THE ODOUR UNIT

SYDNEY
Level 3 Suite 12
56 Church Avenue
MASCOT, NSW, 2020
Phone: +61 2 9209 4420
A C N 091 165 061
A B N 53 091 165 061

BRISBANE
Unit 2
57 Neumann Road
CAPALABA QLD 4157
Phone: +61 7 3245 1700
A C N 87 102 255 765
A B N 102 255 765

Website: www.odourunit.com.au

Laura Arango Gil
Luchetti Krelle
56 Cooper Street
SURRY HILLS NSW 2010
For Applejack Hospitality

6 November 2023

by email: laura@luchettikrelle.com

PROPOSED DEVELOPMENT AT URBNSURF PRECINCT – POD 5B, SYDNEY OLYMPIC PARK – ODOUR ASSESSMENT REPORT

Laura,

As requested, The Odour Unit Pty Ltd (**TOU**) has undertaken an odour assessment study (the **Assessment**) for the development application (**DA**) for the inclusion of a solid fuel cooking facility by Applejack Hospitality at UrbnSurf Precinct - Pod 5B, Sydney Olympic Park, New South Wales (the **Proposed Development**). The following letter-style report is an odour assessment addressing the solid fuel cooking activity at the Proposed Development.

1. Relevant Background and Context

The Proposed Development is a new restaurant venue consisting of a kitchen area that will include gas, electrical and charcoal cooking. TOU understands that Luchetti Krelle (**LK**) requires an odour assessment report for the solid fuel cooking facility and that the electrical and gas-powered equipment for the kitchen area will be addressed as part of an internal fit-out under complying development certification application (**CDC 23052**). With this in mind, the Assessment is prepared on the basis that it will be lodged as part of a DA submission to Parramatta Council (the **Council**).

2. Supplied Information

The Assessment conducted for the Proposed Development is based on an expert review of the following information:

- Mechanical design drawings as prepared by JC Ventilation and Engineering Pty Ltd (**JC Ventilation**) dated 18 October 2023;
- Equipment specifications as prepared by Air Odour Solutions (**AOS**); and
- Design drawings relating to the solid fuel cooking facility and mechanical kitchen exhaust system as prepared by LK dated 11.09.2023;

In the preparation of the Assessment, TOU has reviewed the above information in the context of its extensive knowledge in odour science and engineering and past project experience in the food and beverage industry.

3. Assessment Objective

The objective of the Assessment is to identify all potentially significant odour emission sources through a detailed review of the activities that will be undertaken at the Proposed Development. Based on the outcomes of the review process, the Assessment evaluates

whether engineered and other management-based controls are required or instated to adequately attenuate all significant odour emissions at the Proposed Development.

4. Assessment Approach

The Assessment approach entailed the undertaking of the following key steps:

1. A review of the key activities that will be undertaken at the Proposed Development;

2. Identification of all key odour emission sources and their associated level of odour risk; and

3. Where an odour emission source is evaluated to pose an unacceptable level of odour risk, a review into whether the necessary controls or management practices have been implemented to reduce this odour risk.

The above odour assessment approach is framed around the New South Wales Environment Protection Authority (**NSW EPA**) documentation, which is suitable for retail-based developments and routinely used by TOU. In the context of the Assessment, this documentation includes:

- *Local Government Air Quality Kit,* including the three modules:

    1. *The science and management of air quality module;*

    2. *Legislative and policy framework for air quality management; and*

    3. *Guidelines for managing air pollution*.

Given the nature of activities associated with the Proposed Development, the approach for undertaking the Assessment is appropriate.

5. Site Locality and Context

A site plan and aerial map highlighting the Proposed Development in relation to its location and general surroundings are shown in **Figure 1**. The Proposed Development itself will exist at the second level of a double-storey commercial development (as shown in **Figure 2**) and is surrounded by existing nature reserves and future public space. As such, the general surroundings of the Proposed Development can be described as a built environment that includes but is not limited to, public and commercial development.

5.1 Sensitive Receptors

A sensitive receptor, as defined in the NSW EPA document titled *Technical Framework: Assessment and Management of Odour from Stationary Sources in NSW* and dated November 2006, is a location where people are likely to work or reside; this may include a residential dwelling, school, hospital, office, or public recreational area. In the context of the Assessment, the nearest sensitive receptors that may potentially be impacted by odours that could emanate from the Proposed Development are within or in the vicinity of the Proposed Development boundary. These sensitive receptors are identified as those likely to be impacted by odours that may emanate from the activities that will be conducted at the Proposed Development. Therefore, the locality analysis indicates that the Proposed Development is in a region with a moderate potential for odour sensitivity. On this basis,

potential odour emissions from the Proposed Development will be required to be emitted or released at a rate and quality that will not adversely affect the general amenity of the surrounding area.

