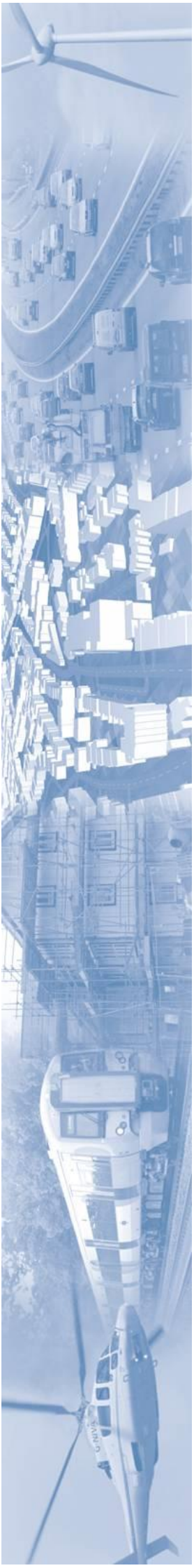

Report for:

Greggs

Greggs New Food on the Go Shops (Generic)

Odour Impact Assessment

Status: FINAL **Date: 11.12.2023**

Author	Redacted Christine Park Senior Environmental Consultant
Approved By	Redacted Graham Parry Managing Director
Report For	**Greggs** 31 Greenside Street Manchester M11 2HW
Date	11.12.2023
Version Number	A5078/O/01
Status	Final

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1. INTRODUCTION

ACCON UK Limited (ACCON) have previously been commissioned by Greggs to carry out an odour impact review in respect of two existing extract flue systems at Greggs shops in Reading and Bracknell.

The purpose of the odour impact assessments was to determine the extent to which odour emanating from the extract flues from the existing sites, which replicate the ovens, odour control systems and ventilation at typical Greggs shops, is likely to result in nuisance occurring at any residential properties in the vicinity of similar operations. The assessments can then be utilised to determine the acceptability with respect to odour emanating from new Greggs shops and whether detailed odour assessments may be required at proposed new locations.

The proposed extract system at any new sites would be at least of the standard of the current systems. Based on the opening hours of the current shops which have been reviewed they are unlikely to be open before 0600 hrs or after 1930 hrs, for town centre locations, although other locations may vary.

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2. ODOUR ASSESSMENT

2.1. Introduction

This odour review relates to the operation of Greggs shops and the potential odour impacts on any sensitive receptors in close proximity to any proposed new Greggs locations.

2.2. Nature and Effect of Odour

Odour is perceived by our brains in response to chemicals present in the air we breathe. Odour is the effect that those chemicals have upon us. Humans have sensitive senses of smell, and they can detect odour even when chemicals are present in very low concentrations. Most odours are a mixture of many chemicals that interact to produce what we detect as an odour.

Different life experiences and natural variation in the population can result in different sensations and emotional responses by individuals to the same odorous compounds. Because the response to odour is synthesised in our brains, other senses such as sight and taste, and even our upbringing, can influence our perception of odour and whether we find it acceptable, objectionable or offensive.

2.3. Assessment Methodology

The assessment of odour takes on the following aspects:

- A qualitative assessment of existing odour emissions on the proposed residential development;
- An assessment taking into account the nature of the premises;
- The height of any existing flue;
- The approximate exit velocity from the existing flue; and
- The distance between the existing flue and the potential odorous emissions and the distance to the sensitive receptor.

2.3.1. Guidance on Control of Odours from Kitchens

The Department for Environment Food and Rural Affairs (DEFRA) originally published guidance[1] (now withdrawn) on the control of odours from kitchens. That guidance has been subsequently updated by Control of Odour and Noise from Commercial Kitchen Exhaust Systems (EMAQ, July 2018)[2].

Although the guidance is not statutory, it provides very useful information on best practice techniques for the minimisation of odour and noise nuisance from kitchen exhaust systems. This

[1] Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems. Report prepared by Netcen on behalf of Department for Environment, Food and Rural Affairs, January 2005

[2] Control of Odour and Noise from Commercial Kitchen Exhaust Systems prepared by EMAQ+ (September 2018)

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source of guidance and ACCON's own experience form the basis of the assessment to determine whether occupiers of residential properties would consider that odour from a Greggs shop was acceptable or not and importantly whether it resulted in a nuisance such as to impact the amenity of their properties.

2.3.2. General Principles in Controlling Odour

The guidance is generally used for premises where food is cooked for patrons on or off the premises and where a kitchen is used to prepare and cook food. In these instances, a kitchen canopy extract system, are invariably present.

The main purpose of a kitchen canopy is to extract excess heat, steam, fats, smoke and odour arising from cooking processes. Removal of these unwelcome by-products of kitchen activity helps to achieve a reasonably comfortable and safe working environment, protect the working environment, as well as preventing the spread of the products from the kitchen area to other parts of the building.

