

Odour Assessment
Circle Square, Manchester

Client: Federal Cafe 3 Ltd

Reference: 5824r2

Date: 26th July 2022



Report Issue

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Executive Summary

Redmore Environmental Ltd was commissioned by Federal Cafe 3 Ltd to undertake an Odour Assessment in support of a planning application for a proposed café at Circle Square, Manchester.

The development has the potential to cause odour impacts as a result of emissions from food preparation activities on the premises. As such, an Odour Assessment was undertaken in order to evaluate potential effects as a result of the scheme and identify any necessary mitigation to prevent adverse impacts.

An assessment using the standard industry methodology was undertaken in order to identify the odour risk associated with the development. This was based on a number of site-specific inputs.

The results of the assessment indicated the odour risk was classified as **very high**. This prediction does not infer that the development would result in significant odour impact or affect local amenity levels. However, it does suggest that appropriate mitigation options may be required to reduce potential effects to an acceptable level.

The odour abatement strategy for the development has been specified in line with the relevant guidance for kitchens with a **very high** risk of impact. It therefore follows that with this mitigation in place, potential odour impacts at nearby sensitive receptors would be reduced to an acceptable level.

Table of Contents

1.0	INTRODUCTION	1
1.1	Background	1
1.2	Site Location and Context	1
2.0	ODOUR BACKGROUND	2
2.1	Odour Definition	2
2.2	Odour Impacts	2
2.3	Legislative Control	3
2.4	National Planning Policy	4
2.5	Local Planning Policy	5
3.0	METHODOLOGY	6
3.1	Introduction	6
3.2	Assessment Methodology	6
4.0	ASSESSMENT	8
4.1	Odour Risk	8
4.2	Odour Control	9
5.0	CONCLUSION	11
6.0	ABBREVIATIONS	12

1.0 INTRODUCTION

1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Federal Cafe 3 Ltd to undertake an Odour Assessment in support of a planning application for a proposed café at Circle Square, Manchester.

1.1.2 The development has the potential to cause odour impacts as a result of emissions from food preparation activities on the premises. As such, an Odour Assessment was undertaken in order to evaluate potential effects as a result of the scheme and identify the necessary mitigation measures to prevent adverse impacts.

1.2 Site Location and Context

1.2.1 The development is located at Circle Square, off Oxford Road, Manchester, at approximate National Grid Reference (NGR): 384270, 397320. Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The proposed café will be located on the ground floor of Block 2. The kitchen will be positioned within the eastern section of the café and will contain a salamander grill, a combi oven, an electric hob and a flat top griddle, as well as refrigeration equipment. Reference should be made to Figure 2 for a site layout plan.

1.2.3 A kitchen extraction system will be installed to remove emissions generated by food preparation activities on the premises. Releases will be discharged to atmosphere horizontally via a louvre on the northern façade of the building. Reference should be made to Figure 3 for the location of the extract point.

1.2.4 The development has the potential to cause odour impacts as a result of emissions from food preparation activities on the premises. As such, an Odour Assessment has been undertaken in order to evaluate potential effects and identify any necessary mitigation to reduce impacts to an acceptable level. This is detailed within the following report.

2.0 ODOUR BACKGROUND

2.1 Odour Definition

2.1.1 The Institute of Air Quality Management (IAQM) guidance¹ defines odour as:

"[...] the human olfactory response (perception followed by psychological appraisal) to one, or more often a complex mixture of, chemical species in the air."

2.1.2 The stated definition is considered to be relevant in the context of this assessment.

2.2 Odour Impacts

2.2.1 The magnitude of odour impact depends on a number of factors and the potential for complaints varies due to the subjective nature of odour perception. The **FIDOL** acronym, is a useful reminder of the factors that will determine the degree of odour pollution. These are described by the IAQM² as follows:

- **F**requency - how often an individual is exposed to odour;
- **I**ntensity - the individual's perception of the strength of the odour;
- **D**uration - the overall duration that individuals are exposed to an odour over time;
- **O** odour unpleasantness - odour unpleasantness describes the character of an odour as it relates to the 'hedonic tone' (which may be pleasant, neutral or unpleasant) at a given odour concentration/ intensity. This can be measured in the laboratory as the hedonic tone, and when measured by the standard method and expressed on a standard nine-point scale it is termed the hedonic score; and,
- **L**ocation - the type of land use and nature of human activities in the vicinity of an odour source. Tolerance and expectation of the receptor. The 'Location' factor can be considered to encompass the receptor characteristics, receptor sensitivity, and socio-economic factors.

