



COMMERCIAL KITCHEN ODOUR RISK ASSESSMENT

on behalf of

M. RAY LIMITED

for

**39 - 45 HIGH STREET, PRESCOT,
KNOWSLEY, L34 6HF**

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Summary

This assessment has been undertaken to accompany a planning application for two residential flats on the first floor of 39 - 45 High Street, Prescot, Knowsley, L34 6HF. The ground floor is used as a bakery and coffee shop which bakes pre-prepared products on-site.

The Institute of Air Quality Management's "Guidance on the assessment of odour for planning" has been used to inform the assessment.

The assessment concluded that the level of odour associated with the ground floor bakery and coffee shop would be insignificant to the proposed residential dwellings.

There is, therefore, no reason for this application to be refused on the grounds of odour.

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Signed		Signed	
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1 Introduction

- 1.1 This kitchen odour assessment has been undertaken to accompany a planning application for a residential development on the first floor of 39 - 45 High Street, Prescot, Knowsley, L34 6HF. The site lies within the administrative boundary of Knowsley Metropolitan Borough Council (KMBC).

2 Site Description

- 2.1 The site is located in the town centre of Prescot, located in Merseyside.
- 2.2 There is car parking to the north of the site and Moss Street Car Park is located to the east of the site. Commercial premises are located to the west of the site. High Street runs along the southern site boundary.
- 2.3 The proposed development consists of the first floor of the building numbered 39 to 45 High Street. Chatwins Bakery and Coffee Shop is located on the ground floor of the same building.
- 2.4 The proposed development space was used as flats previously but was converted for use as staff facilities.
- 2.5 The site location is shown in **Appendix A**.

3 Proposed Development

- 3.1 The proposal is to change the use of the site, from a commercial space to two self-contained flats on the first floor of the building.

4 Policy Context

4.1 National Planning Policy Framework

- 4.1.1 The National Planning Policy Framework¹ (NPPF) does not specifically mention odour, but it does refer to air and pollution. Paragraph 174 states:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.”

¹ Ministry of Housing, Communities and Local Government (MHCLG) (2023) National Planning Policy Framework

- 4.1.2 The role of planning is to ensure that new developments that are capable of creating odour do not cause a significant adverse effect in the local area or impact upon existing sensitive uses nearby. Additionally, the planning system also seeks to ensure sensitive uses introduced at the development would not be adversely affected by existing odorous sources and/or that undue restrictions are not placed on existing odorous businesses that may have operated up to that point without issue.

5 Methodology

5.1 EMAQ+ Risk Assessment Methodology - Odour Control

- 5.1.1 The EMAQ+ guidance ^[2] includes a risk assessment methodology for odour associated with commercial kitchens, the outcome of which determines the level of odour control required. EMAQ+ does not specifically include bakeries. As Chatwins is a bakery and coffee shop which does not fry foods, a FIDOL odour assessment has been deemed more suitable for this specific site.

5.2 H4 Odour Management

- 5.2.1 The Environment Agency's Additional Guidance for H4 Odour Management³ provides a table of hedonic scores for everyday odours. A hedonic score indicates how offensive or offensive an odour may be, irrespective of its strength (intensity). The measurement scale for hedonic tones typically ranges from +4 for very pleasant odours to -4 for foul ones, neutral odours score 0.

5.3 FIDOL Odour Assessment Methodology

- 5.3.1 The methodology within the IAQM (2018) *Guidance on the assessment of odour for planning*⁴ has been used to inform the assessment.
- 5.3.2 Before an adverse effect (such as disamenity, annoyance, nuisance or complaints) can occur, there must be odour exposure. For odour exposure to occur all three links in the source-pathway-receptor chain must be present: an emission source (a means for the odour to get into the atmosphere); a pathway (for the odour to travel through the air to locations off-site); and the presence of receptors (people) that could experience an adverse effect, noting that people vary in their sensitivities to odour.
- 5.3.3 The scale of exposure (the impact) is determined by the parameters collectively known as the FIDO factors (Frequency, Intensity, Duration and Offensiveness); these are described in **Table 2**. The magnitude of the effect experienced is determined by the scale of exposure (FIDO) and the sensitivity of the receptor (L, denoting the location, which is often taken to be a surrogate for the sensitivity and incorporates the social and psychological factors that can be expected for a given community.)