Odours from cooking are contained both within the solid, liquid and gaseous material which is extracted by the kitchen canopy, and these different phases generally require different abatement techniques to reduce levels of odour to those levels which are acceptable to those in the vicinity. The extent to which any odour mitigation is required is dependent on the type of foods being prepared and cooked.

Commonly the kitchen extract canopy will contain the first line of odour control through the incorporation of coarse grease filters, which take out the largest grease particles from the extracted air stream. Such coarse grease filters tend to be a common feature of almost all kitchen canopy systems.

The type and levels of odour control required downstream of the canopy is very much dependent on a number of factors. The principal ones are:

- **Type of food prepared**. This is probably the most dominant factor as the type of food, and particularly any spices used, dictates the chemical constituents present in the exhaust air;
- **Size of the cooking facility**. The number of covers the facility is designed to handle affects the intensity of odour in the exhausted air, and the air volume throughput the system must be designed to achieve; and
- **Types of cooking appliances used**. This dictates the level of fat, water droplets and temperature within the ventilation air.

The guidance includes two **Tables** which classify the odour and grease content of extract air according to the general cooking type and equipment used. These are reproduced in **Appendix 3** (**Table 1** and **Table 2**). The information, in **Appendix 4**, has been used in this report to carry out the odour risk assessment in respect of the consented change of use development.

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2.4. Odour Impact Assessment

Based on the generic proposals for Greggs retail sites, odour impact assessments were undertaken in accordance with the DEFRA "Guidance on the control of odour and noise from commercial kitchen exhaust" (now revoked and replaced by online "Guidance - Nuisance smells: how councils deal with complaints").

Nuisance smells can be caused by problems with "food processors and commercial kitchens (for example, if the extraction system is poor)"

Sniff tests were previously carried out at two existing Greggs shops (Reading and Bracknell) by ACCON personnel who have had their odour acuity tested and both of them tested within the prescribed range for 'sniff testing' assessments.

The potential source of odour at both shops was due to the following cooking methods:

- Final baking / cooking of bread baguettes, pasties, sausage rolls and sausages in standard convection ovens.
- The cooking of bacon in standard convection ovens during the morning breakfast period.
- The warming of sausages, bacon and omelettes in gastronome pots on hot plates during he morning breakfast period.
- The rapid warming up of sandwiches, baguettes and wraps in turbo ovens.
- Preparation of coffees using commercial coffee machines.
- No frying or open grilling is undertaken in the shops.

2.4.1. Reading

For the Reading location, the closest existing residential properties are above the Greggs premises. The extract for the property is to the rear and exits into a small courtyard area. The flue terminates approximately 1.8m below the nearest residential window and the photographs taken during the site visit are included in **Figure 2.1**. The Odour Report Form for the site visit is included in **Appendix 4**.

2.4.2. Bracknell

For the Bracknell location, there are no sensitive residential properties within 50m of the extract of the premises. The extract for the property is to the rear and exits into a large loading bay area which serves the shops in the High Street area of the town.

According to DEFRA guidance the shop provides products within the range of foods in the "moderate" category, as show in **Table 2A** of **Appendix 2**. The menu mainly consists of hot and cold drinks, soup, pastries, pizzas, hot and cold sandwiches, cakes and other baked goods e.g. sausage rolls, pasties etc.

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2.5. Risk Assessment

The guidance identified at **Section 2.3.1** provides a means of risk assessing the impact of any catering establishment and consented and existing uses. The key elements of the method are reproduced in **Appendix 4**. The method relies on scoring the proposal on four different aspects:

- **Dispersion** – where the extract vents to atmosphere are in relation to the building to which the vent is attached;
- **Proximity of receptors** – the location of the nearest residents;
- **The kitchen size** – number of covers, i.e. level of activity; and
- **Cooking type** – based on grease and odour loading.

The level of odour which is created by a premises will depend on the size of kitchen and type of cooking. These can be determined using categories which have been set out in the guidance and are replicated in **Appendix 3**.

The scores for each aspect are summed to derive an overall significance score, an impact risk, and a statement about the odour control requirement. The guidance has been utilised where possible to determine the risk of odour nuisance from existing odour sources on the development.

The scores for each aspect are summed to derive an overall significance score, an impact risk, and a statement about the odour control requirement. The guidance has been utilised where possible to determine the risk of odour nuisance from the store without any odour abatement in place.

For the example stores, the risk assessments are provided in **Table 2.1** and **Table 2.2**. The results of the assessment is a potentially **High Risk** of impact at the Reading store and **Low Risk** of Impact at the Bracknell store.

