Unsol

Administrative Officer,
Planning Department,
South Dublin County Council,
County Hall Tallaght,
Dublin 24,
D24 A3XC.

2nd June 2022

Our Ref: CON22069

RE: APPLICATION FOR PLANNING PERMISSION FOR THE REDEVELOPMENT OF THE EXISTING CIRCLE K PARKWAY WEST SERVICE STATION, THE HILL, LUCAN ROAD, PALMERSTOWN, DUBLIN 20.

APPLICATION REGISTER REFERENCE: SD22A/0147

UNSOLICTED FURTHER INFORMATION

Dear Sir/Madam,

We, Coakley O'Neill Town Planning Ltd. of NSC Campus, Mahon, Cork, have been instructed by our clients, Ard Services Limited, to lodge this Unsolicited Further Information to an application seeking permission for the redevelopment at the existing Circle K Service Station on the Lucan Road in Palmerstown.

We note the Planning Reference of SD22A/0147 attached to the application.

Please find enclosed;

- 6 no. copies of Noise Impact Assessment prepared by RSK Consulting Engineers
- 6 no. copies of Odour Impact Assessment prepared by RSK Consulting Engineers

We trust the above information is satisfactory, and we look forward to a favourable decision in due course.

Yours sincerely,

Alan O Callaghan

Alan O'Callaghan
Coakley O'Neill Town Planning Ltd.

Circle K

PROPOSED REDEVELOPMENT AT PARKWAY WEST SERVICE STATION, DUBLIN 20

Noise Impact Assessment

604202-P (00)

JUNE 2022

RSK

EXECUTIVE SUMMARY

RSK Ireland Limited (RSK) has been appointed by Circle K Ltd. to conduct a baseline noise survey and prepare a noise impact assessment with regard to the proposed development at the Circle K Service Station at Parkway West, Dublin 20. The proposed development consists of changes to the internal layout of the existing retail unit to facilitate hot food/deli us, which will require new kitchen extract fan.

Baseline noise surveys have been conducted at the site boundary closest to nearby dwellings between 17:22hrs on 11th May and 13:57hrs on 13th May 2022.

The British Standard BS 4142:2014+A1: 2019 *Methods for rating and assessing industrial and commercial sound* (BS4142) outlines methodologies for analysing industrial sound emissions to residential receptors and has been used for the assessment of potential impacts to nearby dwellings.

BS 4142 states that adverse impacts are likely to occur when rated plant sound level exceeds the prevailing background sound level by +5dB with a significant adverse impact occurring at +10dB or more. BS 4142 advises that, "*where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact*".

On the basis of the measured baseline noise levels, the proposed new plant items associated with the redevelopment shall be selected and designed so as not to exceed the following noise criteria:

- Daytime (07:00 to 23:00hrs): 55 dB $L_{Ar,1hr}$.
- Night-time (23:00 to 07:00hrs): 43 dB $L_{Aeq,15min}$.

A proprietary noise model (iNoise® modelling software, DGMR Software B.V.) has been used to predict noise emissions from the new plant items to nearby receptors. Noise calculations have been made to the façade of dwellings closest to the proposed redevelopment. In order to ensure that the noise criteria is achieved, the following noise mitigation measures are proposed:

- Selection of the Kitchen Extract Fan such that the Sound Power Level at outlet does not exceed 80 dB L_{wA}, (Type Ruck Ventilatoren DVN 225 E2, or similar approved). Any alternative fan selection shall be designed such that noise emissions at source do not exceed 80 dB L_{wA}, in order to ensure that noise emissions to nearby receptors complies with the noise criteria.
- Any alternative or additional plant items proposed as part of the redevelopment shall be selected such that cumulative noise emissions do not exceed the daytime (55 dB $L_{Ar,T}$) and night-time (43 dB $L_{Aeq,15min}$) noise criteria at nearby receptors.

On this basis the calculated sound level from the development complies with the daytime and night-time noise criteria at nearby residential dwellings, indicating that the proposed redevelopment will have low impact.

RSK GENERAL NOTES

Project No.: 604202-P (01)

Title: Proposed Redevelopment at Parkway West Service Station, Dublin 20 – Noise Impact Assessment

Client: Circle K

Date: 2nd June 2022

Office: Dublin

Status: **FINAL**

Author	James Mangan, MIOA Associate Director (Acoustics)	**Technical reviewer**	Aarron Hamilton Acoustic Consultant
Signature	James Mangan	Signature	Aarron Hamilton
Date:	2nd June 2022	Date:	2nd June 2022

RSK Ireland Ltd. Bluebell Business Centre, Old Naas Road, Bluebell, Dublin 12

CONTENTS

List of Appendices

Appendix A: Service Constraints

1 INTRODUCTION

RSK Ireland Limited (RSK) was instructed by Circle K to a conduct baseline noise survey and an assessment of the potential noise impact of the proposed development at Parkway West Service Station, Dublin 20, to nearby receptors.

The aim of this assessment is to provide an objective review of the expected noise emissions to nearby receptors, and, where necessary, to provide recommendations for noise mitigation measures.

2 THE SITE

The development is located at an existing Service Station in Parkway West, Dublin 20. The proposed development consists of changes to the internal layout of the existing retail unit to facilitate hot food/deli us, which will require new kitchen extract fan.

The proposed new plant items are located approximately 22metres (R1), 85 metres (R2) and 55 - 65 metres (R3-R5) from nearby residential dwellings.

Figure 1 shows the proposed site with regard to nearby residential receivers.

Figure 1: Proposed Site Plan Outlining Plant and Receiver Locations

3 BASELINE NOISE SURVEY

An environmental noise survey has been conducted on site in order to establish the baseline noise environment. Noise surveys have been conducted in accordance with ISO 1996-2:2017 "*Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels*".

