

# **Organics Processing Plant Community Liaison Group Meeting Agenda**

## **Tuesday 15<sup>th</sup> November 2022, 6:30pm to 8pm**

**Venue – Waitai Coastal-Burwood-Linwood Community Boardroom**  
**180 Smith Street, Woolston, Christchurch 8062**

Welcome to the Community Liaison Group, a community forum to discuss consent compliance for the Organics Processing Plant; discharging contaminants to air, discharging contaminants to water, and use of land to store organic matter and decaying organic matter.

### **Agenda**

1. Welcome and introduction (5 minutes)
2. Confirm previous meeting's minutes (5 minutes)
3. Environment Canterbury Community Liaison Group report and questions arising (15 minutes)
4. Living Earth Community Liaison Group report and questions arising (15 minutes)
5. Christchurch City Council Community Liaison Group update and questions arising (5 minutes)
6. Further questions about consent compliance for the Organics Processing Plant (10 minutes)
7. Concluding remarks (5 minutes)

### **Attachments**

- a. Previous Community Liaison Group meeting minutes, Tuesday 16<sup>th</sup> August 2022
- b. Living Earth Community Liaison Group report
- c. Environment Canterbury Community Liaison Group report
- d. Pattle Delamore Partners Review and Reporting of Living Earth's Dust Monitoring Programme – July 2021 to June 2022

Any questions or feedback can be sent to [Bromley@ccc.govt.nz](mailto:Bromley@ccc.govt.nz)

# **Organics Processing Plant Community Liaison Group Meeting Minutes**

## **16 August 2022, 6:30pm**

**Venue - Waikura Linwood-Central-Heathcote Community Boardroom, 180 Smith Street, Woolston.**

### **Attendees**

**Facilitator** - Carl Pascoe

**Christchurch City Council (CCC) Staff** - Jane Davis, Lynette Ellis, Ross Trotter, David McArdle

**CCC Councillors** - Yani Johanson (Linwood), Phil Mauger (Burwood)

**Environment Canterbury (ECan) Staff** - Ruth Sarson, Sophie Harland

**ECan Councillors** - Nicole Marshall

**Living Earth** - Jaco Kleinhans

**Community Members** - Alexandra Davids, Andrew Walker & Vickie Walker, Bruce King, Carol Anderson, Don Gould, Geoffrey King, Jackie Simonds, Margaret Macpherson, Michael Williams

**Minute Taker** – Mary O’Leary

### **Introductions and Welcome**

The facilitator welcomed everyone and acknowledged there were no apologies and that hard copies of the previous minutes were available on site.

### **Discussion Around Previous Meeting Minutes**

The facilitator requested confirmation that the minutes were correct and confirmed that action had been taken at the end of the last meeting to ensure that Geoffrey King had correct contact details to communicate any alterations to minutes directly to him via text or email as required.

### **Discussion around Environment Canterbury & Living Earth Reports**

**Ruth Sarson - ECan** - Spoke to the confusion around the reporting of incidents at the previous meeting and reiterated that the report focused on the Bromley area as defined on the map and complaints specifically regarding compost odour coming from the Living Earth site over the period from May to July 2022. It was noted that ECan had been hampered during the reporting period due to staff availability because of Covid and flu.

There were a total of 65 incidents logged during the reporting period; it was noted that there could be multiple Smelt-It odour reports assigned to each particular incident. The number of Smelt-Its had increased significantly since the Wastewater Treatment Plant (WWTP) fire in November but these had dramatically reduced over the last three months. There were 399 Smelt-It submissions where the reporter mentioned compost along with multiple other odour sources, but for the purposes of the report, only submissions specifically stating compost had been included, resulting in 29 assessments being carried out. Odour from Living Earth was substantiated beyond the property boundary at a low level on 8 occasions. As this was not occurring on a regular basis, it was not deemed to be offensive or objectionable. A breakdown of Smelt-Its and Snap Send Solve reports was included in the report.

There were two Notices of Non-Compliance (NONCs) issued during the reporting period to Living Earth. Officers had ruled out other sources when carrying out their assessments and Living Earth had been confirmed as the source on both occasions.

ECan was asked to report on the time it took to reach an incident and this was estimated to average approximately half an hour.

The report spoke to the issue of dust monitoring and one incident that was reported by a resident relating to a fine, yellow gritty dust. However the officer assessing the site did not observe any dust of the nature reported during their assessment.

During the reporting period, there was a desktop inspection to check compliance with the conditions of consent via reports and data sent electronically versus onsite inspections. Compliance was confirmed with the exception of condition number 27 relating to the discharge of offensive and objectionable odour beyond the boundary which was graded as significantly non-compliant. There were no other non-compliance issues noted during the reporting period.

It was important to note that dust was not observed beyond the boundary during any of the 24 assessments.

**Carol Anderson - Community** - Spoke to the incident of the yellow gritty dust which she had reported and stated that nobody came to look at it.

**Ruth Sarsons - ECan** - Replied the officer did an assessment via their usual 360 dust assessment whereby they take different variables into account which included reviewing the photos Carol supplied.

**Carol Anderson - Community** - Expressed that she would not bother to send in any further photos.

**Bruce King - Community** - Commented he had checked the rain water at times when the sewerage odour was strong and that the readings indicated that they were potentially experiencing something close to acid rain due to the chemical reaction when hydrogen sulphide mixed with water. Referencing Carol's complaint, he observed that it turned yellow when it dried and changed into sulphuric acid. He suggested that the CCC was not prepared for the long term outcomes.

**(Q) Michael Williams - Community** - What do ECan intend to do about the significant non-compliance referenced?

**(A) Ruth Sarson - ECan** - The matter is under investigation and as such ECan are unable to make any comment.

**(Q) Michael Williams - Community** - Might legal action against Organics Processing Plant (OPP) be a potential outcome?

**(A) Ruth Sarson - ECan** - Reiterated that ECan could not comment while the matter was under investigation as it could cause prejudice.

**(Q) Michael Williams - Community** - Is there a timeframe for an outcome?

**(A) Ruth Sarson - ECan** - Under the Resource Management Act, Regional Council or local authorities had a period of 12 months to take enforcement action. Generally speaking, once any enforcement action was taken, it would be passed on to the District Court for determining the outcome.

**(Q) Michael Williams - Community** - When was the significant non-compliance?

**(A) Ruth Sarson - ECan** - We have been recording significant non-compliance against the consent for the last two to three years.

**(Q) Michael Williams - Community** - Asked for clarification.

**(A) Ruth Sarson - ECan** - You may recall that we have taken enforcement action in terms of an Abatement Notice issued, a number of Infringement Notices had been given in previous years. When the Abatement Notice came into effect that made a new parameter in that we had to prove that there was still an issue post the Abatement Notice deadline, therefore we had to take a period of time to determine whether there were still non-compliances. We have taken that time and we are still grading the consenters as non-compliant, significantly non-compliant.

**(Q) Don Gould - Community** - How typical it is for a regional council to have a significantly non-compliant issue arise in the community?

**(A) Ruth Sarson - ECan** - Replied she would have to check to provide an exact answer, but that grading an offence as significantly non-compliant was not unusual.

**(Q) Yani Johanson - CCC Councillor** - How many complaints were there during the reporting period?

**(A) Ruth Sarson - ECan** - Referred to the graph and reiterated that the incidents only referred to Bromley and excluded the WWTP and the graph related exclusively to compost odour.

**(Q) Yani Johanson - CCC Councillor** - Questioned the large discrepancy in terms of 399 incidents in total with only 29 having been investigated.

**(A) Ruth Sarson - ECan** - Explained they were not responding to WWTP complaints or any other odours and that they were responding specifically to complaints that related to compost odour because ECan were specifically checking compliance with the Abatement Notice.

**(Q) Yani Johanson - CCC Councillor** - Are ECan communicating that complainants should be sure to separate their complaints to avoid the issue of their complaint not being investigated?

**(A) Ruth Sarson - ECan** - There had been a lot of communication when the WWTP fire happened which had given the public the opportunity to make specific submissions and it had been discussed in this forum as well, however, they had to be careful of the message going out to the broader community due to the potential risk that people would think they were being asked to report as a matter of course

**(Q) Yani Johanson - CCC Councillor** - Commented that it was unfair that many complaints were not being followed up on due to the issue of the complainants mentioning different odours

**(A) Ruth Sarson - ECan** - Agreed that this was a problem.

**Vicki Walker - Community** - Commented that she was sick of how long it was taking.

**Ruth Sarson - ECan** - Acknowledged the frustration and explained that many of the assessments were now being carried out in a proactive manner relative to wind conditions and other factors but that due to the fact that many complaints came in after hours and other factors such as being short staffed during Covid, it meant that not all investigations could take place.

**(Q) Bruce King - Community** - The Smelt It app doesn't always work and half of his reports don't go in. Are we going to have anything happen before the Resource Management Act (RMA) is changed?

**(Q) Geoffrey King - Community** - Queried whether there were 65 days out of 90 days, and noted that it was not good enough that this was happening. The Resource Management Act, The Clean Air Act clearly states that this City Council entity is breaching the law, and ECan is to blame as much as the City Council for not policing it, for letting it start in the first place and not shutting it down. We had a Council vote about a month ago and it was 7 to 8, it only needed one councillor to change their vote, Les Donaldson, Sarah Templeton, trendy lefties, wanted to keep it open. It affects the constituents in their wards but they want to keep it open.

**(Q) Yani Johanson - CCC Councillor** - Can the annual report from ECan be shared with the community in order to provide an opportunity to see what has happened over the course of a year and provide an overview of the number of complaints etc.

**(A) Ruth Sarson - ECan** - Absolutely

**(Q) Yani Johanson - CCC Councillor** - Is it true that you've been doing a lot more reporting?

**(A) Ruth Sarson - ECan** - I don't think so, I think we have just been a lot more proactive.

**(Q) Yani Johanson - CCC Councillor** - Regarding the dust monitoring, I saw the Pattle Delamore Partners (PDP) report for the year 2020-2021 which came out in March 2022, is that still the timeframe, i.e. will we see the next report in March 2023?

**(A) David McArdle - CCC** - Clarified the report was updated in March 2023 for public release, but it was originally completed and submitted to ECan after the end of the financial year it was reporting upon.

**(A) Ruth Sarson - ECan** - Trigger limits have not been established beyond the property boundary. Often trigger limits within the consent require reporting but it doesn't mean it's an actual breach of the consent.

**(Q) Yani Johanson - CCC Councillor** - Regarding the PDP report, ECan have until March to change consent conditions, so I think it is really important the community can see that report and give feedback to ECan, and if there are concerns around the dust then that would be the opportunity to consider changes.

**(A) Ruth Sarson - ECan** - Replied suggesting CCC could provide the PDP report and the Annual Environmental Monitoring report.

**(Q) Michael Williams - Community** - How many years and how many non compliances would it take to actually shut the plant down?

**(A) Ruth Sarsons - ECan** - Replied that ECan do not have the authority to shut down a lawfully operating business under the Resource Management Act; they can only address the impact of non-compliance. Ruth reiterated that the issue was under investigation, noting that enforcement action has been taken in the past and that ECan were currently at the next stage of the process.<sup>33</sup> Various members of the community expressed that this keeps going on year after year.

**(Q) Don Gould - Community** - If ECan can't shut down a lawfully acting business, if the residents want redress, the redress would seem to be that the residents need to take this to the District Court for them to order the plant to be shut down.

**(A) Ruth Sarsons - ECan** - Private residents have the ability to apply for their own enforcement order under the Resource Management Act.

**(Q) Don Gould - Community** - As such, the residents wouldn't need to do an investigation as they already have evidence that they could present to allow the court to make a decision and seek their own legal opinion and bring a case.

**(Q) Bruce King - Community** - We took legal advice a few years ago and were told we needed a minimum of \$300,000 to take the matter to court - it is unlikely we will raise this. While the business may be a legally operating business, they do not meet the consent that is issued and the issuing body for the consent is ECan so they should have the ability to close the plant down.

**Carl Pascoe - Chair** - That is the point, that there are limits on their ability to do so.

**Bruce King - Community** - If I build a house and it doesn't meet consent, it is pulled down. This is the same kind of basic stuff, this plant is not even built to the plan submitted to get the consent.

**(Q) Yani Johanson - CCC Councillor** - When we've had NONCs served to Living Earth before, there has been a comment 'no action required' - what does this mean?

**(A) Ruth Sarsons - ECan** - On all the notices issued there has been action required, which has been to cease the offensive and objectionable odour beyond the property boundary.

**(Q) Yani Johanson - CCC Councillor** - Within what time frame?

**(A) Ruth Sarsons - ECan** - Within the compliance of the Abatement Notice. The action was to cease the odour and I have to admit I am in a difficult position because I can not make any comments on what those further actions are

**(Q) Yani Johanson - CCC Councillor** - But that is with the compliance investigation team at ECan who are looking at all options?

**(A) Ruth Sarsons - ECan** - Correct

**(Q) Yani Johanson - CCC Councillor** - I was confused about the last response, because if a private citizen can get an enforcement order to cease an activity, surely ECan can do the same?

**(A) Ruth Sarsons - ECan** - Yes they could

**(Q) Yani Johanson - CCC Councillor** - So why don't they?

**(A) Ruth Sarsons - ECan** - I can't make any comment

**(Q) Yani Johanson - CCC Councillor** - I'm still really confused about the dust, in the report that we have seen previously, it stated that we had a high level of non compliance with the requirements of 33B, that experience in 2019/2020 said that 19 of the 31 exceedances were recorded at onsite monitoring locations, so I presume that means about 12 exceedances were recorded off-site monitoring locations. How many exceedances and non-compliances have there been with regard to dust over the last year?

**(A) Ruth Sarsons - ECan** - There have been no breaches of the consent in relation to dust.

**(Q) Yani Johanson - CCC Councillor** - So the PDP report will say that?

**(A) Ruth Sarsons - ECan** - I will need to get back to you on that, but I think we mentioned in the last report that there were a few exceedances when the material was being taken off site to be relocated, that is covered off in the Living Earth report.

**(Q) Yani Johanson - CCC Councillor** - I think one of the issues is that the language in the PDP reports is quite different to the reports that this committee gets from ECan and Living Earth. The PDP report uses clear language that is easy to understand yet we struggle to get that information in a way that the community can understand it. I wonder if there is a way to simplify this?

**Carl Pascoe - Chair** - Clarified that Yani's request was being directed to ECan to use a simpler reporting style in the PDP reports on dust.

**Geoffrey King - Community** - Stated he wasn't getting at Ruth personally, but at ECan. The consent says the dust should not exceed 4 grams per metre squared in 30 days, but we've got 10 grams per metre squared across a period of three months which is contrary to what was just said, so we have to breathe that in every day when it is blowing North East. In 2006/7 there was an agreement for the build of an organic plant detailed in a legal document from Simpson and Greerson. ECan, under Bill Bayfield, allowed it to open before it was finished, the biofilter is third world yet it is still allowed to operate. The legal document is breached 24/7.

Ruth announced that this would be her last Community Liaison Group (CLG) meeting and acknowledged that her 4 years were nothing in comparison to what the residents had been putting

up with. She assured the group that she had been doing everything she could and thanked everyone for their support and persistence over the years, especially throughout the Bromley Odour Pilot. She introduced Sophie Harland, who manages the staff who respond to the calls and confirmed she would continue to support Sophie from behind the scenes once she took over at the next meeting.

**Jaco Kleinhans - Living Earth** - Talked to eight gauges monitoring dust, specifically those shown in the graph located in Dyers Road, one at the pump station and another just North of Metro place. During the period a lot of changes had taken place on site and water misters were utilised, there was an increase to the boundary between the tailings and the fenceline is constantly increasing as material is being moved off site, all of which had helped to bring the dust readings down. There was a plan to move the water misters to electric units. The dust review was completed and is currently with PDP with an answer from them expected imminently. Boundary planting requirements were ongoing and were expected to take place within the next few weeks or in September. Ongoing odour assessment takes place via PDP as an independent odour assessor as part of ECan's monitoring. Progress had been made with removal of the remaining surplus tailings onsite, however it was noted that July weather had hampered some activity. There was an updated picture within the report, but quite a few more tailings had been subsequently removed.

**(Q) Vicki Walker - Community** - Queried whether the tailings were what was being dumped by the Bridge Street ponds.

**(A) Jaco Kleinhans - Living Earth** - Explained this was compost.

**(Q) Don Gould - Community** - What are we actually smelling and what sort of equipment is in place to understand those odours?

**(A) Jaco Kleinhans - Living Earth** - Onsite management uses the same equipment as ECan. We are also trialling a handheld unit that can pick up a variety of gases which gives a sensitivity reading to odour etc.

**(Q) Don Gould - Community** - What capacity is the plant and what is its growth potential? I asked the Council and they responded that it is expected to grow 11% year on year over the next couple of years, which is another 25% of content coming to the plant for processing, and I am wondering whether it needs to go or whether it needs to be scaled back. What I am not understanding is what the actual capacity is.

**(A) Jaco Kleinhans - Living Earth** - The plant was consented for 90,000 tonnes of kerbside material with an additional 30,000 tonnes of green waste.

**(Q) Phil Mauger - CCC Councillor** - Last time we had a meeting, there were 20,000 cubic metres of tailings there, how much of that has gone?

**(A) Jaco Kleinhans - Living Earth** - We've moved approximately two thirds of it.

**(Q) Phil Mauger - CCC Councillor** - When they are all gone, is it correct that there will be no dust? And apart from the biofilter, there will be no odour as there will be nothing outside. Is the biofilter being worked extra hard?



**(A) Jaco Kleinhans - Living Earth** - We don't windrow outside anymore. We process and handle the material inside more regularly and the system is working harder, we also had a busy last season and will probably have the same again this upcoming season.

**(Q) Phil Mauger - CCC Councillor** - Can you confirm that all the additional green waste is being sent out to Oxford?

**(A) Jaco Kleinhans - Living Earth** - We use the green waste from the transfer station next door as we need it for porosity and to achieve the optimal carbon nitrogen ratio for the composting process.

**(Q) Phil Mauger - CCC Councillor** - Can I just clarify that you need about 3,000 tonnes of tailings for operational purposes, when do you think you will be down to 3,000 tonnes?

**(A) Jaco Kleinhans - Living Earth** - It is going well, it depends on transport and availability along with the weather and other logistical challenges, but I'm loading up as quickly as there are resources available.

**(Q) Don Gould - Community** - How do Living Earth feel about the effect on the quality of the material being provided by the community due to the amount of plastic that ends up in compost. Has the banning of plastic bags helped?

**(A) Jaco Kleinhans - Living Earth** - We end up with an enormous amount of plastics but we work closely with CCC to educate the public that segregation at source is the solution.

**(Q) Michael Williams - Community** - How often do things need to be reprocessed in terms of exceeding the resource consent relating to odour when working with the tunnels?