Table 2.1: Odour Risk Assessment - Reading

	Descriptor	Score	Impact Risk	Odour Control Requirement
Dispersion	Poor-Moderate	10 - 15	**High Risk**	High level odour control required
Proximity of Receptors	Close	10		
Size of kitchen/food cooking area	Small	1		
Cooking Type (Odour & grease loading)	Final cooking of frozen part cooked goods using standard convection ovens	1		
TOTAL		**22-27**		

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Table 2.2: Odour Risk Assessment – Bracknell

	Descriptor	Score	Impact Risk	Odour Control Requirement
Dispersion	Poor-Moderate	10 - 15	**Low to Medium Risk**	Low Level odour control
Proximity of Receptors	Far	1		
Size of kitchen/food cooking area	Small	1		
Cooking Type (Odour & grease loading)	Final cooking of frozen part cooked goods using standard convection ovens	1		
TOTAL		**13 - 18**		

2.6. Site Context

2.6.1. Reading

- There are existing flats located on the upper floors immediately above the store.
- The closest sensitive receptor window is located approximately 1.8m above the extract location;
- The store extracts into a courtyard area; and
- A site visit was undertaken during the "breakfast" period, with the extract operational. During the site visit, no odour was perceptible in close proximity to the extract, and with the current level of odour control there is unlikely to be nuisance complaints and ACCON are unaware of any having been received.

2.6.2. Bracknell

- There are no existing sensitive (residential) receptors within 50m of the extract;
- The extract is located to the rear of the property and exits into a large loading area which serves the premises as well as a number of other shops on the High Street; and
- A site visit was undertaken during the "lunch" period, with the extract operational, During the site visit, a very faint not unpleasant odour was perceptible directly at the flue extract;
- Based on the lack of any sensitive receptors in close proximity to the extract and with the current level of odour control, there is unlikely to be nuisance complaints and ACCON are unaware of any having been received.

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2.7. The Odour Control Scheme

Section 2.5 and **2.6** has quantified the odour risk of 2 No. town centre locations in Reading and Bracknell.

The Bracknell store requires a "**Low**" level of odour control, this would include:

- an ETALINE fan by ruck Ventilatoren GmbH (Model No. EL 315 E2 01); and
- baffle grease filters by Grease Defender (Model No. FS50-2016-BA)

The Reading store requires a "**High**" level of odour control, this would include:

- an ETALINE fan by ruck Ventilatoren GmbH (Model No. EL 315 E2 01);
- baffle grease filters by Grease Defender (Model No. FS50-2016-BA);
- Carbopleat Disposable Panel" - Gas Phase Filtration; and
- the "Discarb Cell" – Gas Phase Filtration

These odour control systems will provide a good level of odour control by dispersion and arrestment for the type of cooking which will be undertaken in a typical store and will minimise the potential for complaints.

It should be noted that it is important that these abatement systems should be regularly cleaned and maintained in order to ensure they work at their optimum capacity and to reduce any likelihood of nuisance complaints from nearby residential receptors.

The level of odour which is created by a premises will depend on the size of kitchen and type of cooking. These can be determined using categories which have been set out in "Control of Odour and Noise from Commercial Kitchen Exhaust Systems" (EMAQ+, July 2018) and are replicated in **Appendix 3**.

The initial risk assessment is provided in **Table 2.1**. The results of the assessment are potentially a **High Risk**.

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3. RECOMMENDATIONS

This report has reviewed the available guidance on cooking odours and its control. The risk assessment method from the EMAQ+ guidance has been used to classify the odour impact of the existing stores, to determine potential odour impacts from future shops.

The result of ACCON's study is that the existing extract systems without mitigation would represent a potentially 'high' risk, at the Reading store and 'low' risk, at the Bracknell store, in respect of odour impact if no odour control was implemented in the extraction systems.

Based on the Odour Control Schemes, there is currently a good level of odour control being incorporated into new stores.

For future premises, based on the example existing premises which have been assessed by ACCON, and the level of odour control which is implemented in the stores, the main contributing factor to the likelihood of odour complaints will be the proximity of sensitive receptors to the extract flue. Based on the EMAQ+ guidance, if a receptor is within 20m of an extract it is considered to be "close".

Table 3.1 provides a matrix which can be utilised to determine if a detailed odour assessment is likely to be required for a site.

Table 3.1: Requirements for a Detailed Odour Assessment

Distance to Closest Sensitive Receptor (m)	Detailed Odour Assessment Required?
0-5	Only required if no additional odour control is included (e.g. pleated carbon filter)
6-10	Unlikely to be required when "standard" extraction is included as detailed in **Section 2.7**
11-20	Highly unlikely to be required when "standard" extraction is included as detailed in **Section 2.7**
>20	Not Required when "standard" extraction is included as detailed in **Section 2.7**

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4. CONCLUSIONS

With respect to odour, it has been identified that with the current extract systems (or better) included in all future Greggs shops, flue extracts from proposed premises which are located more than 20m from any sensitive receptors should not require a detailed odour assessment.