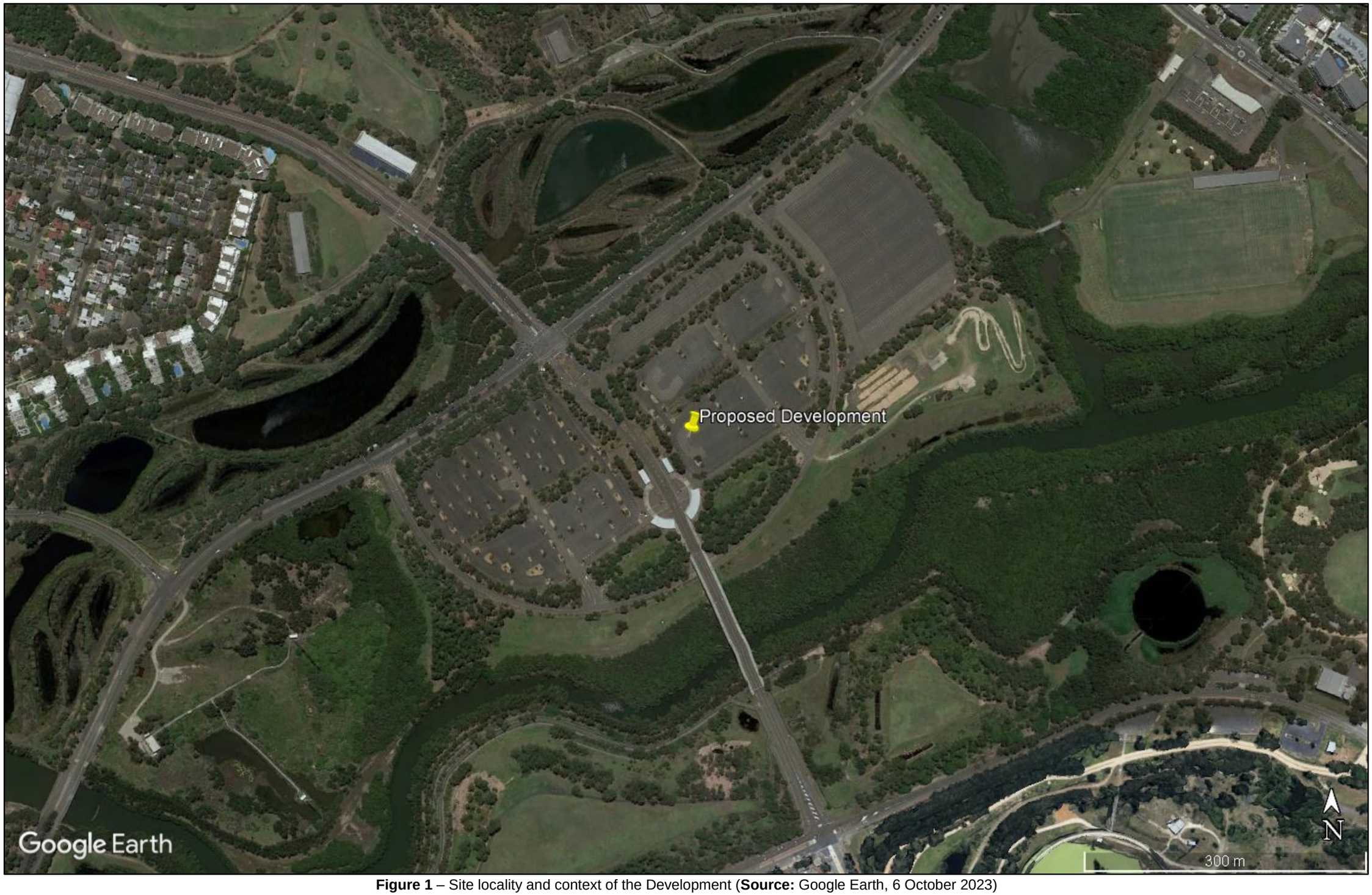


Figure 1 – Site locality and context of the Development (**Source:** Google Earth, 6 October 2023)

GENERAL NOTE:

The following drawings accompany the submission seeking building approval for new charcoal cooking facilities with exhaust hood. Proposed facilities located within approved kitchen fit out under **CDC-23052**

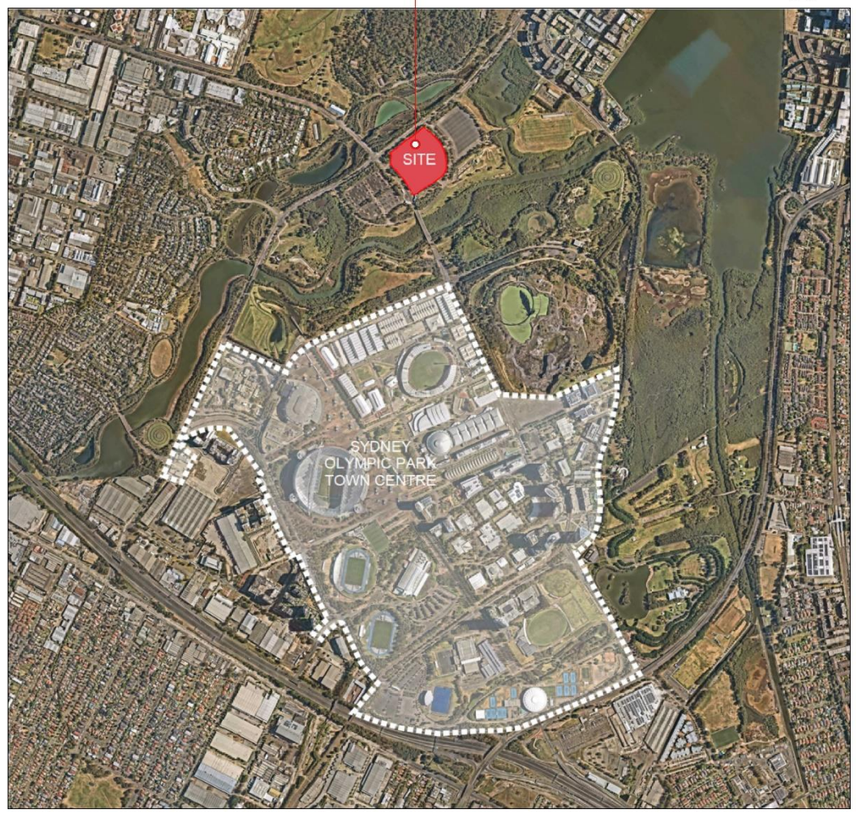
The internal fit out works are part of a separate complying development approvals application.

All drawings are to be read in conjuction with services consultants drawings.

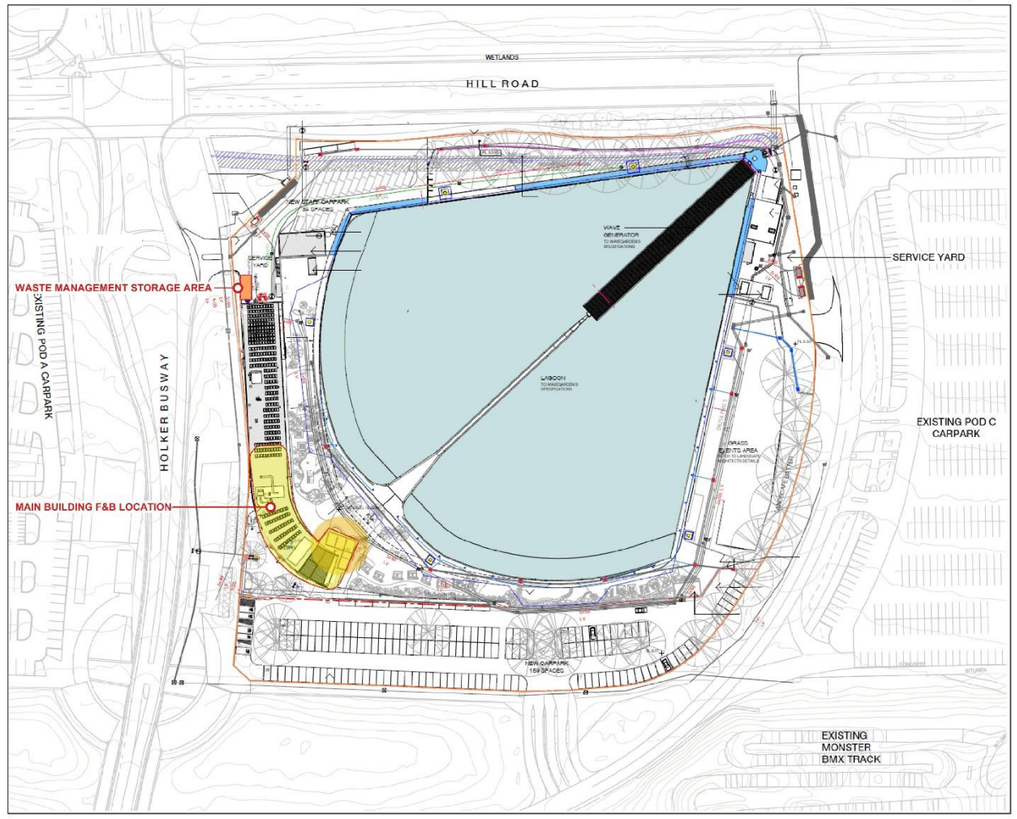
Waste Management:

