# Odour Risk Assessment

## Town Gate, Hepworth

**Client: Royds Pub Co. Ltd**

**Reference: 5206-2r1**

**Date: 16th February 2024**



## Report Issue

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Report Reference: 5206-2

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## Executive Summary

Redmore Environmental Ltd was commissioned by Royds Pub Co. Ltd to undertake an Odour Risk Assessment in support of a kitchen extraction system at the Butchers Arms, Town Gate, Hepworth.

Emissions from the proposed system have the potential to cause odour impacts at sensitive locations in the vicinity of the site. An Odour Risk Assessment was therefore undertaken in order to assess potential effects and identify the requirement for any additional mitigation to control impacts to an acceptable level.

An assessment using the standard industry methodology was undertaken in order to identify the odour risk associated with the installation. 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 proposed development would result in significant odour impact or affect local amenity levels. However, it does suggest that appropriate mitigation is required to reduce potential effects to an acceptable level.

Review of the design specifications for the proposed extraction system indicated that fine filtration is required to achieve the requirements for kitchens with a **very high** risk of impact. Subject to inclusion of this mitigation, it is considered that potential odour impacts at nearby sensitive receptors are likely to be reduced to an acceptable level.

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# 1.0 INTRODUCTION

## 1.1 Background

1.1.1 Redmore Environmental Ltd was commissioned by Royds Pub Co. Ltd to undertake an Odour Risk Assessment in support of a kitchen extraction system at the Butchers Arms, Town Gate, Hepworth.

1.1.2 Emissions from the proposed system have the potential to cause odour impacts at sensitive locations in the vicinity of the site. As such, an Odour Risk Assessment was undertaken in order to assess potential effects and identify the requirement for any additional mitigation in order to control emissions to an acceptable level.

## 1.2 Site Location and Context

1.2.1 The Butchers Arms is located at 38 Town Gate, Hepworth, HD9 1TE, at approximate National Grid Reference (NGR): 416293, 406793. Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The Butchers Arms is a restaurant located in the village of Hepworth and is bordered to the east and south by Town Gate and to the west by Upper Gate, with residential dwellings beyond. A single residential property is located directly to the north of the site off Upper Gate.

1.2.3 The kitchen is located to the rear of the property and includes induction hobs, a grill and ovens. The restaurant serves a range of food types including fish, pie, steaks and chips, and the number of meals served per day is approximately 50. Reference should be made to Figure 2 for a site layout plan.

1.2.4 Emissions generated by food preparation activities will be extracted via two dedicated canopies and transferred through plenum units with internal grease filters. This is followed by treatment via an Ecovery Innovations Controlled Ozone injector system to remove odour from the air stream. The extract air will then be discharged horizontally to atmosphere via a vent on the south-western façade of the building. The release point will be positioned above first floor level, below the eaves of the building.

1.2.5 KC has previously refused planning permission due to the potential for undue harm to the living conditions of the nearby occupants in terms of noise disturbance from the extraction system[1]. As such, the fans and extraction units are to be housed within the existing building and horizontal discharge is necessary in order to minimise the potential for excess noise.

1.2.6 Reference should be made to Figure 3 for a visual representation of the extraction arrangements and Figure 4 for elevation drawings showing the flue locations.

1.2.7 The kitchen is operational during the following hours:

- Wednesday and Thursday - 12:00 to 15:00 and 17:00 to 20:00;
- Friday and Saturday - 12:00 to 21:00; and,
- Sunday 12:00 to 19:00.

1.2.8 An Odour Risk Assessment[2] prepared by Redmore Environmental Ltd was submitted to Kirklees Council (KC) in support of a retrospective planning application for the alterations to an existing extraction system (planning reference: 2021/62/93509/W) at the property. Following submission, the plans for the extraction system have been revised. As such, an updated Odour Risk Assessment is undertaken in order to assess potential effects and identify the requirement for any additional mitigation to control emissions to an acceptable level.

[1] Refusal of Permission for Development – Application Number 2021/62/93509/W, KC, 2022.

[2] 5206-1r2 – Odour Risk Assessment – Towngate, Hepworth, Redmore Environmental Ltd, 2023.

# 2.0 ODOUR BACKGROUND

## 2.1 Odour Definition

2.1.1 The Institute of Air Quality Management (IAQM) guidance[3] 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 IAQM[4] as follows:

- **Fr**equency - 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**dour 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**.**

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

[4] 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 further considered to provide the following issues in regards to 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 restaurants, 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 Environmental Protection Act (1990), 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 or activity 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 Framework[5] (NPPF) was published in September 2023 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 odour:

> "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 place. 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."