3.1 Monitoring Location

Unattended noise measurements were conducted at Location N1 (i.e. adjacent to the closest dwelling to the proposed new plant items. The noise measurement location is shown in Figure 2 with a photograph of the measurement position shown adjacent to the location description.

Figure 2: Site Image (Existing) Showing Baseline Monitoring Position N1

Location N1 to the south-west of the site with the microphone positioned at ground floor level. Monitoring at location N1 comprised of approximately 2-days of unattended monitoring to establish typical baseline day, evening and night-time noise levels.

3.2 Survey Periods

Noise measurements were conducted over the source of the following periods:

Table 1: Noise Survey Periods

Period	Location	Date	Start Time	Stop Time
Daytime 07:00 – 23:00hrs	N1	11th – 13th May 2022	11th May at 17:22	13th May at 13:57
Night-time 23:00 – 07:00hrs	N1	11th – 13th May 2022	11th May at 23:00	13th May at 07:00

3.3 Weather

The weather during the unattended and attended survey of 11th – 13th May was dry, part cloudy and calm, temperatures were in the range 6 to 17 degrees Celsius and the wind direction was generally south westerly.

3.4 Instrumentation

The noise measurements were undertaken using the following equipment.

Table 2: Survey Equipment

Equipment	Type	Serial No.
Class 1 Sound Level Meter	Larson Davis LxT	0005977

The equipment used has a calibration history that is traceable to a certified calibration institution. The calibration of the sound level meter was field checked prior to commencing measurements and prior to removing the equipment from site upon completion. A calibration drift of -0.1dB was noted upon commencement of the survey and +0.1 upon survey completion. The sound level meter calibration certificates are available on request.

The sound level meter conformed to the Class 1 requirements of BS EN 61672-1:2013 '*Electroacoustics. Sound level meter, Specifications*'. The calibrator used conforms to the requirements of BS EN IEC 60942:2018 '*Electroacoustics. Sound calibrators*'.

3.5 Measurement Parameters

The noise survey results are presented in decibels (dB), using the following parameters:

$L_{Aeq,T}$ is the equivalent continuous sound level and is used to describe a fluctuating sound as a single value over the sample period (T).

$L_{AF90,T}$ Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval (T). It is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level without contribution from intermittent sources.

All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa. Noise measurements use a reference time period (T) of 15-minutes.

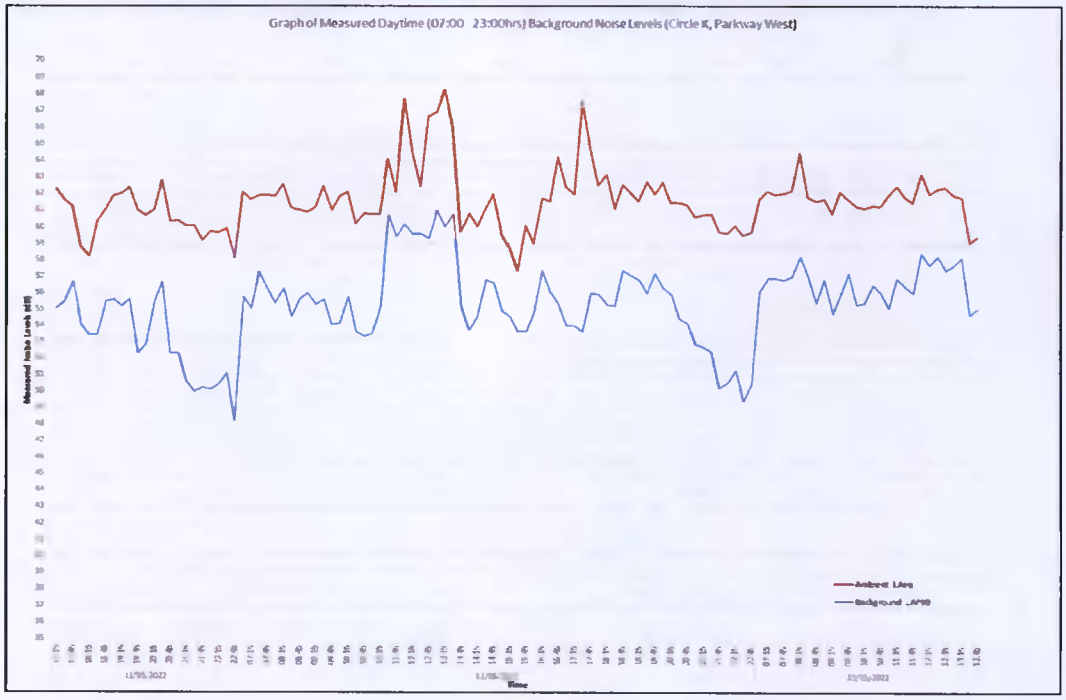
3.6 Measurement Results

3.6.1 Location N1

3.6.1.1 Daytime

Figure 3 shows the time-history graph of measured daytime noise levels between 13th and 15th May 2022 at Location N1.

