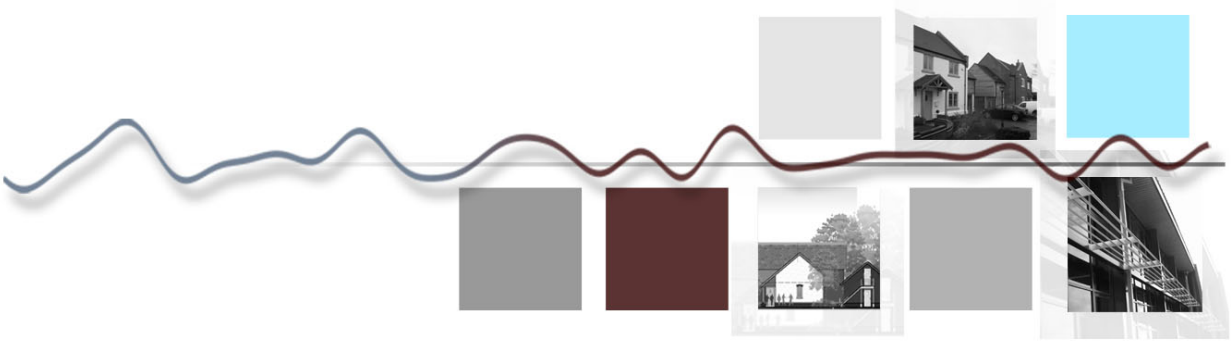
The Burlington Hotel | on behalf of Mr. K. Najafi



app doc 5: ventilation and extraction statement Rev B

proposed alterations and extensions to
The Burlington Hotel
Marine Parade, Worthing

Barn 5a, Sutton Hall Farm
Sutton Maddock
Shropshire
TF11 9NQ

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1.0 Introduction

1.1 MTC planning and design have been instructed by Mr. K. Najafi to prepare this document to support the submitted proposals. This document is providing an overview and design justification to the proposed ventilation and extraction for the new kitchen extension.

1.2 This report has been requested by the local authority following a Teams Meeting held on Monday 3rd June. The original application design was submitted on 24/10/23 and validated on 08/11/23. A concern has been raised by the local authority in connection with the proposed external extraction flue pipe. The design of this was not originally included in the previously consented design (your ref: AWDM1811/19) but had a 'prior-to occupation' condition attached to this consent that meant the works on site could commence without the design being agreed. However, within this application and latest planning policy such a detail is required to be designed and agreed as part of the initial application drawings to meet new planning policy within the adopted Worthing Local Plan (March 2023).

1.3 Prior to the Teams Meeting MTC have provided a number of possible design solutions for the proposed flue pipe, including both external and internal positions. However, the local authority had concerns that neither of these designs either fully respected the listed building fabric or provided a satisfactory external appearance. The local authority expressed a concern that they needed further analysis to demonstrate that the size, height, scale and location of any flue was the minimum required to serve the proposed extended kitchen, the type of cooking and likely odours without affecting the amenity of close to hotel rooms within the development or neighbouring properties.

1.4 Parallel to this MTC was also encouraged to take an approach that would see any proposed flue/duct installation as an additional 'visual feature' to the building in terms of cladding materials etc. instead of seeking designs that tried to conceal the installation that was felt to create unsatisfactory designs.

1.5 As such this report has been prepared to provide a methodology statement for the latest design by setting out the applicant's brief (need and anticipated use), overview of the minimum design criteria from the flue installers (resultant required specification), and how MTC's latest design seeks to accommodate this in a new design approach (layout and appearance).

1.6 MTC understand that all other elements of the submitted design have been agreed/received support from the local authority. For completeness we do still urge that this report and the additional application drawings no.22/12557/123 are read in conjunction with the following submitted information.

- Application document 1 Introduction and Planning Statement
- Application document 2: Design and Access Statement
- Application document 3: Heritage Statement
- Application document 4: Sustainability statement
- Application drawings.

1.7 Further to the above, this report includes an appendices that includes the following information:

- Sample menus of meal/food types prepaid by The Burlington Hotel
- Designs of proposed kitchen extract and ventilation equipment by Kitchen Vent Technical (KVT) Ltd
- Odour assessment for the proposed kitchen competed by KVT Ltd
- Copy of MTC drawing no. 22/12557/123 rev A indicating proposed ventilation enclosure details, marked 'For Discussion'.
- Manufacturing details of proposed enclosure cladding.
- Revised Noise Impact Assessment to consider the latest extraction design.

2.0 Overview of proposal

2.1 The proposals seek full and listed building consent for proposed alterations and extensions to the existing hotel. The development would see the erection of a 4 storey (inclusive of ground floor) side extension along the sites eastern boundary to provide improved reception and entrance area, new restaurant provision, improved and expanded kitchen facilities and then the creation of 18 no. bedrooms above on 3 no. floors.

2.2 The expanded kitchen facilities would be located at ground floor level to the rear of the modern building extension and connect to the existing kitchen that lies within the existing core listed building.

2.3 The proposals, as previously accepted in earlier consented schemes would improve the capacity and range of facilities within The Burlington Hotel. The design would improve the general access arrangement to the hotel to all users, regardless of age and physical ability. The proposals would add a further restaurant to the hotel, increasing the range of services available to hotel guests and passing trade. The additional restaurant adds to the overall range of attraction for both daytime and evening economy. The hotel management will seek to use an existing large function room at ground floor to become the main venue for weddings and events, thereby retaining the existing range of facilities. The proposed improvements to the kitchen area will enable The Burlington Hotel to cater for events and fully booked restaurants simultaneously, where at present if a main event is scheduled then the restaurants operate at reduced capacity, diluting the experience for other hotel guests.

3.0 The applicants brief (need and anticipated use)

3.1 The Burlington Hotel was purchased by the applicant in 2017 and the property has seen an extensive re-branding and refurbishment project that is still on going. The aim of this project is to create high quality accommodation supplemented by high standard restaurants and conference rooms. As such the applicant wishes to be able to provide a wide range of food styles for restaurants, wedding events and corporate occasions. **Appendix A** includes some of the current sample menus presented by the Burlington Hotel. The styles of food range from traditional British, continental, to cosmopolitan styles with a strong sea food style. The Burlington has a reputation for grilled meats. As such the kitchen will be expected to provide quantities of grilled., steamed, fried, and conventual cooked food stuffs.

3.2 The designed kitchen and extraction has also been dictated by the number of covers the applicants hope to serve within the restaurants and the type of events that they wish to cater for. The applicant has provided a breakdown of the existing and anticipated numbers/covers that the Burlington Hotel does and hopefully will provide:

Existing capacity

- Ground floor function rooms (2 no. rooms at ground floor level) – sit down food = max 70 no. covers (depending on configuration) these rooms are used to serve hotel guests breakfast as well as private functions.
- Existing restaurant – sit down food = max 35 no. covers (depending on configuration).
- Existing outside terrace – sit down food = max 8 no. covers
- The existing kitchen can accommodate for either the function rooms or the restaurant. If the function room is booked, then the restaurant may need to be closed to allow this space to be used as a bar area serving the function rooms. For small events where the restaurant is not needed food for the function room has to be prepared and partially cooked the day before, to enable the kitchen to react and cook for restaurant bookings. As such the existing restaurant can cook for 70 no. covers at one time if it is a reduced function room menu.

Proposed capacity

- Proposed lower ground floor restaurant– sit down food = max 40 no. covers (depending on configuration).
- Retained ground floor function rooms (2 no. rooms at ground floor level) – sit down food = max 70 no. covers (depending on configuration) these rooms will continue to serve hotel guests breakfast as well as private functions.
- Retained existing restaurant – sit down food = max 35 no. covers (depending on configuration).
- Retained existing outside terrace – sit down food = max 8 no. covers
- The proposed kitchen would enable at least 1 no. restaurant to always be open, regardless of the size of functions taking place elsewhere within the building. It would also allow more of the food to be prepared and cooked on the day of each function, in doing so enabling the function rooms and restaurant to be in use more days of the year, thereby greatly increasing the range of foods that can be cooked and the overall viability of the extended hotel.

3.3 The applicant has confirmed that the proposed kitchen would operate from 7:00am – 10:00am for breakfast servings, then from 12:00pm – 9:00pm for lunchtime, afternoon functions, and evening servings. The hotel does not provide nighttime room service meals.

3.4 The applicant wishes to maintain the existing gas supply to the kitchen for the immediate future due to the industry currently still providing most commercial equipment based on gas supply. However, they have also asked the kitchen designs to design in features that allow for conversion to all electric in due course, enabling the hotel to react once the general industry improves it sustainability credentials.

3.5 The applicant has commissioned a firm of commercial kitchen designers (NWC) who have provided detailed kitchen floor plans locating all key equipment. Specialist extraction designers Kitchen Ventilation Technical KVT have also been appointed to liaise with NWC and the applicant to assist with the flue design. They have evaluated the kitchen requirements, intensity of use, hours of operation and types of food stuffs that will be prepared, and produced a report to analyse the minimal requirement for the prosed flue/duct attached as **Appendix B**.

4.0 Required specification

4.1 The odour assessment completed by KVT notes that the proposed flue/duct pipe needs to have a diameter of 560mm. The flue/duct must be positioned 350mm of the adjoining facing wall to access the equipment for maintenance. This is dictated by the specified kitchen equipment and their outputs. KVT has also confirmed that the flue must extend to a height of 1.0m above the adjacent flat roof parapet of the new build extension. KVT has advised this assists with the dispersing of kitchens odours and combustion gases and would other trapped by the surrounding structures and prevent them from reaching the higher atmosphere. As agreed with the Local Authority within the application process a UV filter will be fitted within the extraction kitchen canopy to assist with odour control.

4.2 The kitchen and extraction designers have been able to offer a number of different locations for the proposed flue, however the local authority confirmed in the recent Teams meeting that the preferred choice is the originally suggested location. Considering this and other identified design parameters a full Odour Assessment has also been provided by KVT (within Appendix B) which sets out the risk assessment for odour and the control measures to the best of the system's ability. This assessment provides a score for each design element and therefore set out an overall pending on the risk. Considering all factors the total score as provided a low level of odour control requirement with this being lower than 20 no. points. KVT has within the report also provided a breakdown of the odour control system details.

4.2 Extraction attenuators have been fitted to minimise noise levels. NOVA Acoustics have completed a further noise assessment (**Appendix E)** which confirms the proposed extraction system would be satisfactory as the emitted noise would still be lower than the identified background noise. The assessment does note that the background noise around the application is significant due to the proximity to the sea front, which will dilute any noise associated with the proposed equipment. NOVA had advised that the diffuser specification initially set out by KVT should be upgraded to further reduce noise emission which the kitchen specialists (KVT) have confirmed a upgraded attenuator can be provided to meet the criteria.

5.0 Design (Layout and Appearance)

5.1 **Appendix C** includes a copy of sketch drawing no. 22/12557/123 rev A. The proposed location of the flue/duct has considered the listed status of the hotel and the nearby residential properties. Through discussion with local authority the current proposals is to revert back to the original location set to the rear of the modern extension, in the corner junction between the extension and original hotel structure. As part of this MTC drawing no. 123 has been prepared to illustrate how the first-floor arrangement can be modified so that no bedroom space is adjacent to the duct, instead an ensuite will act as a further noise and vibration buffer between the duct and sleeping areas whilst the reconfigured floor plan includes a newly located plant room.

5.2 The size of the shaft and ducting has been dictated by the kitchen equipment required and the height of high velocity discharge. With the shaft design proposed this proposes a slim encasement solution and minimises impact on the surrounding structures. By installed these aluminium sheets that are bracketed off the externals walls this maintains this slim profile.

5.3 The latest design offers a contemporary design solution meaning the duct would be enclosed by bespoke perforated steel cladding panels in an embellished leaf shaped perforation. We have shown this in a finish to stand out for the other pallet of proposed materials to the extension. This by proposing in an aluminium alloy brushed polished mirror effect in Anolok 543. As noted in submitted drawing no.123. To provide more information we have provided a product brochure within **Appendix D** from Proteus SC where details of the proposed system are provided. Regarding the appearance page no.9 provides an image of the leaf style perforation that has been proposed on this scheme.

5.4 Proteus Facades Ltd have confirmed to MTC that the fixing frame for the panels means that each panel can be open dot form an access hatch, meaning that maintenance can be caried out on nay part of the flue/duct as it rises up the building. Furthermore, it means that each panel can be opened and cleaned form the inside as well as side to maintain the original colour and appearance.

9.0 Conclusion

5.1 This report has sort to provide an overview of the design rationale of the proposed extraction system(s) required to service the proposed alterations and extensions to the Burlington Hotel. The report has revisited the proposed operations, scale of food production the expanded kitchen will create type of foods (and their associated odours etc.), and times of operations. The report (and attached appendices) illustrate the proposed design drawings are based on detailed inputs from the applicant and kitchen specialists who have analysed the required usage and advised on size, height, and location of the kitchen equipment and resultant extraction flue.

5.2 MTC design drawing no. 123 illustrates revised floor plans to accommodate the position of the flue, a proposed cladding detail to mask the flue, and how it's presence is mitigated within the revised floor plans. Finally, the attached noise reports confirm such a design would be acceptable in terms of noise output and impact on occupants of the hotel and neighbouring properties. As such this report seeks to illustrate that the proposed extraction system is essential and the minimum requirement in relation to the scale of the project whilst respecting the listed building/heritage asset within the application site.