Based on the matrix provided in **Table 3.1**, with the current levels of ventilation (as included in the Bracknell store) there should not be a requirement for a detailed assessment for any sites where the flue will extract between 5m and 20m from any sensitive receptors.

If there are sensitive receptors within 5m of a proposed flue extract, the basic ventilation system, with the addition of the pleated carbon filter (such as in the Reading store) there should minimise complaints.

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Appendix 1
Site Location Plan

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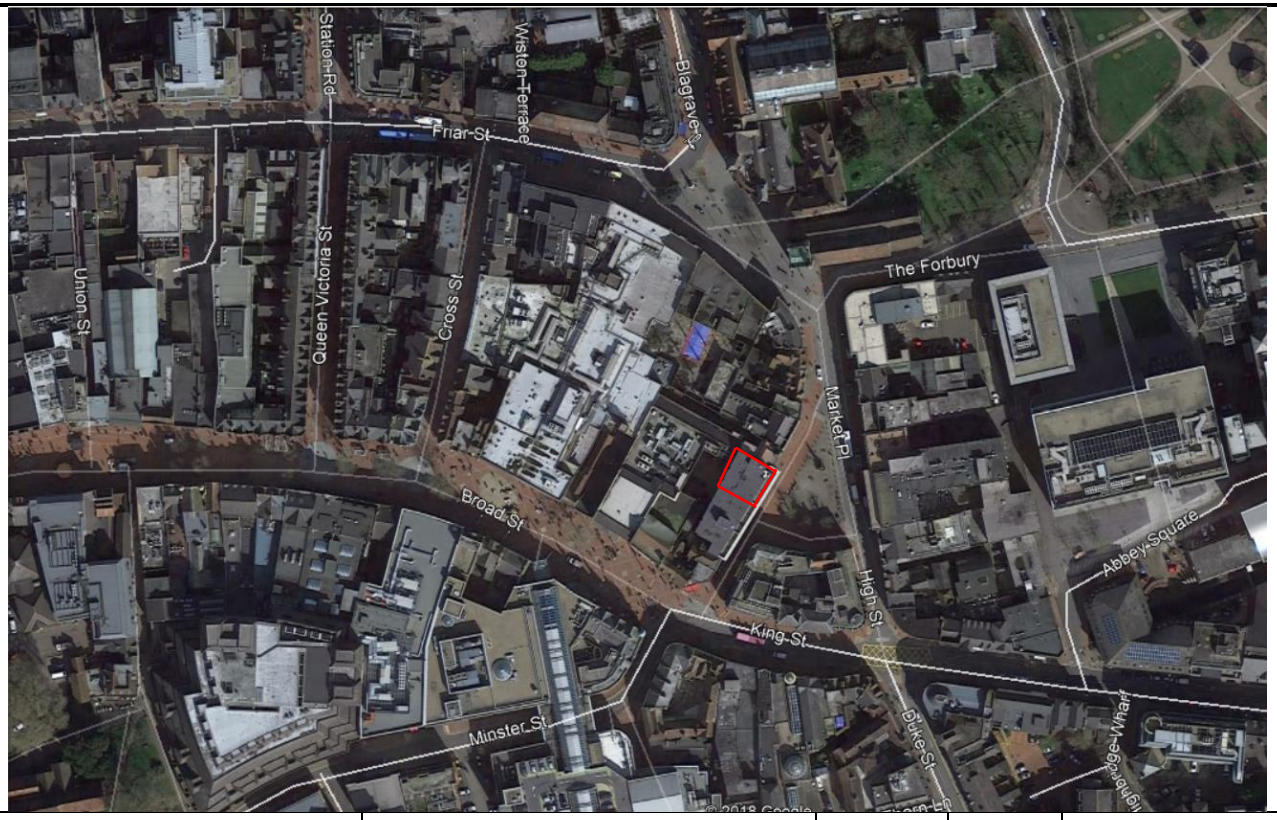
Appendix 1.1: Site Location Plan - Reading



LEGEND

Site Boundary

Client: Greggs Plc		Description: Site Location Plan - Reading	Design	CP	11.12.2023	accon UK ENVIRONMENTAL CONSULTANTS
			Drawn	CP	11.12.2023	
Rev: A	Description: FINAL	Project: Greggs New Food on the Go Shops (Generic)	Checked	CP	11.12.2023	Appendix 1.1
			Approved	GP	11.12.2023	