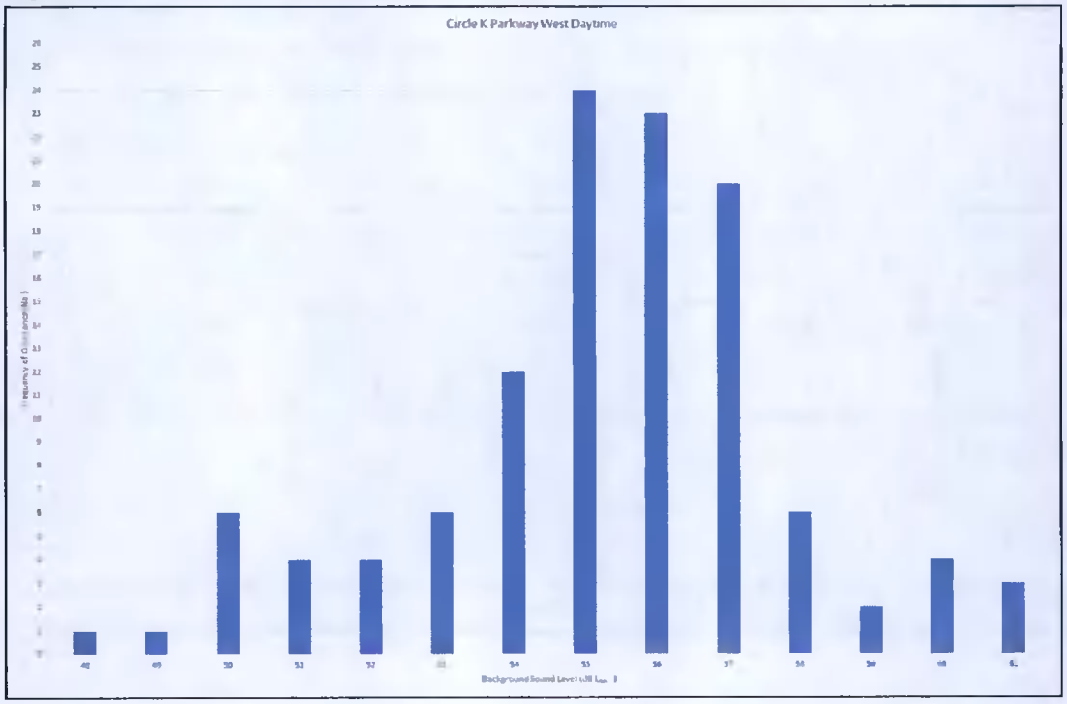
Figure 3: Profile of Daytime Baseline Noise Monitoring Results at Location N1



Traffic noise sources were the main contributor of noise observed at this location. The measured daytime background sound levels were in the range 48 to 61 dB $L_{A90,T}$, with an average value of

55 dB $L_{A90,T}$. Reference to Figure 4 confirms that the most commonly occurring daytime background sound level was 55 dB $L_{A90,T}$.

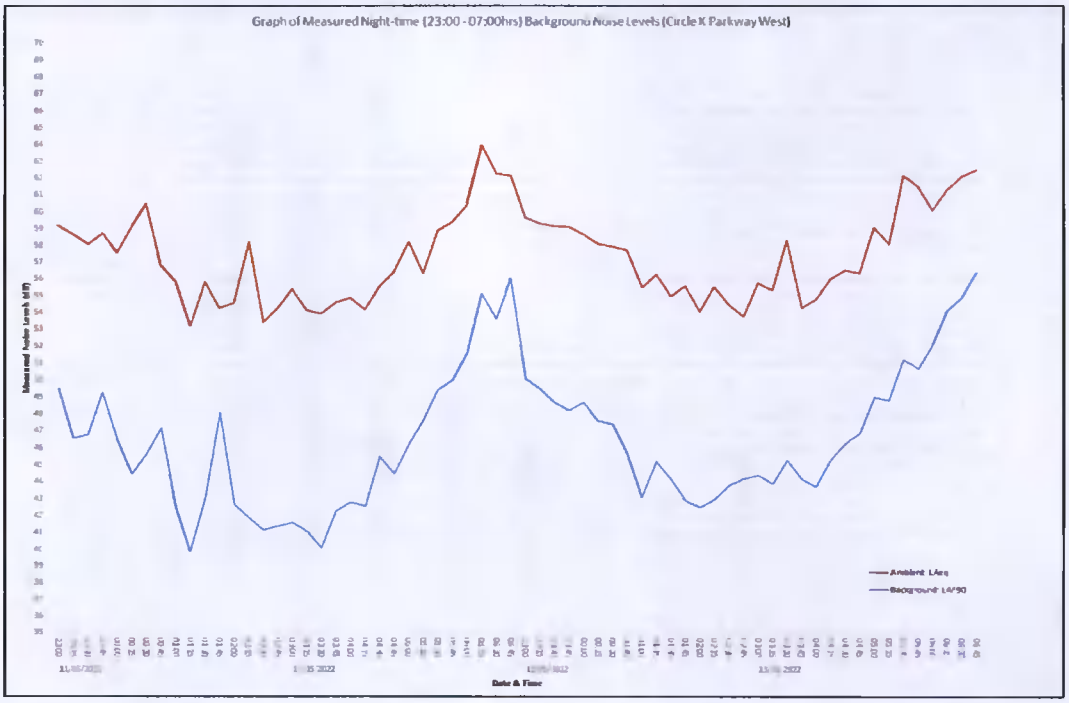
Figure 4: Distribution of Daytime Baseline background Sound Levels