² EMAQ+ (2018) *Control of Odour and Noise from Commercial Kitchen Exhaust Systems*.

³ Environment Agency (2011) *Additional Guidance for H4 Odour Management*

⁴ IAQM (2018) *Guidance on the assessment of odour for planning*

Table 1: Description of the FIDOL factors

Factor	Description of Factor
Frequency	How often an individual is exposed to odour
Intensity	The individual's perception of the strength of the odour
Duration	The overall duration that individuals are exposed to an odour over time
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.
Location	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.

5.3.4 The risk of the impact of the odour at a receptor can be estimated using a basic relationship as identified below:

$$\text{Effect} \approx \text{Dose} \times \text{Response}$$

5.3.5 The dose is the likely impact of the odour as a result of the odour exposure and the response is the result of the sensitivity of the receiving environment.

5.3.6 The key issues impacting on the effect of the odour include:

- Magnitude of the odour;
- Effectiveness of the pathway for the odour to be received; and
- The sensitivity of the receptor.

5.3.7 The IAQM Odour Assessment Methodology which has been followed during the assessment procedure is shown in **Appendix B**. Odour risks deemed 'negligible' or 'slight adverse' are considered to be insignificant.

6 Assessment of Odour on the Development

6.1 Source Odour Potential

6.1.1 The proposed residential development is located on the first floor of 39 – 45 High Street, Prescott, which has Chatwins Bakery and Coffee Shop on the ground floor. The odour associated with Chatwins Bakery and Coffee Shop is considered within the odour assessment. A plan of Chatwins Bakery and Coffee Shop which shows the location of the extract from the oven through the outside wall is provided in **Appendix C**. **Appendix C** also includes photographs of the wall vent. The size of the kitchen is small as there are less than 30 covers². The cooking type (odour and grease loading) is low as Chatwins Bakery and Coffee Shop does not fry any foods but bakes pre-prepared goods in the oven and serves soups, carvery, sandwiches, wraps and toasties². This was confirmed directly with Chatwins Bakery during a site visit⁵.

⁵ Miller Goodall Ltd. site visit on the 29th September 2023.

- 6.1.2 The Foods Standards Agency conducts hygiene inspections of food preparation businesses in England. Kitchen odour generation is often caused by grease and cooking practices; therefore, the build-up of grease and poor hygiene and cleaning practices can be of concern. Chatwins Prescott has a 5-star hygiene rating⁶, the highest possible standard.
- 6.1.3 The hygiene rating is not a direct indicator of whether the business could be capable of causing adverse odour; however, it does indicate that hygiene practices at the business are excellent. This indicates that grease and surfaces are cleaned to a high standard, which is ultimately beneficial in the control of odour generation during the operational periods. Grease build-up is a large contributor to kitchen odour generation.
- 6.1.4 Bakeries are listed as having a hedonic score of 3.53 and coffee has a score of 2.33^[3]. Therefore, bakeries and coffee are deemed to have a pleasant odour. The possibility for odour generation will be limited to the operational hours of the business, and the periods when baking in the ovens is carried out.
- 6.1.5 Using **Table B1** in **Appendix B**, the source odour potential can be described as **small**.

6.2 Pathway Effectiveness

- 6.2.1 The proposed development is located on the first floor of the same building as Chatwins Bakery and Coffee Shop, which is situated on the ground floor. Using **Table B2** in **Appendix B**, the pathway effectiveness can be described as **highly effective**.

6.3 Risk of Odour Impact

- 6.3.1 Using the matrix in **Table B3** in **Appendix B**, the risk of odour impact can, therefore, be described as **low risk** as there is a small source odour potential and a highly effective pathway.

6.4 Receptor Sensitivity

- 6.4.1 Using **Table B4** in **Appendix B**, the receptor sensitivity can be described as **highly sensitive** because the proposed development is for residential use; therefore, users can reasonably expect a high level of amenity.