All waste to be collected and taken to waste storage room in the basement. Refer to DA.010 for location

POD B, P5 CARPARK, HILL ROAD, SYDNEY OLYMPIC PARK



1 Location Plan
Not to Scale



2 Site Plan
Not to Scale

FOR DEVELOPMENT APPLICATION ONLY

LUCHETTI KRELLE
Gadigal Country
59 Cooper Street
Surry Hills NSW 2010
+61 2 9698 3425
www.luchettikrelle.com

Rev	Description	Date
A	Issue for Information	11/09/2023

Applejack at URBNSURF
22085
Pod B, P5 Carpark, Hill Road, Sydney Olympic Park
Applejack Hospitality

Site Plan

Date: September 2023 | Scale: 1:1 | Drawn: LA

DRAWING NO. DA.010
REVISION A

Figure 2 – A site locality and overall site plan of the Proposed Development at the Proposed Development (**Source:** LK)

6. Proposed Development Activities

The Proposed Development activities will be based on the preparation and servicing of restaurant and café style cuisines that involve the use of several types of cooking processes, including:

- A Brazilian-style parrilla charcoal wood-fired grill; and
- Gas and electrically powered kitchen equipment.

To that end, the Assessment focuses only on the charcoal wood-fired grill at the Proposed Development. The Assessment notes that the kitchen area, including all gas and electrically powered equipment, has been addressed as part of the internal fit-out Complying Development Certificate (**CDC**) application 23052. The mechanical design drawings indicate that the solid-fuel cooking kitchen exhaust air emissions control system (**ECS**) will be independent of the other kitchen equipment. The Assessment supports this design configuration.

7. Operational Odour Analysis

A detailed review analysis is intended to assist the local authority or planning body in conducting an odour impact risk assessment for applications. As such, an operational odour analysis has been carried out to provide details on the operations and likely odour emission sources at the Proposed Development and the management of those odour emissions to mitigate odour impact risk. The following section addresses the ECS that will be implemented at the Proposed Development.

7.1 Kitchen Exhaust Air Emissions Control System

Given the medium to high-intensity characteristics of solid fuel cooking, and with due consideration for the surrounding sensitive environment and context (refer to **Section 5**), the kitchen area exhaust air emissions at the Proposed Development will need to be managed via a suitably designed ECS prior to atmospheric discharge. The details of the ECS for the Proposed Development are shown in **Figure 3**. The complete mechanical drawing set is **appended** to the Assessment report for reference purposes.

Based on the information provided, the ECS will be responsible for the management of the kitchen exhaust air emissions generated from the solid fuel cooking station during normal operations. The ECS for the solid fuel cooking process will be a stand-alone station, and the exhaust air will not be mixed with other non-solid cooking processes. Once the exhaust air is extracted, the principle of operation for the ECS will be as follows:

1. Pre-treatment via stainless steel flame guard honeycomb grease filters (HOOD F: Envirohood – WM, as shown in **Figure 3** and **Figure 4**);

2. Primary treatment via an ozone system. Ozone is a well-known, powerful oxidant that is conventionally used in commercial kitchen applications to promote the rapid oxidation of complex gaseous compounds in kitchen exhaust streams to ‘inert’, non-odorous compounds. For solid fuel applications, this technology is only recommended when coupled with either an ESP, wet scrubber or other suitable emissions control equipment for the overall effective management of the exhaust air emissions prior to atmospheric release – as is the case at the Proposed Development. The ozone generator will be an OG-50 by Air & Odour Solutions (**AOS**) Australia that is externally mounted and connected to a stainless-steel pipe to convey the ozone into the

extraction duct for HOOD F (**Figure 5** and **Figure 7**). This is ideal as the ozone will need a contact time of between 2 and 3 seconds and dosage optimised to ensure that residual ozone is not detectable at the point of discharge;

3. Secondary treatment via a wet scrubber system. Wet scrubbing is an effective technology that passes the air through a water scrubbing process, often through a packed bed column or venturi channel, resulting in the removal of air contaminants. This technology is also well-established and known to be effective for the removal of fine particulate matter from cooking exhaust emissions in the food retail sector, particularly where solid fuel is used. At the proposed development, a MIST TEC 3000 scrubber unit by AOS with a single pass arrangement will be adopted;

4. Tertiary treatment via a double-pass electrostatic precipitator (**ESP**). ESP technology is routinely utilised for treating cooking exhaust air emissions as it is relatively low in ongoing operating costs, easy to install and operate, and suitable for a range of ducting layouts and installation area configurations compared to other technologies. These features make it a feasible and attractive air emission treatment technology for the food retail sector. At the Proposed Development, the ESP unit will be a double-pass cell configuration (**RY5000B-DP-UV**) supplied by AOS. As the exhaust air is forced through the cells, an electrostatic charge is induced, resulting in contaminants being captured in the collection cells. This is a well-established and effective air exhaust treatment technology for the removal of fine particulate matter in the food retail sector when operated and maintained adequately; and

5. A polishing treatment via ozone generated via in-situ ultraviolet lamps (**UV**) retrofitted downstream of the ESP unit (RY5000B-DP-UV by AOS).

The process will be driven by an in-line centrifugal flow kitchen exhaust (**KEF-1**) located at roof level, as shown in, with a design airflow of 868 L/s (3,125 m^3/hr). The fan specifications are summarised in **Table 1**. KEF-1 will be responsible for the extraction of kitchen exhaust air emissions from the solid fuel cooking station only. Following the air emissions treatment process, the treated airstream will be vertically discharged to the atmosphere at the roof level, approximately 8-9 metres from ground level (DP-1, refer to **Figure 6**).

7.2 Emissions Control Systems – Equipment Specifications Review

The exhaust fan specifications are shown in **Figure 7** and Table 1. **The** discharge point specifications are outline**d** in Table 2. The details for the ozone system are shown in **Figure 8**, noting the treated airflow of 1,600 L/s for model OG-50. This is compatible with the design operating airflow **for the** ECS **of** 868 L/s. **T**he details for the ESP are shown in **Figure 9**, noting that the rated capacity for the ESC is at 99.9% removal efficiency is 1,400 L/s – 1,900 L/s for particulate matter. This is consistent with the design operating airflow for the ECS of 868 L/s.