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Appendix 1.2: Rear Elevation Plan - Reading

Client: Greggs Plc		Description: Rear Elevation Plan - Reading	Design	CP	11.12.2023	accon UK ENVIRONMENTAL CONSULTANTS
			Drawn	CP	11.12.2023	
Rev: A	Description: FINAL	Project: Greggs New Food on the Go Shops (Generic)	Checked	CP	11.12.2023	*Appendix 1.2*
			Approved	GP	11.12.2023	

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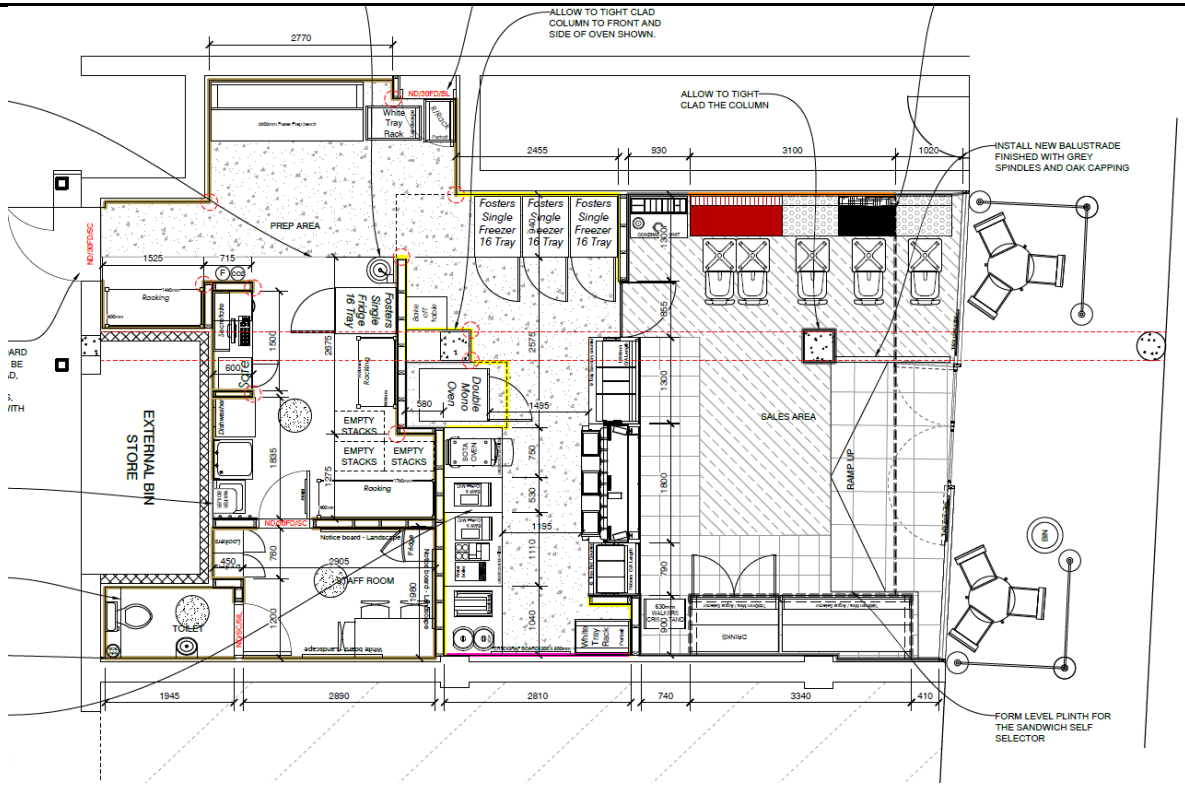
Appendix 1.3: Layout Plan - Reading



Client: Greggs Plc		Description: Layout Plan - Reading	Design	CP	11.12.2023	accon UK ENVIRONMENTAL CONSULTANTS
			Drawn	CP	11.12.2023	
Rev: A	Description: FINAL	Project: Greggs New Food on the Go Shops (Generic)	Checked	CP	11.12.2023	Appendix 1.3
			Approved	GP	11.12.2023	