3.6.1.2 *Night-time*

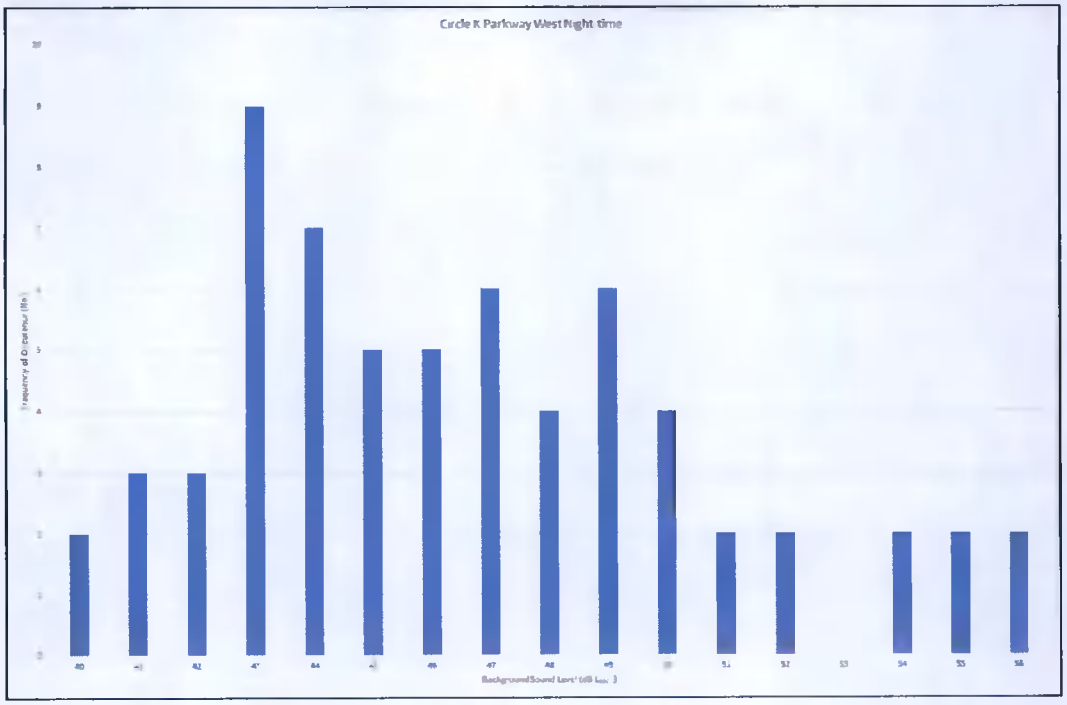
Figure 5 shows the time-history graph of measured night-time noise levels between 11th and 13th May 2022 at Location N1.

Figure 5: Profile of Night-time Baseline Noise Monitoring Results at Location N1



The measured night-time background noise levels at the site boundary were in the range 40 to 56 dB $L_{A90,15min}$, with an average value of 47 dB $L_{A90,15min}$. Reference to Figure 6 confirms that the most commonly occurring night-time background sound levels was 43 dB $L_{A90,T}$.

Figure 6: Distribution of Night-time Baseline background Sound Levels



4 NOISE CRITERIA

4.1 BS 4142 :2014+A1: 2019 *Methods for rating and assessing industrial and commercial sound*

The British Standard BS 4142:2014+A1: 2019 *Methods for rating and assessing industrial and commercial sound* (BS4142) outlines methodologies for analysing industrial sound emissions to residential receptors.

BS4142 describes methods for rating and assessing sound of an industrial and/or commercial nature, using outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling upon which the sound is incident.

4.1.1 BS 4142 Terminology

The following definitions as discussed in BS 4142 as summarised below:

"ambient sound level, $L_{Aeq,T}$"	equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at any given time, usually from many sources near and far, at the assessment location over interval, T.
"residual sound level, $L_{Aeq,T}$"	equivalent continuous A-weighted sound pressure level of the residual sound (i.e. ambient sound remaining at the assessment location when specific sound is suppressed such that it does not contribute to ambient sound) at the assessment location over time interval, T.
"specific sound level, $L_{Aeq,T}$"	equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over reference time interval, Tr.
"rating level, $L_{Ar,T}$"	specific sound level plus any adjustment for the characteristic features (See section 3.2.2) of the sound.
"background sound level, $L_{A90,T}$"	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels

Where sound emissions are found to be tonal, impulsive, intermittent or to have other sound characteristics that are readily distinctive against the residual acoustic environment, BS4142 advises that penalties be applied to the specific level to arrive at the rating level.

4.1.2 BS 4142 Initial Estimate of Impact

In order to perform an initial estimate of impact, BS 4142 states:

> *Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level from the rating level, and consider the following.*
>
> *a. Typically, the greater this difference, the greater the magnitude of the impact.*
>
> *b. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
>
> *c. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
>
> *d. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*
>
> *Adverse impacts include, but are not limited to, annoyance and sleep disturbance.*

4.1.3 BS 4142 Context

The assessment methodology described above (i.e. comparison of rated sound level to background sound level) is quoted in BS4142 as representing a methodology to *'obtain an initial estimate'* of impact.

It is important to note that BS4142 also comments that *'Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration'*. BS4142 provides a list of potential pertinent factors that can influence the 'initial estimate', which may be deemed relevant in certain instances.

4.2 Proposed Building Services Plant Noise Criteria

Criteria for building services plant noise emissions to off-site noise sensitive locations (NSL's) have been outlined with consideration of the following:

- Pre-existing baseline noise levels measured at the site boundary, and;
- Relevant noise guidelines i.e. as discussed in Section 4.1.

The proposed new plant items shall be selected and designed so as not to exceed the following criteria:

- Daytime (07:00 to 23:00hrs): 55 dB $L_{Ar,T}$.
- Night-time (23:00 to 07:00hrs): 43 dB $L_{Aeq,15min}$.

During the night-time there shall be no clearly audible tonal or impulsive component in sound emission from the proposed development, at any noise sensitive location.

5 PLANT NOISE IMPACT ASSESSMENT

In order to assist with the review of noise impacts, and specifications of noise mitigation measures, a proprietary noise model of the site has been developed.

5.1 Noise Model Details

iNoise is a proprietary noise prediction package for calculating noise levels in the vicinity of industrial sites. Calculations are based on ISO9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*. This method has the scope to take into account a range of factors affecting the sound propagation, primarily:

- The overall sound power level of the noise source;
- the frequency content of the noise source;
- the distance between the noise source(s) and the receiver(s);
- the provision of obstacles such as bunds or screens in the path between the noise source and the receiver, and;
- the presence of any other noise reflecting/absorbing surfaces;

The input to the noise model was an overall site plan, a set of buildings and the various noise sources. Each noise source was input into the model as sound power. Each source also has its own position, height and directivity. Predicted noise levels are calculated to specific receiver locations (i.e. nearby residential receptors).