Table 1 – ECS Fan Specification for Proposed Development

Parameter	**Value/Description**
KEF-1	
Fan model	Powerline Series PCD454DD by Fantech
Exhaust airflow specifications	868 L/s (3,125 m^3/hr) at 358 Pa static pressure
Variable speed drive (Y/N)	Y

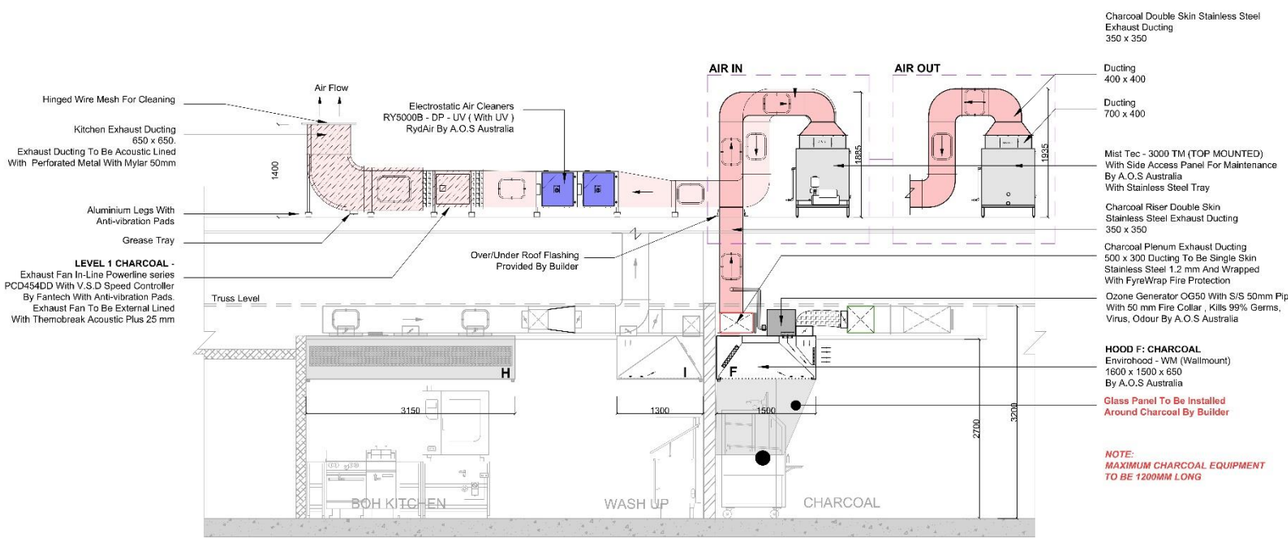
Table 2 – Exhaust air discharge point specifications for the Proposed Development	
Parameter	Value/Description
ECS Discharge Point	
Discharge configuration	Vertical
Discharge location	Roof-level
Discharge height	8-9 metres (approximately) from ground level
Discharge velocity	2.86 m/s

7.2.1 Certificate of Compliance

The design and specifications of the ECS at the Proposed Development will need to be designed and installed to ensure compliance with Australian Standards 1668.1-2015, 1668.2-2012 and 1530-1994, reflecting current industry best practice in the food retail sector. The certificate of compliance will be required as part of the commencement of operations for the Proposed Development (refer to **Section 11**).

Any deviation from this design and/or specified equipment will result in failure to comply with Electrical Safety Australian Standard AS/NZ 60335.1 and Fire Testing Clause 3.4 of AS1530.1 - 1994. It is an offence to supply or offer prescribed electrical equipment unless it is electrical certified to Australian Standard AS/NZ 60335.1 and Fire Testing Clause 3.4 of AS1530.1 - 1994.

NOTE :
EXHAUST FANS , UV OZONE UNITS, MIST-TEC , ELECTROSTATIC AIR CLEANERS AND MAKE UP AIR FAN TO BE INTERLOCKED TOGETHER



SECTION G -
LEVEL 1 CHARCOAL
EXHAUST SYSTEM

Scale 1 : 50 @ A2

ISS	AMENDMENT	DATE
A	FOR INFORMATION	18/10/2023

JC Ventilation and Engineering Pty Ltd
Consulting and Design
Stainless Steel Fabrication-Catering Equipment
ABN 42 099 952 879
Unit 20 / 55-61 Pine Rd,Yennora NSW 2161
Office : (02) 9892 4465
Mobile : 0402 236 300
Facsimile : (02) 9892 2940
Email : admin@jcvent.com.au
Web : www.jcvent.com.au

PROJECT :	APPLEJACK AT URBNSURF, SYDNEY OLYMPIC PARK
DRAWING TITLE :	SECTION G - LEVEL 1 CHARCOAL EXHAUST SYSTEM
APPROVED :	G.Clark
DRAWN :	JC
SCALE :	1 : 50 @ A2
DATE :	18/10/23
JOB NO. :	2023-77
DRAWING NO. :	04
ISSUE :	A

Figure 3 – ECS for solid fuel cooking at the Proposed Facility (**Source:** JC Ventilation)

