



December 19, 2019

Region of Waterloo  
150 Frederick Street  
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Attention: David Welwood, Principal Planner

***Shantz Station Pit Air Quality Assessment – Technical Peer Review***

Mr. Welwood,

Dillon Consulting Limited (Dillon) has been retained by the Region of Waterloo (the Region) to provide a peer review of an air quality assessment performed for the proposed Capital Paving Inc. Shantz Station Pit, in the Township of Woolwich, Ontario (the Site). The assessment was performed by RWDI AIR Inc. and is summarized in the report "*Capital Paving Inc. – Shantz Station Pit, Air Quality Assessment*", dated May 14<sup>th</sup>, 2019 (the Report). This letter summarizes the findings of our peer review.

1. In general, the methodology followed in this assessment appears to be reasonable and may follow industry standards. The Report considers ambient concentrations and the impact of Site operations at surrounding receptor locations, and has generally relied on provincial guidance and standards. However there are areas where assumptions and information have not been provided and therefore it is not possible to fully assess the completeness and appropriateness of the Report.
2. The Report makes reference to a Best Management Practices Plan (BMPP) for dust, which has not yet been developed. In some cases, the Report states that if the BMPP is followed, off-site impacts from an air quality perspective will be acceptable. For example, the selected emission rates for all processing activities included in the modelling are listed as "controlled" emission rates (i.e. include control mechanisms). The Report does not include a description or commitment to the types of controls which will be implemented at the Site.

It is recommended that a BMPP be developed, with direct linkage to the levels of mitigation required from within the modelling (e.g. frequency of application of suppressants, moisture contents of materials in piles, levels of traffic at site, road cleaning activities) and reviewed for appropriateness prior to approval of the undertaking.

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3. Section 7 states that *“Dispersion modelling was conducted to confirm that the proposed mitigation measures will be sufficient to control off-site impacts at the residential receptor locations.”* It is unclear what mitigation measures have been included in the modelling. It is recommended that the report describe all required mitigation measures and that these measures be included as operational requirements for the Site. These measures can have a material impact on compliance/level of impact and would require review to ensure alignment with industry standards.
4. Section 11 of the Report states that *“...with a high level of control on the haul routes and appropriate setback distances, compliance with the relevant criteria can be achieved at all residential receptors...”* The Report should include a clear description of the control methods to be implemented on the haul routes as well as the required setback distances to achieve compliance. These setback distances and control methods can have a material impact on compliance/level of impact, and would require review to ensure alignment with industry standards. These setback distances should form part of the approval provided by the Region for the undertaking.
5. The Report states that conifer trees will be used as a mitigation measure for visible dust. Further details, such as required tree density and assumed control efficiency should be provided which supports the use of trees as a mitigation measure. These assumed efficiencies and required density can have a material impact on compliance/level of impact and would require review to ensure alignment with industry standards.
6. The Report assumes a 95% control efficiency for fugitive dust emissions from on-site unpaved roads which represents a very high level of control. This control efficiency is well above typical assumed control efficiencies, and would require management well above industry standard practices. The report should include justification for this control efficiency and this information would be required to be reviewed to ensure appropriateness of assumptions.
7. The Report includes specific operational limitations which have been accounted for in the impact assessment. These limitations should form part of the operational plan for the site and/or the approval that will be issued by the Region. All assumptions included in the emission calculations which would impact site operation (for example, minimum emission ratings from on-site vehicles and equipment) should be included in the Report as requirements for Site operation.