**(A) Jaco Kleinhans - Living Earth** - The product coming out of the tunnels has its odour assessed before it can go outside. The procedure is that it goes back in the tunnel if it is odorous, however, over the last six months I could probably count the number of times this has happened on one hand. The technologist and technical assistant onsite do this monitoring.

**(Q) Phil Mauger - CCC Councillor** - Would it make life easier if you could leave things in the tunnel for longer?

**(A) Jaco Kleinhans - Living Earth** - As a simulation that is what we have right now. Because it is low season, I can run it in the tunnels for longer and I just keep on reprocessing it.

**(Q) Phil Mauger - CCC Councillor** - Is there a point where we bite the bullet as a Council and in order to avoid you being overloaded, that we send them elsewhere?

**(A) Jaco Kleinhans - Living Earth** - We are working on this and I will be giving feedback on this to David when we meet later in the week. We are going into this next season with less product than we did last season. The less I have to reprocess, the better it is.

**Bruce King - Community** - You say that your biofilter is working at 90% of its capacity, it works on the bacteria attaching itself to the odours as the air goes through, the faster the

air goes through, the less time it has to be in contact with the bacteria that destroys the odour. Given we know the tunnels are working, the only place the stink can be coming from is the biofilter, which suggests the biofilter is probably totally inefficient and probably third world technology. I haven't been able to get hold of anyone who is prepared to call themselves an expert on compost. If you are going to keep operating the plant for the next two to five years (as we are being told), it might be blown up by then.

**Carl Pascoe - Chair** - Suggested that this comment was a hypothetical rhetorical statement, and Bruce agreed stating that it might blow itself up due to the gases forming inside of the tunnels, noting that it happened before at the Gelatine factory when ECan had been powerless to do anything and an arsonist had fixed the issue.

**(Q) Michael Williams - Community** - What can we do to reduce the odour in the interim? How is the biofilter going to be monitored if it is the cause of the odour? Can we see a graph over the next few months that can monitor the biofilter? Do you understand the monitoring of the odours?

**(A) Jaco Kleinhans - Living Earth** - Biofilters are maintained on pH, pressure, temperature and humidity. All we can do is maintain the biofilter in its current design.

**(Q) Michael Williams - Community** - What is your opinion of the odours?

**(A) Jaco Kleinhans - Living Earth** - I do not find the odours offensive.

**Nicole Marshall - ECan Councillor** - I just want to congratulate you and your team on the massive clearance of the site and your positive attitude in engaging with the community at these events and I want to thank you for your efforts doing your bit for the community to improve things. I really appreciate what you and your team have done.

**Carl Pascoe - Chair** - Moved to proceed with the CCC CLG update.

**(Q) Yani Johansson - CCC Councillor** - How many dust exceedances are there in the Living Earth report in this reporting period?

**(A) Jaco Kleinhans - Living Earth** - We have had no exceedances. We report on the on and offsite dust monitors which are independently measured by a third party which means that I'm comfortable with whatever we are doing as it is working.

**(Q) Don King - Community** - Is there anything we could do as the community that could advocate to help you even more?

**(A) Jaco Kleinhans - Living Earth** - The community has concerns around odours, but I believe the good news story around resource recovery has got lost. So I believe we need to work on segregation and promoting the good news story.

**David McArdle - CCC** - Spoke to the following;

- **PDP AQMesh real time air quality monitoring trial completed;**
  - Data was collected over 17 days from a monitor being trialled on the south-western boundary of Living Earth's site

- The monitor recorded particulate matter, PM, of size  $PM_{10}$ , and smaller from the site. PM is microscopic matter suspended in air or water. PM is measured in microns with a micron being one millionth of metre in length or less
  - The higher PM concentrations came from the west and PDP believe it is likely they can be associated with vehicles on Dyers Road or smoke from domestic wood burners
  - In summary, the trial was a success. PDP were able to distinguish between Living Earth effects and other sources. The concentration of particles produced by Living Earth are lower than other sources and do not appear to result in particulate concentrations that exceed the NESAQ PM guidelines.
- **Removal of Tailings Surplus to Operational Requirements from Site;**  
To date 5,884 tonnes of tailings have been removed from site and work is ongoing to meet the project completion date of 30 September 2022.
- **Otautahi Christchurch Organics Processing Solution procurement process;**
    - As per the newsletter from 30 June, a procurement plan looking at alternative locations for the OPP was approved by Council. The procurement plan is commercially sensitive therefore is not available for public release at this time.
    - The first stage of the procurement process is a Request for Information which was released to the market through July and the responses have been reviewed.
    - The subsequent stage is an Expression of Interest which will include an interactive element where we will engage with respondents to work through potential solutions. Staff are currently reviewing this document before it is released to the market at the end of the month.
    - Following this stage, one or more prospective suppliers will be invited to tender.
- **Spreading of compost at the paddocks of the WWTP;**
    - As previously communicated, this programme of work is for soil improvement ahead of the planting of native trees and plants to help Christchurch reduce its carbon emissions and ease the midge problem in the area, by providing a natural barrier between the oxidation ponds and nearby homes.
    - Environmental assessments completed to date have not found offensive and objectionable odour in the area with the material being stabilised within two weeks of application. Living Earth regularly visits the paddocks and is conducting an ongoing monitoring programme.
    - We are continuing to engage PDP for ongoing proactive monitoring which includes the areas where the compost is being spread.
    - Since November 2021 approximately 20,000 tonnes of maturing compost has been transported to the WWTP which has a capacity to receive over 100,000 tonnes, roughly the equivalent to three years of output from the OPP.
    - To clarify, the WWTP is buying a product from Living Earth and this is a medium term solution for the output of the OPP.
    - Living Earth has approached the market to develop further end markets and initial feedback has been positive. Living Earth is working with AssureQuality to support this.
    - We are currently developing a bird management plan with a CCC Ecologist as native birds appear to be nesting in the area.

**(Q) Bruce King Community** - Can you tell us what size they are measuring down to?

**(A) David McArdle - CCC & Jaco Kleinhans - Living Earth** - Responded PM<sub>10</sub> .

**(Q) Alexandra Davies - Community** - Regarding the procurement plan, you were \$20 million short of what the market required. What have you learned so that we will actually get a solution this time?

**(A) Lynette Ellis - CCC** - It has been put out to the market with a view to finding a solution, knowing the concerns that are out there. Last time it was more about upgrading the site, this time it is not. So we are not as prescriptive, we've said that the outcome we want is to be able to process this material and divert it from landfill.

**(Q) Alexandra Davies - Community** - So you are focused on the outcome this time rather than the budget?

**(A) Lynette Ellis - CCC** - Yes.

**(Q) Phil Mauger - CCC Councillor** - When we do shift it, will we start accepting all the green waste that is going to Oxford to wherever the new site is?

**(A) Lynette Ellis - CCC** - That depends on the outcome, we are not guaranteeing anything.

**(Q) Geoffrey King - Community** - How far advanced are you with finding this new site?

**(A) Lynette Ellis - CCC** - We are not looking for a new site, we are looking for a solution to achieve this, part of this is a site, part of it is a methodology for processing the waste material. That is underway, to find a solution.

**(Q) Geoffrey King - Community** - How long has that been going for?

**(A) Lynette Ellis - CCC** - It went out to the market in July and has now closed. We have been engaging with interested parties and are moving to the next phase of the process to find a complete solution, including a site.

**(Q) Yani Johansson - CCC Councillor** - The initial report from Jacobs looked at a number of alternative sites. One of the key takeaways from that report was that the methodology would shape the decisions regarding site suitability. As I understand it, staff are looking at a range of options around methodologies, possibly some new sites are being considered in addition to the existing dozen or so and they want to make sure that they refine the technology for the most appropriate site.

**(A) Lynette Ellis - CCC** - Expressions of Interest have closed and Stage Two is about to start; staff have committed to go back to Council by February 2023 with the outcome. We are hoping to have more information before Christmas to indicate where we are at but everything depends on this process.

**Yani Johansson - CCC Councillor** - Suggested that there was a good case for Central Government to fast track consent.

**(Q) Michael Williams - Community** - Confirmed that methodology referred to processing the compost and suggested that surely there weren't that many options available for a city

the size of Christchurch. Why is it such a long and drawn out process? How many options are there?

**(A) Lynette Ellis - CCC** - We have multiple options ranging from anaerobic digestion to aerobic digestion, which is windrows, i.e. with air or without air. What has changed recently is that the government has signalled an intent to have organic processing across the country, i.e. kerbside organic collection nationwide, particularly in major metro areas which means this won't just be about Christchurch, it will be the wider Canterbury region and probably the South Island. This changes the market for bigger players to come to New Zealand to set something different up. A lot of the existing organic facilities are typically aerobic windrow based facilities, but we are really keen to explore the possibility of bringing in the technology to move to anaerobic and that is what this process enables.

**(Q) Carol Anderson - Community** - Does it have to come from overseas? Why can't we develop it?

**(A) Lynette Ellis - CCC** - We are not restricting it, we are talking to local and offshore providers, this is a procurement process that is out there.

**(Q) Vicki Walker - Community** - But the anaerobic process makes methane?

**(A) Lynette Ellis - CCC** - That is correct so those are all the considerations that will be put on the table, the CO<sub>2</sub> emissions is a big issue with our Council, so that's a consideration along with cost.

**(Q) Don Gould - Community** - Would it be fair to suggest that previously we have thought that we can do this cheaper than what the reality is?

**(A) Lynette Ellis - CCC** - We are not restricting ourselves, so for example, there could be an arrangement with the private sector so the ratepayer isn't paying the full cost. We are aware that rates are significant, so the cost has to be a consideration. We are keeping our options open and thinking more broadly than we have in the past, for example, how we might partner with Central Government, other councils, and the private sector.

**(Q) Don Gould - Community** - Do we have to look at paying for this through cuts elsewhere?

**(A) Lynette Ellis - CCC** - We do have to look at cost effectiveness, so that means we might have to be more creative.

**Carl Pascoe - Chair** - Moved to close the meeting, noting the importance of the conversation becoming more civil across the last few meetings. Although it had been 14 years, the community was having an impact on the decision making process of a Council that was starting to move faster in the right direction for the community. Thanks to this advocacy, changes had been made to the way the plant operated and it was improving its operations progressively and often incrementally. A new plant was on the way in some form as a result of this advocacy and Carl expressed gratitude to the attendees for this.

**Nicole Marshall - ECan Councillor** - Thanked Carl for his role in facilitating the meetings and helping to set a better tone. She advised this would be her last meeting as she was not standing, noting she had enjoyed working with everyone and seeing the progress that had been made.

**Yani Johansson - CCC Councillor** - Acknowledged the contribution from Ruth and Nicole and their advocacy for taking the Community's concerns seriously, noting that more progress had been made during the last three years than in the past decade. The Council had made budget provision and the Community could rest assured that money wasn't driving the process as it was accepted that the plant needed to be moved, enough harm had been caused to the Community and that Councillors wanted to do the right thing and find the best solution and move it to the best possible location. A lot of the frustration stemmed from the inefficiency of the regulatory framework, the RMA was inadequate and ill-equipped to deal with the harm caused to the community, but he was feeling very optimistic.



Living Earth  
CLG Report – 16 November 2022  
Organics Processing Plant

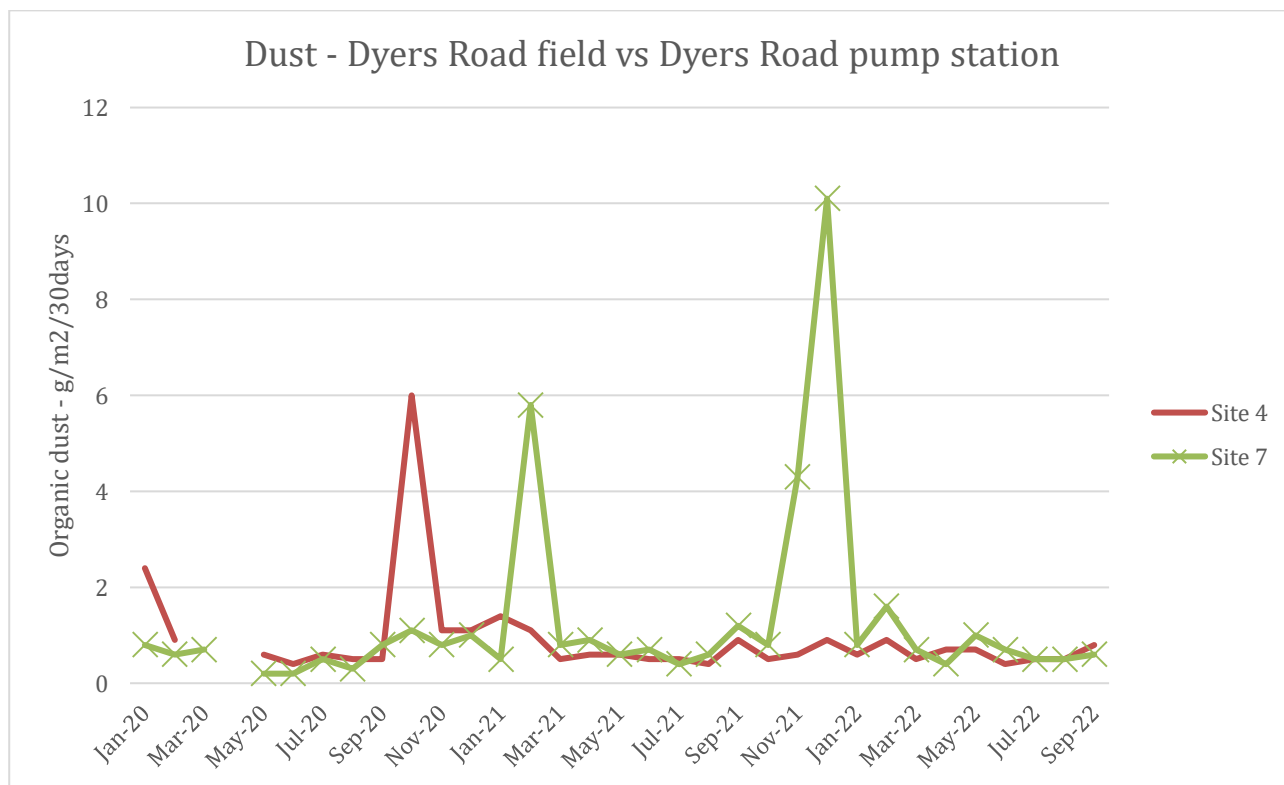
August 2022 - October 2022

Prepared by: Jaco Kleinhans  
27 October 2022

The consent conditions of CRC 080301.1 are detailed in this report and comments are provided on the status. Key matters are discussed below:

### **Dust (c25)**

We have two deposition gauges located along Dyers Road. One is situated in a field North of Metro Place (Site 4, upwind of the Organics Processing Plant (OPP)) and the other is at the old pump station near the end of Maces Road (Site 7, downwind of the OPP and near the residential area of Bromley).



Agile dust mitigation procedures on-site have proven to be effective with the relocation of the fines load-out area closer to the processing hall and the relocation of the water cannons.

The annual review and reporting of Living Earth’s dust monitoring programme for July 2021 to June 2022 by independent environmental experts Pattle Delamore Partners (PDP) has been completed. This report will be shared with the Community Liaison Group as part of the agenda for the 16 November 2022 meeting.

As part of the company’s carbon reduction program, internal combustion engine-driven water misters have been phased out or converted to electric.

Further work is being done around the traffic management plan to install irrigation along the main routes onsite to assist with dust management.

### **Boundary plantings (c25)**

Clear buffer zone created and maintained on-site. Perimeter replacement trees planted.

### **Odour (c27/c14)**

Ongoing site odour assessment by the team and proactive odour assessments are being completed by PDP.



## On-site operations

The removal of tailings surplus to operational requirements off-site was completed on time by the end of September 2022. The site operation footprint has been drastically reduced.



September 2021



August 2022





September 2022

RMA Authorisation Number: **CRC 080301.1**

	<b>Description</b>	<b>Compliance (Y/N)</b>	<b>Findings Comments &amp; Problems</b>
1	The discharges shall be only odour and dust from an organics processing plant and green waste composting facility located at 40 Metro Place, Bromley, Christchurch at map reference NZMS 260 M35: 8627-4087 and indicated as "Applicant's Site" on plan CRC080301A attached as part of this consent.	<b>Yes</b>	No discharge except odour and dust occurs from the facility other than storm and wastewater that are covered under different consents.
2	The organics processing plant shall process not more than 90,000 tonnes of organic material per year.	<b>Yes</b>	The plant operates under the set limit.
3	<p>The discharges of odour and dust shall only occur from the following sources:</p> <ul style="list-style-type: none"> <li>a. From construction activities associated with the establishment of the organics processing plant;</li> <li>b. From an odour extraction system on the process building that discharges to air via biofilters;</li> <li>c. From composting of organic material in managed windrows; and</li> <li>d. From screening, blending, packaging and stockpiling of matured compost.</li> </ul>	<b>Yes</b>	<ul style="list-style-type: none"> <li>a) n/a during this period</li> <li>b) Activity was undertaken during this period</li> <li>c) Outdoor windrow process stopped on 15 November 2021.</li> <li>d) Activity was undertaken during this period</li> </ul>
	<b>Construction of Organics Processing Plant</b>		
4	<p>The consent holder shall provide to the Canterbury Regional Council a Construction Management Plan to be submitted for approval before commencement of the works on site that includes but is not limited to the following requirements:</p> <ul style="list-style-type: none"> <li>a. Regular watering of dusty surfaces during dry windy conditions;</li> <li>b. Restricting traffic speed within the site to less than 15 kilometres per hour;</li> <li>c. Covering loads of excavated soil whenever visible dust occurs from this source;</li> <li>d. Locating stockpiles in areas that are less likely to be affected by prevailing winds and at least 50 metres from boundaries; and</li> <li>e. Stabilisation of exposed areas as soon as possible after work is completed.</li> </ul>	<b>Yes</b>	No construction during this period
	<b>Organics Processing Plant</b>		
5	The consent holder shall provide to the satisfaction of the Canterbury Regional Council a Facilities Operation Manual before operating the organics processing plant.	<b>Yes</b>	A copy was provided in 2012 as required under the consent.