Appendix A: Sample menus

THE SEA PEARL

BAR & RESTAURANT

NIBBLES FOR THE TABLE

Pan scorched Padron peppers £3.95 GF VE
Rock salt, crushed pepper, olive oil splash

Garlic & rosemary marinated olives £3.95 GF VE

Bacon & potato au gratin £5.95 GF
Roasted bulbs of garlic, parmesan shavings

Bread and oils £3.95 VE GFA
Warmed ciabatta breads, olive & balsamic oils

Antipasto £6.95 GFA
Sliced salami, pastrami & chorizo, olives, cubed feta, houmous, warmed pitta

Vegan on board £4.95 VE GFA
Slow roasted pepper plum tomatoes, olive & balsamic dip, warmed breads

STARTERS

Shell on crevettes £11.95 GF
Sauteed in garlic & chilli butter, sriracha mayo dip

Sticky baby back pork ribs £10.95 GF DF
House BBQ dipping sauce, garden salad

Basil & garlic Mediterranean vegetable salad £7.95 VE
Pesto pearl couscous, roasted pepper, plum tomato, pesto & balsamic dip

Soup of the day £5.95
Warmed crusty bread

Salt & pepper squid £7.95
Lime & pine nut aioli, citrus mixed leaves

Satay chicken skewers £7.45 GF DF
Soy & peanut marinade, Asian sesame dressing, beansprout Asian salad

Haddock & salmon cakes £7.75
Chives & coriander, dressed rocket, tartar sauce

Bruschetta £6.75 VE
Fresh tomatoes and basil topping finished with avocado, drizzled with olive oil (v) 6.75

VE vegan VG vegetarian GF gluten free DF dairy free GFA Gluten free available

THE BURLINGTON HOTEL

ALWAYS FROM THE HEART

please notify your waiter of any food allergies or food intolerances when ordering. We cannot guarantee the total absence of allergens in our dishes.

THE SEA PEARL

BAR & RESTAURANT

PLATTERS

Ultimate steak platter £58.95 GF
8oz New York strip, 6oz rump steak, 8oz rib eye,
tender stem broccoli, grilled sweet carrots, charred courgettes,
skin on fries, chimichurri, peppercorn & romesco sauces

From the Sea - £45.95 (for 2 people) and £26.95 (for 1 person) GFA
Lemon pesto oysters, chilli & garlic sautéed king prawns,
cured salmon, smoked haddock & salmon cakes,
dynamite tiger prawns, warmed pitta bread

From the Land - £28.95 (for 2 people) and £18.95 (for 1 person) GFA
Sliced medium flat steak, chorizo, salami,
aged cheddar, Tuxford & Tebbutt stilton, petit brie,
red caramelised onion chutney, warmed pitta bread

MAINS

Seafood tagliatelle £19.95
Tiger prawns, flaked salmon, squid, garlic & spiced tomato marinara

Prawn & chicken butter curry £21.95
Saffron & tarragon rice, chimichurri crisped flat bread

Aromatic whole seabass £24.95 GF DF
Marinated saffron, chilli & coriander, charred courgette, peppers & sweet potato

Burlington fish & chips £18.95
Battered haddock fillet, crispy fries, buttered garden peas

Herb crusted loin of cod £26.95
Flashed tiger prawns & mange tout, roasted cherry tomatoes, dauphinoise potatoes

Roasted royal bream £23.95 GF DF
Roasted in capers, garlic, flat parsley & lime, rosemary and smoked garlic Jerusalem artichokes,
saffron & tarragon basmati rice

Roasted salmon and broccoli penne pasta £25.95
Cherry tomato, black olive & smoked garlic penne pasta, tender stem broccoli

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THE SEA PEARL

BAR & RESTAURANT

MAINS

Mint & lemon marinated rump of lamb £25.95
Grilled baby carrots, charred garlic courgettes, torched asparagus, mint & lemon aioli, parsnip crisps, pine nuts, dauphinoise potatoes

Pan fried breast of chicken £20.95 GF
Thyme infused fondant potatoes, roasted tender stem broccoli, wild mushroom sauce

8oz pan fried sirloin steak £24.95 GF DF
Roasted tender stem broccoli, grilled sweet carrots, charred courgettes
choice of peppercorn, Romesco or Chimichurri sauce £2.95

8oz grilled ribeye £23.95 GF DF
Roasted tender stem broccoli, grilled sweet carrots, charred courgettes
choice of peppercorn, Romesco or Chimichurri sauce £2.95

Burlington burger £18.95
100% prime beef, brioche bun, Monterey jack cheese, flamed chorizo, caramelised onion relish, gherkin, sweet chilli sauce, skin on fries
Optional hot chilli sauce or blue cheese sauce

Gourmet grill £26.95 GF DF
Sticky baby back pork ribs, skillet seared 3oz rump steak, skewered sesame satay, served with a garden salad

Maple caramelised halloumi Burger £18.95
Vegan bun, romesco relish, gherkin, iceberg slice, skin on fries

Baked portobello mushroom £17.95 VE
Almond & oat plant cheese, pesto pearl couscous, dressed with toasted pecan & pumpkin seeds and mixed leaves

Warmed butternut squash salad £17.95 GF VG
Cubed feta, puy lentils, cherry tomatoes, flat-leaf spinach, toasted pine nuts, herb dressing

SIDES

Skin on fries £3.95 GF VE
Add truffle oil or aged cheddar for £1.00

Dauphinoise potato £4.95 GF

Garlic ciabatta £4.95

Flaked parmesan & rocket salad £4.95 GF

Garden leaves, with tomato, cucumber & red onion £4.50 GF VE

Hollandaise drizzled asparagus £4.95 GF

Seasonal vegetables £4.95 GF

Rosemary and smoked garlic Jerusalem artichokes £4.95 GF VE

Buttered garden peas £3.95 GF VG

Roasted tender stem broccoli £3.95

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THE SEA PEARL

BAR & RESTAURANT

SANDWICHES

Choice of breads – White, Brown or Gluten free

Marie rose cocktail prawn £7.95

Aged cheddar & pickle £6.50

Roasted pepper, pesto, avocado & rocket £7.00

Seared flat iron steak, horseradish & rocket £7.95

Sussex ham, mayonnaise, sliced tomato & leaves £6.50

DESSERTS

New Forest ice cream all £6.95 GF VG

choose 3 scoops from the list below

Salted caramel ripple

Rum & sweet raisin

Toffee & honeycomb crunch

Vanilla essence

Indulgent chocolate

Strawberry & cream

Sticky toffee pudding £7.95 VG

Vanilla ice cream, salted caramel sauce

White chocolate, lime, passionfruit Cheesecake £7.95 VG

Cookies & cream Crème brulee £7.95 VG

Lemon Posset £7.95 GF

Fresh raspberry and biscotti crumb

Dark & white Belgium brownie £7.95 VG

Vanilla essence ice cream, dripping chocolate, fresh strawberries

Cheese board £9.95

Tuxford & Tebbutt stilton, petit brie, smoked applewood, apples grape & celery, house chutney

DIGESTIF

Espresso martini £9

Irish coffee £7.50

Americano, cappuccino, latte, flat white, mocha £3.95

Espresso, Macchiato £3.75

Hot chocolate £4.05

Small batch coffee Brazil Monte Carmelo

THE BURLINGTON HOTEL

ALWAYS FROM THE HEART

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BUFFET MENU

Coconut crumb coated king prawns.

Savoury tartlets – assortment of 'pork & cheddar' 'wild garlic & mushroom' 'flaked salmon & dill' 'goats' cheese' and 'cherry tomato & basil' 'mature cheddar & broccoli'.

Gyoza dumplings, filled with duck and hoisin.

Onion bhajis, cucumber & mint raita - VE.

Crispy breadcrumb chicken goujons – DF.

Vegetable spring roll, sweet chilli dip – VG.

Battered cod goujons.

Traditional pork pie.

Soy glazed vegetable skewers – VE GF.

Ciabatta pizza slices – various toppings – Allergen adaptable.

Chickpea houmous & vegan tzatziki, mixed crudites – VE GF.

Sandwich and wrap platter – various fillings – Allergen adaptable.

Pork sausage puff pastry roll – V on request.

Spiced lamb kofta, minted yoghurt dressing - GF.

Dessert

Profiterole tower, drizzled chocolate glaze - V

Mini caramelised biscuit beignets - V

5 ITEMS £24.00pp

7 ITEMS £28.00pp

9 ITEMS £32.00pp

Fancy more? add another option for £4.50pp / Crisps & nuts £3.00pp - VG GF



2 Course £29.00
3 Course £34.00

SAPPHIRE MENU

STARTER

Carrot & coriander soup, drizzled crème fraiche - GF

Ham hock & pea terrine, honey glazed, with cucumber & courgette pickled vinegar

Haddock & salmon fishcake, dressed watercress, tartar sauce - GF

MAIN

Breast of chicken, lemon & honey mustard soak, fondant potato, green beans - GF DF

Pork tenderloin, herb roasted potatoes, seasonal vegetables, apple sauce - GF

Fillet of Pollock, with pesto, fresh asparagus & new potatoes

DESSERT

Citron tartlet, wild berry coulis, Chantilly cream - V

Blueberry & apple crumble, vanilla custard - V

Trio of New forest ice cream - vanilla, strawberries & cream, indulgent chocolate - GF



RUBY MENU

2 Course £32.50
3 Course £37.00

STARTER

Leek & potato soup, rustic herbed croutons - VG, GFA

Beetroot gravalax, caper and beetroot salsa, mango horseradish, groundstone sourdough - GFA

BBQ beef brisket bites, panko crumb crusted, with a pickled vegetable relish DF

MAIN

Prosciutto wrapped chicken supreme, dauphinoise potato, seasonal vegetables, topped with creamy wild garlic - GF

Roast sirloin of beef, Yorkshire pudding, herb roasted potatoes, seasonal vegetables, beef dripping jus - GFA DFA

Teriyaki glazed fillet of salmon, roasted vine tomatoes, dauphinoise potato - GF

DESSERT

Panna cotta, fresh ginger & lime citrus, coconut and blueberry compote - GF, V

Chocolate brownie, raspberry coulis, chocolate ganache - VG GF

Sticky toffee pudding, salted caramel sauce, vanilla essence ice cream - V



CANAPES

Choose 4 items for £15.00 per person

Medium rare sirloin Yorkshire pudding, horseradish

Smoked salmon blini, lemon and chive cream cheese - GFA

Shredded duck, hoisin sauce, cucumber mini wrap - DF

Breadcrumbed crab ball, sweet chili dip

Bruschetta bites - VG GFA

Maple marinated halloumi, seared pineapple skewer - V GF

BBQ glazed belly pork cubes - DF GF

Chicken, chorizo & roasted pepper roulade, wasabi dip - DF

Fancy more? add another option for £4.00pp

Appendix B: Specialist extraction design and odour assessment

Odour Assessment for Approval – version 4.

Project Reference number:	**P24240**
Project Title:	**The Burlington Hotel.**
Site Address:	**Marine Parade Worthing BN11 3QL**
Assessment Date:	**9h July 2024.**

Kitchen Vent Technical Ltd ● Units 8 & 10 ● Warwick House Business Park ● Southam ● Warwickshire ● CV47 2PT ● Tel: 01926-675375 ● Web: www.kvtech.co.uk ● Registered No. 1948004

KITCHEN VENT TECHNICAL
CLEAR THE AIR

GENERAL INFORMATION ABOUT THE PREMISES

Number of covers to be prepared per day:	**153**
Cooking Methods:	**Frying, Griddling, Open-top Hobs, Combi-Ovens**
Type of menu to be served:	**British/Italian/French**
Proposed hours of operation:	**12:00 to 20:30**

RISK ASSESSMENT FOR ODOUR:

CRITERIA	DETAILS	RANKING	SCORE
DISPERSION	Low-level discharge or discharge into courtyard ore with stack height restriction	Very poor	**20**
DISPERSION	Not low-level discharge but below eaves or discharge at below 10 $m.s^{-1}$.	Poor	**15**
DISPERSION	Discharging 1m above eaves at 10-15 $m.s^{-1}$.	Moderate	**10**
DISPERSION	Discharging 1m above eaves at 15 $m.s^{-1}$.	Good	**5**
PROXIMITY OF RECEPTORS	Closest sensitive receptor less than 20m from point of discharge.	Close	**10**
PROXIMITY OF RECEPTORS	Closest sensitive receptor between 20m & 100m from point of discharge.	Medium	**5**
PROXIMITY OF RECEPTORS	Closest sensitive receptor more than 100m from point of discharge.	Far	**1**
SIZE OF KITCHEN	More than 100 covers per day or large takeaway.	Large	**5**
SIZE OF KITCHEN	Between 30 and 100 covers per day or medium sized takeaway.	Medium	**3**
SIZE OF KITCHEN	Less than 30 covers per day or a small takeaway.	Small	**1**
ODOUR AND GREASE LOADING	Pub (high level of fried food), fried chicken, burgers, fish & chips.	Very High	**10**
ODOUR AND GREASE LOADING	Kebab, Vietnamese, Thai or Indian.	High	**7**
ODOUR AND GREASE LOADING	Banquet, Buffet food Cantonese, Japanese or Chinese.	Medium	**4**
ODOUR AND GREASE LOADING	Small pubs, Italian, French, Pizza, Tapas.	Low	**1**
TOTAL SCORE	**LOW TO MEDIUM RISK – low level of odour control requirement**	**<20**	**19**
TOTAL SCORE	**HIGH RISK – high level of odour control requirement**	**20 to 35**	**??**
TOTAL SCORE	**VERY HIGH RISK – Very high level of odour control requirement**	**>35**	**??**

PLANS AND DRAWINGS:

KVT preliminary drawing KVT-24240-01 rev. 02, is attached for reference.