6.5 Magnitude of Odour Impact

- 6.5.1 Using the matrix in **Table B5** in **Appendix B**, the magnitude of odour impact can be described as a **slight adverse effect**, as there is a low risk of odour impact on highly sensitive receptors. The IAQM guidance considers slight adverse effects to be insignificant.

7 Summary of Impacts and Conclusion

- 7.1 This assessment has been undertaken to accompany a planning application for two residential flats on the first floor of 39 - 45 High Street, Prescott, Knowsley, L34 6HF. The ground floor is used as a bakery and coffee shop which bakes pre-prepared products on-site.

⁶ <https://ratings.food.gov.uk/business/1569963/chatwins-knowsley>

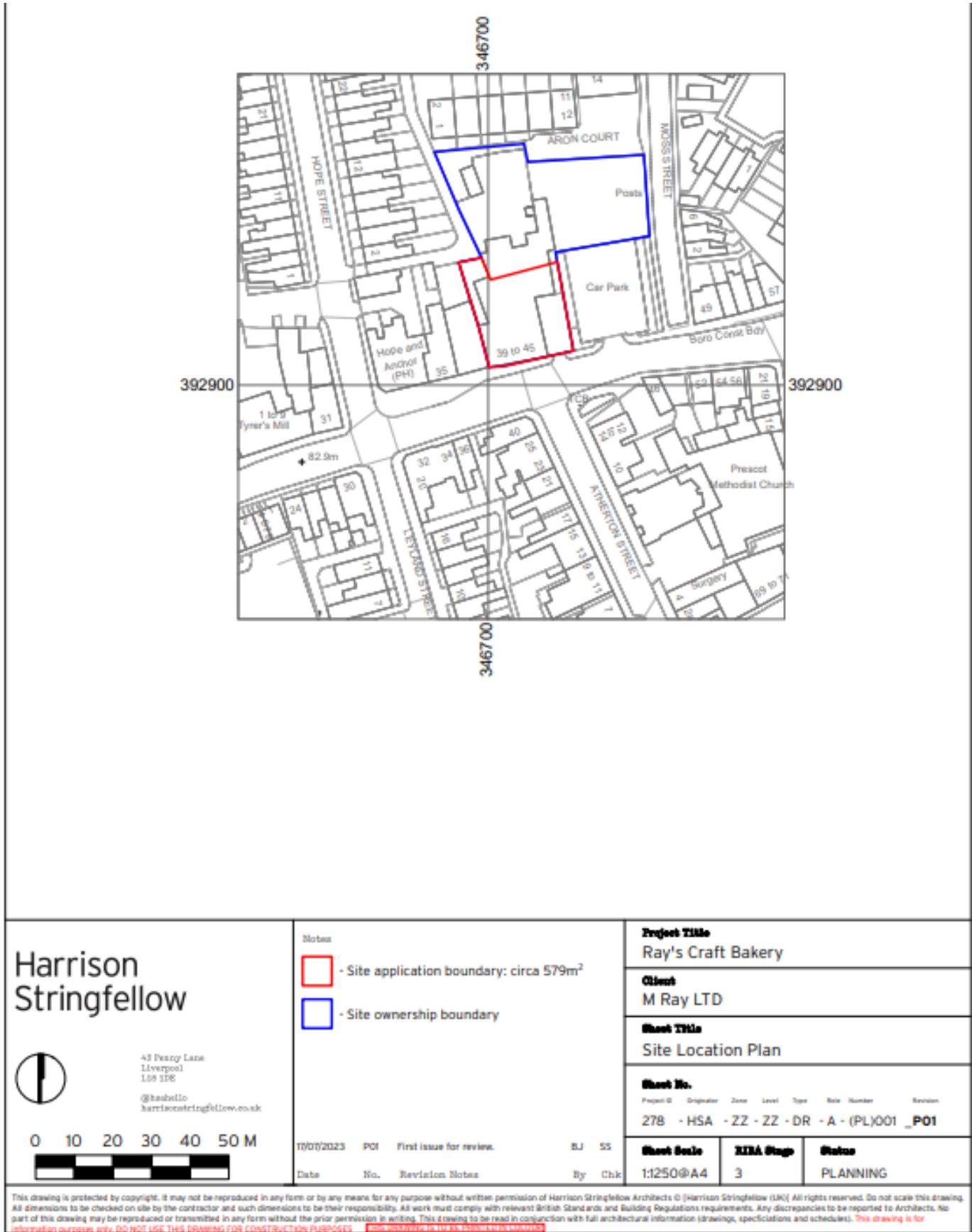
- 7.2 The Institute of Air Quality Management's "Guidance on the assessment of odour for planning" has been used to inform the assessment.
- 7.3 The assessment concluded that the level of odour associated with the ground floor bakery and coffee shop would be insignificant to the proposed residential dwellings.
- 7.4 There is, therefore, no reason for this application to be refused on the grounds of odour.