6	The material processed shall only include the following: a. Green waste; b. Food waste; and c. River weed.	<b>Yes</b>	No other items are accepted.
7	Organic waste containing putrescible material {food waste} shall be processed in a tunnel compost system contained within the process building.	<b>Yes</b>	All kerbside organics and food waste collection vehicles are emptied inside the processing hall and processed in the tunnels.
8	Organic waste not containing putrescible material may be composted in managed windrows.	<b>Yes</b>	No more windrows being processed on site.
	<b>Tunnel Compost System</b>		
9	The tunnel compost system shall consist of a process building, outdoor uncovered windrows and screening and stockpiling.	<b>Yes</b>	No more windrows being processed on site.
10	The process building shall: a. House all receiving, shredding and blending of organic waste that is to be composted in the tunnel composting process; and b. Be operated under a negative pressure system with all discharges to air being treated via a biofilter.	<b>Yes</b>	a) All receipting, shredding, and blending of materials is completed in the process hall before being loaded into tunnels. b) The negative pressure of the biofilter fan (tunnel exit) is typically maintained at -100Pa and monitored via a computer control system.
11	The incoming organic material shall be placed into the tunnel composting system on a daily basis within 24 hours of receipt.	<b>Yes</b>	This is completed. OPP operates on public holidays in line with the kerbside collection trucks. We are open and processing on all days that collection occurs.
12	The tunnel composting process shall have a duration of not less than seven days, which includes an allowance of up to half a day for tunnel emptying, cleaning and filling. During the tunnel composting process, the temperature of all the compost shall be maintained at greater than 55 degrees Celsius for a minimum of three continuous days or less at higher temperatures, so that pathogen destruction has occurred in compliance with New Zealand Composting Standard NZ4454. At the same time or after the tunnel composting process, the compost shall be aerobically treated for 14 days or longer, during which time the temperature must always be over 40 degrees Celsius and the average temperature must be higher than 45 degrees Celsius.	<b>Yes</b>	During this period typical time was 14 days in the tunnel.
13	Records shall be maintained showing compliance with Condition (12). Such records shall be available to Canterbury Regional Council on request.	<b>Yes</b>	Reports were recorded via a computer control system recording time and temperature.
14	The maturation composting stage shall be an uncovered windrow system that allows the process to meet Condition (27) of this consent.	<b>Yes</b>	No more windrows being processed on site.
	<b>Greenwaste Windrow Compost System</b>		

15	Organic wastes not containing putrescibles are to be shredded, blended and formed into windrows within 24 hours of receipt.	Yes	No more windrows being processed on site. All Green waste is processed through the tunnels.
16	Any organic waste which contains putrescible material is to be redirected into the tunnel composting system.	Yes	All Green waste is processed through the tunnels.
17	Not more than 30,000 tonnes per annum of green waste shall be composted in full in the outdoors windrows.	Yes	We receive less than this. All Green waste is processed through the tunnels.
18	The uncovered windrows shall meet the following criteria: a. The windrow shall be maintained in an aerobic state throughout; and b. The state of the windrows shall be monitored for oxygen, temperature and moisture as follows (and records retained):  a. Oxygen: Weekly for the first four weeks after the row is constructed and thereafter if the row is suspected of turning anaerobic; b. Temperature: Weekly; c. Moisture Content: Every second day	Yes	No more windrows being processed on site.
<b>Odour Extraction System – Organics Processing Plant</b>			
19	The odour extraction system on the process building shall be designed by a person competent in this area of technology to industry best practices.	Yes	n/a during the period
20	The odour extraction system shall be of sufficient capacity to prevent any fugitive discharge of odours from the process building under all operating conditions.	Yes	n/a during the period
21	The discharge shall exhaust via a biofilter with an average loading of not greater than 80 cubic metres of air per hour per cubic metre of bed material	Yes	Biofilter size 20.7m x 42.5m size. Maximum airflow ex fan is 90,000m <sup>3</sup> /hr. If media is > 1.17m deep, then 80m <sup>3</sup> /hr/m <sup>3</sup> of media cannot be exceeded. Bed depth is typically 1.3 – 1.5m. fan speed typically <90% of max. The fan can be limited in the control system to maximum speed as required. Fan operation is measured, controlled, and monitored by a computer control system.
22	The odour extraction systems shall operate at all times during processing of raw materials or products.	Yes	Operates 24/7 and is monitored by a computer system.
23	The bio filters shall be maintained in such a way as to effectively reduce odours from the organics processing plant so Condition (27) is met. This shall include but not be limited to:  a. Maintaining satisfactory moisture levels in the biofilter.	Yes	a) Humidifier operates at the inlet to the biofilter. Moisture tested June 2022 as 68% b) pH recorded in July 2022 as 6.7 c) Oxygen levels >n20%

	<ul style="list-style-type: none"> <li>b. Maintaining an appropriate pH range, typically 4 to 8.</li> <li>c. Maintain aerobic conditions at all times.</li> <li>d. Replace the biofilter media at an appropriate time, determined when any of the above operating parameters, odour levels, or, airflow backpressure are unable to be maintained within their operating limits.</li> </ul>		d) Back pressure monitored for bed media condition. Media last changed in May 2021.
	<b>Dust Control</b>		
24	<p>The consent holder shall implement the following measures to minimise the generation and discharge of dust:</p> <ul style="list-style-type: none"> <li>a. Use water sprays with any mechanical handling of compost when conditions are likely to generate dust.</li> <li>b. Provide an impervious base to all outdoor composting areas.</li> <li>c. Limit the height and slope of outdoor piles to less than five metres in height.</li> <li>d. Bulk carriers removing material from site shall be covered.</li> <li>e. Use water tankers and/or sprinklers to dampen down areas of heavy vehicle access when wind speed exceeds five metres per second (five minute average) during dry conditions.</li> <li>f. Suspend all product load-out and windrow turning operations during dry conditions when the wind speed measured by the on-site meteorological station, blowing from between 10 degrees and 130 degrees, exceeds 10 metres per second for two consecutive five-minute averages. Recommencement of load-out and windrow turning operations may occur if recorded wind speeds from that sector are less than 10 metres per second for two consecutive five minute averages.</li> </ul>	<b>Yes</b>	<ul style="list-style-type: none"> <li>a) Mistlers and water trucks are used</li> <li>b) Site is asphalt sealed</li> <li>c) Input piles are under 5m in height</li> <li>d) Bulk loads covered</li> <li>e) Monitored on-site, data reported each minute.</li> </ul>
25	<ul style="list-style-type: none"> <li>a. Within 12 months of this consent coming into effect the consent holder shall establish and maintain suitable tree windbreaks around all areas where compost is stored.</li> <li>b. Notwithstanding condition 25(a), a further line of tree shelter shall be established along the boundary with Affordable Storage Limited and the boundary with Dogwatch Sanctuary Trust, to fill in gaps in the existing tree shelter plantings where establishment or growth has been poor such that a continuous shelter belt more than 1.8 metres high has not been formed. These additional shelter trees shall be planted within six months of commencement of the change to conditions. All shelter trees shall have a minimum height of 1.8 metres and shall be maintained and irrigated until they reach a height of at least five metres. Any dead, diseased or damaged trees shall be replaced immediately. The trees shall be protected from the prevailing wind during at least the initial three years of establishment of the trees by wind cloth fencing or similar in order to optimise tree growth.</li> <li>c. A plan showing planting and landscaping works to be undertaken to comply with Condition 25(b) shall be prepared by a suitably qualified person and shall be submitted to the Canterbury Regional Council within three months of commencement of the change to conditions.</li> </ul>	<b>Yes</b>	The open area is regularly cleaned.

26	On-site vehicle speeds in the outside windrow, compost storage and compost screening areas shall be restricted to not more than 15 kilometres per hour. A sign, capable of being read at a distance of five metres, shall be erected at the main vehicle entrance to the outside storage area to inform all drivers of this requirement.	Yes	Signs in place, all drivers, and contractors inducted with specific mention made of consent compliance.
27	The discharges to air shall not cause odour or dust which is offensive or objectionable beyond the boundary of the site on which this consent is exercised.	Yes	Transitional plan in place
28	Notwithstanding Conditions 24 and 27, all product load-out, heavy vehicle operation and windrow turning activities shall cease at any time when these activities cause visible suspended particulate matter beyond the western site boundary, including at properties occupied by Affordable Storage Limited, Dogwatch Sanctuary Trust or their successors.	Yes	Monitored daily. Reduced operational area, lined with water cannons and misters.
29	<p>The consent holder shall maintain records of any odour or dust complaints received by the consent holder. These records shall include:</p> <ul style="list-style-type: none"> <li>a. Location of complainant when odour or dust was detected;</li> <li>b. Date and time of odour or dust detection;</li> <li>c. Weather conditions, including wind direction, at the composting facility when odour or dust was detected;</li> <li>d. Strength of the odour complained of, assessed on a scale of 1 to 5 by the complainant with the following rating system: 1 odour noticeable but not persistent; 2 odour clear and persistent; 3 odour unpleasant and persistent; 4 odour strong, offensive and persistent; 5 odour very strong and offensive.</li> <li>e. The amount of dust complained of, assessed on a description of the visible quantities and extent of dust deposits on a scale of 1 to 5 by the complainant with the following rating system: 1 noticeable and not extensive; 2 clear and minor coverage; 3 nuisance and moderate coverage; 4 objectionable and extensive coverage; 5 significant extensive deposits, offensive. A description of the appearance of the dust shall also be recorded;</li> <li>f. Any possible cause for the odour or dust complained of; and</li> <li>g. Any corrective action taken.</li> </ul> <p>Records demonstrating compliance with the above condition shall be provided to the Canterbury Regional Council on request and shall be summarised as part of the Annual Environmental Report required under Condition 36.</p>	Yes	Complaints made to ECan are recorded by ECan.
	<b>Monitoring</b>		
30	The consent holder shall undertake site-boundary odour assessments at least once per day, in a manner consistent with Work Instruction WI30 Issue 6, dated 1 September 2010, submitted with the application, or an equivalent later document. These assessments shall occur at no fewer than	Yes	Completed.

	<p>eight locations around the site boundary, including at least one location downwind of the composting tunnels and the maturation windrows. In the event of strong odours being detected, that may create adverse effects beyond the site boundary, then the consent holder shall take all practicable efforts to mitigate the odour using measures that may include the use of masking agents, capping the source, and returning odorous material to the tunnels. Records shall be kept that include the date and time of the assessment, meteorological parameters at the time, odour descriptions and odour intensities at each monitoring location. Staff members responsible for these assessments shall have calibrated noses, determined by suitably qualified persons at an accredited laboratory. These staff members shall be recalibrated for odour sensitivity at least once every three years.</p>		
31	<p>The consent holder shall, prior to unloading a tunnel, undertake an odour assessment of the compost material, in a manner consistent with Work Instruction WI4 Issue 6, dated 1 September 2010, submitted with the application, or an equivalent later document. In the event of strong odours being detected, that may create adverse effects beyond the site boundary, then the consent holder shall return the assessed material to the tunnel and shall not empty the tunnel until it has been determined that the material is no longer odorous to the point where it may create an adverse effect beyond the site boundary. Staff members responsible for these assessments shall have calibrated noses, determined by suitably qualified persons at an accredited laboratory. These staff members shall be recalibrated for odour sensitivity at least once every three years.</p>	Yes	<p>Odour assessments are completed on a continuous basis when tunnels are being emptied.</p>
32	<p>a. At all times during exercise of this consent, wind speed and wind direction shall be measured by an anemometer established on the site.</p> <p>b. The anemometer shall be installed at a height of at least five metres above ground level at a location free from any obstruction that has potential to significantly affect wind flow.</p> <p>c. Wind speed resolution of measurement shall be not more than 0.1 metres per second and wind speed accuracy of measurement shall be at least within +/-0.2 metres per second.</p> <p>d. The anemometer shall be established, located and operated to the satisfaction of the Canterbury Regional Council.</p> <p>e. Wind speed and direction shall be continuously recorded with an averaging time for each parameter of not more than five minutes.</p> <p>f. These data shall be:</p> <p>(i) recorded using an electronic data logging system; and</p> <p>(ii) provided to the Canterbury Regional Council upon request.</p>	Yes	<p>Weather station located on site.</p>



33	<p>a. Dust deposition monitoring shall occur in at least two dust gauges sited near to the boundary with Affordable Storage Limited or successor and the boundary with Dogwatch Sanctuary Trust or successor and at least one further control dust gauge. The location of the dust deposition gauges shall be determined by a suitably qualified person and shall be provided in writing to the Canterbury Regional Council. The method of monitoring shall be ISO DIS-4222.2 or a similar method to the satisfaction of the Canterbury Regional Council. Samples shall be collected monthly and the monitoring results shall be included and summarised in the Annual Environmental Report required under Condition 36.</p> <p>b. Dust control measures shall be implemented to maintain the rate of dust deposition at the consent holder's boundary, measured in accordance with Condition 33(a), at less than 4g/m<sup>2</sup>/30 days above the background concentration measured at the control site. Any exceedance of this trigger level shall be reported to the Canterbury Regional Council, including the likely reasons for exceedance and any remedial action undertaken.</p>	Yes	A total of eight dust gauges are used as controls (2), onsite (3) and offsite (3). Offsite gauges are in the immediate neighboring properties, and these are used to monitor compliance against this consent.
<b>Management Plan</b>			
34	<p>(a) The consent holder shall prepare and implement an Environmental Management Plan (EMP) that addresses the control of discharges to air from the site.</p> <p>(b) The EMP shall be prepared and provided to the Canterbury Regional Council: attention: RMA Compliance and Enforcement Manager, within three months of the granting of this consent variation and within one month of the completion of annual reviews.</p> <p>(c) The EMP shall be reviewed annually.</p> <p>(d) The EMP and any revisions shall include all measures necessary to achieve compliance with the conditions of this consent.</p> <p>(e) The EMP shall include, but not be limited to:</p> <ul style="list-style-type: none"> <li>a. A description of the dust and odour sources on-site;</li> <li>b. The methods to be used for controlling dust and odour at each source;</li> <li>c. A description of consent and monitoring requirements;</li> <li>d. A system of training for employees and contractors to make them aware of the requirements of the EMP; and</li> <li>e. Identifying staff responsible for implementing and reviewing the EMP.</li> </ul>	Yes	
<b>Community Liaison Group</b>			
35	<p>a. Within one month of the commencement of the change of conditions, the consent holder shall invite local residents and interested people to attend a meeting to establish a Community Liaison Group. The invitation to attend and establish a Community Liaison Group shall be extended to include:</p> <ul style="list-style-type: none"> <li>(i) all property owners and occupiers with boundaries adjoining, or but for the presence</li> </ul>	Yes	Ongoing CLG meetings are held as required, including this meeting.

	<p>of roads, with boundaries immediately next to the site; and</p> <p>(ii) all parties who made a submission on the application to change consent conditions.</p> <p>b. A representative of the consent holder shall attend all meetings of the Community Liaison Group. The Canterbury Regional Council shall be invited to send a representative to attend all meetings.</p> <p>c. The consent holder shall ensure that members of the Community Liaison Group are provided with the opportunity and facilities to meet at least once every three months.</p> <p>d. The main purposes of the Community Liaison Group shall be to:</p> <p>a. Identify and address any adverse effects of discharges to air from the site, including possible remedial action; and</p> <p>b. Discuss the results of all monitoring and reporting required under this consent.</p>		
	<b>Reporting</b>		
36	<p>The consent holder shall, no later than the 30<sup>th</sup> of June of each year, provide an Annual Environmental Report to the Canterbury Regional Council setting out all monitoring and reporting results required by conditions of consent and their interpretation by an appropriately qualified person, including dust deposition monitoring and complaints recording undertaken in relation to this consent over the previous period. Where the result of any test or monitoring undertaken in relation to this consent exceeds the relevant limit/trigger level or does not comply with the relevant condition, then the steps that were taken to rectify the non-compliance shall be specified.</p>	<b>Yes</b>	The Annual Environmental Report (AER) report was provided to ECan in July 2022.
	<b>Administration</b>		
37	This consent shall not be exercised concurrently with CRC930514.	<b>Yes</b>	
38	<p>The Canterbury Regional Council may annually, on or about the last working day of March each year, serve notice of its intention to review the conditions of this consent for the purposes of:</p> <p>a. Dealing with any adverse effect on the environment which may arise from the exercise of the consent; or</p> <p>b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or</p> <p>c. Complying with the requirements of an operative regional plan.</p>	<b>Yes</b>	OPP upgrade/relocation options being considered.

## Environment Canterbury Odour and Dust Report August 2022 – October 2022

*(Prepared for the Community Liaison Group meeting 15 November 2022)*

### Bromley Reporting Area

The data used in this report relates to incidents received within the Bromley area, as outlined by the pink area in the map below. For consistency of reporting, only Smelt Its within the pink boundary are considered.



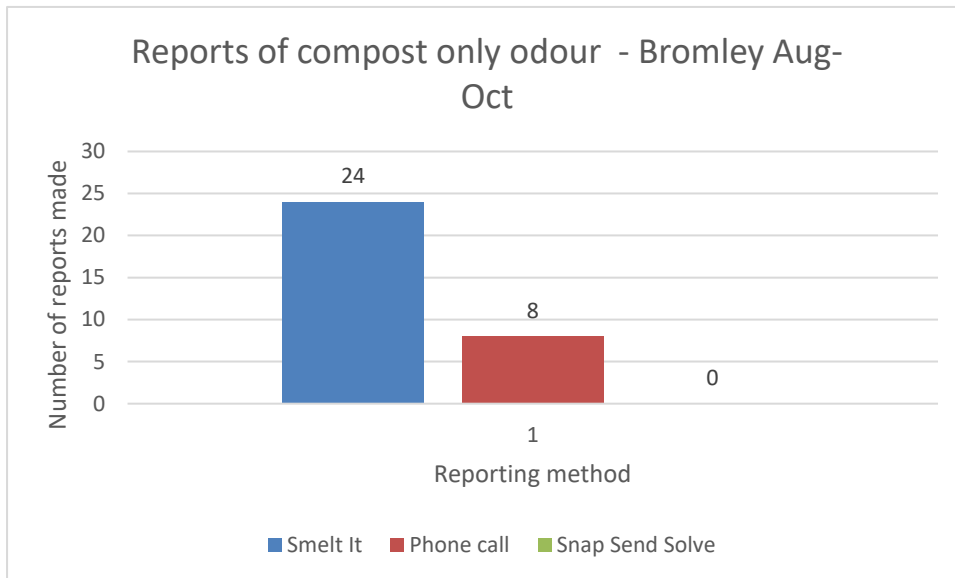
### Odour Monitoring

A total of 48 incidents regarding compost odour were logged with Environment Canterbury during the reporting period. There may be multiple Smelt Its assigned to one incident for administration purposes.

In this reporting period, Environment Canterbury received a total of 72 Smelt It submissions. Of these 72 submissions, 44 reported a compost odour, along with other characteristics. Submitters often mention a range of other odour types, making it difficult for Environment Canterbury to determine the source. Of these 44 submissions, only 24 reported the odour as just having a compost only characteristic.

There has been a significant reduction in Smelt-It submissions over October due to odour from the Wastewater treatment plant improving as the activated sludge plant is now operational.

The below chart shows Smelt It submissions within the reporting period where the submitter had stated specifically *compost odour only* within the Bromley area. It also includes phone call and Snap Send Solve reports.



During the reporting period, 23 assessments were carried out by Warranted Officers in Bromley. Odour from Living Earth was substantiated beyond the property boundary on 6 occasions at a low level. This means the odour would only be considered offensive and objectionable if it occurred on a regular or frequent basis.

There were no Notices of non-compliances issued in Bromley during the reporting period.

Each time an officer confirms odour from Living Earth, odour from the Wastewater Treatment Plant is ruled out as the source. This is done so through a 360 odour assessment conducted under Ministry for the Environment Guidelines.

