

MAXIMUM PREDICTED WATER TABLE REPORT

PROPOSED BARDOEL PIT

**Part Lots 26 and 27, Broken Front Concession, Township of South-West Oxford
(Formerly West Oxford Township), County of Oxford, Ontario**



Prepared for:
J-AAR Materials Limited
3003 Page Street,
London, Ontario
N5V 4J1

March 20, 2025



Prepared by:
Novaterra Environmental Ltd.
39 Winship Close,
London, ON N6C 5M8

TABLE OF CONTENTS

PREAMBLE	1
1.0 Introduction.....	1
2.0 Purpose and Scope	1
3.0 Maximum Predicted Groundwater Table	2
4.0 Closure	3
5.0 References.....	4
6.0 Limitation	5

LIST OF FIGURES

Figure 1	Location map.....	7
Figure 2	Water level elevation hydrographs and precipitation	8
Figure 3	Maximum predicted high groundwater table elevation	9
Figure 4	Minimum depth to water level below ground surface during hydrologic high	10

LIST OF TABLES

Table 1	Depth to water level and maximum water level elevation at Bardoel Pit, as observed on April 6, 2023	2
---------	---	---

PREAMBLE

This report was prepared in order to meet the requirements of Part 2.0, Section 2.1, as described in the document titled: *Aggregate Resources of Ontario: Technical Reports and Information Standards* issued under the Aggregate Resources Act (ARA; MNRF, 2020).

All of the information contained in this report is found in the Water Report Level 1 and Level 2 which was prepared by Novaterra Environmental Ltd. and is dated March 20, 2025. Therefore, this report is considered to be superfluous.

This report is intended to present a brief overview of the site and proposed development, and to present the maximum extent of the water table at the proposed Bardoel Pit.

1.0 Introduction

J-AAR Materials Limited (J-AAR) of London Ontario intends to apply for a license to extract aggregate material to 1.0 m above the maximum established water table. In support of the application, Novaterra Environmental Ltd. has prepared this assessment report in accordance with the Ministry of Natural Resources and Forestry (MNRF) requirements as described in their document titled: *Aggregate Resources of Ontario Standards: A Completion of Four Standards Adopted by Ontario Regulation 244/97 Under the Aggregate Resources Act (August 2020)*.

The subject site is known as Bardoel Pit and occupies part Lots 26 and 27, Broken Front Concession, Township of South-West Oxford (Formerly Oxford Township) Country of Oxford, Ontario. The site statistics, as shown on the Site Plans prepared by MHBC Planning (2025) are as follows:

- License area: 49.4 hectares (122.1 acres)
- Limit of extraction: 45.3 hectares (111.9 acres)

The subject site is located approximately 2 km southwest from the Town of Ingersoll and has 911 address of 583398 Hamilton Road, Ingersoll, Ontario.

2.0 Purpose and Scope

This Maximum Predicted Water Table Report relies entirely on the technical information contained in the report titled: "Hydrogeological Level 1 and Level 2 Assessment" also prepared by Novaterra (2025). Four figures and one table were taken from that report and are presented herein as supporting information under the following designations:

- Figure 1 has the same original designation as Figure 1 in Novaterra (2025)
- Figure 2 was re-designated from Figure 11 in Novaterra (2025)
- Figure 3 was re-designated from Figure 8 in Novaterra (2025)
- Figure 4 was re-designated from Figure 7 in Novaterra (2025)

3.0 Maximum Predicted Groundwater Table

This section was adopted from the Hydrogeological Level 1 and Level 2 Assessment Report (Novaterra, 2025) and describes as to how the maximum predicted water table conditions were established.

A total of nine boreholes were drilled at the subject site to depths ranging from 6.5 to 12.6 metres below ground surface (m bgs). Six of those boreholes were completed as monitoring wells, designated as MW1 to MW6. They were completed with 50-mm diameter PVC casings and PVC screens of 1.5 or 3.0 m lengths, with screen bottoms varying in depth from 3.8 to 10.6 m bgs. The monitoring well locations are shown on Figure 1. Additionally, a staff gauge (SG1) was installed in the large pond abutting the northwest boundary of the site.

