



12/10/2023

To: Sam Kealey | Senior Planner
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File Ref: J23162
Subject: **Dust Management Plan – Peer Review – Hawkeswood Mining Limited, Teviot.**

Introduction

Hawkeswood Mining Limited (the applicant) has applied to the Central Otago District Council (the Council) for a land use consent to construct and operate a gold alluvial mining operation on the banks of the Clutha River / Mata-Au in Teviot, Central Otago.

As part of the application a Dust Management Plan (DMP) was submitted that outlined the potential sources of dust, the controls to minimise the dust, methods to monitor the dust, and complaints procedures and responsibilities under the DMP. Pattle Delamore Partners assessed the DMP in a technical capacity and requested further information to understand the potential effects. In response, the DMP was updated (24 April 2023) and provided to Council. A further technical review was completed by Pattle Delamore Partners of the updated DMP and comments provided back to the Council's processing officer. The Council Officer's Section 95 Report notes that *'[in regards to dust] ... without further evidence to the contrary, there are reasonably likely to be more than minor effects on the public users of the cycle trail and that the proposal will impact on the rural amenity values presently experienced in the receiving environment'*.

On this basis Air Matters was engaged by the applicant to peer review the DMP.

Review Scope

On the 12 September 2023 the applicant provided an updated mining plan (*'Mining Methodology by Hawkeswood Resources'*). The proposed update will result in working areas nearer to the north-eastern boundary (adjacent to the Clutha River / Mata-Au) and on the eastern boundary adjacent to Teviot Road. The active work area also increases from ~2ha to >20ha (active areas + temporary stockpiles) at any one time. These changes and the updated controls which include an increase in dust suppression, should be reflected in the DMP. Despite the change to the scale in the activity, the principals in the DMP and the recommendations in this review are still considered appropriate.

The updated methodology results in the activity exceeding the permitted activity provisions of the Otago Regional Council's *Regional Plan: Air for Otago*. Consequently, an air discharge permit will now be required from ORC.

It is acknowledged that the PDP technical assessment and the Council Officer's Section 95 Report raised concerns with regard to the potential health effects relating to fine particulate matter (PM₁₀) discharges from the activity. It is expected that a full assessment of effects relating to PM₁₀ will be undertaken as part of the application to ORC. On this basis the DMP (and this peer review) focusses on employing best practise to control general effects of dust. For the purpose of supporting the Land Use Consent application this peer review has assessed:

- Description of the dust generating activities;
- The effectiveness of the proposed controls and monitoring methods;
- Alignment of the DMP with the Ministry for the Environment's (2016) good practice guide for managing dust and any other relevant dust management guidelines;

Reviewed Documents

- *Hawkeswood Mining Limited: Dust Management Plan Millers Flat Gold Mine* (9 February 2023); Town Planning Group.
- *Hawkeswood Mining Limited: Dust Management Plan Millers Flat Gold Mine* (24 April 2023); Town Planning Group.
- *Technical Review – RC220350 – Hawkeswood Mining Limited – Air Quality Assessment* (19 May 2023); Pattle Delamore Partners Limited.
- *Application for Resource Consent to the Central Otago District Council: Hawkeswood Mining Limited. Land use consent to establish and operate a gold mining activity at 1346-1536 Teviot Road, Millers Flat* (12 October 2022). Town Planning Group.
- *Response to further information request RMA/2022/220350 – Teviot Road, Roxburgh* (10 February 2023). Town Planning Group.
- *Response to second further information request RMA/2022/220350 – Teviot Road, Roxburgh* (4 May 2023). Town Planning Group.
- *Test report – particle size analysis prepared for Hawkeswood Mining Limited* (29 March 2023); Central Testing Services.
- *Map illustrating neighbouring properties that have supplied written approval*. Ref: 2753-22 (27 June 2023); Town Planning Group.
- *Hawkeswood Mining Limited: Mining Methodology*. Undated. Supplied to Air Matters on 12 September 2023.

Review and Discussion

The DMP provides a sufficient description of the proposed activity and the areas that have the potential to generate dust. Controls to avoid and minimise dust are well described and generally in accordance with best practices and include limiting open working areas and progressive restoration; using a suitable water cart for dampening down working areas and stockpiles when required; monitoring weather conditions and ceasing operations during high wind and dry conditions; limiting vehicle speeds on site; using covered trucks to transport material and retaining existing wind breaks on the boundary of the site. Proposed monitoring to ensure that the prescribed controls are adequate include: visual monitoring of dust generating activities; checking weather forecasts for windy/dry conditions and operating four dust deposition gauges at the boundary of the site.

The site is within a rural environment with a number of residential and lifestyle properties surrounding the site. In accordance with Victoria Environmental Protection Agency's (2022) separation distance guideline, properties located more than 250m away are not likely to be adversely affected by deposited material if best practice controls are implemented.

There is a property on the northern boundary (1334 Teviot Road) and, based on the revised mining area, potentially other properties to the south-east that are within 250m of the work site. The prevailing wind directions and strengths (as provided in the resource consent application) are north-west and south-east which aligns with these neighbour's location. Based on the limited separation distances and meteorological conditions there is an increased risk of adverse effects on these properties.