### **Dust Monitoring**

During the reporting period, Environment Canterbury received 3 reports of dust in the Bromley area. None of these were associated with Living Earth.

# Review and Reporting of Living Earth's Dust Monitoring Programme – July 2021 to June 2022

✦ Prepared for

Living Earth

✦ October 2022



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## Quality Control Sheet

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### DOCUMENT CONTRIBUTORS

Prepared by

SIGNATURE



Katherine Gray

Reviewed and approved by

SIGNATURE



Jeff Bluett

### Limitations:

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Living Earth and others (not directly contracted by PDP for the work), including Fulton Hogan. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of Living Earth for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

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## Table of Contents

SECTION	PAGE
<b>1.0 Introduction</b>	<b>1</b>
1.1 Background	1
1.2 Consent Conditions	1
1.3 Scope of the Project	2
<b>2.0 Summary of Monitored Dust Deposition Rates</b>	<b>3</b>
<b>3.0 Analysis of Total Organic Dust Deposition Rate</b>	<b>6</b>
3.1 Overview	6
3.2 Compliance of Total Organic Dust Deposition Rate with the Consent Limit	7
3.3 Summary of CCC and CRC reporting	9
3.4 Analysis of Wind Data – Influence on Control and Impact Sites	10
<b>4.0 Investigation of Dust Deposition Exceedances</b>	<b>15</b>
4.1 Introduction	15
4.2 Potential Causes of Exceedances	15
4.3 Remedial Actions	19
<b>5.0 Complaints</b>	<b>20</b>
<b>6.0 Summary of the Monitoring Programme 2021-2022</b>	<b>20</b>
<b>7.0 Compliance with Consent Conditions 2020-2021</b>	<b>21</b>
<b>8.0 Future Dust Deposition Monitoring at the Site</b>	<b>22</b>

## Table of Figures

Figure 1: Location of Living Earth and Dust Deposition Monitoring Sites	4
Figure 2: Total Atmospheric Dustfall (g/m <sup>2</sup> /30-days), July 2021 to June 2022	5
Figure 3: Total Organic Dust Deposition (g/m <sup>2</sup> /30-days), July 2021 to June 2022	6
Figure 4: Organic Dust Deposition Rate above background (g/m <sup>2</sup> /30-days) for impact sites	8
Figure 5: Bromley EWS wind rose, 1 July 2021 to 30 June 2022	12
Figure 6: Average Hourly Rainfall at Christchurch Aero Station 4843	16
Figure 7: Relative Humidity at New Brighton Pier (2015-2019)/Bromley (2019-2022)	17

## Table of Tables

Table 1: Dates of sample set-up, collection, and exposure time for each monitoring period	3
Table 2: Organic dust deposition rate above background for relevant monitored periods	9
Table 3: Summary of wind patterns and dust levels	13

## Appendices

Appendix A: Monthly Wind Roses (Bromley EWS)
Appendix B: Exceedance Period Wind Roses (Bromley EWS)



## 1.0 Introduction

### 1.1 Background

Living Earth (LE) operates an organics processing plant located at 40 Metro Place, Bromley, Christchurch (shown in **Figure 1**). LE's air discharges are subject to the conditions attached to air discharge consent CRC080301.1 ("the consent") from Canterbury Regional Council (CRC) to discharge contaminants (odour and dust) to air. While LE operates the composting facility, Christchurch City Council (CCC) holds the consent.

Pattle Delamore Partners (PDP) has been engaged by LE to provide this report to assist in meeting the requirements of dust monitoring and reporting Conditions 33 and 36 of the consent. This report provides a technical review of the LE dust deposition data and monitoring programme and summarises LE's compliance with the relevant consent conditions.

It is important to note that the 2021-2022 dust deposition monitoring period was an atypical year for the LE site. The company continued removing outdoor windrows from the site, finishing in February 2022. This has resulted in relatively high dust deposition from July 2021 to February 2022. However, the result of these changes has been a significant reduction in dust discharged from the site as seen in the results March to June 2022.

### 1.2 Consent Conditions

The consent conditions relating to dust monitoring and control are listed below. Condition 33 provides details on how dust monitoring, reporting and dust control must be carried out. The objective of this report is to satisfy the reporting requirements of Condition 36.

Condition 33:

*“(a) Dust deposition monitoring shall occur in at least two dust gauges sited near to the boundary with Affordable Storage Limited or successor and the boundary with Dogwatch Sanctuary Trust or successor and at least one further control dust gauge. The location of the dust deposition gauges shall be determined by a suitably qualified person and shall be provided in writing to the Canterbury Regional Council. The method of monitoring shall be ISO DIS-4222.2 or a similar method to the satisfaction of the Canterbury Regional Council. Samples shall be collected monthly and the monitoring results shall be included and summarised in the Annual Environmental Report required under Condition 36.*

*(b) Dust control measures shall be implemented to maintain the rate of dust deposition at the consent holder's boundary, measured in accordance with Condition 33(a), at less than 4 g/m<sup>2</sup>/30 days above the background concentration measured at the control site. Any exceedance of this trigger level shall be reported to the Canterbury Regional Council, including the likely reasons for exceedance and any remedial action undertaken."*

Condition 36:

*"The consent holder shall, no later than the 30th of June of each year, provide an Annual Environmental Report to the Canterbury Regional Council setting out all monitoring and reporting results required by conditions of consent and their interpretation by an appropriately qualified person, including dust deposition monitoring and complaints recording undertaken in relation to this consent over the previous period. Where the result of any test or monitoring undertaken in relation to this consent exceeds the relevant limit/trigger level or does not comply with the relevant condition, then the steps that were taken to rectify the non-compliance shall be specified."*

### 1.3 Scope of the Project

The following tasks define the scope of the project and are addressed in this report:

- Task 1:** Obtain and review the dust deposition data and reports from Fulton Hogan's Atmospheric Dustfall reports July 2021 to June 2022 for all sites, numbers 1 to 7;
- Task 2:** Liaise with LE staff to obtain a summary of the composting operations for the 2021-2022 monitoring year, and to obtain an update on any changes to operational procedures that occurred in the 2021-2022 year;
- Task 3:** Obtain wind speed and wind direction data for the period 1 July 2021 to 30 June 2022 (inclusive) from the Bromley Electronic Weather Station (EWS). Undertake an analysis of wind data to confirm dust monitoring sites 1 and 4 can be used as representative indicators of background dust deposition;
- Task 4:** Review the LE-supplied estimate of organic dust deposition rate for each month (total deposition minus background) for the downwind sites (site numbers 2, 3, 5, 6, and 7);
- Task 5:** Identify any exceedances of the 4 g/m<sup>2</sup>/30-day consent limit for organic dust at the downwind monitoring sites;
- Task 6:** Liaise with LE staff to establish likely reasons for any exceedances identified;

**Task 7:** Liaise with LE staff to establish what, if any remedial action was undertaken in response to any exceedances identified;

**Task 8:** Review any dust complaints, the relationship to the dust monitoring undertaken, site activities and mitigation; and,

**Task 9:** Produce a report which summarises the key findings of Tasks 1 to 8.

## 2.0 Summary of Monitored Dust Deposition Rates

This section presents a summary of the dust deposition rate data recorded over the period July 2021 to June 2022 at monitoring sites 1-7, shown in **Figure 1**. Site 2 was moved in April 2021 due to the gauge filling with water from LE's sprinklers. Its current position is shown in **Figure 1**. The samples were collected by Fulton Hogan Limited from the deposition gauges at the end of each monitoring period<sup>1</sup>. The dates of sample set-up, collection and the total exposure time are shown in **Table 1**. Each monitoring period lasted approximately one month to provide estimates of dust deposition able to be compared with the guideline of 4 g/m<sup>2</sup> per 30 days. The samples at all seven sites were set up and collected on the same days.

Table 1: Dates of sample set-up, collection, and exposure time for each monitoring period			
Monitoring period	Date of sample set-up	Date of sample collection	Exposure time (days)
Jul-21	22/06/2021	27/07/2021	35
Aug-21	27/07/2021	8/09/2021	43
Sep-21	8/09/2021	28/09/2021	20
Oct-21	28/09/2021	26/10/2021	28
Nov-21	26/10/2021	23/11/2021	28
Dec-21	23/11/2021	14/12/2021	21
Jan-22	14/12/2021	25/01/2022	42
Feb-22	25/01/2022	22/02/2022	28
Mar-22	22/02/2022	22/03/2022	28
Apr-22	22/03/2022	26/04/2022	35
May-22	26/04/2022	24/05/2022	28
Jun-22	24/05/2022	28/06/2022	35

<sup>1</sup> Fulton Hogan Canterbury Laboratory monthly test reports on atmospheric dustfall over 30 days by Andy Howie, available on request.

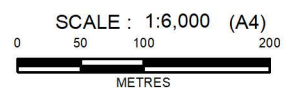




- MONITORING SITES:  
 1 - CONTROL  
 2 - DOGWATCH  
 3 - AFFORDABLE STORAGE  
 4 - CONTROL  
 5 - AFFORDABLE STORAGE INSIDE  
 6 - DOGWATCH LAWN  
 7 - PUMP STATION

SOURCE:  
 1. AERIAL IMAGERY SOURCED FROM THE LINZ DATA SERVICE AND LICENCED FOR RE-USE UNDER THE CREATIVE COMMONS ATTRIBUTION 4.0 INTERNATIONAL LICENCE.

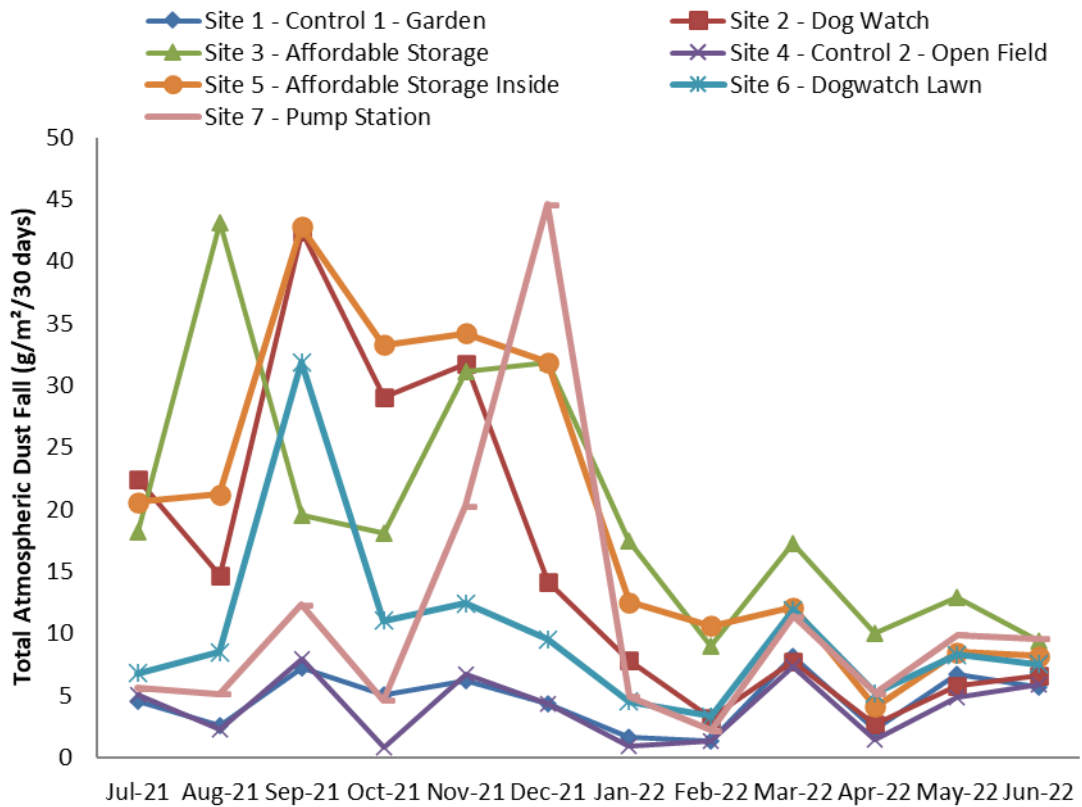
FIGURE 1 : LOCATION OF LIVING EARTH AND DUST DEPOSITION MONITORING SITES





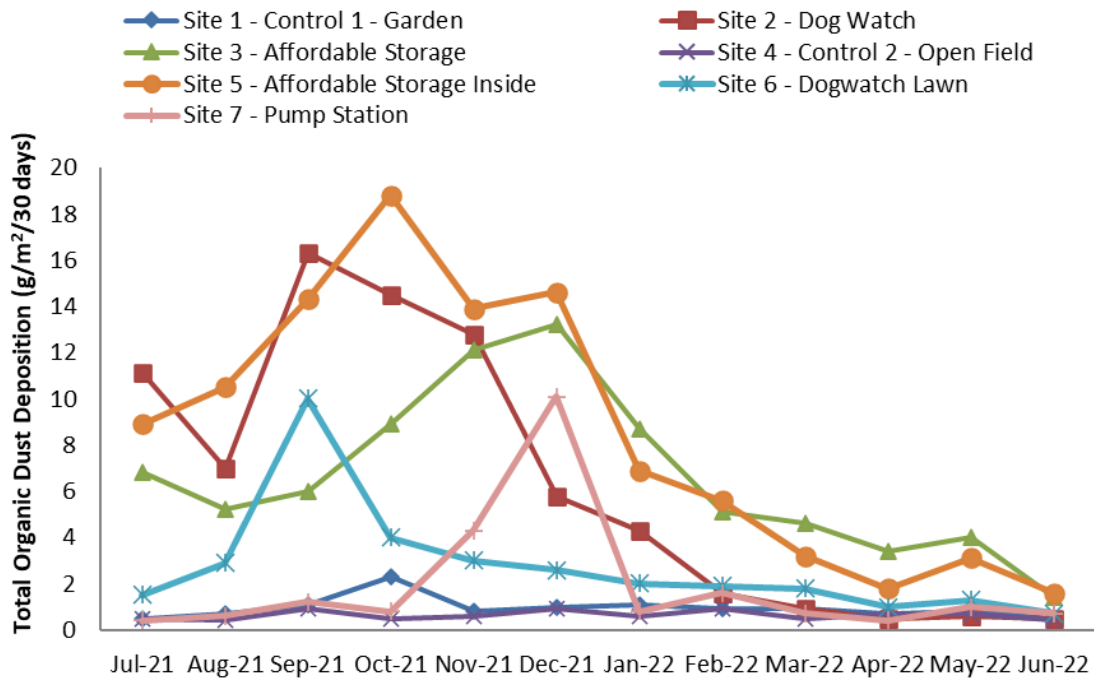
After collection, each sample was analysed for Total Atmospheric Dustfall (TAD, in g/m<sup>2</sup>/30-days), which is comprised of Total Suspended Solids (TSS) and Total Dissolved Solids (TDS) deposited in the gauge during the exposure period. The deposition of Total Organic Solids (TOS) (g/m<sup>2</sup>/30-days) was also analysed; in this report TOS will be referred to as Total Organic Dust Deposition (TODD) and be used as a marker of Living Earth's dust discharge.

The summaries of TAD and TODD data between July 2021 and June 2022 are presented in **Figure 2** and **Figure 3** below, respectively.



**Figure 2: Total Atmospheric Dustfall (g/m<sup>2</sup>/30-days), July 2021 to June 2022**

The maximum TAD measurement during the July 2021 to June 2022 reporting year (44.6 g/m<sup>2</sup>/30-days) is lower than the maximum for the July 2020 to June 2021 reporting year (65.2 g/m<sup>2</sup>/30-days). The average TAD has also decreased from 15.1 g/m<sup>2</sup>/30-days in the 20/21 reporting period to 11.6 g/m<sup>2</sup>/30-days in the 21/22 reporting period.



**Figure 3: Total Organic Dust Deposition (g/m<sup>2</sup>/30-days), July 2021 to June 2022**

TODD has also decreased in the July 2021 to June 2022 monitoring period. More detailed analysis of the TODD data is given in Section 3.0.

### 3.0 Analysis of Total Organic Dust Deposition Rate

#### 3.1 Overview

To comply with Condition 33(b) of the consent, LE is required to implement dust control measures to maintain the rate of dust deposition at its boundary below 4 g/m<sup>2</sup>/30-days above the background rate of dust deposition as measured at the control sites. PDP has adopted the approach of Golder Associates (NZ) Limited’s 2014 dust monitoring report<sup>2</sup> which identified that using TODD as the measure upon which to assess compliance of Condition 33(b) is the most appropriate option of the dust metrics available. TODD is the fraction of the TAD that most closely reflects LE’s operations and nature of discharges.

The deposition rate of TODD above background is calculated by subtracting the average background TODD deposition rate (measured at control site numbers 1 and 4) from the TODD dust deposition rate measured at the impact sites (numbers 2, 3, 5, 6, and 7).

<sup>2</sup> Golder (2014). Review of Dust Monitoring and Reporting. Report to Living Earth by Golder Associates (NZ) Limited. Report number 1478104304\_002, September 2014.

If TODD at the impact site is less than 4 g/m<sup>2</sup>/30 days before the background is removed, then it is not possible that an exceedance of the consent level occurred for that month. Therefore, only the months with potential exceedances (i.e., total TODD above 4 g/m<sup>2</sup>/30 days) have been considered for further analysis. The months with potential exceedances are identified in Section 3.2 and further discussed in Section 4.0.

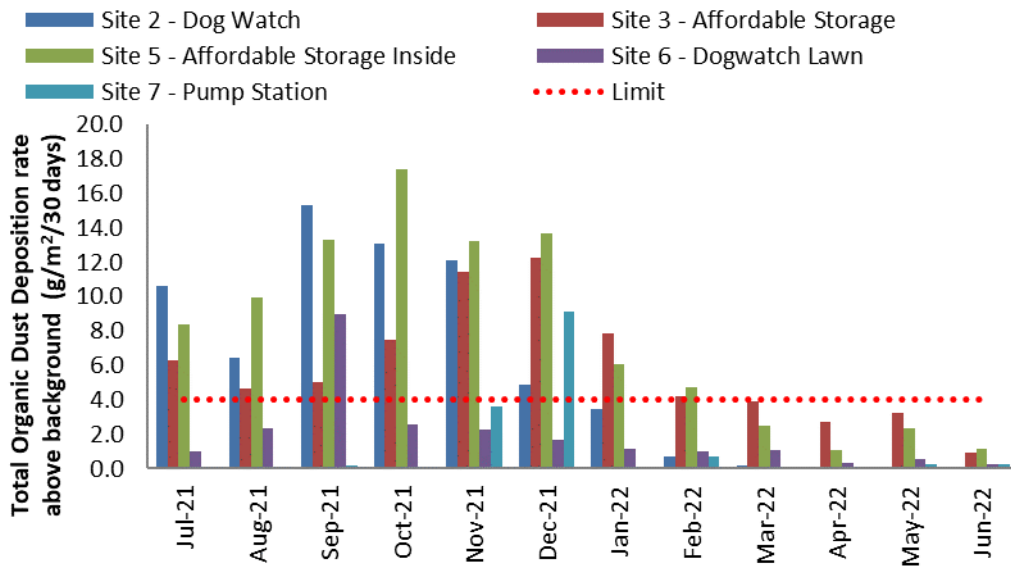
To confirm that the control sites (numbers 1 and 4) have data representative of background concentrations, it is important to check that they are upwind of LE for the majority of each sampling period. The LE impact monitoring sites (numbers 2, 3, 5, 6, and 7) must also be confirmed to be representative by ensuring the sites were downwind of the LE operations for significant amounts of time during each sampling period. To check the representativeness of the LE monitoring sites for the intended background or impact purposes, an analysis of predominant wind patterns during each monitoring period has been undertaken in Section 3.3 for months identified with potential exceedances of the consent limit.

