R.J. Burnside & Associates Limited 15 Townline Orangeville ON L9W 3R4 CANADA
telephone (519) 941-5331 **fax** (519) 941-8120 **web** www.rjburnside.com

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April 12, 2022

Via: Email

Chris Jones
Township Planner
Township of Melancthon
157101 Highway 10
Melancthon ON L9V 2E6

Dear Chris:

Re: Duivenvoorden Haulage OPA & ZBA Applications
Project No.: 300055091

Further to your authorization of March 11, 2022, we have reviewed the Stormwater Management Brief, Traffic Review, Noise Impact Study, and ARA Site Plans. Our comments are as follows:

Stormwater Management Brief, WMI & Associates Limited - December 15, 2020

The report indicates that the external water drains towards the proposed pit, where it will infiltrate into the ground. There do not appear to be any downstream riparian owners who will have concerns with the pit interfering with surface water that they like to receive. As a result, we do not have any concerns with the general concept of a gravel extraction operation at this location.

With respect to the details of the proposal, we have the following comments:

- The drainage engineer appears to have given some design alternatives to the Site Plan designer, who has repeated them verbatim on the plan. However, the license should specifically show how the project will be completed, so the designer needs to select one alternative and show it on the plan. This is discussed in greater detail below.
- The recommendation to: "*Construct perimeter cut-off swales along the west and north limits of the site*" is not clear, particularly when not detailed on the plans.
  - A berm is not currently shown along the north limit of the site. In the event that a berm is added to the plan, it must be designed in conjunction with this proposed cut-off swale and a large culvert would be required to allow drainage to pass the berm.
  - A cut-off swale on the west limit of the site would somehow interact with the wetland. It is not at all clear why a cutoff swale is being proposed in this area. If it is truly to be at the "west limit" of the site, that would be an undisturbed area due to the wetland. The purpose and location of cut-off swales needs to be clarified.

- The proposed outlets for the cut-off swales also need to be clarified:
  - *"Cut-off swales can both be directed to the existing low point…."* The west properly line slopes southward about 4 m from the northwest site corner down to the limit of extraction, near the wetland. It would therefore be uphill to direct it north towards the existing low point.
  - Or *"the west cut off swale can be directed to the existing pit to the south of the site…"* No details are provided for this alternative and again, it is difficult to understand exactly what is being suggested. There is a possibility that such as swale could dewater the wetland. It is also unclear how the water would be accommodated through the operation of the existing or proposed pits. There might be merit in combining Phases 3 and 4, so that the operator is given the alternative of working around offsite water during wet periods and making progress when it's dry.
- *"Complete the aggregate extraction in the northwest portion of the site. Once completed, direct all external drainage into the new cut to be stored and infiltrated….".* This recommendation appears to be directed to Phase 4 of the extraction, so it is unclear how it would be sequenced. In fact, the northwest portion of the site appears to be the very last location of extraction. Again, it might be advantageous to combine Phases 3 and 4.

In general, the Stormwater Management Brief needs to be coordinated more closely with the ARA drawings. The plans need to show how, when, and where the swales are being created and how they interaction with the extraction operation.

Traffic Review, Tatham Engineering - February 10, 2021

The Traffic Review is complete and is generally satisfactory with respect to traffic generation. We have the following comments:

- With respect to the 4th Line, the Traffic Review was written prior to road upgrades that have recently been completed. We are not aware of the arrangements for those upgrades and whether or not cost sharing had been arranged.
- Table 4 and Table 6 both appear to contain some typographical errors.
- Fill importation is not accounted for in the Traffic Review.

Given that the 4th Line has now been upgraded, no further submission is necessary.

Noise Impact Study, Trinity Consultants - July 27, 2021

- Table 4-1 – Summary of Sound Level Limits (Leq) for Steady Sources summarized the limits for the Plane of Window of Noise Sensitive Spaces only. Limits for Outdoor Points of Reception were not included in the table. Sound levels at the Outdoor Points of Reception were not assessed in the Noise Impact Study, thus were not compared against the applicable limits. Sound levels should be assessed at all Outdoor Points of Reception.
- The surrounding area was considered to be a Class 2 area which represents Class 1 area during daytime and Class 3 area during nighttime. According to the Ministry of Environment, Conservation and Parks (MECP) Noise Guideline NPC-300, Class 1 area means "an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum". Based on the Google images, we do not anticipate an "urban hum" in the area; therefore, Class 3 area seems more appropriate in this case. Justification should be provided for using Class 2 area limits, otherwise assessment should be revised based on Class 3 area limits.