¹ Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

² Guidance on the Assessment of Odour for Planning v1.1, IAQM, 2018.

2.2.2 It is important to note that even infrequent emissions may cause loss of amenity if odours are perceived to be particularly intense or offensive.

2.2.3 The **FIDOL** factors can be considered further in relation to the following and the potential for an odour emission to cause a nuisance:

- The rate of emission of the compound(s);
- The duration and frequency of emissions;
- The time of the day that this emission occurs;
- The prevailing meteorology;
- The sensitivity of receptors to the emission i.e. whether the odorous compound is more likely to cause nuisance, such as the sick or elderly, who may be more sensitive;
- The odour detection capacity of individuals to the various compound(s); and,
- The individual perception of the odour (i.e. whether the odour is regarded as unpleasant). This is greatly subjective and may vary significantly from individual to individual. For example, some individuals may consider some odours as pleasant, such as petrol, paint and creosote.

2.3 **Legislative Control**

2.3.1 The main requirement with respect to odour control from premises not controlled under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as cafés, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

"Any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

2.3.2 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the Local Authority is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

- 2.3.3 The legislative controls described above were considered as necessary throughout the undertaking of the assessment.

2.4 National Planning Policy

- 2.4.1 The revised National Planning Policy Framework³ (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

- 2.4.2 The purpose of the planning system is to contribute to the achievement of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

"c) An environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

- 2.4.3 Chapter 12 of the NPPF details objectives in relation to achieving well-designed places. It states that:

"Planning policies and decisions should ensure that developments:

[...]

f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesions and resilience."

- 2.4.4 The implications of the NPPF have been considered throughout this assessment.

³ NPPF, Ministry of Housing, Communities and Local Government, 2021.

2.5 **Local Planning Policy**

2.5.1 The Core Strategy⁴ was adopted by Manchester City Council (MCC) on 11th July 2012. It is the key document in the Local Development Framework and sets out the long term strategic policies for the Manchester's future development.

2.5.2 A review of the Core Strategy indicated the following policy of relevance to this assessment:

"Policy DM 1 - Development Management

All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

[...]

- Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation [...]."

2.5.3 Further to this, MCC have produced a Supplementary Planning Document (SPD)⁵ for Hot Food Takeaways within the city. The guidance was adopted in March 2017 and aims to expand on the policies within Manchester's Core Strategy and relevant national guidance.

2.5.4 The above policy and guidance were taken into consideration throughout the undertaking of the assessment.

⁴ Core Strategy, MCC, 2012.

⁵ Hot Food Takeaways SPD, MCC, 2017.

3.0 **METHODOLOGY**

3.1 **Introduction**

3.1.1 The development has the potential to cause odour impacts as a result of emissions from cooking processes. An assessment has therefore been undertaken in accordance with guidance document 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems' prepared by EMAQ+ for Department for Environment, Food and Rural Affairs (DEFRA)⁶. This document provides an update to the 2005 guidance⁷ produced by DEFRA.

3.1.2 The relevant process is summarised in the following Sections.

3.2 **Assessment Methodology**

3.2.1 The EMAQ+ and DEFRA methodology provides an approach for identifying the risk of odour impact associated with food preparation premises and defining an appropriate level of mitigation to control potential effects to an acceptable level.

3.2.2 The first stage in the process is to score the proposed premises in accordance with the criteria outlined in Table 1.

Table 1 Risk Scoring Criteria

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into courtyard or restriction on stack
	Poor	15	Not low level but below eaves, or discharge at below 10m/s
	Moderate	10	Discharging 1m above eaves at 10 - 15m/s
	Good	5	Discharging 1m above ridge at 15m/s
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge

⁶ Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2018.

⁷ Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, DEFRA, 2005.