### **3.2 Compliance of Total Organic Dust Deposition Rate with the Consent Limit**

This section presents an assessment of the TODD rates against the consent limit for all months and identifies potential and actual exceedances.

An initial evaluation has been undertaken using the TODD results for the five impact sites over the months July 2021 to June 2022 in order to identify which monitored periods have potential exceedances of the dust deposition limit given in Condition 33(b).

**Figure 4** shows the TODD at impact sites following the removal of background TODD from the control sites.



**Figure 4: Organic Dust Deposition Rate above background (g/m<sup>2</sup>/30-days) for impact sites**

Figure 4 shows that dust deposition from March 2022 to June 2022 did not exceed the consented limit. All remaining months from July 2021 to February 2022 have TODD above 4 g/m<sup>2</sup>/30-days at least one of the impact sites. Notably impact sites 2 and 3 are placed inside of the LE boundary to measure onsite TODD levels and therefore cannot be considered exceedances beyond the boundary. Impact sites 5, 6 and 7 are outside of the boundary. Sites 6 and 7 recorded one exceedance each and exceedances were measured at site 5 in 8 of the 12 months. Therefore, further analysis is required to evaluate whether these exceedances of the dust deposition limit are likely to have occurred due to the discharge of dust from LE's activities.

The exceedances shown in Figure 4 are presented in Table 2 where exceedances of the consent limit are denoted by bold text and shaded cells.



**Table 2: Organic dust deposition rate above background for relevant monitored periods**

Monitoring period	Background (g/m <sup>2</sup> /30 days)	Organic Dust Deposition Rate Above Background (g/m <sup>2</sup> /30 days)				
		Onsite Monitors		Offsite Monitors		
		Site 2 - Dog Watch	Site 3 - Affordable Storage	Site 5 - Affordable Storage Inside	Site 6 - Dogwatch Lawn	Site 7 - Pump Station
Jul-21	0.5	<b>10.6</b>	<b>6.3</b>	<b>8.4</b>	1.0	0.0
Aug-21	0.6	<b>6.5</b>	<b>4.7</b>	<b>10.0</b>	2.4	0.0
Sep-21	1.0	<b>15.3</b>	<b>5.0</b>	<b>13.3</b>	<b>9.0</b>	0.2
Oct-21	1.4	<b>13.1</b>	<b>7.5</b>	<b>17.4</b>	2.6	0.0
Nov-21	0.7	<b>12.1</b>	<b>11.4</b>	<b>13.2</b>	2.3	3.6
Dec-21	1.0	<b>4.9</b>	<b>12.3</b>	<b>13.7</b>	1.7	<b>9.2</b>
Jan-22	0.9	3.5	<b>7.9</b>	<b>6.05</b>	1.2	0.0
Feb-22	0.9	0.7	<b>4.2</b>	<b>4.7</b>	1.0	0.7
Mar-22	0.7	0.2	3.9	2.5	1.1	0.0
Apr-22	0.7	0.0	2.7	1.1	0.3	0.0
May-22	0.8	0.0	3.3	2.4	0.6	0.3
Jun-22	0.5	0.1	1.0	1.2	0.3	0.3

*Notes:*

1. Values that exceed the consent limit of 4 g/m<sup>2</sup>/30 days above background concentrations are shown in bold with a grey background.
2. Negative values of impact site minus background are reported as zero values.

**Table 2** and **Figure 4** show that there are a total of 24 exceedances of the consent limit (4 g/m<sup>2</sup>/30-days above background concentration), a decrease from 32 in the previous monitoring period. Ten of these exceedances are from off-site dust deposition gauges. Further investigation of the exceedances are discussed in the analysis of wind data in Section 3.4 and investigation of exceedances in Section 4.0.

### 3.3 Summary of CCC and CRC reporting

A summary of CCC and CRC reporting for each month when exceedances were observed at the monitoring sites is provided below:

- ∴ **July 2021:** The exceedances monitored at sites 2, 3 and 5 were 165%, 58%, and 110% higher than the consent limit, respectively;
- ∴ **August 2021:** The exceedances monitored at sites 2, 3, and 5 were 61%, 16%, and 149% higher than the consent limit, respectively;
- ∴ **September 2021:** The exceedances monitored at sites 2, 3, 5, and 6 were 283%, 25%, 233%, and 125% higher than the consent limit, respectively;
- ∴ **October 2021:** The exceedances monitored at sites 2, 3, and 5 were 228%, 88%, and 335% higher than the consent limit, respectively;
- ∴ **November 2021:** The exceedances monitored at sites 2, 3, and 5 were 203%, 185%, and 230% higher than the consent limit, respectively;
- ∴ **December 2021:** The exceedances monitored at sites 2, 3, 5, and 7 were 21%, 206%, 241%, and 129% higher than the consent limit, respectively;
- ∴ **January 2022:** The exceedances monitored at sites 3 and 5 were 96% and 51% higher than the consent limit, respectively; and,
- ∴ **February 2022:** The exceedances monitored at sites 3 and 5 were 5% and 18% higher than the consent limit, respectively.

In summary, exceedances were measured at site 2 from July 2021 to December 2021, at sites 3 and 5 from July 2021 to February 2022, at site 6 in September 2021, and at site 7 in December 2021. Sites 2 and 3 are onsite monitors, before boundary dust control measures. Site 5 is offsite, on the boundary between Affordable Storage and Dogwatch, about 15 m from the LE boundary, site 6 is located on the dogwatch lawn, about 100 m from the LE boundary, and site 7 is located about 650 m from the LE boundary at the pump station. All exceedances were reported to CCC, and the site 5, 6, and 7 (offsite) exceedances were reported to CRC by CCC.

### 3.4 Analysis of Wind Data – Influence on Control and Impact Sites

To confirm that the control sites (1 and 4) and the impact sites (2, 3, 5, 6 and 7) provide data that is appropriate for assessment of compliance with condition 33(b), wind data was obtained from the Bromley meteorological station and analysed. Data from the onsite meteorological station is also available for this monitoring period. However, this data is not easily averaged and formatted to enable the generation of monthly and annual wind roses.

The Bromley data is much better suited for the purpose of generating annual and monthly windroses. The Bromley EWS is located about 1.5 km north-east of the LE facility. Given the proximity of the LE site to the Bromley EWS and the lack of any topographical features between the two locations, PDP considers the station is likely to provide data that is representative of the wind conditions experienced at the LE site.

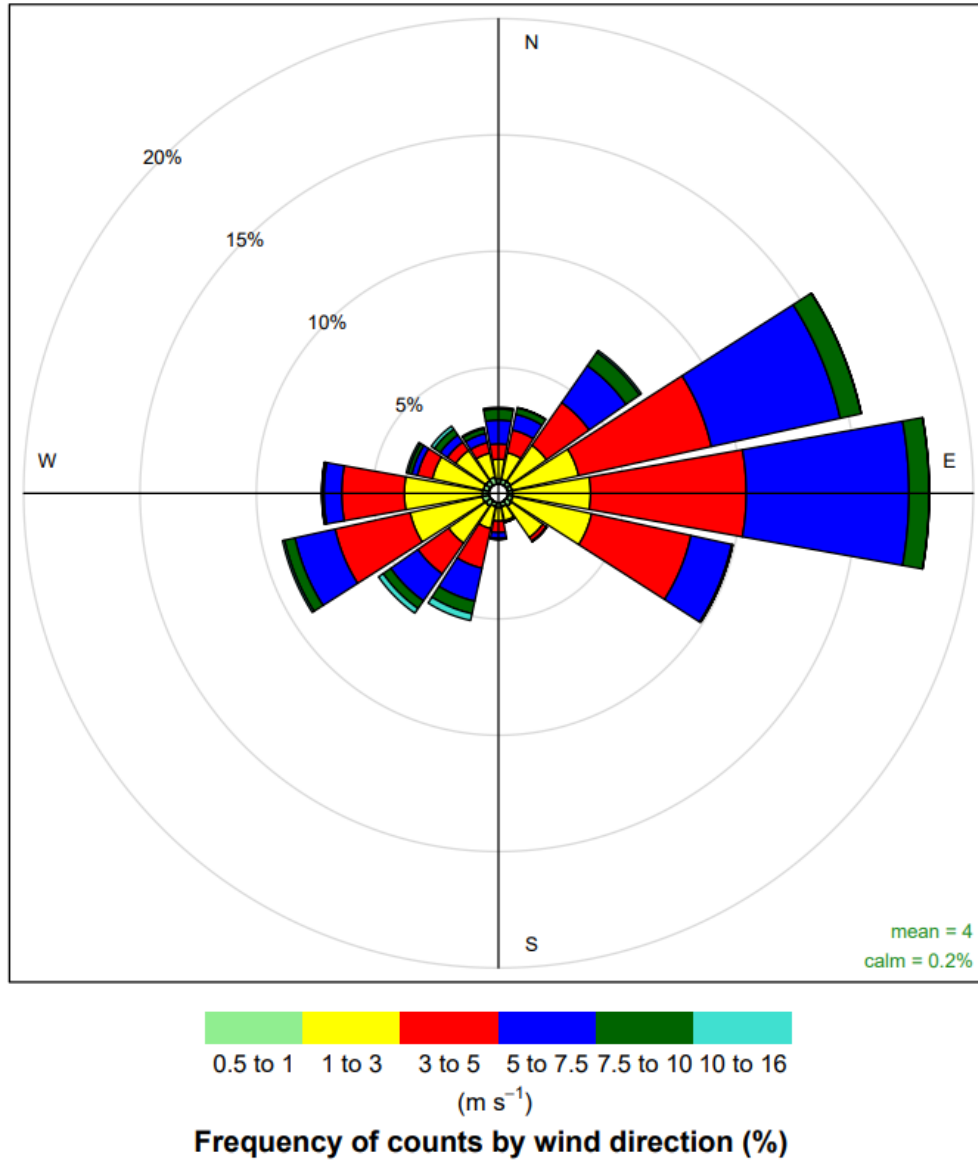
Frequencies of wind speed and direction were checked for each monitored period. Based on the wind data, it was concluded that sites 1 and 4 could be considered as representative control sites (i.e., upwind of LE for the majority of time).

The remaining sites can be considered impact sites (i.e., downwind of LE for a relatively large number of hours). **Figure 5** shows the wind rose for the period from July 2021 to June 2022. The annual wind rose demonstrates that the predominant wind directions are from the east and east north-east, with winds from the west south-west and east-south-east also common. This suggests sites 2, 3, 5, 6 and 7 are appropriately located to be downwind of the LE activities for the predominant wind directions.

The annual wind rose is similar to those presented in previous monitoring reports for LE<sup>3</sup>. The previous reports have also noted the predominant wind direction is from the east (or north-east) and there is also a significant frequency of winds from the west, which is similar to this year's observations. Winds from the south occur infrequently, so monitoring sites 1 and 4 to the north of the LE facility should not be significantly impacted by onsite activities. Therefore, the annual wind rose supports their use as representative sites for measurement of background levels of dust.

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<sup>3</sup> Pattle Delamore Partners (2020). *Review and Reporting of Living Earth's Dust Monitoring Programme – July 2019 to June 2020*.  
Pattle Delamore Partners (2021). *Review and Reporting of Living Earth's Dust Monitoring Programme – July 2020 to June 2021*.



**Figure 5: Bromley EWS wind rose, 1 July 2021 to 30 June 2022**

Monthly wind roses for the monitoring period are shown in **Appendix A**. There is variation in the distribution of wind speeds and directions between months when compared with each other and against the annual average. These variations can affect TAD and TODD levels at monitoring sites as they will be downwind from different dust sources at different times of the year.

In **Table 3**, wind directions are compared with monthly dust deposition rates at monitoring sites for the 8 months identified as having exceedances in **Section 3.2**.

Table 3: Summary of wind patterns and dust levels				
Period	General wind patterns <sup>1</sup> (see Appendix B for wind roses)	TODD levels exceeding 4 g/m <sup>2</sup> /30 days at impact monitoring sites	Hours impact sites are downwind during winds >5 m/s	Max gust while downwind (m/s)
July (22/06/2021 to 27/07/2021)	High frequency from E Moderate frequency from W, WSW, and ESE	Site 2 at 10.6 g/m <sup>2</sup> /30 days, Site 3 at 6.3 g/m <sup>2</sup> /30 days, Site 5 at 8.4 g/m <sup>2</sup> /30 days	85 (13%)	18.7
August (27/07/2021 to 08/09/2021)	High frequency from ESE Moderate frequency from E	Site 2 at 6.5 g/m <sup>2</sup> /30 days, Site 3 at 4.7 g/m <sup>2</sup> /30 days, Site 5 at 10.0 g/m <sup>2</sup> /30 days	174 (16%)	16.3
September (08/09/2021 to 28/09/2021)	Moderate frequency from E, ENE, and ESE	Site 2 at 15.3 g/m <sup>2</sup> /30 days, Site 3 at 5.0 g/m <sup>2</sup> /30 days, Site 5 at 13.3 g/m <sup>2</sup> /30 days, Site 6 at 9.0 g/m <sup>2</sup> /30 days	71 (14%)	22.6
October (28/09/2021 to 26/10/2021)	High frequency from E and ENE Moderate frequency from ESE	Site 2 at 13.1 g/m <sup>2</sup> /30 days, Site 3 at 7.5 g/m <sup>2</sup> /30 days, Site 5 at 17.4 g/m <sup>2</sup> /30 days	158 (23%)	12.5
November (26/10/2021 to 23/11/2021)	High frequency from E and ENE	Site 2 at 12.1 g/m <sup>2</sup> /30 days, Site 3 at 11.4 g/m <sup>2</sup> /30 days, Site 5 at 13.2 g/m <sup>2</sup> /30 days	175 (25%)	15.5
December (23/11/2021 to 14/12/2021)	High frequency from E and ENE	Site 2 at 4.9 g/m <sup>2</sup> /30 days, Site 3 at 12.3 g/m <sup>2</sup> /30 days, Site 5 at 13.7 g/m <sup>2</sup> /30 days, Site 7 at 9.2 g/m <sup>2</sup> /30 days	176 (33%)	11.9
January (14/12/2021 to 25/01/2022)	High frequency from E and ENE Moderate frequency from WSW	Site 3 at 7.9 g/m <sup>2</sup> /30 days, Site 5 at 6.1 g/m <sup>2</sup> /30 days	272 (26%)	13.6
February (25/01/2022 to 22/02/2022)	High frequency from E and ENE	Site 3 at 4.2 g/m <sup>2</sup> /30 days, Site 5 at 4.7 g/m <sup>2</sup> /30 days	192 (28%)	14.2

Notes:

<sup>1</sup> High and moderate frequency winds have been categorised as >15% and 10 – 15%, respectively.

Similar to previous monitoring years, the most frequent winds are generally from an easterly direction. June 2022 was the only month when winds from a westerly direction occurred more frequently than easterly winds, however easterly winds still occurred frequently in this month. The impact sites (2, 3, 5, 6 and 7) are all located in a westerly direction relative to the LE operation. This means that winds from an easterly direction increase the likelihood of dust being carried towards the impact sites.

Measured dust deposition rates were generally higher from July 2021 through to February 2022 than for the last four months of the year. Wind speeds in the months with exceedances were similar to wind speeds in the months with no exceedances.

Dust deposition is generally lower in winter due to increased rainfall suppressing dust, however in this monitoring period it appears that the biggest impact on dust deposition levels throughout the year has been the removal of the windrows. Dust deposition was much lower in June 2022 than July 2021, despite both being winter months. Dust deposition levels significantly decreased after the removal of the windrows was completed in February 2022. The exceedances in February 2022 were only slightly above the limit and there have been no exceedances of the consent limit since then.

Sites 2, 3, and 5 generally had the highest dust deposition rates of the impact sites. These sites are located close to the area where windrows were located and sites 3 and 5 are effectively downwind from the site activities for winds blowing from west-north-west right through to south-south-west. Sites 2 and 3 are inside the LE boundary so dust can be deposited as a result of slower wind speeds than those required to impact the more distant monitoring sites. Sites 2 and 3 had 6 and 8 exceedances in the 12 monitoring months, respectively. The maximum exceedances at sites 2 and 3 were 16.3 g/m<sup>2</sup>/30 days in September 2021 and 13.2 g/m<sup>2</sup>/30 days in December 2021, respectively. In addition, impact site 5 which is outside the site boundary where mitigation should have reduced dust deposition exceeded the consent limit for 8 out of 12 months with a maximum exceedance of 18.8 g/m<sup>2</sup>/30 days in October 2021.

Dust deposition is generally lower at sites 6 and 7 than it is at the other impact sites. These sites are further away from the boundary of the LE site than sites 2, 3 and 5. Stronger wind speeds would be required to transport the dust to these more distant monitoring sites. The increase in dust deposition at the LE boundary is representative of the localised effects of the LE activities onsite. Despite this there was one exceedance at site 6 (Dogwatch lawn) about 100 m from the LE boundary in September and one at site 7 (pump station) 650 m from the LE boundary in December. This is unexpected due to the distance from LE activities to site 7, but the exceedance may well have been due to the relatively large volumes of dust generated from the site as the windrows were removed.

## 4.0 Investigation of Dust Deposition Exceedances

### 4.1 Introduction

Condition 33(b) of the resource consent requires the consent holder to report on the likely reasons for any exceedances that occur, and any remedial action taken. This section of the report examines potential reasons or causes of exceedances which occurred during the eight months listed in Section 3.2 and reports on remedial action taken by LE at the time.

### 4.2 Potential Causes of Exceedances

Dust deposition exceedances were observed at sites 2, 3, 5, 6 and 7.

It is anticipated that sites within or on the boundary of the LE site (i.e., sites 2, 3 and 5) would experience higher TODD rates than the more distant sites (i.e., sites 6 and 7). This is consistent with the monitoring results of July 2021 to June 2022 and previous years monitoring results.

There were 8 fewer TODD exceedances in the 2021-2022 monitoring year in comparison to the 2020-2021 monitoring year.

As outlined in the previous year's reports, related studies confirm that relative humidity and rainfall show significant negative association with dustfall level (Giri et al<sup>4</sup>, Naddafi et al<sup>5</sup>, Yassen<sup>6</sup>). A positive association between wind speed and dustfall was also reported.