5 NPPF, Ministry of Housing, Communities and Local Government, 2023.

## 2.5 Local Planning Policy

2.5.1 The Kirklees Local Plan (KLP)[6] was adopted by KC on 27th February 2019. A review of the document indicated the following policies in relation to odour that are relevant to this assessment:

> "Policy LP16 - Food and drink uses and the evening economy
>
> Proposals for food and drink, licensed entertainment uses and associated proposals will be supported, provided they are located within a defined centre, and subject to:
>
> - ensuring the concentration of food and drink and licensed entertainment uses are not located in a particular centre or part of a centre, where they would result in harm to the character, function, vitality and viability of the centre, either individually or cumulatively.
>
> In order to assess the potential harm of food and drink and licensed entertainment proposals on a centre, the following criteria will be considered with a planning application:
>
> […]
>
> b. the impacts of noise, general disturbance, fumes, smells, litter and late night activity, including those impacts arising from the use of external areas […]
> g. the appearance of any associated extensions, flues and installations.
>
> Proposals for food and drink uses and licensed entertainment uses located outside of defined centres will be subject to criteria b to g set out above and also require the submission of a Sequential Test and Impact Assessment."
>
> "Policy LP52 - Protection and improvement of environmental quality

[6] KLP, KC, 2019.

> Proposals which have the potential to increase pollution from noise, vibration, light, dust, odour, shadow flicker, chemicals and other forms of pollution or to increase pollution to soil or where environmentally sensitive development would be subject to significant levels of pollution, must be accompanied by evidence to show that the impacts have been evaluated and measures have been incorporated to prevent or reduce the pollution, so as to ensure it does not reduce the quality of life and well-being of people to an unacceptable level or have unacceptable impacts on the environment […]"

2.5.2 The above policies were taken into consideration throughout the undertaking of the assessment.

# 3.0 METHODOLOGY

## 3.1 Introduction

3.1.1 The proposals have the potential to cause odour impacts as a result of emissions from cooking processes. An assessment has therefore been undertaken in accordance with the 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems' guidance document prepared by EMAQ+ for the Department for Environment, Food and Rural Affairs (DEFRA)[7]. This document provides an update to the 2005 guidance[8] 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 or 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 |

[7] Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2022.

[8] 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 20m 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, fast food or any premises cooking with solid fuel |
| | High | 7 | Vietnamese, Thai, Indian, Turkish, Kebab houses, Pizza (wood-fired), casual dining (burgers/chicken) |
| | Medium | 4 | Cantonese, Chinese, Japanese Italian, French, Pizza (gas fired), Steakhouses |
| | 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 guidance[9].

[9] Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2022.

# 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 methodology[10]. The results are provided in the following Sections.

**Table 3 Odour Risk**

| Criteria | Score | Score | Notes |
|---|---|---|---|
| Dispersion | Poor | 15 | Extract air will be discharged horizontally to atmosphere via a 1m by 0.6m vent above first floor level, below the eaves of the building |
| Proximity of receptors | Close | 10 | The closest sensitive receptor is less than 20m from the kitchen discharge point. This is a residential dwelling directly to the north on Upper Gate |
| Size of kitchen | Medium | 3 | The kitchen size is classified as medium as it is not anticipated that there will be more than 100 covers per day |
| Cooking type (odour and grease loading) | High | 7 | Hot food items cooked on the premises include fish, pie, steaks and chips using induction hobs, grills and ovens. This cuisine type is considered to lie between low and medium odour and grease loading potential. This higher score for medium has therefore been adopted as a worst-case |

4.1.2 As shown in Table 3, the odour risk from the proposed development was scored as 35. The risk was therefore classified as **very high**, in accordance with the EMAQ+ and DEFRA criteria.

## 4.2 Odour Control

4.2.1 Based on the assessment results, the restaurant requires mitigation suitable for a **very high** level of odour risk. There are a number of options for abatement identified within the EMAQ+ and DEFRA guidance[11] that provide this level of control. These include:

[10] Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2022.

[11] Control of Odour and Noise from Commercial Kitchen Exhaust Systems, EMAQ+, 2022.

- Emission collection - Cooking odours should be collected via extraction hoods situated above the hot food preparation area;
- Grease filtration system - Mesh type grease filters, such as baffle filters, should be included for the purpose of grease filtration. These are suitable for medium grease loads such as those associated with griddles;
- Fine dust filter - A bag, fan or High-Efficiency Particulate Arrestance (HEPA) filter should be included for removal of particulate from the air stream;
- Gaseous phase - An activated carbon filter with a 0.4 - 0.8 second residence time should be included for odour removal. Alternatively, an oxidation system such as UV light or ozone may be used; and,
- Dispersion - Emissions should be discharged vertically at high velocity using a jet cowl.