Criteria	Score	Score	Details
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge
Size of kitchen	Large	5	More than 100 covers or large sized takeaway
	Medium	3	Between 30 and 100 covers or medium sized takeaway
	Small	1	Less than 30 covers or small take away
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips, Turkish, Middle Eastern or any premises cooking with solid fuel
	High	7	Vietnamese, Thai, Indian, Japanese, Chinese or steakhouse
	Medium	4	Cantonese, Italian, French, Pizza (gas fired)
	Low	1	Most pubs (no fried food, mainly reheating and sandwiches etc) or Tea rooms

3.2.3 The score obtained using the values shown in Table 1 is subsequently used to define the associated risk and odour control requirement. The relevant criteria are summarised in Table 2.

Table 2 Odour Control Requirement

Significance Score	Impact Risk	Odour Control Requirement
Less than 20	Low to Medium	Low level odour control
20 to 35	High	High level odour control
More than 35	Very high	Very high level odour control

3.2.4 A suitable odour control system can then be identified from the techniques summarised in the EMAQ+ and DEFRA guidance⁸.

⁸ Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2018.

4.0 ASSESSMENT

4.1 Odour Risk

4.1.1 The odour risk associated with the proposals was rated in accordance with the EMAQ+ and DEFRA methodology⁹. The results are summarised in Table 3.

Table 3 Odour Risk

Criteria	Score	Score	Notes
Dispersion	Very poor	20	Emissions from cooking processes will be extracted and discharged to atmosphere horizontally via a louvre on the northern façade of the building The extract point will be located below the eaves of the building and dispersion may be constrained by the grille outlet on the louvre
Proximity of receptors	Close	10	The closest sensitive receptors are located less than 20m from the extract point. These include offices above the proposed café
Size of kitchen	Medium	3	The proposed café will provide seating for approximately 32 individuals. As such, the kitchen size was considered to be medium
Cooking type (odour and grease loading)	Medium	4	The food items to be cooked on the premises include bacon, mushroom, steaks, eggs, chorizo, french toast, halloumi, bread, caramel, hollandaise sauce, banana bread and natas The equipment to be installed in the kitchen includes a salamander grill, a combi oven, an electric hob and a flat top griddle. The use of these appliances may result in moderate odour and grease loadings. As such, a 'medium' score was applied

4.1.2 As shown in Table 3, the odour risk from the proposed café was scored as 37. The risk was therefore classified as **very high**, in accordance with the EMAQ+ and DEFRA criteria¹⁰.

⁹ Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2018.

¹⁰ Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2018.

4.2 Odour Control

4.2.1 Based on the assessment results, the development requires mitigation suitable for a **very high** level of odour risk. This should include removal of both potential particulate and gaseous phase pollutants. The following odour control system is therefore recommended based on the measures outlined in the relevant guidance¹¹:

- Emission collection - Odour should be collected via extraction hoods situated above the hot food preparation area;
- Grease filtration system - Mesh type grease filters, such as baffle or cartridge filters, should be included for the purpose of grease filtration. These are suitable for heavy grease loads and would provide a robust control of emissions from the cooking processes within the proposed kitchen;
- Fine dust filter - Bag, panel or High-Efficiency Particulate Arrestance (HEPA) filters. Alternatively, an Electrostatic Precipitator (ESP) may be used; and,
- Gaseous phase - An activated carbon filter followed by a neutralising system should be included for odour removal. Alternatively, an oxidation system using ultraviolet light or ozone may be used.

4.2.2 The following odour controls will be incorporated into the proposed kitchen extraction system:

- Emissions from hot food preparation will be collected using an extract canopy system which includes baffle filters to remove grease and particulates;
- An ESP unit to further assist with the removal of particulate phase pollutants from the extract air prior to discharge to atmosphere; and,
- A high efficiency carbon filtration system followed by a neutraliser to remove odourous compounds prior to discharge to atmosphere.

4.2.3 Reference should be made to Figure 4 for a visual representation of the proposed kitchen extraction system and Appendix 1 for the relevant specifications.

¹¹ Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2018.

4.2.4 The proposed measures are consistent with the abatement options suggested within the EMAQ+ and DEFRA guidance¹² for kitchens with a **very high** risk of impact. It therefore follows that with this mitigation in place, potential odour impacts would be reduced to an acceptable level. Reference should be made to Appendix 1 for further details of the extraction system.

¹² Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2018.