NWCE equipment layout drawing NWCE7890BT-R-1 is also attached.

ODOUR CONTROL SYSTEMS DETAILS:

1. A canopy and ventilation system which is fully compliant with DW172 combining extract-air and return-supply-air to the kitchen space incorporating baffle-type centrifugal grease separators in the canopy itself with LED lighting to provide the requisite 500 lux on the working plane. See KVT scope of works and proposal for more information.
2. High level, high velocity discharge (via a self draining jet cowl) to develop and efflux velocity of 12 to 15 $m.s^{-1}$ and providing a high degree of dispetion & dilution.
3. At this stage, there are no additional odour control methods or system subject to input/comments from the local authority.
4. If further odour control is required, then we would recommend an in-canopy UV System to attack odour & grease and protect all down-stream ductwork & equipment, with a secondary option of an Electro-Static Precititator Unit to deal with residual odour and smoke particulate. The second of these items would require sufficient space for installation & maintenance to be created.

REPLACEMENT COMPONENTS AND MAINTENANCE ARE AVAIABLE FROM:

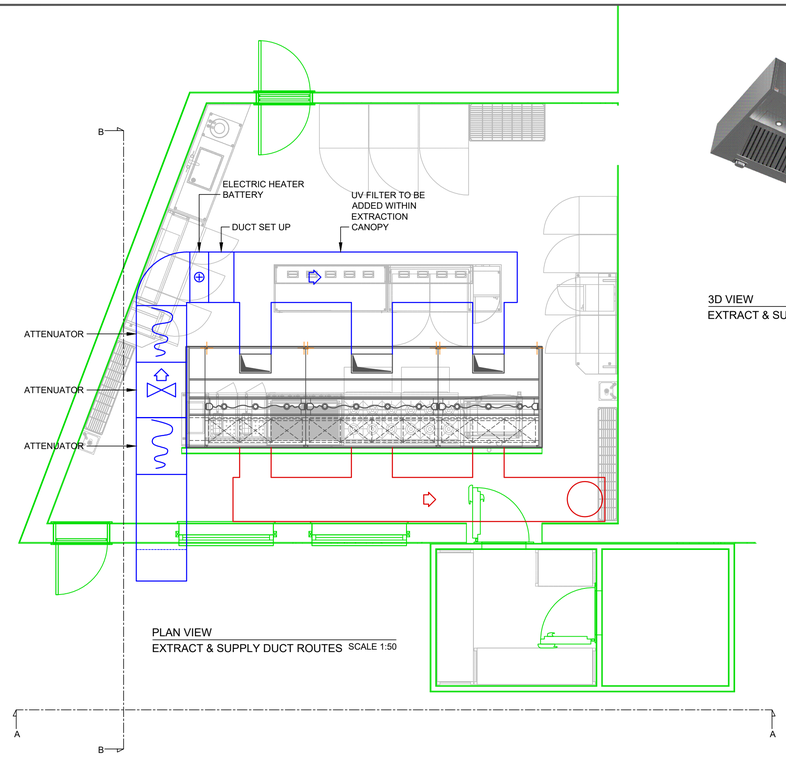
FOR INFORMATION ON THE CANOPY & VENTILATION SYSTEM:
Kitchen Vent Technical Ltd. – SEE THIS LETTER HEAD.

FOR MAINTENANCE OF ELECTRO-STATIC PRECIPITATOR UNITS:
Purified Air Ltd. Lyon House, Lyon Rd, Romford RM1 2BG Tel: 0800 018 4000

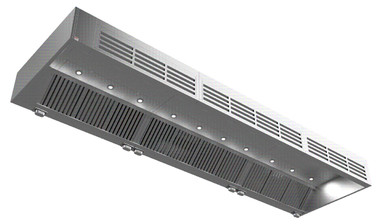
FOR MAINTENANCE OF OUR "SPECTRUM" IN-CANOPY UV SYSTEMS:
MORIARTY CATERING INSTALLATIONS LTD. Tel: 01788 821440 – Contact: Mr Paul Willie.
Units 3-4, Prospect Park, Valley Drive, Rugby, Warwickshire, CV21 1TF

FOR ALL MAINTENANCE & CLEANING OF CANOPIES AND VENTILATION SYSTEMS:
VENTILATION SURVEYS & SERVICES LTD. Tel: 0333 500 8368 – Contact: Mr George Friend.
Unit 2 Sandon Way, Sandon Industrial Estate, Liverpool, Merseyside, L5 9YN

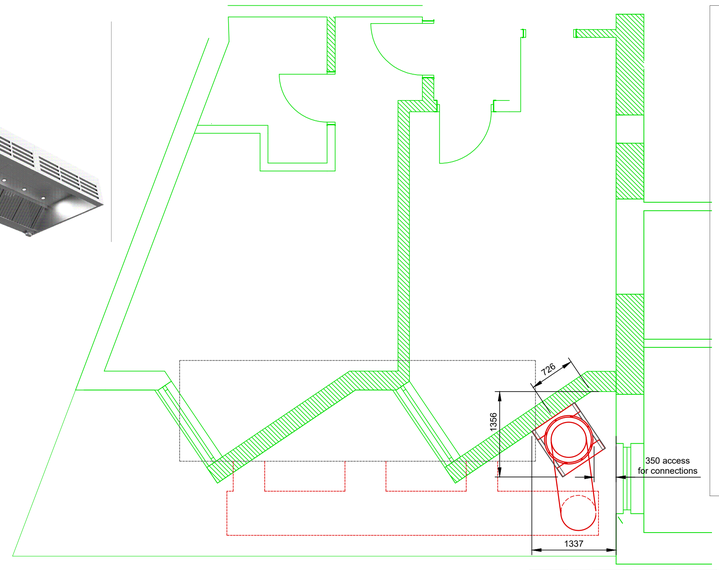
SEE ATTACHED DATA SHEETS FOR FURTHER INFORMATION.



PLAN VIEW
EXTRACT & SUPPLY DUCT ROUTES SCALE 1:50



3D VIEW
EXTRACT & SUPPLY CANOPY NTS



PLAN VIEW
EXTRACT DUCT 1ST FLOOR ROOF SCALE 1:50

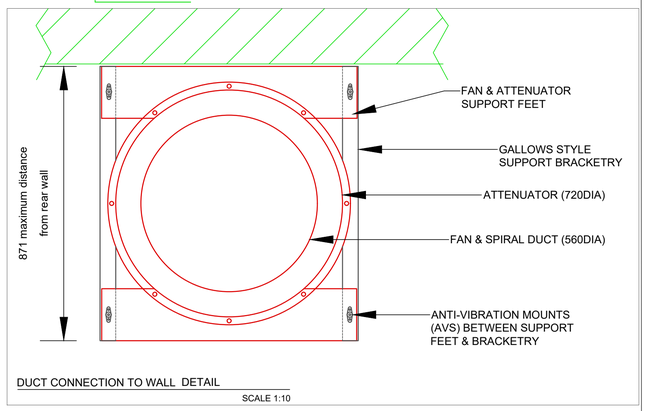


1 x CONTRA ROTATING CASED AXIAL FAN - TCBBx2

FAN ACOUSTIC DETAILS - TCBBx2 / 4 560

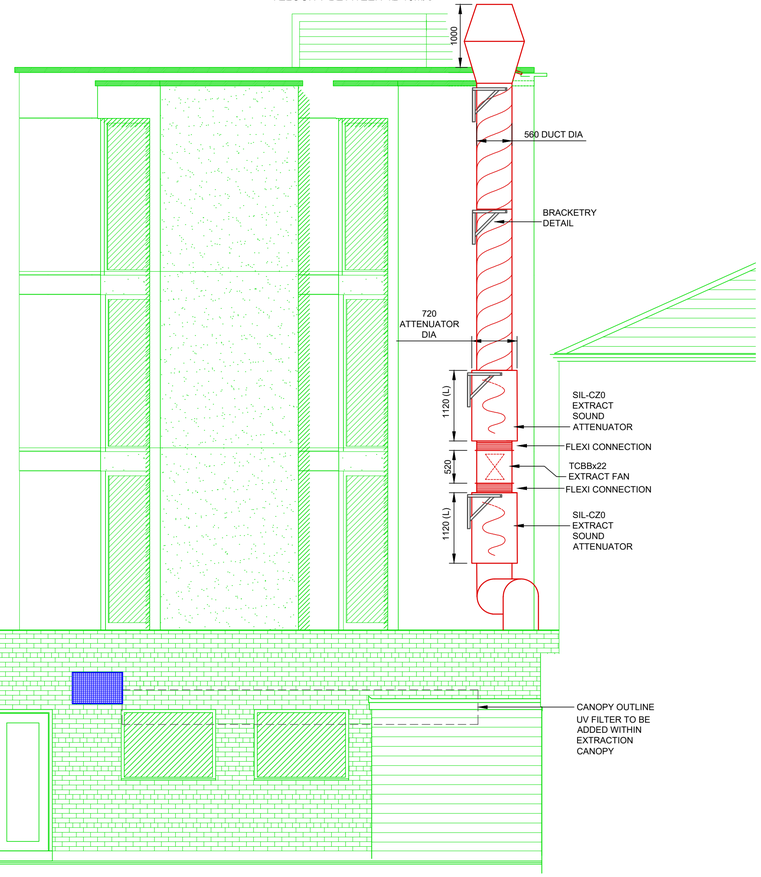
PLEASE NOTE:
The sound levels shown correspond to the value of sound pressure dB(A), The table also shows the sound power level spectrums in dB(A) measured with the fan ducted both inside (inlet) and outside (Outlet)

Model	Air volume m³/h	63	125	250	500	1000	2000	4000	8000	Global
560 Inlet	13.720	50	85	87	88	91	85	78	73	95
	10.800	57	79	83	86	89	84	78	72	93
	9.000	63	79	81	86	89	84	78	72	92
560 Outlet	13.720	74	86	85	91	94	88	81	75	97
	10.800	70	82	84	88	92	87	81	74	95
	9.000	74	81	85	89	92	87	81	74	95

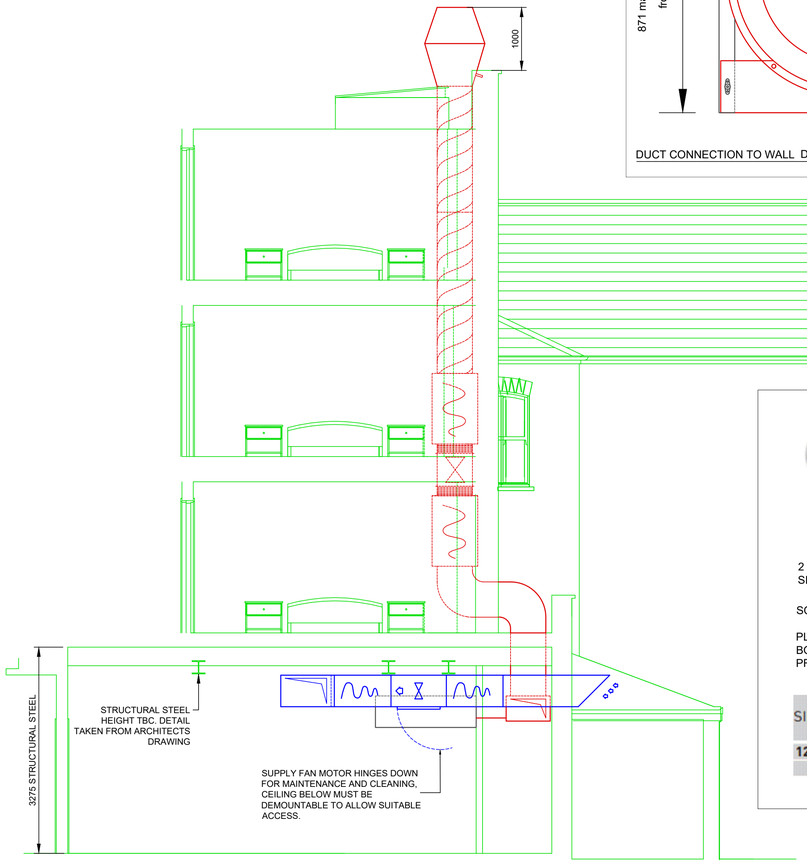


DUCT CONNECTION TO WALL DETAIL
SCALE 1:10

DISCHARGE NOTE:
HIGH VELOCITY RISER OPENING
- EXTRACTING VOLUME AT VELOCITY BETWEEN 12-15M/S



SECTION A-A
EXTERNAL EXTRACTION
PROPOSED ARRANGEMENT SCALE 1:50



SECTION B-B
EXTRACT & SUPPLY DUCT ROUTES SCALE 1:50



2 x SOUND ATTENUATORS
SIL-CZO

SOUND ATTENUATION BY FREQUENCY BAND (TABLE BELOW)

PLEASE NOTE:
BOTH SOUND ATTENUATORS USED HERE TO MELINEX LINED TO PROTECT THE ROCKWALL FINISH OF THE ATTENUATORS

SIL-CZO-560

125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
2	12	27	41	35	18	12

Notes:

1. DO NOT SCALE
2. ALL INFORMATION CONTAINED WITHIN THIS DRAWING IS COPYRIGHT KITCHEN VENT TECHNICAL LIMITED

SPECIFICATION: The ClearAir range of kitchen canopies manufactured by KVT will be designed, sized, manufactured and installed strictly in accordance with the Building & Engineering Services Association document DW172: 2018 2nd edition (specification for Kitchen Ventilation Systems).
Please note!
The design proposal is based upon adhering to guidelines set out in DW172SE. Airflow calculations are calculated by using thermal convection method.
Odour control has been incorporated into the system by using a high velocity discharge for odours to dilute and dissipate in the atmosphere.

