	0.0*	0.0*	-	0.0*
Jun	0.7	0.4	0.0	0.0	2.9*	2.9*	2.9	2.9*	2.9*	2.9*	2.9*	2.9*
Jul	0.5	0.0	0.0	0.0	0.2*	0.2*	0.2	-	0.2*	0.2*	-	-
Aug	0.8	0.0	0.0	0.0	0.6*	0.6*	0.6	0.6*	0.6*	0.6*	0.6*	0.6*
Sep	0.7	0.0	0.0	0.0	1.7*	1.7*	1.7	1.7*	1.7*	1.7*	1.7*	1.7*
Oct	0.7	0.9	0.0	2.4	0.0*	-	0.0	0.0*	0.0*	0.0*	-	0.0*
Nov	1.0	1.9	0.0	0.5	0.0*	0.0*	0.0	0.0*	-	0.0	-	0.0
Dec	1.2	-	0.3	1.0	0.7*	0.7*	0.7	0.7*	-	0.0	-	0.0
Annual average	0.8	0.7	0.0	0.4	0.7	0.8	0.7	0.8	0.9	0.6	1.1	0.5

*Contribution assumed to be equal to (or less than) that of intermediate DL2 monitor. Note that D112 and DL2 are not compliance monitors.

2.5 TSP Data

Table 2-4 presents the annual average TSP HVAS monitoring data for the HVO area in 2021. The table shows that the Warkworth monitor recorded a level above the annual average criterion of 90µg/m³.

Table 2-4: TSP HVAS annual average monitoring data (all data) – 2021

Location	Measured HVAS TSP level ($\mu\text{g}/\text{m}^3$)
Cheshunt East	53.4
Warkworth	94.6
Wandewoi	38.0
Maison Dieu	46.1
Long Point	46.1
Knodlers Lane	64.5
Kilburnie South	36.4

The annual average TSP levels during the 2021 period are shown in **Figure 2-3**. The figure includes annual windrose plots of the meteorological data collected at the Cheshunt and HVO Corp Automatic Weather Stations (AWS) during 2021. Winds predominantly originated along a northwest/west-northwest and southeast/south-southeast axis at Cheshunt, and a west/west-northwest and southeast/east-southeast axis at HVO Corp.

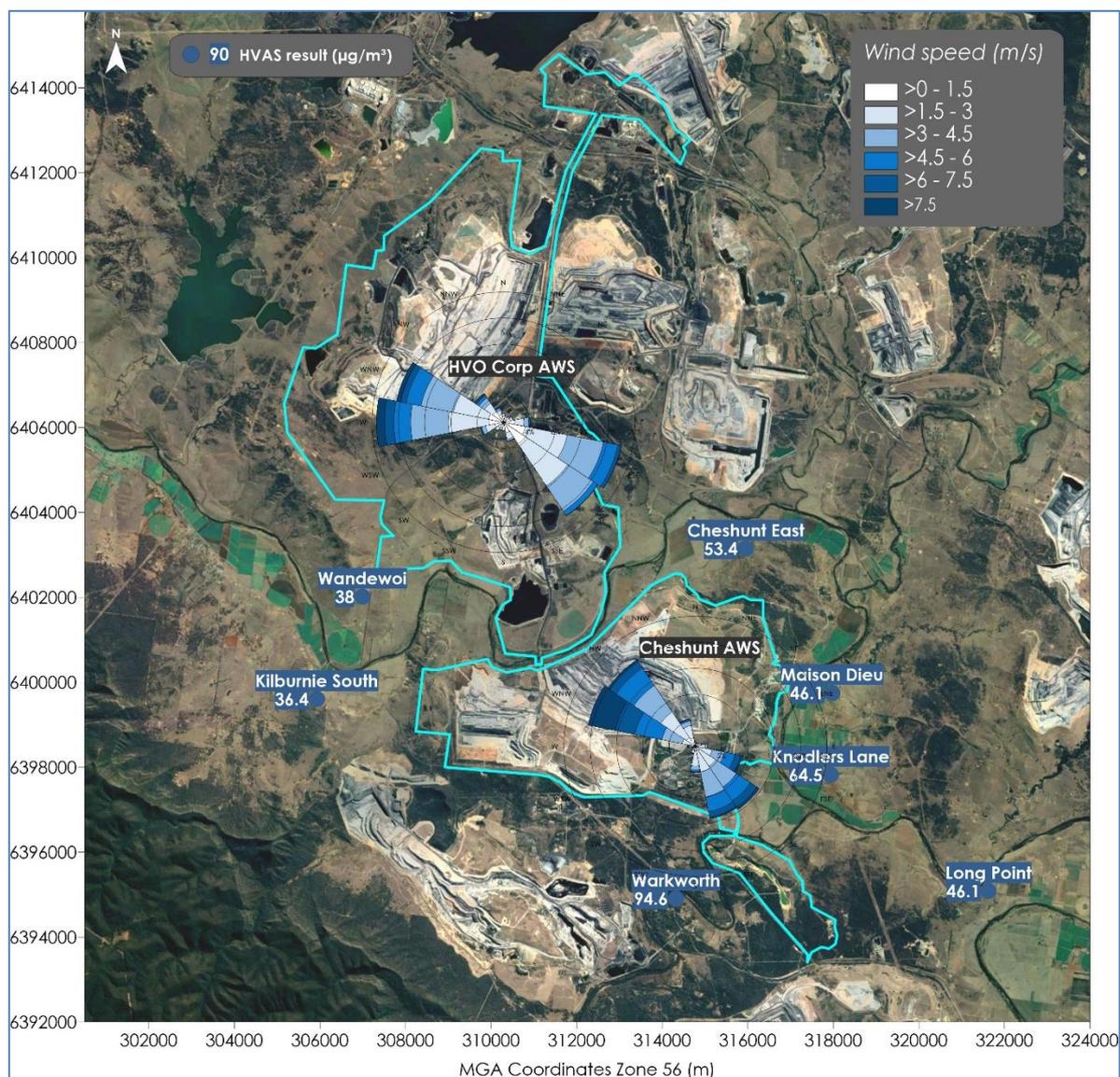


Figure 2-3: TSP HVAS results for 2021

2.5.1 TSP Investigation

The aim of this analysis is to determine the potential contribution of HVO North and HVO South to the 2021 annual average TSP levels recorded at the HVO HVAS monitors.

The contributions at the TSP HVAS monitors were estimated to be the 24-hour concentrations recorded at each monitor minus an estimated background level on the corresponding day. The background level in this context is considered to be the level which excludes the contribution from HVO but may include the influence of other sources, including other mines, localised sources, or regional sources of background dust.

For days when the monitor was not downwind of HVO North/ South (i.e. <5% downwind), the HVO North/ South contribution to this monitor was considered to be zero. Where the monitor was downwind of HVO North/ South for some part of the day, the background levels for that day were taken to be the average level recorded by the monitors in the local network which were downwind for less than 15% of the time.

For the Warkworth monitor, which is often downwind of HVO South and a neighbouring mine concurrently, the daily contribution is considered to include both mines. In order to determine the contribution from HVO South alone, the combined mining increment was scaled by the proportion of time the monitor was downwind of HVO South relative to the total time the monitor was downwind of both mines during each 24-hour average period.

Note that the 24-hour average contributions presented in this analysis are estimated using a simplistic and conservative method based on the daily contributions and would likely overestimate the HVO North/ South actual 24-hour average contribution. Where the downwind angle of the monitor from HVO North and South overlap, the estimated contributions for each HVO North and HVO South would include the influence of the other. Furthermore, the approach does not factor in dispersion of pollutants with distance, thus a more distant mine can make the same contribution as a closer mine for the same wind angle. This leads to calculating much higher contributions than may possibly be the actual case. Therefore, the data presented should only be used for estimating levels on an annual average basis.

Table 2-5 presents the annual average TSP levels recorded in 2021 and HVO's estimated contribution to the annual average TSP levels, for each analysis. **Appendix A** shows the 24-hour average TSP levels and the estimated TSP contribution of HVO North and HVO South where relevant at each of the HVO monitors for each monitoring day of 2021.

Table 2-5: HVO's estimated contribution and annual average TSP levels 2021

Location	HVO Compliance (level) ($\mu\text{g}/\text{m}^3$)	Measured annual average TSP level ($\mu\text{g}/\text{m}^3$)	Estimated contribution to annual average TSP level ($\mu\text{g}/\text{m}^3$)	
			HVO North	HVO South
Cheshunt East	North (90)	53.4	24.4	-
Warkworth	South (90)	94.6	-	32.8
Wandewoi	-	38.0	-	7.4
Maison Dieu	South (90)	46.1	-	17.1
Long Point	South (90)	46.1	-	19.0
Knodlers Lane	South (90)	64.5	-	31.3
Kilburnie South	North (90) & South (90)	36.4	3.0	7.6

Table 2-5 shows there was an elevated level above the relevant annual average TSP criterion for the Warkworth HVAS monitor. It is noted that the annual average level of $94.6\mu\text{g}/\text{m}^3$ measured in 2021 is still below the cumulative (HVO and other sources) Stage 2 modelled impact of $106\mu\text{g}/\text{m}^3$ (**Todoroski Air Sciences, 2017**) at this location. It is noted that there are no privately owned residences remaining in Warkworth represented by this monitor.

The data indicate that the HVO South contribution to the Warkworth HVAS in 2021 would have been a maximum of $32.8\mu\text{g}/\text{m}^3$ or 35% of the $94.6\mu\text{g}/\text{m}^3$. It is important to note that this estimation is conservative and due to the limited data provided by the HVAS monitoring method, the influence of other likely significant sources cannot be isolated from HVO South's contribution, including the influence of HVO North (which cannot be separated from HVO South given the similar downwind wind angles), and localised sources near to the monitor. Regardless, the cumulative impact of HVO, other sources and background concentrations results in a level only a little above the criterion of $90\mu\text{g}/\text{m}^3$.

The Warkworth HVAS monitor recorded significantly higher TSP levels compared with the other monitors in HVO's monitoring network. This trend was similarly seen at the Warkworth deposited dust gauge, which is located in close proximity to the HVAS, but was not apparent in the Warkworth TEOM PM_{10} monitoring, which is located further away, approximately 850m from the Warkworth HVAS and deposited dust gauge. There are numerous large mines in the vicinity and all of the monitors in Warkworth are at relatively similar distances and relative wind angles to each of these large mines.

Thus, if any (or all) of the mining activities were the key source of impacts being recorded at the Warkworth dust gauge and HVAS, all of the other monitors in Warkworth would record similar trends, but they do not. The Warkworth dust gauge and HVAS monitor records much higher levels relative to the other monitors. As the larger, heavier particles of dust (in deposited dust and TSP) generally deposit out of the air rapidly within a few tens to hundreds of metres of the source, the indications from the data are that the Warkworth HVAS and deposited dust locations are therefore most likely impacted by highly localised source/s of dust. An investigation of the area in the vicinity of the Warkworth monitor identified the Golden Highway clearing works at the northern end of Warkworth Bridge and a material stockpile area as potential localised sources of dust.

2.6 PM_{10} Data

Figure 2-4 and **Figure 2-5** present the 24-hour average HVO PM_{10} HVAS and PM_{10} TEOM results recorded during 2021 respectively. The HVAS and TEOM PM_{10} data show reasonably similar trends through 2021. The figures show that on occasion in 2021, 24-hour average PM_{10} levels above the criteria were recorded. The elevated results at compliance monitors were assessed through specific investigations conducted throughout the year, as summarised in **Table B-1** of **Appendix B**.

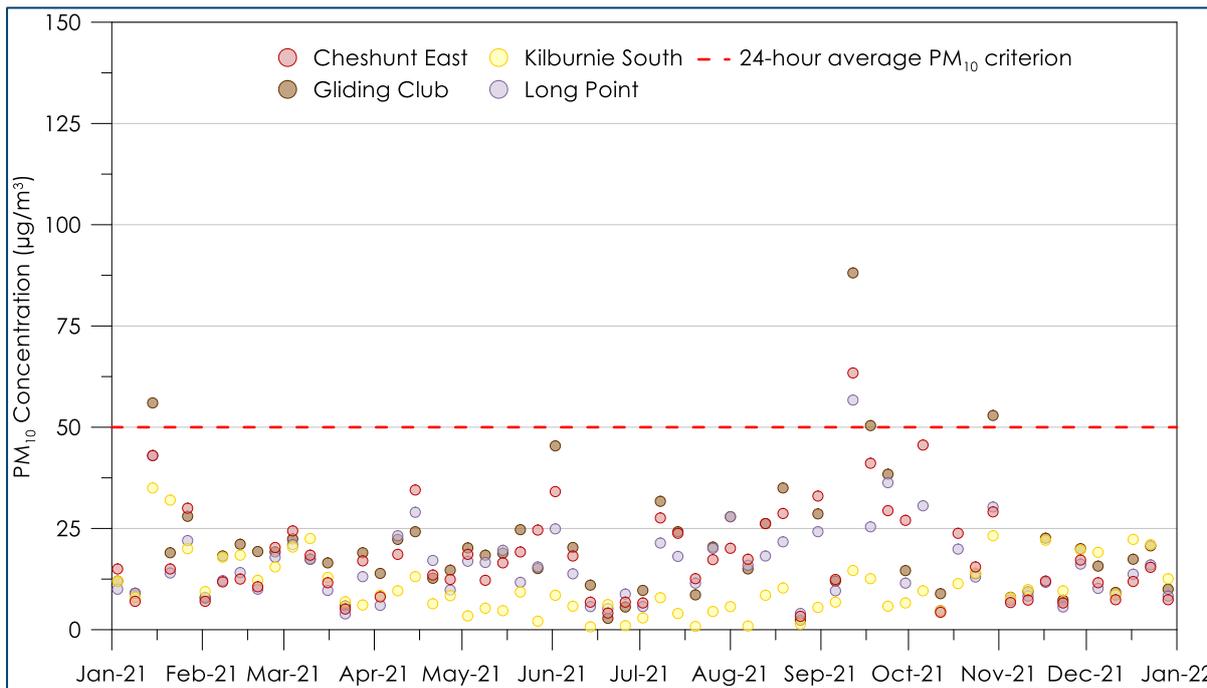


Figure 2-4:24-hour average PM₁₀ HVAS results for 2021

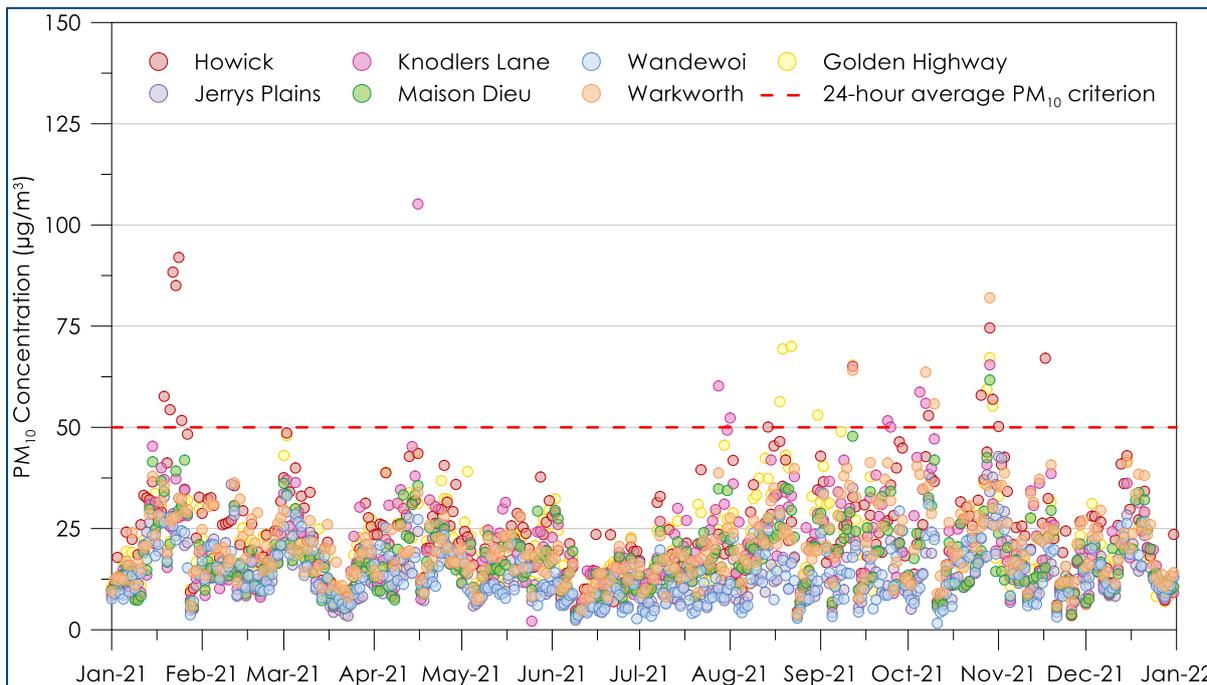


Figure 2-5:24-hour average PM₁₀ TEOM results for 2021

It is noted that there were no days specifically considered to be extraordinary events at the HVO in 2021, however it has been identified by the Department of Planning and Environment (DPE) that a dust storm impacted some monitors in the Upper Hunter region on 29/10/2021. This was not a HVAS run day, however likely impacted some of the TEOM monitors as elevated levels were recorded at the majority of TEOMs on this day, as seen in **Figure 2-5**. For the purpose of this assessment, no extraordinary event days have been considered for HVO in 2021.

Table 2-6 includes a summary of all the annual average HVAS and TEOM PM₁₀ monitoring data for the general HVO area in 2021. With regard to the HVAS PM₁₀ and TEOM PM₁₀ annual average data, obviously erroneous data, data with error codes and monitors which contain less than 75% data have not been included in **Table 2-6**. It is also noted that hourly TEOM data was adjusted to match the corresponding DPE data and for day light savings. The table shows that the TEOM and HVAS monitors recorded annual average PM₁₀ levels below the relevant criteria in 2021.

Table 2-6: HVAS and TEOM PM₁₀ annual average monitoring data – 2021

Location	Measured HVAS PM ₁₀ (µg/m ³)	Measured TEOM PM ₁₀ (µg/m ³)
Wandewoi	-	13.7
Golden Highway	-	20.7
Howick	-	23.3
Knodlers Lane	-	20.3
Warkworth	-	20.8
Jerrys Plains	-	13.6
Maison Dieu	-	17.6
Cheshunt East	18.2	-
Gliding Club	20.5	-
Long Point	16.1	-
Kilburnie South	10.8*	-

*No readings available at Kilburnie South from 23/11/2021 as the monitor was away for maintenance. As agreed with DPE, the missing Kilburnie South data has been supplemented with the Moses Crossing data from United Wambo.

Table 2-7 summarises the Upper Hunter Air Quality Monitoring Network (UHAQMN) PM₁₀ annual average data for the 2021 period. The monitoring data for the 2021 review period show that the levels recorded by the UHAQMN network were similar to those recorded by the monitors surrounding HVO, with all the monitors recording levels below 25µg/m³.

Table 2-7: UHAQMN PM₁₀ levels – 2021

Monitor	Measured PM ₁₀ level (µg/m ³)
Muswellbrook	18.2
Singleton	17.5
Maison Dieu	17.6
Camberwell	20.6
Singleton NW	18.8
Mount Thorley	19.0
Bulga	12.9
Muswellbrook NW	15.6
Wybong	12.6
Aberdeen	12.9
Singleton South	16.5
Jerrys Plains	13.6
Warkworth	20.8
Merriwa	11.7

Annual average PM₁₀ levels during the 2021 period are shown in **Figure 2-6**. The figure includes annual windrose plots of the meteorological data collected at the Cheshunt and HVO Corp Automatic Weather Stations (AWS) during 2021. Winds predominantly originated along a northwest/west-northwest and

southeast/south-southeast axis at Cheshunt, and a west/west-northwest and southeast/east-southeast axis at HVO Corp.

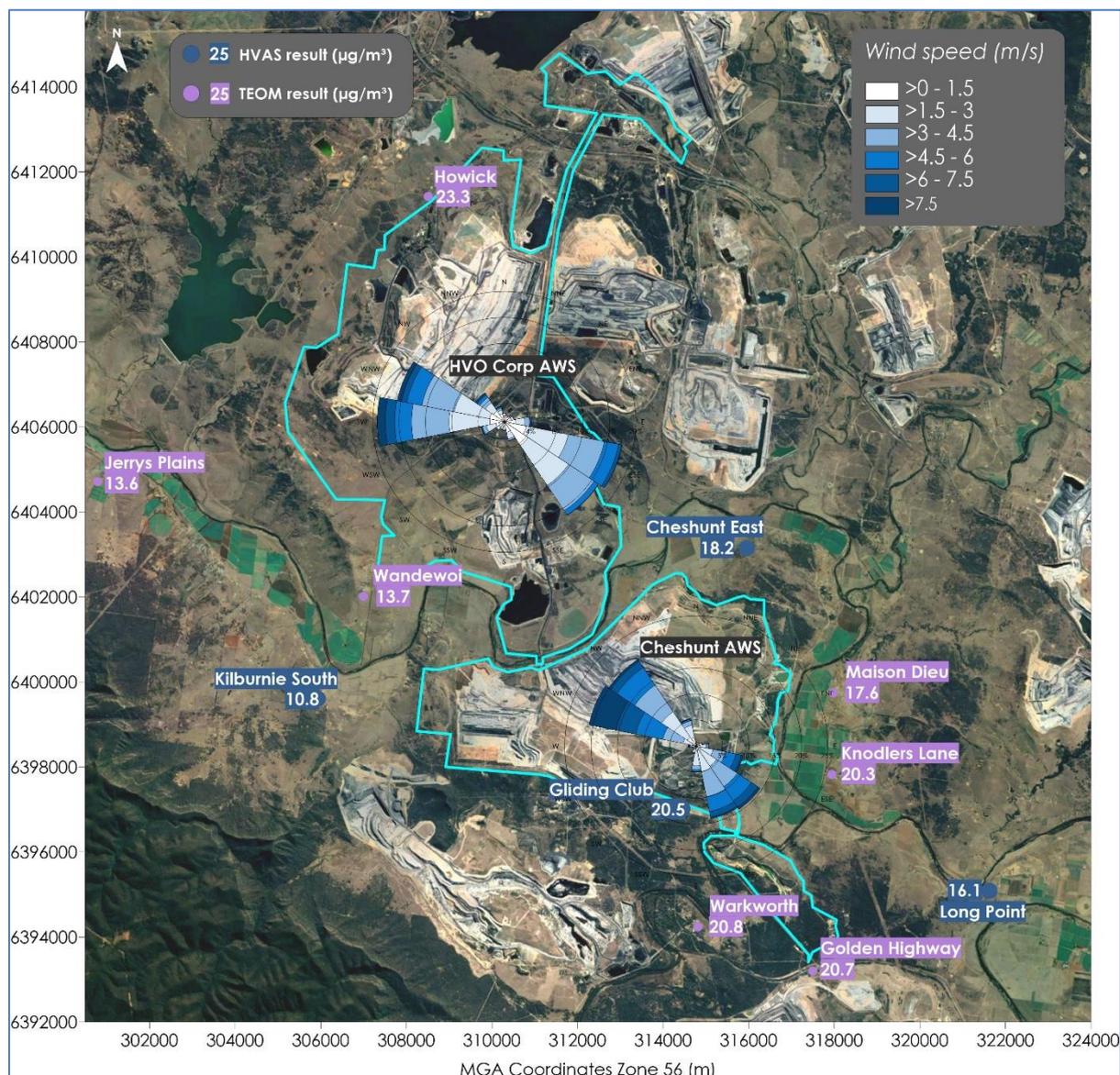


Figure 2-6: Annual average HVAS and TEOM PM₁₀ results for 2021

2.6.1 PM₁₀ Investigation

The aim of this analysis is to determine the potential contribution of HVO North and HVO South to the 2021 annual average PM₁₀ levels recorded at the HVO TEOM and HVAS monitors.

The HVO North and HVO South contributions to the TEOM monitors were estimated on an hourly basis. The hourly contributions were estimated as the concentrations recorded at each monitor minus an estimated background level (average of upwind monitors) for the corresponding hour. The contribution for a given hour was considered to be zero where the monitor was not downwind of HVO (North/ South) for that hour. Where all monitors were downwind of HVO North/South (based on the representative Cheshunt or HVO Corp weather station), the minimum value recorded was selected as the background for that hour. The hourly contributions were then averaged for each 24-hour period to determine the 24-hour contributions from HVO North and HVO South.

The contributions at the HVAS monitors were estimated to be the 24-hour concentrations recorded at each monitor minus an estimated background level on the corresponding day.

The background level in this context is considered to be the level which excludes the contribution from HVO but may include the influence of other sources, including other mines, localised sources, or regional sources of background dust.

For days when the monitor was not downwind of HVO North/ South (i.e. <5% downwind), the HVO North/ South contribution to this monitor was considered to be zero. Where the monitor was downwind of HVO North/ South for some part of the day, the background levels for that day were taken to be the average level recorded by the monitors in the local network which were downwind for less than 15% of the time.

Note that the 24-hour average contributions presented in this analysis are estimated using a simple, conservative method based on the daily contributions and would likely overestimate the HVO North/ South actual 24-hour average contribution. Where the downwind angle of the monitor from HVO North and South overlap, the estimated contributions for each HVO North and HVO South would include the influence of the other. Furthermore, the approach does not factor in dispersion of pollutants with distance, thus a more distant mine can make the same contribution as a closer mine for the same wind angle. This leads to calculating much higher contributions than may possibly be the actual case. Therefore, the data presented in this section should only be used for conservatively estimating levels on an annual average basis. A more detailed analysis was conducted for some days where levels exceed the 24-hour average criterion.

Table 2-8 presents the annual average PM₁₀ levels recorded in 2021 and HVO's estimated contribution to the annual average PM₁₀ levels, for each analysis. **Appendix B** shows the 24-hour average PM₁₀ levels and the estimated PM₁₀ contribution of HVO North and HVO South where relevant at each of the HVO monitors for each monitoring day of 2021. Days in which HVO's contribution were already estimated (analyses for elevated 24-hour average readings) are presented in **Table B-1** of **Appendix B** and were used where possible. It is noted that the 24-hour TEOM values presented in **Table B-1** are based on the raw readings.

Table 2-8: HVO's maximum estimated contribution and annual average PM₁₀ levels 2021

Location	Monitor Type	HVO Compliance (level) (µg/m ³)	Measured annual average PM ₁₀ level (µg/m ³)	Estimated contribution to annual average PM ₁₀ level (µg/m ³)	
				HVO North	HVO South
Wandewoi	TEOM	North (30) & South (25)	13.7	0.1	1.1
Golden Highway	TEOM	-	20.7	-	-
Howick	TEOM	-	23.3	-	-
Knodlers Lane	TEOM	South (25)	20.3	-	4.6
Warkworth	TEOM	South (25)	20.8	-	1.9
Jerrys Plains	TEOM	North (30) & South (25)	13.6	0.3	1.0
Maison Dieu	TEOM	South (25)	17.6	-	0.9
Cheshunt East	HVAS	North (30)	18.2	6.2	-
Gliding Club	HVAS	South (25)	20.5	-	7.8
Long Point	HVAS	South (25)	16.1	-	4.2
Kilburnie South	HVAS	North (30) & South (25)	10.8	0.2	0.9

2.7 PM_{2.5} Data

Figure 2-7 presents the 24-hour average PM_{2.5} HVAS results recorded during 2021 for Kilburnie South and Maison Dieu. The figures show that four results above criteria were recorded during 2021. The results were assessed through investigation, as summarised in **Table C-1** of **Appendix C**, and were found to have not been significantly contributed to by HVO.