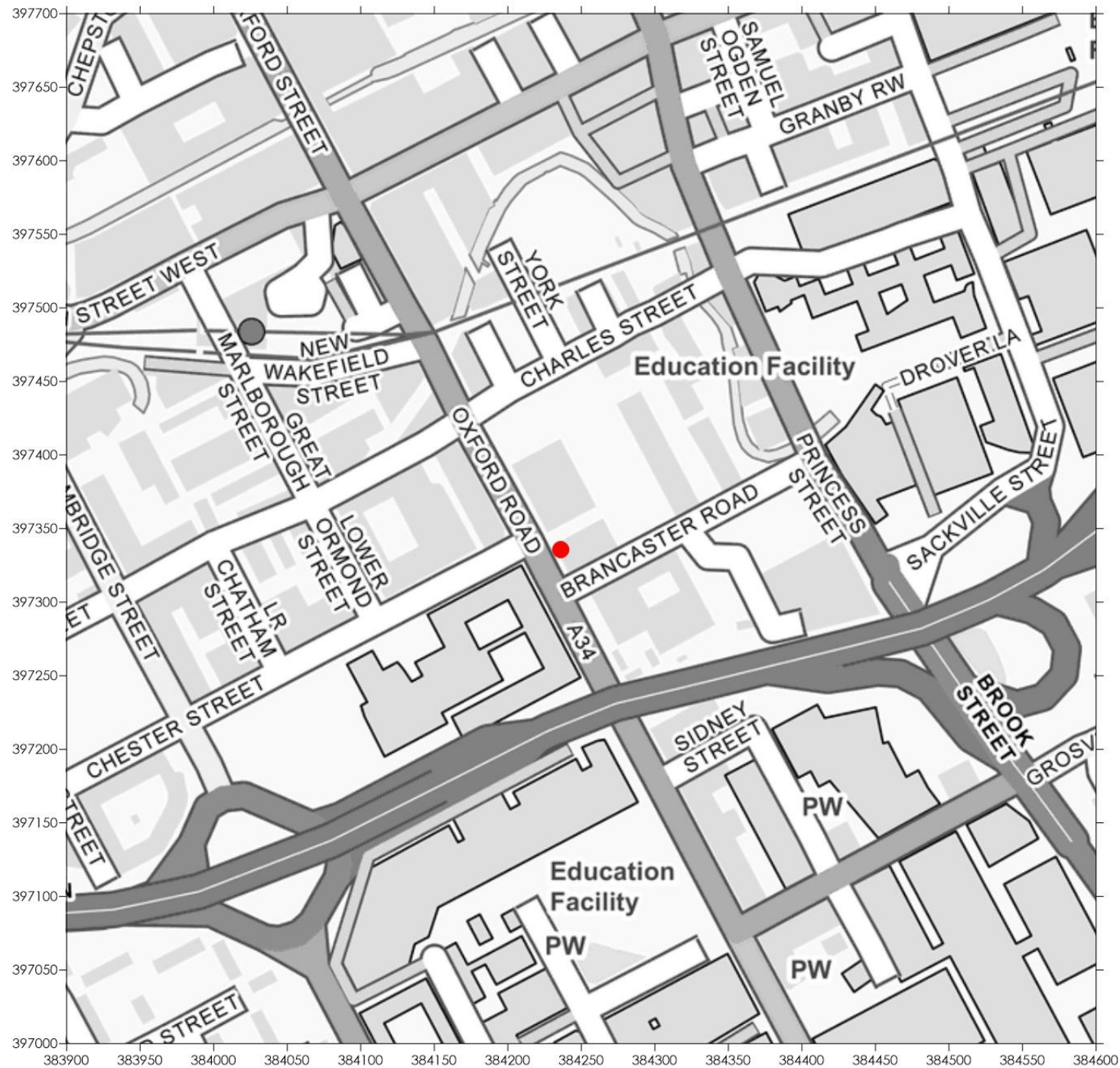
5.0 CONCLUSION

- 5.1.1 Redmore Environmental Ltd was commissioned by Federal Cafe 3 Ltd to undertake an Odour Assessment in support of a planning application for proposed café at Circle Square, Manchester.
- 5.1.2 The development has the potential to cause odour impacts as a result of emissions from food preparation activities on the premises. As such, an Odour Assessment was undertaken in order to evaluate potential effects as a result of the scheme and identify any necessary mitigation measures to prevent adverse impacts.
- 5.1.3 An assessment using the EMAQ+ and DEFRA methodology was undertaken in order to identify the odour risk associated with the development. This was based on a number of site-specific inputs.
- 5.1.4 The results of the assessment indicated the odour risk was classified as **very high**. It should be noted that this prediction does not infer that the development would result in significant odour impact or affect local amenity levels. However, it does suggest that appropriate mitigation options may be required to reduce potential effects to an acceptable level.
- 5.1.5 The odour abatement strategy for the development has been specified in line with EMAQ+ and DEFRA guidance for kitchens with a **very high** risk of impact. It therefore follows that with this mitigation in place, potential odour impact would be reduced to an acceptable level. As such, the proposed mitigation is considered to be suitable for a development of this nature.

6.0 ABBREVIATIONS

DEFRA	Department for Environment, Food and Rural Affairs
ESP	Electrostatic Precipitator
HEPA	High-Efficiency Particulate Arrestance
IAQM	Institute of Air Quality Management
MCC	Manchester City Council
NGR	National Grid Reference
NPPF	National Planning Policy Framework
SPD	Supplementary Planning Document