REFERENCE: DUCTWORK
A range of galvanised, mild steel ductwork to meet the requirements of BESA publication DW144.
All ductwork natural finish - NOT PAINTED.

THIRD ANGLE PROJECTION

REV:	DESCRIPTION:	BY:	DATE:
04	UV filter note added to extraction canopy	DB	28/08/24
03	Fan & attenuator detail included with additional dimensions	DB	01/07/24
02	Extract route re-located with Firemack (fire rating material) included.	DB	17/04/24
01	Moved extract duct route to avoid obstructing window.	MG	29/02/24
00	First issue	DB	23/02/24

STATUS: FOR INFORMATION

KITCHEN VENT TECHNICAL
CLEAR THE AIR
Units 8-10
Warwick House Business Park
Banbury Road
Southam
Warwickshire
CV47 2PT
Tel: 01926 675375
www.kvtech.co.uk

CLIENT: NWCE FOODSERVICE EQUIPMENT

SITE: MARINE PARADE, WORTHING BN11 3QL

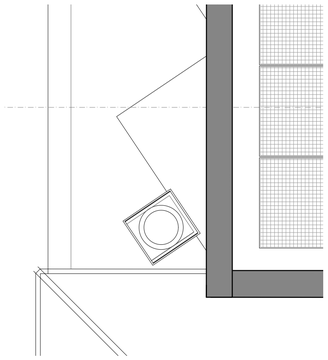
TITLE: KITCHEN EXRACT & SUPPLY VENTILATION

SCALE:	DATE:	DRAWN:	CHECKED:
1:50 @A1	21/02/24	DB	

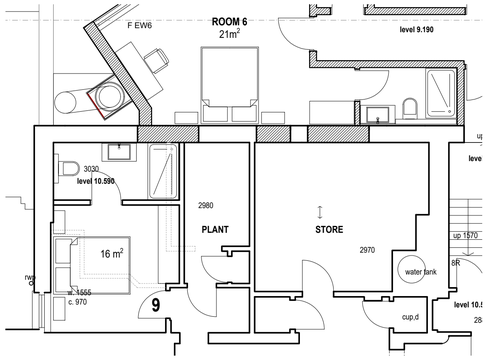
PROJECT NO:	DRAWING NO:	REVISION:
P24240	KVT-24240-01	04

Appendix C: MTC drawings

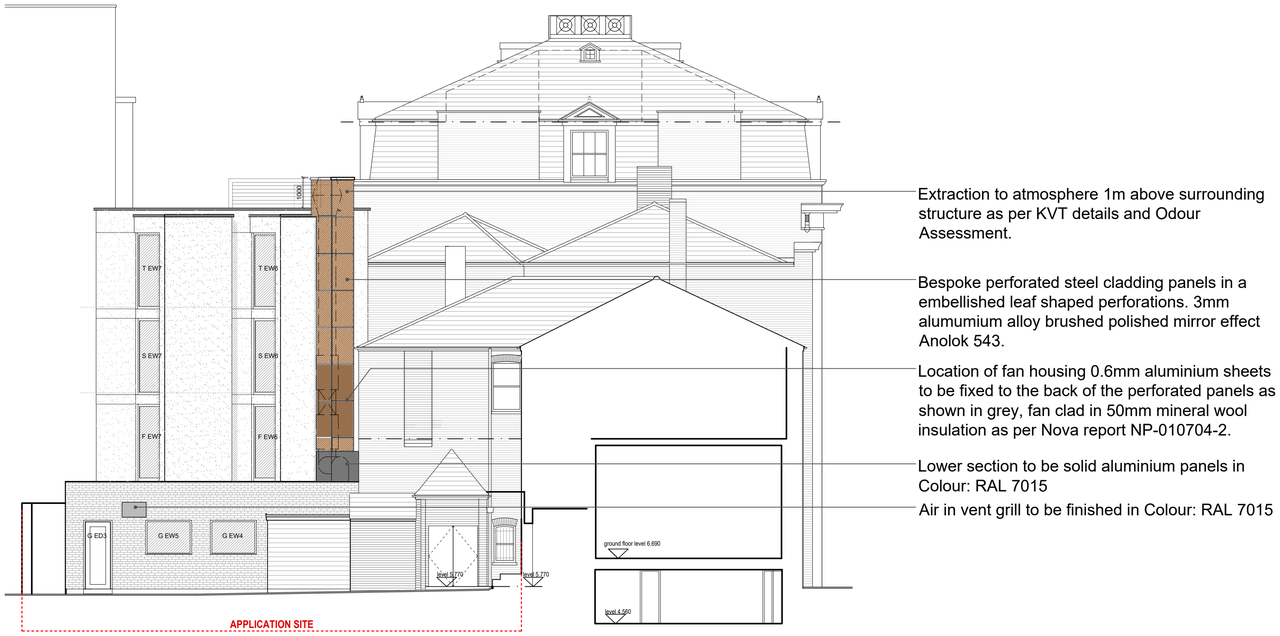
The copyright of this drawing and design is vested in the Architect and must not be copied or reproduced without written consent. All dimensions given are to be verified on site by the contractor. This drawing must not be scaled.



First floor plan showing proposed plant
Scale 1:50



First floor plan showing proposed plant
Scale 1:50



Rear showing proposed plant
Scale 1:100

Extraction to atmosphere 1m above surrounding structure as per KVT details and Odour Assessment.

Bespoke perforated steel cladding panels in a embellished leaf shaped perforations. 3mm alumumium alloy brushed polished mirror effect Anolok 543.

Location of fan housing 0.6mm aluminium sheets to be fixed to the back of the perforated panels as shown in grey, fan clad in 50mm mineral wool insulation as per Nova report NP-010704-2.

Lower section to be solid aluminium panels in Colour: RAL 7015

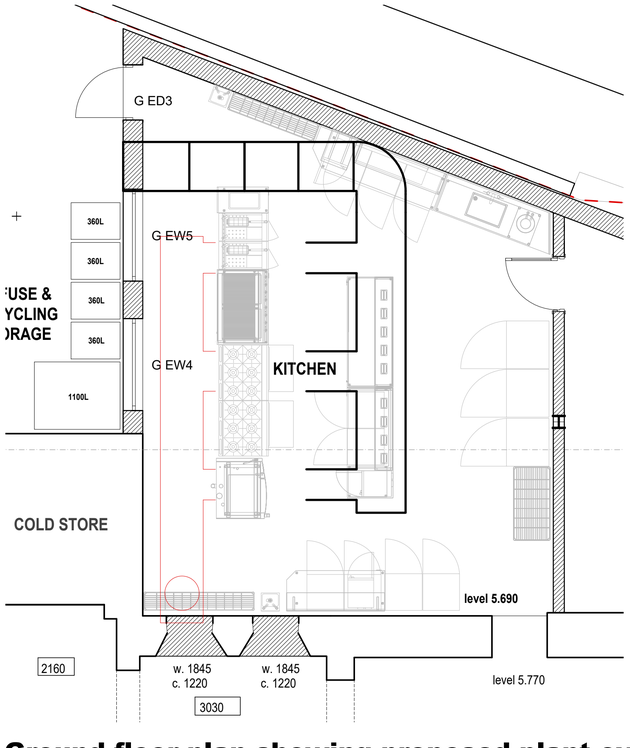
Air in vent grill to be finished in Colour: RAL 7015



Image 1
Showing embellished leaf cladding system
by Proteus or similar.

Notes

- Please see attached brochures and manufacturer details.



Ground floor plan showing proposed plant over
Scale 1:50



Side elevation showing proposed plant
Scale 1:100

PLANNING

Rev	Details	Date/Chk
A	Issued for Planning	12/07/2024

CLIENT
Mr. K Najafi

PROJECT
Extensions and alterations to Burlington Hotel, Worthing, BN11 3QL

DRAWING
Proposed drawings:
Kitchen ventilation enclosure details

DRAWING NUMBER	REVISION	SCALE@A1	DATE
22/12557/123	A	Varies	18.06.2024
		DRAWN BY	CHECKED BY
		AMN	

mtc planning and design
architect town planning building surveying
Barn 5a
Sutton Hall Farm, Sutton Maddock
Shropshire TF119NQ
Tel 01952 730 492 Fax 01952 730 492/863

Appendix D: Chimney cladding manufacturers details

Cl/SfB
(41) Nh2
February 2024

Proteus SC

PERFORATED, SOLID & MESH SCREEN



Proteus SC is a versatile and flexible solution for providing aesthetic screening to building facades. A single-skin metal panel system that can be provided in all metal finishes both solid, perforated and mesh. The panel system uses the Proteus aluminium support system to carry the solid, perforated and mesh panels.

The Proteus SC range offers a broad selection of standard configurations, which can be customised and adapted to create a unique look for individual projects.

Contents

What is Proteus SC?	04
Proteus SC projects	06
Technical information	10
Materials and finishes	12
Project services	14

Proteus SC
PERFORATED, SOLID & MESH SCREEN



What is Proteus SC?

Proteus SC is an engineered panel system in either solid, perforated or mesh panel formats utilising an extensive range of metals, colours, textures and forms.

Proteus SC consists of a single skin solid, perforated or mesh panel, generally constructed from 1mm to 5mm thick sheet metal. The design of the panel will be subject to the material chosen by the designer, with some materials having limitations on width and thickness which will have an impact on the solution, however Proteus SC can be engineered around these limitations to deliver the best possible solution for the designer. The live loadings applied to the building along with the amount of perforations or size of eyes within the mesh, either required for aesthetics or air flow requirements will also be a consideration when creating the final design solution.

Our Proteus SC panel systems are supported by the unique engineered Proteus system of aluminium carriers and ancillary components, which can be installed on to any type of wall construction, in certain applications these carrier systems will be designed to span between structural floors to remove the requirement for any secondary structure.

The Proteus SC system can also be provided with an acoustic insulation layer encapsulated within the panel, for internal applications we can also provide contrasting fabric inserts when the panels are perforated.

Where can Proteus SC be used?

The Proteus SC system can be used in a variety of applications, here are just a few typical uses:

- Car parks
- Stair towers
- Window screens
- Plant screens
- Balconies & balustrading
- Acoustic panels
- Sun screening
- External wall coverings
- Internal wall coverings

Engineered to suit the application and supporting structure

Wide range of colours, textures and perforations to create bespoke facades

All panels assembled at our factory and pre-finished for rapid installation on site

Fully adjustable support system on all axis

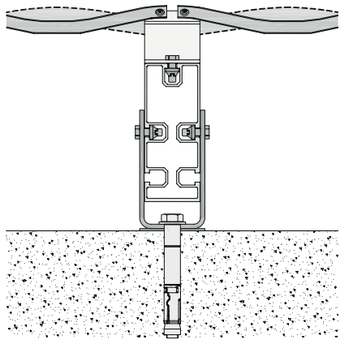
Integrates seamlessly with all other Proteus systems

Flat, curved, corner and soffit panels available for solid, perforated and mesh panels

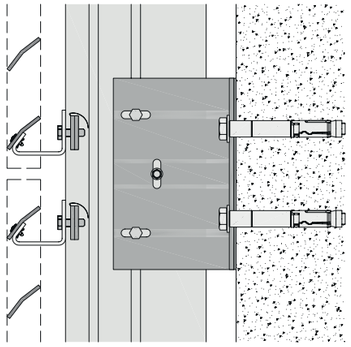
Construction can be broken down and fully recycled