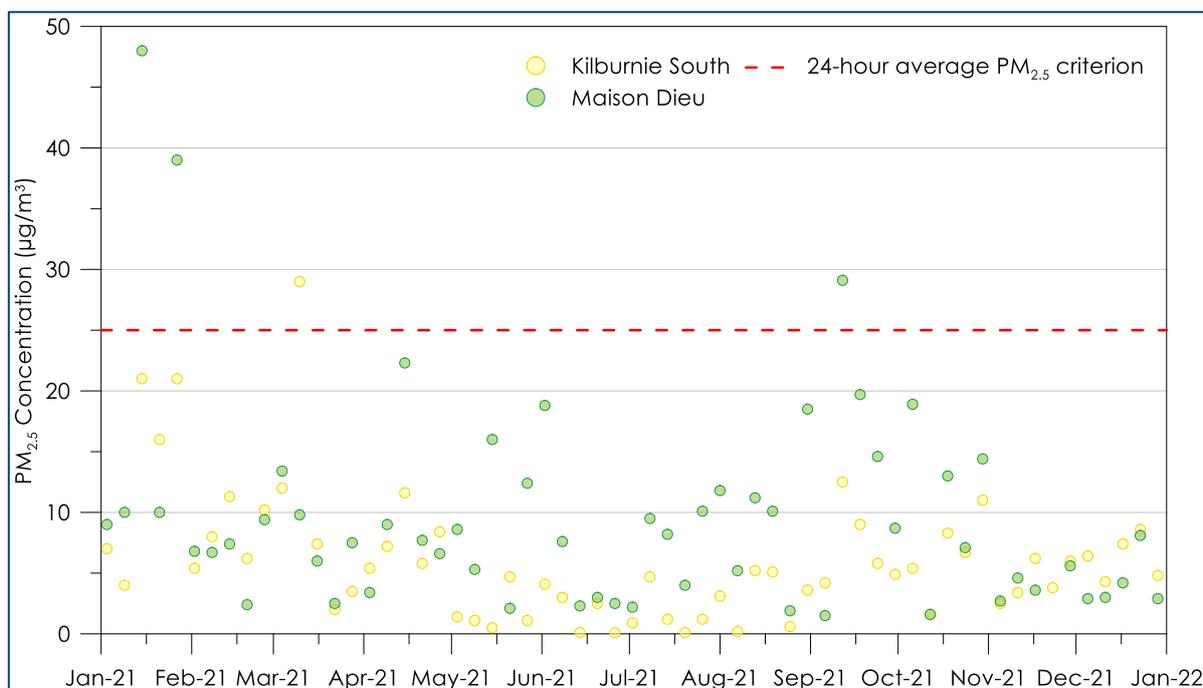


Figure 2-7: Kilburnie South and Maison Dieu 24-hour average PM_{2.5} HVAS results for 2021

Table 2-9 includes the annual average HVAS PM_{2.5} monitoring data for Maison Dieu and Kilburnie South in 2021. The table shows that the Maison Dieu monitor recorded an elevated level above 8µg/m³.

Table 2-9: HVAS PM_{2.5} annual average monitoring data – 2021

Location	Measured HVAS PM _{2.5} (µg/m ³)
Maison Dieu	9.6
Kilburnie South	6.1

Table 2-10 includes the UHAQMN PM_{2.5} annual average data for the 2021 period. The monitoring data for the 2021 review period show that the UHAQMN monitors recorded levels below 8µg/m³.

Table 2-10: UHAQMN PM_{2.5} levels – 2021

Monitor	Measured PM _{2.5} level (µg/m ³)
Muswellbrook	7.3
Singleton	6.3
Camberwell	5.7
Merriwa	4.2

The annual average PM_{2.5} levels during the 2021 period are shown at their monitor locations in **Figure 2-8**. The figure also includes annual windrose plots of the meteorological data collected at the Cheshunt and HVO Corp Automatic Weather Stations (AWS) during 2021. Winds predominantly originated along

a northwest/west-northwest and southeast/south-southeast axis at Cheshunt, and a west/west-northwest and southeast/east-southeast axis at HVO Corp.

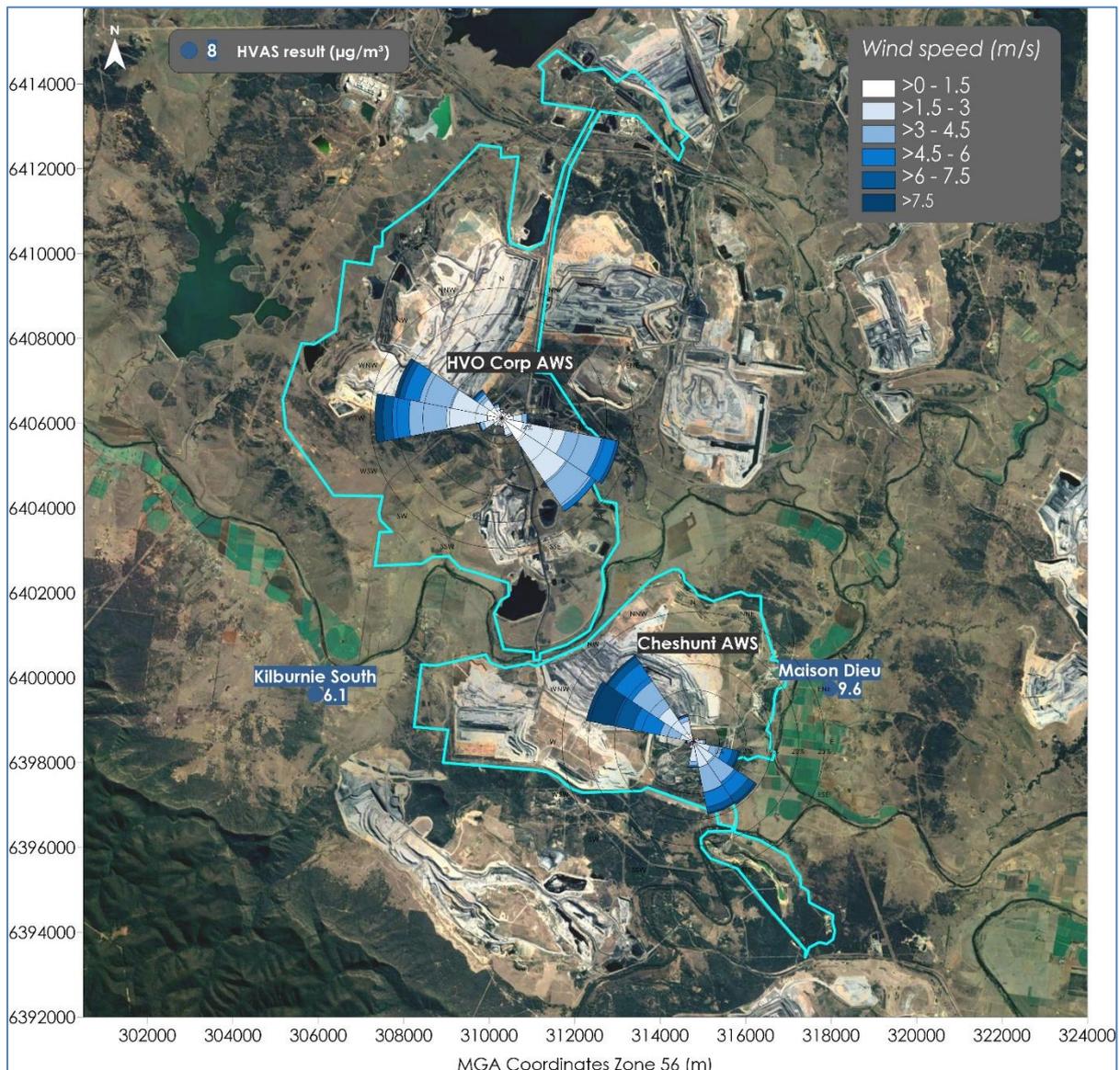


Figure 2-8: HVAS PM_{2.5} results for 2021

The data in **Table 2-9** and **Table 2-10** show that the PM_{2.5} HVAS results recorded at Maison Dieu were high in comparison to the results recorded by the DPE monitoring stations. This is unusual considering both Kilburnie South and Maison Dieu monitors are situated away from any known significant sources of PM_{2.5} (mines generate emissions in the coarser PM₁₀ range), whereas the Muswellbrook, and to a lesser extent Singleton and Camberwell monitors, are known to be impacted by localised smoke from wood heaters. This is highlighted further in **Table 2-11** which shows the ratio of PM_{2.5} / PM₁₀ levels in the Upper Hunter since 2015. Both HVO monitors recorded higher PM_{2.5} / PM₁₀ ratios in 2021 than any other Upper Hunter monitor since 2015.

The PM_{2.5} / PM₁₀ ratios in 2021 for the Maison Dieu and Kilburnie South monitor are implausibly high for this locality, indicating a likely problem with the data. This is considered in more detail below.

Table 2-11: PM_{2.5} / PM₁₀ ratios in Upper Hunter

Year	PM _{2.5} / PM ₁₀ ratio					
	Muswellbrook	Singleton	Camberwell	Merriwa	Maison Dieu	Kilburnie South
2015	0.46	0.39	0.33	-	-	-
2016	0.44	0.41	0.31	-	-	-
2017	0.43	0.39	0.27	-	-	-
2018	0.35	0.34	0.27	-	-	-
2019	0.35	0.36	0.26	-	-	-
2020	0.41	0.41	0.31	-	0.63	0.78
2021	0.41	0.37	0.30	0.38	0.48	0.54

- Not Applicable

Figure 2-9 shows how the PM_{2.5} / PM₁₀ ratios fluctuated over the year. Both locations at times recorded PM_{2.5} levels which were higher than the recorded PM₁₀ levels (i.e. PM_{2.5} / PM₁₀ ratio > 1), which in reality is not possible given that PM_{2.5} is a sub-component of PM₁₀. This may be explained at Maison Dieu by the different measurement technology (TEOM) used to measure PM₁₀, which can result in slight differences in results, however at Kilburnie South both co-located PM_{2.5} and PM₁₀ measurements are conducted using the same reference standard of HVAS monitors.

The PM_{2.5} / PM₁₀ ratios at Maison Dieu and Kilburnie South were 0.48 and 0.54 on average for the whole year in 2021. Typically, the normal PM_{2.5} / PM₁₀ ratio of background particulate data is approximately 0.36. Particulate emissions from HVO have a ratio of approximately 0.13 and Hunter Valley coal mines on average have a ratio of 0.15 (PEL, 2014). During only the wintertime in Muswellbrook, when air quality is significantly impacted by the PM_{2.5} content of the local wood-heater smoke, and average PM_{2.5} / PM₁₀ ratio (for eight winters) is 0.68, but can be approximately 0.8 in some winters.

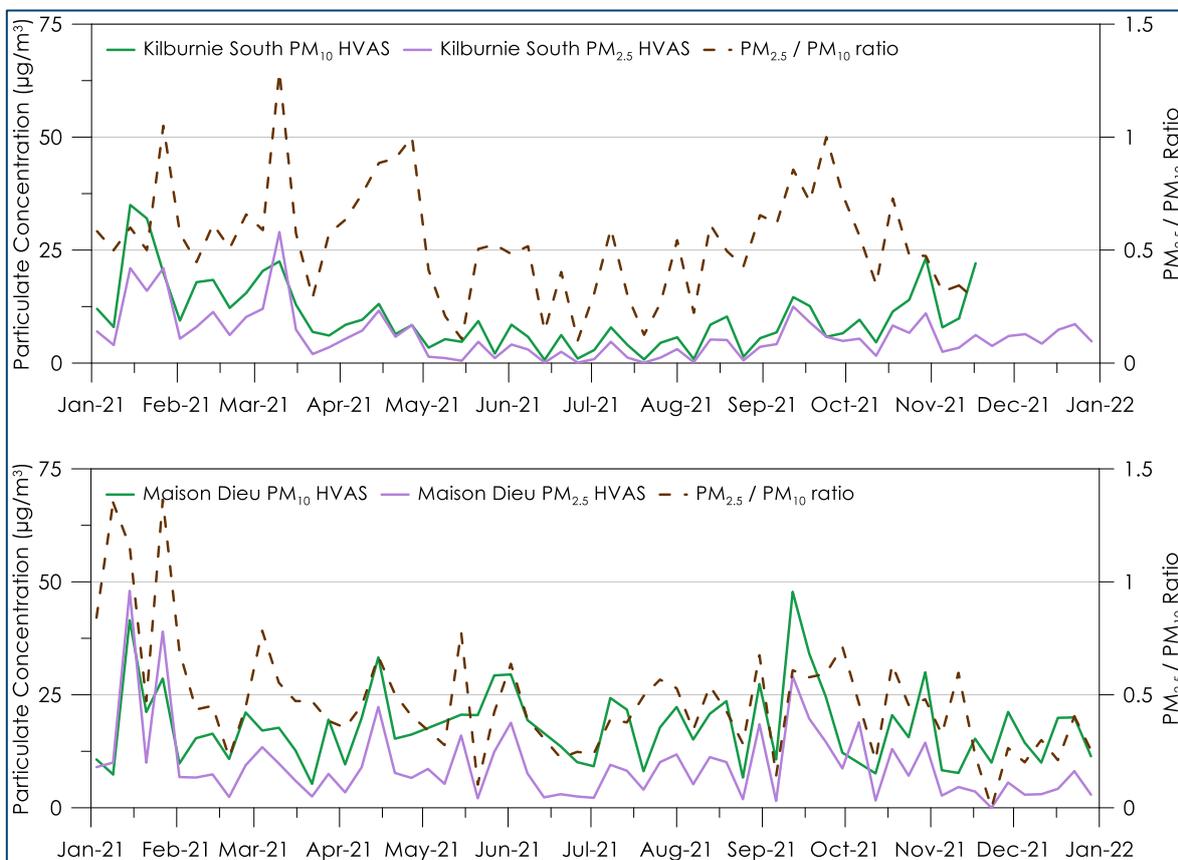


Figure 2-9: HVO PM_{2.5} and PM₁₀ data on HVAS run days in 2021

The high $PM_{2.5} / PM_{10}$ ratios, combined with the unusually high $PM_{2.5}$ results, indicate that there may be an issue (i.e. an overestimation) with the $PM_{2.5}$ measurements.

$PM_{2.5}$ levels recorded have been investigated throughout the year. Investigations have included the following:

- ✦ Monitoring locations have been inspected multiple times to identify any local $PM_{2.5}$ sources, with none identified.
- ✦ Monitoring methods were reviewed. These reviews did not identify any issues with the monitoring methods that would impact on the result. Reviews included:
 - Review of monitoring records and methods against Australian Standards
 - Inspection of instrumentation by an independent monitoring contractor
 - Sampling run between normal HVAS runs by an independent monitoring contractor.
- ✦ Calculation of $PM_{10} : PM_{2.5}$ ratios for monitoring equipment for co-located units (as outlined in **Table 2-11** and **Figure 2-9**).
- ✦ Installation of a $PM_{2.5}$ E-Sampler unit at Maison Dieu as a trial. This unit recorded elevated $PM_{2.5}$ levels above PM_{10} levels, and above those measured by the $PM_{2.5}$ HVAS, which indicates yet another source of variation due to the monitoring technology.

These investigations have not been conclusive to identify source of errors. It is believed that the source of the errors is due to the high volume air sampler monitoring method. HVO have engaged Jacobs to review the air quality monitoring network. This review has recommended the implementation of real-time $PM_{2.5}$ monitoring at Maison Dieu and Kilburnie South. HVO propose to implement units such as E-BAMs or TEOMs in these locations.

2.7.1 $PM_{2.5}$ Investigation

Even though the results recorded at Maison Dieu appear to be implausibly high, they have been used in order to estimate HVO South's increment to the recorded levels.

The aim of this analysis is to determine the potential contribution of HVO South to the 2021 annual average $PM_{2.5}$ levels recorded at the HVO HVAS monitors.

The contributions at the HVAS monitors were estimated to be the 24-hour concentrations recorded at each monitor minus an estimated background level on the corresponding day.

The background level in this context is considered to be the level which excludes the contribution from HVO but may include the influence of other sources, including other mines, localised sources, or regional sources of background dust.

For days when the monitor was not downwind of HVO South (i.e. <5% downwind), the HVO South contribution to this monitor was considered to be zero. Where the monitor was downwind of HVO South for some part of the day, the background levels for that day were taken to be the average level



recorded by the upwind monitor. If the other PM_{2.5} HVAS was not upwind (i.e. >5% downwind), the average of the levels recorded at Camberwell and Singleton were used as background.

Note that the 24-hour average contributions presented in this analysis are estimated using a simplistic and conservative method based on the daily contributions and would likely overestimate the HVO South actual 24-hour average contribution. Therefore, the data presented in this section should only be used for conservatively estimating levels on an annual average basis. A more detailed analysis was conducted for some days where levels exceeded the 24-hour average criterion. Days in which HVO South's contribution were already estimated (analyses for elevated 24-hour average readings) are presented in **Table C-1** of **Appendix C**.

Table 2-12 presents the annual average PM_{2.5} levels recorded in 2021 and HVO South's estimated contribution to the annual average PM_{2.5} levels. **Table C-2** of **Appendix C** shows the 24-hour average PM_{2.5} levels and the estimated PM_{2.5} contribution of HVO South at each of the HVO monitors for each monitoring day of 2021.

Table 2-12: HVO South's estimated contribution and annual average PM_{2.5} levels 2021

Location	Monitor Type	Compliance (level) (µg/m ³)	Measured annual average PM _{2.5} level (µg/m ³)	Estimated contribution to annual average PM _{2.5} level (µg/m ³)
Maison Dieu	HVAS	8 (HVO South)	9.4	3.4
Kilburnie South	HVAS	8 (HVO South)	6.1	0.9

Table 2-8 indicates that maximum HVO contributions, would have been:

- ✦ 3.4µg/m³ or 35% of the 9.4µg/m³ from HVO South at the Maison Dieu HVAS in 2021; and,
- ✦ 0.9µg/m³ or 15% of the 6.1µg/m³ from HVO South at the Kilburnie South HVAS in 2021.

The high result at Maison Dieu is unlikely in a rural setting away from a town, which further indicates (in addition to the issues discussed above) that the PM_{2.5} HVAS results may not be reliable.

However, reliable or not, even if the implausibly high data are taken on face value, the analysis shows that the effect of the mine on PM_{2.5} levels is relatively low at 15% to 35% of the measured level.

3 CONCLUSIONS

This investigation has reviewed the annual average deposited dust, TSP, PM₁₀, and PM_{2.5} levels recorded at HVO during the 2021 calendar year.

An annual average deposited dust level above the cumulative criterion of 4g/m²/month was recorded at the Warkworth monitor, however the analysis indicates that HVO North's contribution to this level was well below the 2g/m²/month incremental criterion and that the total level would have been over 4g/m²/month regardless of any contribution from HVO North.

An elevated annual average TSP level of 94.6µg/m³ was recorded at the Warkworth monitor. The analysis indicates that HVO South's conservatively estimated contribution to the Warkworth HVAS in 2021 would have been a maximum of 32.8µg/m³ or 35% of the 94.6µg/m³. The investigation however identified that the Warkworth TSP HVAS and deposited dust monitors are likely impacted by highly localised source(s) of dust.

The annual average PM₁₀ levels were below the relevant criteria at all compliance monitoring locations.

An elevated annual average PM_{2.5} level was recorded at the Maison Dieu HVAS monitor. The result is significantly elevated above any other available Hunter Valley PM_{2.5} results and showed unrealistically high ratios of PM_{2.5} / PM₁₀, indicating a likely issue with the monitor recording the results. HVO is conducting ongoing investigations into this situation to help identify any issues that may be causing the high readings.

4 REFERENCES

PEL (2014)

"Upper Hunter Air Quality Particle Model", Pacific Environment Limited, October 2014.

Todoroski Air Sciences (2017)

"Air Quality and Greenhouse Gas Assessment HVO South Modification 5", Todoroski Air Sciences, January 2017.



Appendix A

24-hour Average Levels and Estimated Contributions - TSP



Table A-1: 24-hour average TSP HVAS levels, percent time downwind and estimated contributions – HVO North

Date	Percentage of time downwind (%)							24-hour average TSP level ($\mu\text{g}/\text{m}^3$)								HVO North's estimated max. contribution to TSP level ($\mu\text{g}/\text{m}^3$)	
	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Estimated Background	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Cheshunt East	Kilburnie South
3/01/2021	6%	2%	15%	8%	4%	7%	6%	28.2	28.0	40.0	35.0	27.0	17.0	29.0	42.0	0.0	13.8
9/01/2021	0%	0%	6%	0%	0%	0%	2%	17.2	18.0	26.0	26.0	13.0	17.0	12.0	32.0	0.0	0.0
15/01/2021	46%	14%	3%	24%	8%	15%	1%	79.0	107.0	190.0	79.0	109.0	105.0	134.0	90.0	28.0	0.0
21/01/2021	2%	0%	15%	1%	0%	1%	6%	53.8	33.0	82.0	88.0	45.0	36.0	73.0	125.0	0.0	71.2
27/01/2021	0%	0%	0%	0%	0%	0%	0%	110.8	110.0	95.0	67.0	115.0	72.0	186.0	87.0	0.0	0.0
2/02/2021	1%	0%	12%	1%	0%	0%	8%	27.8	22.1	34.7	46.8	26.4	19.6	36.3	45.8	0.0	18.0
8/02/2021	0%	0%	0%	0%	0%	0%	0%	31.9	27.4	45.8	51.5	26.7	23.7	35.7	64.3	0.0	0.0
14/02/2021	0%	0%	0%	0%	0%	0%	0%	40.5	33.3	71.6	50.1	33.6	28.4	35.7	65.0	0.0	0.0
20/02/2021	0%	0%	1%	0%	0%	0%	0%	34.4	21.4	85.0	51.0	21.9	19.5	24.1	59.8	0.0	0.0
26/02/2021	63%	4%	1%	60%	49%	57%	0%	71.8	53.2	62.8	60.6	47.7	41.5	52.8	71.8	0.0	0.0
4/03/2021	19%	5%	17%	14%	7%	12%	13%	21.6	52.9	86.3	87.8	52.4	21.6	72.8	79.0	31.3	57.4
10/03/2021	0%	0%	0%	0%	0%	0%	0%	46.0	38.7	66.3	82.7	42.5	33.8	48.5	92.0	0.0	0.0
16/03/2021	0%	0%	5%	0%	0%	0%	0%	37.0	29.4	78.6	41.2	28.1	20.9	28.0	38.6	0.0	0.0
22/03/2021	0%	0%	0%	0%	0%	0%	0%	9.2	9.4	14.4	11.6	8.9	5.5	8.0	9.7	0.0	0.0
28/03/2021	53%	9%	3%	52%	31%	53%	3%	22.1	36.4	57.9	23.6	43.0	36.4	52.1	22.1	14.3	0.0
3/04/2021	0%	0%	11%	0%	0%	0%	4%	30.8	20.7	55.8	75.2	20.2	20.8	36.3	45.3	0.0	0.0
9/04/2021	82%	8%	0%	86%	47%	63%	0%	31.9	53.4	94.5	30.0	44.2	66.2	83.9	33.7	21.6	0.0
15/04/2021	81%	8%	1%	76%	38%	55%	0%	34.4	82.2	183.0	34.0	73.1	85.9	114.0	34.8	47.8	0.0
21/04/2021	50%	2%	3%	49%	29%	33%	1%	23.7	34.5	56.3	25.8	33.5	49.0	75.6	23.7	10.8	0.0
27/04/2021	14%	19%	15%	18%	5%	24%	6%	28.6	36.9	69.0	48.5	31.4	28.6	50.9	48.2	8.3	19.6
3/05/2021	52%	18%	0%	60%	31%	60%	0%	31.5	72.0	69.2	36.8	48.3	62.8	72.4	26.2	40.5	0.0
9/05/2021	48%	13%	3%	51%	25%	50%	1%	10.7	36.8	52.7	15.8	43.9	52.9	53.6	10.7	26.1	0.0
15/05/2021	98%	0%	0%	66%	34%	45%	0%	17.4	56.1	162.0	22.1	45.2	64.9	80.7	12.7	38.7	0.0
21/05/2021	4%	24%	11%	14%	1%	24%	4%	35.4	60.6	116.0	32.5	37.4	35.4	52.0	31.1	0.0	0.0
27/05/2021	84%	3%	1%	78%	57%	67%	0%	5.5	82.6	70.4	6.0	65.1	42.4	53.5	5.0	77.1	0.0
2/06/2021	50%	16%	7%	53%	29%	56%	3%	30.0	110.0	80.6	35.4	98.8	76.8	101.0	24.5	80.1	0.0
8/06/2021	47%	17%	17%	51%	21%	50%	12%	13.6	52.2	48.4	16.9	43.4	44.1	43.3	13.6	38.6	0.0
14/06/2021	79%	10%	3%	78%	51%	71%	1%	3.2	30.8	38.4	4.3	22.7	27.6	35.3	2.1	27.6	0.0
20/06/2021	0%	0%	0%	0%	0%	0%	0%	29.5	21.5	35.8	20.1	32.9	27.8	43.4	15.6	0.0	0.0