- The Noise Study assessed the noise impact from the Phase 1 Operation at the expansion area only. Will separate assessment prepared for Phases 2 to 4?
- Based on Google images, there appears to be a residential dwelling at 437213 4th Line. Justification should be provided why this sensitive receptor was not included in the assessment, otherwise sound levels at this location should be provided and compared to the applicable limits.
- Clarification regarding recommended berm extents and the height should be provided, A label in Figure 3 indicates "berms at the site perimeters: 5 meters high". Does this mean berms follow the orange line in this figure? If this assumption is correct, what is happening between the existing and the proposed site, where there is an orange line as well, but trucks will be travelling between the two areas? Locations of all the berms and their respective heights should be clearly indicated in the figures.
- The Noise impact Study assumed day and evening time operations only. According to the Operational Plan, the hours of operation will be 6:00 am to 6:00 pm. The period between 6:00 am and 7:00 am is considered a nighttime. Nighttime operations should be assessed and predicted sound levels compared to the applicable nighttime limits.

ARA Site Plans, Innovative Planning Solutions - August 3, 2021

Drawing 1: Existing Features

- The contours are discontinuous at the boundary between Phase 1 and Phase 2.

Drawing 2: Operational Plan

Site Plan

- The drawing should show drainage features (as shown on the Existing Features Plan) and how they will be accommodated through the excavation. Recommendations from the Stormwater Management Report should be incorporated into the design.

General Notes

1.2.2 The Rehabilitation Plan requires replacement of topsoil and subsoil to a minimum depth of 0.5 m. How then could the topsoil be taken from the subject site and used for rehabilitation of the existing (adjacent) pit without creating the need to import topsoil to the subject site? Perhaps it is being proposed that the topsoil stripped from the subject site is used for progressive rehabilitation of the adjacent site in exchange for existing stockpiles to be used in return. If so, it should be detailed and explained. In general, we have concern with topsoil being removed from aggregate sites unless the rehabilitation includes a pond where topsoil is not required.

1.2.5 The note indicates that no new entrance/exit is proposed. However, I noted on the day of my site visit that the existing entrance is not paved, as typically required. As a result, gravel was being tracked onto the new road surface. We suggest that the existing driveway should be paved as a condition of approval of the subject site.

1.2.10, 1.2.18 & 1.2.19

Typically, topsoil or overburden is used for perimeter berming so that it is out of the way of the operation, but can be drawn back over the site for rehabilitation. The type of material should be detailed on the Operational Plan. Currently, it is unclear when the berms will be constructed in the sequence and where the material will come.

Why is there no acoustic berm proposed along the north property line?

1.2.22 *"To the extent feasible the licensee will minimize operations on Saturday between June 1st to August 31."* This note is not written with the clarity or measurability that is normally provided on ARA drawings; there is no means of determining what is feasible, what minimized means, or who decides. If this issue is important to local residents, then the clause should be written more definitively, such as *"The licensee may open on no more than a total of three Saturdays between June 1st and August 31st…"*. Alternatively, this issue has been addressed in another Dufferin municipality with a requirement for Council approval of Saturday openings during the summer.

1.2.26 Will License 3726 be amended to include the combined limitation? If so, as noted earlier the driveway entrance should be paved.

1.2.27.2

The approach to noise control seems to be less defined than we are accustomed to seeing on other pits. *"Final mitigation measures determined upon a later onsite noise audit, at the commencement of extraction…."* The Note then lists potential measures such as Sea Containers, and Perimeter Berms. This would imply that extraction could commence and following which the need for berms would be identified and implemented. It also would suggest that the noise audit at the commencement of extraction would be representative of conditions in other locations or elevations. We would prefer to have the noise mitigation measures defined and implemented up front, with audits being used to confirm the results.

Hydrogeology Notes

2. The details of the Fuel Handling and Spill Management Plans should be provided on the ARA plans. (This is implied in sentence 2b).

Natural Heritage Notes

General - *"Fencing should be used appropriately as directed…i.e., as exclusion fencing during construction"*. These notes should actually provide the direction, as opposed to simply referring to it. I was unable to understand exactly what is intended with respect to fences.

Rehabilitation - *"Develop and implement a monitoring program…."*. The program should be developed prior to the ARA drawings being approved and should be implemented through the license.

Stormwater Management Notes

As noted above, these recommendations should be incorporated by the designer as opposed to being repeated verbatim.