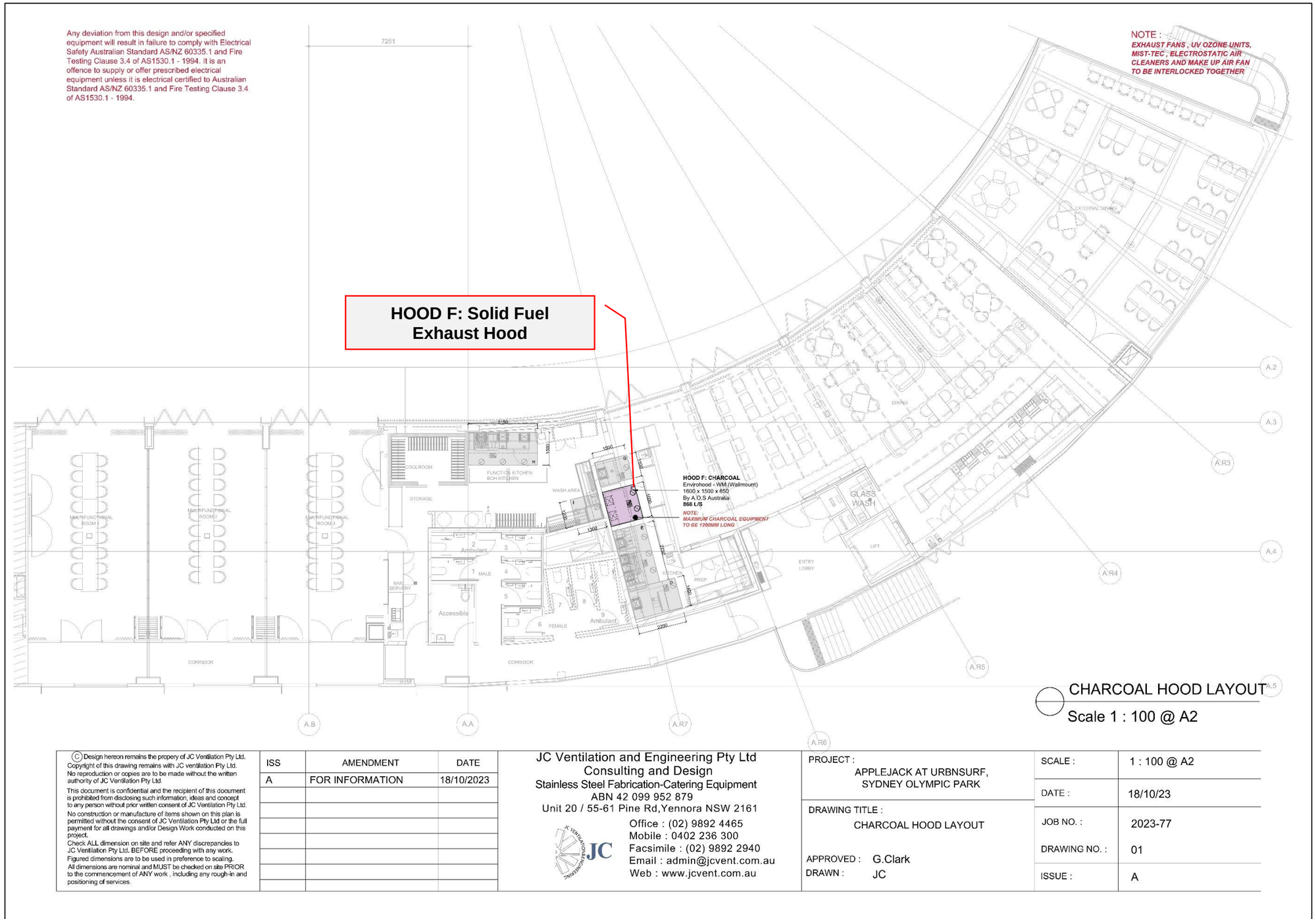


Figure 4 – A layout of the solid fuel exhaust hood location at the Proposed Development (**Source:** JC Ventilation)

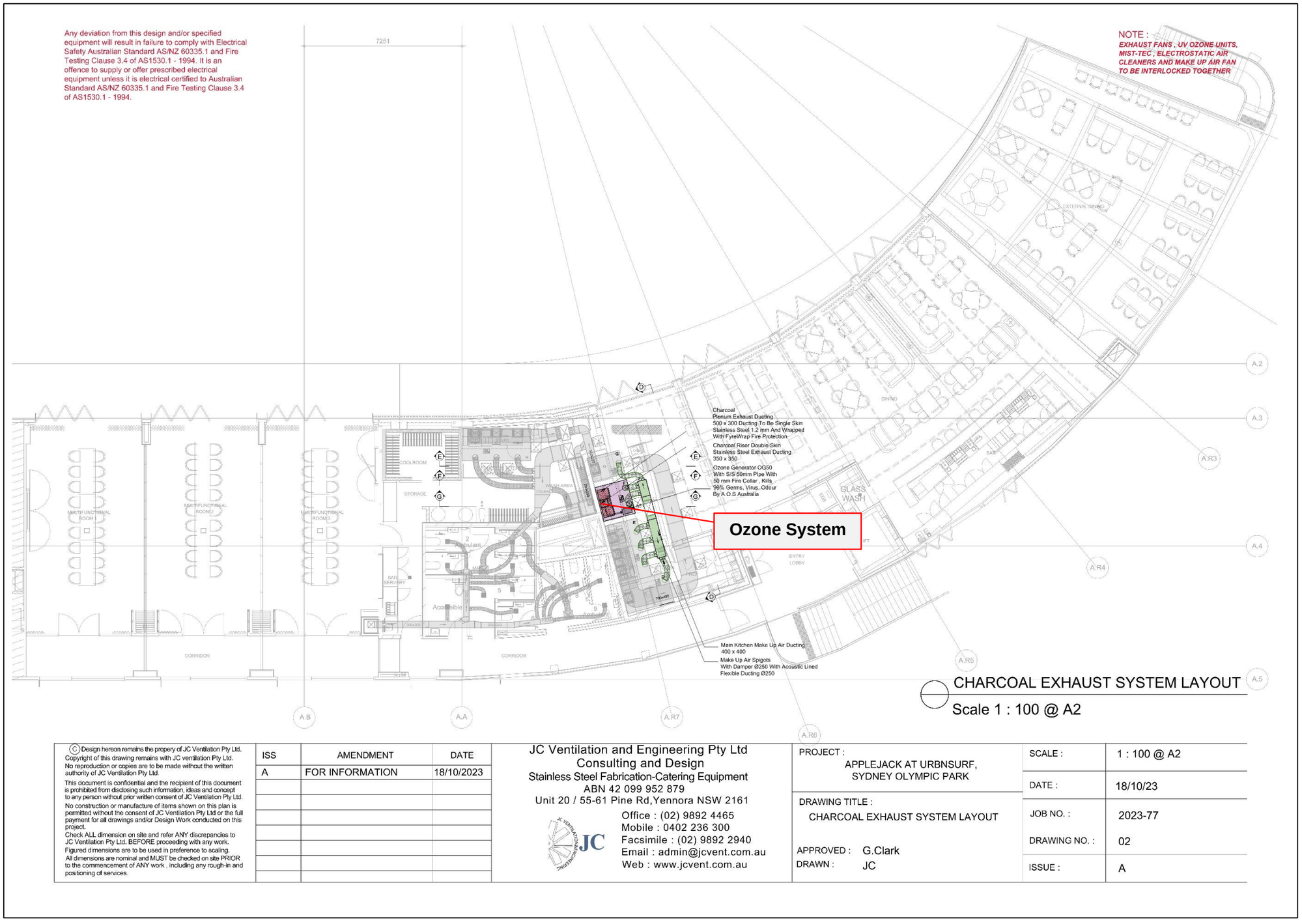
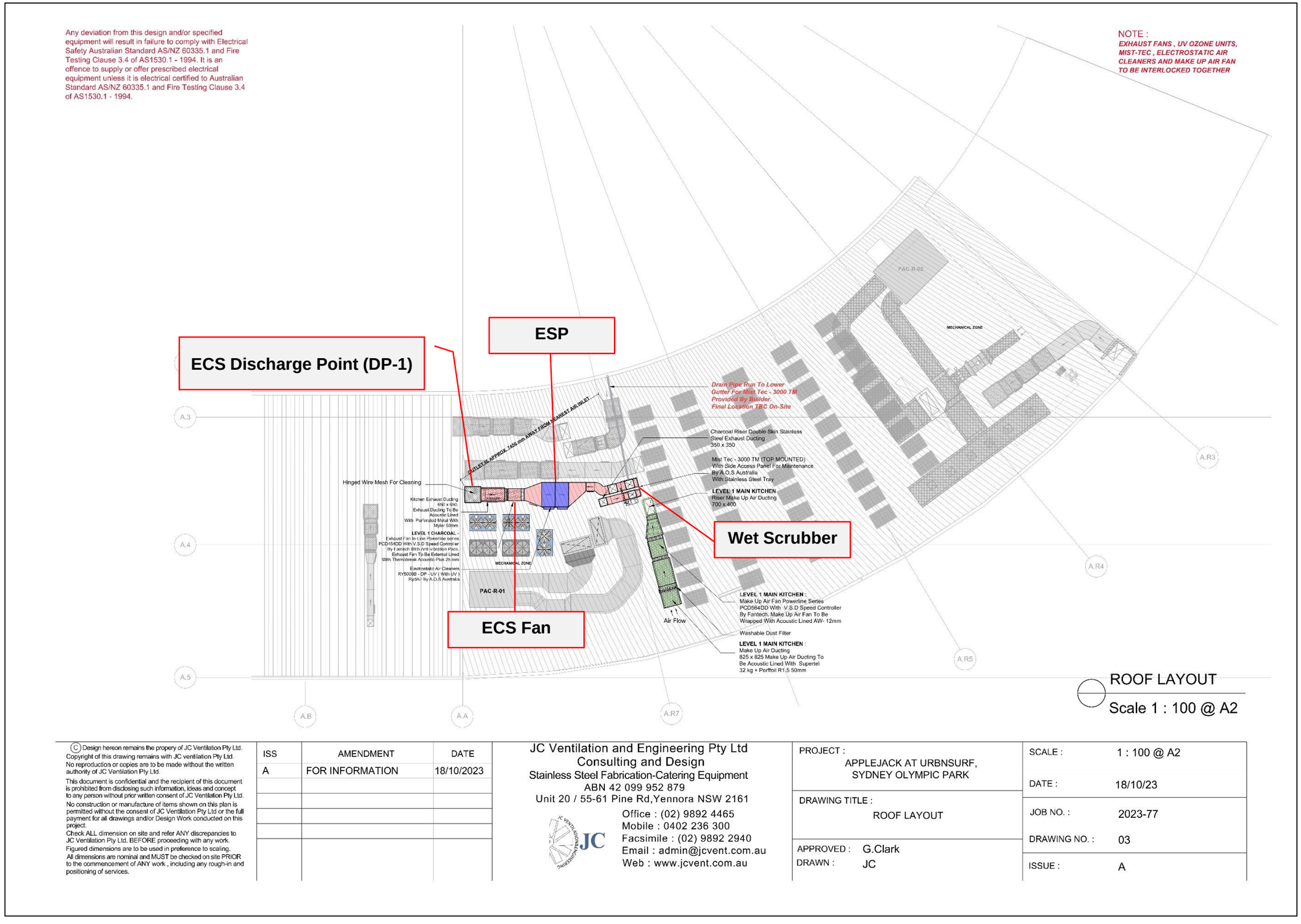