Date	Percentage of time downwind (%)							24-hour average TSP level ($\mu\text{g}/\text{m}^3$)								HVO North's estimated max. contribution to TSP level ($\mu\text{g}/\text{m}^3$)	
	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Estimated Background	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Cheshunt East	Kilburnie South
26/06/2021	99%	0%	1%	91%	32%	35%	0%	5.9	45.5	117.0	6.3	25.7	36.6	51.1	5.4	39.7	0.0
2/07/2021	79%	8%	7%	64%	30%	47%	4%	5.7	26.8	59.7	5.8	15.9	20.9	31.1	5.5	21.2	0.0
8/07/2021	36%	18%	16%	47%	21%	52%	10%	22.0	55.9	83.8	42.8	63.1	38.3	73.1	22.0	33.9	0.0
14/07/2021	79%	9%	2%	75%	47%	58%	1%	13.1	84.2	84.7	17.5	61.0	62.9	117.0	8.6	71.2	0.0
20/07/2021	100%	0%	0%	75%	8%	8%	0%	52.2	51.4	147.0	4.7	22.3	45.7	46.8	4.9	0.0	0.0
26/07/2021	97%	3%	0%	76%	31%	34%	0%	8.8	63.6	132.0	8.6	38.4	65.5	74.2	9.0	54.8	0.0
1/08/2021	94%	6%	0%	77%	41%	56%	0%	16.6	68.1	133.0	18.3	55.8	94.7	132.0	14.9	51.5	0.0
7/08/2021	100%	0%	0%	93%	34%	43%	0%	6.5	78.3	113.0	7.1	49.8	64.2	79.0	5.9	71.8	0.0
13/08/2021	26%	20%	33%	35%	15%	34%	10%	23.2	92.2	143.0	40.4	68.7	69.0	126.0	23.2	69.0	0.0
19/08/2021	53%	17%	8%	55%	26%	51%	4%	25.5	87.0	121.0	28.4	55.7	74.7	78.2	22.6	61.5	0.0
25/08/2021	99%	0%	0%	61%	25%	26%	0%	3.8	17.6	43.2	4.2	20.4	16.7	35.6	3.4	13.8	0.0
31/08/2021	67%	8%	6%	57%	38%	52%	5%	19.2	101.0	123.0	22.6	99.2	104.0	133.0	15.7	81.9	0.0
6/09/2021	59%	0%	7%	54%	22%	26%	3%	27.8	49.4	27.8	32.1	28.4	38.9	51.8	31.0	21.6	0.0
12/09/2021	90%	8%	0%	80%	51%	69%	0%	49.4	152.0	447.0	53.8	126.0	133.0	148.0	45.0	102.6	0.0
18/09/2021	79%	6%	5%	76%	30%	42%	3%	41.9	112.0	157.0	47.8	86.1	62.4	83.5	36.0	70.1	0.0
24/09/2021	100%	0%	0%	65%	36%	40%	0%	37.6	70.3	260.0	43.5	72.7	96.8	149.0	31.6	32.8	0.0
30/09/2021	66%	2%	17%	55%	42%	45%	10%	22.2	77.3	55.0	44.8	48.4	27.8	33.8	22.2	55.1	0.0
6/10/2021	93%	6%	0%	83%	43%	51%	0%	28.7	133.0	382.0	39.6	102.0	99.9	125.0	17.7	104.4	0.0
12/10/2021	0%	0%	0%	0%	0%	0%	0%	26.3	19.4	64.2	25.5	14.4	14.7	18.8	17.4	0.0	0.0
18/10/2021	49%	22%	8%	45%	18%	40%	5%	38.7	78.7	122.0	54.4	63.0	69.0	82.3	38.7	40.0	0.0
24/10/2021	57%	6%	0%	52%	33%	40%	0%	49.5	40.6	84.4	56.6	34.3	34.6	35.0	49.5	0.0	0.0
30/10/2021	13%	7%	13%	13%	6%	15%	8%	78.8	77.6	97.0	74.3	80.5	79.9	108.0	68.0	0.0	0.0
5/11/2021	2%	0%	1%	0%	0%	0%	0%	41.8	22.2	102.0	57.8	19.3	23.9	36.5	46.6	0.0	0.0
11/11/2021	48%	1%	1%	47%	32%	33%	0%	15.0	15.5	29.9	16.1	15.2	15.0	16.6	18.4	0.5	0.0
17/11/2021	0%	0%	2%	0%	0%	0%	0%	60.4	45.9	98.5	65.9	40.7	48.2	68.8	69.2	0.0	0.0
23/11/2021	0%	0%	0%	0%	0%	0%	0%	23.8	21.4	41.5	25.3	17.9	15.9	22.3	30.8	0.0	0.0
29/11/2021	0%	0%	2%	0%	0%	0%	0%	35.7	34.7	43.7	43.0	32.5	28.1	39.6	61.3	0.0	0.0
5/12/2021	0%	0%	0%	0%	0%	0%	0%	32.1	27.6	54.0	46.7	26.8	21.8	30.3	61.8	0.0	0.0
11/12/2021	0%	0%	3%	0%	0%	0%	1%	43.3	28.7	92.6	42.9	28.9	29.0	37.3	33.2	0.0	0.0
17/12/2021	0%	0%	29%	0%	0%	0%	1%	48.5	43.2	55.0	54.7	47.5	37.6	65.6	53.6	0.0	0.0

Date	Percentage of time downwind (%)							24-hour average TSP level ($\mu\text{g}/\text{m}^3$)								HVO North's estimated max. contribution to TSP level ($\mu\text{g}/\text{m}^3$)	
	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Estimated Background	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Cheshunt East	Kilburnie South
23/12/2021	0%	1%	7%	0%	0%	0%	2%	46.9	43.3	63.5	55.4	43.2	34.4	50.3	55.2	0.0	0.0
29/12/2021	0%	0%	3%	0%	0%	0%	0%	25.6	23.8	24.3	24.9	25.4	25.2	29.1	42.6	0.0	0.0

Table A-2: 24-hour average TSP HVAS levels, percent time downwind and estimated contributions – HVO South

Date	Percentage of time downwind (%)							24-hour average TSP level ($\mu\text{g}/\text{m}^3$)								HVO South's estimated max. contribution to TSP level ($\mu\text{g}/\text{m}^3$)				
	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Estimated Background	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Warkworth	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South
3/01/2021	6%	7%	61%	3%	3%	7%	25%	28.2	28.0	40.0	35.0	27.0	17.0	29.0	42.0	8.4	0.0	0.0	0.8	13.8
9/01/2021	0%	0%	92%	0%	0%	0%	42%	17.2	18.0	26.0	26.0	13.0	17.0	12.0	32.0	0.0	0.0	0.0	0.0	14.8
15/01/2021	0%	25%	31%	36%	36%	44%	26%	79.0	107.0	190.0	79.0	109.0	105.0	134.0	90.0	45.4	30.0	26.0	55.0	11.0
21/01/2021	5%	2%	78%	1%	1%	1%	22%	53.8	33.0	82.0	88.0	45.0	36.0	73.0	125.0	0.0	0.0	0.0	0.0	71.2
27/01/2021	0%	0%	92%	0%	0%	0%	6%	110.8	110.0	95.0	67.0	115.0	72.0	186.0	87.0	0.0	0.0	0.0	0.0	0.0
2/02/2021	7%	1%	63%	2%	1%	1%	52%	27.8	22.1	34.7	46.8	26.4	19.6	36.3	45.8	0.0	0.0	0.0	0.0	18.0
8/02/2021	0%	0%	98%	0%	0%	0%	53%	31.9	27.4	45.8	51.5	26.7	23.7	35.7	64.3	0.0	0.0	0.0	0.0	32.4
14/02/2021	0%	0%	100%	0%	0%	0%	31%	40.5	33.3	71.6	50.1	33.6	28.4	35.7	65.0	0.0	0.0	0.0	0.0	24.5
20/02/2021	0%	0%	97%	0%	0%	0%	49%	34.4	21.4	85.0	51.0	21.9	19.5	24.1	59.8	0.0	0.0	0.0	0.0	25.4
26/02/2021	3%	58%	26%	12%	11%	59%	4%	71.8	53.2	62.8	60.6	47.7	41.5	52.8	71.8	0.0	0.0	0.0	0.0	0.0
4/03/2021	6%	16%	38%	11%	6%	17%	12%	21.6	52.9	86.3	87.8	52.4	21.6	72.8	79.0	36.3	30.8	0.0	51.2	57.4
10/03/2021	0%	0%	100%	0%	0%	0%	40%	46.0	38.7	66.3	82.7	42.5	33.8	48.5	92.0	0.0	0.0	0.0	0.0	46.0
16/03/2021	0%	0%	94%	0%	0%	0%	34%	37.0	29.4	78.6	41.2	28.1	20.9	28.0	38.6	0.0	0.0	0.0	0.0	1.6
22/03/2021	0%	0%	100%	0%	0%	0%	19%	9.2	9.4	14.4	11.6	8.9	5.5	8.0	9.7	0.0	0.0	0.0	0.0	0.5
28/03/2021	10%	58%	21%	10%	3%	35%	3%	22.1	36.4	57.9	23.6	43.0	36.4	52.1	22.1	29.2	20.9	0.0	30.0	0.0
3/04/2021	0%	1%	83%	0%	0%	0%	33%	30.8	20.7	55.8	75.2	20.2	20.8	36.3	45.3	0.0	0.0	0.0	0.0	14.5
9/04/2021	1%	65%	2%	27%	40%	76%	1%	31.9	53.4	94.5	30.0	44.2	66.2	83.9	33.7	43.9	12.4	34.4	52.1	0.0
15/04/2021	3%	57%	0%	35%	47%	74%	0%	34.4	82.2	183.0	34.0	73.1	85.9	114.0	34.8	90.3	38.7	51.5	79.6	0.0
21/04/2021	20%	34%	20%	22%	28%	48%	9%	23.7	34.5	56.3	25.8	33.5	49.0	75.6	23.7	18.2	9.8	25.3	51.9	0.0

Date	Percentage of time downwind (%)							24-hour average TSP level ($\mu\text{g}/\text{m}^3$)								HVO South's estimated max. contribution to TSP level ($\mu\text{g}/\text{m}^3$)				
	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Estimated Background	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Warkworth	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South
27/04/2021	10%	32%	52%	2%	2%	7%	33%	28.6	36.9	69.0	48.5	31.4	28.6	50.9	48.2	37.2	0.0	0.0	22.3	19.6
3/05/2021	17%	63%	9%	10%	11%	40%	1%	31.5	72.0	69.2	36.8	48.3	62.8	72.4	26.2	29.6	16.8	31.3	40.9	0.0
9/05/2021	8%	56%	17%	8%	7%	33%	0%	10.7	36.8	52.7	15.8	43.9	52.9	53.6	10.7	35.4	33.2	42.2	42.9	0.0
15/05/2021	1%	45%	0%	52%	50%	88%	0%	17.4	56.1	162.0	22.1	45.2	64.9	80.7	12.7	67.1	27.8	47.5	63.3	0.0
21/05/2021	12%	29%	56%	6%	2%	2%	19%	35.4	60.6	116.0	32.5	37.4	35.4	52.0	31.1	60.5	2.0	0.0	0.0	0.0
27/05/2021	10%	67%	0%	24%	21%	78%	0%	5.5	82.6	70.4	6.0	65.1	42.4	53.5	5.0	44.8	59.6	36.9	48.0	0.0
2/06/2021	13%	60%	3%	11%	9%	36%	6%	30.0	110.0	80.6	35.4	98.8	76.8	101.0	24.5	41.2	68.9	46.9	71.1	0.0
8/06/2021	7%	54%	4%	13%	9%	33%	3%	13.6	52.2	48.4	16.9	43.4	44.1	43.3	13.6	27.4	29.8	30.5	29.7	0.0
14/06/2021	3%	73%	4%	17%	19%	67%	4%	3.2	30.8	38.4	4.3	22.7	27.6	35.3	2.1	28.4	19.5	24.4	32.1	0.0
20/06/2021	0%	0%	65%	0%	0%	0%	3%	29.5	21.5	35.8	20.1	32.9	27.8	43.4	15.6	0.0	0.0	0.0	0.0	0.0
26/06/2021	0%	35%	0%	61%	77%	97%	0%	5.9	45.5	117.0	6.3	25.7	36.6	51.1	5.4	40.3	19.9	30.8	45.3	0.0
2/07/2021	0%	51%	1%	40%	42%	72%	2%	5.7	26.8	59.7	5.8	15.9	20.9	31.1	5.5	30.1	10.3	15.3	25.5	0.0
8/07/2021	4%	56%	28%	1%	1%	22%	4%	22.0	55.9	83.8	42.8	63.1	38.3	73.1	22.0	59.6	0.0	0.0	51.1	0.0
14/07/2021	5%	62%	1%	26%	38%	74%	0%	13.1	84.2	84.7	17.5	61.0	62.9	117.0	8.6	49.1	48.0	49.9	104.0	0.0
20/07/2021	0%	8%	0%	88%	94%	100%	0%	52.2	51.4	147.0	4.7	22.3	45.7	46.8	4.9	8.2	0.0	0.0	0.0	0.0
26/07/2021	0%	34%	0%	61%	80%	97%	0%	8.8	63.6	132.0	8.6	38.4	65.5	74.2	9.0	44.1	29.6	56.7	65.4	0.0
1/08/2021	0%	56%	0%	41%	52%	85%	0%	16.6	68.1	133.0	18.3	55.8	94.7	132.0	14.9	67.3	39.2	78.1	115.4	0.0
7/08/2021	0%	43%	0%	53%	69%	91%	0%	6.5	78.3	113.0	7.1	49.8	64.2	79.0	5.9	47.5	43.3	57.7	72.5	0.0
13/08/2021	14%	58%	13%	8%	10%	24%	8%	23.2	92.2	143.0	40.4	68.7	69.0	126.0	23.2	100.6	45.5	45.8	102.8	0.0
19/08/2021	15%	62%	1%	17%	19%	41%	1%	25.5	87.0	121.0	28.4	55.7	74.7	78.2	22.6	70.2	30.2	49.2	52.7	0.0
25/08/2021	0%	26%	0%	72%	77%	99%	0%	3.8	17.6	43.2	4.2	20.4	16.7	35.6	3.4	10.4	16.6	12.9	31.8	0.0
31/08/2021	7%	55%	6%	25%	15%	60%	1%	19.2	101.0	123.0	22.6	99.2	104.0	133.0	15.7	69.5	80.1	84.9	113.9	0.0
6/09/2021	12%	26%	15%	34%	40%	55%	14%	27.8	49.4	27.8	32.1	28.4	38.9	51.8	31.0	0.0	0.6	11.1	24.0	3.2
12/09/2021	0%	70%	0%	29%	38%	81%	0%	49.4	152.0	447.0	53.8	126.0	133.0	148.0	45.0	280.8	76.6	83.6	98.6	0.0
18/09/2021	6%	44%	3%	39%	56%	74%	4%	41.9	112.0	157.0	47.8	86.1	62.4	83.5	36.0	58.5	44.2	20.5	41.6	0.0
24/09/2021	0%	40%	0%	59%	65%	97%	0%	37.6	70.3	260.0	43.5	72.7	96.8	149.0	31.6	89.3	35.2	59.3	111.5	0.0
30/09/2021	3%	48%	12%	21%	27%	64%	6%	22.2	77.3	55.0	44.8	48.4	27.8	33.8	22.2	22.4	26.2	5.6	11.6	0.0
6/10/2021	0%	51%	0%	42%	62%	90%	0%	28.7	133.0	382.0	39.6	102.0	99.9	125.0	17.7	193.7	73.4	71.3	96.4	0.0
12/10/2021	0%	0%	100%	0%	0%	0%	15%	26.3	19.4	64.2	25.5	14.4	14.7	18.8	17.4	0.0	0.0	0.0	0.0	0.0
18/10/2021	6%	53%	10%	23%	24%	41%	1%	38.7	78.7	122.0	54.4	63.0	69.0	82.3	38.7	58.1	24.3	30.3	43.6	0.0
24/10/2021	1%	45%	28%	15%	26%	53%	8%	49.5	40.6	84.4	56.6	34.3	34.6	35.0	49.5	25.8	0.0	0.0	0.0	0.0

Date	Percentage of time downwind (%)							24-hour average TSP level ($\mu\text{g}/\text{m}^3$)								HVO South's estimated max. contribution to TSP level ($\mu\text{g}/\text{m}^3$)				
	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Estimated Background	Cheshunt East	Warkworth	Wandewoi	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South	Warkworth	Maison Dieu	Long Point	Knodlers Lane	Kilburnie South
30/10/2021	1%	17%	64%	7%	5%	11%	28%	78.8	77.6	97.0	74.3	80.5	79.9	108.0	68.0	13.0	1.8	0.0	29.3	0.0
5/11/2021	9%	0%	77%	3%	0%	2%	6%	41.8	22.2	102.0	57.8	19.3	23.9	36.5	46.6	0.0	0.0	0.0	0.0	4.9
11/11/2021	0%	33%	47%	14%	28%	48%	19%	15.0	15.5	29.9	16.1	15.2	15.0	16.6	18.4	10.5	0.2	0.0	1.6	3.4
17/11/2021	0%	0%	95%	0%	0%	0%	56%	60.4	45.9	98.5	65.9	40.7	48.2	68.8	69.2	0.0	0.0	0.0	0.0	8.8
23/11/2021	0%	0%	100%	0%	0%	0%	27%	23.8	21.4	41.5	25.3	17.9	15.9	22.3	30.8	0.0	0.0	0.0	0.0	7.0
29/11/2021	0%	0%	88%	0%	0%	0%	20%	35.7	34.7	43.7	43.0	32.5	28.1	39.6	61.3	0.0	0.0	0.0	0.0	25.6
5/12/2021	0%	0%	100%	0%	0%	0%	47%	32.1	27.6	54.0	46.7	26.8	21.8	30.3	61.8	0.0	0.0	0.0	0.0	29.7
11/12/2021	3%	0%	78%	0%	0%	0%	39%	43.3	28.7	92.6	42.9	28.9	29.0	37.3	33.2	0.0	0.0	0.0	0.0	0.0
17/12/2021	0%	28%	71%	0%	0%	0%	40%	48.5	43.2	55.0	54.7	47.5	37.6	65.6	53.6	6.5	0.0	0.0	0.0	5.1
23/12/2021	6%	1%	76%	0%	0%	0%	29%	46.9	43.3	63.5	55.4	43.2	34.4	50.3	55.2	0.0	0.0	0.0	0.0	8.3
29/12/2021	1%	0%	90%	0%	0%	0%	43%	25.6	23.8	24.3	24.9	25.4	25.2	29.1	42.6	0.0	0.0	0.0	0.0	17.0

- No data



Appendix B

24-hour Average Levels and Estimated Contributions -PM₁₀



Table B-1: Detailed analyses for elevated 24-hour average PM₁₀ readings

Date	Site	Measured 24-hour average PM ₁₀ level (µg/m ³)	HVO 24-hour average PM ₁₀ Incremental Criteria (µg/m ³)	Estimated HVO Incremental contribution to PM ₁₀ level (µg/m ³)
15/01/2021	Gliding Club	56	50	21
16/4/2021	Knodlers Lane	108	50	21.6 - South
28/7/2021	Knodlers Lane	70.8	50	55.8 - South
1/8/2021	Knodlers Lane	51.9	50	32.9 - South
12/9/2021	Knodlers Lane	66.3	50	44.8 - South
12/9/2021	Warkworth	64.6	50	32.3 - South
12/9/2021	Cheshunt East	63.4	50	36.4
12/9/2021	Long Point	56.7	50	38.0
12/9/2021	Gliding Club	88.1	50	48.1
18/9/2021	Gliding Club	50.4	50	37.8
24/9/2021	Knodlers Lane	51.9	50	43.4 - South
25/9/2021	Knodlers Lane	52.40	50	34.7 - South
5/10/2021	Knodlers Lane	63.1	50	46.5 - South
7/10/2021	Knodlers Lane	58.2	50	33.5 - South
7/10/2021	Warkworth	61.8	50	27.5 - South
10/10/2021	Warkworth	56.5	50	7.4 - South
29/10/2021	Knodlers Lane	67.2	50	37.7 - South
29/10/2021	Maison Dieu	60.6	50	7.2 - South
29/10/2021	Warkworth	78.9	50	17.5 - South
30/10/2021	Gliding Club	52.9	50	29.7



Table B-2: 24-hour average PM₁₀ TEOM levels, percent time downwind and estimated contributions – HVO North

Date	24-hour average level (µg/m ³)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level (µg/m ³)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
1/01/2021	10.6	9.7	8.4	9.0	9.8	7.7	9.5	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
2/01/2021	9.8	11.2	9.2	10.2	9.8	8.9	12.5	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
3/01/2021	11.0	17.9	12.6	10.6	10.7	12.0	13.1	0%	75%	25%	8%	8%	8%	0%	0.7	0.1
4/01/2021	12.2	13.5	9.8	13.1	13.0	9.0	12.7	25%	8%	0%	67%	58%	21%	13%	0.0	0.0
5/01/2021	16.6	10.7	8.6	14.9	13.4	7.6	12.3	13%	8%	0%	67%	88%	0%	8%	0.0	0.0
6/01/2021	19.3	24.1	14.1	14.6	15.8	13.4	16.9	0%	100%	4%	0%	0%	0%	0%	0.3	0.0
7/01/2021	14.7	15.9	10.8	10.7	11.9	9.3	15.9	0%	92%	17%	0%	0%	0%	0%	0.1	0.0
8/01/2021	19.1	22.3	13.2	15.4	14.4	13.4	24.0	0%	100%	8%	0%	0%	0%	0%	0.0	0.0
9/01/2021	10.0	9.6	8.7	7.5	7.4	10.1	11.0	0%	92%	21%	0%	0%	0%	0%	0.0	0.0
10/01/2021	12.3	18.5	11.3	7.8	7.3	14.6	16.6	0%	88%	17%	0%	0%	8%	0%	0.0	0.0
11/01/2021	10.9	25.9	14.4	9.1	8.3	13.9	15.1	0%	96%	8%	0%	0%	0%	0%	0.0	0.0
12/01/2021	22.1	33.2	21.0	19.5	19.0	20.8	20.4	21%	50%	25%	25%	25%	13%	8%	0.2	0.0
13/01/2021	17.0	32.6	24.1	13.5	14.7	17.4	20.8	0%	96%	21%	0%	0%	0%	0%	1.6	0.0
14/01/2021	31.3	32.1	26.5	30.9	29.8	21.7	28.5	21%	29%	4%	46%	50%	4%	17%	0.0	0.1
15/01/2021	30.8	36.5	28.5	45.3	41.5	23.4	37.9	17%	29%	17%	21%	33%	0%	17%	0.2	0.0
16/01/2021	33.7	21.2	23.7	31.5	24.9	18.2	23.3	4%	13%	4%	33%	46%	4%	4%	0.9	0.0
17/01/2021	27.3	30.5	19.4	28.7	26.6	21.1	28.2	42%	33%	4%	46%	42%	0%	33%	0.0	0.0
18/01/2021	30.3	29.1	26.4	40.0	36.8	28.0	31.6	21%	8%	0%	75%	75%	13%	8%	0.0	0.5
19/01/2021	34.0	57.6	32.8	37.1	34.2	26.6	35.6	8%	75%	0%	21%	21%	0%	0%	0.0	0.0
20/01/2021	19.8	41.2	18.6	15.4	16.7	17.0	19.1	0%	100%	21%	0%	0%	0%	0%	1.7	0.0
21/01/2021	21.9	54.4	25.8	25.6	21.2	27.8	26.8	0%	83%	21%	0%	0%	13%	0%	0.6	0.3
22/01/2021	-	88.3	24.9	28.6	28.0	25.6	27.5	8%	8%	4%	58%	67%	17%	4%	0.0	1.5
23/01/2021	-	85.0	23.2	37.2	39.2	22.2	27.9	4%	13%	8%	21%	54%	17%	4%	0.9	0.3
24/01/2021	-	92.0	28.5	27.8	29.5	32.4	32.5	0%	33%	25%	21%	21%	17%	0%	1.6	0.2
25/01/2021	24.4	51.7	30.6	28.2	30.7	24.4	32.2	21%	29%	8%	42%	46%	17%	8%	0.5	0.4
26/01/2021	31.8	34.7	20.8	34.5	41.9	24.0	29.1	33%	17%	0%	67%	79%	4%	13%	0.0	0.0
27/01/2021	32.0	48.3	21.5	28.2	28.6	15.3	29.7	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
28/01/2021	10.0	9.3	4.8	7.3	6.8	3.7	5.9	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
29/01/2021	6.8	10.2	5.5	5.1	5.5	7.1	14.1	0%	100%	0%	0%	0%	0%	0%	0.0	0.0