Depths to water levels at the six monitoring wells and one staff gauge were measured manually starting in November 2017 on a monthly basis until November 2019. These readings continued mainly on a quarterly basis until late 2022. In 2023, there were seven readings. The obtained data are tabulated and given in Table 3 of Novaterra (2025) but are not provided herein.

The water level elevations are graphically presented together with precipitation on Figure 2. An examination of Figure 2 indicates that the highest water level elevation (i.e. the shallowest water level) of the entire dataset was recorded on April 6, 2023 (see Table 1, below). It is significant to note that this date represents the historically highest groundwater level elevation of the entire seven year monitoring period, but it is quite similar to some of the highs observed in previous years.

Table 1. Depth to water level and maximum water level elevation at Bardoel Pit, as observed on April 6, 2023.

Station	Depth to water level (m bgs)	Water level elevation (m amsl)
MW1	5.90	270.96
MW2	3.97	268.35
MW3	0.30 ¹⁾	277.20
MW4	0.42	285.56
MW5	0.76	276.05
MW6	6.11	272.35
SG1	-	270.44

¹⁾ Water level above ground surface

It is therefore concluded that this is the most reliable information regarding maximum groundwater level to which groundwater will rise during the propose aggregate removal at the Bardoel site. It is also important to note that the climatic condition such as precipitation was taken into consideration while preparing and the interpretation of the available data and thus to arrive to this valuable conclusion.

Water level elevations recorded for April 6, 2023 were used to generated the groundwater table elevation contour map which is shown on Figure 3. Therefore, this figure represents the Maximum Predicted Water Table for the proposed Bardoel Pit.

Depth to water levels below ground surface recorded for April 6, 2023 were used to construct Figure 4 which illustrates the minimum depth to water level recorded at Bardoel site.

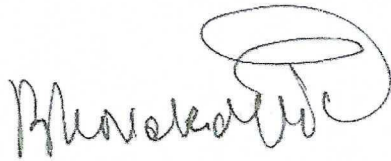
It is also important to note that the thickness of sand and gravel deposits at MW6 is 5.10 m where these deposits are underlain by clayey silt and silt till. The measured depths to water level at MW6 is always lower than the bottom of sand and gravel deposits, thus indicating that there is no saturated zone (aquifer) at this location. The extent of the unsaturated zone in the area of MW6 is not known, but it is considered that in the area where there is no saturated sand and gravel, aggregate removal can be done to the underlying clayey silty till without adverse effect to groundwater.

4.0 Closure

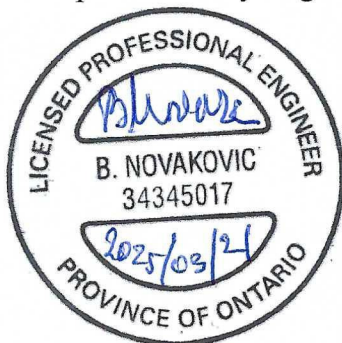
This Maximum Predicted Water Table Report has been prepared in accordance with the Aggregate Resources Act Ontario Regulation 244/97 (MNRF, August 2020). The maximum predicted water table for the Bardoel site was established to be for April 6, 2023 where the water level elevation ranges from 285.56 m amsl in the south to 268.35 m amsl in the north areas of the site.

For further information on the water resources and hydrogeological condition at the proposed Bardoel Pit, please see the Hydrogeological Level 1 and Level 2 Assessment Report for the site (Novaterra, 2025).

Respectfully Submitted,
Novaterra Environmental Ltd.



Blagovest Novakovic, M.Sc. P.Eng.
Principal/Senior Hydrogeologist



Sasha Novakovic, B.A.Sc., P.Eng.
Hydrogeologist



5.0 References

Ontario Ministry of Natural Resources and Forestry 2020.

Aggregate Resources of Ontario Standards: A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act. August 2020.

Novaterra Environmental Ltd. 2025.

Hydrogeological Level 1 and Level 2 Assessment, Proposed Bardoel Pit, Part Lots 26 and 27, Broken Front Concession, Township of South-West Oxford (formerly West Oxford Township), County of Oxford, Ontario. March 20, 2025.