4.2.2 As outlined previously, emissions from the hot food preparation area will be collected through two kitchen canopies and transferred through stainless steel plenum units which contain baffle filters for grease filtration. Consultation with the Applicant indicated that the extract arrangements will be modified to include a fine dust filter in order to remove particulate from the air stream.

4.2.3 Extract air will then be treated by an Ecovery Innovations Controlled Ozone injector system to remove odour from the air stream. Emissions will then be discharged horizontally to atmosphere through a vent on the south-western façade of the building above first floor level, below the eaves.

4.2.4 The following maintenance schedule has been identified for the abatement system:

- The extraction system will be serviced at intervals between one and three months, dependant on usage. The cell within the unit will be replaced in situ and the housing and inside of the casing will be cleaned;
- The Ecovery Innovations Controlled Ozone injector system will be maintained in accordance with manufacturer instructions;
- A visual inspection of the ventilation system will be carried out at least once per week to check for grease build up and surface damage;
- Cooker hoods and grease filters will be cleaned on a daily basis; and,
- All fans will be maintained on a regular basis as recommended by the fan manufacturer.

4.2.5 Subject to the inclusion of the fine dust filter and implementation of the maintenance schedule, it is considered that potential odour impacts would be reduced to an acceptable level. As such, the proposed mitigation is considered to be suitable for a development of this nature.

## 5.0 CONCLUSION

5.1.1 Redmore Environmental Ltd was commissioned by Royds Pub Co. Ltd to undertake an Odour Risk Assessment in support a kitchen extraction system at the Butchers Arms, Town Gate, Hepworth.

5.1.2 Emissions from the proposed system have the potential to cause odour impacts at sensitive locations in the vicinity of the site. An Odour Risk Assessment was therefore undertaken in order to assess potential effects and identify the requirement for any additional mitigation to control emissions to an acceptable level.

5.1.3 An assessment using the EMAQ+ and DEFRA methodology was undertaken in order to identify the odour risk associated with emissions from the extraction system. 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**. This prediction does not infer that significant odour impacts would occur or local amenity levels would be affected. However, it does suggest that appropriate mitigation is required to reduce potential effects to an acceptable level.

5.1.5 Review of the design specifications for the proposed extraction system installed at the site indicated that fine filtration is required to achieve the requirements for kitchens with a **very high** risk of impact. It is considered that with this mitigation in place, potential odour impacts at nearby sensitive receptors are likely to be reduced to an acceptable level, in accordance with the stated guidance.

## 6.0 ABBREVIATIONS

| | |
|---|---|
| DEFRA | Department for Environment, Food and Rural Affairs |
| HEPA | High-Efficiency Particulate Arrestance |
| IAQM | Institute of Air Quality Management |
| KC | Kirklees Council |
| KLP | Kirklees Local Plan |
| NGR | National Grid Reference |
| NPPF | National Planning Policy Framework |