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Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
30/01/2021	16.7	22.6	10.9	12.7	14.6	14.2	14.6	4%	50%	8%	8%	8%	8%	13%	0.0	0.3
31/01/2021	30.0	32.8	13.3	19.2	21.0	13.7	19.4	8%	88%	4%	4%	4%	4%	8%	0.0	0.0
1/02/2021	22.5	28.8	18.7	19.8	15.7	17.0	24.8	0%	96%	8%	0%	0%	0%	0%	0.4	0.0
2/02/2021	10.4	13.6	11.8	8.5	9.8	12.6	13.4	0%	79%	33%	0%	0%	13%	0%	1.2	0.1
3/02/2021	18.1	32.3	19.7	15.2	16.9	20.6	30.4	0%	100%	13%	0%	0%	0%	0%	0.7	0.0
4/02/2021	19.9	32.6	21.2	12.8	15.2	20.7	31.2	0%	79%	17%	0%	0%	17%	0%	1.9	0.2
5/02/2021	15.9	30.7	22.4	13.3	12.9	21.0	30.9	0%	92%	29%	0%	0%	0%	0%	2.7	0.0
6/02/2021	17.5	20.2	15.2	13.1	14.6	15.6	19.6	13%	33%	8%	38%	42%	4%	8%	0.0	0.0
7/02/2021	16.6	17.8	12.4	10.2	12.9	12.5	14.7	8%	46%	8%	46%	46%	4%	8%	0.0	0.0
8/02/2021	-	26.0	16.9	12.3	15.4	15.1	20.3	0%	96%	29%	0%	0%	0%	0%	1.1	0.0
9/02/2021	-	26.2	21.5	13.7	14.3	14.6	19.3	0%	100%	17%	0%	0%	0%	0%	0.7	0.0
10/02/2021	17.2	26.5	17.4	12.3	13.3	15.6	16.5	0%	100%	13%	0%	0%	0%	0%	1.7	0.0
11/02/2021	16.7	27.0	35.9	13.4	14.4	19.4	17.4	13%	63%	29%	13%	8%	25%	13%	13.9	0.2
12/02/2021	29.3	35.6	28.3	30.5	30.7	29.3	36.3	29%	21%	0%	58%	63%	0%	21%	0.0	0.0
13/02/2021	14.1	14.4	8.3	10.0	13.1	8.6	11.6	0%	50%	4%	50%	50%	0%	0%	0.0	0.0
14/02/2021	22.0	21.0	14.9	13.9	16.4	15.9	32.3	0%	100%	17%	0%	0%	0%	0%	0.2	0.0
15/02/2021	25.1	29.4	10.9	13.7	15.4	10.9	23.1	0%	88%	4%	0%	0%	13%	0%	0.0	0.0
16/02/2021	11.7	-	10.7	8.4	8.9	10.4	17.7	0%	100%	8%	0%	0%	0%	0%	0.2	0.0
17/02/2021	21.6	19.4	13.7	11.0	13.4	13.3	24.5	0%	96%	17%	0%	0%	0%	0%	0.0	0.0
18/02/2021	22.1	26.1	16.6	17.1	19.7	16.8	27.4	0%	96%	4%	0%	0%	0%	0%	0.0	0.0
19/02/2021	12.0	17.5	11.1	10.0	11.4	10.7	21.4	0%	96%	13%	0%	0%	0%	0%	0.1	0.0
20/02/2021	15.7	19.3	12.5	9.6	10.8	13.5	28.9	0%	100%	17%	0%	0%	0%	0%	0.8	0.0
21/02/2021	15.8	16.5	8.6	8.1	9.5	10.0	17.7	0%	88%	33%	0%	0%	4%	0%	0.9	0.0
22/02/2021	23.2	18.0	14.3	13.3	15.0	9.5	14.5	29%	42%	4%	33%	33%	8%	25%	1.0	0.0
23/02/2021	23.6	23.4	12.3	15.6	16.4	12.0	20.7	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
24/02/2021	14.6	17.4	10.9	13.7	13.5	9.9	16.9	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
25/02/2021	20.3	19.1	12.0	16.2	15.4	13.6	15.6	17%	29%	4%	42%	42%	8%	13%	0.0	0.4
26/02/2021	18.7	24.4	18.5	19.8	21.1	18.4	23.3	8%	33%	0%	54%	58%	0%	0%	0.0	0.0
27/02/2021	18.8	24.4	18.2	16.7	16.4	18.5	26.3	0%	96%	4%	0%	0%	0%	0%	0.0	0.0
28/02/2021	26.1	31.7	20.9	23.7	20.7	21.0	27.7	13%	54%	4%	13%	29%	0%	13%	0.0	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
1/03/2021	43.1	37.6	21.6	33.6	36.2	25.5	29.6	46%	21%	4%	46%	42%	4%	33%	0.0	0.0
2/03/2021	48.0	48.6	29.1	37.0	33.5	33.1	-	0%	83%	33%	0%	0%	0%	0%	0.2	0.0
3/03/2021	22.8	34.1	20.1	25.6	21.3	18.7	-	0%	100%	8%	0%	0%	0%	0%	0.4	0.0
4/03/2021	25.9	23.1	16.0	19.7	17.1	23.2	19.9	8%	33%	4%	21%	25%	17%	4%	0.0	0.8
5/03/2021	30.0	40.0	27.1	36.4	29.9	28.5	-	29%	63%	17%	38%	38%	0%	4%	2.5	0.0
6/03/2021	22.0	28.0	23.8	29.1	19.6	26.6	18.7	0%	100%	25%	0%	0%	0%	0%	1.5	0.0
7/03/2021	22.5	33.0	24.1	24.0	19.1	25.5	21.2	0%	88%	25%	0%	0%	8%	0%	1.9	0.2
8/03/2021	23.4	30.1	15.4	-	17.8	13.4	14.1	29%	8%	4%	79%	75%	4%	17%	0.0	0.0
9/03/2021	17.9	22.0	15.9	-	19.4	15.8	19.9	0%	29%	4%	50%	58%	0%	0%	0.0	0.0
10/03/2021	18.5	34.0	24.1	18.5	17.7	22.0	27.0	0%	100%	17%	0%	0%	0%	0%	0.7	0.0
11/03/2021	14.6	23.1	21.9	14.9	14.1	19.6	21.6	0%	96%	17%	0%	0%	4%	0%	1.3	0.0
12/03/2021	17.3	15.9	10.0	12.0	-	10.6	14.5	8%	38%	17%	17%	17%	33%	8%	0.0	1.0
13/03/2021	24.9	16.1	11.0	17.7	18.5	11.2	15.9	29%	13%	8%	50%	46%	4%	25%	0.0	0.0
14/03/2021	18.3	12.3	8.8	10.4	7.2	7.9	10.2	4%	83%	4%	4%	8%	4%	4%	0.0	0.2
15/03/2021	19.2	20.1	9.9	16.1	15.4	18.2	20.1	0%	96%	33%	0%	0%	0%	0%	0.0	0.0
16/03/2021	18.1	21.6	7.5	12.4	12.7	12.9	26.0	0%	92%	29%	0%	0%	0%	0%	0.0	0.0
17/03/2021	11.9	11.8	5.7	9.8	9.0	9.7	19.9	0%	100%	4%	0%	0%	0%	0%	0.0	0.0
18/03/2021	6.2	8.2	4.3	5.6	6.0	6.4	10.9	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
19/03/2021	10.8	8.9	5.9	9.2	9.4	8.7	16.7	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
20/03/2021	7.7	9.4	4.9	7.1	7.0	7.5	10.1	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
21/03/2021	7.0	7.8	5.4	7.1	6.8	6.3	10.9	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
22/03/2021	5.7	5.3	3.7	5.3	5.3	5.3	9.7	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
23/03/2021	-	9.1	3.4	5.7	6.0	6.6	8.0	4%	71%	0%	13%	13%	4%	4%	0.0	0.0
24/03/2021	7.3	9.7	6.5	14.5	9.9	6.2	13.5	0%	0%	0%	29%	100%	0%	0%	0.0	0.0
25/03/2021	18.5	10.6	7.9	23.1	13.0	8.8	14.7	13%	0%	0%	29%	96%	0%	4%	0.0	0.0
26/03/2021	20.9	16.1	7.5	16.6	15.5	10.0	13.8	25%	25%	0%	33%	50%	0%	8%	0.0	0.0
27/03/2021	22.8	20.0	7.8	30.3	16.9	10.2	18.4	33%	0%	0%	63%	83%	0%	13%	0.0	0.0
28/03/2021	17.0	18.9	8.2	19.1	19.5	12.9	19.0	13%	33%	0%	50%	50%	0%	8%	0.0	0.0
29/03/2021	21.1	31.3	12.3	15.5	14.4	21.1	22.8	0%	100%	13%	0%	0%	0%	0%	0.1	0.0
30/03/2021	25.1	27.7	13.4	19.0	16.5	18.9	21.1	0%	100%	0%	0%	0%	0%	0%	0.0	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
31/03/2021	27.3	25.5	11.6	18.4	15.7	19.8	19.0	0%	75%	21%	0%	0%	8%	0%	0.0	0.7
1/04/2021	16.5	23.5	10.8	16.9	12.9	16.2	14.6	13%	79%	13%	13%	8%	13%	8%	0.3	0.1
2/04/2021	14.7	23.5	11.0	11.8	9.6	19.8	13.2	8%	79%	21%	8%	4%	8%	8%	0.9	0.8
3/04/2021	14.9	26.1	12.0	12.7	9.6	20.9	-	0%	88%	25%	0%	0%	8%	0%	0.0	2.0
4/04/2021	23.2	25.8	8.9	17.2	15.5	13.4	-	21%	25%	8%	58%	54%	8%	13%	0.0	0.0
5/04/2021	38.9	38.8	17.5	22.3	20.2	25.3	-	17%	67%	25%	17%	4%	13%	17%	0.1	0.6
6/04/2021	16.4	21.2	13.2	30.8	10.6	18.3	-	0%	100%	17%	0%	0%	0%	0%	0.1	0.0
7/04/2021	-	15.5	8.8	9.8	8.3	11.0	24.8	0%	96%	13%	0%	0%	0%	0%	0.0	0.0
8/04/2021	-	17.1	10.4	7.9	7.4	14.5	16.1	0%	83%	33%	4%	4%	4%	0%	0.5	0.0
9/04/2021	26.2	25.9	12.1	31.2	19.9	12.2	-	8%	8%	0%	71%	92%	0%	8%	0.0	0.0
10/04/2021	30.7	26.1	13.4	34.6	26.2	17.5	25.5	8%	13%	0%	38%	88%	0%	8%	0.0	0.0
11/04/2021	14.6	17.1	13.2	30.0	33.3	11.2	19.0	4%	0%	0%	13%	38%	0%	4%	0.0	0.0
12/04/2021	27.6	28.3	15.0	25.6	23.2	18.6	19.0	0%	21%	13%	4%	4%	17%	0%	1.1	0.6
13/04/2021	33.9	42.8	15.7	23.0	22.6	27.6	19.5	13%	25%	8%	38%	42%	17%	13%	0.2	0.4
14/04/2021	22.7	31.4	14.0	45.3	30.9	13.9	-	4%	0%	0%	42%	67%	0%	0%	0.0	0.0
15/04/2021	43.9	31.9	19.1	38.0	33.3	17.8	-	13%	0%	0%	54%	83%	0%	4%	0.0	0.0
16/04/2021	31.2	43.5	24.3	105.2	35.6	27.3	33.9	13%	63%	8%	38%	38%	0%	4%	0.0	0.0
17/04/2021	11.5	12.0	9.2	7.5	9.6	11.1	12.4	4%	88%	0%	8%	8%	8%	4%	0.0	0.0
18/04/2021	13.1	12.8	7.2	9.8	8.9	9.3	9.0	8%	17%	8%	38%	54%	13%	4%	0.2	0.0
19/04/2021	22.0	20.1	11.4	19.5	16.8	11.7	15.4	21%	0%	0%	79%	88%	0%	4%	0.0	0.0
20/04/2021	20.8	20.2	15.9	32.1	25.2	13.6	25.9	0%	0%	0%	38%	96%	0%	0%	0.0	0.0
21/04/2021	30.9	28.0	13.5	22.6	15.3	11.8	17.1	4%	33%	4%	38%	46%	0%	0%	0.0	0.0
22/04/2021	-	26.3	19.3	30.4	22.9	10.8	19.4	0%	0%	0%	42%	79%	0%	0%	0.0	0.0
23/04/2021	-	29.8	19.2	26.1	26.3	15.7	22.7	21%	0%	0%	71%	88%	0%	17%	0.0	0.0
24/04/2021	36.8	29.7	16.8	24.4	23.4	18.8	22.1	38%	13%	0%	63%	75%	0%	25%	0.0	0.0
25/04/2021	32.4	40.6	22.2	25.9	24.9	23.4	27.9	38%	58%	4%	42%	42%	4%	21%	0.4	0.1
26/04/2021	32.3	31.5	20.4	18.8	19.5	20.8	20.2	25%	46%	17%	33%	29%	21%	25%	0.0	0.6
27/04/2021	24.4	25.7	20.2	16.3	16.2	18.3	16.6	29%	67%	21%	33%	17%	8%	25%	3.6	0.3
28/04/2021	22.8	29.2	17.6	18.3	16.7	19.0	16.9	25%	63%	4%	29%	17%	13%	17%	0.1	0.4
29/04/2021	-	35.9	16.7	17.6	14.8	16.7	16.6	21%	58%	0%	38%	33%	4%	4%	0.0	0.7



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
30/04/2021	-	21.5	18.9	15.3	15.8	17.5	19.6	29%	50%	21%	29%	21%	17%	29%	2.0	0.5
1/05/2021	13.4	22.0	16.6	11.4	11.6	18.3	20.2	17%	71%	13%	8%	0%	17%	17%	0.0	2.2
2/05/2021	26.6	24.3	14.1	16.3	14.5	16.3	16.5	4%	71%	4%	13%	13%	17%	4%	0.0	0.3
3/05/2021	39.1	22.9	13.8	17.5	-	10.0	14.2	33%	17%	0%	63%	67%	0%	8%	0.0	0.0
4/05/2021	23.2	19.5	9.4	21.6	21.1	9.2	15.5	13%	17%	8%	54%	58%	8%	4%	0.0	0.0
5/05/2021	17.9	16.1	5.9	9.6	10.5	8.3	10.3	17%	67%	13%	17%	17%	8%	13%	0.0	0.5
6/05/2021	11.5	9.3	6.4	9.5	9.8	7.1	7.6	4%	46%	8%	4%	4%	8%	4%	0.1	0.2
7/05/2021	8.2	9.5	7.1	9.0	8.7	8.0	7.9	29%	42%	0%	33%	33%	4%	13%	0.0	0.1
8/05/2021	11.6	14.8	8.2	17.0	13.3	8.1	13.0	13%	0%	0%	67%	100%	0%	0%	0.0	0.0
9/05/2021	24.3	20.0	10.8	17.9	19.1	10.2	15.0	33%	38%	4%	54%	54%	0%	17%	0.0	0.0
10/05/2021	14.8	13.7	9.7	24.7	23.2	10.4	22.5	8%	4%	0%	67%	79%	0%	4%	0.0	0.0
11/05/2021	14.2	18.2	11.1	15.3	14.8	17.7	18.2	13%	0%	0%	75%	88%	0%	0%	0.0	0.0
12/05/2021	13.8	18.1	11.4	13.4	15.0	11.4	20.1	29%	58%	0%	42%	42%	0%	21%	0.0	0.0
13/05/2021	12.9	22.7	10.3	20.0	15.3	10.0	17.8	13%	4%	0%	63%	88%	0%	8%	0.0	0.0
14/05/2021	13.5	16.5	10.6	23.9	14.6	8.8	19.1	8%	0%	0%	50%	96%	0%	0%	0.0	0.0
15/05/2021	12.9	17.0	8.9	29.8	20.6	9.0	23.1	4%	0%	0%	46%	71%	0%	0%	0.0	0.0
16/05/2021	11.4	22.5	9.5	31.4	16.1	7.8	23.2	0%	0%	0%	42%	88%	0%	0%	0.0	0.0
17/05/2021	19.3	21.2	12.6	21.4	21.1	13.5	20.4	0%	21%	4%	29%	54%	13%	4%	0.0	0.0
18/05/2021	22.5	25.7	17.3	20.7	23.4	21.3	23.6	38%	38%	13%	42%	38%	17%	17%	0.1	0.1
19/05/2021	20.8	22.6	10.8	21.0	14.3	9.9	14.6	21%	4%	0%	71%	83%	0%	13%	0.0	0.0
20/05/2021	23.7	28.7	14.0	18.8	21.2	14.8	-	8%	21%	0%	54%	71%	0%	4%	0.0	0.0
21/05/2021	23.0	27.9	16.8	21.0	20.5	17.2	28.1	29%	58%	4%	29%	21%	4%	25%	0.1	0.0
22/05/2021	23.2	25.3	11.7	14.3	13.1	17.8	15.3	21%	21%	38%	21%	13%	46%	13%	0.7	0.5
23/05/2021	17.3	23.8	-	11.7	14.2	15.3	18.4	38%	33%	8%	50%	42%	8%	21%	-	0.0
24/05/2021	15.4	20.1	-	15.9	-	15.4	18.5	25%	54%	13%	25%	21%	17%	17%	-	0.5
25/05/2021	12.0	15.4	7.1	2.1	9.9	8.2	8.3	29%	17%	8%	54%	63%	17%	13%	0.0	0.1
26/05/2021	20.8	15.5	11.1	16.3	17.9	8.3	18.3	0%	0%	0%	29%	71%	0%	0%	0.0	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
27/05/2021	11.5	16.9	-	24.2	29.3	6.0	16.1	8%	0%	0%	71%	79%	0%	0%	-	0.0
28/05/2021	24.8	37.7	10.4	24.2	17.6	8.3	19.5	0%	54%	0%	46%	46%	0%	0%	0.0	0.0
29/05/2021	27.3	23.5	9.7	20.5	18.3	11.1	14.4	0%	96%	8%	0%	0%	0%	0%	0.0	0.0
30/05/2021	23.9	26.6	8.8	19.6	19.5	10.5	13.9	4%	67%	13%	4%	8%	8%	0%	0.0	0.0
31/05/2021	29.7	31.9	9.5	17.6	16.4	13.3	16.8	25%	38%	4%	42%	42%	8%	13%	0.0	0.0
1/06/2021	19.4	28.1	10.7	22.8	16.9	9.9	18.1	42%	4%	0%	67%	79%	0%	17%	0.0	0.0
2/06/2021	32.3	29.0	10.0	29.0	29.5	14.1	17.5	21%	17%	13%	67%	63%	8%	8%	0.0	0.6
3/06/2021	24.4	19.6	11.1	26.0	27.4	11.6	20.7	33%	21%	8%	54%	54%	17%	21%	0.0	0.0
4/06/2021	9.8	8.0	6.4	12.8	9.5	6.1	9.8	0%	0%	0%	42%	75%	0%	0%	0.0	0.0
5/06/2021	16.0	10.4	6.0	13.5	12.3	6.5	10.4	29%	0%	0%	75%	100%	0%	4%	0.0	0.0
6/06/2021	13.8	14.0	7.0	13.3	10.6	7.2	11.3	13%	8%	13%	75%	75%	13%	13%	0.0	0.0
7/06/2021	17.9	21.3	7.7	18.6	14.2	8.5	13.9	25%	4%	0%	58%	75%	0%	8%	0.0	0.0
8/06/2021	17.8	15.5	8.5	16.5	19.4	9.0	16.1	25%	8%	0%	50%	54%	13%	8%	0.0	0.0
9/06/2021	4.2	4.7	2.4	4.1	3.6	3.0	-	0%	0%	0%	21%	88%	0%	0%	0.0	0.0
10/06/2021	6.6	4.0	4.7	5.2	4.6	3.5	-	25%	17%	4%	29%	29%	17%	46%	0.2	0.0
11/06/2021	5.9	6.5	5.5	6.8	5.1	5.0	4.9	0%	0%	0%	4%	88%	0%	0%	0.0	0.0
12/06/2021	6.2	10.1	4.9	7.8	-	4.7	7.5	0%	0%	0%	13%	79%	0%	0%	0.0	0.0
13/06/2021	7.4	10.1	4.6	14.5	-	4.2	9.8	8%	0%	0%	42%	92%	0%	0%	0.0	0.0
14/06/2021	13.4	7.9	5.8	13.7	-	5.7	7.9	13%	8%	0%	79%	83%	0%	8%	0.0	0.0
15/06/2021	13.2	14.6	7.7	13.8	-	5.6	10.5	8%	13%	0%	58%	75%	0%	4%	0.0	0.0
16/06/2021	12.4	23.5	8.9	14.5	13.8	8.9	11.5	17%	29%	4%	54%	50%	8%	8%	0.0	0.0
17/06/2021	9.3	10.0	4.6	13.3	8.2	5.3	13.9	0%	0%	0%	13%	88%	0%	0%	0.0	0.0
18/06/2021	7.7	9.2	4.3	10.8	6.1	4.4	13.9	0%	0%	0%	8%	88%	0%	0%	0.0	0.0
19/06/2021	9.7	7.8	5.6	12.5	8.8	5.0	11.2	0%	33%	0%	25%	54%	0%	0%	0.0	0.0
20/06/2021	14.8	10.3	7.4	14.1	13.6	7.5	8.2	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
21/06/2021	16.0	23.5	9.9	13.5	12.6	10.6	12.2	0%	67%	8%	0%	4%	25%	0%	0.0	0.2



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
22/06/2021	16.7	6.9	11.6	11.5	11.7	13.6	15.5	25%	58%	0%	25%	21%	13%	17%	0.0	0.2
23/06/2021	16.3	15.3	12.0	14.4	11.4	10.3	15.3	13%	38%	21%	42%	42%	17%	13%	0.0	0.0
24/06/2021	15.1	17.7	9.6	19.1	18.1	8.5	20.6	8%	0%	0%	75%	100%	0%	4%	0.0	0.0
25/06/2021	6.0	9.2	5.5	14.9	8.0	4.3	14.2	0%	0%	0%	21%	71%	0%	0%	0.0	0.0
26/06/2021	8.3	11.9	5.9	17.7	10.1	5.3	15.6	0%	0%	0%	29%	96%	0%	0%	0.0	0.0
27/06/2021	14.1	14.5	5.7	11.8	12.9	5.3	12.3	8%	13%	0%	71%	79%	4%	4%	0.0	0.0
28/06/2021	22.8	20.4	13.8	17.1	17.6	15.3	22.4	50%	29%	17%	50%	29%	21%	33%	1.1	0.4
29/06/2021	9.6	19.3	10.9	8.7	10.0	11.1	16.3	0%	88%	8%	0%	0%	8%	0%	0.0	0.0
30/06/2021	10.6	19.4	9.5	9.8	9.4	2.7	13.8	25%	58%	38%	21%	13%	21%	21%	0.2	0.7
1/07/2021	12.1	17.0	16.6	12.0	13.4	7.8	15.5	17%	54%	25%	25%	29%	17%	4%	1.0	0.0
2/07/2021	7.9	7.6	5.3	10.3	9.2	4.8	9.1	25%	0%	0%	63%	67%	4%	8%	0.0	0.0
3/07/2021	8.6	9.1	4.7	11.6	9.1	4.2	10.0	21%	0%	0%	88%	96%	0%	0%	0.0	0.0
4/07/2021	9.3	10.3	5.5	13.9	9.0	6.7	-	4%	0%	0%	67%	92%	0%	0%	0.0	0.0
5/07/2021	10.6	12.5	7.1	13.8	10.1	3.4	13.8	17%	0%	0%	83%	100%	0%	0%	0.0	0.0
6/07/2021	16.2	12.4	5.6	13.3	15.3	4.7	12.5	13%	4%	4%	83%	83%	4%	13%	0.0	0.0
7/07/2021	24.5	31.5	11.3	17.8	17.1	15.1	15.1	38%	54%	8%	46%	42%	4%	29%	0.6	0.0
8/07/2021	26.8	32.9	10.0	26.8	24.3	19.7	23.2	33%	29%	4%	58%	54%	13%	21%	0.0	0.0
9/07/2021	15.9	13.6	8.6	16.9	17.6	9.1	17.4	17%	4%	8%	63%	63%	21%	4%	0.0	0.0
10/07/2021	16.8	9.2	6.6	13.2	10.1	6.4	8.1	0%	58%	0%	38%	38%	0%	0%	0.0	0.0
11/07/2021	25.3	24.7	9.5	13.0	12.3	14.8	17.9	13%	63%	17%	17%	8%	17%	13%	0.0	0.6
12/07/2021	19.5	18.7	7.8	12.9	14.1	10.9	15.8	50%	29%	4%	58%	50%	8%	33%	0.0	0.1
13/07/2021	14.2	17.7	7.6	23.6	15.3	9.2	15.1	17%	0%	0%	75%	88%	0%	8%	0.0	0.0
14/07/2021	26.9	19.1	7.3	30.0	21.7	9.2	19.0	8%	0%	0%	67%	88%	0%	0%	0.0	0.0
15/07/2021	10.3	10.9	6.4	14.1	12.9	5.9	12.8	4%	0%	0%	33%	83%	0%	4%	0.0	0.0
16/07/2021	15.5	15.8	10.2	20.6	17.9	10.4	18.2	0%	0%	0%	17%	75%	0%	0%	0.0	0.0
17/07/2021	-	21.4	15.4	27.0	19.3	13.0	-	0%	0%	0%	8%	54%	0%	0%	0.0	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
18/07/2021	-	14.6	8.6	17.4	15.0	7.3	16.5	0%	0%	0%	50%	100%	0%	0%	0.0	0.0
19/07/2021	-	13.5	5.3	12.0	11.9	4.0	14.0	4%	0%	0%	33%	100%	0%	0%	0.0	0.0
20/07/2021	7.2	15.8	-	19.1	8.1	4.5	17.0	0%	0%	0%	4%	79%	0%	0%	-	0.0
21/07/2021	31.0	21.2	6.4	16.8	14.2	5.9	9.2	21%	38%	0%	29%	50%	0%	17%	0.0	0.0
22/07/2021	29.0	39.5	8.7	21.1	21.5	14.6	17.8	17%	33%	0%	67%	67%	0%	4%	0.0	0.0
23/07/2021	21.0	20.7	9.6	21.9	24.0	11.6	22.1	38%	8%	0%	83%	83%	8%	17%	0.0	0.0
24/07/2021	12.0	14.8	5.5	21.2	15.2	6.0	19.3	0%	0%	0%	21%	88%	0%	0%	0.0	0.0
25/07/2021	11.9	16.0	8.9	24.7	14.8	7.7	16.3	0%	0%	0%	25%	79%	0%	0%	0.0	0.0
26/07/2021	15.0	15.2	9.7	26.9	17.8	8.0	20.8	0%	0%	0%	29%	79%	0%	0%	0.0	0.0
27/07/2021	28.7	18.9	9.4	29.7	19.8	12.7	22.2	17%	0%	0%	58%	96%	0%	8%	0.0	0.0
28/07/2021	24.8	23.6	9.8	60.2	34.8	10.3	38.7	0%	0%	0%	46%	92%	0%	0%	0.0	0.0
29/07/2021	13.5	12.3	8.8	22.4	15.5	8.1	15.5	0%	0%	0%	38%	75%	0%	0%	0.0	0.0
30/07/2021	45.6	18.7	7.2	31.0	23.0	7.9	14.3	8%	0%	0%	58%	75%	0%	8%	0.0	0.0
31/07/2021	27.3	21.1	9.7	49.3	34.4	10.0	25.1	4%	0%	0%	71%	100%	0%	4%	0.0	0.0
1/08/2021	25.1	19.5	11.9	52.3	22.3	11.3	27.6	13%	4%	0%	50%	79%	0%	4%	0.0	0.0
2/08/2021	28.9	41.8	17.4	36.0	19.6	22.6	23.9	0%	100%	8%	0%	0%	0%	0%	0.4	0.0
3/08/2021	15.4	13.8	7.5	14.1	11.0	9.2	18.1	4%	0%	4%	25%	83%	4%	4%	0.0	0.0
4/08/2021	10.6	11.5	6.8	26.6	15.8	5.2	20.0	0%	0%	0%	38%	67%	0%	0%	0.0	0.0
5/08/2021	-	9.7	5.5	15.4	15.3	4.2	11.7	0%	0%	0%	50%	71%	0%	0%	0.0	0.0
6/08/2021	-	14.8	6.9	18.3	17.2	5.4	17.4	4%	0%	0%	58%	96%	0%	0%	0.0	0.0
7/08/2021	11.2	21.0	8.2	21.4	15.1	5.9	16.3	13%	0%	0%	42%	96%	0%	0%	0.0	0.0
8/08/2021	24.4	29.1	11.4	17.9	20.7	12.5	22.6	38%	63%	0%	38%	38%	4%	25%	0.0	0.0
9/08/2021	32.4	35.8	18.3	19.8	20.0	24.0	27.0	0%	71%	17%	4%	4%	13%	0%	0.2	0.5
10/08/2021	33.3	21.5	12.2	17.6	15.8	15.0	16.8	54%	8%	0%	79%	88%	0%	17%	0.0	0.0
11/08/2021	37.4	18.5	12.4	25.5	23.6	18.6	25.4	21%	0%	0%	92%	96%	0%	17%	0.0	0.0
12/08/2021	24.3	23.2	13.7	21.6	17.5	11.7	22.2	0%	25%	0%	25%	54%	4%	0%	0.0	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
13/08/2021	42.4	26.4	9.3	21.9	20.8	18.7	21.2	33%	13%	4%	42%	38%	13%	33%	0.0	1.0
14/08/2021	37.3	50.1	20.7	26.3	27.5	24.6	27.7	33%	54%	4%	38%	21%	0%	21%	0.0	0.0
15/08/2021	33.5	28.5	16.1	41.9	22.9	13.4	31.8	21%	0%	0%	50%	83%	0%	13%	0.0	0.0
16/08/2021	15.1	45.4	11.9	32.8	22.6	7.4	35.0	0%	0%	0%	38%	92%	0%	0%	0.0	0.0
17/08/2021	25.1	33.4	12.3	18.3	23.3	14.5	21.2	21%	25%	4%	54%	54%	8%	8%	0.0	0.0
18/08/2021	56.3	46.5	27.9	29.5	25.6	28.4	28.8	17%	50%	13%	21%	21%	17%	13%	0.0	0.8
19/08/2021	69.4	35.4	17.9	25.2	23.6	17.2	23.5	33%	8%	0%	54%	54%	8%	25%	0.0	0.0
20/08/2021	43.1	41.9	15.4	34.0	35.0	13.3	24.8	38%	0%	0%	79%	96%	0%	13%	0.0	0.0
21/08/2021	40.1	22.0	10.2	30.4	34.7	10.0	23.5	17%	0%	0%	75%	88%	8%	17%	0.0	0.1
22/08/2021	70.0	26.6	16.5	33.1	29.5	16.4	22.2	29%	8%	0%	71%	75%	4%	17%	0.0	0.0
23/08/2021	-	17.7	18.0	37.8	22.9	12.1	39.8	21%	0%	0%	67%	71%	13%	8%	0.0	0.0
24/08/2021	-	4.5	3.3	3.9	3.6	2.8	3.9	4%	8%	0%	17%	50%	0%	4%	0.0	0.0
25/08/2021	5.7	7.0	6.1	9.4	6.7	5.0	8.2	0%	0%	0%	33%	67%	0%	0%	0.0	0.0
26/08/2021	13.0	11.0	7.5	11.4	10.4	8.0	13.6	8%	8%	0%	67%	75%	0%	0%	0.0	0.0
27/08/2021	15.4	10.0	7.1	25.2	11.6	7.6	20.3	0%	0%	0%	42%	63%	0%	0%	0.0	0.0
28/08/2021	14.4	14.4	8.5	19.6	14.7	7.5	19.5	0%	0%	0%	88%	100%	0%	0%	0.0	0.0
29/08/2021	32.9	21.6	12.2	20.8	20.3	13.4	17.4	17%	25%	8%	54%	54%	8%	8%	0.0	0.0
30/08/2021	28.9	21.1	8.2	23.6	20.5	9.5	19.4	29%	0%	0%	58%	71%	0%	13%	0.0	0.0
31/08/2021	53.0	34.5	9.8	28.6	27.4	12.0	19.6	13%	13%	0%	58%	67%	8%	4%	0.0	0.0
1/09/2021	31.5	42.9	22.4	34.1	28.8	23.9	27.3	8%	54%	0%	50%	50%	4%	8%	0.0	0.0
2/09/2021	40.4	36.6	27.1	26.6	24.6	33.7	33.3	13%	71%	8%	13%	13%	21%	8%	0.1	2.2
3/09/2021	30.9	16.6	12.8	20.2	20.2	19.3	20.7	29%	21%	4%	63%	58%	8%	29%	0.1	0.2
4/09/2021	31.3	18.6	11.4	36.7	24.7	14.1	25.2	8%	0%	0%	63%	92%	8%	8%	0.0	0.0
5/09/2021	6.9	6.0	4.2	12.3	6.8	3.3	11.5	0%	0%	0%	8%	67%	0%	0%	0.0	0.0
6/09/2021	18.2	19.8	12.1	16.7	10.7	10.6	18.0	8%	25%	13%	29%	58%	8%	4%	0.5	0.0
7/09/2021	28.4	19.1	8.8	34.1	19.8	7.5	28.1	17%	0%	0%	42%	79%	0%	0%	0.0	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
8/09/2021	48.9	21.7	13.5	31.2	27.9	14.8	33.5	29%	0%	0%	83%	79%	0%	21%	0.0	0.0
9/09/2021	24.1	25.6	9.9	41.9	22.6	7.6	38.0	0%	0%	0%	25%	71%	0%	0%	0.0	0.0
10/09/2021	25.5	26.0	17.9	28.2	24.8	14.0	40.0	0%	17%	4%	25%	75%	4%	0%	0.4	0.2
11/09/2021	28.5	22.7	24.0	30.0	29.0	13.9	35.6	25%	0%	0%	67%	79%	4%	25%	0.0	0.4
12/09/2021	65.4	32.8	35.0	65.0	47.8	17.9	64.1	13%	0%	0%	67%	83%	0%	0%	0.0	0.0
13/09/2021	27.1	30.4	19.5	21.9	24.3	20.8	32.8	0%	63%	8%	0%	4%	4%	0%	0.0	0.0
14/09/2021	18.5	7.6	5.4	9.9	9.8	4.4	7.8	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
15/09/2021	21.9	14.0	6.8	12.7	10.6	8.1	10.2	4%	71%	13%	13%	13%	4%	0%	0.5	0.0
16/09/2021	24.3	30.8	10.2	14.0	11.5	10.0	12.9	4%	75%	8%	8%	8%	8%	4%	0.0	0.0
17/09/2021	26.0	18.1	11.0	23.1	25.2	19.6	21.5	42%	33%	0%	42%	42%	4%	25%	0.0	0.0
18/09/2021	37.8	28.3	15.6	32.6	34.1	17.5	41.3	8%	4%	0%	54%	92%	8%	4%	0.0	0.2
19/09/2021	9.4	13.1	-	25.3	12.9	5.2	18.3	8%	0%	0%	42%	83%	0%	0%	-	0.0
20/09/2021	-	21.1	14.3	38.2	19.4	7.4	32.0	8%	13%	0%	29%	67%	0%	4%	0.0	0.0
21/09/2021	-	23.9	19.5	28.0	19.3	11.5	31.0	0%	38%	0%	13%	33%	4%	0%	0.0	0.0
22/09/2021	-	19.1	9.3	31.0	32.9	13.6	25.5	25%	13%	0%	54%	50%	13%	25%	0.0	0.0
23/09/2021	-	26.4	9.0	34.1	25.6	8.6	37.2	0%	0%	0%	50%	83%	0%	0%	0.0	0.0
24/09/2021	-	26.9	10.9	51.6	24.6	8.6	41.2	0%	0%	0%	46%	67%	0%	0%	0.0	0.0
25/09/2021	-	35.8	22.0	50.1	34.2	20.0	31.9	8%	42%	0%	46%	58%	0%	8%	0.0	0.0
26/09/2021	-	28.2	15.1	9.0	9.9	10.8	9.7	0%	100%	17%	0%	0%	0%	0%	1.3	0.0
27/09/2021	-	39.9	21.0	13.0	11.2	18.1	16.7	0%	92%	13%	0%	0%	0%	0%	0.4	0.0
28/09/2021	-	46.4	24.8	21.6	21.3	29.3	24.6	21%	46%	42%	13%	17%	29%	8%	2.9	1.3
29/09/2021	-	44.9	19.3	19.2	24.4	24.5	27.1	4%	50%	4%	21%	29%	21%	13%	0.0	0.2
30/09/2021	-	18.3	9.5	13.0	12.2	11.0	12.7	4%	21%	0%	50%	63%	13%	8%	0.0	0.6
1/10/2021	-	10.4	9.4	11.8	13.5	8.7	12.1	8%	17%	0%	42%	46%	13%	0%	0.0	0.4
2/10/2021	-	9.0	5.1	11.1	11.0	7.4	11.0	0%	0%	0%	33%	83%	0%	0%	0.0	0.0
3/10/2021	-	13.8	7.5	28.2	17.6	6.6	19.7	0%	0%	0%	29%	83%	0%	0%	0.0	0.0