MHBC, 2025.

J-AAR Materials Limited, 3003 Page Street, London, Ontario, Bardoel Pit, For Submittal to MNR, File No. 18218A, Engineering Drawings: "Existing Features" (Drawing 1 of 4), "Operational Plan" (Drawing 2 of 4), "Rehabilitation Plan" (Drawing 3 of 4), "Cross Section Plan" (Drawing 4 of 4), Scale 1:3,000. March 2025.

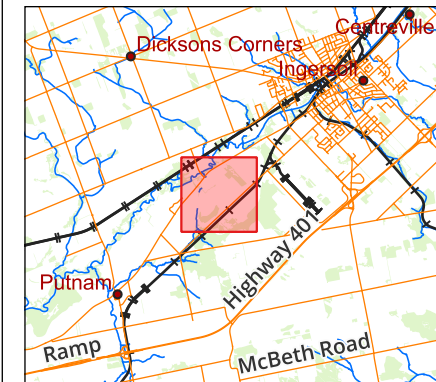
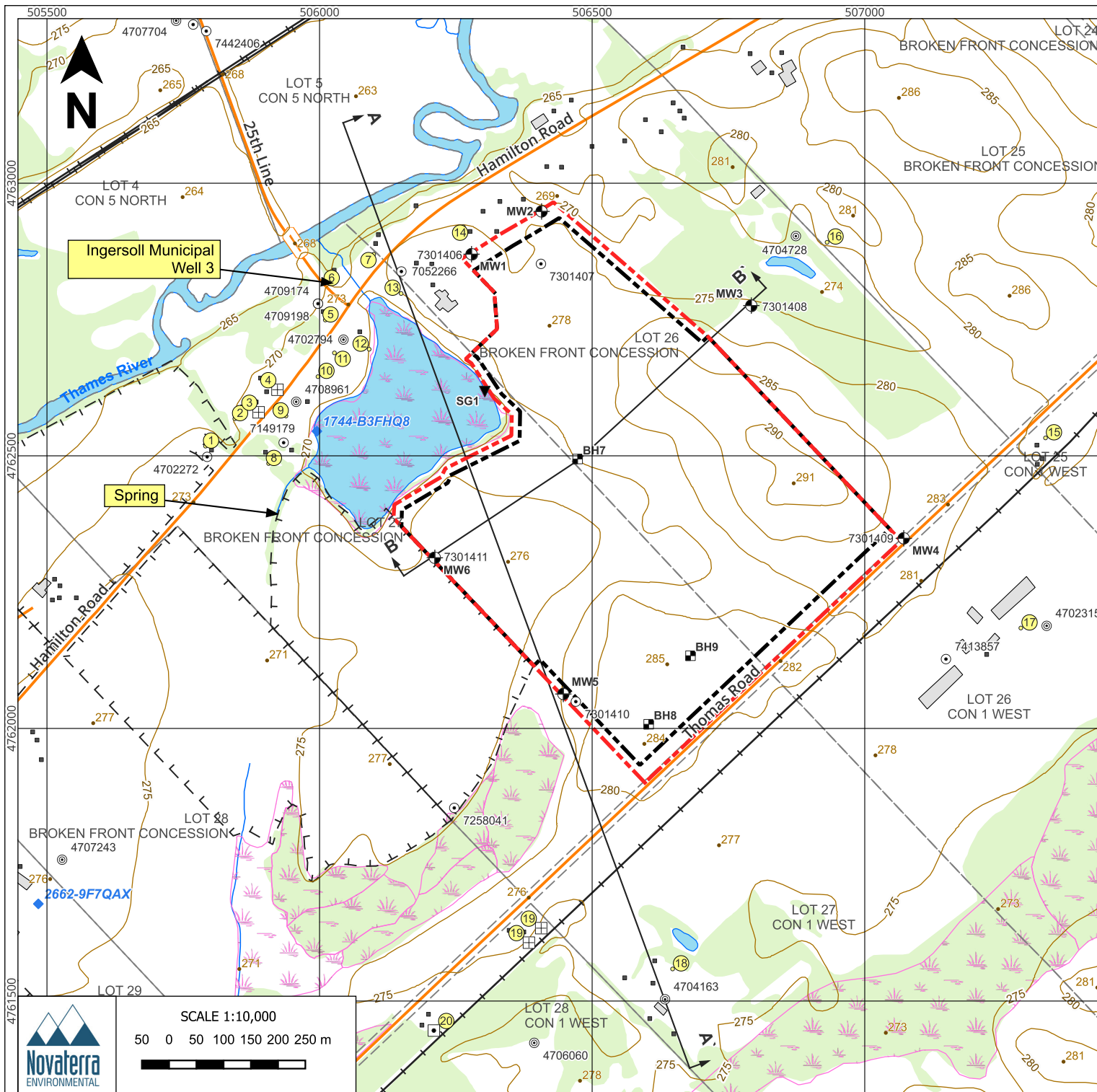
6.0 Limitation