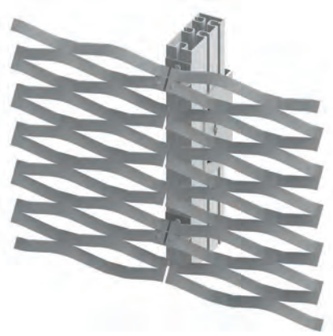
Mesh panel system

Mesh vertical joint



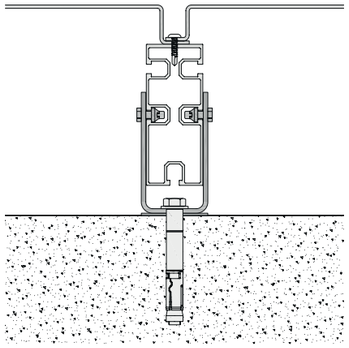
Mesh horizontal joint



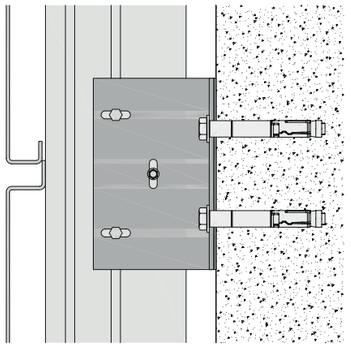


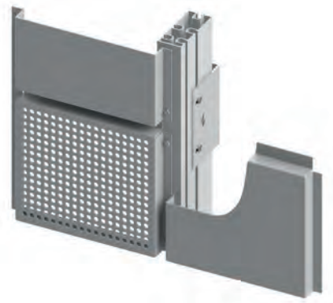
Tray panel system

Tray vertical joint



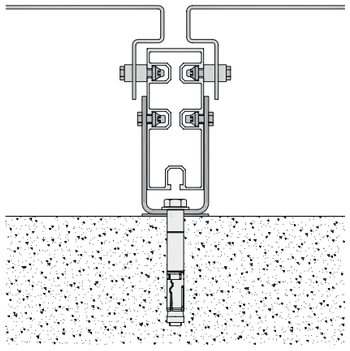
Tray horizontal joint



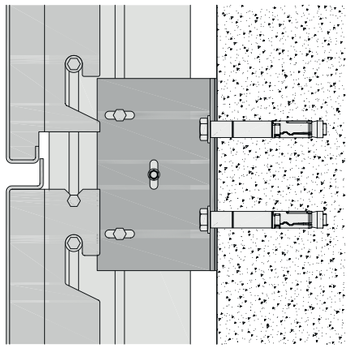


Hook panel system

Hook vertical joint



Hook horizontal joint

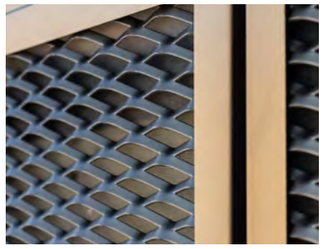




Proteus SC projects

Proteus SC is suitable for a range of buildings, from offices and other workplaces through to public buildings and residential developments. The images here reflect just a few of the high-profile schemes that have used Proteus SC.







Project:
Durham University

Sector: Education
Architect: GCS
Finish: RAL 7016







Project:
East Park Student Accomodation

Sector: Residential
Architect: Stridge Treglown
Finish: RAL 8000

Project:
BSkyB Studios,
Wind Turbine

Sector: Commercial
Architect: Arup
Finish: Natural silver anodised aluminium

Project:
White Hart Street

Sector: Commercial
Architect: Richard Markland
Finish: Anolok 543

The Proteus SC cladding panels are arranged in a striking half-hexagon design that appears to float outward from the main structure.



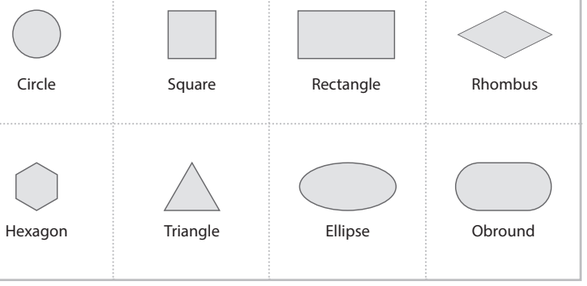


Perforated screen

Proteus SC Panels offer designers the flexibility to generate a myriad of perforation sizes, patterns and textures.

KEY:

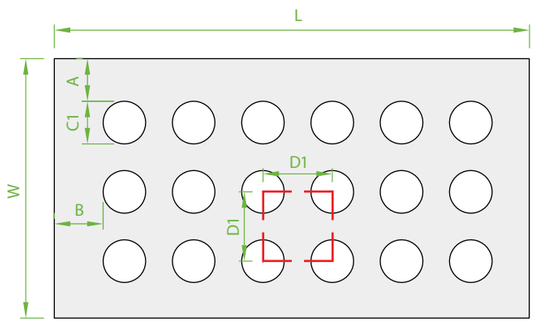
Other perforation shapes are available upon request.



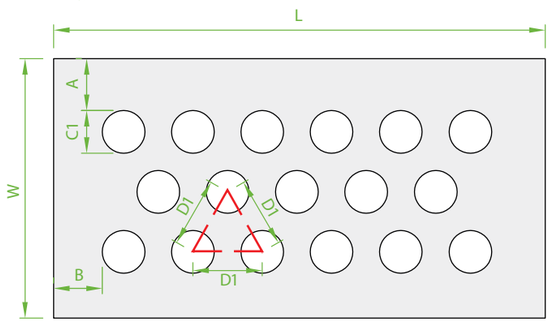
A	Perimeter border 1
B	Perimeter border 2
C1	Perforation size 1
C2	Perforation size 2
D1	Perforation spacing 1
D2	Perforation spacing 2
L	Length of panel
W	Width of panel

Pattern orientation can be modified to suit requirement.

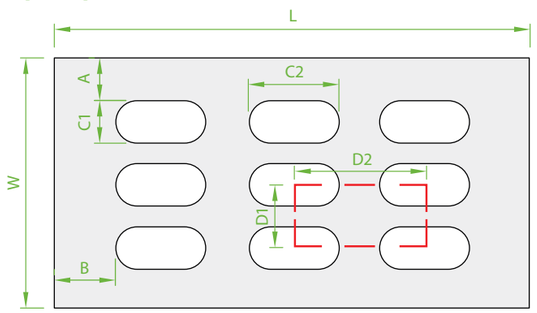
Square pattern



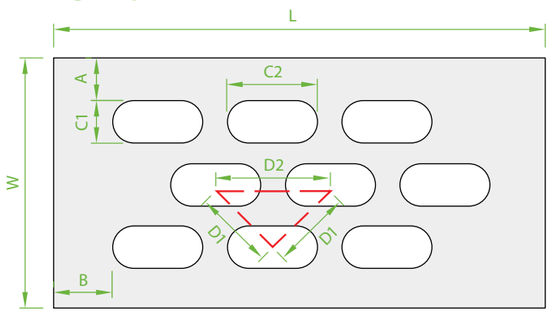
Triangular pattern



Square pattern



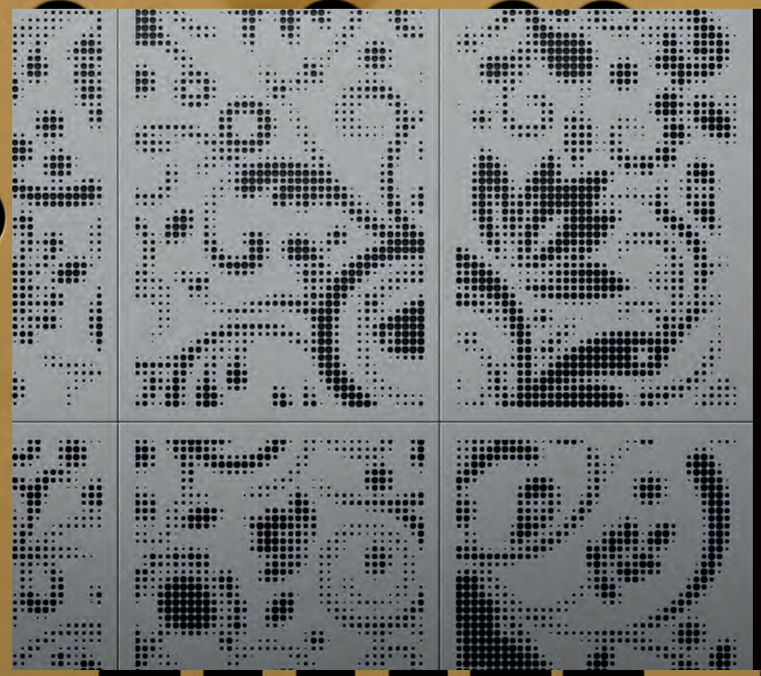
Triangular pattern



FORM

Bespoke textured patterns

Most perforated or solid screens are one dimensional. Form now offers designers the ability to conceive a second dimension by forming shapes into the surface offering designers the ability to generate texture and movement in the screen.

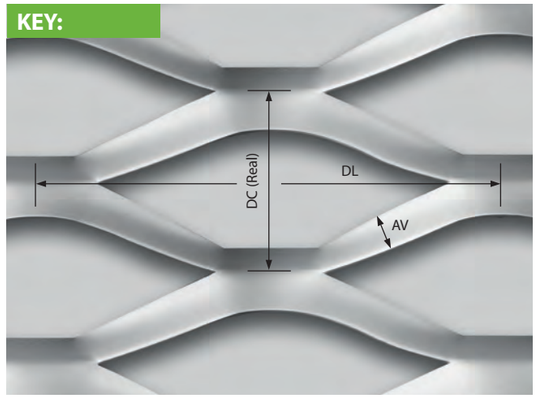


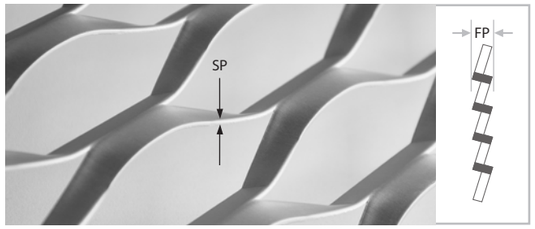
CREATE

Bespoke perforated panels

Utilising the latest computer software to pixelate images, logos, letters and numbers to create a bespoke perforation pattern that can be applied to one panel or a number of panels to create a "jigsaw" that can be applied to a whole building façade. Create offers a designer and building owner the ability to set their individual mark on a building façade.

Expanded mesh





DL	Long Diagonal
DC	Short Diagonal
AV	Strand Width
SP	Thickness
FP	Flat Thickness

Example								
DL	**x**	**DC**	**DC (Real)**	**-**	**av**	**sp**
200		75	(80)	-	24	1.5

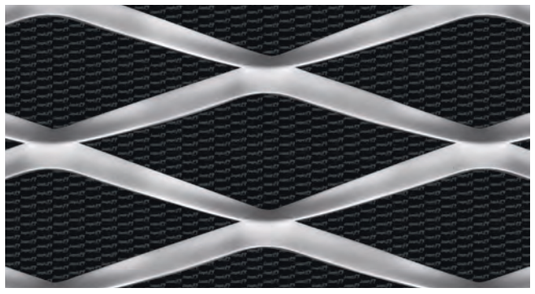
XL expanded mesh

Antilia



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
400 x 150 (100) - 40 x 2	12.5	4.3	41	27.5
400 x 150 (100) - 40 x 3	18.7	6.5	41	27.5

Apus



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
400 x 140 (140) - 33 x 2	7.2	2.6	53	63
400 x 140 (140) - 33 x 3	11	3.8	53	63

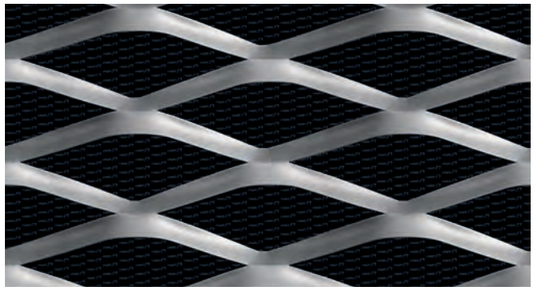
Aquila



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
350 x 120 (120) - 33 x 2	8.6	3	52	59
350 x 120 (120) - 33 x 3	12.9	4.5	52	59

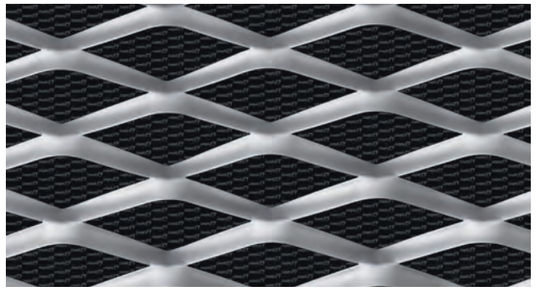
Large expanded mesh

Carina



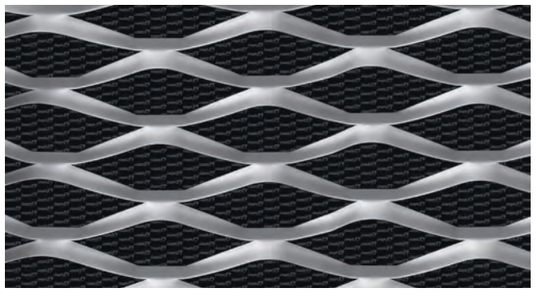
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
250 x 90 (96) - 25 x 1.5	6.3	2.1	37	59
250 x 90 (96) - 25 x 2	8.4	2.8	37	59
250 x 90 (96) - 25 x 3	12.6	4.2	37	59

