

Thornbury Village Cider House

ODOUR BEST MANAGEMENT PRACTICES PLAN

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Tara Bailey, P.Eng.
Senior Engineer

ODOUR BEST MANAGEMENT PRACTICES PLAN

Prepared for:

Thornbury Village Cider House
90 King Street East
Thornbury, Ontario, N0H 2P0

Prepared by:

Arcadis Canada Inc.
155 Frobisher Drive
Suite J101
Waterloo
Ontario N2V2E1
Tel 519 886 7070
Fax 519 886 8398

Our Ref.:

351546-000

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ODOUR BEST MANAGEMENT PRACTICES PLAN

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1 INTRODUCTION

This Best Management Practice Plan (BMPP) has been prepared to address the control of odour emissions from the Thornbury Village Cider House (Thornbury) facility located at 90 King Street East in Thornbury, Ontario (Facility) in accordance with the requirements specified in Ontario Regulation 1/17.

Thornbury produces cider, beer and packages wine that is produced at a different location. The Facility produces approximately 303,000 litres per year of beer, with the remaining portion of its production being cider and wine repackaging. The potential sources of odour emissions at the Facility include the brew kettle and any fugitive odours from the brewhouse.

This BMPP describes the methods necessary to minimize and control odour emissions from sources and activities associated with the beer production at the Facility. This BMPP will be revised, as necessary, to reflect changes in odour control strategies as site conditions or activities may change in the future.

The BMPP is prepared with the understanding that it can be modified to accommodate actual site conditions and will be updated on a regular basis.

1.1 Site Location and Location of Points of Odour Reception

Thornbury operates a cidery and brewery located at 90 King St. East, Thornbury, Ontario. The Facility is located in an area zoned as *General Employment (M1)*. Land uses to the north are zoned for *Residential Use (R1-1 and R2-75-h7)* while lands to the south, east and west are primarily zoned for *General Employment (M1)*, *Open Space (OS)* and *Village Commercial (C1)*.

The closest point of odour reception is residential zoned land directly next to the Facility's northern fence line, which is less than the required setback distance of 250 metres from Table 1 of the EASR Publication. This land is currently not developed however, there are other residences located within the 250-metre setback distance from the Facility.

1.2 Facility Owner

Legal Name of the Owner:

Contact Information:

1.2.1 Facility Operator

The Facility is operated by the Owner identified above.

1.3 Production Rate and Operating Hours

The facility produces up to 303,000 liters of beer per year. The remainder of its annual production consists of cider and wine packaging.

The Facility operates 24 hours per day, 5 days per week, 52 weeks per year.

2 ELEMENTS OF THE PLAN

This BMPP has been developed using four basic elements: Plan, Do, Check, and Act. The steps within each of these elements, as described below, have been exercised during the development of the BMPP and will be used during review and amendment of the BMPP as necessary.

1. Plan

- Identify and characterize the sources of odour emissions at the Facility.
- Develop a site map to identify the locations of odour sources (such as the brew kettle, waste storage areas) and potential sensitive receptors within the vicinity of the Facility.
- Identify the contributing factors for each significant source that favour the generation of odour emissions.
- Prioritize the use of resources based on the significance of sources to the contribution to odour from the Facility.

2. Do

- Describe proper operating, monitoring, record-keeping, and best practice procedures (e.g. ensuring spent grain is in enclosed totes, good housekeeping, etc.).
- Describe how odour will be controlled for each significant source
- Document how the control measures will be implemented including timelines, as necessary.
- Include a training program for Facility personnel, as appropriate.

3. Check

- Implement a regular inspection and maintenance program (e.g. visual inspections of waste storage areas, maintenance of vessels and fermenters, etc.).
- Describe methods of reviewing information collected from inspections, and record-keeping to verify compliance and effectiveness of the BMPP.

4. Act

- Review the effectiveness of control measures using available data from site inspections, complaint records, etc. to identify opportunities for continuous improvement.
- Update the BMPP as required.

3 RESPONSIBILITIES

1. Owner/Senior Management

- Provide the support and resources for the successful implementation of this BMPP.

2. Plant Manager

- Will be the “Alternate Contact” that can speak for the Facility in the EHS Co-Ordinator’s absence;

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- Provide the support and resources to the “BMPP Manager” for the successful implementation of this Plan.