# Figures




**Legend**

Site Boundary

**Title**
Figure 1 - Site Location Plan

**Project**
Odour Risk Assessment
Town Gate, Hepworth

**Project Reference**
5206-1

**Client**
Royds Pub Co. Ltd

Contains Ordnance Survey Data
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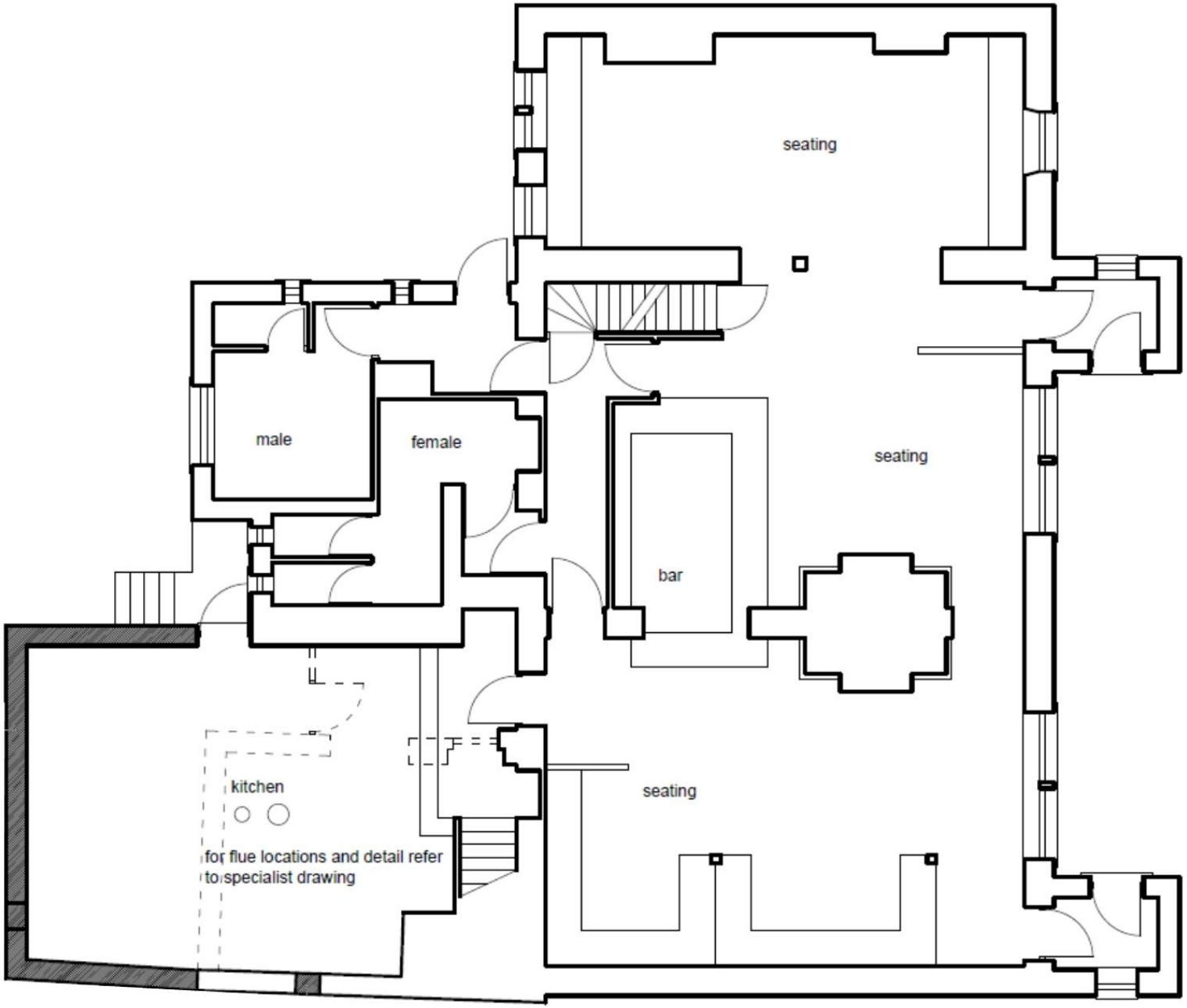


**Legend**

**Title**
Figure 2 - Site Layout Plan

**Project**
Odour Risk Assessment
Town Gate, Hepworth

**Project Reference**
5206-1

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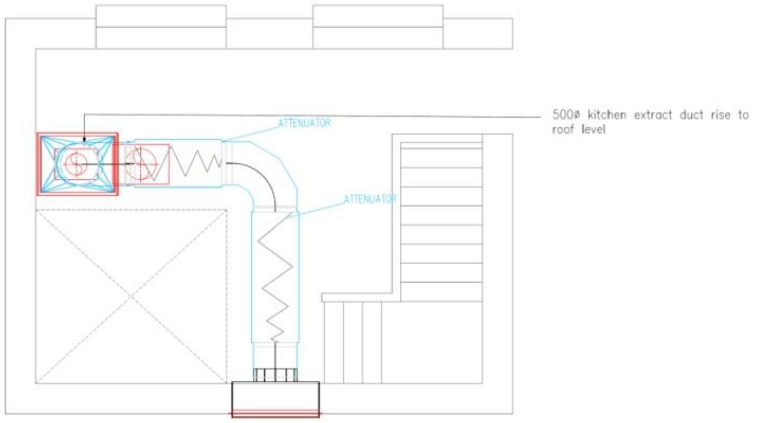
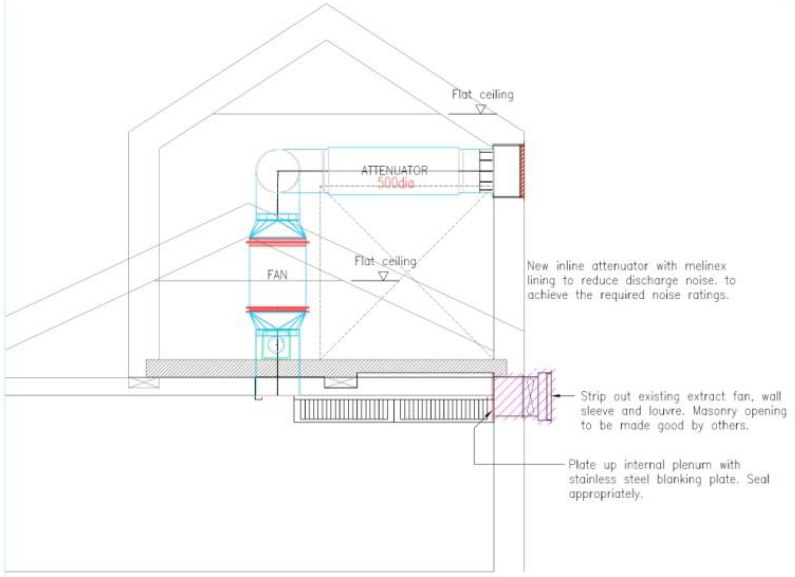