5.2 Plant Noise Source Data

Table 5 presents the source sound power levels used for calculation purposes which have been provided by equipment suppliers. Plant items are assumed to potentially operate at the same overall output for both day and night-time periods.

Table 5: Source Sound Power Level for Proposed New Plant Items

Source Ref	Source Sound Power Level (dB L_w) in Octave Frequency Bands (Hz)								Overall dB L_{wA}
	63	125	250	500	1k	2k	4k	8k	
Kitchen Extract Fan (Ruck Ventilatoren DVN 225 E2 20 | 128045)	75	74	80	77	75	72	69	68	80

5.3 Noise Mitigation Measures

5.3.1 Kitchen Extract Fan

The current Kitchen Extract Fan selection (i.e. Ruck Ventilatoren DVN 225 E2 20 | 128045) has a stated sound power level of 80 dB L_{wA}. This results in compliance with the daytime (55 dB $L_{Ar,T}$) and night-time (43 dB $L_{Aeq,15min}$) noise criteria at nearby receptors.

Any alternative fan selection shall be designed such that noise emissions at source do not exceed 80 dB L_{wA}, in order to ensure that noise emissions to nearby receptors complies with the noise criteria.

5.3.2 Additional Plant

Any alternative or additional plant items proposed as part of the redevelopment shall be selected such that cumulative noise emissions do not exceed the daytime (55 dB $L_{Ar,T}$) and night-time (43 dB $L_{Aeq,15min}$) noise criteria at nearby receptors. During the night-time there shall be no clearly audible tonal component or impulsive component in the noise emission from the proposed development at any noise sensitive location.

5.4 Plant Noise Model Results

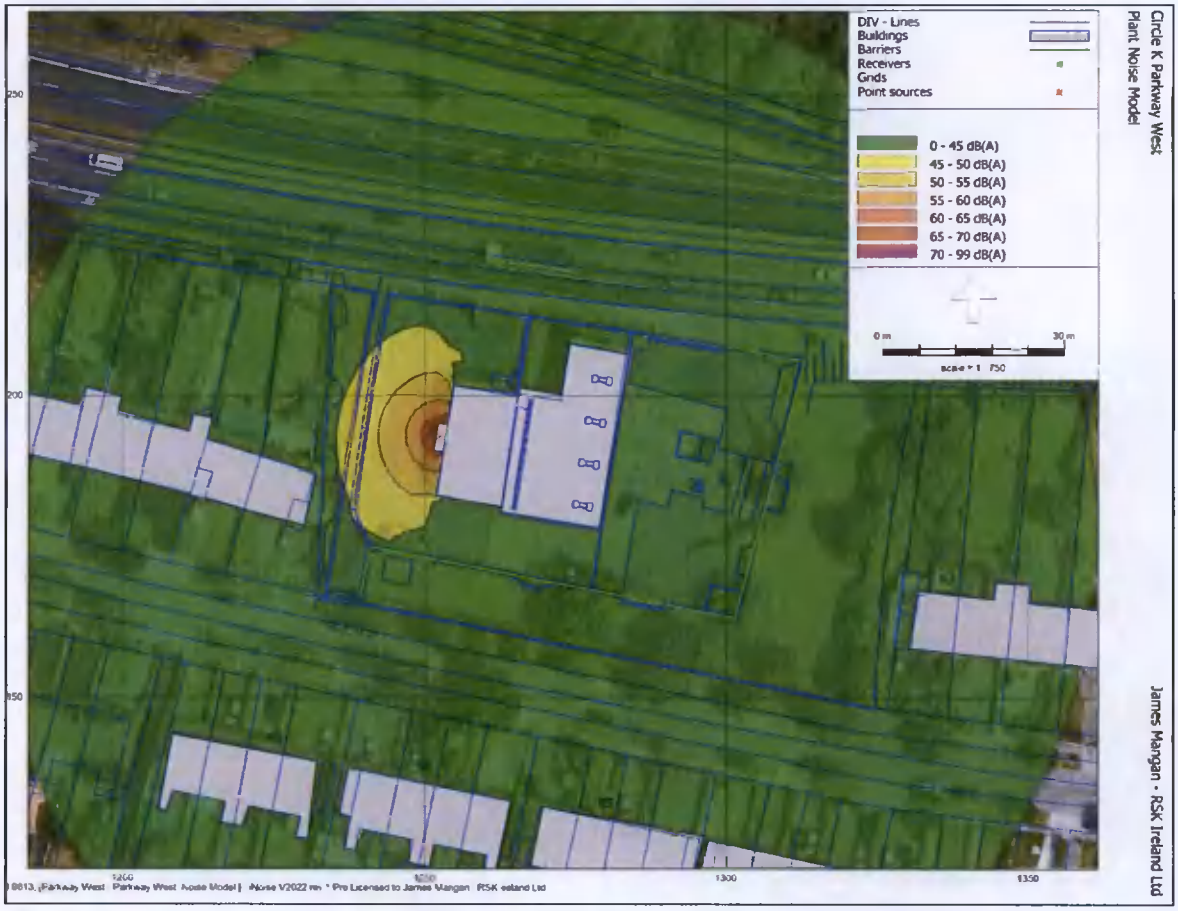
Table 6 presents the results of the noise modelling assessment, with the inclusion of the specified noise mitigation measures.

Table 6: Calculated Plant Noise

Receptor (Ref. Figure 1)	Description	Calculated Plant Noise Level (dB $L_{Aeq,T}$)
R1	2-Storey Dwelling adjoining Western Boundary	42
R2	2-Storey Dwelling adjoining Eastern Boundary	10
R3	2-Storey Dwelling to South of Site	33
R4	2-Storey Dwelling to South of Site	32
R5	2-Storey Dwelling to South of Site	26

Figure 7 presents the calculated noise level contour for the scenario developed.