3. EHS Coordinator (BMPP Manager)

- Ensure that this BMPP is carried into effect;
- Ensure that this BMPP is reviewed each year and revised to ensure regulatory compliance;
- Complete inspections of the Facility and complete the required documentation;
- Ensure all appropriate training is completed for new employees, annual training is completed for all staff, and training records are kept up to date.

4. Maintenance Manager

- Oversee, a preventive maintenance (PM) program for maintaining and repairing equipment whose failure may lead to fugitive and airborne odour emissions.
- Complete the appropriate tracking system for the preventive maintenance of the equipment whose failure may lead to fugitive and airborne odour emissions.
- Ensure the PM Program is complied with and that all preventative maintenance is completed in accordance with the PM Program.

5. Supervisors

- Adhere to the requirements of this BMPP and ensure that all employees under their direct supervision comply with the requirements of this BMPP.

6. All Employees

- Adhere to the requirements of this BMPP and notify their immediate Supervisor of any non-conformances with this BMPP.
- Take all reasonable steps to mitigate any potential releases of odour emissions.
- Notify their immediate Supervisor, as soon as practicable, of any release or potential generation of excessive odourous emissions. Should the immediate Supervisor be unavailable, the employee shall notify any Thornbury supervisor or manager.

4 FACILITY DESCRIPTION AND ODOUR SOURCES

At Thornbury, beer production involves the following main process stages:

- Bulk materials handling and storage;
- Brewhouse;
- Fermentation and aging;
- Kegging and packaging; and,
- Auxiliary services.

4.1.1 Bulk Materials Handling and Storage

The bulk handling of materials includes the following:

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- The storage of pre-milled malt, hops, yeast, etc.;
- Liquid holding and storage tanks for ingredients, process intermediates, or product; and,
- Spent grain storage.

All materials, including the spent grain, are stored indoors within enclosed vessels and/or totes. Thornbury uses pre-milled malt, therefore, there are no milling or malting processes occurring at the Facility.

4.1.2 Brewhouse

The milled malt and water are mixed in the brew kettle. Once mixed and heated it is transferred into the Lauter tun. The wort is separated from the malt and sent back to the kettle where hops are added and the mixture is boiled. The spent grain is put into a sealed container and shipped off-site for farm use.

Once the wort is boiled the mixture is sent to the whirlpool to separate the hops from the liquid. Once separated the wort is chilled via a heat exchanger and sent to the fermenter where yeast is added, and the beer is aged.

4.1.3 Fermentation and Aging

The fermentation tanks are closed to the atmosphere for fermentation to take place. After the beer is aged, approximately 4 weeks, it is filtered, and the product is pumped to beer storage vessels to be kegged or packaged at the cidery.

4.1.4 Auxiliary

The auxiliary equipment at the Facility include:

- A boiler;
- Chiller units and comfort heating and cooling;
- Pilot Batch (R&D) room; and,
- General (non-process) building exhausts (office space, retail venue, etc.).

4.2 Identification of Odour Sources

Thornbury has only one directly exhausted vessel, which is the Brew Kettle (Source E-1). All other sources are either not vented or they are within the building and therefore any odourous emissions would be considered fugitive through open building doors, windows, etc. The emissions from the Brew Kettle are considered intermittent as they would occur during wort boiling and the amount of potential odourous emissions produced would be a condition on the temperature, length of time boiling, and time taken to empty the wort from the kettle.

The fermentation vessels could produce some odour emissions during fermentation when vented. These emissions would be considered fugitive in nature as the vessels are not directly vented to the atmosphere.

Some other minor sources of odours include the brewhouse, filtering, beer storage, spent grain storage and yeast handling. These sources would all be fugitive in nature from the building as none are directly emitted to the atmosphere.

5 CONDITIONS OF HIGH ODOUR EMISSIONS

Thornbury's operations are considered small scale with minimal potential for significant odourous emissions. However, there are conditions that could result in increased odours from the Facility's operations. Below are conditions that can result in an increase in odour emissions at the Facility:

1. **Increased Processing Time and Temperatures** – Higher wort temperatures and longer boiler times could potentially increase the amount of odour emitted from the kettle and fugitively from the brewhouse.
2. **Open Handling and Storage of Spent Grain** – Odour emissions from the Facility could be increased due to changes in the handling and storage of spent grain. All spent grain must be contained within an enclosed container. Should the grain be stored in open totes or outdoors increased odours will occur.
3. **Housekeeping (Brewhouse & Filling)** – Fugitive odours can occur from the presence of spilled wort or beer product within the brewhouse.