Draco



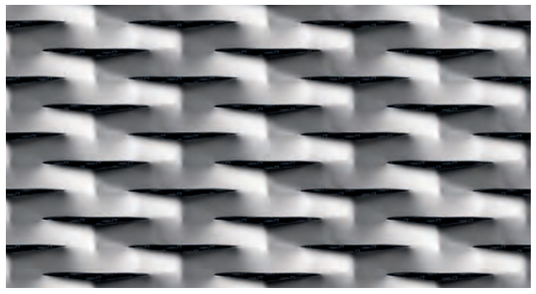
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
200 x 75 (80) - 24 x 1.5	7.1	2.4	32	52.3
200 x 75 (80) - 24 x 2	9.4	3.2	32	52.3
200 x 75 (80) - 24 x 3	14.1	4.7	32	52.3

Eridanus



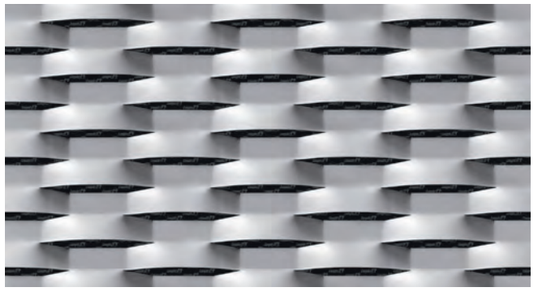
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
200 x 65 (70) - 20.6 x 1.5	7.2	2.4	28	56
200 x 65 (70) - 20.6 x 2	9.3	3.1	28	56
200 x 65 (70) - 20.6 x 3	14	4.6	28	56

Fornax



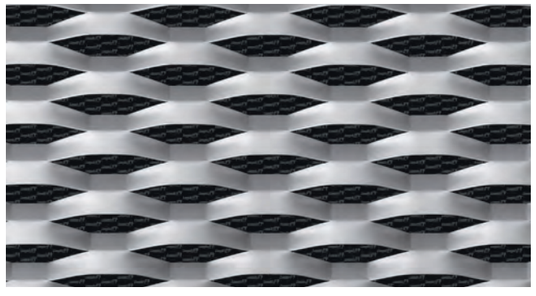
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
160 x 40 (52) - 24 x 1.5	10.6	3.6	18	10.2
160 x 40 (52) - 24 x 2	14.1	4.7	18	10.2

Grus



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
160 x 40 (52) - 24 x 1.5	10.8	3.6	16	15
160 x 40 (52) - 24 x 2	14.4	4.8	16	15
160 x 40 (52) - 24 x 3	21.6	7.2	16	15

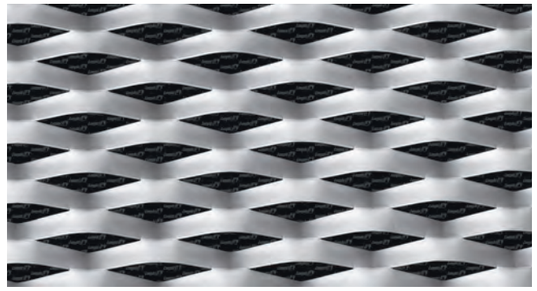
Hydra



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
150 x 56 (56) - 21.5 x 1.5	9.3	3.1	21	29.8
150 x 56 (56) - 21.5 x 2	12.4	4.2	21	29.8

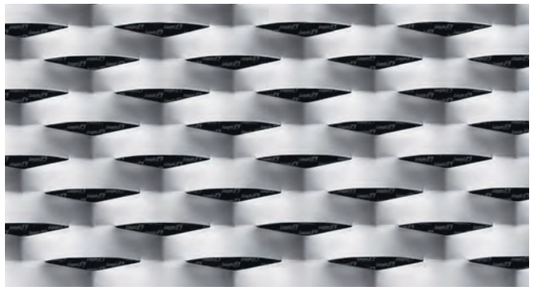
Medium expanded mesh

Indus



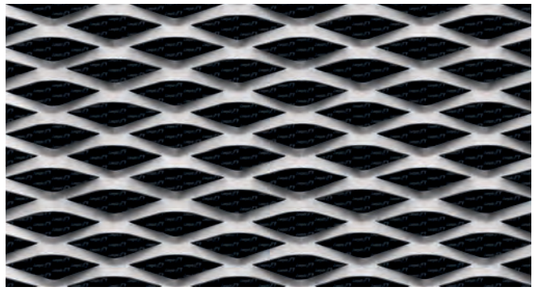
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
115 x 40 (48) - 20 x 1.5	9.7	3.2	21	26
115 x 40 (48) - 20 x 2	12.8	4.2	21	26
115 x 40 (48) - 20 x 3	19.3	6.4	21	26

Lyra



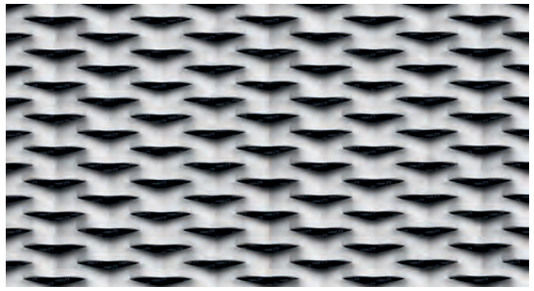
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
110 x 40 (52) - 24 x 1.5	10.6	3.6	18	16
110 x 40 (52) - 24 x 2	14.1	4.7	18	16
110 x 40 (52) - 24 x 3	21.1	7	18	16

Musca



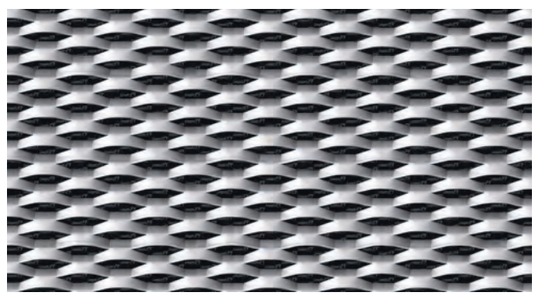
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
100 x 35 - 11 x 1.5	7.55	2.7	15	45
100 x 35 - 11 x 2	10.1	3.5	15	45

Octans



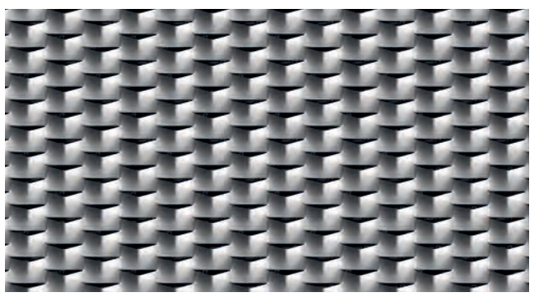
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
100 x 30 - 13 x 1.5	10.4	3.55	13	17
100 x 30 - 13 x 2	13.4	4.7	13	17

Pavo



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
70 x 26 - 10 x 1.5	9	3.1	11	29
70 x 26 - 10 x 2	12	4.2	11	29

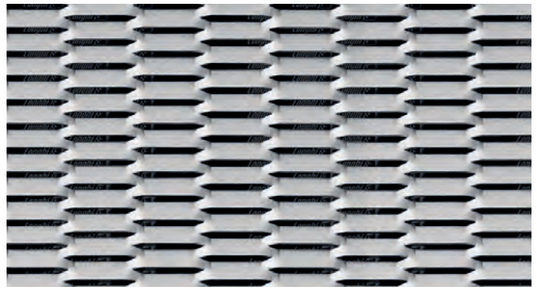
Pictor



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
62 x 22 - 10 x 1.5	10.5	3.6	9	12
62 x 22 - 10 x 2	14.1	4.9	9	12

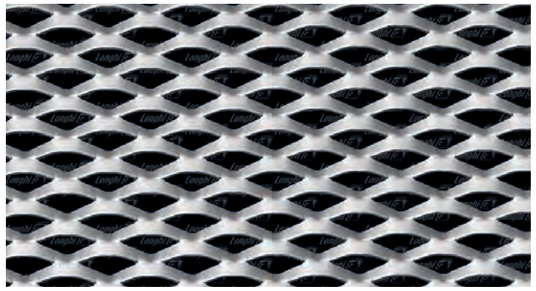
Small expanded mesh

Sagitta



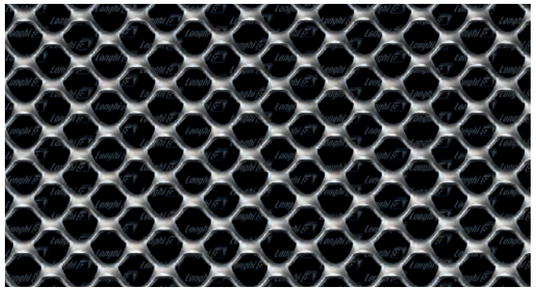
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
45 x 8 - 3.5 x 1	6.8	2.4	4	23
45 x 8 - 3.5 x 1.5	10.0	3.3	4	23

Tucana



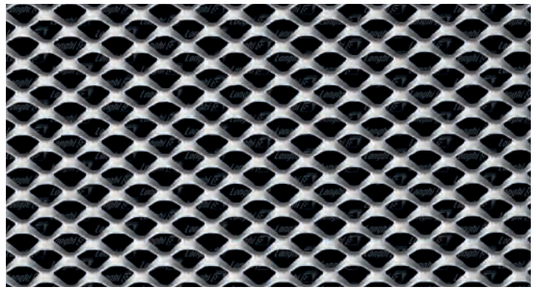
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
28 x 14 - 5 x 1.5	8.4	3	7	33
28 x 14 - 5 x 2	11.3	3.9	7	33

Ursa



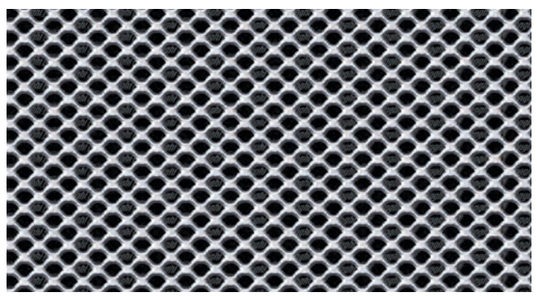
Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
20 x 10Ø - 3.25 x 1.5	5.4	1.95	5	57
20 x 10Ø - 3.25 x 2	7.1	2.5	5	57

Vela



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
16 x 11 - 3 x 1.5	6.4	2.25	4	46
16 x 11 - 3 x 2	8.6	3	4	46

Volans



Dimensions DL x DC - av x sp (mm)	Steel Kg/m²	Aluminium Kg/m²	Finished Panel Thickness (mm)	Open Area (%)
10 x 5Ø - 1.6 x 1	3.3	1.15	1	50
10 x 5Ø - 1.6 x 1.5	4.9	1.7	1.5	50
10 x 5Ø - 1.6 x 2	6.5	2.4	2	50

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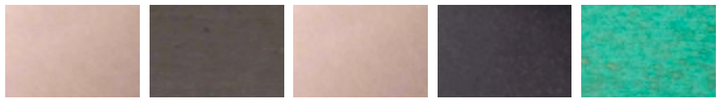

TECU® Classic

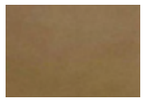
TECU® Classic Weathered (Vertical)

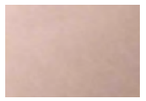
TECU® Classic Coated

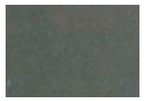
TECU® Oxid

TECU® Patina


TECU® Brass


TECU® Brass Weathered


TECU® Bronze


TECU® Bronze Weathered


TECU® Gold


TECU® Brass BMA


TECU® Brass Artisan


TECU® Brass Mid Brown Distressed


TECU® Brass Metropolitan


TECU® Brass Black Florentine


TECU® Bronze BMA


TECU® Bronze Artisan


TECU® Bronze Mid Brown Distressed


TECU® Bronze Metropolitan


TECU® Bronze Black Florentine

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RIMEX

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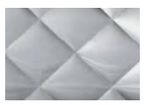
Material width: 1000, 1250, 1500mm

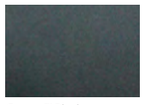

6WL


Canvass

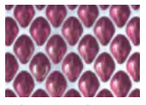

Quilted


ColourTex® Mirror Bronze


ColourTex® Mirror Blue


Granex™ Black


Granex™ Gold


ColouTex® Pearl


ColouTex® Pagoda


ColouTex® Pinstripe

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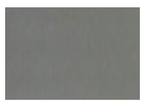
VMZINC

Building owners and architects are increasingly turning to zinc for its long, maintenance-free life and adaptability to various design styles ranging from traditional to modern.

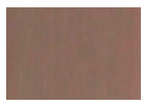
Material width: 670, 1000mm
Max panel width: 630, 960mm

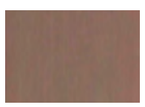

Quartz


Anthra


Pigmento Blue


Pigmento Green


Pigmento Red


Pigmento Brown

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Natural Anodised


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Anolok® 543 Umber

Anolok® 545 Dark Umber

Anolok® 547 Bronze

Anolok® 549 Dark Bronze

Anolok® 54B Black

Sandalor® 100-1

Sandalor® 130-0

Sandalor® 150-2

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Material width: 1000, 1250, 1500mm

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Metallic Bronze

Metallic Gold

Metallic Dark Titanium

Design Dark Granite

Design Terracotta

Design Terra Sand

Wood Colonial Red

Chameleon Silver Gold

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We manufacture all our products to the highest quality standard, operating a BSI accredited Quality Management System in compliance with the requirements of ISO 9001. Our products are manufactured from the highest-quality materials from our approved supply chain, using state-of-the-art production equipment which is rigorously controlled through inspection and testing at each production stage. Our products are designed and manufactured in accordance with all related and prevailing standards.