Figure 7: Noise Prediction Contour



5.5 BS 4142 Assessment of Impact

5.5.1 Daytime Operation

Table 7 presents the BS 4142 assessment of daytime (07:00 – 23:00hrs) sound levels to the dwelling where plant noise levels are calculated to be highest (i.e. Location R1).

Table 7: BS4142 Daytime Assessment at Residential Dwelling R1

Result	Ref.	Commentary
Background Sound Level (dB $L_{A90,T}$)	55	Most commonly occurring baseline background sound level during daytime (07:00 – 23:00hrs)
Predicted Specific Sound Level (dB $L_{Aeq,T}$)	42	Calculated via noise modelling and based on suppliers' noise data for proposed new plant sources.
Acoustic Feature Correction	0	No tonal, impulsive or intermittent sound sources expected during the daytime. No correction applied
Rating Sound Level (dB L_{ArT})	42	Calculated as specific sound level + acoustic feature correction (i.e. 42 + 0dB)
BS 4142 Assessment Level	-13	BS 4142 states that *"Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact"*. The assessment therefore indicates that impacts will be low.

5.5.2 Night-time Operation

Table 8 presents the BS 4142 assessment of night-time (23:00 – 07:00hrs) sound levels to dwelling where plant noise levels are calculated to be highest (i.e. Location R1).

Table 8: BS4142 Night-time Assessment at Residential Dwelling R1

Result	Ref.	Commentary
Background Sound Level (dB $L_{A90,T}$)	43	Most commonly occurring baseline background sound level during night-time (07:00 – 23:00hrs)
Predicted Specific Sound Level (dB $L_{Aeq,T}$)	42	Calculated via noise modelling and based on suppliers' noise data for proposed new plant sources.
Acoustic Feature Correction	-	No tonal, impulsive or intermittent sound sources expected during the night-time. No correction applied
Rating Sound Level (dB L_{ArT})	42	Calculated as specific sound level + acoustic feature correction (i.e. 42 + 0dB)
BS 4142 Assessment Level	-1	BS 4142 states that *"Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact"*. The assessment therefore indicates that impacts will be low.

6 CONCLUSIONS

RSK Ireland Limited (RSK) was instructed by Circle K Ltd. to conduct baseline noise surveys and an assessment of the potential noise impact of the proposed redevelopment of the Circle K Service Station at Parkway West, Dublin 20.

The aim of this assessment is to provide an objective review of the expected noise emissions to nearby receptors, and, where necessary, to provide recommendations for noise mitigation measures.

A proprietary noise model has been used to predict noise emissions from the new plant items to nearby receptors. Noise calculations have been made to the rear façade of dwellings closest to the proposed new Kitchen Extract Fan.

Criteria for building services plant noise emissions to off-site noise sensitive locations (NSL's) have been outlined with consideration of the relevant plant noise criteria and a review of baseline noise levels.

In order to ensure that the noise criteria is achieved, the following noise mitigation measures are proposed:

- Selection of the Kitchen Extract Fan such that the Sound Power Level at outlet does not exceed 80 dB L_{wA}, (Type Ruck Ventilatoren DVN 225 E2, or similar approved). Any alternative fan selection shall be designed such that noise emissions at source do not exceed 80 dB L_{wA}, in order to ensure that noise emissions to nearby receptors complies with the noise criteria.
- Any alternative or additional plant items proposed as part of the redevelopment shall be selected such that cumulative noise emissions do not exceed the daytime (55 dB $L_{Ar,1hr}$) and night-time (43 dB $L_{Aeq,15min}$) noise criteria at nearby receptors.

On this basis the calculated sound level from the redevelopment complies with the daytime and night-time noise criteria at nearby residential dwellings, indicating that the proposed redevelopment will have low impact.

APPENDIX A
SERVICE CONSTRAINTS

RSK ENVIRONMENT LIMITED SERVICE CONSTRAINTS

1. This report (the "Services") was compiled and carried out by RSK Ireland Limited (RSK) for Circle K Ltd (the "client") in accordance with the terms of a contract between RSK and the "client". The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services.

7. RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

Circle K

Circle K Filling Station, Palmerstown, Co. Dublin

Odour Risk Assessment

Project No: 444852-03(00)

MAY 2022

RSK GENERAL NOTES

Project No.: 444852-03 (00)

Title: Odour risk assessment for Circle K Filling Station, Palmerstown, Co. Dublin

Client: Circle K

Date: 23rd May 2022

Status: Final

Author	Phoebe Chan Graduate Air Quality Consultant	**Technical reviewer**	Dr Christina Higgins Principal Air Quality Consultant
Signature		Signature	
Date:	23rd May 2022	Date:	23rd May 2022

CONTENTS

1 INTRODUCTION

RSK Environment Limited (RSK) was commissioned to undertake an odour risk assessment for the proposed development at the existing Circle K filling station in Palmerstown, Co. Dublin in line with Ricardo's 2018 document '*Control on Odour and Noise from Commercial Kitchen Exhaust Systems*' which was produced as an update to the withdrawn 2004 Defra document '*Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems*'.

The assessment has been prepared to support the planning application. The approximate centre of the site is at grid reference 109700, 392889.

