Odour Control & Ventilation Assessment

Wasabi - Market Street, Manchester, M1 1PB

Integrated EMAQ+ Planning Submission Report

Prepared in accordance with EMAQ+ guidance - Control of Odour and Noise from Commercial Kitchen Exhaust Systems

Prepared for	Wasabi
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Purpose of this report

This report incorporates additional Purified Air specialist equipment selection information, includes an EMAQ+ scoring and provides a clearer response to address Environmental Health comments and previous amenity concerns.

1. Executive Summary

This report provides a consolidated odour and ventilation assessment for the proposed Wasabi restaurant at Market Street, Manchester. It has been prepared for submission to planning and directly incorporates the specialist odour control plant information provided by Purified Air.

The assessment addresses the previous Environmental Health concerns associated with the proposed low-level facade discharge, including odour, grease/aerosol carry-over, steam, vapour, condensate and potential effects on surrounding residential amenity and other nearby receptors.

A revised and consistent EMAQ+ Appendix 3 scoring basis has been adopted within this report. The assessment treats the arrangement as a high-risk design because of the low-level horizontal discharge and the proximity of receptors. The mitigation strategy has therefore been designed to provide a high level of odour and aerosol control before discharge.

The proposed design is not a carbon-only solution. It comprises a staged source-to-discharge treatment train using canopy baffle grease filters, Purified Air ESP1500E electrostatic precipitators and Purified Air MFU carbon filtration modules designed for an enhanced carbon residence/dwell time. The Purified Air selection confirms a proposed carbon dwell time of 0.6 seconds, which exceeds the 0.2-0.4 second residence time referred to in EMAQ+ for high-level odour-control systems using ESP/fine filtration followed by carbon.

Planning conclusion

Subject to the installation, commissioning and maintenance of the system in accordance with this report and the submitted drawings, the proposed mitigation measures are assessed as providing a robust and proportionate control strategy. On that basis, the revised scheme is expected to avoid harmful odour, fume, grease, vapour or condensate impacts on surrounding residential amenity and nearby receptors.

2. Site Description and Context

The proposed Wasabi unit is located on the ground floor at the corner of Market Street and Fountain Street, Manchester. The proposed kitchen extract terminal discharges horizontally through a louvred opening on the Fountain Street facade.

The following receptors and constraints have informed the assessment:

- Public footpath and street-level receptors in front of the proposed louvre location.
- Adjacent commercial premises and passers-by at street level.
- Potential future upper-floor occupiers near the discharge location, including residential amenity considerations where applicable.
- No available landlord-approved internal riser, roof route or internal lightwell suitable for kitchen extract termination.
- The need to coordinate the louvre design with the planning submission and the architectural appearance of the facade.

The low-level facade discharge is therefore accepted as a constrained termination location and the abatement design has been intentionally upweighted to mitigate that constraint.

3. Proposed Cooking Process and Design Basis

The proposed Wasabi kitchen operation is understood to comprise electric food preparation, warming and cooking equipment including hot-holding, bain maries, noodle/water baths, pan heating, steaming, simmering, boiling and reheating of prepared food items. The proposal does not include solid-fuel cooking or chargrill cooking.

For the purpose of the planning assessment, the EMAQ+ cooking score has not been reduced to the lowest category solely on the basis of the electric equipment. Instead, a conservative high cooking score has been adopted to reflect the Japanese/QSR use class within the EMAQ+ risk table and to avoid relying on a narrow or overly optimistic cooking-method assumption. This conservative approach does not change the conclusion: a high level of odour control is required and has been specified.