This report was prepared by Novaterra Environmental Ltd. (Novaterra) for the exclusive use of J-AAR Materials Limited. The material in it reflects Novaterra's best judgement considering the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Novaterra accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

The report was prepared based, in part, on information and data for the site provided to Novaterra Environmental Ltd., by other parties. It is assumed that the information provided is factual and accurate. We accept no responsibility for any deficiencies, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretations, or fraudulent acts of these other parties.

FIGURES

Figures 1 to 4



INDEX MAP

LEGEND

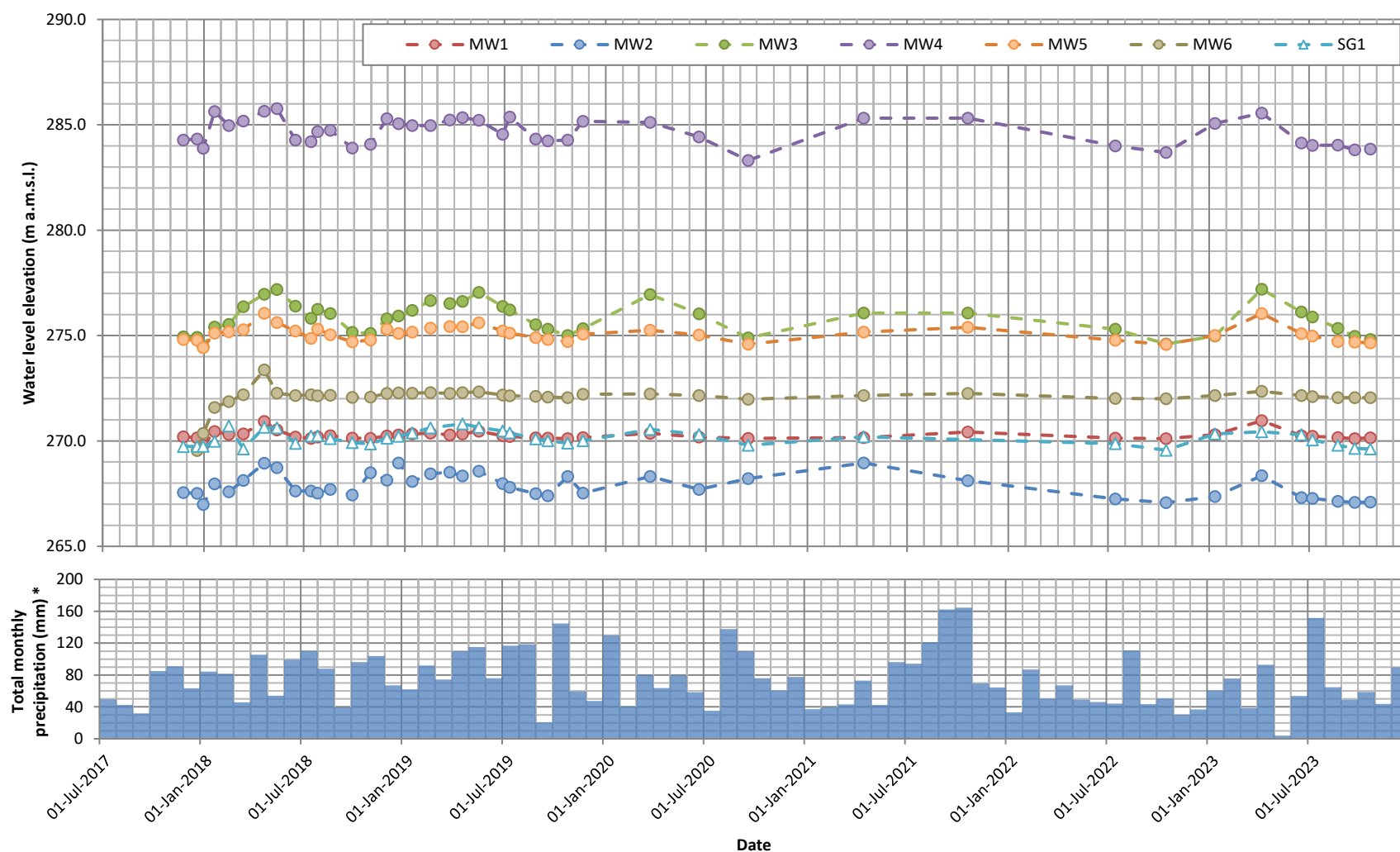
- Proposed License Boundary
- Proposed Extraction Limit
- Monitoring stations**
 - Borehole
 - Monitoring well
 - Staff gauge
- Door-to-door survey**
 - Dug Well
 - Sand point
 - Survey ID designation
- MECP Water Well Records**
 - Overburden well
 - Bedrock well
 - Active Permit to Take Water
- Other Features**
 - Cross-section
 - Active aggregate license
 - Wetland not significant or not evaluated
 - Provincially Significant Wetland