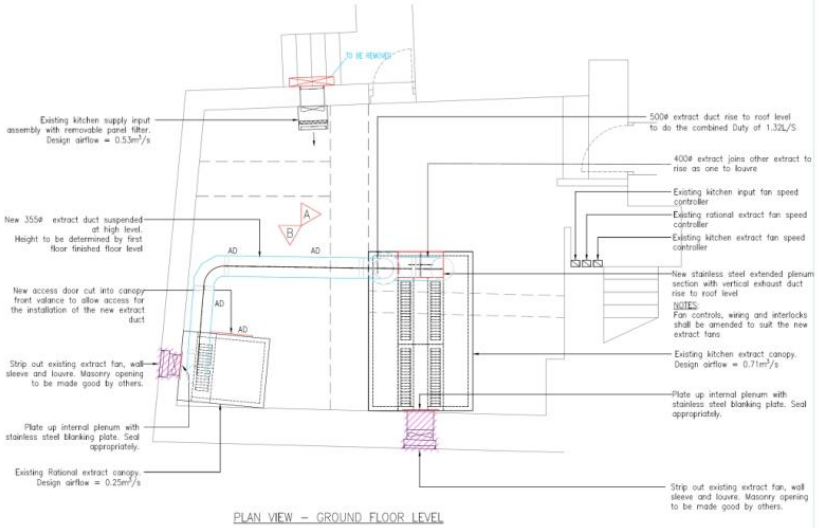

PLAN VIEW – FIRST FLOOR LEVEL

1:20



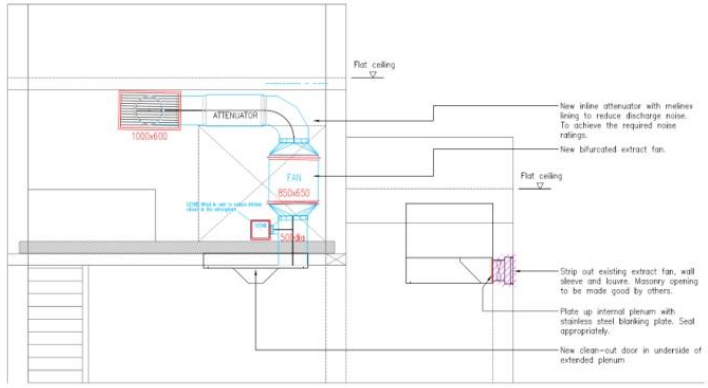

ELEVATION – VIEW IN DIRECTION 'A'

1:20




PLAN VIEW – GROUND FLOOR LEVEL

1:30




ELEVATION – VIEW IN DIRECTION 'B'

1:30

**Legend**

**Title**
Figure 3 - Extraction Arrangements

**Project**
Odour Risk Assessment
Town Gate, Hepworth

**Project Reference**
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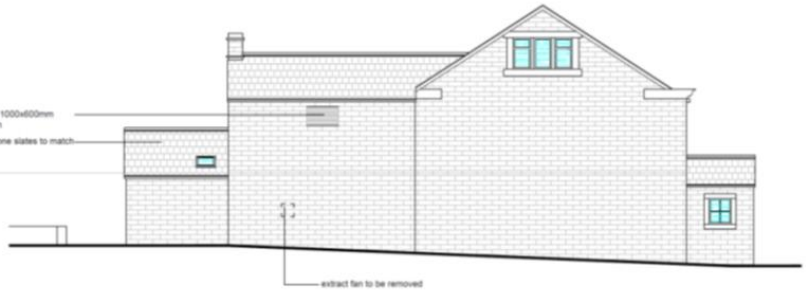
NORTH EAST
PROPOSED ELEVATIONS 1:100




SOUTH WEST




NORTH WEST

**Legend**

**Title**
Figure 4 - Proposed Elevations and Flue Locations

**Project**
Odour Risk Assessment
Town Gate, Hepworth

**Project Reference**
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