Date	24-hour average level (µg/m³)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level (µg/m³)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
4/10/2021	-	21.1	12.3	42.6	23.8	9.5	40.4	13%	8%	8%	33%	63%	4%	4%	0.0	0.0
5/10/2021	-	23.8	13.1	58.7	21.0	10.3	38.4	0%	0%	0%	13%	46%	0%	0%	0.0	0.0
6/10/2021	-	26.0	13.9	34.6	-	13.6	34.8	13%	0%	0%	63%	100%	0%	0%	0.0	0.0
7/10/2021	-	42.7	19.0	55.9	-	23.4	63.6	33%	17%	0%	54%	75%	0%	17%	0.0	0.0
8/10/2021	-	52.9	38.4	32.0	32.6	31.0	35.5	0%	92%	17%	0%	0%	8%	0%	0.6	0.0
9/10/2021	-	37.4	18.9	39.9	30.6	24.1	28.7	25%	13%	4%	46%	67%	21%	17%	0.0	0.0
10/10/2021	-	36.6	23.1	47.1	41.9	22.3	55.8	25%	17%	0%	46%	63%	0%	17%	0.0	0.0
11/10/2021	-	6.9	5.5	-	6.2	1.6	8.9	0%	79%	0%	4%	17%	0%	0%	0.0	0.0
12/10/2021	-	8.7	7.1	6.9	7.6	4.3	13.3	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
13/10/2021	-	8.4	6.0	6.0	6.2	4.8	9.3	0%	100%	8%	0%	0%	0%	0%	0.2	0.0
14/10/2021	-	16.0	11.1	13.2	14.4	8.8	15.9	38%	38%	17%	46%	38%	4%	29%	0.1	0.0
15/10/2021	-	19.5	16.1	24.4	21.5	11.4	26.5	4%	0%	0%	33%	71%	0%	4%	0.0	0.0
16/10/2021	-	11.0	7.5	18.8	11.5	5.8	20.4	0%	0%	0%	4%	71%	0%	0%	0.0	0.0
17/10/2021	-	17.1	12.7	18.1	11.1	11.6	18.1	0%	25%	0%	42%	63%	0%	0%	0.0	0.0
18/10/2021	-	-	13.0	24.9	20.5	16.9	18.8	29%	8%	0%	50%	67%	8%	21%	0.0	0.0
19/10/2021	15.5	31.6	16.4	26.1	26.3	16.5	28.7	8%	33%	17%	54%	63%	0%	0%	0.5	0.0
20/10/2021	27.6	27.3	16.9	10.5	10.5	19.3	15.3	0%	79%	33%	0%	0%	8%	0%	0.9	0.9
21/10/2021	18.4	30.3	20.7	11.2	11.0	21.9	27.5	0%	88%	38%	0%	0%	13%	0%	2.8	0.6
22/10/2021	-	28.2	22.4	11.7	12.0	18.0	30.6	0%	83%	25%	0%	0%	13%	0%	0.4	0.3
23/10/2021	22.2	25.7	18.4	21.6	22.6	22.6	24.5	4%	21%	4%	29%	46%	21%	8%	0.0	1.3
24/10/2021	17.3	22.6	13.9	14.3	15.6	14.2	20.4	8%	38%	4%	50%	58%	0%	0%	0.0	0.0
25/10/2021	30.0	32.0	16.5	17.0	17.4	16.4	28.3	4%	29%	0%	29%	54%	0%	0%	0.0	0.0
26/10/2021	26.7	57.9	22.5	18.3	19.5	22.7	25.5	0%	83%	25%	0%	0%	8%	0%	0.2	0.0
27/10/2021	36.2	37.1	17.8	27.5	29.3	26.3	26.7	25%	21%	4%	33%	38%	13%	21%	0.0	0.1
28/10/2021	59.4	43.9	38.3	40.8	42.5	18.1	35.7	17%	8%	0%	42%	63%	0%	8%	0.0	0.0
29/10/2021	67.2	74.6	34.1	65.4	61.7	26.3	82.0	8%	0%	0%	54%	83%	0%	4%	0.0	0.0

Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
30/10/2021	55.3	56.9	37.7	31.1	30.0	25.8	30.2	8%	71%	13%	8%	13%	13%	4%	2.9	0.3
31/10/2021	17.7	35.9	27.8	19.5	14.4	18.7	25.6	0%	92%	25%	0%	0%	4%	0%	4.2	0.2
1/11/2021	32.9	50.2	42.8	25.9	23.8	29.8	35.4	8%	71%	21%	13%	13%	8%	4%	5.9	0.0
2/11/2021	19.7	40.8	42.4	21.8	14.4	26.5	35.7	0%	100%	4%	0%	0%	0%	0%	0.3	0.0
3/11/2021	15.6	42.6	29.2	18.7	12.3	24.7	38.7	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
4/11/2021	18.2	34.2	22.0	16.9	20.3	26.5	26.3	0%	50%	50%	0%	4%	29%	0%	1.7	0.3
5/11/2021	10.8	13.0	6.8	7.4	8.3	8.4	14.8	0%	100%	4%	0%	0%	0%	0%	0.0	0.0
6/11/2021	14.6	21.1	12.4	14.9	13.9	13.7	16.8	4%	38%	8%	21%	38%	29%	0%	0.2	1.1
7/11/2021	18.1	25.3	14.3	18.5	17.3	16.9	20.6	13%	67%	0%	25%	25%	0%	4%	0.0	0.0
8/11/2021	13.7	16.0	11.5	12.7	12.1	13.5	16.0	13%	50%	29%	13%	8%	21%	17%	1.1	0.6
9/11/2021	18.6	25.6	19.3	16.0	16.2	21.0	22.1	8%	71%	17%	8%	4%	13%	8%	0.0	0.0
10/11/2021	16.8	23.2	15.7	12.4	11.9	15.1	18.3	8%	42%	29%	29%	29%	38%	8%	0.3	0.2
11/11/2021	8.6	8.6	6.9	9.0	7.7	5.9	9.0	0%	63%	4%	29%	38%	0%	0%	0.0	0.0
12/11/2021	27.6	19.9	9.8	34.3	27.6	19.5	33.7	0%	17%	0%	8%	29%	0%	0%	0.0	0.0
13/11/2021	15.0	10.9	10.6	30.7	12.6	6.6	31.4	0%	0%	0%	0%	42%	0%	0%	0.0	0.0
14/11/2021	10.4	9.3	8.0	23.2	13.1	6.3	22.7	0%	0%	0%	0%	54%	0%	0%	0.0	0.0
15/11/2021	15.8	14.5	14.0	36.2	22.4	8.9	37.2	0%	0%	0%	4%	58%	0%	0%	0.0	0.0
16/11/2021	17.1	26.3	14.5	17.2	13.1	11.5	21.8	0%	33%	0%	29%	54%	0%	0%	0.0	0.0
17/11/2021	16.9	67.1	17.3	13.1	15.3	21.4	25.2	0%	96%	17%	0%	0%	0%	0%	0.8	0.0
18/11/2021	22.3	32.4	13.7	25.5	23.1	20.3	22.7	4%	25%	4%	21%	54%	17%	0%	0.0	0.0
19/11/2021	31.6	26.6	16.3	38.6	29.5	19.2	40.7	13%	0%	0%	46%	92%	0%	4%	0.0	0.0
20/11/2021	23.4	22.5	14.5	25.9	24.5	19.8	24.7	8%	33%	8%	17%	25%	17%	8%	0.2	0.9
21/11/2021	6.1	6.2	4.3	5.8	5.4	3.2	5.9	0%	100%	4%	0%	0%	0%	0%	0.0	0.0
22/11/2021	10.7	10.9	9.1	10.0	11.0	8.6	11.4	0%	100%	4%	0%	0%	0%	0%	0.0	0.0
23/11/2021	9.8	19.1	9.2	9.6	10.0	8.3	11.9	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
24/11/2021	13.5	24.4	13.2	10.6	12.1	15.7	15.7	0%	88%	21%	0%	0%	8%	0%	1.3	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
25/11/2021	8.2	12.6	-	9.0	10.5	9.2	11.9	4%	75%	4%	17%	25%	8%	4%	-	0.0
26/11/2021	4.0	3.5	-	5.0	3.8	-	6.9	0%	79%	0%	4%	13%	4%	0%	-	-
27/11/2021	9.3	7.1	6.8	9.2	8.8	-	11.8	0%	100%	0%	0%	0%	0%	0%	0.0	-
28/11/2021	20.9	16.5	12.5	16.9	17.2	-	21.3	0%	100%	4%	0%	0%	0%	0%	0.0	-
29/11/2021	23.3	26.7	17.8	19.8	21.2	-	25.9	0%	96%	13%	0%	0%	0%	0%	0.0	-
30/11/2021	17.0	15.6	12.9	14.2	15.2	14.8	27.0	0%	96%	13%	0%	0%	4%	0%	0.3	0.0
1/12/2021	6.2	12.6	7.8	6.4	6.8	10.8	15.5	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
2/12/2021	7.8	19.9	11.1	8.5	7.6	12.9	16.3	0%	100%	8%	0%	0%	0%	0%	0.3	0.0
3/12/2021	31.1	28.1	15.8	18.4	22.0	20.1	23.1	17%	54%	21%	42%	38%	8%	13%	0.0	1.0
4/12/2021	19.8	28.0	19.5	20.7	20.9	22.4	25.2	8%	88%	13%	8%	4%	4%	4%	0.1	0.1
5/12/2021	18.9	25.2	14.2	15.3	14.4	15.9	23.0	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
6/12/2021	21.1	26.7	18.2	15.6	16.7	16.1	29.5	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
7/12/2021	11.3	12.3	9.9	11.1	13.5	10.4	13.3	0%	33%	8%	42%	58%	8%	0%	0.0	0.1
8/12/2021	10.6	15.2	9.8	10.7	11.6	11.5	14.3	0%	67%	8%	4%	17%	8%	0%	0.0	0.0
9/12/2021	8.7	11.6	8.4	8.8	9.0	9.4	-	0%	50%	25%	0%	4%	25%	0%	0.1	0.3
10/12/2021	17.8	11.6	10.0	24.3	20.1	10.2	-	0%	17%	0%	4%	25%	4%	0%	0.0	0.0
11/12/2021	17.1	22.2	8.3	10.6	10.0	11.0	11.5	0%	100%	13%	0%	0%	0%	0%	0.1	0.0
12/12/2021	15.4	25.8	14.7	14.8	13.8	17.4	17.2	0%	96%	29%	0%	0%	4%	0%	0.6	0.0
13/12/2021	22.4	40.9	21.1	21.0	18.8	25.5	21.2	0%	88%	13%	0%	0%	0%	0%	0.0	0.0
14/12/2021	22.2	36.1	23.1	20.3	19.8	22.8	23.8	13%	71%	8%	17%	17%	8%	8%	0.2	0.0
15/12/2021	41.8	43.0	28.3	36.2	-	26.3	41.3	17%	29%	4%	38%	38%	33%	8%	0.0	0.4
16/12/2021	20.4	29.7	18.8	17.8	-	18.6	20.1	0%	79%	8%	0%	0%	17%	0%	0.0	0.2
17/12/2021	-	-	21.2	-	19.9	-	23.8	0%	96%	13%	0%	0%	4%	0%	0.6	-
18/12/2021	-	-	16.0	-	32.0	-	33.6	17%	13%	0%	38%	50%	4%	13%	0.0	-
19/12/2021	24.9	27.1	14.5	31.3	33.9	18.5	38.4	0%	13%	4%	38%	71%	4%	0%	0.0	0.1
20/12/2021	25.9	26.5	15.5	24.4	26.6	15.8	25.5	17%	33%	8%	13%	21%	17%	17%	0.0	0.2



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO North's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)	
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Wandewoi
21/12/2021	28.4	34.2	23.3	29.1	32.1	26.7	38.1	25%	21%	4%	33%	42%	21%	17%	0.0	0.0
22/12/2021	17.3	20.1	-	20.4	24.7	-	23.5	4%	38%	0%	25%	42%	17%	4%	-	-
23/12/2021	16.9	18.2	15.3	19.8	20.0	-	26.0	0%	83%	17%	0%	0%	4%	0%	0.6	-
24/12/2021	12.3	13.3	12.9	19.8	13.4	12.5	16.0	0%	96%	4%	0%	0%	4%	0%	0.0	0.0
25/12/2021	8.3	11.7	11.6	15.8	14.0	10.8	12.8	0%	71%	17%	4%	4%	8%	0%	0.1	0.1
26/12/2021	9.8	11.1	10.9	12.3	11.6	10.2	11.7	0%	79%	25%	0%	0%	21%	0%	0.1	0.1
27/12/2021	11.5	9.0	8.5	9.7	12.1	10.5	13.6	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
28/12/2021	6.9	7.2	7.5	7.6	9.0	8.2	10.7	0%	100%	0%	0%	0%	0%	0%	0.0	0.0
29/12/2021	8.0	10.8	10.4	9.0	11.4	10.0	11.8	0%	96%	8%	0%	0%	4%	0%	0.0	0.0
30/12/2021	8.9	12.7	10.4	9.9	10.0	10.9	13.4	0%	92%	17%	0%	0%	4%	0%	0.0	0.0
31/12/2021	10.6	23.5	13.2	9.2	10.6	13.0	14.1	0%	92%	17%	4%	4%	8%	0%	0.4	0.8

- No data



Table B-3: 24-hour average PM₁₀ TEOM levels, percent time downwind and estimated contributions – HVO South

Date	24-hour average level (µg/m ³)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level (µg/m ³)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
1/01/2021	10.6	9.7	8.4	9.0	9.8	7.7	9.5	0%	0%	54%	0%	0%	100%	0%	0.2	0.0	0.0	0.3	0.0
2/01/2021	9.8	11.2	9.2	10.2	9.8	8.9	12.5	0%	0%	83%	0%	0%	100%	0%	0.6	0.0	0.0	0.1	0.0
3/01/2021	11.0	17.9	12.6	10.6	10.7	12.0	13.1	8%	17%	29%	8%	0%	58%	8%	0.4	0.1	0.0	1.0	0.2
4/01/2021	12.2	13.5	9.8	13.1	13.0	9.0	12.7	71%	0%	4%	50%	4%	4%	75%	0.0	2.1	0.0	0.0	1.8
5/01/2021	16.6	10.7	8.6	14.9	13.4	7.6	12.3	67%	4%	0%	79%	29%	0%	58%	0.0	3.8	0.8	0.0	3.8
6/01/2021	19.3	24.1	14.1	14.6	15.8	13.4	16.9	0%	0%	79%	0%	0%	100%	0%	1.5	0.0	0.0	1.1	0.0
7/01/2021	14.7	15.9	10.8	10.7	11.9	9.3	15.9	0%	4%	33%	0%	0%	88%	0%	0.4	0.0	0.0	0.3	0.0
8/01/2021	19.1	22.3	13.2	15.4	14.4	13.4	24.0	0%	0%	54%	0%	0%	100%	0%	0.1	0.0	0.0	0.8	0.0
9/01/2021	10.0	9.6	8.7	7.5	7.4	10.1	11.0	0%	0%	71%	0%	0%	96%	0%	1.0	0.0	0.0	2.7	0.0
10/01/2021	12.3	18.5	11.3	7.8	7.3	14.6	16.6	0%	0%	67%	0%	0%	88%	4%	3.1	0.0	0.0	5.1	0.3
11/01/2021	10.9	25.9	14.4	9.1	8.3	13.9	15.1	0%	0%	71%	0%	0%	100%	0%	3.7	0.0	0.0	4.1	0.0
12/01/2021	22.1	33.2	21.0	19.5	19.0	20.8	20.4	29%	0%	29%	13%	8%	54%	29%	1.9	1.3	0.4	3.1	1.6
13/01/2021	17.0	32.6	24.1	13.5	14.7	17.4	20.8	0%	0%	71%	0%	0%	96%	0%	7.1	0.0	0.0	2.3	0.0
14/01/2021	31.3	32.1	26.5	30.9	29.8	21.7	28.5	54%	8%	21%	50%	17%	21%	42%	0.3	5.5	2.2	1.7	1.8
15/01/2021	30.8	36.5	28.5	45.3	41.5	23.4	37.9	29%	4%	13%	42%	42%	29%	25%	0.2	14.1	9.5	0.2	4.3
16/01/2021	33.7	21.2	23.7	31.5	24.9	18.2	23.3	33%	0%	8%	50%	42%	13%	21%	0.4	6.3	2.2	1.4	1.8
17/01/2021	27.3	30.5	19.4	28.7	26.6	21.1	28.2	54%	0%	25%	13%	8%	33%	54%	1.5	1.2	0.4	1.0	3.1
18/01/2021	30.3	29.1	26.4	40.0	36.8	28.0	31.6	79%	0%	4%	58%	0%	8%	63%	0.0	11.7	0.0	0.0	2.2
19/01/2021	34.0	57.6	32.8	37.1	34.2	26.6	35.6	21%	4%	63%	13%	0%	75%	17%	7.6	3.5	0.0	1.1	3.8
20/01/2021	19.8	41.2	18.6	15.4	16.7	17.0	19.1	0%	0%	88%	0%	0%	100%	0%	3.1	0.0	0.0	1.7	0.0
21/01/2021	21.9	54.4	25.8	25.6	21.2	27.8	26.8	0%	4%	58%	0%	0%	79%	0%	4.9	0.0	0.0	4.9	0.0
22/01/2021	-	88.3	24.9	28.6	28.0	25.6	27.5	58%	0%	4%	63%	17%	4%	46%	0.0	3.3	1.4	0.2	0.8
23/01/2021	-	85.0	23.2	37.2	39.2	22.2	27.9	25%	0%	8%	58%	42%	8%	13%	0.5	9.0	7.8	0.0	0.8
24/01/2021	-	92.0	28.5	27.8	29.5	32.4	32.5	21%	0%	25%	25%	4%	33%	21%	3.0	2.2	0.0	5.0	2.0
25/01/2021	24.4	51.7	30.6	28.2	30.7	24.4	32.2	42%	0%	21%	38%	17%	29%	38%	4.9	1.5	2.1	2.7	1.6
26/01/2021	31.8	34.7	20.8	34.5	41.9	24.0	29.1	67%	8%	0%	50%	17%	0%	67%	0.0	6.5	4.4	0.0	3.4

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Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
27/01/2021	32.0	48.3	21.5	28.2	28.6	15.3	29.7	0%	4%	42%	0%	0%	100%	0%	2.8	0.0	0.0	0.0	0.0
28/01/2021	10.0	9.3	4.8	7.3	6.8	3.7	5.9	0%	0%	46%	0%	0%	100%	0%	0.6	0.0	0.0	0.3	0.0
29/01/2021	6.8	10.2	5.5	5.1	5.5	7.1	14.1	0%	0%	79%	0%	0%	100%	0%	0.2	0.0	0.0	0.8	0.0
30/01/2021	16.7	22.6	10.9	12.7	14.6	14.2	14.6	8%	4%	25%	17%	17%	46%	21%	0.4	1.4	1.4	1.1	0.1
31/01/2021	30.0	32.8	13.3	19.2	21.0	13.7	19.4	8%	4%	29%	4%	4%	83%	8%	0.3	0.0	0.0	0.4	0.1
1/02/2021	22.5	28.8	18.7	19.8	15.7	17.0	24.8	0%	13%	54%	0%	0%	83%	0%	1.8	0.0	0.0	1.2	0.0
2/02/2021	10.4	13.6	11.8	8.5	9.8	12.6	13.4	0%	8%	58%	0%	0%	75%	0%	2.2	0.0	0.0	2.7	0.0
3/02/2021	18.1	32.3	19.7	15.2	16.9	20.6	30.4	0%	0%	75%	0%	0%	100%	0%	2.6	0.0	0.0	2.4	0.0
4/02/2021	19.9	32.6	21.2	12.8	15.2	20.7	31.2	0%	0%	54%	0%	0%	79%	0%	3.8	0.0	0.0	4.1	0.0
5/02/2021	15.9	30.7	22.4	13.3	12.9	21.0	30.9	0%	0%	63%	0%	0%	96%	0%	4.4	0.0	0.0	5.2	0.0
6/02/2021	17.5	20.2	15.2	13.1	14.6	15.6	19.6	42%	8%	21%	38%	8%	25%	33%	1.0	1.4	0.1	1.7	2.8
7/02/2021	16.6	17.8	12.4	10.2	12.9	12.5	14.7	46%	4%	42%	42%	4%	42%	42%	0.9	0.5	0.3	1.2	1.0
8/02/2021	-	26.0	16.9	12.3	15.4	15.1	20.3	0%	0%	96%	0%	0%	100%	0%	2.9	0.0	0.0	1.8	0.0
9/02/2021	-	26.2	21.5	13.7	14.3	14.6	19.3	0%	0%	88%	0%	0%	100%	0%	7.3	0.0	0.0	1.5	0.0
10/02/2021	17.2	26.5	17.4	12.3	13.3	15.6	16.5	0%	8%	63%	0%	0%	96%	0%	5.0	0.0	0.0	2.3	0.0
11/02/2021	16.7	27.0	35.9	13.4	14.4	19.4	17.4	13%	4%	38%	0%	0%	58%	17%	6.8	0.0	0.0	3.5	0.4
12/02/2021	29.3	35.6	28.3	30.5	30.7	29.3	36.3	67%	0%	13%	50%	13%	21%	54%	0.1	4.3	0.7	3.1	5.2
13/02/2021	14.1	14.4	8.3	10.0	13.1	8.6	11.6	50%	0%	25%	50%	0%	50%	17%	0.2	1.2	0.0	0.5	0.5
14/02/2021	22.0	21.0	14.9	13.9	16.4	15.9	32.3	0%	0%	63%	0%	0%	100%	0%	0.0	0.0	0.0	1.0	0.0
15/02/2021	25.1	29.4	10.9	13.7	15.4	10.9	23.1	0%	0%	38%	0%	0%	88%	0%	0.0	0.0	0.0	0.0	0.0
16/02/2021	11.7	-	10.7	8.4	8.9	10.4	17.7	0%	0%	83%	0%	0%	100%	0%	1.4	0.0	0.0	1.8	0.0
17/02/2021	21.6	19.4	13.7	11.0	13.4	13.3	24.5	0%	0%	96%	0%	0%	100%	0%	0.5	0.0	0.0	1.0	0.0
18/02/2021	22.1	26.1	16.6	17.1	19.7	16.8	27.4	0%	0%	75%	0%	0%	96%	0%	0.1	0.0	0.0	0.8	0.0
19/02/2021	12.0	17.5	11.1	10.0	11.4	10.7	21.4	0%	0%	79%	0%	0%	100%	0%	0.8	0.0	0.0	0.7	0.0
20/02/2021	15.7	19.3	12.5	9.6	10.8	13.5	28.9	0%	0%	79%	0%	0%	100%	0%	0.8	0.0	0.0	1.2	0.0
21/02/2021	15.8	16.5	8.6	8.1	9.5	10.0	17.7	0%	17%	33%	0%	0%	88%	0%	1.1	0.0	0.0	2.2	0.0
22/02/2021	23.2	18.0	14.3	13.3	15.0	9.5	14.5	38%	4%	29%	17%	17%	33%	38%	0.4	0.6	0.5	0.4	1.7