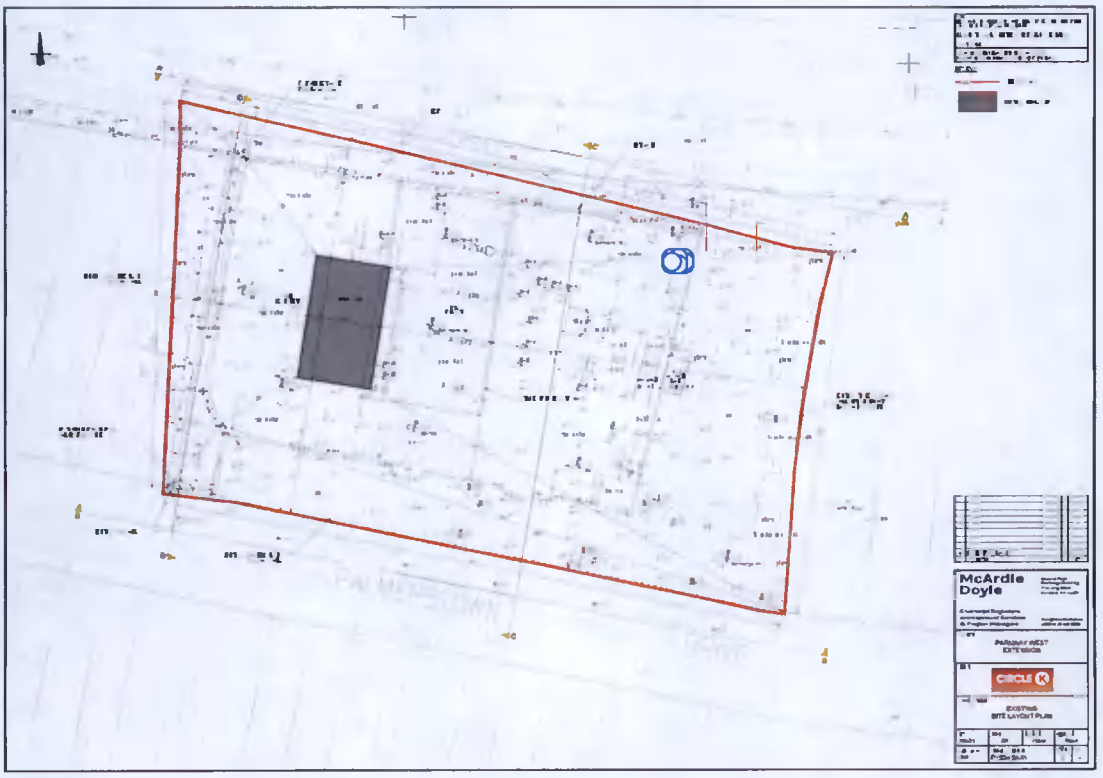
The odour assessment presented in this report was carried out to an agreed brief, as set out in RSK's proposal letter referenced T444852-01 on 19th April 2022, and included the following tasks:

- Identification of relevant odour sources;
- Risk assessment of odour with reference to Ricardo's '*Control of Odour and Noise from Commercial Kitchen Exhaust Systems*', and/or the Institute of Air Quality Management (IAQM) *'Guidance on the assessment of odour for planning'*; and
- Recommendation of mitigation measures, as appropriate.

2 SITE LOCATION

The site (i.e. the filling station) currently consists of a retail unit and canopy with 4 no. fuel pumps and a jet type car wash. The proposed development will include changes to the internal layout of the existing retail unit to facilitate hot food/deli use. The proposed development layout is presented in Figure 1.1.

Figure 1.1 Proposed Development Layout



3 LEGISLATION AND POLICY CONTEXT

3.1 Ricardo – Control of Odour and Noise from Commercial Kitchen Exhaust Systems

The Ricardo 2018 document provides an update to the withdrawn 2004 Defra guidance regarding the control of odour and noise with regard to kitchen exhaust systems. The status of the guidance is as follows:

> *'...This guidance document is a revised and updated version of the original document, originally prepared by Netcen an operating division of AEA Technology, for Defra, and through it the Development Administration of the Scottish Executive, the National Assembly for Wales, and the Department of the Environment in Northern Ireland to provide clear guidance to the regulation process.'*

This report will use the methodology from the guidance to consider the odour control requirements for the site.

3.2 IAQM Guidance on the Assessment of Odour for Planning

The IAQM's 2018 guidance provides a framework and describes approaches for assessing odour impacts for planning purposes. It is not to replace the existing guidance produced for environmental permitting purposes, but provides a comprehensive discussion of odour, assessment methods and criteria and odour benchmarks.

4 RISK ASSESSMENT FOR ODOUR

4.1 Introduction

Odour from commercial kitchen exhausts may affect local amenity, especially when located in urban areas where residences may be adjacent to the catering premises.

It is a requirement that odour control is designed to prevent disamenity and nuisance, and the Ricardo document suggests a methodology based on a scoring system, for determining the requirements for odour control for commercial kitchens.

The IAQM odour guidance suggests that an approach to odour assessment is to carry out a 'screening assessment' before deciding whether a more detailed assessment is necessary, based on whether there is likely to be a significant risk of an odour impact.

A risk assessment for odour at the proposed site was therefore undertaken. This includes a desk-based review of the site, to predict the impact of its operation on nearby receptors, and determine the specific odour control requirements listed in the Ricardo guidance.

As the development includes commercial ovens and odour is extracted via flues (as with commercial kitchens), it was considered appropriate to assess following the Ricardo odour guidance.

4.2 Assessment of Potential Odour Impact Risk

The existing retail building is situated in the west of the development site. The M&E equipment is installed to the west of the existing retail building.

As part of the development, a roof mounted extract fan is proposed. A data sheet has been provided for the fan. The proposed fan type is assumed to be a RUCK Roof Centrifugal Exhaust Fans Type DVN 500 E4 20. Reference to the manufacturers technical literature confirms that these fans have a flow rate of 7,601 m^3/h (4.3 m/s with 39.5 cm radius).