To investigate probable causes of the exceedances, PDP has reviewed wind speed and wind direction data from the Bromley EWS for July 2021 to June 2022 and precipitation data from the Christchurch Airport weather station for 2018 to 2022. PDP has also reviewed relative humidity data from the New Brighton Pier weather station from July 2015 to October 2019 and from the Bromley EWS from October 2019 to June 2022. This is due to the Bromley EWS being installed in October 2019.

#### ∴ Wind speeds and directions:

Through the summer months of December to February wind direction and speed were similar to the previous year. In autumn (March, April, and May) wind speed and direction were similar to the previous year, however wind frequency from the east and east northeast were higher in March 2022 than March 2021. The winter season (June to August) was similar to the previous season in wind speed and frequency, with a higher frequency of winds from

<sup>4</sup> D. Giri, V. Krishna Murthy, and P. R. Adhikary, The influence of meteorological conditions on PM<sub>10</sub> concentrations in Kathmandu Valley. *International Journal of Environmental Research*, vol. 2, no. 1, pp. 49-60, 2008.

<sup>5</sup> K. Nabizadeh, Z. Soltanianzadeh, and M. H. Ehrapoosh, Evaluation of dustfall in arid air of Yazd, *Journal of Environmental Health Science Engineering*, vol.3, no.3, pp. 161-168, 2006.

<sup>6</sup> M. E. Yassen, Analysis of climatic conditions and air quality observations in Kuala Lumpur and Petaling Jaya, Malaysia, during 1983-1997 [M.S. thesis], University Kebangsaan Malaysia, 2000.

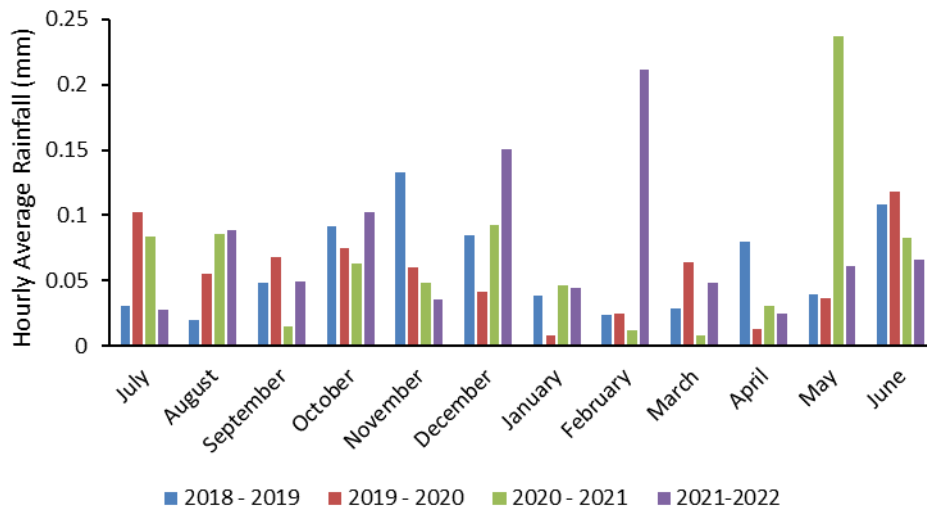
the west southwest and lower frequency from the north in June 2022 compared to June 2021. The spring season (September to November) had similar wind speeds to the previous monitoring year but a higher frequency of easterly winds in November. Annual average windspeed was the same as the previous 2020-2021 period at 4.0 m/s.

In summary, there appears to be a similar annual frequency of north and east winds to previous years, and there does not appear to be a significant amount of higher wind speeds or frequencies which have potential to result in higher potential for dust in the current monitoring period than in 2020-2021.

∴ **Precipitation level**

Hourly average rainfall data from the Christchurch Aero meteorological station for July 2017 to June 2022 is shown in **Figure 6**. Rainfall in December and February was significantly higher than previous years, but rainfall in July, November, and June was lower compared to previous years.

The total rainfall in the 2021 to 2022 period was 42% greater than the total rainfall in the 2020 to 2021 monitoring period. In summary, the higher overall quantity of rainfall in 2021 - 2022 results in decreased potential for dust compared to the previous monitoring period.



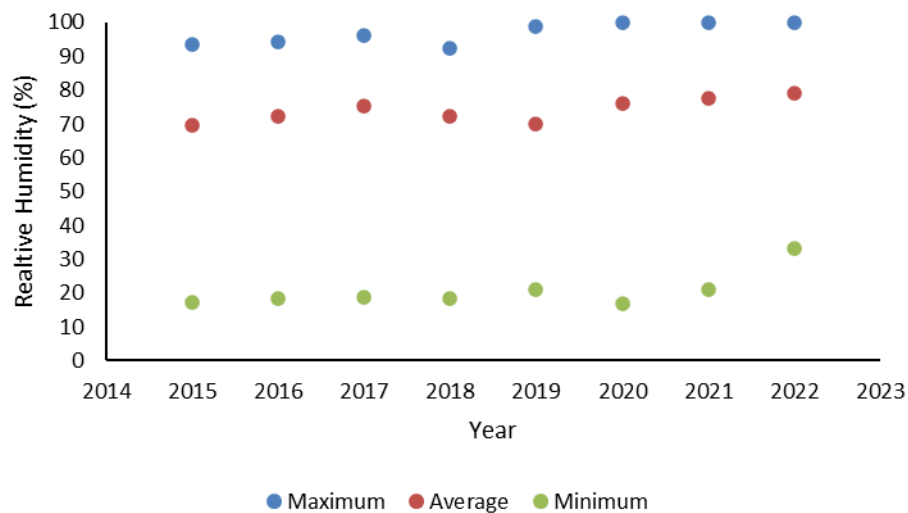
**Figure 6: Average Hourly Rainfall at Christchurch Aero Station 4843**



∴ **Relative humidity**

Relative humidity fluctuated between 33% and 100% in the July 2021 to June 2022 period. Average monthly relative humidity ranged from 72% to 84% with the lowest average humidity recorded in September, indicating this was a drier month. There is less variability in average monthly relative humidity compared to the previous monitoring period. July 2021 had the highest average humidity of 87%. The average annual relative humidity was slightly higher than the previous period, suggesting the 2021 – 2022 monitoring period's RH was not a key factor driving the high dust deposition. The average annual relative humidity from July 2015 to June 2022 ranged between 70% and 79% with the average in 2021 being 77% and the average in 2022 being 79% (Figure 7).

In summary, relative humidity from July 2021 to June 2022 was slightly higher compared to previous years.



**Figure 7: Relative Humidity at New Brighton Pier (2015-2019)/Bromley (2019-2022)**

∴ **Site activities and dust management**

LE informed PDP that site activities and dust management were not typical of regular operation throughout the year. This is due to a number of circumstances requiring adaptive management of the site as LE prepared to have all windrows removed from the outside area by February 2022. LE note the following about site operations during the 2021-2022 period:

- LE are currently managing their transition to remove material from the outside area to offsite locations which has resulted in increased dust generation. The windrows were removed by February 2022. Removal of surplus tailings is also a focus in 2022, with 8,600 tonnes having been removed by 28 September 2022, and 1,564 tonnes remaining on site, noting 3,000 tonnes is the optimal volume required for the composting process; and,
- There is a facility which manages shingle, soil, and other materials in stockpiles for bulk sales west of the site on the other side of State Highway 74. This has generated visible plumes of suspended material during windy days. However, this type of activity is more likely to result in TAD than TODD and therefore is unlikely to be measured as TODD in dust gauges.

The noted changes and disruptions to typical management are what most likely drove the high dust deposition rates observed in this year's monitoring results.

The high measurements at onsite impact sites 2 and 3 demonstrate the increased generation of dust inside the boundary due to these changes in management and activities onsite. The high measurements offsite at impact site 5, and in one month each, sites 6 and 7, show how the disruption of typical management and removal of windrows, increased screening and a higher number of truck movements can have a negative influence on dust deposition.

Site 6 at Dogwatch had only one exceedance during this year's monitoring period, which is potentially due to effective boundary controls. In comparison, sites 3 and 5 had exceedances in 8 out of 12 months of the monitoring period, and site 2 had exceedances in 7 out of 12 months. The processes undertaken (windrow turning/removal, and truck movements) immediately next to the Affordable Storage boundary are likely to generate dust that can be deposited at sites 2, 3, and 5. Dust deposition at site 2 significantly decreased after the removal of the windrows, as these were stored at the southern end of the LE site, close to site 2.

Overall, the meteorological conditions have not varied significantly from previous years, but the site operational conditions have, due to LE's aim to reduce the amount of material stored on site. The investigation indicated that the high dust levels reported in the first 8 months of the monitoring period are likely due to changes in practices and increased dust generating activities being undertaken onsite throughout the first 8 months of the year.

It should be noted that sites 2 and 3 are inside the boundary of the LE site and that therefore only measured exceedances at impact sites 5, 6, and 7 are offsite exceedances. The consistent exceedances were localised at impact site 5 which is immediately next to the site boundary near an area with a high number of truck movements. Sites 6 and 7 had one exceedance each, which may suggest some less localised effects of dust have occurred due to the operational changes and need to remove compost offsite.

### 4.3 Remedial Actions

The developments in LE's dust mitigation procedures are summarised below.

**2016:** Watering systems including sprinklers, portable low-pressure mister towers and a portable mist unit have been operated onsite to assist with dust suppression since 2016. A sweeper attachment for a small loader has also been used since 2016 and sweeps the site's yards while the main sweeper truck is being used elsewhere. LE uses the sweeper truck for dual purposes, and it is often used to water the windrows while sweeping. The watering systems were improved in 2016 including revision of timing and duration of the sprinkler and water truck operation near the Dogwatch boundary.

**2017:** As part of remedial action for dust complaints in January 2017, loader movements were shifted away from the site boundary and a new windrow turning machine was used onsite from October 2017. This machine decreases the amount of time taken to turn windrows from approximately 3 hours to 15 minutes. The use of the windrow turning machine allows LE to select times of the day with low wind speeds and therefore low dust transportation risk to turn the windrows. This therefore reduces risk of dust from this process being blown offsite.

**2018:** A new biofilter and canopy were installed on the screening shed in May 2018.

**2019:** One portable water mister was upgraded to increase output. In addition, a water curtain was installed on the screening shed to mitigate dust and water vapour escaping through this area.

**2020:** LE focused on water application with sprinklers and misters. A third truck was acquired to assist with keeping the pavement wet during site operations. Additional dust suppression cannons were brought onto site to mitigate the increase in windrow turning since March.

**2021:** LE continued to focus on water application however LE's main focus during this monitoring period was to explore options for future site improvements, which resulted in LE aiming to remove all outdoor stockpiles by January 2022. While this change temporarily increased dust deposition due to increased truck movements, it was expected that after January 2022 there were unlikely to be any further exceedances resulting from LE activities due to the removal of outdoor windrows and stockpiles.

**2022:** A new cover was installed on the screening shed in October 2021. In November 2021, LE stopped adding new windrows to the outside area, and in December 2021 stopped turning the windrows. The windrows were removed by February 2022 and the tailings are gradually being removed from the outside area.

## 5.0 Complaints

There were no complaints received for adverse dust impacts by LE during the July 2021 to June 2022 period. This is consistent with the previous monitoring year where there were also no complaints.

It is noted that complaints have decreased in the last two monitoring years in comparison to previous monitoring years. This may reflect public anticipation and satisfaction that dust and odour from the LE site will be improved through removal of material offsite.

## 6.0 Summary of the Monitoring Programme 2021-2022

PDP has reviewed the TAD and TODD data supplied by LE and their calculation of monthly organic dust deposition rates. The monitoring period was from July 2021 to June 2022 inclusive. The monthly TODD rates indicated 24 exceedances of the consent limit of 4 g/m<sup>2</sup>/30-days. LE has reported all exceedances to CCC. There were also off-site exceedances which were reported to CRC by CCC during the monitoring year.

Investigations of probable causes of exceedances at monitoring sites 2 and 3 (located within LE's boundary) conclude that dust levels above 4 g/m<sup>2</sup>/30 days recorded in the year 2021-2022 have likely been influenced by the changes and disruptions to typical operation in removing compost material from the outdoor area. In general, it is considered that the exceedances at these onsite impact sites are due to proximity to the dust discharge activities undertaken by LE. An examination of wind data showed that there was not a strong correlation between wind speed or direction and dust deposition in this monitoring period.

There were exceedances of 4 g/m<sup>2</sup>/30 days of dust deposition recorded in July 2021 to February 2022 at impact site 5 beyond the LE boundary at Affordable Storage. This is attributed to the high level of LE activities moving material in the area immediately next to the Affordable Storage boundary.

There was one exceedance at impact site 7 at the pump station in December 2021. This was also attributed to the increase in activity occurring onsite.

No complaints were received by LE relating to dust impacts in the July 2021 to June 2022 period. LE has continued to undertake various dust control measures in order to provide effective dust control. In this monitoring season LE has installed a new cover on the screening shed, aside from this LE has focused on changes to site practices to allow for removal of material offsite instead of allowing for maturation of product in windrows. Receiving no complaints compared to previous monitoring years is likely a reflection of public perception that changes are being implemented to site activities and that these will soon result in a reduction in dust discharged from the site.

## 7.0 Compliance with Consent Conditions 2020-2021

With regard to compliance with the consent conditions, the following conclusions are made:

*“33. (a) Dust deposition monitoring shall occur in at least two dust gauges sited near to the boundary with Affordable Storage Limited or successor and the boundary with Dogwatch Sanctuary Trust or successor and at least one further control dust gauge. The location of the dust deposition gauges shall be determined by a suitably qualified person and shall be provided in writing to the Canterbury Regional Council. The method of monitoring shall be ISO DIS-4222.2 or a similar method to the satisfaction of the Canterbury Regional Council. Samples shall be collected monthly and the monitoring results shall be included and summarised in the Annual Environmental Report required under Condition 36.”*

The dust monitoring programme undertaken by LE in 2020-2021 is compliant with the requirements of consent condition 33(a).

*“33. (b) Dust control measures shall be implemented to maintain the rate of dust deposition at the consent holder's boundary, measured in accordance with Condition 33(a), at less than 4g/m<sup>2</sup>/30 days above the background concentration measured at the control site. Any exceedance of this trigger level shall be reported to the Canterbury Regional Council, including the likely reasons for exceedance and any remedial action undertaken.”*

The dust deposition limit was exceeded for 8 of the 12 months in the 2021-2022 reporting period. However, 14 of the 24 2021-2022 exceedances (58%) were recorded at on-site monitoring locations. The dust deposition limit was exceeded off-site from July 2021 to February 2022. LE has reported these exceedances to CCC. Subsequent remedial action has been taken, however, notably the main priority of the site has been changing practices and removing material offsite to meet the target of no outdoor windows by January 2022 which has caused disruption to the regular dust mitigation systems in place.

As addressed in Section 4.2, the exceedances offsite are considered a reflection of abnormal operations and disruptions in standard practices. The most frequent offsite exceedances are localised to a small area at impact site 5 close to a busy area of the site where material was being loaded for removal offsite.

There was one exceedance further away from the site at the pump station (site 7) and one at the dogwatch lawn (site 6) which are likely also due to disruption to regular practices.

LE has a continual improvement process in place which aims to reduce the impacts of dust to ensure full compliance with condition 33(b).

*“36. The consent holder shall, no later than the 30th of June of each year, provide an Annual Environmental Report to the Canterbury Regional Council setting out all monitoring and reporting results required by conditions of consent and their interpretation by an appropriately qualified person, including dust deposition monitoring and complaints recording undertaken in relation to this consent over the previous period. Where the result of any test or monitoring undertaken in relation to this consent exceeds the relevant limit/trigger level or does not comply with the relevant condition, then the steps that were taken to rectify the non-compliance shall be specified.”*

This report meets the requirements of complying with consent condition 36. However, the 30<sup>th</sup> June deadline is not feasible to meet since the monitoring period runs from 1<sup>st</sup> July to 30<sup>th</sup> June, and time is needed for data analysis and report writing.

## 8.0 Future Dust Deposition Monitoring at the Site

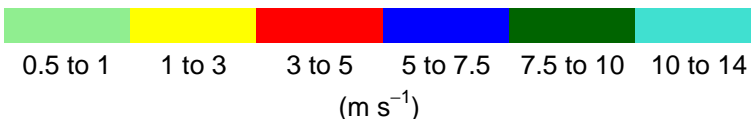
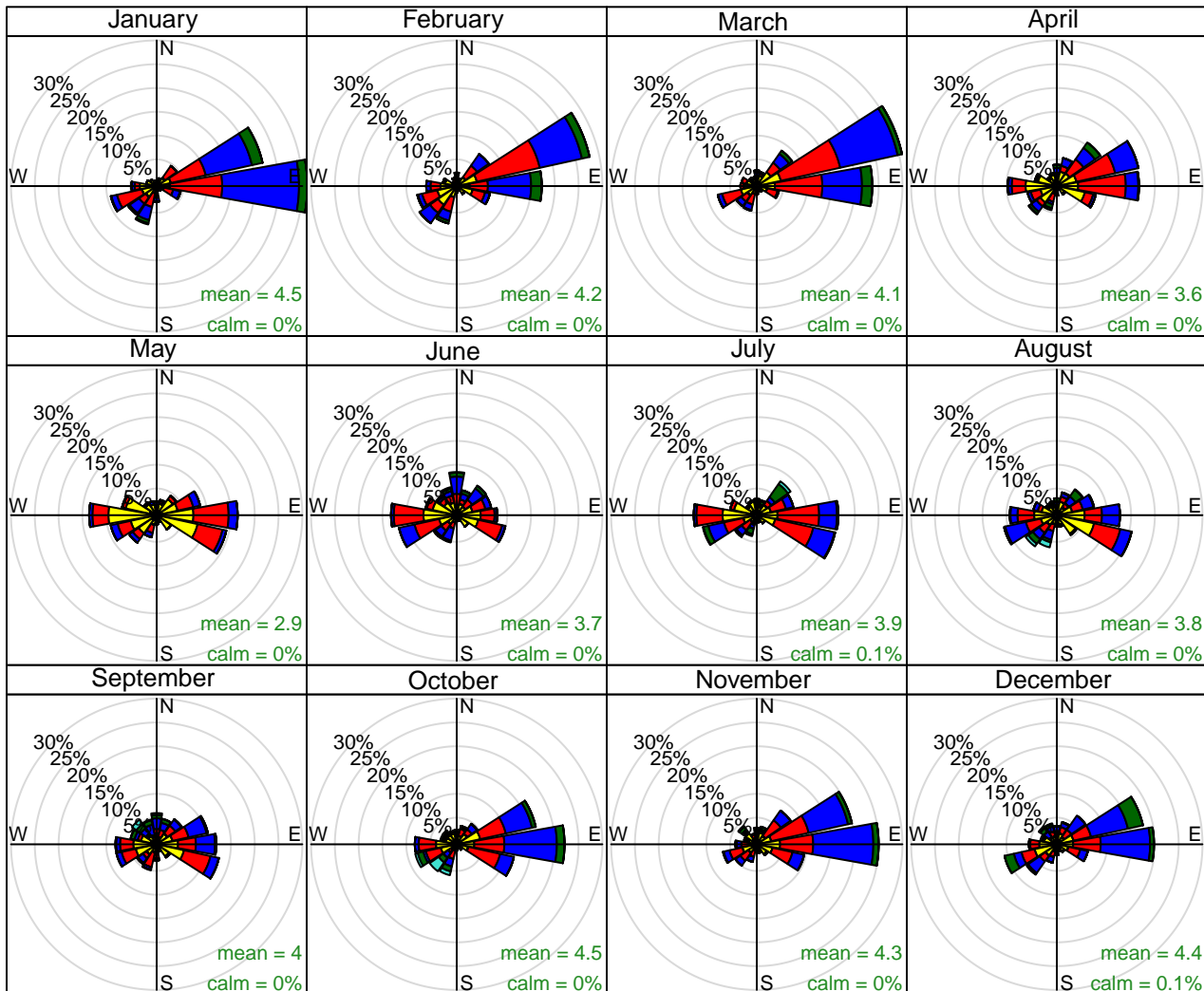
LE's operations in 2021-2022 had a higher level of compliance with the requirements of 33(b) compared to 2020-2021 but lower than 2019-2020. The elevated level of non-compliance can be attributed to changes in practice resulting in increased vehicle movements and increased screening and material disturbance at LE. However, LE notes this is part of remedial action to eliminate the long-term effects of the operations beyond the property boundary by removing all excess material from the outside area.