Phasing Notes

Phase 1

7. The "Woodland Area" should be shown in the Operational Plan.

Phase 2

8. It is suggested here that the Woodland Area be removed in two phases, each time ahead of the extractive phase. The rationale for this is not clear. We would have no objection to the Woodland being removed within the same phase as the extraction (providing that the nesting requirements are met etc.). Likewise, we would have no objection to the Woodland being removed in a single phase, which might be more efficient. In general, it would be satisfactory to us if this condition were less specific.

Phase 3-4

2. The note refers to the berm along the western perimeter. Should it say "eastern"? Why is this note under the heading of Phase 3-4? It is not clear whether there is a suggestion that the berm is not completed all at one. Typically, it would be put in place in its entirety prior to any extraction taking place.

7-11 These notes lack clarity. Why would final rehabilitation of the existing pit await Phase 3? Could it not be done progressively during Phase 1, or at the start of Phase 2? Does this require an amendment to the license of the existing pit? Why is progressive rehabilitation of Phase 2 not mentioned? In general, it would be helpful to restate these steps more clearly.

Drawing 3 of 4, Rehabilitation

Drawing - The plan shows final use as "proposed hay planting" but does not recognize the drainage courses that convey runoff from the wetland and from the external lands to the north. Particularly with the additional change in elevation caused by the extraction these flows may be erosive.

1.3.2, 1.3.6 & 1.4.1
These notes permit the importation of clean fill, where necessary, for slope rehabilitation. Some municipalities have concerns with similar clauses. Unless it is expected that there will not be any unmarketable material in this pit, then the Township may prefer to have these notes altered.

1.3.3 & 1.4.3
Will decompaction be completed to a minimum depth of 15.0 m, or is that a typo?

1.4.6 *"The Rehabilitation and Compensation Plan should incorporate."* This is the Rehabilitation Plan. These recommendations should be provided as specific direction. For example, either the Future Offset for Woodland Habitat should be identified on the drawing or all of the notes describing how to implement it should be removed.

We trust this provides a satisfactory response to your request for comments. Please let us know if further explanation is required.

Yours truly,

R.J. Burnside & Associates Limited

Gord Feniak, P.Eng.
GF:jh

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Ministry of Heritage, Sport, Tourism, and Culture Industries

Archaeology Program Unit
Programs and Services Branch
Heritage, Tourism and Culture Division
5th Floor, 400 University Ave.
Toronto ON M7A 2R9
Tel.: (437) 339-9197
Email: Andrea.Williams@ontario.ca

Ministère des Industries du patrimoine, du sport, du tourisme et de la culture

Unité des programme d'archéologie
Direction des programmes et des services
Division du patrimoine, du tourisme et de la culture
5e étage, 400 ave. University
Toronto ON M7A 2R9
Tél. : (437) 339-9197
Email: Andrea.Williams@ontario.ca

Ontario

Apr 28, 2022

Eva MacDonald (P125)
ASI Archaeological and Cultural Heritage Services
528 Bathurst Toronto ON M5S 2P9

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 3 Site-Specific Assessment of the James Taggart Site (BaHb-19), Melancthon Pit Expansion, Part of Lots 13 and 14, Concession 4 Old Survey, Township of Melancthon, Dufferin County, Ontario ", Dated Nov 3, 2021, Filed with MHSTCI Toronto Office on Mar 14, 2022, MHSTCI Project Information Form Number P125-0313-2021, MHSTCI File Number 0008669

Dear Ms. MacDonald:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.[1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Figure 2 and Supplementary Documentation Figure 2 of the above titled report and recommends the following:

1. The James Taggart site (BaHb-19) meets the MHSTCI criteria of a site type with CHVI. Therefore, Stage 4 mitigation of impacts is required. The recommended Stage 4 protocol is the hand-excavation of additional one-metre square units around the high-yielding deposits, starting with Stage 3 units 500N-190E, 510N-205E, 510N-210E, and 515N-210E until yields drop to 90 artifacts per square, in order to salvage excavate the midden. Any cultural features exposed must also be buffered by two metres during the hand excavation. Following the block excavation, mitigation would continue with the removal of the plough zone by mechanical means (Gradall or backhoe equipped with a smooth bucket) to expose potential features within the B-horizon. The stripped area must be buffered by at least 10 metres of subsoil free of features. The exposed subsoil should then be cleaned by shovel (“shovel shine”) or trowel and the resulting subsoil surface examined for cultural features. Afterward, full hand-excavation and documentation of all features should follow.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Andrea Williams
Archaeology Review Officer

cc. Archaeology Licensing Officer
Tricia Cook,Duivenvoorden Haulage Ltd.
Seana Richardson,MNRF

[1] *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

BLUEWATER GEOSCIENCE
CONSULTANTS INC.