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
23/02/2021	23.6	23.4	12.3	15.6	16.4	12.0	20.7	0%	0%	63%	0%	0%	100%	0%	0.4	0.0	0.0	0.0	0.0
24/02/2021	14.6	17.4	10.9	13.7	13.5	9.9	16.9	0%	0%	75%	0%	0%	100%	0%	0.1	0.0	0.0	0.0	0.0
25/02/2021	20.3	19.1	12.0	16.2	15.4	13.6	15.6	46%	0%	17%	29%	0%	29%	46%	0.6	1.6	0.0	1.2	0.9
26/02/2021	18.7	24.4	18.5	19.8	21.1	18.4	23.3	54%	0%	33%	50%	8%	33%	46%	1.8	1.8	0.0	1.5	1.7
27/02/2021	18.8	24.4	18.2	16.7	16.4	18.5	26.3	0%	0%	71%	0%	0%	96%	4%	1.7	0.0	0.0	1.1	0.0
28/02/2021	26.1	31.7	20.9	23.7	20.7	21.0	27.7	17%	0%	42%	25%	21%	54%	25%	2.2	1.1	0.3	1.1	0.6
1/03/2021	43.1	37.6	21.6	33.6	36.2	25.5	29.6	54%	4%	4%	17%	8%	25%	54%	0.0	1.3	0.3	8.0	3.9
2/03/2021	48.0	48.6	29.1	37.0	33.5	33.1	-	0%	0%	58%	4%	8%	92%	0%	3.0	0.1	0.0	3.3	-
3/03/2021	22.8	34.1	20.1	25.6	21.3	18.7	-	0%	0%	83%	0%	0%	100%	0%	1.2	0.0	0.0	1.5	-
4/03/2021	25.9	23.1	16.0	19.7	17.1	23.2	19.9	21%	4%	25%	25%	13%	29%	29%	0.1	1.1	0.3	1.1	0.8
5/03/2021	30.0	40.0	27.1	36.4	29.9	28.5	-	38%	0%	58%	8%	0%	63%	38%	3.7	1.5	0.0	4.6	-
6/03/2021	22.0	28.0	23.8	29.1	19.6	26.6	18.7	0%	0%	88%	0%	0%	100%	0%	2.9	0.0	0.0	6.8	0.0
7/03/2021	22.5	33.0	24.1	24.0	19.1	25.5	21.2	0%	0%	50%	0%	0%	92%	0%	3.3	0.0	0.0	5.9	0.0
8/03/2021	23.4	30.1	15.4	-	17.8	13.4	14.1	79%	0%	8%	58%	8%	8%	67%	0.1	-	0.9	0.8	1.4
9/03/2021	17.9	22.0	15.9	-	19.4	15.8	19.9	50%	0%	29%	67%	17%	29%	29%	1.0	-	1.3	0.5	1.0
10/03/2021	18.5	34.0	24.1	18.5	17.7	22.0	27.0	0%	0%	88%	0%	0%	100%	0%	3.3	0.0	0.0	2.5	0.0
11/03/2021	14.6	23.1	21.9	14.9	14.1	19.6	21.6	0%	8%	63%	0%	0%	88%	0%	4.4	0.0	0.0	4.4	0.0
12/03/2021	17.3	15.9	10.0	12.0	-	10.6	14.5	21%	8%	17%	17%	8%	29%	21%	0.0	0.9	-	0.5	1.0
13/03/2021	24.9	16.1	11.0	17.7	18.5	11.2	15.9	58%	8%	4%	29%	8%	8%	63%	0.0	1.9	1.0	0.0	3.6
14/03/2021	18.3	12.3	8.8	10.4	7.2	7.9	10.2	8%	13%	38%	4%	4%	71%	8%	0.8	0.0	0.0	0.6	0.1
15/03/2021	19.2	20.1	9.9	16.1	15.4	18.2	20.1	0%	0%	79%	0%	0%	100%	0%	0.0	0.0	0.0	2.4	0.0
16/03/2021	18.1	21.6	7.5	12.4	12.7	12.9	26.0	0%	0%	67%	0%	0%	96%	0%	0.0	0.0	0.0	1.6	0.0
17/03/2021	11.9	11.8	5.7	9.8	9.0	9.7	19.9	0%	0%	92%	0%	0%	100%	0%	0.0	0.0	0.0	0.7	0.0
18/03/2021	6.2	8.2	4.3	5.6	6.0	6.4	10.9	0%	0%	75%	0%	0%	100%	0%	0.2	0.0	0.0	1.1	0.0
19/03/2021	10.8	8.9	5.9	9.2	9.4	8.7	16.7	0%	0%	75%	0%	0%	100%	0%	0.0	0.0	0.0	0.6	0.0
20/03/2021	7.7	9.4	4.9	7.1	7.0	7.5	10.1	0%	0%	96%	0%	0%	100%	0%	0.0	0.0	0.0	1.0	0.0
21/03/2021	7.0	7.8	5.4	7.1	6.8	6.3	10.9	0%	0%	100%	0%	0%	100%	0%	0.2	0.0	0.0	0.2	0.0

Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
22/03/2021	5.7	5.3	3.7	5.3	5.3	5.3	9.7	0%	0%	100%	0%	0%	100%	0%	0.1	0.0	0.0	0.3	0.0
23/03/2021	-	9.1	3.4	5.7	6.0	6.6	8.0	17%	4%	54%	17%	4%	67%	17%	0.0	0.4	0.0	1.2	0.3
24/03/2021	7.3	9.7	6.5	14.5	9.9	6.2	13.5	29%	0%	0%	100%	71%	0%	4%	0.0	5.9	1.8	0.0	0.1
25/03/2021	18.5	10.6	7.9	23.1	13.0	8.8	14.7	29%	0%	0%	88%	71%	0%	21%	0.0	10.3	1.9	0.0	1.3
26/03/2021	20.9	16.1	7.5	16.6	15.5	10.0	13.8	33%	13%	4%	50%	42%	8%	33%	0.0	3.5	2.2	0.2	1.9
27/03/2021	22.8	20.0	7.8	30.3	16.9	10.2	18.4	63%	0%	0%	63%	33%	0%	63%	0.0	12.3	0.9	0.0	3.8
28/03/2021	17.0	18.9	8.2	19.1	19.5	12.9	19.0	50%	4%	4%	42%	8%	29%	50%	0.0	3.5	0.6	0.7	1.8
29/03/2021	21.1	31.3	12.3	15.5	14.4	21.1	22.8	0%	4%	67%	0%	0%	96%	0%	0.7	0.0	0.0	4.8	0.0
30/03/2021	25.1	27.7	13.4	19.0	16.5	18.9	21.1	0%	0%	83%	0%	0%	100%	0%	0.1	0.0	0.0	3.1	0.0
31/03/2021	27.3	25.5	11.6	18.4	15.7	19.8	19.0	0%	4%	42%	0%	0%	63%	0%	0.0	0.0	0.0	1.3	0.0
1/04/2021	16.5	23.5	10.8	16.9	12.9	16.2	14.6	13%	8%	58%	0%	0%	71%	13%	0.5	0.0	0.0	3.1	0.2
2/04/2021	14.7	23.5	11.0	11.8	9.6	19.8	13.2	8%	0%	50%	0%	0%	79%	13%	1.3	0.0	0.0	6.5	0.2
3/04/2021	14.9	26.1	12.0	12.7	9.6	20.9	-	0%	8%	63%	0%	0%	83%	0%	1.3	0.0	0.0	6.4	-
4/04/2021	23.2	25.8	8.9	17.2	15.5	13.4	-	58%	13%	4%	38%	0%	17%	42%	0.0	1.7	0.0	0.5	-
5/04/2021	38.9	38.8	17.5	22.3	20.2	25.3	-	17%	0%	63%	4%	4%	67%	21%	2.0	0.0	0.0	3.6	-
6/04/2021	16.4	21.2	13.2	30.8	10.6	18.3	-	0%	0%	96%	0%	0%	100%	0%	0.5	0.0	0.0	2.5	-
7/04/2021	-	15.5	8.8	9.8	8.3	11.0	24.8	0%	0%	79%	0%	0%	96%	0%	0.4	0.0	0.0	1.2	0.0
8/04/2021	-	17.1	10.4	7.9	7.4	14.5	16.1	4%	4%	58%	4%	0%	83%	4%	1.5	0.0	0.0	4.1	0.0
9/04/2021	26.2	25.9	12.1	31.2	19.9	12.2	-	71%	0%	4%	83%	21%	4%	50%	0.0	13.6	0.9	0.3	-
10/04/2021	30.7	26.1	13.4	34.6	26.2	17.5	25.5	38%	0%	4%	79%	54%	4%	25%	0.0	13.6	2.4	1.0	0.2
11/04/2021	14.6	17.1	13.2	30.0	33.3	11.2	19.0	13%	0%	0%	46%	38%	0%	58%	0.0	10.0	5.4	0.0	1.2
12/04/2021	27.6	28.3	15.0	25.6	23.2	18.6	19.0	4%	0%	4%	4%	0%	21%	50%	0.0	0.5	0.0	1.6	0.8
13/04/2021	33.9	42.8	15.7	23.0	22.6	27.6	19.5	42%	13%	8%	33%	13%	17%	42%	0.0	1.8	0.0	2.8	1.2
14/04/2021	22.7	31.4	14.0	45.3	30.9	13.9	-	42%	0%	0%	96%	58%	0%	33%	0.0	24.3	5.5	0.0	-
15/04/2021	43.9	31.9	19.1	38.0	33.3	17.8	-	54%	0%	0%	83%	42%	0%	46%	0.0	12.1	2.2	0.0	-
16/04/2021	31.2	43.5	24.3	105.2	35.6	27.3	33.9	38%	0%	63%	25%	0%	63%	38%	1.2	21.6	0.0	0.6	3.2
17/04/2021	11.5	12.0	9.2	7.5	9.6	11.1	12.4	8%	13%	46%	4%	0%	67%	8%	0.1	0.0	0.0	1.5	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
18/04/2021	13.1	12.8	7.2	9.8	8.9	9.3	9.0	38%	4%	0%	46%	17%	4%	33%	0.0	1.3	0.2	0.6	0.8
19/04/2021	22.0	20.1	11.4	19.5	16.8	11.7	15.4	79%	0%	0%	79%	21%	0%	63%	0.0	4.0	0.6	0.0	1.5
20/04/2021	20.8	20.2	15.9	32.1	25.2	13.6	25.9	38%	0%	0%	100%	63%	0%	25%	0.0	13.3	3.9	0.0	1.2
21/04/2021	30.9	28.0	13.5	22.6	15.3	11.8	17.1	38%	17%	13%	46%	21%	13%	21%	0.0	6.5	0.4	0.0	0.6
22/04/2021	-	26.3	19.3	30.4	22.9	10.8	19.4	42%	0%	0%	100%	58%	0%	42%	0.0	13.5	4.3	0.0	2.2
23/04/2021	-	29.8	19.2	26.1	26.3	15.7	22.7	71%	0%	0%	79%	29%	0%	58%	0.0	4.1	1.0	0.0	1.8
24/04/2021	36.8	29.7	16.8	24.4	23.4	18.8	22.1	67%	4%	4%	42%	13%	8%	58%	0.0	3.1	0.2	0.6	2.3
25/04/2021	32.4	40.6	22.2	25.9	24.9	23.4	27.9	42%	29%	8%	4%	0%	50%	42%	0.0	0.2	0.0	1.7	1.2
26/04/2021	32.3	31.5	20.4	18.8	19.5	20.8	20.2	38%	4%	29%	8%	0%	46%	38%	4.1	0.3	0.0	2.8	2.6
27/04/2021	24.4	25.7	20.2	16.3	16.2	18.3	16.6	33%	8%	33%	4%	0%	58%	33%	2.0	0.0	0.0	3.3	1.4
28/04/2021	22.8	29.2	17.6	18.3	16.7	19.0	16.9	29%	0%	38%	4%	0%	58%	29%	3.2	0.9	0.0	1.6	1.9
29/04/2021	-	35.9	16.7	17.6	14.8	16.7	16.6	38%	0%	38%	17%	4%	54%	33%	3.6	0.1	0.2	2.1	1.1
30/04/2021	-	21.5	18.9	15.3	15.8	17.5	19.6	29%	0%	29%	0%	0%	50%	29%	2.7	0.0	0.0	2.3	1.9
1/05/2021	13.4	22.0	16.6	11.4	11.6	18.3	20.2	17%	4%	38%	0%	0%	67%	21%	4.2	0.0	0.0	3.1	1.0
2/05/2021	26.6	24.3	14.1	16.3	14.5	16.3	16.5	17%	4%	38%	13%	4%	67%	21%	1.9	1.3	0.0	1.9	1.6
3/05/2021	39.1	22.9	13.8	17.5	-	10.0	14.2	63%	13%	4%	42%	17%	4%	63%	0.0	3.0	-	0.0	2.5
4/05/2021	23.2	19.5	9.4	21.6	21.1	9.2	15.5	54%	8%	0%	58%	21%	4%	50%	0.0	6.3	0.9	0.0	2.0
5/05/2021	17.9	16.1	5.9	9.6	10.5	8.3	10.3	21%	21%	33%	4%	4%	46%	21%	0.0	0.7	0.0	0.3	1.3
6/05/2021	11.5	9.3	6.4	9.5	9.8	7.1	7.6	8%	25%	8%	21%	29%	29%	8%	0.2	1.0	1.4	0.1	0.1
7/05/2021	8.2	9.5	7.1	9.0	8.7	8.0	7.9	38%	13%	0%	17%	13%	21%	38%	0.0	1.1	0.0	0.3	0.2
8/05/2021	11.6	14.8	8.2	17.0	13.3	8.1	13.0	67%	0%	0%	88%	33%	0%	63%	0.0	5.9	0.9	0.0	1.5
9/05/2021	24.3	20.0	10.8	17.9	19.1	10.2	15.0	63%	21%	4%	33%	8%	21%	58%	0.0	1.9	0.9	0.5	1.6
10/05/2021	14.8	13.7	9.7	24.7	23.2	10.4	22.5	67%	4%	0%	92%	33%	0%	58%	0.0	10.7	1.4	0.0	7.0
11/05/2021	14.2	18.2	11.1	15.3	14.8	17.7	18.2	75%	0%	0%	88%	25%	0%	58%	0.0	2.5	0.2	0.0	3.5
12/05/2021	13.8	18.1	11.4	13.4	15.0	11.4	20.1	42%	4%	33%	13%	0%	54%	42%	0.4	0.1	0.0	0.2	3.1
13/05/2021	12.9	22.7	10.3	20.0	15.3	10.0	17.8	63%	0%	0%	79%	29%	4%	33%	0.0	4.7	0.5	0.0	1.9
14/05/2021	13.5	16.5	10.6	23.9	14.6	8.8	19.1	50%	0%	0%	92%	50%	0%	42%	0.0	11.0	0.9	0.0	4.1



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
15/05/2021	12.9	17.0	8.9	29.8	20.6	9.0	23.1	46%	0%	0%	96%	54%	0%	38%	0.0	16.1	4.3	0.0	4.2
16/05/2021	11.4	22.5	9.5	31.4	16.1	7.8	23.2	42%	0%	0%	100%	58%	0%	33%	0.0	17.3	1.1	0.0	3.0
17/05/2021	19.3	21.2	12.6	21.4	21.1	13.5	20.4	29%	4%	8%	54%	25%	13%	21%	0.0	1.7	1.4	0.8	1.6
18/05/2021	22.5	25.7	17.3	20.7	23.4	21.3	23.6	42%	8%	13%	8%	4%	38%	42%	0.8	0.5	0.0	2.3	6.5
19/05/2021	20.8	22.6	10.8	21.0	14.3	9.9	14.6	71%	4%	0%	63%	13%	0%	58%	0.0	4.2	0.0	0.0	2.1
20/05/2021	23.7	28.7	14.0	18.8	21.2	14.8	-	54%	0%	17%	63%	17%	21%	54%	0.0	1.9	0.6	2.4	-
21/05/2021	23.0	27.9	16.8	21.0	20.5	17.2	28.1	29%	8%	29%	0%	4%	50%	29%	0.4	0.0	0.0	0.0	2.2
22/05/2021	23.2	25.3	11.7	14.3	13.1	17.8	15.3	25%	4%	8%	4%	8%	29%	25%	0.2	0.0	0.0	2.0	2.2
23/05/2021	17.3	23.8	-	11.7	14.2	15.3	18.4	54%	8%	25%	17%	0%	42%	54%	-	0.4	0.0	1.7	2.5
24/05/2021	15.4	20.1	-	15.9	-	15.4	18.5	25%	4%	42%	0%	0%	50%	33%	-	0.0	-	1.5	2.7
25/05/2021	12.0	15.4	7.1	2.1	9.9	8.2	8.3	58%	0%	8%	38%	8%	13%	58%	0.0	0.0	0.0	0.2	1.1
26/05/2021	20.8	15.5	11.1	16.3	17.9	8.3	18.3	29%	0%	0%	79%	63%	0%	25%	0.0	5.7	2.5	0.0	2.3
27/05/2021	11.5	16.9	-	24.2	29.3	6.0	16.1	71%	0%	0%	79%	25%	0%	67%	-	9.7	4.3	0.0	2.7
28/05/2021	24.8	37.7	10.4	24.2	17.6	8.3	19.5	46%	0%	29%	46%	0%	50%	42%	0.0	4.9	0.0	0.0	3.4
29/05/2021	27.3	23.5	9.7	20.5	18.3	11.1	14.4	0%	21%	25%	0%	0%	75%	0%	0.0	0.0	0.0	0.0	0.0
30/05/2021	23.9	26.6	8.8	19.6	19.5	10.5	13.9	4%	13%	25%	8%	13%	58%	8%	0.3	0.2	0.8	0.0	0.0
31/05/2021	29.7	31.9	9.5	17.6	16.4	13.3	16.8	42%	13%	21%	17%	4%	29%	46%	2.1	2.2	0.0	2.9	5.5
1/06/2021	19.4	28.1	10.7	22.8	16.9	9.9	18.1	71%	4%	0%	54%	25%	0%	71%	0.0	6.8	0.0	0.0	2.3
2/06/2021	32.3	29.0	10.0	29.0	29.5	14.1	17.5	67%	4%	4%	50%	8%	4%	67%	0.0	7.6	0.2	0.0	4.3
3/06/2021	24.4	19.6	11.1	26.0	27.4	11.6	20.7	54%	13%	4%	33%	17%	4%	58%	0.0	2.1	1.2	0.0	4.5
4/06/2021	9.8	8.0	6.4	12.8	9.5	6.1	9.8	42%	0%	0%	92%	58%	0%	33%	0.0	5.7	1.1	0.0	1.3
5/06/2021	16.0	10.4	6.0	13.5	12.3	6.5	10.4	75%	0%	0%	71%	25%	0%	63%	0.0	4.0	0.9	0.0	2.4
6/06/2021	13.8	14.0	7.0	13.3	10.6	7.2	11.3	79%	4%	0%	63%	0%	4%	63%	0.0	2.8	0.0	0.0	1.2
7/06/2021	17.9	21.3	7.7	18.6	14.2	8.5	13.9	67%	0%	0%	58%	21%	0%	71%	0.0	4.2	0.0	0.0	3.1
8/06/2021	17.8	15.5	8.5	16.5	19.4	9.0	16.1	50%	0%	0%	38%	17%	4%	46%	0.0	2.5	1.3	0.0	3.1
9/06/2021	4.2	4.7	2.4	4.1	3.6	3.0	-	21%	0%	0%	100%	79%	0%	13%	0.0	1.3	0.8	0.0	-
10/06/2021	6.6	4.0	4.7	5.2	4.6	3.5	-	58%	8%	4%	25%	17%	4%	58%	0.2	0.4	0.2	0.0	-



Date	24-hour average level (µg/m³)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level (µg/m³)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
11/06/2021	5.9	6.5	5.5	6.8	5.1	5.0	4.9	4%	0%	0%	100%	96%	0%	0%	0.0	1.7	0.4	0.0	0.0
12/06/2021	6.2	10.1	4.9	7.8	-	4.7	7.5	13%	0%	0%	100%	88%	0%	4%	0.0	2.0	-	0.0	0.0
13/06/2021	7.4	10.1	4.6	14.5	-	4.2	9.8	42%	0%	0%	92%	58%	0%	25%	0.0	6.4	-	0.0	1.2
14/06/2021	13.4	7.9	5.8	13.7	-	5.7	7.9	79%	0%	4%	79%	13%	4%	67%	0.0	6.5	-	0.0	1.2
15/06/2021	13.2	14.6	7.7	13.8	-	5.6	10.5	58%	8%	4%	75%	25%	4%	58%	0.0	5.1	-	0.0	1.0
16/06/2021	12.4	23.5	8.9	14.5	13.8	8.9	11.5	54%	4%	13%	42%	4%	25%	50%	0.1	3.2	0.0	0.1	1.0
17/06/2021	9.3	10.0	4.6	13.3	8.2	5.3	13.9	13%	0%	0%	100%	88%	0%	0%	0.0	5.1	0.6	0.0	0.0
18/06/2021	7.7	9.2	4.3	10.8	6.1	4.4	13.9	8%	0%	0%	100%	92%	0%	4%	0.0	3.6	0.1	0.0	0.0
19/06/2021	9.7	7.8	5.6	12.5	8.8	5.0	11.2	25%	33%	0%	58%	38%	0%	17%	0.0	3.1	0.1	0.0	1.5
20/06/2021	14.8	10.3	7.4	14.1	13.6	7.5	8.2	0%	50%	8%	0%	0%	79%	0%	0.0	0.0	0.0	0.0	0.0
21/06/2021	16.0	23.5	9.9	13.5	12.6	10.6	12.2	0%	0%	25%	4%	4%	67%	0%	0.0	0.3	0.0	0.3	0.0
22/06/2021	16.7	6.9	11.6	11.5	11.7	13.6	15.5	25%	8%	46%	4%	4%	54%	38%	2.9	0.0	0.0	1.2	3.3
23/06/2021	16.3	15.3	12.0	14.4	11.4	10.3	15.3	50%	13%	8%	38%	0%	21%	42%	2.0	2.1	0.0	0.2	2.6
24/06/2021	15.1	17.7	9.6	19.1	18.1	8.5	20.6	75%	0%	0%	92%	25%	0%	42%	0.0	5.9	1.6	0.0	4.3
25/06/2021	6.0	9.2	5.5	14.9	8.0	4.3	14.2	21%	0%	0%	100%	79%	0%	4%	0.0	7.3	0.6	0.0	0.1
26/06/2021	8.3	11.9	5.9	17.7	10.1	5.3	15.6	29%	0%	0%	100%	71%	0%	17%	0.0	9.0	0.8	0.0	1.2
27/06/2021	14.1	14.5	5.7	11.8	12.9	5.3	12.3	71%	0%	8%	71%	8%	8%	50%	0.0	2.9	0.3	0.0	2.5
28/06/2021	22.8	20.4	13.8	17.1	17.6	15.3	22.4	50%	4%	21%	0%	0%	29%	50%	0.8	0.0	0.0	0.8	6.7
29/06/2021	9.6	19.3	10.9	8.7	10.0	11.1	16.3	0%	0%	42%	0%	0%	92%	0%	0.5	0.0	0.0	1.5	0.0
30/06/2021	10.6	19.4	9.5	9.8	9.4	2.7	13.8	25%	4%	46%	0%	0%	63%	25%	1.3	0.0	0.0	0.3	1.2
1/07/2021	12.1	17.0	16.6	12.0	13.4	7.8	15.5	25%	8%	25%	17%	8%	50%	21%	1.3	0.0	0.0	0.3	0.2
2/07/2021	7.9	7.6	5.3	10.3	9.2	4.8	9.1	63%	0%	0%	71%	33%	0%	46%	0.0	2.7	0.6	0.0	1.5
3/07/2021	8.6	9.1	4.7	11.6	9.1	4.2	10.0	88%	0%	0%	79%	13%	0%	83%	0.0	4.1	0.0	0.0	3.5
4/07/2021	9.3	10.3	5.5	13.9	9.0	6.7	-	67%	0%	0%	96%	33%	0%	54%	0.0	6.2	0.5	0.0	-
5/07/2021	10.6	12.5	7.1	13.8	10.1	3.4	13.8	83%	0%	0%	83%	17%	0%	71%	0.0	5.7	0.0	0.0	4.0
6/07/2021	16.2	12.4	5.6	13.3	15.3	4.7	12.5	83%	0%	4%	75%	4%	4%	79%	0.0	3.6	0.2	0.0	4.4
7/07/2021	24.5	31.5	11.3	17.8	17.1	15.1	15.1	46%	0%	33%	8%	0%	54%	46%	1.4	1.0	0.0	2.5	1.8