To confirm that the improvement resulting from the removal of outdoor windrows from the site can be achieved year-round, the dust deposition monitoring programme will be continued for the 2022-23 monitoring year.

It is expected that next year's monitoring report will show a continuation of the low dust deposition recorded since March 2022 as a result of the removal of outdoor windrows from the site. Should the 2022-2023 monitoring report demonstrate a continued compliant level of offsite dust deposition, LE will review the value of the dust monitoring programme and if required will apply to CRC to amend the relevant conditions of consent.



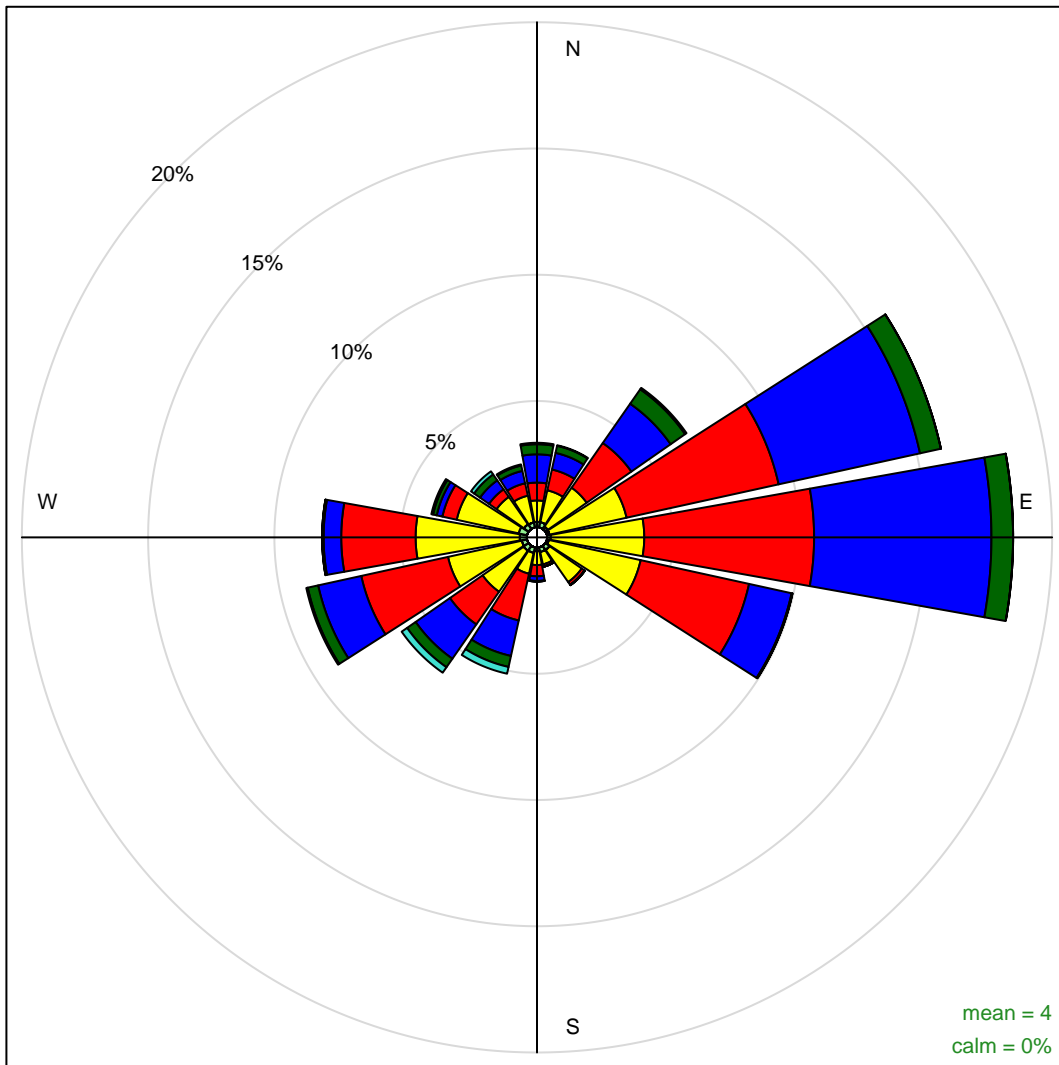
# Bromley Windroses – July 2021 to June 2022



Frequency of counts by wind direction (%)



# Bromley Windrose

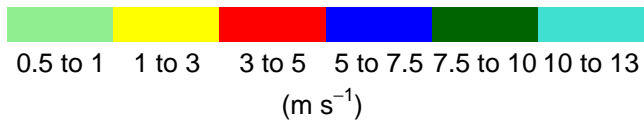
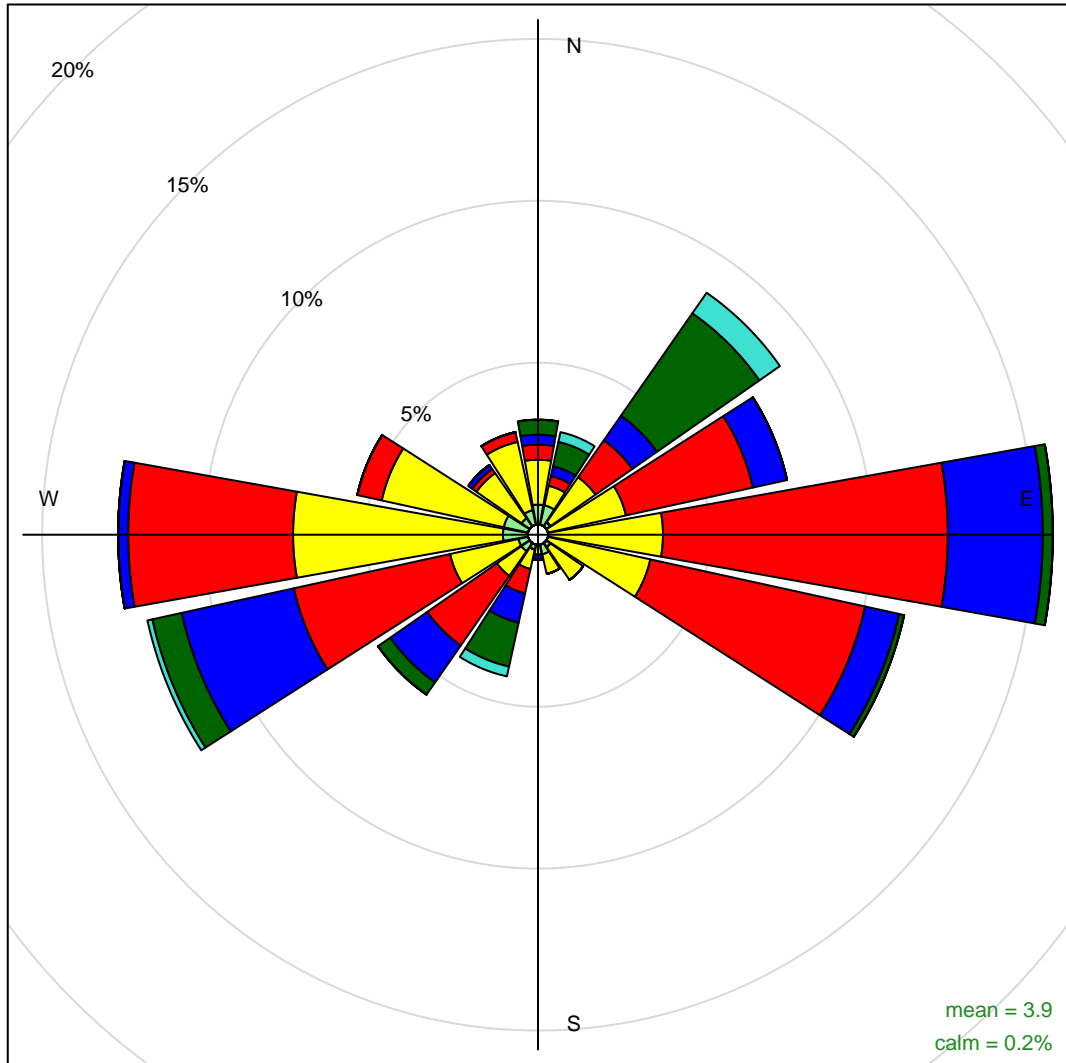


0.5 to 1 1 to 3 3 to 5 5 to 7.5 7.5 to 10 10 to 14  
(m s<sup>-1</sup>)

**Frequency of counts by wind direction (%)**

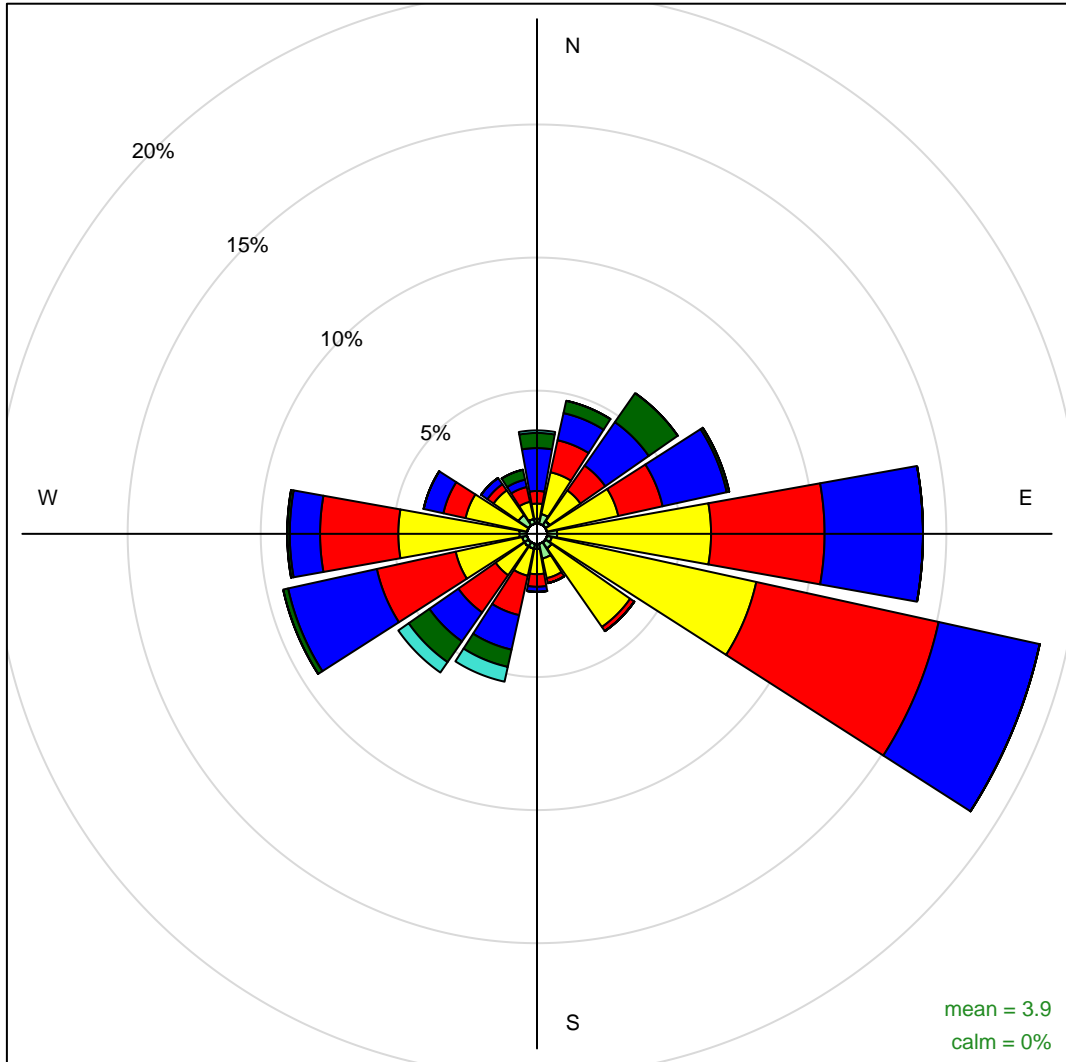
## **Appendix B: Exceedance Period Wind Roses (Bromley EWS)**

# Bromley July 22/06/2021 – 27/07/2021



**Frequency of counts by wind direction (%)**

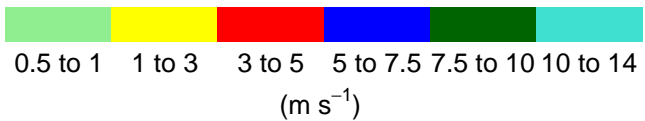
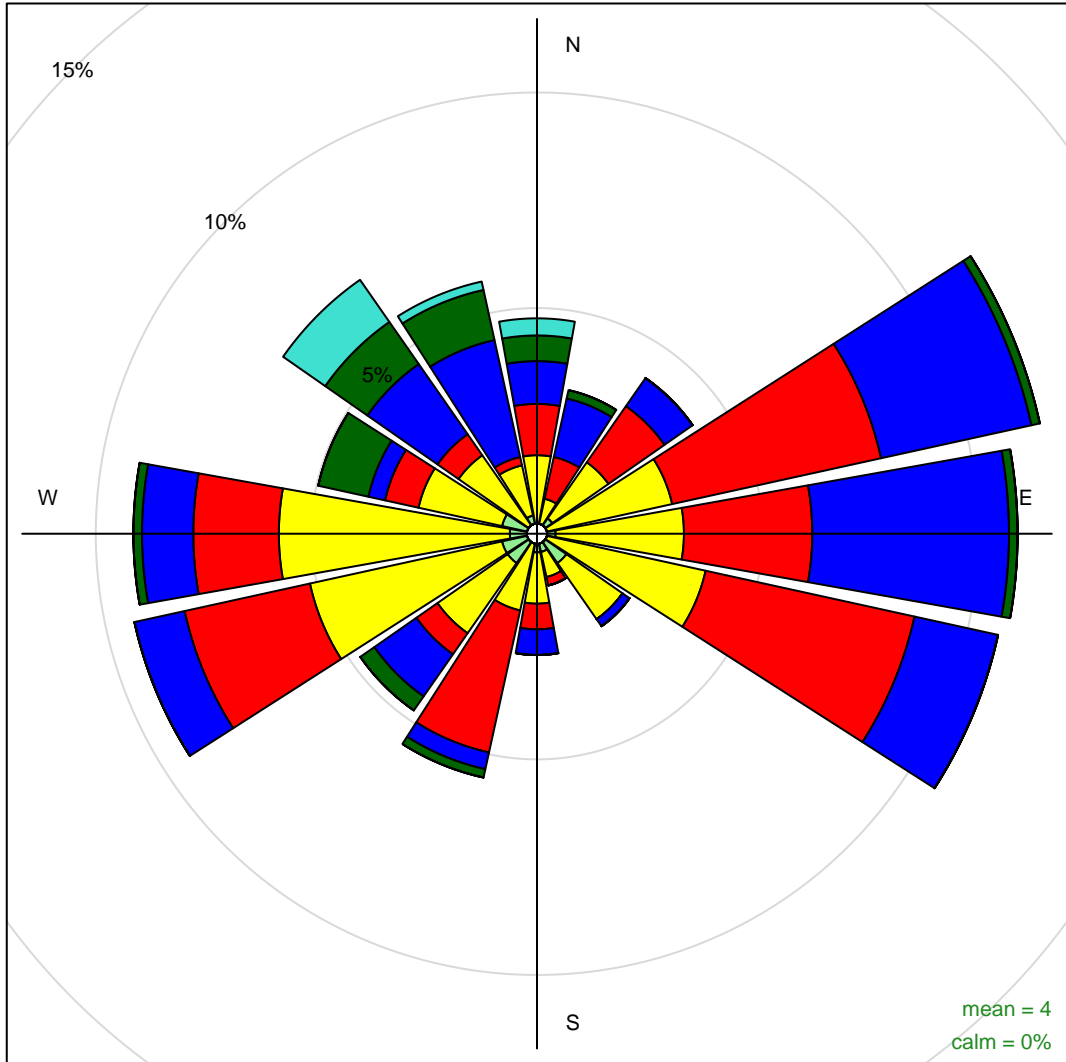
# Bromley August 27/07/2021 – 8/09/2021



0.5 to 1 1 to 3 3 to 5 5 to 7.5 7.5 to 10 10 to 12  
(m s<sup>-1</sup>)