Figures



Legend

 Site Location

Title

Figure 1 - Site Location Plan

Project

Odour Assessment
Circle Square, Manchester

Project Reference

5824

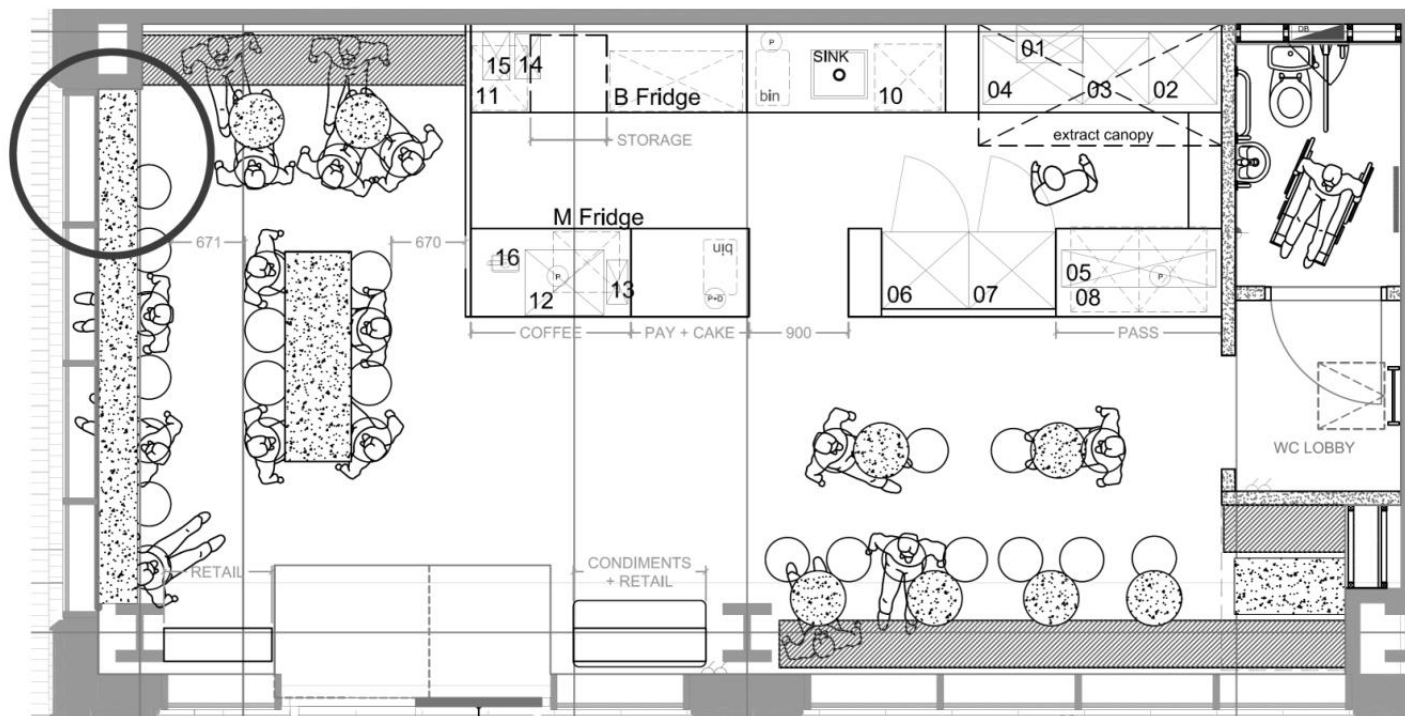
Client