4. Proposed Extract and Abatement System

The revised kitchen extract and abatement system shall comprise the following staged arrangement from source capture through to discharge:

- Kitchen canopy over the relevant cooking and warming equipment, incorporating stainless-steel baffle filters for primary grease separation.
- Accessible extract ductwork from the canopy to the odour-abatement equipment, with inspection hatches provided for cleaning and maintenance.
- Purified Air ESP1500E electrostatic precipitator units for fine grease, smoke, mist, particulate and aerosol removal upstream of the carbon filtration stage.
- Purified Air MFU units incorporating filtration and activated carbon modules for gaseous-phase odour polishing.
- Extract fan, transitions, attenuation and controls selected to maintain the design airflows through the ESP, MFU, louvre and associated system pressure drops.
- External discharge through the Fountain Street facade louvre, with louvre/weathering details designed to minimise recirculation, staining and condensate tracking.

Reference	Design airflow	Proposed abatement plant	Function / comment
CF1	0.645 m3/s	1 No. Purified Air ESP1500E + 1 No. Purified Air MFU1200A1	Main high-level odour and aerosol control train. ESP removes fine grease, smoke, mist and particulate/aerosol loading before the MFU carbon stage. MFU selected by Purified Air for enhanced 0.6 second carbon dwell time.
CF2	0.350 m3/s	1 No. Purified Air ESP1500E + 1 No. Purified Air MFU600A1	Secondary high-level odour and aerosol control train. This corrects the previous CF reference and aligns the Purified Air schedule with the technical specifications.

5. EMAQ+ Odour Risk Assessment

The scoring below is an EMAQ+ Appendix 3 risk assessment for this planning submission.

	Adopted position	Score	Reason for adopted score
Dispersion	Very poor - low-level horizontal facade discharge	20	The discharge is not at roof level and is through a constrained urban street facade. This is the principal risk driver.
Proximity of receptors	Medium proximity, with receptors close enough to require conservative treatment	5	Potential future upper-floor occupiers, street-level receptors and adjacent premises have been considered. A sensitivity check using the close receptor score would not change the required high-level abatement strategy.
Size of kitchen	Medium QSR	3	The proposed Wasabi operation is treated as a medium-sized restaurant.
Cooking type	High - conservative brand/cuisine category	7	Although the installed electric equipment is materially lower odour than frying, chargrill or solid fuel, the score has been conservatively upweighted to the high category to avoid reliance on a narrow low-duty cooking assumption.
Total	High-risk design basis	35	A high level of odour, grease/aerosol and vapour control is required before discharge.

The design response is therefore based on high-level odour control, not a minimal or medium level of control. The proposed ESP plus MFU carbon arrangement with 0.6 second carbon dwell time is an enhanced high-level control solution for the constrained facade discharge.

6. Direct Response to Environmental Health Comments

The previous Environmental Health comments have been treated as the primary technical issues to be addressed by this report. The response below should be read with the proposed side-view drawing and louvre details forming part of the planning submission.

Environmental Health issue	Consolidated technical response
Carbon as final filter and need for a different means of control such as ESP / UV	The revised design is not carbon-only. It includes primary canopy baffle filtration, followed by Purified Air ESP1500E units for fine grease, smoke, mist and particulate/aerosol removal, followed by MFU carbon filtration for final gaseous odour polishing. EMAQ+ high-level odour control allows fine filtration or ESP followed by carbon filtration with a 0.2-0.4 second residence time. The proposed Purified Air MFU selection is designed to provide 0.6 second carbon dwell time, which exceeds that benchmark. UV/ozone is therefore not required as a separate base-design stage for this proposed equipment package, .
Environmental Health issue	**Consolidated technical response**
Steam, vapours and moisture from cooking	Steam and water vapour are controlled through source capture, removal of entrained grease/aerosol/mist by baffle filters and ESP, management of condensate within ductwork and plant, and discharge detailing at the louvre. The strategy is not to remove water vapour chemically, but to prevent contaminated vapour, grease aerosol and condensate from impacting the facade or upper-floor occupiers.
Impact on upper-floor occupiers and surrounding amenity	The low-level discharge risk is mitigated by a high-level abatement train, enhanced carbon dwell time, access for cleaning, commissioning checks, and an ongoing maintenance regime. With these measures installed and maintained, the system is assessed as suitable to avoid harmful odour, fume, grease, vapour or condensate effects on surrounding residential amenity and nearby receptors.
Access and cleanability	Access panels will be provided and identified on the submitted sideview drawing at the canopy connection, upstream and downstream of the ESP units, upstream and downstream of the MFU units, at the fan/attenuator where applicable, at changes of direction and at the final louvre/plenum connection. This allows the complete route from canopy to louvre to be inspected, cleaned and maintained.