Date	24-hour average level (µg/m ³)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level (µg/m ³)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
8/07/2021	26.8	32.9	10.0	26.8	24.3	19.7	23.2	58%	4%	13%	25%	0%	29%	63%	0.0	0.4	0.0	0.4	5.8
9/07/2021	15.9	13.6	8.6	16.9	17.6	9.1	17.4	63%	0%	0%	58%	13%	0%	58%	0.0	2.2	0.3	0.0	4.3
10/07/2021	16.8	9.2	6.6	13.2	10.1	6.4	8.1	38%	42%	0%	38%	4%	38%	38%	0.0	1.5	0.0	0.0	0.4
11/07/2021	25.3	24.7	9.5	13.0	12.3	14.8	17.9	17%	0%	46%	4%	0%	63%	17%	0.0	0.2	0.0	1.3	0.5
12/07/2021	19.5	18.7	7.8	12.9	14.1	10.9	15.8	58%	13%	4%	8%	4%	8%	67%	0.0	0.1	0.0	0.0	3.7
13/07/2021	14.2	17.7	7.6	23.6	15.3	9.2	15.1	75%	0%	0%	83%	25%	0%	71%	0.0	10.9	1.0	0.0	3.5
14/07/2021	26.9	19.1	7.3	30.0	21.7	9.2	19.0	67%	0%	0%	79%	21%	0%	54%	0.0	15.6	1.4	0.0	4.7
15/07/2021	10.3	10.9	6.4	14.1	12.9	5.9	12.8	33%	0%	0%	96%	67%	0%	21%	0.0	5.7	3.2	0.0	1.0
16/07/2021	15.5	15.8	10.2	20.6	17.9	10.4	18.2	17%	0%	0%	100%	83%	0%	8%	0.0	7.6	3.2	0.0	0.1
17/07/2021	-	21.4	15.4	27.0	19.3	13.0	-	8%	0%	0%	100%	92%	0%	4%	0.0	10.2	3.5	0.0	-
18/07/2021	-	14.6	8.6	17.4	15.0	7.3	16.5	50%	0%	0%	100%	50%	0%	13%	0.0	6.5	1.4	0.0	1.2
19/07/2021	-	13.5	5.3	12.0	11.9	4.0	14.0	33%	0%	0%	96%	67%	0%	29%	0.0	4.0	1.5	0.0	0.6
20/07/2021	7.2	15.8	-	19.1	8.1	4.5	17.0	4%	0%	0%	100%	96%	0%	4%	-	9.9	0.4	0.0	0.0
21/07/2021	31.0	21.2	6.4	16.8	14.2	5.9	9.2	29%	17%	0%	38%	29%	25%	29%	0.0	3.4	3.5	0.0	0.6
22/07/2021	29.0	39.5	8.7	21.1	21.5	14.6	17.8	67%	8%	8%	50%	0%	21%	67%	0.0	4.1	0.0	0.6	4.1
23/07/2021	21.0	20.7	9.6	21.9	24.0	11.6	22.1	83%	4%	0%	58%	13%	0%	75%	0.0	4.1	1.8	0.0	6.3
24/07/2021	12.0	14.8	5.5	21.2	15.2	6.0	19.3	21%	0%	0%	100%	79%	0%	4%	0.0	10.2	5.0	0.0	1.0
25/07/2021	11.9	16.0	8.9	24.7	14.8	7.7	16.3	25%	0%	0%	100%	75%	0%	4%	0.0	12.7	1.3	0.0	0.1
26/07/2021	15.0	15.2	9.7	26.9	17.8	8.0	20.8	29%	0%	0%	100%	71%	0%	17%	0.0	14.2	3.4	0.0	1.3
27/07/2021	28.7	18.9	9.4	29.7	19.8	12.7	22.2	58%	0%	0%	83%	42%	0%	50%	0.0	14.5	2.9	0.0	7.5
28/07/2021	24.8	23.6	9.8	60.2	34.8	10.3	38.7	46%	0%	0%	100%	54%	0%	33%	0.0	55.8	10.0	0.0	5.0
29/07/2021	13.5	12.3	8.8	22.4	15.5	8.1	15.5	38%	0%	0%	96%	63%	0%	29%	0.0	11.9	1.4	0.0	2.2
30/07/2021	45.6	18.7	7.2	31.0	23.0	7.9	14.3	58%	0%	0%	79%	38%	0%	50%	0.0	17.0	1.7	0.0	1.6
31/07/2021	27.3	21.1	9.7	49.3	34.4	10.0	25.1	71%	0%	0%	96%	29%	0%	67%	0.0	33.5	6.6	0.0	6.6
1/08/2021	25.1	19.5	11.9	52.3	22.3	11.3	27.6	50%	0%	0%	83%	46%	0%	46%	0.0	32.9	4.1	0.0	6.3
2/08/2021	28.9	41.8	17.4	36.0	19.6	22.6	23.9	0%	4%	63%	0%	0%	100%	0%	0.8	0.0	0.0	2.5	0.0
3/08/2021	15.4	13.8	7.5	14.1	11.0	9.2	18.1	25%	0%	0%	88%	67%	0%	13%	0.0	3.8	0.3	0.0	0.5

Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
4/08/2021	10.6	11.5	6.8	26.6	15.8	5.2	20.0	38%	0%	0%	100%	63%	0%	0%	0.0	16.4	3.3	0.0	0.0
5/08/2021	-	9.7	5.5	15.4	15.3	4.2	11.7	50%	0%	0%	92%	46%	0%	8%	0.0	8.0	4.1	0.0	0.9
6/08/2021	-	14.8	6.9	18.3	17.2	5.4	17.4	58%	0%	0%	96%	42%	0%	33%	0.0	8.6	4.8	0.0	3.8
7/08/2021	11.2	21.0	8.2	21.4	15.1	5.9	16.3	42%	0%	0%	88%	58%	0%	33%	0.0	9.4	2.1	0.0	0.8
8/08/2021	24.4	29.1	11.4	17.9	20.7	12.5	22.6	38%	0%	54%	0%	0%	63%	38%	0.4	0.0	0.0	0.3	1.1
9/08/2021	32.4	35.8	18.3	19.8	20.0	24.0	27.0	4%	8%	50%	4%	0%	67%	8%	1.0	0.0	0.0	2.5	0.7
10/08/2021	33.3	21.5	12.2	17.6	15.8	15.0	16.8	83%	4%	4%	46%	17%	4%	75%	0.2	3.2	0.9	0.9	2.6
11/08/2021	37.4	18.5	12.4	25.5	23.6	18.6	25.4	92%	0%	0%	79%	8%	0%	75%	0.0	6.4	0.6	0.0	7.3
12/08/2021	24.3	23.2	13.7	21.6	17.5	11.7	22.2	25%	4%	4%	67%	46%	21%	4%	0.0	3.7	0.3	0.2	0.0
13/08/2021	42.4	26.4	9.3	21.9	20.8	18.7	21.2	46%	4%	4%	21%	17%	13%	46%	0.0	2.9	0.0	1.3	4.5
14/08/2021	37.3	50.1	20.7	26.3	27.5	24.6	27.7	38%	0%	21%	4%	4%	54%	38%	0.7	0.0	1.0	4.6	2.6
15/08/2021	33.5	28.5	16.1	41.9	22.9	13.4	31.8	50%	0%	0%	75%	46%	0%	42%	0.0	22.0	2.1	0.0	2.1
16/08/2021	15.1	45.4	11.9	32.8	22.6	7.4	35.0	38%	0%	0%	100%	63%	0%	25%	0.0	13.0	4.1	0.0	2.1
17/08/2021	25.1	33.4	12.3	18.3	23.3	14.5	21.2	58%	0%	8%	42%	4%	25%	50%	0.0	3.1	0.5	2.1	3.0
18/08/2021	56.3	46.5	27.9	29.5	25.6	28.4	28.8	21%	4%	29%	4%	0%	54%	17%	1.7	0.0	0.0	1.8	3.9
19/08/2021	69.4	35.4	17.9	25.2	23.6	17.2	23.5	58%	0%	0%	46%	21%	0%	58%	0.0	1.9	0.6	0.0	2.3
20/08/2021	43.1	41.9	15.4	34.0	35.0	13.3	24.8	79%	0%	0%	63%	21%	0%	71%	0.0	6.1	1.9	0.0	4.0
21/08/2021	40.1	22.0	10.2	30.4	34.7	10.0	23.5	79%	0%	0%	71%	13%	0%	63%	0.0	10.8	1.2	0.0	4.7
22/08/2021	70.0	26.6	16.5	33.1	29.5	16.4	22.2	71%	8%	0%	50%	8%	4%	71%	0.0	4.1	0.4	0.0	4.0
23/08/2021	-	17.7	18.0	37.8	22.9	12.1	39.8	71%	0%	0%	63%	17%	0%	75%	0.0	11.9	0.0	0.0	16.6
24/08/2021	-	4.5	3.3	3.9	3.6	2.8	3.9	17%	0%	4%	83%	75%	4%	4%	0.0	1.1	0.4	0.1	0.0
25/08/2021	5.7	7.0	6.1	9.4	6.7	5.0	8.2	33%	0%	0%	100%	67%	0%	21%	0.0	3.3	0.4	0.0	0.9
26/08/2021	13.0	11.0	7.5	11.4	10.4	8.0	13.6	67%	0%	0%	71%	13%	4%	42%	0.0	3.1	0.1	0.5	2.7
27/08/2021	15.4	10.0	7.1	25.2	11.6	7.6	20.3	42%	0%	0%	100%	58%	0%	33%	0.0	14.7	0.6	0.0	2.0
28/08/2021	14.4	14.4	8.5	19.6	14.7	7.5	19.5	88%	0%	0%	100%	13%	0%	54%	0.0	8.7	0.0	0.0	4.4
29/08/2021	32.9	21.6	12.2	20.8	20.3	13.4	17.4	58%	4%	13%	42%	4%	17%	58%	0.0	4.9	0.0	1.0	2.0
30/08/2021	28.9	21.1	8.2	23.6	20.5	9.5	19.4	58%	0%	0%	58%	29%	0%	58%	0.0	7.7	2.8	0.0	4.2



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
31/08/2021	53.0	34.5	9.8	28.6	27.4	12.0	19.6	58%	4%	0%	67%	21%	8%	58%	0.0	7.6	1.9	0.0	2.7
1/09/2021	31.5	42.9	22.4	34.1	28.8	23.9	27.3	50%	0%	50%	42%	0%	50%	50%	4.1	8.6	0.0	5.4	4.6
2/09/2021	40.4	36.6	27.1	26.6	24.6	33.7	33.3	13%	4%	46%	0%	0%	67%	13%	5.3	0.0	0.0	3.5	2.7
3/09/2021	30.9	16.6	12.8	20.2	20.2	19.3	20.7	67%	4%	13%	38%	8%	13%	58%	0.3	3.6	0.3	2.4	5.5
4/09/2021	31.3	18.6	11.4	36.7	24.7	14.1	25.2	63%	0%	0%	92%	38%	0%	50%	0.0	17.8	2.0	0.0	4.9
5/09/2021	6.9	6.0	4.2	12.3	6.8	3.3	11.5	8%	0%	0%	100%	92%	0%	8%	0.0	6.4	1.6	0.0	0.1
6/09/2021	18.2	19.8	12.1	16.7	10.7	10.6	18.0	29%	4%	8%	54%	33%	17%	17%	0.0	3.3	0.1	0.0	0.9
7/09/2021	28.4	19.1	8.8	34.1	19.8	7.5	28.1	42%	0%	0%	71%	46%	0%	38%	0.0	12.7	2.0	0.0	2.7
8/09/2021	48.9	21.7	13.5	31.2	27.9	14.8	33.5	83%	0%	0%	58%	8%	0%	63%	0.0	7.9	1.0	0.0	13.2
9/09/2021	24.1	25.6	9.9	41.9	22.6	7.6	38.0	25%	0%	0%	100%	75%	0%	13%	0.0	22.1	2.9	0.0	1.3
10/09/2021	25.5	26.0	17.9	28.2	24.8	14.0	40.0	25%	0%	8%	75%	50%	17%	8%	1.4	5.4	1.1	1.1	0.8
11/09/2021	28.5	22.7	24.0	30.0	29.0	13.9	35.6	71%	0%	0%	71%	29%	0%	63%	0.0	8.8	1.5	0.0	9.7
12/09/2021	65.4	32.8	35.0	65.0	47.8	17.9	64.1	67%	0%	0%	83%	29%	0%	58%	0.0	44.8	2.9	0.0	32.3
13/09/2021	27.1	30.4	19.5	21.9	24.3	20.8	32.8	0%	13%	38%	21%	25%	54%	0%	2.9	1.0	0.9	1.9	0.0
14/09/2021	18.5	7.6	5.4	9.9	9.8	4.4	7.8	0%	42%	17%	0%	0%	71%	0%	0.0	0.0	0.0	0.0	0.0
15/09/2021	21.9	14.0	6.8	12.7	10.6	8.1	10.2	13%	13%	29%	8%	4%	67%	8%	0.0	0.4	0.2	1.2	0.2
16/09/2021	24.3	30.8	10.2	14.0	11.5	10.0	12.9	8%	4%	50%	17%	13%	71%	8%	0.7	0.1	0.4	1.1	0.0
17/09/2021	26.0	18.1	11.0	23.1	25.2	19.6	21.5	46%	17%	13%	17%	13%	21%	50%	0.0	0.8	0.3	1.2	4.5
18/09/2021	37.8	28.3	15.6	32.6	34.1	17.5	41.3	54%	0%	0%	88%	46%	0%	33%	0.0	7.2	4.3	0.0	5.3
19/09/2021	9.4	13.1	-	25.3	12.9	5.2	18.3	42%	0%	0%	92%	58%	0%	33%	-	13.0	1.1	0.0	1.5
20/09/2021	-	21.1	14.3	38.2	19.4	7.4	32.0	29%	0%	0%	83%	63%	0%	21%	0.0	16.1	0.9	0.0	0.9
21/09/2021	-	23.9	19.5	28.0	19.3	11.5	31.0	13%	4%	8%	38%	29%	13%	13%	0.0	8.6	2.4	0.0	2.1
22/09/2021	-	19.1	9.3	31.0	32.9	13.6	25.5	58%	0%	4%	33%	4%	4%	63%	0.0	8.6	0.0	0.0	7.8
23/09/2021	-	26.4	9.0	34.1	25.6	8.6	37.2	50%	0%	0%	100%	50%	0%	17%	0.0	14.9	4.2	0.0	0.7
24/09/2021	-	26.9	10.9	51.6	24.6	8.6	41.2	46%	0%	0%	100%	54%	0%	33%	0.0	43.4	1.8	0.0	6.4
25/09/2021	-	35.8	22.0	50.1	34.2	20.0	31.9	46%	0%	38%	50%	13%	42%	38%	3.7	34.7	0.0	1.6	4.0
26/09/2021	-	28.2	15.1	9.0	9.9	10.8	9.7	0%	0%	88%	0%	0%	100%	0%	5.1	0.0	0.0	2.2	0.0



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
27/09/2021	-	39.9	21.0	13.0	11.2	18.1	16.7	0%	4%	75%	0%	0%	96%	0%	6.8	0.0	0.0	5.8	0.0
28/09/2021	-	46.4	24.8	21.6	21.3	29.3	24.6	21%	13%	13%	4%	4%	42%	29%	1.2	0.0	0.0	5.2	1.4
29/09/2021	-	44.9	19.3	19.2	24.4	24.5	27.1	21%	13%	25%	29%	17%	33%	29%	2.1	2.2	0.6	7.0	1.2
30/09/2021	-	18.3	9.5	13.0	12.2	11.0	12.7	50%	8%	13%	67%	21%	13%	46%	0.1	2.7	0.1	0.2	1.1
1/10/2021	-	10.4	9.4	11.8	13.5	8.7	12.1	42%	0%	0%	58%	29%	0%	33%	0.0	1.4	0.4	0.0	1.2
2/10/2021	-	9.0	5.1	11.1	11.0	7.4	11.0	33%	0%	0%	100%	67%	0%	17%	0.0	4.6	4.1	0.0	0.6
3/10/2021	-	13.8	7.5	28.2	17.6	6.6	19.7	29%	0%	0%	100%	71%	0%	13%	0.0	17.9	3.5	0.0	2.4
4/10/2021	-	21.1	12.3	42.6	23.8	9.5	40.4	33%	4%	0%	79%	63%	4%	21%	0.0	19.5	4.9	0.0	2.1
5/10/2021	-	23.8	13.1	58.7	21.0	10.3	38.4	13%	0%	0%	100%	88%	0%	0%	0.0	46.5	3.8	0.0	0.0
6/10/2021	-	26.0	13.9	34.6	-	13.6	34.8	63%	0%	0%	88%	38%	0%	42%	0.0	10.8	-	0.0	9.4
7/10/2021	-	42.7	19.0	55.9	-	23.4	63.6	54%	0%	17%	50%	29%	17%	54%	0.1	33.5	-	0.0	27.5
8/10/2021	-	52.9	38.4	32.0	32.6	31.0	35.5	0%	0%	63%	0%	0%	92%	0%	3.2	0.0	0.0	0.7	0.0
9/10/2021	-	37.4	18.9	39.9	30.6	24.1	28.7	50%	13%	0%	54%	29%	0%	38%	0.0	11.6	3.7	0.0	3.0
10/10/2021	-	36.6	23.1	47.1	41.9	22.3	55.8	50%	8%	0%	50%	25%	0%	33%	0.0	11.7	2.8	0.0	7.4
11/10/2021	-	6.9	5.5	-	6.2	1.6	8.9	4%	0%	54%	17%	13%	79%	0%	0.3	-	0.3	0.0	0.0
12/10/2021	-	8.7	7.1	6.9	7.6	4.3	13.3	0%	0%	83%	0%	0%	100%	0%	0.1	0.0	0.0	0.0	0.0
13/10/2021	-	8.4	6.0	6.0	6.2	4.8	9.3	0%	0%	67%	0%	0%	100%	0%	0.2	0.0	0.0	0.5	0.0
14/10/2021	-	16.0	11.1	13.2	14.4	8.8	15.9	58%	0%	29%	17%	0%	38%	58%	0.2	1.7	0.0	1.6	4.0
15/10/2021	-	19.5	16.1	24.4	21.5	11.4	26.5	33%	0%	0%	88%	63%	0%	25%	0.0	6.1	2.8	0.0	1.9
16/10/2021	-	11.0	7.5	18.8	11.5	5.8	20.4	4%	0%	0%	100%	96%	0%	0%	0.0	8.5	1.4	0.0	0.0
17/10/2021	-	17.1	12.7	18.1	11.1	11.6	18.1	42%	4%	4%	71%	29%	25%	33%	0.0	6.0	0.3	0.2	1.8
18/10/2021	-	-	13.0	24.9	20.5	16.9	18.8	50%	8%	0%	50%	29%	0%	58%	0.0	5.7	2.5	0.0	2.5
19/10/2021	15.5	31.6	16.4	26.1	26.3	16.5	28.7	54%	0%	33%	54%	13%	33%	42%	1.6	4.8	0.1	1.8	4.5
20/10/2021	27.6	27.3	16.9	10.5	10.5	19.3	15.3	0%	4%	63%	0%	0%	83%	0%	2.2	0.0	0.0	5.0	0.0
21/10/2021	18.4	30.3	20.7	11.2	11.0	21.9	27.5	0%	0%	88%	0%	0%	88%	0%	5.2	0.0	0.0	5.0	0.0
22/10/2021	-	28.2	22.4	11.7	12.0	18.0	30.6	0%	0%	63%	0%	0%	83%	0%	7.7	0.0	0.0	4.1	0.0
23/10/2021	22.2	25.7	18.4	21.6	22.6	22.6	24.5	33%	4%	8%	50%	21%	13%	46%	0.1	2.3	1.6	3.3	3.3



Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
24/10/2021	17.3	22.6	13.9	14.3	15.6	14.2	20.4	50%	4%	21%	50%	8%	38%	33%	1.2	1.0	0.0	2.3	1.2
25/10/2021	30.0	32.0	16.5	17.0	17.4	16.4	28.3	29%	4%	21%	54%	33%	29%	21%	0.9	0.5	0.7	1.3	1.0
26/10/2021	26.7	57.9	22.5	18.3	19.5	22.7	25.5	0%	0%	54%	0%	0%	88%	4%	2.4	0.0	0.0	2.3	0.0
27/10/2021	36.2	37.1	17.8	27.5	29.3	26.3	26.7	38%	4%	8%	38%	25%	17%	38%	0.0	2.0	1.6	5.1	3.6
28/10/2021	59.4	43.9	38.3	40.8	42.5	18.1	35.7	42%	0%	4%	54%	38%	4%	33%	0.0	4.5	4.0	0.0	1.8
29/10/2021	67.2	74.6	34.1	65.4	61.7	26.3	82.0	54%	0%	0%	92%	46%	0%	33%	0.0	37.7	7.2	0.0	17.5
30/10/2021	55.3	56.9	37.7	31.1	30.0	25.8	30.2	13%	0%	54%	8%	4%	71%	13%	8.5	0.6	0.0	1.5	0.1
31/10/2021	17.7	35.9	27.8	19.5	14.4	18.7	25.6	0%	0%	67%	0%	0%	96%	0%	7.8	0.0	0.0	2.2	0.0
1/11/2021	32.9	50.2	42.8	25.9	23.8	29.8	35.4	13%	8%	42%	8%	4%	63%	13%	16.0	0.2	1.1	6.0	1.4
2/11/2021	19.7	40.8	42.4	21.8	14.4	26.5	35.7	0%	0%	92%	0%	0%	100%	0%	22.8	0.0	0.0	7.3	0.0
3/11/2021	15.6	42.6	29.2	18.7	12.3	24.7	38.7	0%	8%	50%	0%	0%	100%	0%	6.1	0.0	0.0	5.4	0.0
4/11/2021	18.2	34.2	22.0	16.9	20.3	26.5	26.3	0%	0%	38%	4%	4%	63%	0%	1.1	0.0	0.0	5.2	0.0
5/11/2021	10.8	13.0	6.8	7.4	8.3	8.4	14.8	0%	13%	33%	0%	4%	83%	0%	0.4	0.0	0.0	0.9	0.0
6/11/2021	14.6	21.1	12.4	14.9	13.9	13.7	16.8	21%	0%	17%	33%	17%	38%	25%	0.5	2.2	1.0	2.2	1.0
7/11/2021	18.1	25.3	14.3	18.5	17.3	16.9	20.6	25%	25%	33%	25%	13%	42%	25%	0.1	2.3	1.7	2.1	1.3
8/11/2021	13.7	16.0	11.5	12.7	12.1	13.5	16.0	21%	0%	42%	4%	0%	54%	21%	0.6	0.1	0.0	2.1	0.7
9/11/2021	18.6	25.6	19.3	16.0	16.2	21.0	22.1	13%	4%	33%	4%	4%	75%	17%	2.2	0.0	0.1	4.3	0.1
10/11/2021	16.8	23.2	15.7	12.4	11.9	15.1	18.3	29%	0%	25%	25%	4%	42%	25%	2.4	0.4	0.0	2.8	1.1
11/11/2021	8.6	8.6	6.9	9.0	7.7	5.9	9.0	29%	8%	29%	38%	8%	58%	8%	0.1	0.3	0.0	0.0	0.2
12/11/2021	27.6	19.9	9.8	34.3	27.6	19.5	33.7	8%	8%	0%	71%	63%	13%	4%	0.0	8.6	3.8	0.0	0.0
13/11/2021	15.0	10.9	10.6	30.7	12.6	6.6	31.4	0%	0%	0%	100%	100%	0%	0%	0.0	16.2	1.2	0.0	0.0
14/11/2021	10.4	9.3	8.0	23.2	13.1	6.3	22.7	0%	0%	0%	100%	100%	0%	0%	0.0	12.1	3.3	0.0	0.0
15/11/2021	15.8	14.5	14.0	36.2	22.4	8.9	37.2	4%	0%	0%	100%	96%	0%	4%	0.0	18.2	6.5	0.0	0.3
16/11/2021	17.1	26.3	14.5	17.2	13.1	11.5	21.8	29%	0%	29%	67%	38%	33%	21%	1.0	2.9	0.1	0.6	1.3
17/11/2021	16.9	67.1	17.3	13.1	15.3	21.4	25.2	0%	0%	83%	0%	0%	100%	0%	3.3	0.0	0.0	5.7	0.0
18/11/2021	22.3	32.4	13.7	25.5	23.1	20.3	22.7	21%	0%	13%	54%	38%	13%	25%	0.0	5.5	2.2	0.2	2.6
19/11/2021	31.6	26.6	16.3	38.6	29.5	19.2	40.7	46%	0%	0%	88%	54%	0%	38%	0.0	12.4	1.2	0.0	7.4



Date	24-hour average level (µg/m ³)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level (µg/m ³)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
20/11/2021	23.4	22.5	14.5	25.9	24.5	19.8	24.7	21%	4%	17%	29%	21%	29%	17%	2.3	5.2	2.7	1.6	0.6
21/11/2021	6.1	6.2	4.3	5.8	5.4	3.2	5.9	0%	4%	42%	0%	0%	96%	0%	0.3	0.0	0.0	0.2	0.0
22/11/2021	10.7	10.9	9.1	10.0	11.0	8.6	11.4	0%	0%	71%	0%	0%	100%	0%	0.9	0.0	0.0	0.7	0.0
23/11/2021	9.8	19.1	9.2	9.6	10.0	8.3	11.9	0%	0%	83%	0%	0%	100%	0%	0.7	0.0	0.0	0.4	0.0
24/11/2021	13.5	24.4	13.2	10.6	12.1	15.7	15.7	0%	4%	58%	0%	0%	88%	0%	0.4	0.0	0.0	3.0	0.0
25/11/2021	8.2	12.6	-	9.0	10.5	9.2	11.9	17%	13%	42%	29%	21%	54%	17%	-	0.2	0.3	0.7	0.7
26/11/2021	4.0	3.5	-	5.0	3.8	-	6.9	4%	0%	67%	17%	13%	79%	0%	-	0.2	0.2	-	0.0
27/11/2021	9.3	7.1	6.8	9.2	8.8	-	11.8	0%	0%	88%	0%	0%	100%	0%	0.0	0.0	0.0	-	0.0
28/11/2021	20.9	16.5	12.5	16.9	17.2	-	21.3	0%	0%	88%	0%	0%	100%	0%	0.1	0.0	0.0	-	0.0
29/11/2021	23.3	26.7	17.8	19.8	21.2	-	25.9	0%	8%	63%	0%	0%	92%	0%	0.3	0.0	0.0	-	0.0
30/11/2021	17.0	15.6	12.9	14.2	15.2	14.8	27.0	0%	4%	67%	0%	4%	88%	0%	0.5	0.0	0.2	1.2	0.0
1/12/2021	6.2	12.6	7.8	6.4	6.8	10.8	15.5	0%	0%	75%	0%	0%	100%	0%	0.9	0.0	0.0	2.8	0.0
2/12/2021	7.8	19.9	11.1	8.5	7.6	12.9	16.3	0%	0%	75%	0%	0%	100%	0%	2.5	0.0	0.0	3.6	0.0
3/12/2021	31.1	28.1	15.8	18.4	22.0	20.1	23.1	42%	0%	42%	25%	0%	54%	38%	1.2	1.1	0.0	0.3	2.8
4/12/2021	19.8	28.0	19.5	20.7	20.9	22.4	25.2	8%	0%	75%	0%	0%	88%	8%	1.0	0.0	0.0	2.2	0.4
5/12/2021	18.9	25.2	14.2	15.3	14.4	15.9	23.0	0%	0%	96%	0%	0%	100%	0%	0.3	0.0	0.0	0.5	0.0
6/12/2021	21.1	26.7	18.2	15.6	16.7	16.1	29.5	0%	0%	75%	0%	0%	100%	0%	1.4	0.0	0.0	0.5	0.0
7/12/2021	11.3	12.3	9.9	11.1	13.5	10.4	13.3	42%	8%	13%	58%	17%	13%	29%	0.0	1.2	0.4	0.0	1.1
8/12/2021	10.6	15.2	9.8	10.7	11.6	11.5	14.3	4%	4%	42%	21%	17%	58%	4%	0.5	0.1	0.0	1.1	0.0
9/12/2021	8.7	11.6	8.4	8.8	9.0	9.4	-	0%	8%	17%	8%	17%	46%	0%	0.1	0.3	0.1	0.8	-
10/12/2021	17.8	11.6	10.0	24.3	20.1	10.2	-	4%	4%	4%	67%	71%	8%	0%	0.0	10.2	5.4	0.0	-
11/12/2021	17.1	22.2	8.3	10.6	10.0	11.0	11.5	0%	13%	58%	0%	0%	88%	0%	0.9	0.0	0.0	2.2	0.0
12/12/2021	15.4	25.8	14.7	14.8	13.8	17.4	17.2	0%	0%	88%	0%	0%	96%	0%	2.4	0.0	0.0	3.6	0.0
13/12/2021	22.4	40.9	21.1	21.0	18.8	25.5	21.2	0%	17%	58%	0%	0%	88%	4%	2.3	0.0	0.0	3.9	0.1
14/12/2021	22.2	36.1	23.1	20.3	19.8	22.8	23.8	21%	0%	54%	8%	8%	71%	21%	3.2	0.4	0.4	2.8	1.1
15/12/2021	41.8	43.0	28.3	36.2	-	26.3	41.3	42%	4%	13%	25%	0%	25%	46%	0.0	2.8	-	0.5	7.4
16/12/2021	20.4	29.7	18.8	17.8	-	18.6	20.1	0%	0%	67%	0%	0%	71%	0%	1.6	0.0	-	1.2	0.0