Federal Cafe 3 Ltd

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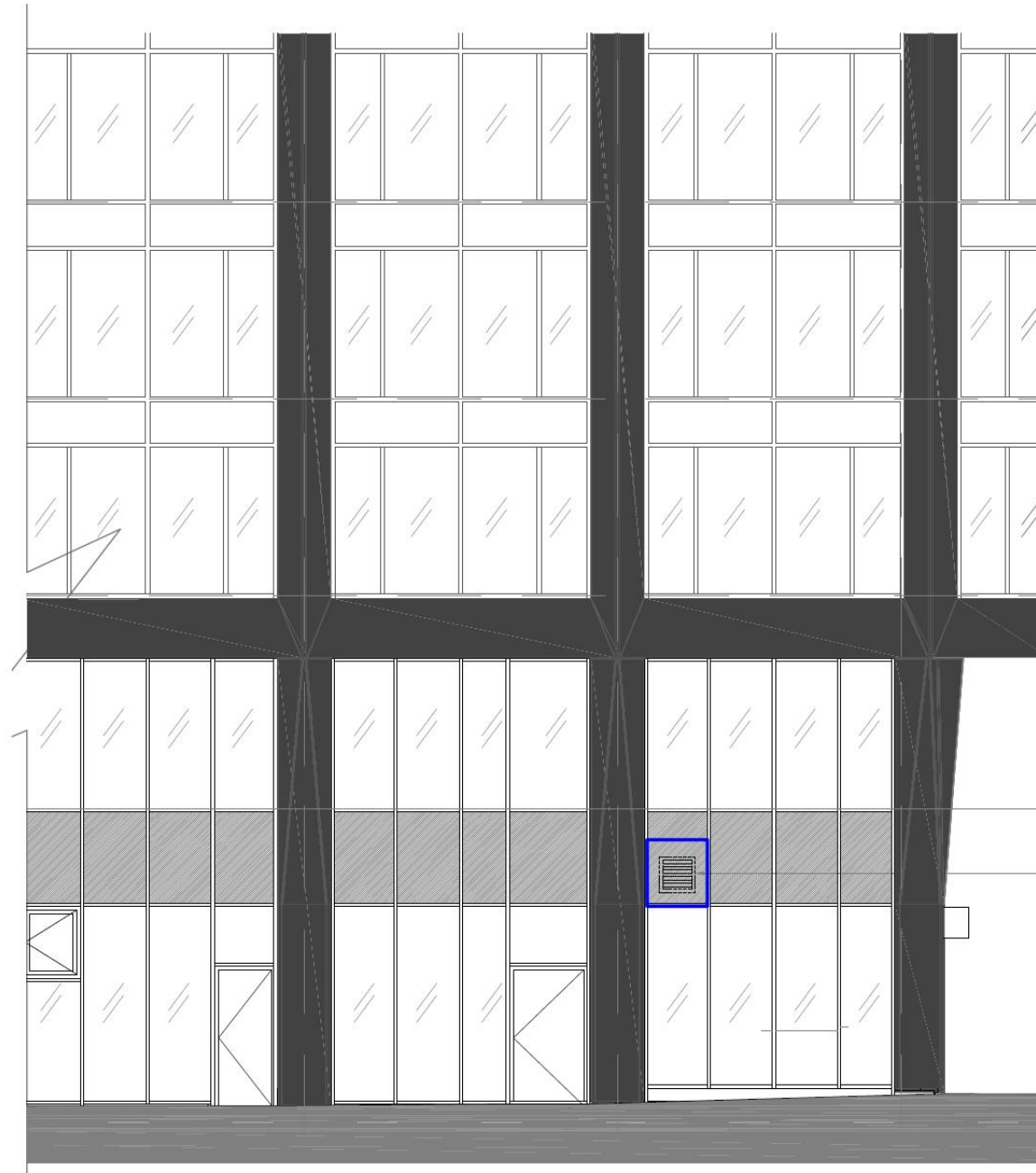
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Figure 2 - Site Layout Plan