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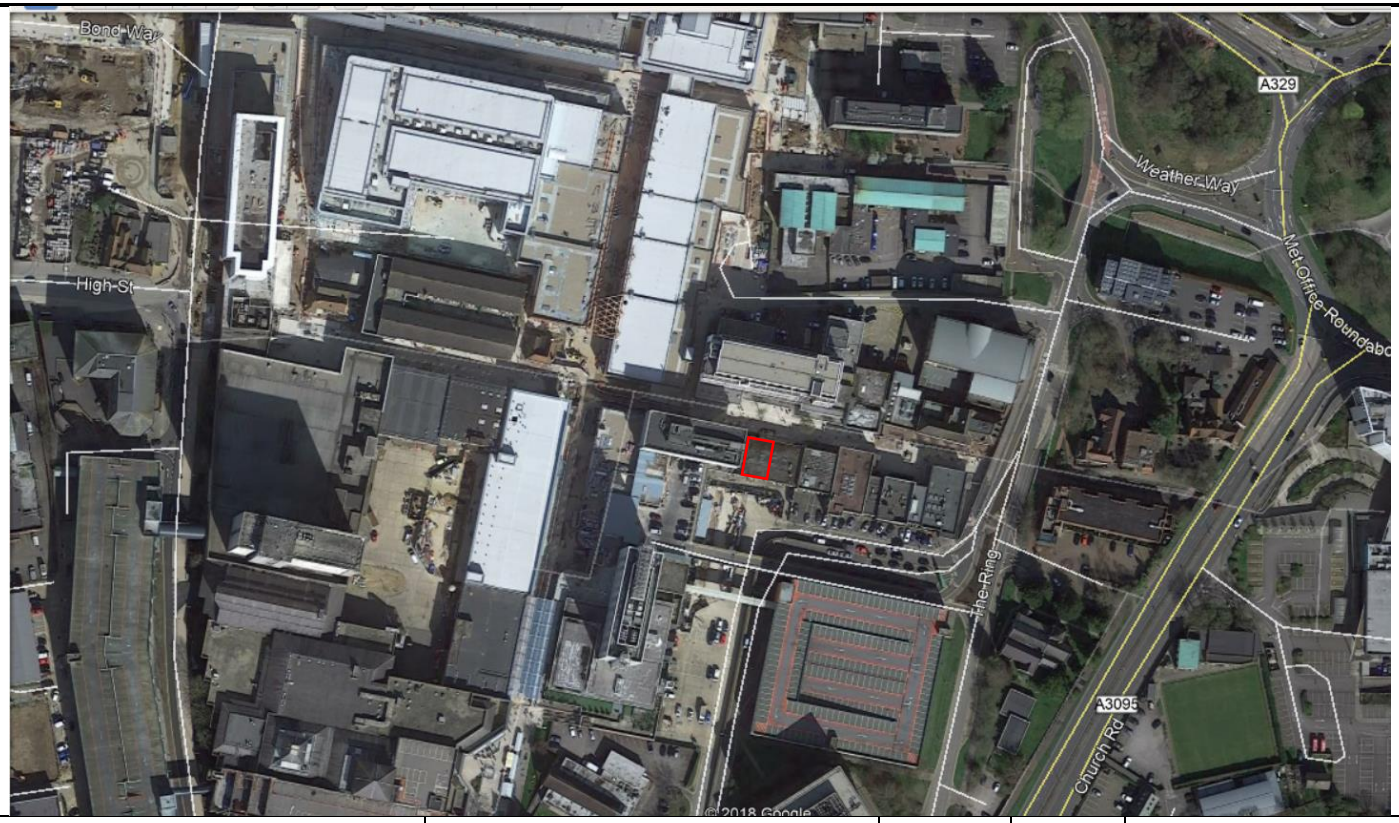
Appendix 1.4: Site Location Plan – Bracknell



LEGEND

Site Boundary

Client: Greggs Plc		Description: Location Plan - Bracknell	Design	CP	11.12.2023
			Drawn	CP	11.12.2023
Rev: A	Description: FINAL	Project: Greggs New Food on the Go Shops (Generic)	Checked	CP	11.12.2023
			Approved	GP	11.12.2023

Appendix 1.4

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Appendix 1.5: Rear Elevation Photograph- Bracknell

Client: Greggs Plc		Description: Rear Elevation Plan - Reading	Design	CP	11.12.2023	ACCON UK ENVIRONMENTAL CONSULTANTS
			Drawn	CP	11.12.2023	
Rev: A	Description: FINAL	Project: Greggs New Food on the Go Shops (Generic)	Checked	CP	11.12.2023	*Appendix 1.5*
			Approved	GP	11.12.2023	