Figure 5 – Ceiling exhaust system layout (**Source:** JC Ventilation and Engineering Pty Ltd)



ISS	AMENDMENT	DATE
A	FOR INFORMATION	18/10/2023

JC Ventilation and Engineering Pty Ltd
Consulting and Design
Stainless Steel Fabrication-Catering Equipment
ABN 42 099 952 879
Unit 20 / 55-61 Pine Rd,Yennora NSW 2161
Office : (02) 9892 4465
Mobile : 0402 236 300
Facsimile : (02) 9892 2940
Email : admin@jcvent.com.au
Web : www.jcvent.com.au

PROJECT :	APPLEJACK AT URBNSURF, SYDNEY OLYMPIC PARK
DRAWING TITLE :	ROOF LAYOUT
APPROVED :	G.Clark
DRAWN :	JC
SCALE :	1 : 100 @ A2
DATE :	18/10/23
JOB NO. :	2023-77
DRAWING NO. :	03
ISSUE :	A

Figure 6 – Roof layout at Proposed Development (**Source:** JC Ventilation)

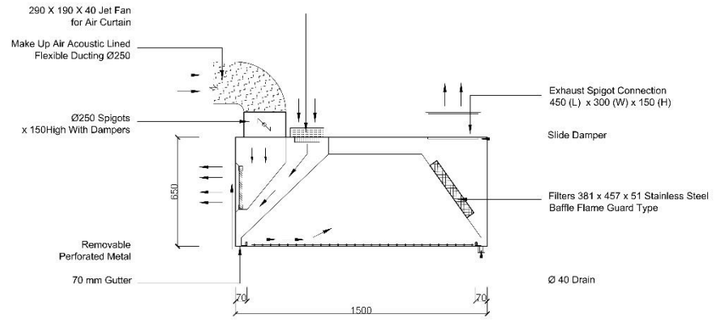
Any deviation from this design and/or specified equipment will result in failure to comply with Electrical Safety Australian Standard AS/NZ 60335.1 and Fire Testing Clause 3.4 of AS1530.1 - 1994. It is an offence to supply or offer prescribed electrical equipment unless it is electrical certified to Australian Standard AS/NZ 60335.1 and Fire Testing Clause 3.4 of AS1530.1 - 1994.

NOTE :
- EXHAUST FANS , UV OZONE UNITS, MIST-TEC , ELECTROSTATIC AIR CLEANERS AND MAKE UP AIR FAN TO BE INTERLOCKED TOGETHER

Specifications Charcoal Exhaust System

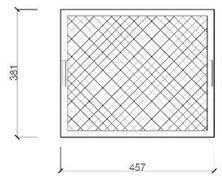
* **HOOD F :** Envirohood - WM (Wallmount) 1600 x 1500 x 650 By A.O.S Australia
* Filters 381 x 457 x 51 Stainless Steel Honeycomb Baffle Flame Guard Type CISRO Approved
* Led Downlights, 4000K, CRI 80, IP44 With Heat Resistance Glass
* Total Air Flow = 868 L/S
* Hood Velocity = 0.42 m/s
* Duct Velocity = 7.08 m/s
* Outlet Velocity = 2.86 m/s
* Static Pressure = 358 pa
* Duct Access Panels = 400 X 300
* Ceiling Access Panels = 450 x 450, 600 x 600 (Provided by Builder) Location TBC
* 1 Off Exhaust Fan Powerline Series PCD454DD With V.S.D Speed Controller By Fantech With Anti-vibration Pads. Exhaust Fan To Be External Lined With Themobreak Acoustic Plus 25 mm
* Exhaust Fan , Make Up Air Fan , Ozone Generator , Electrostatic Air Cleaners and Mist Tec To Be Interconnected
* Exhaust Ducting =
  - 400 X 400
  - 500 x 300 ; **Plenum Ducting To Be Single Skin Stainless Steel 1.2 mm And Wrapped With FyreWrap Fire Protection**
  - 350 x 350 ; **Riser Ducting From Hood To Mist Tec Unit To Be Double Skin Stainless Steel 1.2 mm**
  - 650 x 650 ; **Exhaust Ducting To Be Acoustic Lined With Perforated Metal With Mylar 50mm**
* Exhaust Fan Acoustic Level = 58 dBA At 3 Metres
* Electro Static Air Cleaners RY5000B - DP - UV (With UV) RydAir By A.O.S Australia (Total 2 Units)
* Mist Tec - 3000 TM (Top Mounted) By A.O.S Australia With Stainless Steel Tray ***- Electrical And Plumbing Requirement Refer To Manual Specifications***
  Note : Drain Pipe Run To Gutter To Be Provided By Builder
* 1 Off Ozone Genetator OG50 With 50 Stainless Steel Pipe With 50 mm Fire Collar To Kills 99% Germs, Virus, Odour By A.O.S Australia
* Power Requirement