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APPENDICES

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APPENDIX A: SITE LOCATION



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Appendix B: IAQM Assessment of Odour Methodology

Source Odour Potential

The first step in the assessment is to estimate the odour generating potential of the site activities, termed the “Source Odour Potential”, which takes into account three factors:

- The scale (magnitude) of the release from the odour source, taking into account the effectiveness of any odour control or mitigation measures that are already in place. This involves judging the relative size of the release rate after mitigation and taking account of any pattern of release (e.g. intermittency).
- How inherently odorous the emission is. In some cases it may be known whether the release has a low, medium or high odour detection threshold (ODT); this is the concentration at which an odour becomes detectable to the human nose. In most instances the odours released by a source will be a complex mixture of compounds and the detectability will not be known. However, for some industrial processes the odour will be due to one or a small number of known compounds and the detection thresholds will be a good indication of whether the release is highly odorous or mildly odorous.
- The relative pleasantness/unpleasantness of the odour.

Using the factors above, **Table B1** can be used to determine whether the source odour potential is Large, Medium or Small.

Table B1: Determining the Source Odour Potential

Source Odour Potential	Magnitude	Compounds	Unpleasantness	Mitigation/Control
Large	Larger permitted processes of odorous nature or large Sewage Treatment Works (STWs); materials usage hundreds of thousands of tonnes/m ³ per year; area sources of thousands of m ² .	The compounds involved are very odorous (e.g. mercaptans), having very low Odour Detection Thresholds (ODTs) where known.	Processes classed as “Most offensive” ⁷ (where known) compounds/odours having unpleasant (-2) to very unpleasant (-4) hedonic score.	Open air operation with no containment, reliance solely on good management techniques and best practice.

⁷ Table 5 in the IAQM “Guidance on the Assessment of Odour for Planning”

Source Odour Potential	Magnitude	Compounds	Unpleasantness	Mitigation/Control
Medium	Smaller permitted processes or small (STWs); materials usage thousands of tonnes/m ³ per year; area sources of hundreds of m ² .	The compounds involved are moderately odorous.	Processes classed in H4 as "Moderately offensive"; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score.	Some mitigation measures in place, but significant residual odour remains.
Small	Falls below Part B threshold; material usage hundreds of tonnes/m ³ per year; area sources of tens m ² .	The compounds involved are only mildly odorous, having relatively high ODTs where known.	Processes classed as "Less Offensive" in H4; or (where known) compounds/odours having neutral (0) to very pleasant (+4) hedonic score.	Effective, tangible mitigation measures in place (e.g. BAT, BPM) leading to little or no residual odour.

Effectiveness of Pollutant Pathway

Next, the effectiveness of the pollutant pathway as the transport mechanism for odour through the air to the receptor, versus the dilution/dispersion in the atmosphere, is estimated. Any factor that increases dilution and dispersion of the odorous pollutant plume as it travels from source (e.g. processes and plant) to receptor will reduce the concentration at the receptor, and hence reduce exposure. Important factors to consider here are:

- The distance of sensitive receptors from the odour source.
- Whether these receptors are downwind (with respect to the predominant prevailing wind direction). Odour episodes often tend to occur during stable atmospheric conditions with low wind speed, which gives poor dispersion and dilution; receptors close to the source in all directions around it can be affected under these conditions. When conditions are not calm, it will be the downwind receptors that are affected. Therefore, receptors that are downwind with respect to the prevailing wind direction tend to be at higher risk of odour impact.
- The effectiveness of the point of release in promoting good dispersion, e.g. releasing the emissions from a high stack will – all other things being equal - increase the pathway, dilution and dispersion.
- The topography and terrain between the source and the receptor. The presence of topographical features such as hills and valleys, or urban terrain features such as buildings can affect air flow and therefore increase - or inhibit - dispersion and dilution.