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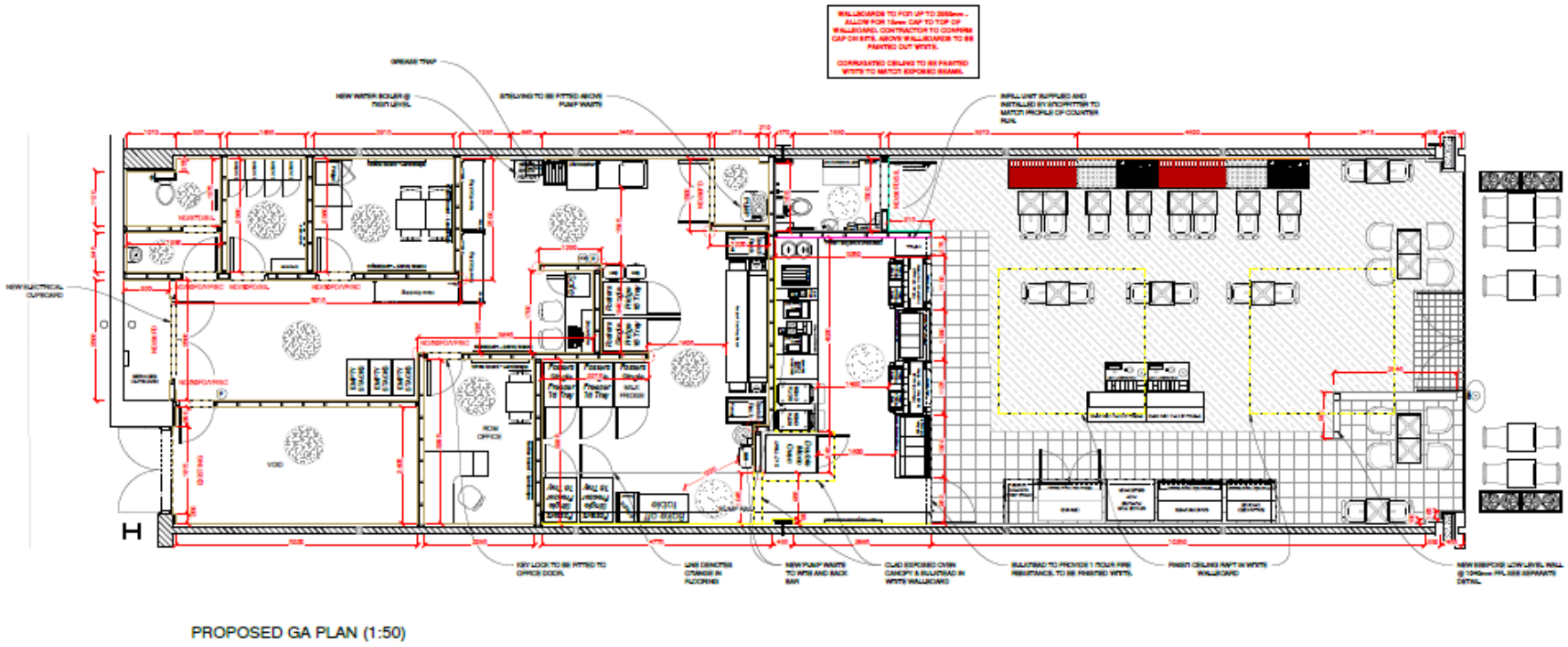
Appendix 1.6: Layout Plan - Bracknell



PROPOSED GA PLAN (1:50)

Client: Greggs Plc		Description: Layout Plan - Bracknell	Design	CP	11.12.2023	accon UK ENVIRONMENTAL CONSULTANTS
			Drawn	CP	11.12.2023	
Rev: A	Description: FINAL	Project: Greggs New Food on the Go Shops (Generic)	Checked	CP	11.12.2023	*Appendix 1.6*
			Approved	GP	11.12.2023	

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Appendix 2
Classification of Odour and Grease Content of Extract Air from Commercial Kitchens

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Table 1: Odour and Grease Characteristics Arising from a Range of Commercial Kitchen

		Odour Potential[1]				Grease Content				Smoke Content			
Catering Establishment	Description	Low	Moderate	High	Very High	Low	Moderate	High	Very high	*Low*	*Moderate*	*High*	*Very high*
Tea shop		□				□				□			
Café serving all day breakfasts	Oil, cooking meat		□					□			□		
Pizza restaurant gas or electric cooking	Herb		□				□			□			
Pizza Restaurant wood fired cooking	*Herbs / garlic / wood*			□			□					□	
Steakhouses	Fat		□				□					□	
French	Herbs/garlic		□				□				□		
Italian	Herbs/garlic		□				□					□	
Most pubs	Fat		□				□				□		
Chinese	Ginger, spices, oil		□					□			□		
Japanese	Spices, oil		□					□			□		
Cantonese	Spices, oil		□					□			□		
Indian	Spices, oil			□				□			□		
Thai	Spices, oil			□				□				□	
Turkish Restaurant	*Fat, cooking meat, spices*			□				□					□
Vietnamese	Spices, oil			□				□			□		
Kebab houses	Fat, cooking meat			□				□					□
Fried chicken	Oil, cooking meat				□				□		□		
Pubs (large turnover of deep-fried food)	Oil, cooking meat				□				□		□		
Fish and chips	Oil,				□				□	□			
Fast food/burger	Oil, cooking meat				□				□		□		
Casual Dining – Burgers/ Chicken	*Fat, cooking meat, spices*			□				□					□