For Exhaust Fan (Each)	=	1.79 Amps - 0.75 kW - 3 Phase - 415 Volt With V.S.D Speed Controller
For Electrostatic Air Cleaner (Each)	=	2 Amps - 1 Phase - 240 Volt ***(Must Be Electrically Interlocked With Kitchen Exhaust Fan)***
For Ozone Generator OG50	=	2.90 AMPS - 1 Phase - 240 Volt ***(Must Be Electrically Interlocked With Kitchen Exhaust Fan)***
For Mist Tec Unit (Each)	=	0.83 Amps Water Solenoid And 3.45 Amps Water Pump



EXHAUST HOOD SECTION VIEW - HOOD F
Scale 1:20 @ A2

FLAME GUARD FILTERS BY A.O.S AUSTRALIA AS 1530
C.S.I.R.O APPROVED (REPORT NO. FNC11997)



This System Has Been Designed And Will Be Installed In Accordance To The Australian Standards As 1668 Parts 1 (2015 ed.) & part 2 (2012 ed.) Complies With section J5 Of The NCC Standards Amdt 1 (2019 edition.)

ISS	AMENDMENT	DATE
A	FOR INFORMATION	18/10/2023

JC Ventilation and Engineering Pty Ltd
Consulting and Design
Stainless Steel Fabrication-Catering Equipment
ABN 42 099 952 879
Unit 20 / 55-61 Pine Rd,Yennora NSW 2161
Office : (02) 9892 4465
Mobile : 0402 236 300
Facsimile : (02) 9892 2940
Email : admin@jcvent.com.au
Web : www.jcvent.com.au

PROJECT :	APPLEJACK AT URBNSURF, SYDNEY OLYMPIC PARK
DRAWING TITLE :	SPECIFICATION SHEET 1
APPROVED :	G.Clark
DRAWN :	JC
SCALE :	1 : 20 @ A2
DATE :	18/10/23
JOB NO. :	2023-77
DRAWING NO. :	05
ISSUE :	A

Figure 7 – ECS Specifications (**Source:** JC Ventilation)

Ozone Generator

Odour Control System

AIR ODOUR SOLUTIONS

The UVi - Aire ozone generator are used in kitchen exhaust systems to reduce cooking odours, grease and oil accumulation from the cooking process. An Ozone Generator will not only reduce fire risk but will save money annually on duct maintenance and the cleaning cost because the ozone allows for a clean air discharge.

Ozone is a very powerful oxidising agent and is effective for odour control. An allowance of 2 - 3 second contact time will allow the odours to be destroyed by the ozone and after 20 - 30 mins ozone is reverted back to oxygen.

Model	Power	Amps	Weight	Size L X H X W (mm)	PVC pipe connection	Exhaust Air treated
UVi Aire - 30G	240 V - 1PH	1.50 A	12 KG	350 x 420 x 225	100mm diameter	1600 L/s
UVi Aire - 40G	240 V - 1PH	2.40 A	16 KG	500 x 420 x 270	100mm diameter	1800 L/s
UVI Aire - 50G	240 V - 1PH	2.80 A	18 KG	500 x 420 x 270	100mm diameter	2200 L/s

Note: Power connections should be interlocked with kitchen exhaust fan.

AIR ODOUR SOLUTIONS

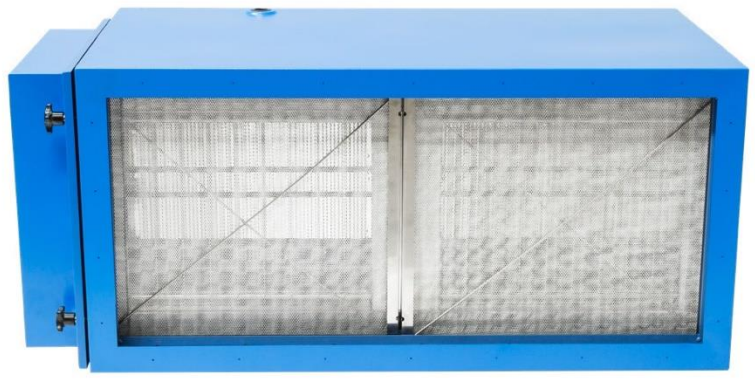
Air Odour Solutions Australia
32 Chifley St, Smithfield NSW 2164
Tel: 02 9721 0020
Email: info@aosaus.com.au

www.aosaus.com.au
www.aosnz.co.nz

Figure 8 – Ozone specifications (**Source:** AOS)

RY-5000B

Electrostatic Air Cleaner with UV Ozone



Without UV optional

Specifications	
Unit:	H: 540mm, W: 620mm, L: 1243mm
Cabinet:	1.4mm/16 Gauge Galvanised Steel
Finishing:	Weatherproof powder coated, Dark blue
Weight:	90 kg
Air Volume:	1400 L/s
LED Operating Indicators:	Green LED (ON) Red LED (OFF) Blue (UV Ozone) on unit's panel
Static Pressure Required:	40 Pascal
Power & Voltage:	230 Volts 1PH – 3 pin cord plug, 50 Hz, 0.72 Amps without UV, 1.50 Amps with UV
Ionising Voltage:	High Voltage 12KVdc, Low Voltage 6KVdc
Airflow Direction:	Right to Left or Left or Right
Power Supply:	High frequency solid state and self-regulating
Particle Size:	0.01 microns – 10 microns
Efficiency:	Single pass 95%, Double pass 99.9% ASHRAE Calculated
MERV Ratings:	Meets MERV 15 at velocity of 2.5m/s to 3.8m/s
Pre-Filter:	Stainless Steel mesh, 2x Washable
Electrostatic Cell Size:	H: 472mm, W: 340mm, L: 550mm
Number of Cells / Weight:	2/16.5 kg per cell
Number of Plates:	61
Total Collection Area:	12.14 Sq metres
Installation:	Ceiling Suspended, Wall or frame mounted, Stacked multiple units
No. of Lamps:	2
Lamp Wattage:	150 Watts
Ozone Output:	14 grams/hour
Lamp Life:	13000 Hours
Application:	Odour Control
Certified To:	AS 1668.1 and AS 1668.2, certified to the BCA performance requirements, can be utilised for alternative solution compliance, AHRAE 52.2 2017 -- Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size Australian and New Zealand Electrical certified AS/NZ 60335.1 AS/NZS60335.1:2011+A1, A2, A3 NATA Accredited Laboratory Number: 676

ASHRAE®

STANDARDS Australia

STANDARDS® NEW ZEALAND PAEREWA AOTEAROA

ESPELECTRICAL SAFETY TESTED

5

Figure 9 – ESP specifications (**Source:** AOS)

8. Odour Emission Operations Review

The normal operating condition of the Proposed Development that is likely to emit odour would come from the solid fuel cooking activities in the kitchen area. The abnormal operational conditions that could emit odour include:

- A fault or sub-optimal operation of the ECS equipment;
- Solid and liquid waste handling within the waste management and disposal area; and/or
- Poor housekeeping.