Figure 1. Location map

PROPOSED BARDOEL PIT
J-AAR Materials Limited

Part Lots 26 and 27, Broken Front Concession, Township of South-West Oxford (Formerly West Oxford Township), County of Oxford

March 20, 2025



* Precipitation measured at London Climate Station (Source: <http://www.climate.weatheroffice.ec.gc.ca>)



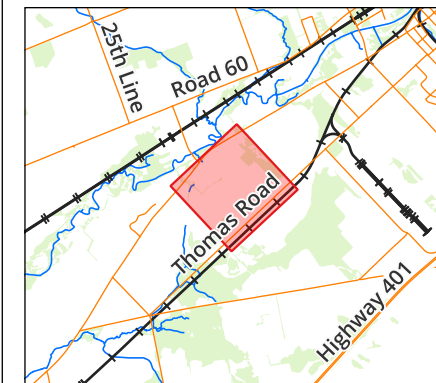
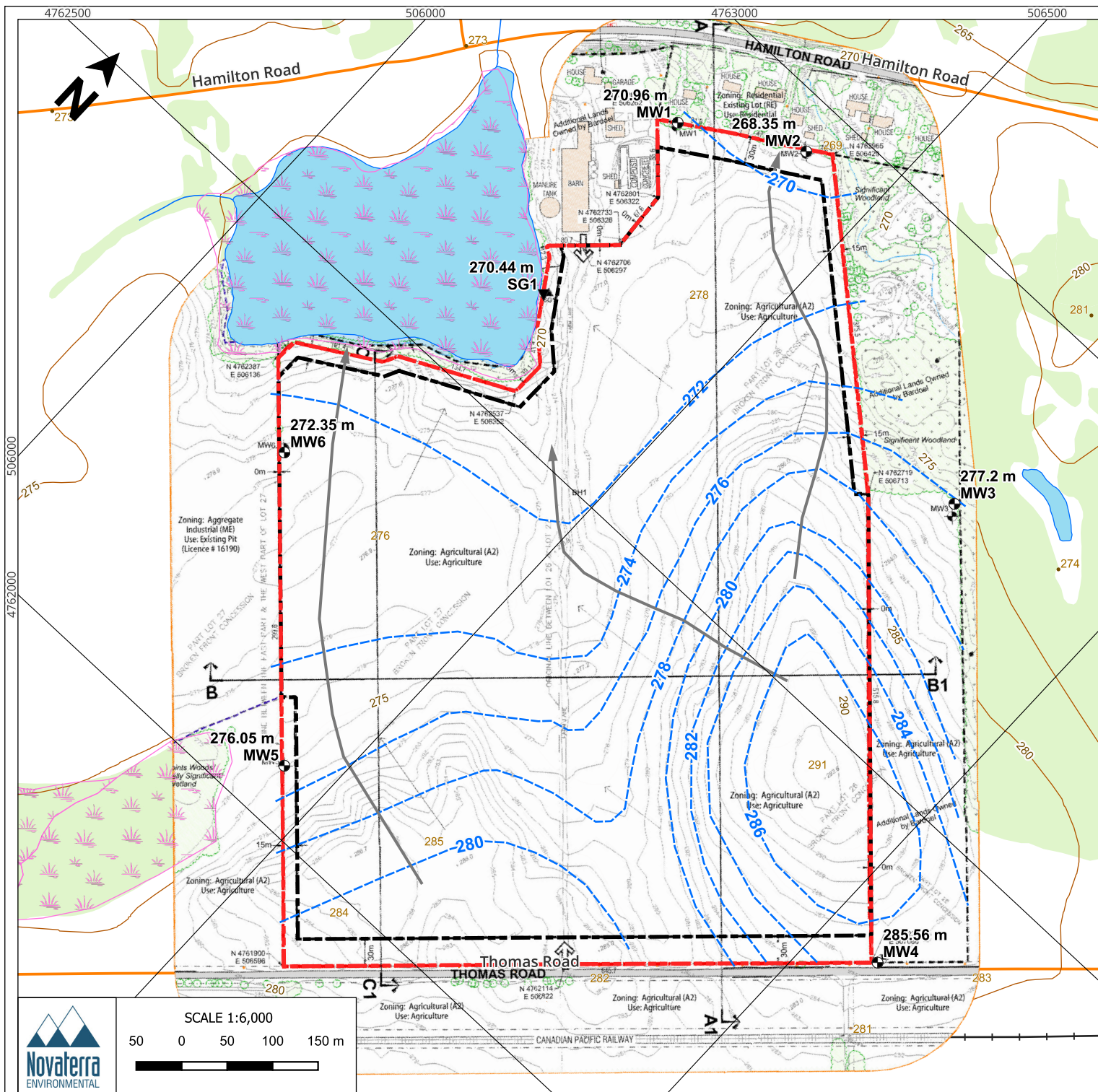
WATER LEVEL ELEVATION HYDROGRAPHS AND PRECIPITATION

Part Lots 25 and 27, Broken Front Concession, Township of South-West Oxford
(Formerly West Oxford Township), Oxford County