Project
Odour Assessment
Circle Square, Manchester

Project Reference
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Kitchen Extract

Title

Figure 3 - Kitchen Extraction Point Location

Project

Odour Assessment
Circle Square, Manchester

Project Reference

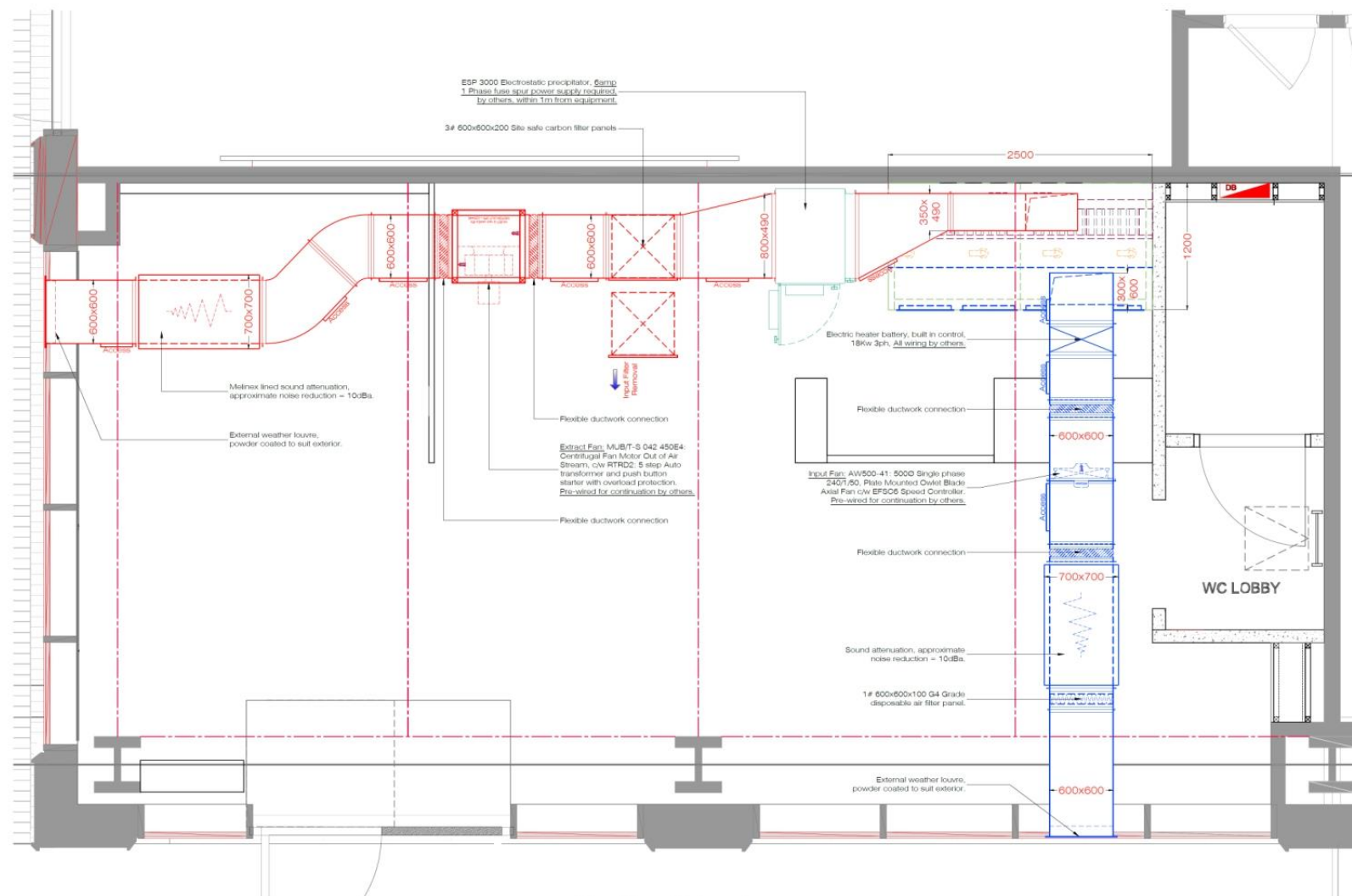
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Title
Figure 4 - Kitchen Extraction System