Note (1) the odour potential is made up of the odour concentration and a measure of its annoyance potential

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Table 2: Moisture and grease/smoke characteristics of various cooking appliances

	Particulate (Grease/Smoke) Loading			Moisture Content		
Cooking Appliance	Light	Medium	Heavy	Light	Medium	Heavy
Cooking pots	□					□
Bain Maries	□					□
Steam ovens	□					□
Pizza ovens		□			□	
Bratt pans		□				□
Oven ranges		□			□	
Flat top grills		□			□	
Chip fryers		□			□	
Salamanders		□			□	
Charcoal			□		□	
Gas fired open grills			□		□	
Char broilers			□		□	
Chinese wok ranges			□			□
Smokers			□		□	
Wood Fired Pizza Ovens			□	□		

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Appendix 3
EMAQ Odour Impact Risk Assessment Methodology

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Odour control must be designed to prevent odour nuisance in a given situation. The following score methodology is suggested as a means of determining odour control requirements using a simple risk assessment approach. The odour control requirements here are consistent with the performance requirements listed in this report.

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

*based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type.

Criteria	Descriptor	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 20 m from kitchen discharge
	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 take away
	Medium	3	Between 30 and 100 covers or medium sized restaurant
	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 and chips. *Turkish, Middle Eastern or any premises cooking with solid fuel.*
	High	7	Vietnamese, Thai, Indian, Japanese, Chinese, steakhouse
	Medium	4	Cantonese, Italian, French, pizza (gas fired)
	Low	1	Most pubs (no fried food, mainly reheating and sandwiches, etc.), Tea rooms[1]

[1] A planner may take a pragmatic view when assessing whether certain low risk kitchens require any odour abatement to be fitted. In reaching this decision the Planner may consider the nature of the food being cooked and/or the size of the kitchen and/or its location.

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Appendix 4
Site Visit Odour Report Forms

Odour Report Form – *Adapted from IPPC H4 'Odour Management', Environment Agency (2011)*

Odour Report Form		**Date:** 12.03.2018	**Project:** A3227 – Greggs Reading	
Test Location No.	**1.**	**2.**	**3.**	**4.**
Test Location Description	Outside Back Door	Top of fire escape in courtyard	Archway to courtyard access	Outside front door
Time	0930	0940	0950	1000
Weather Conditions	Overcast/light rain			
Temperature	8ºC			
Wind Speed/Direction	No wind as the flue discharges into an enclosed courtyard			
Distance to Source	0.5m	Approx. 8m above	10m south	15m east (other side of building)
Plant Operational?	Yes			
Intensity[+] **(*VDI 3882, Part 14*)**	1	0	0	2*
Duration	0630 - 1930 hrs	N/A	N/A	0630 - 1930 hrs
Frequency	consistent	N/A	N/A	consistent
Notes and Odour Characteristics	Light smell of pastry/baked goods	N/A	N/A	Noticeable smell of pastry/baked goods
Current Receptor Sensitivity	High (residential)			
Future Receptor Sensitivity	High (residential)			

*****at the front of the building odour was detected which was not extracted through the ventilation system

Intensity[+]
0 No odour
1 Very faint odour
2 Faint odour
3 Distinct odour
4 Strong odour
5 Very strong odour
6 Extremely strong odour Ref: German Standard VDI 3882, Part 14

Odour Report Form – *Adapted from IPPC H4 'Odour Management', Environment Agency (2011)*

Odour Report Form		**Date:** 13.03.2018	**Project:** A3227 – Greggs Bracknell	
Test Location	**1.**	**2.**	**3.**	**4.**
Test Location Description	At back door	In Loading area behind store	In front of store	
Time	1145 hrs	1155 hrs	1205 hrs	
Weather Conditions	Overcast/light rain			
Temperature	8ºC			
Wind Speed/Direction	Light Wind			
Distance to Source	0.5m	10m	18m (other side of building	
Plant Operational?	Yes	Yes	Yes	
Intensity⁺ (*VDI 3882, Part 14*)	2-3	0	0	
Duration	0630 - 1730 hrs	N/A	N/A	
Frequency	consistent	N/A	N/A	
Notes and Odour Characteristics	Noticeable smell of pastry/baked goods	No odour detected	No odour detected	
Current Receptor Sensitivity	Low (no residential receptors within 50m)			
Future Receptor Sensitivity	Low (no residential receptors within 50m)			

Intensity⁺
0 No odour
1 Very faint odour
2 Faint odour
3 Distinct odour
4 Strong odour
5 Very strong odour
6 Extremely strong odour Ref: German Standard VDI 3882, Part 14

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