Figure 2

PROPOSED BARDOEL PIT
J-AAR Materials Limited

February 16, 2024



LEGEND

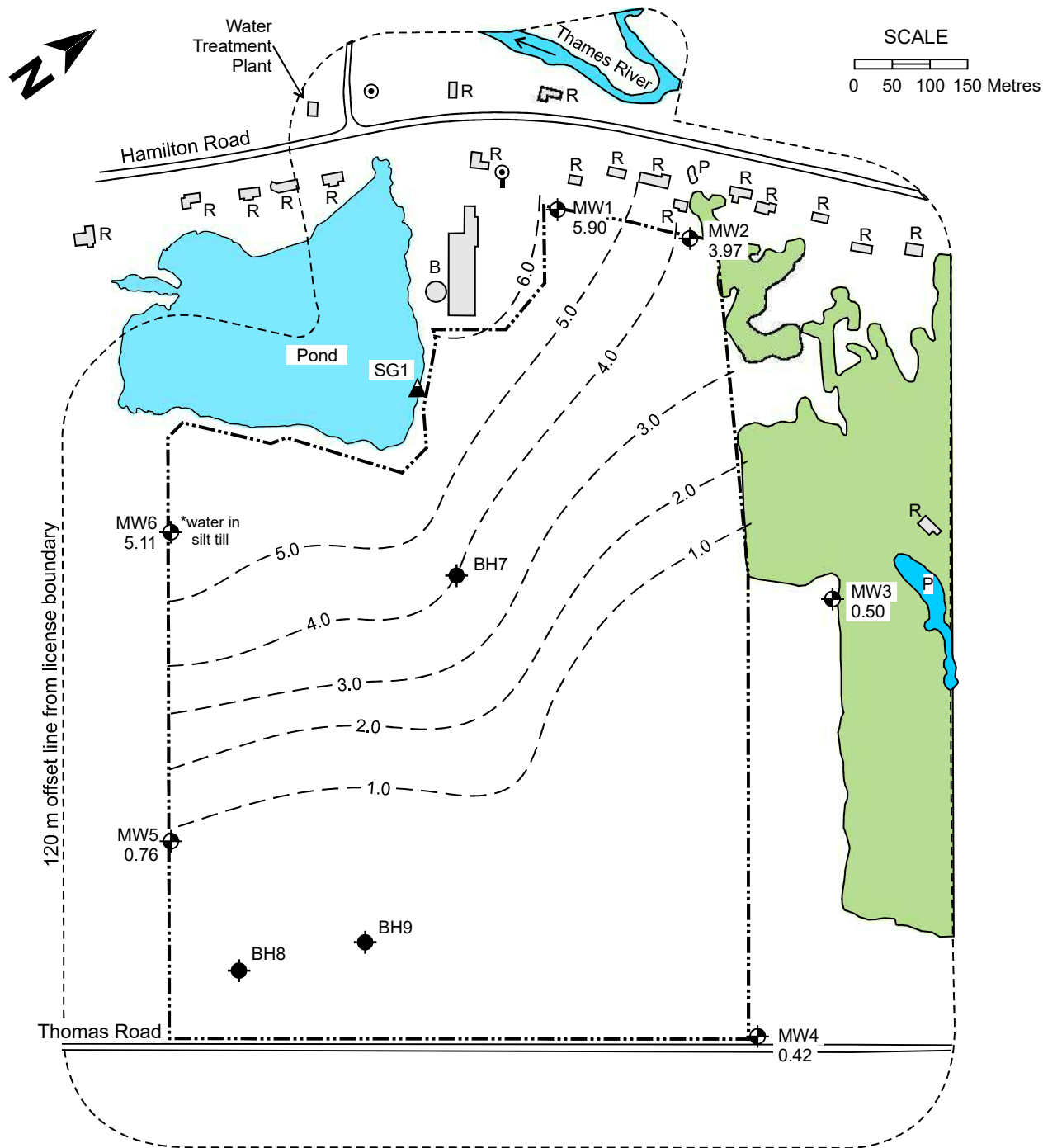
- Proposed License Boundary
- Proposed Extraction Limit
- Groundwater level elevation (m amsl) on April 6, 2023
- ▼ Pond water elevation (m amsl) on April 6, 2023
- Inferred water level elevation (m amsl) on April 6, 2023. Contour interval 2 m.
- Groundwater flow direction

Figure 3. Maximum predicted groundwater table elevation

PROPOSED BARDOEL PIT
J-AAR Materials Limited

Part Lots 26 and 27, Broken Front Concession, Township of South-West Oxford (Formerly West Oxford Township), County of Oxford

March 20, 2025



LEGEND

- | | | |
|----------------------------------|-------------------------------------|--|
| ----- Proposed licensed boundary | ● Monitoring well | ● 5.90 Depth to groundwater (mbgs) on April 6, 2023 |
| □ R Residence | ● Borehole | — 3.0 — Inferred water level contour (mbgs) Contour interval 1.0 m |
| □ B Barn | ○ Drilled domestic well in bedrock | |
| P Pond | ⊙ Drilled municipal well in bedrock | |
| | ▲ Staff gauge | |



MINIMUM DEPTH TO WATER LEVEL BELOW GROUND SURFACE DURING HYDROLOGIC HIGH

Part Lots 26 and 27, Broken Front Concession, Township of South-West Oxford
(Formerly West Oxford Township), Oxford County

Figure 4

PROPOSED BARDOEL PIT
J-AAR Materials Limited

April 17, 2024