42 Shadyridge Place
Kitchener, Ontario
N2N 3J1

Tel: (519) 744-4123
Fax: (519) 744-1863
E-mail: blemieux@rogers.com

March 22, 2022

The Township of Melancthon
157101 Highway 10,
Melancthon, Ontario
L9V 2E6

Attn.: Ms. Denise Holmes, A.M.C.T., Clerk-Treasurer

Re: Duivenvoorden Pit Expansion, Combined Level 1 and Level 2 Hydrogeological Assessment Report Review, Melancthon Township, ON.

Denise:

Bluewater Geoscience Consultants Inc. (Bluewater) is pleased to provide this review of the above-captioned report. It is our understanding that the proponent is seeking to expand the existing pit and have applied to the Ontario Ministry of Natural Resources and Forestry (MNRF) and the Township of Melancthon for approval. Bluewater was provided a copy of the report entitled "Combined Level 1 and Level 2 Hydrogeological Assessment, Duivenvoorden Pit Expansion, Melancthon, Ontario" prepared by Azimuth Environmental Consulting Inc. and dated September 2020.

The proponent currently operates a licensed gravel pit on the 40.2 hectare (ha) Part Lot 13, Concession 4, Township of Melancthon parcel and wish to expand the operations to include the ~42.4 ha. Part Lot 14 portion of their overall property. The permit sought will be for a Category 3, Class A Pit Above Water license. The proposed expansion lands are currently in agricultural land use.

The report details that the proposed expansion lands contain no permanent watercourses, however water ponding may occur seasonally in low-lying areas of the site. A wetland feature is present within the southwest portion of the property. This wetland feature is stated to contain surface water between roughly April to August and "receives some degree of seasonal ground water contribution".

The Quaternary Geology consists of ice-contact stratified sand and gravel overlying the Tavistock clay till unit in some portions of the site, and directly over the Amabel bedrock in other portions of the site. The bedrock is reported to be more than 2.5 m below the proposed extraction depth. The top of bedrock elevation ranges between 500.2 and 489.6 masl beneath the expansion lands.

Background research into the existing Town of Shelburne municipal supply wells and private wells in the area of the site determined that two principal aquifers are present. These being the overburden aquifer and the contact/bedrock aquifer systems. The six municipal wells present utilize the bedrock aquifer. The capture zones for these wells are reportedly "in excess of 6 km from the proposed Duivenvoorden expansion lands".

Research indicates that there are 9 private wells within a 750 m radius from the proposed Duivenvoorden expansion lands, most of which also utilize the bedrock aquifer. Some of these wells may have been decommissioned in the past.

HYDROGEOLOGICAL/HYSROLOGICAL INVESTIGATION

To assess on-site conditions, Azimuth installed seven (7) groundwater monitoring wells at five (5) locations across the property in September 2017. Bedrock was encountered at all locations at depths of 12.2 to 20.7 m below grade. Monitoring wells were installed to the top of bedrock depth. In addition, two nested shallow wells (MW-2S and MW-4S) were installed to depths of 6.7 m and 8.7 m below grade respectively. Groundwater level monitoring was completed between September 2017 and December 2018. At that time, two existing monitors on the existing pit property were added to the monitoring network.

The results of the on-going shallow groundwater monitoring determined that the groundwater flow direction is towards the east to southeast on the expansion lands. This direction was determined to be similar to the regional top-of-bedrock elevation indicating that "bedrock topography locally influencing ground water flow patterns". It was further determined that the seasonally high water table is found within the overburden aquifer across the site. This water table elevation is used to determine the pit floor elevation, being a minimum of 1.5 m above the seasonally high groundwater level.

Groundwater elevations were determined to range from ~507 masl (MW-4S) to 493 masl (MW-5). This equates to depths of between 5.0 - ~19.0 m below existing grade. The piezometer installed in the area of the wetland feature to monitor shallow groundwater recorded a high of ~506.0 masl in May 2018.

Water quality sampling completed on the on-site monitoring wells and for the wetland feature was completed on one occasion in July 2018. The samples were analyzed for general water quality parameters. The results indicated only aesthetic and operational parameter exceedances of the Ontario Drinking Water Quality Standards (ODWQS).

Based on the completed ground water level monitoring, and accounting for a maximum extraction depth of 1.5 m above the high water elevation, contours for the proposed pit floor were developed. These elevations range from ~507 masl in the northwest corner of the expansion lands to ~497 masl along the east-central property boundary.