FS 581452

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Appendix E: Noise impact assessment

Noise Impact Assessment

Site Address: The Burlington Hotel, Marine Parade, Worthing, BN11 3QL

Client Name: MTC Planning & Design Ltd.

Project Reference No: NP-010704-2

Authorisation and Version Control		
Revision	**Reported By**	**Checked By**
02	M. Caley, MSc, MIOA & R. Whitfield, MSc, AMIOA	M. Caley, MSc, MIOA

Amendment History		
Revision	**Date**	**Summary of Amendments**
01	24/07/2024	Original acoustic assessment (ref. NP-010704) updated to include noise emissions from the kitchen extraction and supply systems.
02	06/08/2024	Assessment updated to include further information regarding adjacent noise-sensitive receptors.

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1. Introduction

NOVA Acoustics Ltd has been commissioned to provide a noise impact assessment for the installation of fixed plant ('the Proposed Development') at The Burlington Hotel, Marine Parade, Worthing, BN11 3QL ('the Site').

The applicant is preparing to submit a planning application to Worthing Borough Council (the Local Planning Authority, 'LPA'). This report has been prepared to accompany the planning application.

A noise survey has been undertaken to establish the prevailing background sound levels at the closest Noise Sensitive Receptors ('NSRs'). This report details the existing background sound climate and the noise emissions associated with the proposed development.

This noise assessment is necessarily technical in nature; therefore, a glossary of terms is included in Appendix A to assist the reader.

1.1 Standards, Legislation, Policy & Guidance

The following performance standards, legislation, policy, and guidance have been considered to ensure good acoustic design in the assessment:

- National Planning Policy Framework (2023)
- Noise Policy Statement for England (2010)
- British Standard BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound'

Further information on the legislation can be found in Appendix B.

1.2 Proposal Brief

The proposal is for the installation of a roof mounted solar energy conversion system, and kitchen extraction / supply systems. The proposed layouts of the PV and kitchen extraction systems are shown in the figures below.

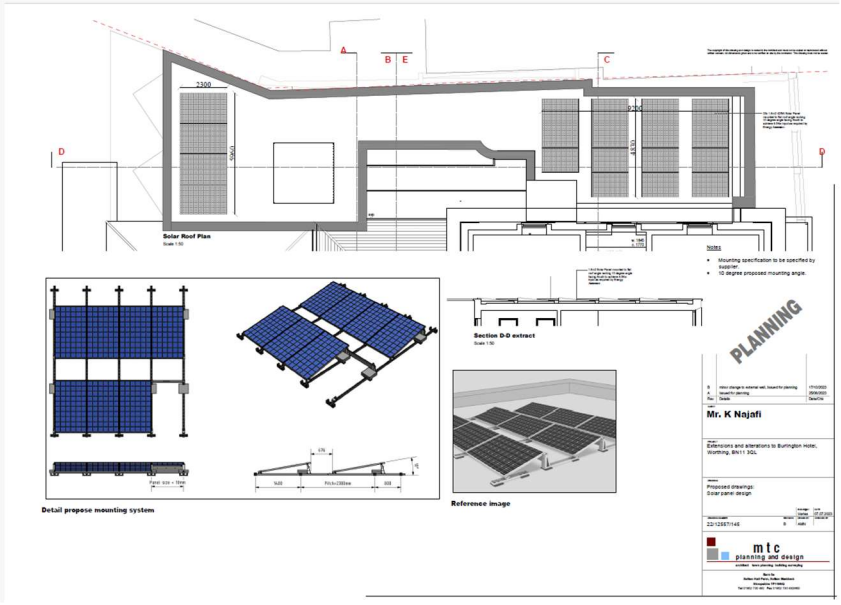

Figure 1 – PV Panel Layout

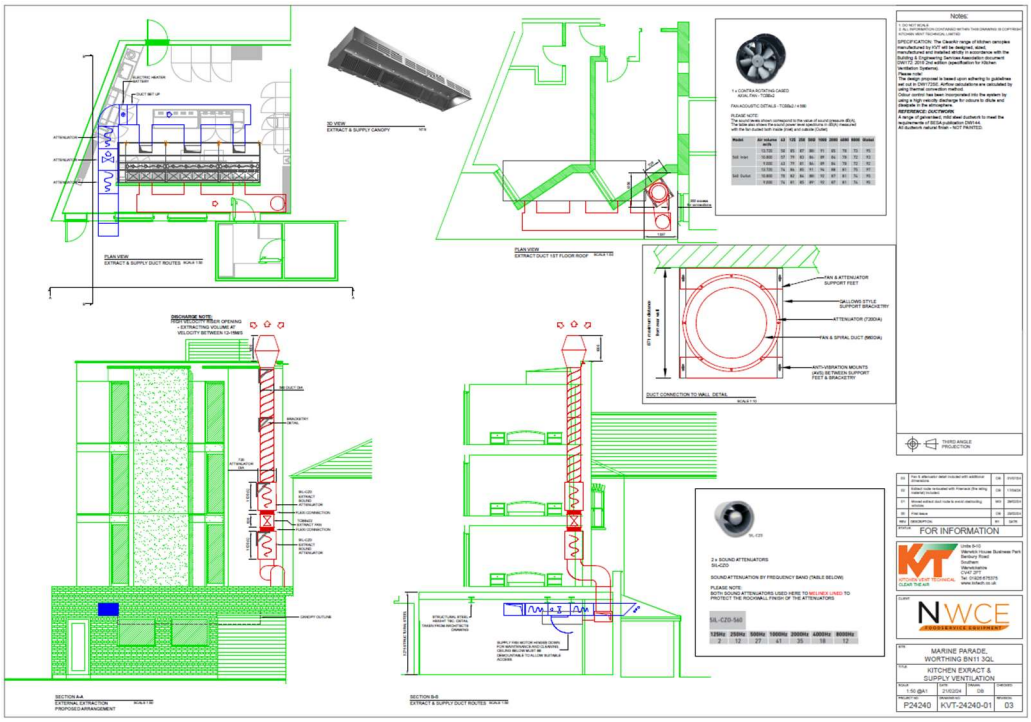

Figure 2 – Kitchen Extraction and Supply Layout

It is expected that the extraction and supply systems will operate during the opening times of the kitchen exclusively, which are as follows:

- 7:00 – 10:00 hours for breakfast servings.
- 12:00 – 21:00 hours for lunchtime, afternoon functions, and evening servings.

2. Environmental Noise Survey

2.1 Measurement Methodology

The following table outlines the measurement dates and particulars. Weather conditions recorded during the environmental sound survey and details of the surveying equipment used can be found in Appendix D.

Location	Survey Dates	Measurement Particulars
MP1	07/02/2024 – 08/02/2024	Equipment mounted on a tripod on the flat roof of the proposed development site. The microphone was positioned approximately 1.5m above the roof and at least 1.5m from any other large reflective surface. A 130mm diameter windshield was fitted to the microphone. The equipment was field calibrated before and after the survey; negligible drift was noted. Appropriate façade corrections have been applied to the measurement results.

Table 1 – Measurement Methodology

The figure below outlines the site surroundings and measurement locations:

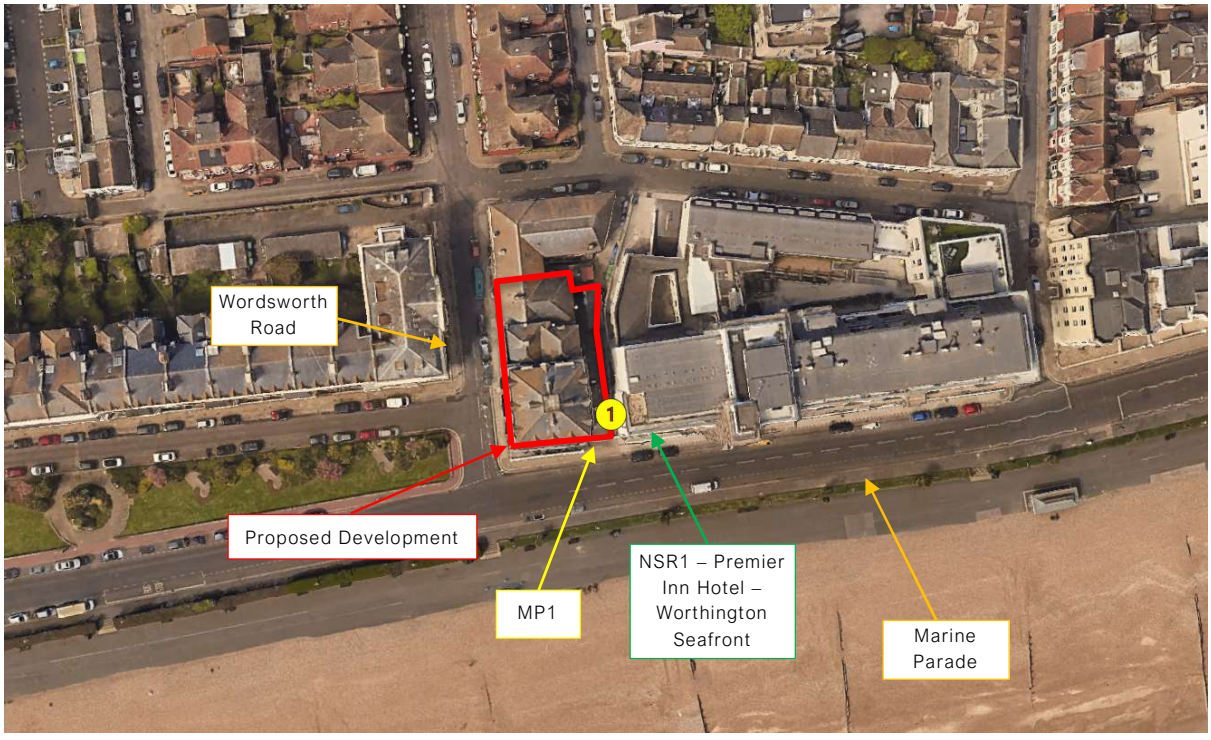

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Figure 3 – Measurement Locations and Site Surroundings

2.2 Context & Subjective Impression

The proposed development site is located at the intersection of Wordsworth Road and Marine Parade, overlooking the English Channel. The immediate surrounding area consists primarily of residential buildings, and the closest NSR (NSR1) is the neighbouring 'Premier Inn' hotel (Worthington Seafront), situated approximately 3m to the east of the site. The area is relatively busy, and the noise profile is dominated by road traffic noise emissions.

2.3 Environmental Noise Survey Results

Background Sound Level Analysis

The following section outlines the measured background sound levels that have been used as the baseline for the subsequent BS4142 noise assessment. The figures below show histogram graphs of the background sound levels measured during both the daytime and night-time periods. The time history results can be found in Appendix D.