Using the factors above, **Table B2** can be used to determine the effectiveness of the pollutant pathway.

Table B2: Determining the Effectiveness of Pollutant Pathway

Effective Pathway for Odour Flux to Receptor	Distance	Direction	Effectiveness of dispersion/dilution
High	Receptor is adjacent to the source/site; distance well below any official set-back distances.	High frequency (%) of winds from source receptor (or, qualitatively, receptors downwind of source with respect to prevailing wind).	Open process with low-level releases, e.g. lagoons, uncovered effluent treatment plant, landfilling of putrescible wastes.
Moderate	Receptor is local to the source.	-	Releases are elevated, but compromised by building effects.
Ineffective	Receptor is remote from the source; distance exceeds any official set-back distances.	Low frequency (%) of winds from source to receptor (or, qualitatively, receptors upwind of source with respect to prevailing wind).	Releases are from high level (e.g. stacks, or roof vents >3m above ridge height) and are not compromised by surrounding buildings.

Risk of odour impact

In the third step, the estimates of Source Odour Potential and the Pathway Effectiveness are considered together to predict the risk of odour exposure (impact) at the receptor location, as shown by the example matrix in **Table B3**.

Table B3: Risk of Odour Exposure (Impact) at the Specific Receptor Location

Pathway Effectiveness	Source Odour Potential		
	Small	Medium	Large
Highly Effective Pathway	Low Risk	Medium Risk	High Risk
Moderately Effective Pathway	Negligible Risk	Low Risk	Medium Risk
Ineffective Pathway	Negligible Risk	Negligible Risk	Low Risk

Receptor Sensitivity

For the sensitivity of people to odour, the IAQM recommends that the air quality practitioner uses professional judgment to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the following general principles shown in **Table B4**.

Table B4: Sensitivity of the Receptor

High Sensitivity Receptor
Surrounding land where: Users can reasonably expect enjoyment of a high level of amenity. The people would reasonably be expected to be present here continuously, or at least regularly for extended period, as part of the normal pattern of use of the land. Examples may include residential dwellings, hospitals, schools/education and tourist/cultural
Medium Sensitivity Receptor
Surrounding land where: Users would expect to enjoy a reasonable level of amenity, but wouldn't reasonably expect to enjoy the same level of amenity as in their home. People wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples may include places of work, commercial/retail premises and playing/recreational fields.
Low Sensitivity Receptor
Surrounding land where: The enjoyment of amenity would not be reasonably expected. There is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples may include industrial, farms, footpaths and roads.

Magnitude of odour impact

The next step is to estimate the effect of that odour impact on the exposed receptor, taking into account its sensitivity, as shown in **Table B5** The odour effects may range from negligible, through slight adverse and moderate adverse, up to substantial adverse.