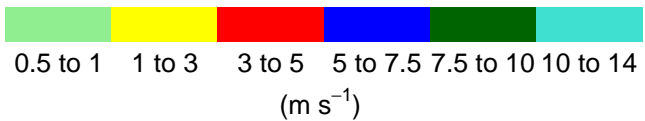
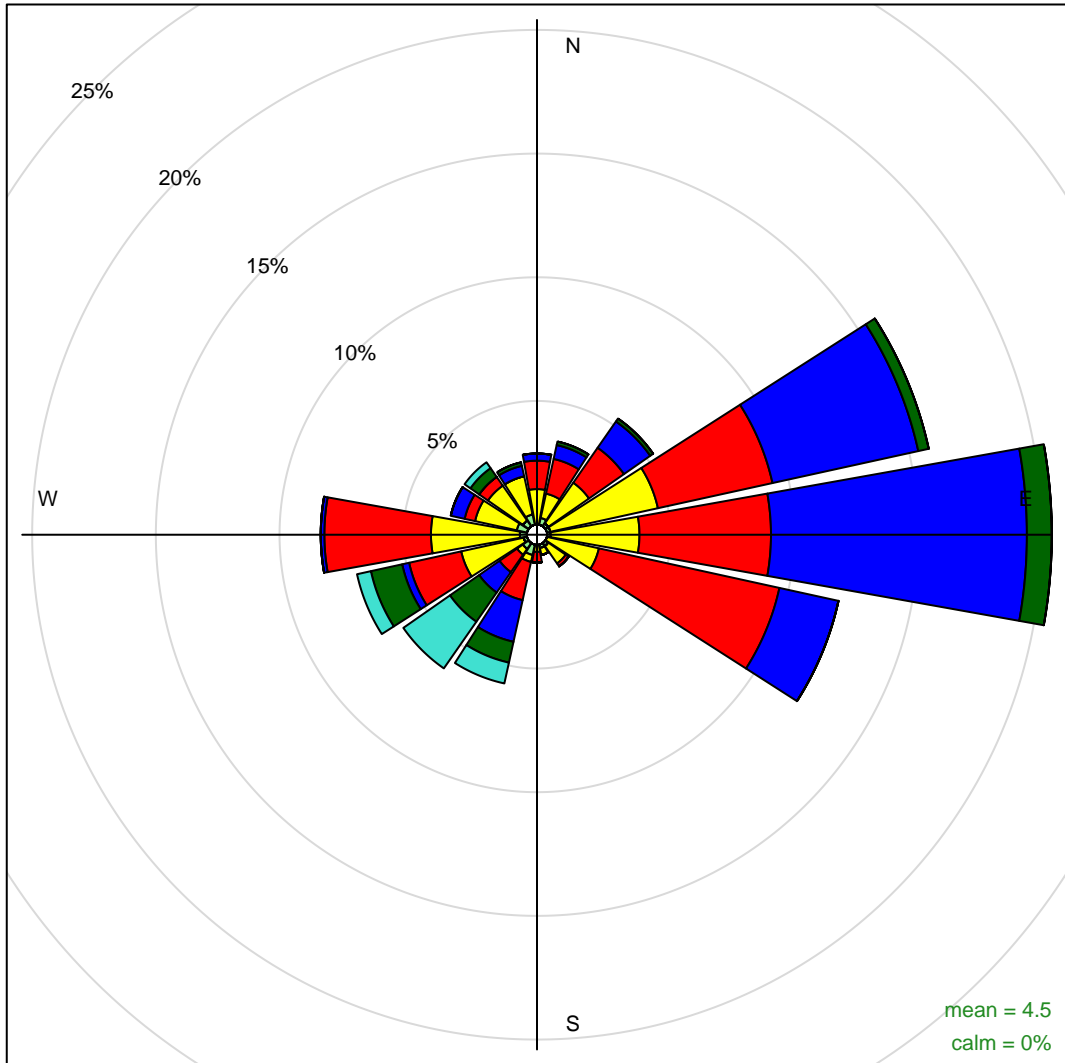
**Frequency of counts by wind direction (%)**

# Bromley September 8/09/2021 – 28/09/2021



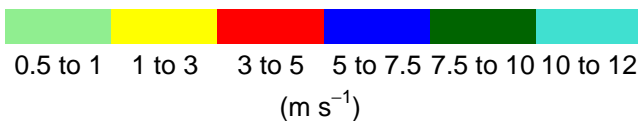
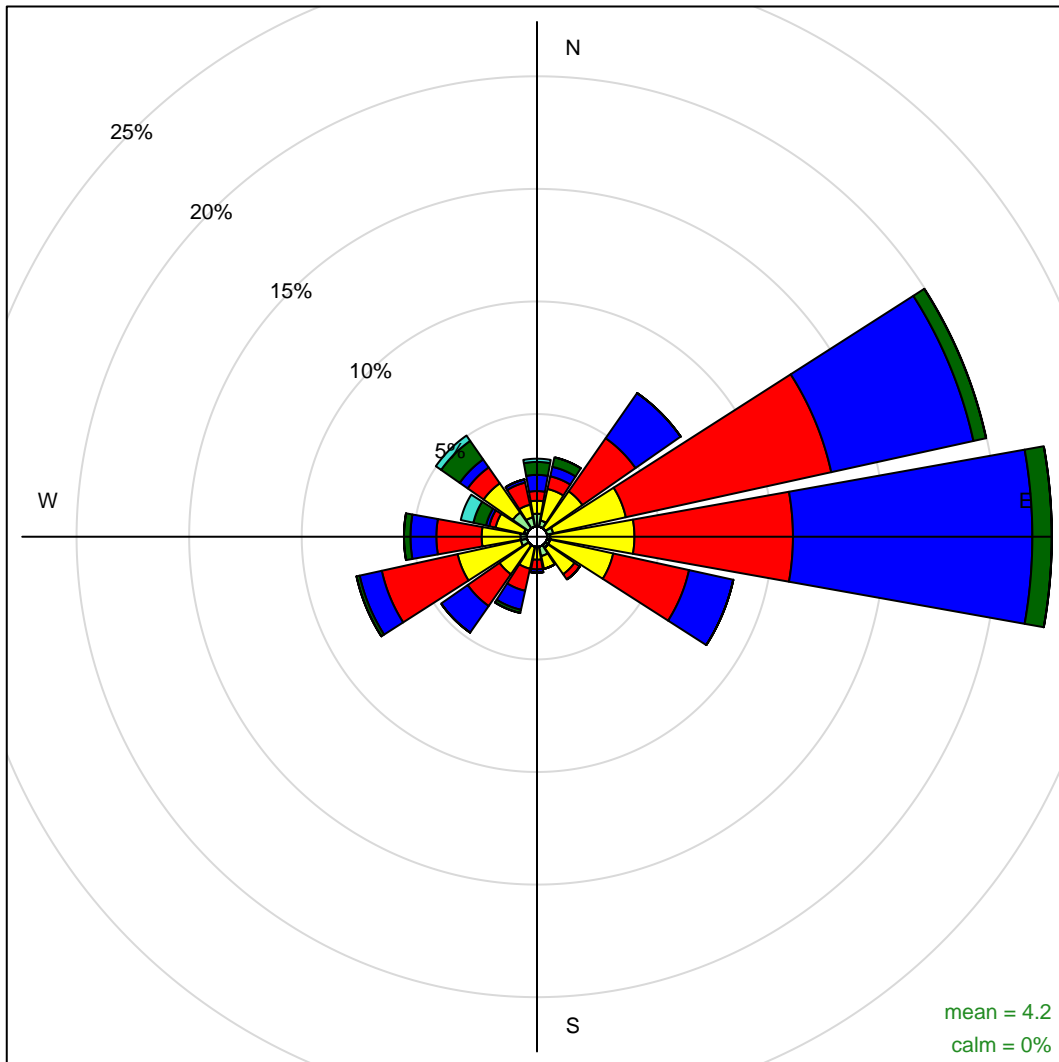
**Frequency of counts by wind direction (%)**

# Bromley October 28/09/2021 – 26/10/2021



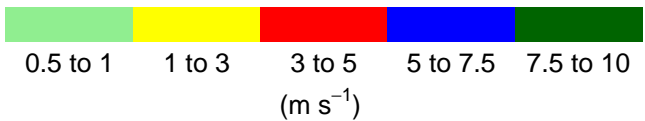
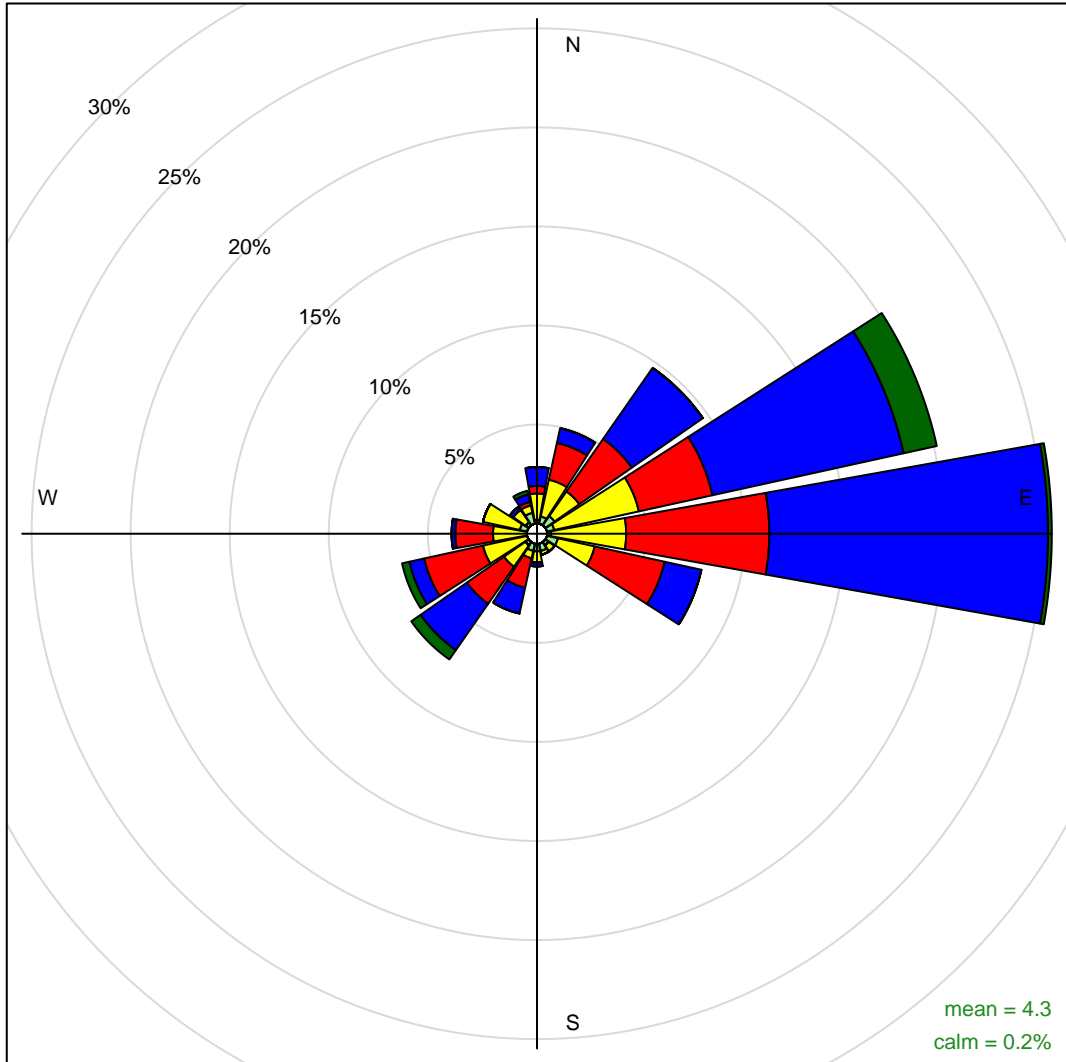
**Frequency of counts by wind direction (%)**

# Bromley November 26/10/2021 – 23/11/2021



**Frequency of counts by wind direction (%)**

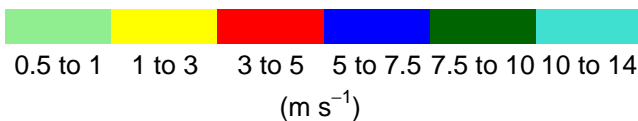
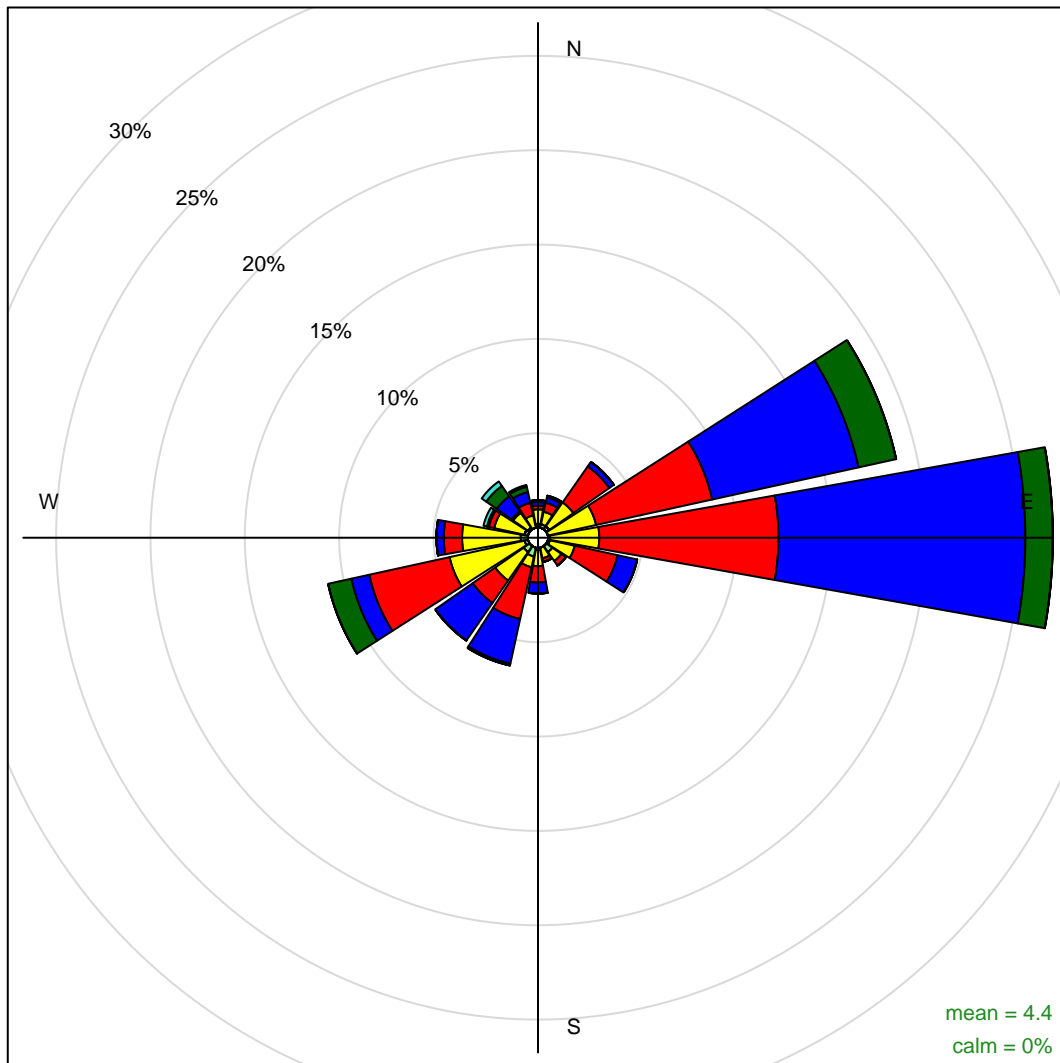
# Bromley December 23/11/2021 – 14/12/2021



Frequency of counts by wind direction (%)

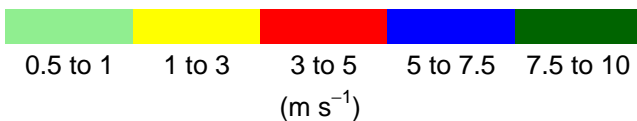
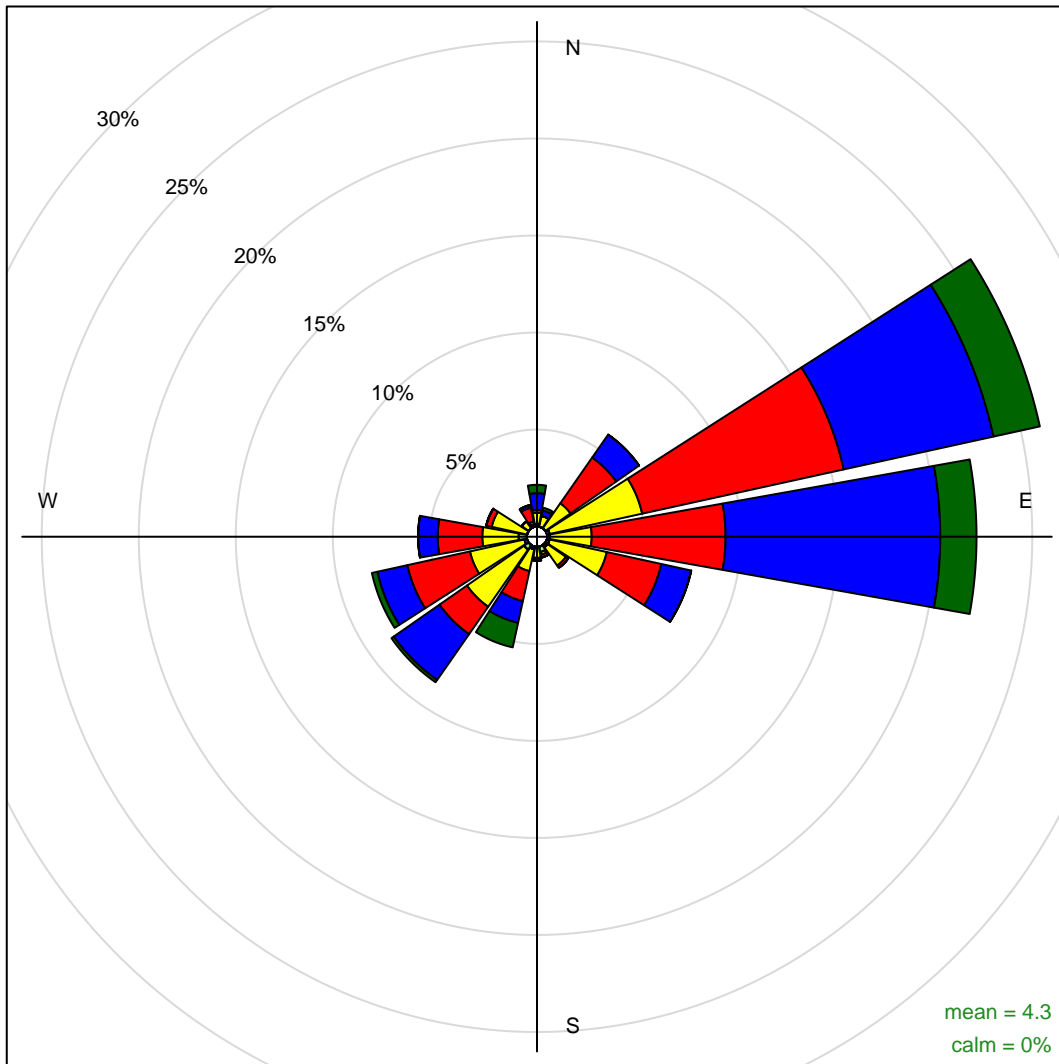


# Bromley January 14/12/2021 – 25/01/2022



**Frequency of counts by wind direction (%)**

# Bromley February 25/01/2022 – 22/02/2022



**Frequency of counts by wind direction (%)**