7. Steam, Moisture and Condensate Control

The proposed cooking process will produce steam and water vapour. ESP and carbon filtration remove contamination within the extract air stream, but they do not remove water vapour itself. The steam and condensate strategy is therefore based on capture, separation of contaminated aerosol/mist, drainage/collection of condensate and discharge detailing.

- The canopy shall capture steam and vapours at source, with the kitchen maintained under suitable negative pressure relative to adjacent areas.
- Stainless-steel baffle filters and ESP units shall remove entrained grease, fine aerosol, smoke and mist before the air reaches the MFU carbon stage and the discharge louvre.
- Extract ductwork shall be graded where practical and provided with drain points or drip trays where condensate could collect, particularly at low points, plant items and the louvre plenum.
- Ductwork sections where condensation risk is increased shall be insulated or otherwise detailed to reduce surface condensation and dripping within the building fabric.
- The external louvre and plenum shall include appropriate weathering and drip detailing so that incidental condensate is contained and does not track across the facade or fall onto occupiers below.

- The louvre arrangement shall direct discharge away from the building face as far as practicable within the constraints of the facade design.
- The PPM regime shall include regular checks for condensate accumulation, visible persistent steam plume, filter condition, ESP operation and staining or deposition around the louvre.

With the above measures, no persistent contaminated plume is expected from the louvre when the system is installed, commissioned and maintained correctly.

8. Access, Cleaning and Commissioning Provisions

The access strategy will be incorporated into the side-view drawing and final coordination drawings. Access panels shall be provided at the following minimum locations:

- Canopy spigot / canopy connection point.
- Upstream and downstream of each ESP1500E unit.
- Upstream and downstream of each MFU carbon filter module.
- At the extract fan, attenuator and transition sections where applicable.
- At changes of direction and duct sections where grease, moisture or condensate could accumulate. At the final plenum / louvre connection for inspection and cleaning of the discharge section.

The access arrangement shall allow the complete extract route from canopy to louvre to be inspected, cleaned and maintained without dismantling major sections of the installation.
The system shall be commissioned to verify that the installed airflows match the design airflows, pressure drops through the ESP/MFU/louvre are within the fan selection allowance, ESP units are operating correctly, filters are correctly fitted without bypass, and the louvre discharge is visually checked during operation.

9. Recommended Maintenance Regime

The following maintenance regime is recommended as the baseline PPM approach. Frequencies should be reviewed after the first 8-12 weeks of trading and adjusted to suit actual cooking hours, loading and inspection findings.

Item	Task	Frequency	Responsible party / comment
Canopy and visible hood surfaces	Clean visible grease and condensate deposits; check capture performance.	Daily / closing clean	Wasabi store team.
Baffle grease filters	Remove, wash/degrease and refit; check for damage and correct seating.	At least weekly, increased if required	Wasabi Store team
ESP1500E units	Check indicators and operation, inspect cells and sumps, remove/clean cells and clean casing/sump.	1 to 3 months depending on usage	Specialist service contractor / manufacturer-trained engineer.
MFU pre-filters / fine filters	Inspect for loading, moisture damage and bypass; replace as required.	Monthly inspection; typically 1 to 3 months replacement	Specialist contractor.
Carbon modules	Check for odour breakthrough, loading and condition; replace in line with Purified Air recommendation and site observations.	Typically 6 to 12 months or earlier if breakthrough occurs	Specialist contractor. Dwell time and carbon specification to align with Purified Air selection.
Ductwork and access panels	Inspect for grease, moisture and condensate; clean as required.	Monthly visual inspection; full clean frequency to be confirmed by risk/loading typically quarterly	Specialist duct cleaning contractor. Maintain records and photographs.
Extract fan and controls	Check fan operation, airflow, vibration, electrical isolator and controls.	Quarterly / as manufacturer recommends	Specialist contractor.