The DMP does not address the potential effects on property within close (250m) proximity of the work site and it is recommended that this specific risk and controls are identified in the DMP. Recommended controls could include limiting mining operations to the winter (wetter) months or creating a specific 'management zone' for these areas. Management in these areas could include lowering the wind threshold for works, additional watering requirements and reduced stock pile heights.

Other neighbouring properties (that have not provided written approval) that are beyond 250m and not within a predominant wind direction are unlikely to experience adverse effects provided the described controls are implemented.

The Otago Rail Trail - cycle trail runs adjacent to the proposed site. Users of the trail will be transient and effects will be limited to nuisance and amenity effects. If implemented correctly, the proposed controls will ensure the effects on any cycle user are maintained to a practical minimum. Actively monitoring the effectiveness of the controls (refer to 'boundary dust monitoring' below) will assist in continuing to minimise the effects on the cycle trail.

It is also noted that the applicant is currently operating a centrally located test pit which employs the key controls identified in the DMP including watering with a cart. The applicant is not aware of any dust related complaints relating to their operation, from neighbours or users of the cycle trail.

Wind speed threshold for ceasing work

The MfE (2016) Good Practice Guide recommends a stop work threshold for wind speeds above 10 m/s. This value was determined from measurements correlated to elevated dust levels (for example Watson, 2000). This derived value is based on wind measurements at a 10-meter elevation. Due to 'wind-share' affects, wind speeds at ground level will be less than this.

Consequently, it is important to locate the wind sensor at an appropriate height taking into account the terrain, bund height and locations of working areas. Wind speed threshold should then also be based on these factors. It is recommended that the wind sensor is located at a height that is reflective of the onsite stockpile heights. Based on this, a threshold of greater than 10 m/s may be acceptable and should be adapted using visual observations and the boundary dust monitoring described below.

Boundary dust monitoring

The applicant proposes to use dust deposition gauges changed out on a 30-day rotation. This is an acceptable method for demonstrating that the controls for deposited dust are adequate over a longer timeframe. However, as noted in the technical review this method does not allow a real-time understanding of the effectiveness of controls and does not relate to fine particulate matter and health effects.

On this basis Air Matters recommends that a minimum of two real-time dust monitors are deployed on the site boundary to measure the concentrations of fine particulate matter (PM₁₀). The purpose of the monitoring would be to demonstrate the controls are adequate and allow for adaptive management if necessary. A threshold of 150 µg/m³ is appropriate (as described in MfE (2016) for this activity and if exceeded an appropriate procedure investigating the cause and reviewing controls should be included in the DMP.

The Peer Review notes that the '[addition of real time monitoring]' would add significant value to supporting the application considering the lack of detail provided on the assessment of affects. Air Matters agree with this statement.

Conclusion and Recommendations

Overall, the DMP provides a sufficient description of the proposed activity and the areas that have the potential to generate dust. Controls to avoid and minimise dust are well described and generally in line with best practices. To minimise the potential effects the following changes to the DMP are recommended:

- 1) Addition of a specific management zone(s) to reflect any limited separation distance to sensitive receptors. The management techniques should limit work to winter periods (if practical) or specific controls put in place i.e. lower wind speed threshold and more frequent dust suppression;
- 2) The wind anemometer should be located at a height of between 4-8 meters. A cut off threshold greater than 10 m/s may be appropriate and if employed should be adaptively managed using visual observations and real-time monitoring (Recommendation 3);
- 3) A minimum of two particulate monitors, capable of indicating TSP / PM₁₀ levels, should be deployed at appropriate locations on the boundary of the site. The purpose of the monitors is to validate the effectiveness of the onsite controls. As far as practical they should be located downwind of the working area and between the work site and any sensitive receptors. The monitoring should be in real-time and alert the site's management team when fine dust levels exceed the values set in the MfE (2016) Good Practise Guide. An investigation of the cause, and review of controls if required, should be undertaken and this process should be documented in the DPM.
- 4) Including standardised forms as an appendix in the DMP including a complaints investigation form; form for recording the daily and weekly dust monitoring plan observations and a real-time dust level exceedance investigation form.

Subject to the implementation of the above recommendations into the DMP the effects of dust emissions from the project beyond the site boundary will be acceptable and the actual and potential effects considered less than minor.

Limitations

This Peer Review has been specifically prepared for the purpose of evaluating the existing DMP and relies on information provided by the applicant and their consultants. Air Matters has not undertaken a visit to the site. The Peer Review makes a number of recommendations with the intention of ensuring adverse effects are avoided and minimised to an acceptable level by employing best practise.



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References

Watson J, Chow J, Pace T (2000) Fugitive Dust Emissions. The Air Pollution Manual – Second Edition. Air and Waste Management Association.

Ministry for the Environment (2016). Good Practice Guide for Assessing and Managing Dust. Wellington.

Environment Protection Agency Victoria – Separation Distance Guideline Proposed Update (2022); based on '*Mine for other minerals*'.