A water balance was completed for the expansion lands to assess any potential impact the aggregate extraction may have on the ground water and surface water systems. The water balance concluded that the proposed operations "will likely have no measurable change in water table elevations across the site and therefore will have no impact on off-site domestic water wells". Further, the water balance concluded that "no negative impacts to the existing pre-extraction recharge conditions are anticipated, so impacts to the wetland are not expected".

The proponent has provided 'Mitigation Measures' and a 'Recommended Monitoring Program' in the report. Mitigation measures proposed include no storage of fuel on the expansion lands, no refuelling of machinery on the pit floor as well as operator training and implementation of a Spill Contingency Plan.

The proponent has proposed an on-going groundwater monitoring and sampling program to continue "the characterization of the local overburden ground water regime, both from water level and water quality perspectives". They propose on-going continuous ground water level monitoring. Further, they recommend that "one upgradient and two downgradient monitoring locations be sampled for water quality on a semi-annual basis." The proposed sampling wells are MW-1, MW-4D and MW-5. A proposed list of sampling parameters is provided. It is recommended that an annual monitoring report be prepared and submitted to MNRF prior to March 31 of each year.

CONCLUSIONS AND RECOMMENDATIONS

Based on the review completed, it appears the proponent has adequately characterized the geological, hydrological and hydrogeological regimes of the proposed expansion lands. The proposed operations are unlikely to affect groundwater or surface water quality or quantity or cause interference to existing private or municipal wells in the area. The shallow groundwater level has been determined adequately enough to establish proposed pit floor elevations being at least 1.5 m above the seasonal high water table level. The data relied upon for this determination was based solely on monitoring completed in 2018. Further data must have been gathered since that time. Of particular interest would be groundwater levels from the spring of 2022 due to this last winter being very snowy and rainy and the 2022 data may represent one of the highest potential ground water levels in the last several years. It is recommended that groundwater elevation data since the 2018 monitoring period be reviewed, and if groundwater levels higher than those found in 2018 are present, adjustments to the proposed pit floor elevations be made. It should also be confirmed with the proponent that they do not intend to establish any wash station on the proposed expansion lands.

With regard to on-going monitoring, it is recommended that an additional shallow groundwater monitoring well be installed along the mid-eastern property boundary roughly half way between the existing MW-1 and MW-5. This area represents the downgradient side of the property and there is too wide a gap between monitors in this area to adequately assess groundwater quality leaving the site.

The pit floor being just 1.5 m above the groundwater level, with only very permeable soils between, creates a very susceptible scenario for groundwater impacts potentially generated from equipment working on the pit floor. Loaders, excavators, dump trucks etc. working on the pit floor could generate releases of contaminants from fuel tanks, hydraulic and cooling systems etc. that would nearly immediately create impacts to the underlying groundwater. As such, it is important that the groundwater monitoring wells installed at the site are adequate to capture and assess these potential impacts. In order to do this it is important that these wells have the screened section of the well straddling the water table surface (at least when the sampling is completed) where these contaminants tend to collect. Based on a review of available well installation data, it appears that MW-2D, MW-4D and MW-5 may be installed with screened sections entirely below the water table surface. If it is finally determined that this is the case, new shallower wells with screened sections

across the water table should be installed at any location where this is not the case, including the proposed new well along the eastern property line.

We recommend that all site monitoring wells (not just the selected wells) be included in the ground water sampling list for on-going monitoring and sampling. Further, we recommend that the parameters to be analyzed during the sampling be expanded to include the full suite of Volatile Organic Compound (VOC) parameters rather than just the BTEX (benzene, toluene, ethylbenzene and xylenes) parameters.

Other recommendations include that the annual monitoring reports be provided to the Township as well as MNRF. If during any monitoring period detectable concentrations of any VOC or Petroleum Hydrocarbon (PHC) parameters are determined at any monitoring location, that the Township be notified immediately and that this condition triggers an immediate re-sampling of the offending well. Further, should any release, spill etc. occur on the site, particularly the pit floor, that the Township and the MECP (Ministry of Environment, Conservation and Parks) Spills Action Centre (SAC) be notified without delay. The proponent should have contingencies in place for the immediate extraction and secure storage of impacted ground water before any significant migration away from that source area can occur.

We trust you will find this review satisfactory for your present requirements. Should you have any questions, or require further information, please feel free to contact the undersigned.

Sincerely,
BLUEWATER GEOSCIENCE CONSULTANTS INC.

Breton J. Lemieux, M.Sc., P.Geo., QP
President, Senior Geoscientist

Date: March 22, 2022