Louvre / plenum / drainage	Check for staining, condensate, blockage, debris, bird/insect ingress and weathering issues.	Monthly and after severe weather	Store / FM contractor.
Odour and steam observation	Record visible persistent plume, or staining and trigger remedial review if observed.	Weekly initially, then monthly	Store manager / FM team.

A maintenance log shall be retained on site and made available for inspection. The log shall record filter cleaning/replacement dates, ESP service dates, duct inspections, louvre checks, odour observations and any corrective actions.

10. Planning Amenity Statement

The proposed mitigation has been selected in response to the site constraints and the previous Environmental Health concerns. Although a roof-level stack would normally provide better dispersion, it is understood that no landlord-approved roof route or internal riser is available. The design therefore mitigates the low-level discharge risk by materially improving the quality of the air before discharge.

The relevant planning consideration is the likely effect of the discharge on nearby receptors and residential amenity. The proposed system reduces grease, smoke, aerosol, mist and odour before discharge by using a multi-stage abatement system and an enhanced carbon dwell time. This provides a robust control approach for the proposed use and facade location.

Amenity conclusion

On technical grounds, and subject to installation, commissioning and maintenance in accordance with this report and the submitted drawings, the revised extract and odour-control scheme is assessed as providing suitable mitigation to avoid harmful adverse impact on surrounding occupiers and residential amenity.

11. Conclusion

The EMAQ+ risk score is 35, resulting in a high-risk design basis and a requirement for high-level odour control.

The proposed system provides high-level mitigation through primary baffle grease filtration, Purified Air ESP1500E particulate/aerosol control and Purified Air MFU activated carbon odour polishing with a proposed 0.6 second carbon dwell time. This is more robust than a carbon-only arrangement and is a proportionate response to the low-level facade discharge constraint.

The report also commits to access panels, commissioning checks, louvre/condensate control details and a documented maintenance regime. These measures are necessary to maintain the performance of the abatement system throughout operation.

Provided the system is installed, commissioned and maintained in accordance with this report and the submitted planning drawings, the proposed mitigation is assessed as suitable to address the previous Environmental Health concerns and avoid harmful odour, fume, grease, vapour or condensate impacts on surrounding residential amenity and nearby receptors.

Produced and issued by	Spiritus Technical Services Ltd
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	For planning submission

Appendix A - Incorporated Purified Air Specification Information

The following specialist equipment information provided for Purified Air a recognised specialist has been incorporated into this report

Purified Air identified the need for high-level odour control due to the low-level discharge, nearby receptors, kitchen size and cooking type. The proposed abatement arrangement is ESP followed by MFU carbon filtration, with the MFU stage designed for a 0.6 second dwell/residence time.

Purified Air item	Technical information
ESP1500E electrostatic precipitator	Quantity: 2 No. Maximum air volume per unit: 0.7 m3/s Electrical supply: 220/240 V, 50 Hz, 1 phase Power consumption: 30 W Weight: 55 kg each Working temperature: 4-56 degC Maximum relative humidity: 75%
MFU600A1 carbon filtration module	Quantity: 1 No. Width: 640 mm Height: 630 mm Depth: 925 mm Weight: 55.5 kg Use: CF2 at 0.350 m3/s
MFU1200A1 carbon filtration module	Quantity: 1 No. Width: 1245 mm Height: 630 mm Depth: 925 mm Weight: 78 kg Use: CF1 at 0.645 m3/s

The ESP units are used upstream of the carbon modules to remove fine grease, smoke, mist, particulate and aerosol loading. This protects the carbon stage and helps maintain odour control performance and service life.





Purified Air ESP and MFU unit images incorporated for product identification only. Final installation shall follow the submitted coordinated drawing and manufacturer requirements.