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Appendix 1 – Kitchen Extraction System Specification

Greens - Kitchen Ventilation Quotation

Date: 12/06/2022

Site:

Federal - Circle Square

Description

Ventilation Island Type Canopy: 2500mm Long x 1100mm Wide x 600mm Deep, manufactured in stainless steel. Full length grease extraction plenum with removable baffle type grease filters, condense channel to perimeter with welded and polished corners. Air input plenums to both side of canopy with front facing perforated panel grilles, to comply with BESA DW172 specification. Extract and Input connection spigots, to comply with BESA DW172 specification.

4# LED Recessed Spot Light Fittings: Steam, heat and grease proof, approximately 500 lux at the working surfaces, prewired with 2m tail for continuation and testing by others.

All wiring must be undertaken by the electrical contractors.

Extract & Supply Fan/Ductwork System:

Extract: 10 # Metres Galvanised MS Ductwork, (Not Fire Rated) to comply with BESA DW144 and TR19 specifications, wall termination subject to site conditions.

Supply: 5 # Metres Galvanised MS Ductwork, (Not Fire Rated) to comply with BESA DW144 and TR19 specifications, G4 air filtration and wall termination subject to site conditions.

Extract fan: MUB/T-S 062 500D4 IE2: 500 Dia (820x820x820 Box) Backwards Curved Centrifugal Fan: 400 Volts, 3 Phase, Motor = 1.75 Kw, SC = 23 Amps, FLC = 3.34 Amps, Noise Level at 3m = 53dBa. c/w Variable speed controller

Supply fan: AW450/4/1: Plate Mounted 450 Dia Axial Fan: 240 Volts, 1 Phase, Motor = 0.607 Kw, SC = 10.0 Amps, FLC = 2.88 Amps, Noise Level at 3m = 49dBa. c/w Variable speed controller

Subject to final site survey and approval of air flow rates.

Extract Sound Attenuation: Standard Insulated ductwork section without pods, Melinex Lined to prevent grease ingress to the insulation. Approximate noise reduction 10 dBA. NOTE! The above is our standard attenuation, if specific noise levels are to be achieved an acoustic specialist will be required to advise the NR level and specify silencers to suit.

Input Sound Attenuation: Standard Insulated ductwork section without pods. Approximate noise reduction 10 dBA. NOTE! The above is our standard attenuation, if specific noise levels are to be achieved an acoustic specialist will be required to advise the NR level and specify silencers to suit.

Electrostatic Precipitator:

ESP3000 Single Pass: High efficiency electronic filtration unit, requiring a 6amp electrical connection, by others, linked via the extract fan controller.

Carbon Filter System:

High efficiency active carbon filtration system. Please note: Not advised to be utilized with Char grill catering equipment.

NOTE: Please note the maintenance of the Pre-Filters is of Paramount Importance for the system to perform to it's potential. If the filters are not maintained the system will reduce in performance, a call out to change the pre filters will be charged to the client at the call out rate.

Odour Neutralizer:

ON100 Odour neutralizer: Chemically formulated neutralising agent injection unit neutralizing the cooking odour. Requiring a 6amp electrical connection, by others, linked via the extract fan controller.

Tempered Air:

Electric Heater Battery: 21KW, 16 Degree Temperature Rise, all field wiring and test/commission by others, unless stated below.

Final electrical wire connections, test and Commission: Gas interlock, fans and Electrical heater battery.

NOTE: All field wiring and electrical power to be working, by others, prior to start of commissioning.

Installation: Based upon a ground floor kitchen area with unrestricted/clear access to site with local 110 Volt electrical points within 3m of cook line area and free site parking. Installation includes for 30 minutes induction, any standard access equipment, internal scaffolding towers up to a height of 4.5 metres and podiums. **Access above 4.5 metres must be provided by others and be fit for purpose.**