Table B5: Likely Magnitude of Odour Effect at the Specific Receptor Location

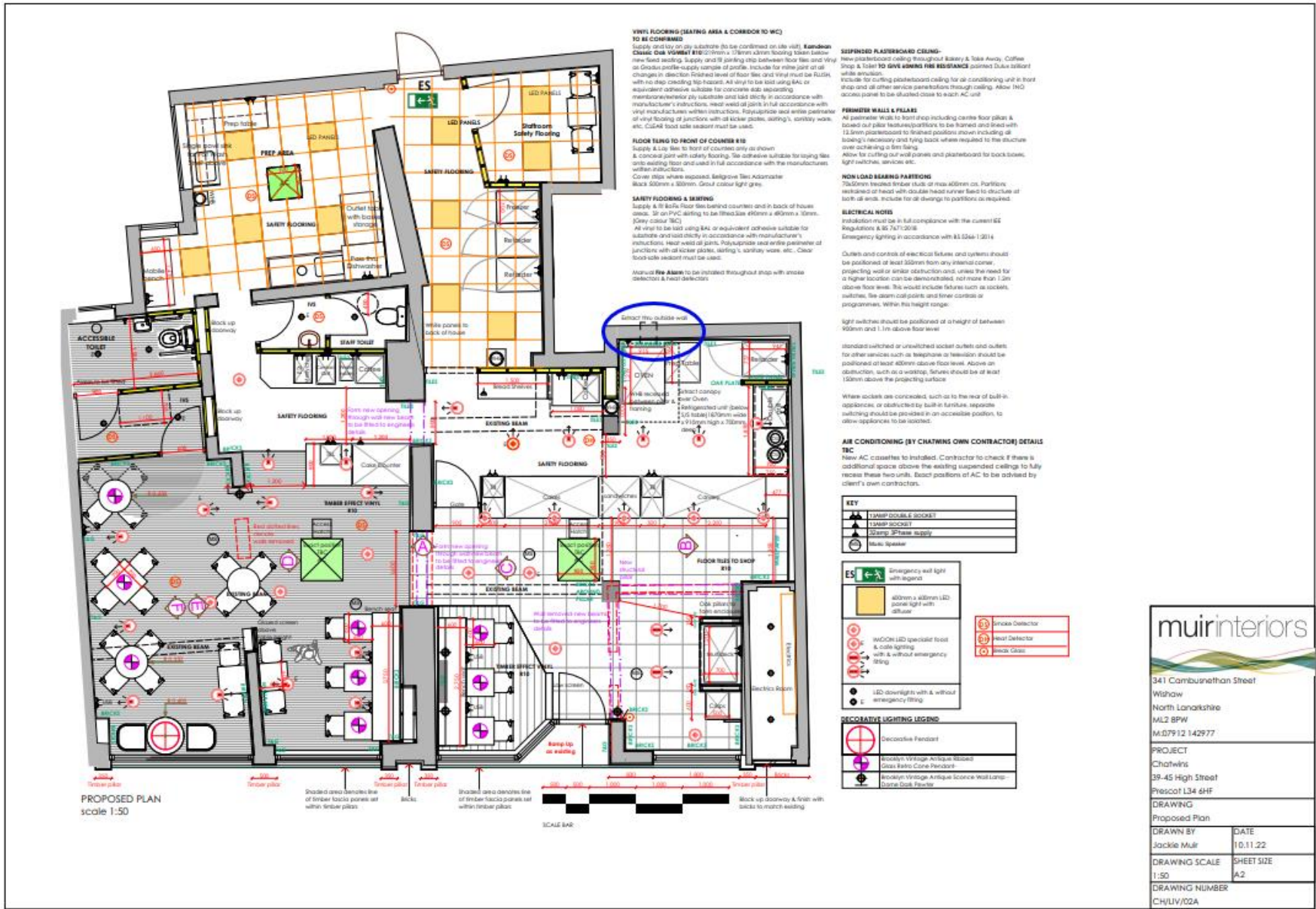
Risk of Odour Exposure (From Table 5)	Receptor Sensitivity		
	Low	Medium	High
High Risk of Odour Exposure	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
Medium Risk of Odour Exposure	Negligible Effect	Slight Adverse Effect	Moderate Adverse Effect
Low Risk of Odour Exposure	Negligible Effect	Negligible Effect	Slight Adverse Effect
Negligible Risk of Odour Exposure	Negligible Effect	Negligible Effect	Negligible Effect

This procedure results in a prediction of the likely odour effect at each sensitive receptor.

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Appendix C: Extraction vent (circled in blue)





Glossary of Terms

Effects The consequences of the changes in airborne concentration and/or dust deposition for a receptor. These might manifest as annoyance due to soiling, increased morbidity or mortality due to exposure to PM₁₀ or PM_{2.5} or plant dieback due to reduced photosynthesis. The term 'significant effect' has a specific meaning in EIA regulations. The opposite is an insignificant effect. In the context of construction impacts any effect will usually be adverse, however, professional judgement is required to determine whether this adverse effect is significant based in the evidence presented.

Impacts The changes in airborne concentrations and/or dust deposition. A scheme can have an 'impact' on airborne dust without having any 'effects', for instance if there are no receptors to experience the impact.

NPPF National Planning Policy Framework