With reference to the Ricardo guidance criteria outlined in Appendix A, the 'risk scores' for the proposed extract discharge dispersion characteristics, proximity of receptors, and size of kitchen and cooking type for the proposed food processing factory are summarised in Table 4.1.

Table 4.1: Summary of Odour Risk Factor Scores

Criteria	Assessment	Score	Details
Dispersion	Poor	15	Not low level discharge but velocity of discharge below 10m/s
Proximity of Receptors	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge
Size of Kitchen	Small	1	Less than 30 covers or small sized take away
Cooking Type (odour and grease loading)	Low	1	Specific food type unknow but assessed as low due to size of facility
Total Score:		22	'High Impact Risk'

Based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type the proposed food processing factory has a significance score of 22. Therefore, the facility has a 'high' impact risk and will require a 'high level' of odour control.

The total score and consequent impact risk and odour control requirement are reproduced from the Ricardo guidance document in Table 4.2, below.

Table 4.2 Summary of odour significance score, impact risk and odour control requirement

Impact Risk	Odour Control Requirement	Total 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

4.3 Odour Control Measures

With regard to minimum requirements for odour control, the aim of the guidance is that '*for new premises or premises covered by planning conditions restricting the impact of odour, the system shall be designed to prevent harm to the amenity*'.

The impact risk was assessed as 'high' and therefore, a 'high level' of odour control will be required. High level odour control will typically include:

Filtration:

1. Fine filtration or ESP followed by carbon filtration (carbon filters with a 0.2-0.4 second resistance time); or
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

Extraction location and exit velocity:

The Ricardo guidance document notes that odour control system shall include an adequate level of:

1. Particulate and odour control; and
2. Stack dispersion.

The overall performance of the odour abatement system will represent a balance of 1 and 2.

To achieve adequate control, the discharge stack shall:

1. Discharge the extracted air not less than 1 m above the roof ridge of any building within 15m of the vent serving the commercial kitchen. Additional odour control measures may still be required depending on the cooking type and frequency;
2. If 1 cannot be complied with for planning reasons, then the extracted air shall be discharged not less than 1 m above the roof eaves or dormer window of the building housing the commercial kitchen. *A higher level of odour control measures than those required in part 1 may be required.*
3. If 1 or 2 cannot be complied with for planning reasons, then higher level of odour control measures than those required in part 1 or 2 may be required.

According to information from the client, the extracted air from the proposed development will be discharged via a roof fan. We would recommend increasing the height of the discharge point to 1m above the ridge and discharging vertically with an exit velocity of greater than 10m/s. This would greatly reduce the risk score to <20 so that low level odour control would be required.

Use of 'hats' or other cowls which impede the upward air flow is not recommended (except accelerator cowls which promote upward velocity and increase the effective stack height).

The kitchen extract system should be designed and fitted by competent persons, and submission of an appropriate scheme/ design including odour control may be secured by an appropriate condition attached to the planning consent.

4.4 Recommendations for Maintenance

Odour abatement systems will only remain effective if appropriate maintenance and management procedures are in place, and these should therefore be included in the odour control scheme.

Maintenance should normally be in accordance with the manufacturers' instructions, but for a basic system without high-level abatement, should include:

- Regular inspection and replacement as necessary of all filters; and
- Cleaning of washable grease filters;
- Inspection & servicing of fans.

If the discharge point is at low height and low velocity such that a high level of odour abatement is required, additional maintenance is likely to be required, again following manufacturers' recommendations but typically:

1. System employing fine filtration and carbon filtration.
   - Change fine filters every two weeks.
   - Change carbon filters every 4 to 6 months.

2. System employing electrostatic separators (ESP) and other in-line abatement, typically
   - ESP systems cleaned, and sump emptied on a four-weekly basis,
   - Carbon filters with ESP pre-treatment change carbon filters every 6 to 12 months.

5 SUMMARY AND CONCLUSIONS

RSK Environment Limited was commissioned to undertake an odour risk assessment to support the proposed internal layout changes at the existing Circle K filling station in Palmerstown, Co. Dublin.

With reference to the widely accepted guidance document '*Control on Odour and Noise from Commercial Kitchen Exhaust Systems*' the odour magnitude for dispersion, proximity of receptors, size of development and cooking type were estimated concluding the odour impact risk is 'high' and therefore, requires 'high' odour control measures.

Typical high level odour control measures suggested by the Ricardo guidance are as follows:

- Fine filtration or ESP followed by either carbon filtration or a UV ozone system.
- Maintenance of odour control measures in line with Ricardo guidance document.

The exit velocity is a principal driver for the 'high' risk score. We would recommend discharging vertically with an exit velocity of greater than 10m/s and ensuring the height of the discharge point is 1m above the ridge which would greatly reduce the risk so that less onerous odour abatement would be required.

Where an exit velocity of 10m/s is impracticable, the greater level of odour abatement plant will likely be required, with more onerous maintenance requirements.

The detailed design and fitting of the kitchen extract system should be carried out by competent persons, and submission of an appropriate scheme/ design including odour control could be secured by a condition attached to the planning consent.

With the proposed odour control measures and maintenance in place, odours are expected to be suitably controlled. Therefore, adverse odour impacts on local amenity are not expected.

6 APPENDIX

Tables A1 and A2: Examples of risk factors and odour control requirement for odour dispersion, proximity to receptors, size of kitchen and cooking type.

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 then 35

*Based on the sum of contributions from dispersion, proximity to receptors, size of kitchen and cooking type:

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 below 10 m/s.
	Moderate	10	Discharging 1m above the eaves at 10-15 m/s.
	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of Receptors	Close	10	Closest sensitive receptor less than 20m 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 take away
	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.
	High	7	Kebab, Vietnamese, Thai or Indian
	Medium	4	Cantonese, Japanese or Chinese
	Low	1	Most pubs, Italian, French, Pizza or steakhouse