6 CONTROL MEASURES AND PROCEDURES

Preventative and control measures will minimize the potential for odour emissions from the Facility. The following control measures will be implemented at the Facility:

1. **Preventative Maintenance Program:** The Facility will ensure all appropriate maintenance and inspections are completed on all equipment and vessels as required. This will ensure that all vessel seals, heating elements, and other working parts of the equipment are in working order and limit the possibility of failure resulting in a spill or emitting of odourous vapours. It will also ensure that all processing temperatures are maintained as required of the regular operating procedures.
2. **Spent Grain Storage:** The Facility will ensure all spent grain is stored in enclosed totes within the building. The spent grain will be routinely transferred off-site to ensure that limited quantities are maintained at the Facility and that the capacity to store within the enclosed totes is not exceeded.
3. **Spill Clean-Up Procedures and Housekeeping Program:** The Facility will ensure that it has a spill cleanup procedure and housekeeping program to ensure that the Facility is well maintained. Any spills of product or intermediate process liquids will be cleaned promptly to limit the potential for fugitive odours from any spilled liquids. In addition, all vessels will be routinely cleaned, and any waste or spilled materials will be properly disposed.
4. **Training:** All Facility staff will be properly trained on the equipment and Thornbury's housekeeping and spill policies. Thornbury will also ensure that all staff are trained on this BMPP and their responsibilities to report any instances of increased odours or spills or equipment malfunction to the appropriate personnel.

7 INSPECTION AND MAINTENANCE

The Facility will follow its preventative maintenance inspection program to ensure that all vessels, equipment and seals are maintained in good working order. The Preventative Maintenance program will include a written program that includes the schedule for inspection and record keeping of maintenance and inspection activities.

The Facility will also complete inspections as part of its routine Housekeeping program. These inspections will be completed to ensure all waste is properly stored, and there is no potential for fugitive odours to escape due to spills or open totes.

Any deficiencies identified during the maintenance and housekeeping inspections will be addresses as soon as possible.

8 MONITORING AND REPORTING

All employees are required to report any abnormal odours emissions or significant spills and releases. Any observed odours, spills, or releases shall be reported to the Supervisor who will determine the cause and implement a corrective action. Any incidents will be recorded with the record kept on-site. The Facility will review incident records on a routine basis to identify any areas for improvement in equipment, processes or policies.

8.1 Complaints Procedure

Should the Facility receive any complaints due to odour from the Facility, an investigation will be completed to determine the root cause of the incident. The Facility will document the complaint and the results of the investigation including any corrective actions taken.

A sample of the Odour Investigation Form is provided in Appendix A.

APPENDIX A

Sample Odour Complaint Form





Odour Complaint Form

Time and Date of Complaint:	Name and address of Complainant	
Telephone number of complainant:		
Date of Odour:		
Time of Odour:		
Location of odour, if not above address:		
Temperature (very warm, warm, mild, cold or degress if known):		
Wind Direction (East, west, north, south):		
Wind Strength (none, light, steady, strong, gusting):		
Complainants Description of Odour		
What does it smell like?		
Intensity (see below):		
Duration (time):		
Constant or intermittent in this period:		
Does the complainant have any other comments about the odour?		
Additional Questions		
Are there any other complaints relating to that location? (either previously or relating to the same exposure):		
Any other relevant information:		
Do you accept that the odour is likely to be from your activities?		
What was happening on site at the time the odour occurred?		
Operating conditions at time the odour occurred (eg flow rate, pressure at inlet and pressure at outlet):		
Facility Actions Taken:		
When was the MECP contacted:		
MECP Contact Name and Number:		
Form Completed by:	Signed	
Date:		

- Intensity
- | | | |
|--------------|------------------|----------------------|
| 0 No Odour | 2 Faint Odoour | 4 Strong Odour |
| 1 Very Faint | 3 Distinct Odour | 5. Very Strong Odour |

Arcadis Canada Inc.

155 Frobisher Drive

Suite J101

Waterloo, Ontario N2V2E1

Tel 519 886 7070

Fax 519 886 8398

www.arcadis.com