8. The dispersion modelling assessment supporting the report used the Ozone Limiting Method (OLM) to calculate the nitric oxide (NO)/ nitrogen dioxide (NO<sub>2</sub>) ratio from total nitrogen oxides (NO<sub>x</sub>). The report states that 90<sup>th</sup> percentile measured ozone (O<sub>3</sub>) concentrations were used within OLM. The United States Environmental Protection Agency (US EPA) – who developed the AERMOD dispersion model used in the Report – states that the use of the OLM requires hourly ozone data be provided to the model. The use of 90<sup>th</sup> percentile data in lieu of hourly ozone data should be justified in the report.
9. The Report discusses a property which is leased by the Site (R1). It is understood that the property will be kept vacant while the Site is operational. It is recommended that documentation be provided which confirms that the property will remain leased and vacant or, in the absence of such documentation, R1 be treated as a normal receptor within the Report.
10. The Emission Summary Table (Table 2) provides some provincial (AAQC) and federal (CAAQS) criteria, however the all the AAQCs and CAAQS have not been presented. For example, the Report has not included the CAAQS for nitrogen dioxide (NO<sub>2</sub>). Justification should be provided for the exclusion of provincial or federal criteria or standards.
11. Dispersion modelling input and output files have not been provided. Without these files it is not possible to review the modelling setup or check the model results. Source configurations within the model can have a material impact on compliance/level of impact and therefore warrants review. These files should be provided for review.
12. The Report provide figures which show the modelled location of various activities throughout the phases of operation. It is unclear if the modelled locations represent the worst-case scenario; i.e. the operations occurring closest to relevant receptors. Rationale should be provided for the location of sources within the model, and these locations should be translated into operational setback distances that are prescribed within the approval of the undertaking.
13. Appendix C includes several sources which are assumed to be 100% controlled. The Report should provide justification for this control efficiency.



14. The Report has not included on-site storage of material or exposed land as a fugitive source. MECP Guidance<sup>1</sup> discusses the assessment of fugitive sources including storage piles and open material conveying. For regulatory compliance assessments (i.e. prescribed assessments required for approvals under Ontario Regulation 419/05), the MECP states that with the implementation of an effective BMPP, fugitive sources can be excluded from modelling. Land use compatibility relates to the potential for impacts on adjacent lands, and air quality impact assessments (as opposed to compliance assessments) should consider all fugitive sources of dust.

Further, the MECP's land use planning guideline, Guideline D-6, states that for fugitive sources such as dust from traffic and storage piles "*...separation of incompatible land uses will help minimize potential adverse effects from fugitive emissions.*" In this case, based on Guideline D-6 guidance, the recommended setback to the nearest sensitive receptors should be 300 m from any source of emissions. When these setback distances cannot be met, a study should be provided to appropriately demonstrate the land uses are compatible.

The Report should be updated to include all sources of air emissions including fugitive dust and the Report reviewed for adherence to industry standards. The resulting setback distances should be reviewed prior to approval of the undertaking. The resulting setback distances should be prescribed within the approval of the undertaking.

15. The Report does not assess the potential impact associated with off-site vehicle traffic. Guideline D-6, requires assessment of all industrial uses in proximity to sensitive receptors and states "*...industrial land uses which have the potential to produce point source and/or fugitive air emissions... from associated traffic/transportation.*" should be assessed. Assessing off-site traffic associated with an industrial site is a regulatory grey area in Ontario; the MECP states that off-site traffic does not need to be assessed for industrial regulatory approvals (i.e. compliance approvals), however the MECP does consider off-site traffic for assessments performed under the *Environmental Assessment Act* (i.e. impact assessments). The Report should include an assessment of off-site traffic impacts and any applicable operational measures which will be implemented to minimize the impacts of off-site traffic. This assessment should be reviewed for accuracy prior to approval of the undertaking.

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<sup>1</sup> MECP's Guideline A-10, "Procedure for Preparing an Emission Summary and Dispersion Modelling Report", February 2017



16. The conclusions of the Report state that *“The Shantz Station Pit has been appropriately designed, managed, and separated from surrounding sensitive land uses to prevent and mitigate adverse effects.”* Sufficient supporting information has not been provided to support this conclusion (e.g. a completed BMPP, dispersion modelling input and/ or output files, description of the assumed mitigation measures and efficiencies, and required separation distances). It is recommended that the Report be updated to include sufficient information to support this conclusion and the revised Report be reviewed for completeness and accuracy.

Should you have any questions about our review, please don't hesitate to contact me.  
Sincerely,

**DILLON CONSULTING LIMITED**



Hamish Corbett-Hains., P.Eng.  
Associate

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Our file: 19-1803