Date	24-hour average level ($\mu\text{g}/\text{m}^3$)							Percentage of time downwind (%)							HVO South's estimated max. contribution to level ($\mu\text{g}/\text{m}^3$)				
	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Golden Highway	Howick	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth	Jerrys Plains	Knodlers Lane	Maison Dieu	Wandewoi	Warkworth
17/12/2021	-	-	21.2	-	19.9	-	23.8	0%	0%	83%	0%	0%	96%	0%	2.0	-	0.0	-	0.0
18/12/2021	-	-	16.0	-	32.0	-	33.6	46%	4%	0%	46%	21%	4%	46%	0.0	-	2.4	-	10.1
19/12/2021	24.9	27.1	14.5	31.3	33.9	18.5	38.4	38%	0%	4%	79%	42%	4%	29%	0.0	8.3	5.2	0.3	3.9
20/12/2021	25.9	26.5	15.5	24.4	26.6	15.8	25.5	17%	0%	8%	25%	29%	21%	25%	0.0	2.1	2.0	0.0	1.3
21/12/2021	28.4	34.2	23.3	29.1	32.1	26.7	38.1	42%	0%	17%	38%	21%	21%	42%	0.0	1.4	1.6	0.0	3.8
22/12/2021	17.3	20.1	-	20.4	24.7	-	23.5	25%	0%	33%	42%	21%	33%	21%	-	0.8	1.2	-	1.0
23/12/2021	16.9	18.2	15.3	19.8	20.0	-	26.0	0%	4%	54%	0%	0%	79%	0%	0.9	0.0	0.0	-	0.0
24/12/2021	12.3	13.3	12.9	19.8	13.4	12.5	16.0	0%	0%	83%	0%	0%	96%	0%	0.7	0.0	0.0	0.4	0.0
25/12/2021	8.3	11.7	11.6	15.8	14.0	10.8	12.8	4%	8%	42%	4%	0%	58%	8%	0.3	0.0	0.0	0.1	0.0
26/12/2021	9.8	11.1	10.9	12.3	11.6	10.2	11.7	0%	4%	67%	0%	0%	79%	0%	0.8	0.0	0.0	0.1	0.0
27/12/2021	11.5	9.0	8.5	9.7	12.1	10.5	13.6	0%	0%	46%	0%	0%	100%	0%	0.5	0.0	0.0	1.0	0.0
28/12/2021	6.9	7.2	7.5	7.6	9.0	8.2	10.7	0%	8%	58%	0%	0%	96%	0%	0.4	0.0	0.0	0.6	0.0
29/12/2021	8.0	10.8	10.4	9.0	11.4	10.0	11.8	0%	8%	67%	0%	0%	96%	0%	1.0	0.0	0.0	1.2	0.0
30/12/2021	8.9	12.7	10.4	9.9	10.0	10.9	13.4	0%	0%	67%	0%	0%	92%	0%	0.6	0.0	0.0	0.9	0.0
31/12/2021	10.6	23.5	13.2	9.2	10.6	13.0	14.1	4%	0%	71%	4%	0%	92%	4%	2.4	0.0	0.0	2.3	0.0

- No data

Table B-4: 24-hour average PM₁₀ HVAS levels, percent time downwind and estimated contributions – HVO North

Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level ($\mu\text{g}/\text{m}^3$)				HVO North's estimated max. contribution to PM ₁₀ level ($\mu\text{g}/\text{m}^3$)		
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Cheshunt East	Kilburnie South
3/01/2021	6%	3%	4%	6%	11.7	15.0	12.0	10.0	12.0	3.3	0.3
9/01/2021	0%	0%	0%	2%	8.7	7.0	9.0	9.0	8.0	0.0	0.0
15/01/2021	46%	16%	8%	1%	23.4	43.0	56.0	43.0	35.0	19.6	0.0

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Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level (µg/m ³)					HVO North's estimated max. contribution to PM ₁₀ level (µg/m ³)	
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Cheshunt East	Kilburnie South
21/01/2021	2%	1%	0%	6%	20.7	15.0	19.0	14.0	32.0	0.0	11.3
27/01/2021	0%	0%	0%	0%	27.3	30.0	28.0	22.0	20.0	0.0	0.0
2/02/2021	1%	0%	0%	8%	9.5	7.0	7.8	8.0	9.4	0.0	0.0
8/02/2021	0%	0%	0%	0%	14.4	11.8	18.2	12.1	17.9	0.0	0.0
14/02/2021	0%	0%	0%	0%	18.5	12.5	21.1	14.1	18.4	0.0	0.0
20/02/2021	0%	0%	0%	0%	14.3	10.6	19.3	10.0	12.2	0.0	0.0
26/02/2021	63%	8%	49%	0%	15.5	20.3	19.2	17.9	15.5	4.8	0.0
4/03/2021	19%	6%	7%	13%	22.3	24.4	22.4	21.0	20.4	2.1	0.0
10/03/2021	0%	0%	0%	0%	19.6	18.4	17.4	17.4	22.5	0.0	0.0
16/03/2021	0%	0%	0%	0%	15.1	11.6	16.5	9.7	12.9	0.0	0.0
22/03/2021	0%	0%	0%	0%	5.8	5.1	5.9	3.9	6.9	0.0	0.0
28/03/2021	53%	22%	31%	3%	7.2	17.0	19.0	13.1	6.1	9.9	0.0
3/04/2021	0%	0%	0%	4%	10.3	8.1	13.9	6.0	8.5	0.0	0.0
9/04/2021	82%	13%	47%	0%	14.9	18.6	22.3	23.2	9.6	3.7	0.0
15/04/2021	81%	17%	38%	0%	20.5	34.5	24.2	29.0	13.1	14.0	0.0
21/04/2021	50%	3%	29%	1%	10.0	13.5	12.7	17.1	6.4	3.6	0.0
27/04/2021	14%	26%	5%	6%	9.8	12.4	14.7	9.8	8.4	2.6	0.0
3/05/2021	52%	28%	31%	0%	9.1	18.6	20.2	16.9	3.4	9.5	0.0
9/05/2021	48%	27%	25%	1%	8.1	12.2	18.4	16.6	5.3	4.2	0.0
15/05/2021	98%	7%	34%	0%	9.9	16.5	18.9	19.6	4.7	6.6	0.0
21/05/2021	4%	28%	1%	4%	11.7	19.2	24.7	11.7	9.3	0.0	0.0
27/05/2021	84%	7%	57%	0%	8.3	24.6	15.1	15.5	2.1	16.3	0.0
2/06/2021	50%	29%	29%	3%	10.9	34.1	45.4	24.9	8.5	23.2	0.0
8/06/2021	47%	26%	21%	12%	12.0	18.2	20.3	13.8	5.8	6.2	0.0
14/06/2021	79%	16%	51%	1%	5.0	6.8	11.0	5.7	0.7	1.8	0.0
20/06/2021	0%	0%	0%	0%	8.5	4.1	2.8	5.2	6.2	0.0	0.0
26/06/2021	99%	3%	32%	0%	6.0	6.8	5.6	8.8	1.0	0.8	0.0

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Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level (µg/m ³)					HVO North's estimated max. contribution to PM ₁₀ level (µg/m ³)	
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Cheshunt East	Kilburnie South
2/07/2021	79%	18%	30%	4%	5.1	6.6	9.7	5.7	2.9	1.5	0.0
8/07/2021	36%	33%	21%	10%	7.9	27.6	31.7	21.4	7.9	19.7	0.0
14/07/2021	79%	11%	47%	1%	9.9	23.8	24.2	18.1	4.0	13.9	0.0
20/07/2021	100%	0%	8%	0%	9.1	12.6	8.6	11.5	0.8	3.5	0.0
26/07/2021	97%	3%	31%	0%	9.4	17.3	20.4	20.1	4.5	7.9	0.0
1/08/2021	94%	13%	41%	0%	12.1	20.1	27.9	27.9	5.7	8.0	0.0
7/08/2021	100%	7%	34%	0%	9.0	17.4	15.0	15.9	0.9	8.4	0.0
13/08/2021	26%	24%	15%	10%	17.8	26.2	26.2	18.2	8.5	8.4	0.0
19/08/2021	53%	32%	26%	4%	20.2	28.7	35.0	21.7	10.3	8.5	0.0
25/08/2021	99%	1%	25%	0%	5.5	3.3	2.3	4.0	1.4	0.0	0.0
31/08/2021	67%	14%	38%	5%	9.1	33.0	28.6	24.2	5.5	23.9	0.0
6/09/2021	59%	4%	22%	3%	6.8	12.4	12.0	9.6	6.8	5.6	0.0
12/09/2021	90%	17%	51%	0%	25.1	63.4	88.1	56.7	14.6	36.4	0.0
18/09/2021	79%	12%	30%	3%	18.5	41.1	50.4	25.4	12.6	22.6	0.0
24/09/2021	100%	2%	36%	0%	13.1	29.4	38.4	36.3	5.8	16.3	0.0
30/09/2021	66%	3%	42%	10%	9.5	27.0	14.6	11.5	6.6	17.5	0.0
6/10/2021	93%	7%	43%	0%	15.8	45.6	-	30.6	9.6	29.8	0.0
12/10/2021	0%	0%	0%	0%	7.4	4.3	8.9	4.7	4.6	0.0	0.0
18/10/2021	49%	28%	18%	5%	12.2	23.8	-	19.9	11.4	11.6	0.0
24/10/2021	57%	8%	33%	0%	14.0	15.5	13.8	13.0	14.0	1.5	0.0
30/10/2021	13%	9%	6%	8%	29.9	29.1	52.9	30.3	23.2	0.0	0.0
5/11/2021	2%	0%	0%	0%	9.0	6.7	8.0	7.3	7.9	0.0	0.0
11/11/2021	48%	1%	32%	0%	5.9	7.3	9.4	8.3	9.9	1.4	0.0
17/11/2021	0%	0%	0%	0%	15.7	12.0	22.6	11.7	22.1	0.0	0.0
23/11/2021	0%	0%	0%	0%	8.9	6.6	7.3	5.6	9.6*	0.0	0.0
29/11/2021	0%	0%	0%	0%	20.6	17.2	20.0	16.2	19.7*	0.0	0.0
5/12/2021	0%	0%	0%	0%	15.6	11.6	15.7	10.2	19.1*	0.0	0.0

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Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level (µg/m ³)					HVO North's estimated max. contribution to PM ₁₀ level (µg/m ³)	
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Cheshunt East	Kilburnie South
11/12/2021	0%	0%	0%	1%	10.9	7.4	9.2	8.6	8.7*	0.0	0.0
17/12/2021	0%	0%	0%	1%	15.2	11.9	17.4	13.7	22.3*	0.0	0.0
23/12/2021	0%	1%	0%	2%	19.0	15.4	20.7	16.0	21.0*	0.0	0.0
29/12/2021	0%	0%	0%	0%	9.3	7.4	10.0	8.3	12.6*	0.0	0.0

- No data

*Supplementary data from the United Wambo Moses Crossing monitor as agreed by DPE

Table B-5: 24-hour average PM₁₀ HVAS levels, percent time downwind and estimated contributions – HVO South

Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level (µg/m ³)					HVO South's estimated max. contribution to PM ₁₀ level (µg/m ³)		
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Gliding Club	Long Point	Kilburnie South
3/01/2021	6%	75%	3%	25%	11.7	15.0	12.0	10.0	12.0	0.3	0.0	0.3
9/01/2021	0%	72%	0%	42%	8.7	7.0	9.0	9.0	8.0	0.3	0.0	0.0
15/01/2021	0%	90%	36%	26%	23.4	43.0	56.0	43.0	35.0	21.0	19.6	11.6
21/01/2021	5%	58%	1%	22%	20.7	15.0	19.0	14.0	32.0	0.0	0.0	11.3
27/01/2021	0%	14%	0%	6%	27.3	30.0	28.0	22.0	20.0	0.7	0.0	0.0
2/02/2021	7%	75%	1%	52%	9.5	7.0	7.8	8.0	9.4	0.0	0.0	0.0
8/02/2021	0%	83%	0%	53%	14.4	11.8	18.2	12.1	17.9	3.8	0.0	3.5
14/02/2021	0%	57%	0%	31%	18.5	12.5	21.1	14.1	18.4	2.6	0.0	0.0
20/02/2021	0%	80%	0%	49%	14.3	10.6	19.3	10.0	12.2	5.0	0.0	0.0
26/02/2021	3%	93%	11%	4%	15.5	20.3	19.2	17.9	15.5	3.7	2.4	0.0
4/03/2021	6%	75%	6%	12%	22.3	24.4	22.4	21.0	20.4	0.1	0.0	0.0
10/03/2021	0%	99%	0%	40%	19.6	18.4	17.4	17.4	22.5	0.0	0.0	2.9

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Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level (µg/m ³)					HVO South's estimated max. contribution to PM ₁₀ level (µg/m ³)		
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Gliding Club	Long Point	Kilburnie South
16/03/2021	0%	70%	0%	34%	15.1	11.6	16.5	9.7	12.9	1.4	0.0	0.0
22/03/2021	0%	59%	0%	19%	5.8	5.1	5.9	3.9	6.9	0.1	0.0	1.1
28/03/2021	10%	70%	3%	3%	7.2	17.0	19.0	13.1	6.1	11.9	0.0	0.0
3/04/2021	0%	72%	0%	33%	10.3	8.1	13.9	6.0	8.5	3.6	0.0	0.0
9/04/2021	1%	97%	40%	1%	14.9	18.6	22.3	23.2	9.6	7.4	8.3	0.0
15/04/2021	3%	93%	47%	0%	20.5	34.5	24.2	29.0	13.1	3.7	8.5	0.0
21/04/2021	20%	69%	28%	9%	10.0	13.5	12.7	17.1	6.4	2.8	7.2	0.0
27/04/2021	10%	73%	2%	33%	9.8	12.4	14.7	9.8	8.4	4.9	0.0	0.0
3/05/2021	17%	71%	11%	1%	9.1	18.6	20.2	16.9	3.4	11.1	7.8	0.0
9/05/2021	8%	68%	7%	0%	8.1	12.2	18.4	16.6	5.3	10.4	8.6	0.0
15/05/2021	1%	89%	50%	0%	9.9	16.5	18.9	19.6	4.7	9.0	9.7	0.0
21/05/2021	12%	48%	2%	19%	11.7	19.2	24.7	11.7	9.3	13.0	0.0	0.0
27/05/2021	10%	82%	21%	0%	8.3	24.6	15.1	15.5	2.1	6.8	7.2	0.0
2/06/2021	13%	72%	9%	6%	10.9	34.1	45.4	24.9	8.5	34.5	14.0	0.0
8/06/2021	7%	81%	9%	3%	12.0	18.2	20.3	13.8	5.8	8.3	1.8	0.0
14/06/2021	3%	91%	19%	4%	5.0	6.8	11.0	5.7	0.7	6.0	0.7	0.0
20/06/2021	0%	3%	0%	3%	8.5	4.1	2.8	5.2	6.2	0.0	0.0	0.0
26/06/2021	0%	100%	77%	0%	6.0	6.8	5.6	8.8	1.0	0.0	2.8	0.0
2/07/2021	0%	94%	42%	2%	5.1	6.6	9.7	5.7	2.9	4.6	0.6	0.0
8/07/2021	4%	67%	1%	4%	7.9	27.6	31.7	21.4	7.9	23.8	0.0	0.0
14/07/2021	5%	92%	38%	0%	9.9	23.8	24.2	18.1	4.0	14.3	8.2	0.0
20/07/2021	0%	99%	94%	0%	9.1	12.6	8.6	11.5	0.8	0.0	2.4	0.0
26/07/2021	0%	99%	80%	0%	9.4	17.3	20.4	20.1	4.5	11.0	10.7	0.0
1/08/2021	0%	100%	52%	0%	12.1	20.1	27.9	27.9	5.7	15.8	15.8	0.0
7/08/2021	0%	100%	69%	0%	9.0	17.4	15.0	15.9	0.9	6.0	6.9	0.0
13/08/2021	14%	74%	10%	8%	17.8	26.2	26.2	18.2	8.5	8.4	0.4	0.0
19/08/2021	15%	79%	19%	1%	20.2	28.7	35.0	21.7	10.3	14.8	1.5	0.0



Date	Percentage of time downwind (%)				24-hour average PM ₁₀ level (µg/m ³)					HVO South's estimated max. contribution to PM ₁₀ level (µg/m ³)		
	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Estimated Background	Cheshunt East	Gliding Club	Long Point	Kilburnie South	Gliding Club	Long Point	Kilburnie South
25/08/2021	0%	92%	77%	0%	5.5	3.3	2.3	4.0	1.4	0.0	0.0	0.0
31/08/2021	7%	72%	15%	1%	9.1	33.0	28.6	24.2	5.5	19.5	15.1	0.0
6/09/2021	12%	77%	40%	14%	6.8	12.4	12.0	9.6	6.8	5.2	2.8	0.0
12/09/2021	0%	99%	38%	0%	25.1	63.4	88.1	56.7	14.6	48.1	38.0	0.0
18/09/2021	6%	92%	56%	4%	18.5	41.1	50.4	25.4	12.6	37.8	6.9	0.0
24/09/2021	0%	99%	65%	0%	13.1	29.4	38.4	36.3	5.8	25.3	23.2	0.0
30/09/2021	3%	86%	27%	6%	9.5	27.0	14.6	11.5	6.6	5.1	2.0	0.0
6/10/2021	0%	100%	62%	0%	15.8	45.6	-	30.6	9.6	-	14.8	0.0
12/10/2021	0%	69%	0%	15%	7.4	4.3	8.9	4.7	4.6	1.5	0.0	0.0
18/10/2021	6%	82%	24%	1%	12.2	23.8	-	19.9	11.4	-	7.7	0.0
24/10/2021	1%	96%	26%	8%	14.0	15.5	13.8	13.0	14.0	0.0	0.0	0.0
30/10/2021	1%	72%	5%	28%	29.9	29.1	52.9	30.3	23.2	29.7	0.0	0.0
5/11/2021	9%	44%	0%	6%	9.0	6.7	8.0	7.3	7.9	0.0	0.0	0.0
11/11/2021	0%	83%	28%	19%	5.9	7.3	9.4	8.3	9.9	3.5	2.4	4.0
17/11/2021	0%	78%	0%	56%	15.7	12.0	22.6	11.7	22.1	6.9	0.0	6.4
23/11/2021	0%	57%	0%	27%	8.9	6.6	7.3	5.6	9.6*	0.0	0.0	0.7
29/11/2021	0%	56%	0%	20%	20.6	17.2	20.0	16.2	19.7*	0.0	0.0	0.0
5/12/2021	0%	77%	0%	47%	15.6	11.6	15.7	10.2	19.1*	0.1	0.0	3.5
11/12/2021	3%	63%	0%	39%	10.9	7.4	9.2	8.6	8.7*	0.0	0.0	0.0
17/12/2021	0%	77%	0%	40%	15.2	11.9	17.4	13.7	22.3*	2.2	0.0	7.1
23/12/2021	6%	75%	0%	29%	19.0	15.4	20.7	16.0	21.0*	1.7	0.0	2.0
29/12/2021	1%	69%	0%	43%	9.3	7.4	10.0	8.3	12.6*	0.7	0.0	3.3

- No data

*Supplementary data from the United Wambo Moses Crossing monitor as agreed by DPE

Appendix C

24-hour Average Levels and Estimated Contributions - PM_{2.5}



Table C-1: Detailed analyses for elevated 24-hour average PM_{2.5} readings

Date	Site	Measured 24-hour average PM _{2.5} level (µg/m ³)	HVO South	Estimated HVO South	Discussion
			24-hour average PM _{2.5} Incremental Criteria (µg/m ³)	Incremental contribution to PM _{2.5} level (µg/m ³)	
15/1/2021	Maison Dieu	48.0	25	19.7	Investigated, site within limits
27/1/2021	Maison Dieu	39.0	25	0	Investigated, result negligible
10/3/2021	Kilburnie South	29.0	25	0.2	Investigated, site within limits
12/9/2021	Maison Dieu	29.1	25	14.7	Investigated, site within limits

Table C-2: 24-hour average PM_{2.5} HVAS levels, percent time downwind and estimated contributions – HVO South

Date	Percentage of time downwind of HVO South (%)		24-hour average PM _{2.5} level (µg/m ³)			HVO South's estimated max. contribution to PM _{2.5} level (µg/m ³)	
	Maison Dieu	Kilburnie South	Background	Maison Dieu	Kilburnie South	Maison Dieu	Kilburnie South
3/01/2021	3%	25%	1.9	9.0	7.0	0.0	5.2
9/01/2021	0%	42%	10.0	10.0	4.0	0.0	0.0
15/01/2021	36%	26%	11.4	48.0	21.0	19.7	9.7
21/01/2021	1%	22%	10.0	10.0	16.0	0.0	6.0
27/01/2021	0%	6%	39.0	39.0	21.0	0.0	0.0
2/02/2021	2%	52%	6.8	6.8	5.4	0.0	0.0
8/02/2021	0%	53%	6.7	6.7	8.0	0.0	1.3
14/02/2021	0%	31%	7.4	7.4	11.3	0.0	3.9
20/02/2021	0%	49%	2.4	2.4	6.2	0.0	3.8
26/02/2021	12%	4%	10.2	9.4	10.2	0.0	0.0
4/03/2021	11%	12%	6.8	13.4	12.0	6.6	5.2
10/03/2021	0%	40%	9.8	9.8	29.0	0.0	0.2
16/03/2021	0%	34%	6.0	6.0	7.4	0.0	1.4
22/03/2021	0%	19%	2.5	2.5	2.0	0.0	0.0
28/03/2021	10%	3%	4.1	7.5	3.5	3.4	0.0
3/04/2021	0%	33%	3.4	3.4	5.4	0.0	2.0
9/04/2021	27%	1%	7.2	9.0	7.2	1.8	0.0
15/04/2021	35%	0%	11.6	22.3	11.6	10.7	0.0
21/04/2021	22%	9%	6.8	7.7	5.8	0.9	0.0
27/04/2021	2%	33%	8.2	6.6	8.4	0.0	0.2
3/05/2021	10%	1%	1.4	8.6	1.4	7.2	0.0
9/05/2021	8%	0%	1.1	5.3	1.1	4.2	0.0
15/05/2021	52%	0%	0.5	16.0	0.5	15.5	0.0
21/05/2021	6%	19%	7.9	2.1	4.7	0.0	0.0
27/05/2021	24%	0%	1.1	12.4	1.1	11.3	0.0
2/06/2021	11%	6%	10.6	18.8	4.1	8.3	0.0



Date	Percentage of time downwind of HVO South (%)		24-hour average PM _{2.5} level (µg/m ³)			HVO South's estimated max. contribution to PM _{2.5} level (µg/m ³)	
	Maison Dieu	Kilburnie South	Background	Maison Dieu	Kilburnie South	Maison Dieu	Kilburnie South
8/06/2021	13%	3%	10.5	7.6	3.0	0.0	0.0
14/06/2021	17%	4%	11.3	2.3	0.1	0.0	0.0
20/06/2021	0%	3%	2.8	3.0	2.5	0.0	0.0
26/06/2021	61%	0%	0.1	2.5	0.1	2.4	0.0
2/07/2021	40%	2%	7.5	2.2	0.9	0.0	0.0
8/07/2021	1%	4%	11.0	9.5	4.7	0.0	0.0
14/07/2021	26%	0%	1.2	8.2	1.2	7.0	0.0
20/07/2021	88%	0%	0.1	4.0	0.1	3.9	0.0
26/07/2021	61%	0%	1.2	10.1	1.2	8.9	0.0
1/08/2021	41%	0%	3.1	11.8	3.1	8.7	0.0
7/08/2021	53%	0%	0.2	5.2	0.2	5.0	0.0
13/08/2021	8%	8%	10.9	11.2	5.2	0.3	0.0
19/08/2021	17%	1%	13.6	10.1	5.1	0.0	0.0
25/08/2021	72%	0%	0.6	1.9	0.6	1.3	0.0
31/08/2021	25%	1%	10.6	18.5	3.6	7.9	0.0
6/09/2021	34%	14%	5.6	1.5	4.2	0.0	0.0
12/09/2021	29%	0%	12.5	29.1	12.5	14.7	0.0
18/09/2021	39%	4%	8.2	19.7	9.0	11.5	0.0
24/09/2021	59%	0%	5.8	14.6	5.8	8.8	0.0
30/09/2021	21%	6%	4.5	8.7	4.9	4.3	0.5
6/10/2021	42%	0%	5.4	18.9	5.4	13.5	0.0
12/10/2021	0%	15%	1.6	1.6	1.6	0.0	0.0
18/10/2021	23%	1%	5.9	13.0	8.3	7.2	0.0
24/10/2021	15%	8%	6.0	7.1	6.7	1.1	0.7
30/10/2021	7%	28%	7.3	14.4	11.0	7.1	3.7
5/11/2021	3%	6%	2.7	2.7	2.5	0.0	0.0
11/11/2021	14%	19%	3.8	4.6	3.4	0.9	0.0
17/11/2021	0%	56%	3.6	3.6	6.2	0.0	2.6
23/11/2021	0%	27%	3.6	-	3.8	-	0.3
29/11/2021	0%	20%	5.6	5.6	6.0	0.0	0.4
5/12/2021	0%	47%	2.9	2.9	6.4	0.0	3.5
11/12/2021	0%	39%	3.0	3.0	4.3	0.0	1.3
17/12/2021	0%	40%	4.2	4.2	7.4	0.0	3.2
23/12/2021	0%	29%	8.1	8.1	8.6	0.0	0.5
29/12/2021	0%	43%	2.9	2.9	4.8	0.0	1.9

- No data