A conceptual site model representing all major and minor odour emissions at the Proposed Development is shown in **Figure 10**. These matters are further discussed in **Section 8.1** to **Section 8.3.**

8.1 Process Controls

The ECS at the Proposed Development will be operated via a switch located in the kitchen area. The airflow commissioning, testing, and balancing of the ECS exhaust air collection system at the Proposed Development will need to be completed by a suitably qualified mechanical contractor prior to the commencement of kitchen cooking activities. The target airflows are provided in **Figure 7**.

8.2 Major Emission Sources

The major odour sources identified under normal operations will be from the roof fan discharge point, given the nature of activities that will be conducted in the kitchen area and the surrounding sensitive environment (refer to **Section 5** for details). The generation source of this emission includes HOOD F, which extracts air from the solid fuel cooking equipment in the kitchen area.

Given that the solid fuel cooking activities will consist of an ECS, the risks associated with the DP-1 are considered to be reasonably mitigated. Under atypical or upset conditions, such as a failure in one or more unit components of the ECS, DP-1 will have the potential to cause off-site odour impact. For this reason, the implementation of an appropriate operating and maintenance schedule will be required as a means of preventative maintenance and to ensure that the treatment performance is consistently working in an optimum condition.

8.3 Minor Odour Emission Sources

All other odour emission sources at the Proposed Development are categorised to have a minor odour risk potential, including the dishwashing operations, waste management and disposal area and ground level fugitive emission release from the solid fuel cooking activity, provided good housekeeping practices are maintained, and a waste management plan is habitually implemented. This detail is reflected in the conceptual site model, as shown in **Figure 10**.

	Air contaminant Source	Air contaminant release mechanism	Environmental transport	Exposure Pathways	Receptors
MAJOR	DP-1	The use of solid fuel for cooking in the kitchen area	Transport by air	Inhalation	Odour nuisance to: - Nearby commercial development - Nearby industrial development
MINOR	Kitchen cooking area (upset conditions) DP1 (upset conditions)	Fugitive emission release or inadequate treatment, caused by either a fault or sub-optimal operation of the ECS.	Transport by air	Inhalation	Odour nuisance to: - Nearby commercial development - Nearby industrial development
	Waste management and disposal area	Poor housekeeping. Prolonged storage and poor housekeeping.	Transport by air	Inhalation	Odour nuisance to: - Nearby commercial development - Nearby industrial development

Figure 10 – Specific conceptual site model representing all major and minor odour emissions at the Proposed Development

10. Assessment Findings

Based on the supplied information utilised as part of the Assessment, the following findings are made pertaining to the Proposed Development:

- A suitable odour control strategy has been adopted to manage the solid fuel cooking exhaust air emissions prior to atmospheric discharge;
- The odour control strategy is via the implementation of the ECS (refer to **Sections 7.1 – 7.2**);
- All emissions from the ECS will be discharged at the DP-1 at the roof level;
- Given the above findings and the identified sensitivity of the general surroundings, the proposed ECS, as documented in **Section 7** of the Assessment, will need to be operated and maintained per the manufacturer's requirements to ensure optimum treatment performance. TOU's findings, as documented in the Assessment, will only be valid on this basis;
- If all recommendations made in **Section 11** are implemented, the resultant plume from the DP-1 will be of a treated quality and is envisaged to shift away from the building structure during windy periods and rise vertically to the atmosphere during calmer wind conditions. Both scenarios are likely to result in sufficient thermally buoyant plumes, which will shift away from nearby public and commercial receptors and undergo significant dispersion before any detection by nearby sensitive receptors; and
- All minor odour emission sources, including the dishwashing and wash-up activities, solid waste generation points, grease trap arrestor, refuse storage area and fugitive emission release, are considered to be negligible, provided good housekeeping practices are implemented and maintained.

Given the above analysis, a series of recommendations have been documented to ensure the operational risk of the proposed solid fuel cooking activities are sustainably operated and maintained to preserve the local air quality amenity and remain consistent with the findings made in the Assessment.

11. Assessment Recommendations

The following recommendations are made based on the Assessment findings documented in **Section 10**:

- The undertaking of a field-based investigation at the Proposed Development, once constructed and commencing normal business activities. During this investigation, the following works are to be undertaken:
    - Inspection of all major and minor emissions sources, as identified in the Assessment;
    - Validate that the mechanical exhaust system has been installed as documented in the Assessment and equipment specification installed for the emission control system and ensure that it is suitable for the design exhaust airflow loading as outlined in **Section 7**;

- Odour sampling and testing of the ECS to validate the odour removal performance under all operating scenarios, namely:

  - **Non-peak operating scenario:** this represents an operating scenario defined by low to medium demand levels in the kitchen cooking activities and ingress of future patrons; and

  - **Peak operating scenario:** this represents an operating scenario defined by high demand levels in the kitchen cooking activities and ingress of future patrons.

  This work should be completed according to AS/NZ 4323.3, the relevant odour guideline documents, and at a NATA Accredited Odour Laboratory.

The outcomes from the follow-up inspection visit will be used as a basis to determine the need for further odour mitigation and to ensure that the Proposed Development can sustainably operate without causing a negative impact on the general amenity from an odour viewpoint. If all recommendations in the Assessment are adopted, it is envisaged that the Proposed Development is unlikely to cause any significant level of odour emission release that would lead to a nuisance on nearby sensitive receptors.

Kind Regards,

The Odour Unit Pty Ltd

Michael Assal MEngSc, B. Eng (Hon)/B.Sc, AMIChemE, MIEAust, CAQP
Operations Manager

Melissa Gilbert **BEnSc**
Consultant

Disclaimer: This document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. This document should not be used or copied without written authorisation from **LUCHETTI KRELLE** and **THE ODOUR UNIT PTY LTD**.

Attachment:

- Complete set of mechanical design drawings for the ECS at the Proposed Development