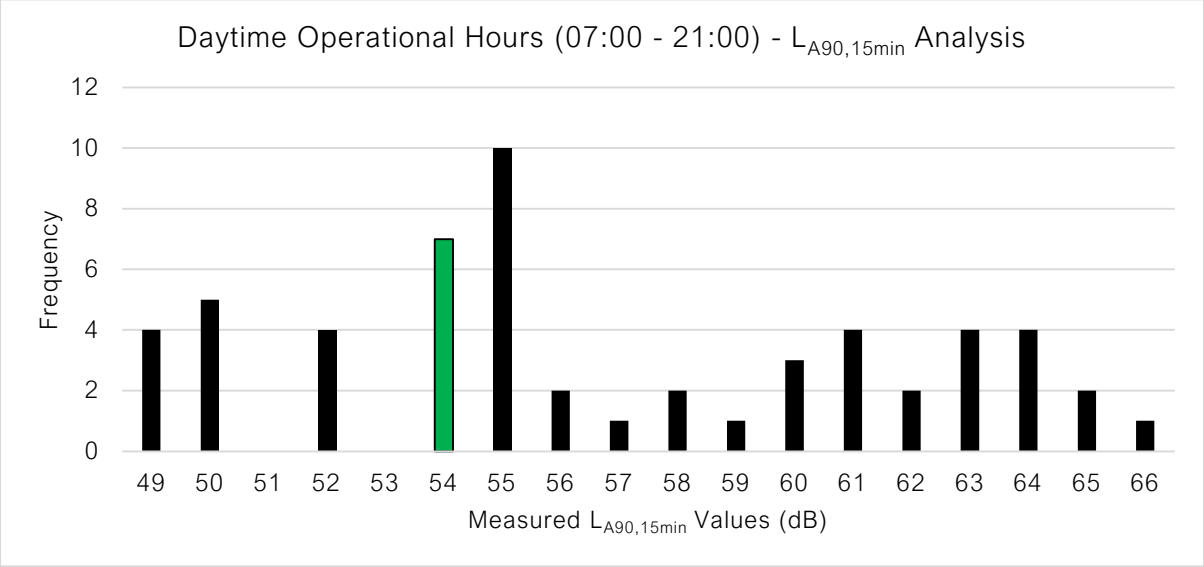


Figure 4 – MP1 Background Sound Level Analysis – Daytime

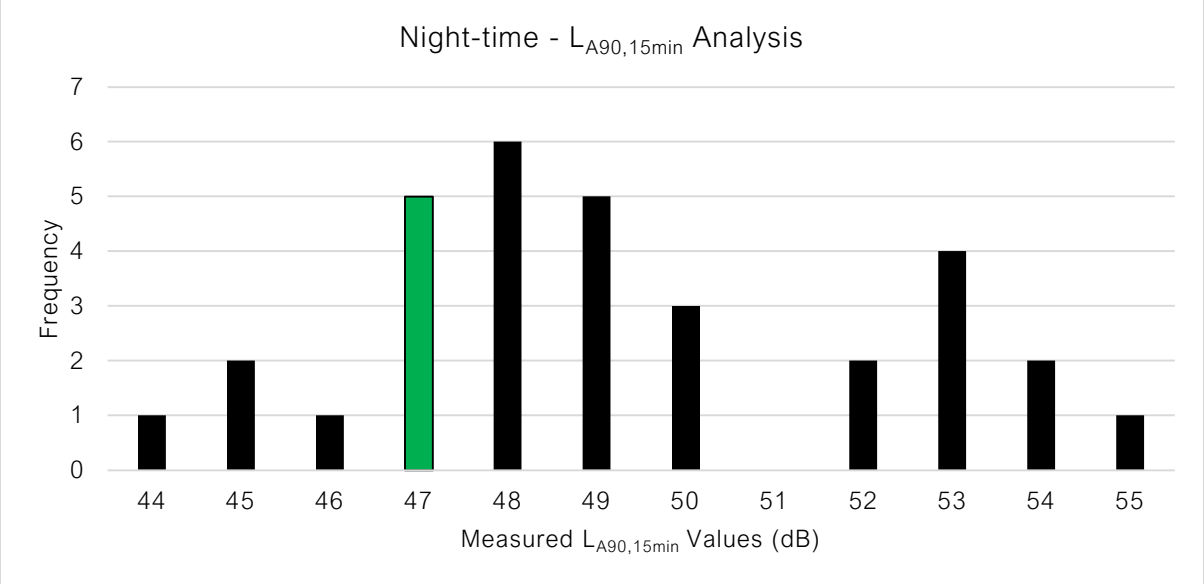


Figure 5 – MP1 Background Sound Level Analysis – Night-time

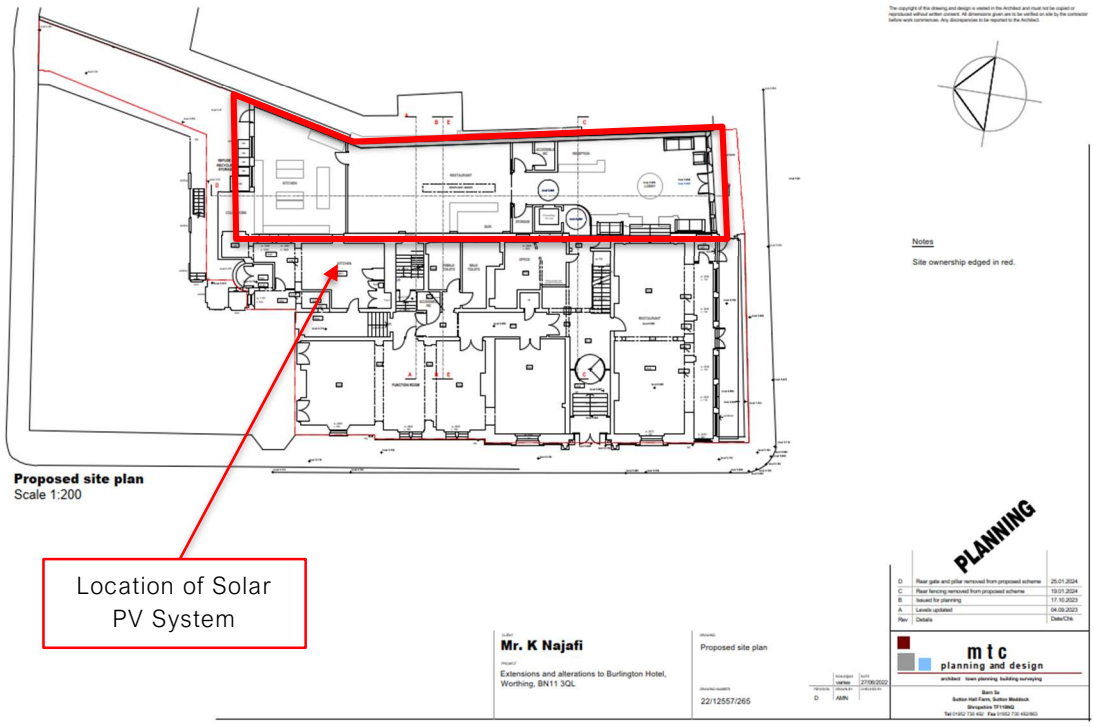
As can be seen in the figures above, the modal $L_{A90,15min}$ values measured during the daytime and night-time periods are 55 dB and 48 dB, respectively. However, to present a robust assessment, values of **54 dB** and **47 dB** are deemed to be the 'lowest typical' background noise levels and will be used in the subsequent assessment.

3. BS4142 Noise Impact Assessment

3.1 Photo Voltaic System

It is intended that 'Trina 430' PV panels are installed with a 'Solis-3P8K-S5 inverter'. It is assumed that certain aspects of the system, such as the inverter and battery storage elements could operate 24-hours a day (depending on demand).

The figure below shows the location of the PV panels.



Drawing Ref No. 22/12557/265 - D from 'MTC Planning and Design'

Figure 6 – Proposed Development Location

The PV panel supplier has stated that the only noise generating element of the system is the inverter (Solis-3P8K-S5). It is shown in the datasheet for the inverter (found in Appendix E) that the unit noise emissions have been measured at less than **30 dBA**. Whilst the measurement distance is not specified, in the experience of NOVA Acoustics, measurements for domestic equipment such as this are generally taken at a distance of either 1m or 3m. Given that the lowest typical background noise level during the night-time is **47 dBA**, and that the closest NSR is 3m from the site boundary, the specific noise emissions from the inverter are expected to be a minimum of **17 dB** below the background. At this level, the noise emissions are likely to be entirely inaudible at the closest NSRs, and as such, a rating penalty would not be required.

Overall, this assessment result would be classed as **'Low Impact'** when assessed with BS4142, and **'No Observed Effect Level' ('NOEL')** when assessed with the NPSE and NPPF.

3.2 Kitchen Extraction and Supply Systems

It is intended that the following extraction and supply system elements will be installed:

Extraction

- 1no. TCBBx2 / 4 560 fan with 1no. SIL-CZO silencer between the fan and the external terminus.

Supply

- IRT/4-400 B fan with an IAA-400 rectangular silencer between the fan and the external terminus.

The following table shows the 1/1 octave frequency band sound power levels of the system elements that are used in the subsequent calculations. As the supply fan will be located within the building, the breakout noise emissions will not be included in the assessment.

Description	1/1 Octave Frequency Band (Hz, L_W, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
TCBBx2 / 4 560 Extract Fan Outlet	100	102	94	94	94	87	80	76	95
TCBBx2 / 4 560 Extract Fan Breakout [1]	100	97	83	77	74	64	56	52	84
IRT/4-400 B Supply Fan [2]	84	91	83	79	74	70	64	59	82

Notes:

[1] *Fan encased in 0.6mm steel.*

[2] *Shown on the datasheet as 'Working Point 5'.*

Table 2 – Sound Power Levels of Extract and Supply Fans

The following table shows the performance values for the silencers that are intended to be installed within the ductwork.

Description	1/1 Octave Frequency Band (Hz, Insertion Loss, dB)							
	63	125	250	500	1k	2k	4k	8k
Extract Duct Silencer (SIL-CZO)	2 [1]	2	12	27	41	35	18	12
Supply Duct Silencer (IAA-400)	3 [1]	5	12	20	25	23	15	10

Notes:

[1] *Assumed insertion loss value.*

Table 3 – Silencer Insertion Loss Values

3.3 BS4142 Noise Impact Assessment

The BS4142 noise impact assessment is presented in the following table.

The following assumptions are used in the calculations:

- The closest unassociated NSR windows are a minimum of **10m** from the extract and supply system elements, however, in order to provide a robust assessment, the adjacent commercial property (Imperial China Restaurant) will be considered in the assessment.
- The system elements will be located at the following distances from the closest window of the Imperial China Restaurant:
    - Extract ductwork terminus – **9m**.
    - Extract fan – **6m**.
    - Supply ductwork terminus – **5m**.
- Noise from the extraction outlet and breakout noise from the fan casing is expected to propagate with a Q factor of 2 (one reflective plane).
- Noise from the supply outlet is expected to propagate with a Q factor of 4 (two reflective planes).
- As previously stated, the supply fan noise emissions have been calculated using the values for **'Working Point 5'**. If this is not correct, further assessment will be required.
- The operational hours of the extraction and supply systems will be 07:00 – 10:00 hours and 12:00 – 21:00 hours.

Further to the above, it must be ensured that all system elements are located a minimum of **5m** from any associated hotel window.

Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Cumulative Specific Sound Level at Imperial China Restaurant (L_{eq})	77	74	60	54	50	41	38	39	61
Acoustic Feature Correction	In accordance with the subjective method of BS4142, a +4 dB penalty for 'clearly perceptible' tonality has been applied to account for the tonality produced by kitchen extraction / supply systems.								+4
Rating Sound Level at NSR1 ($L_{A,Tr}$)	Specific sound level plus rating penalties.								65
Background Sound Level	$L_{A90,15min}$ shown in Figure 4.								54
Exceedance of L_{A90}	$L_{A,Tr} - L_{A90,15min}$.								**+11**
BS4142 Assessment Outcome	'Significant Adverse Impact, dependent on context'.								
NPPF & NPSE Outcome	'Significant Observed Adverse Effect Level' ('SOAEL').								
Mitigation measures are required to reduce noise impact.									

Table 4 – BS4142 Assessment – Pre-mitigation

3.4 Recommendation & Mitigation Measures

In order to achieve the criteria, it is recommended that the following mitigation measures are implemented:

- The output silencer should be upgraded. The proposed insertion loss values are shown in the table below.

Description	1/1 Octave Frequency Band (Hz, Insertion Loss, dB)							
	63	125	250	500	1k	2k	4k	8k
Recommended Insertion Loss Values	4	8	15	30	35	35	20	10

Table 5 – Proposed Silencer Insertion Loss Values

The system designer (KVT) has stated that a silencer has now been specified that can achieve this level of attenuation. Datasheets are available from the manufacturer upon request.

- An enclosure should be installed around the extraction fan that can provide the following insertion loss values:

Description	1/1 Octave Frequency Band (Hz, Insertion Loss, dB)							
	63	125	250	500	1k	2k	4k	8k
Recommended Insertion Loss Values	6	10	10	10	10	10	10	10

Table 6 – Proposed Enclosure Insertion Loss Values

It is understood that the extraction fan will be located within a chimney structure. Providing the chimney is constructed from 0.6mm steel / aluminium and the fan is fully covered with 50mm mineral wool insulation (min. density 10kg/m^3), the insertion loss values should be achieved.

The BS4142 assessment considering the effects of the mitigation can be seen in the table below.

Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Cumulative Specific Sound Level at Imperial China Restaurant (L_{eq})	71	65	52	45	41	33	35	40	52
Acoustic Feature Correction	In accordance with the subjective method of BS4142, a +2 dB penalty for 'just perceptible' tonality has been applied to account for the tonality produced by kitchen extraction / supply systems.								+2
Rating Sound Level at NSR1 ($L_{A,Tr}$)	Specific sound level plus rating penalties.								54
Background Sound Level	$L_{A90,15min}$ shown in Figure 4.								54
Exceedance of L_{A90}	$L_{A,Tr} - L_{A90,15min}$.								0
BS4142 Assessment Outcome	'Low Impact, dependent on context'.								
NPPF & NPSE Outcome	'No Observed Adverse Effect Level' ('NOAEL').								
Mitigation measures are not required.									

Table 7 – BS4142 Assessment – Post-mitigation

4. Conclusion

The development has been assessed against the requirements of BS4142 and the LPA's policies and guidance, and a mitigation scheme has been provided to ensure the adopted criteria can be achieved.

The following 'Action Plan' is outlined to ensure the design considerations and specifications from this report are duly implemented:

- The silencer located between the extraction fan and the output terminus should be upgraded to provide the insertion loss values shown in Table 5. The system designer (KVT) has stated that a silencer has now been specified that can achieve this level of attenuation. Datasheets are available from the manufacturer upon request.
- An enclosure should be installed around the extraction fan that can provide the insertion loss values shown in Table 6. This could be achieved by ensuring the chimney structure surrounding the fan is constructed from a minimum of 0.6mm steel / aluminium and the fan is fully covered with 50mm mineral wool insulation (min. density 10kg/m^3).
- All extraction and supply system elements should be installed a minimum of **10m** from any unassociated residential receptor window and **5m** from any associated window (Burlington Hotel).
- All system elements should be installed at the following distances from the closest window of the Imperial China Restaurant (as a minimum):
    - Extract ductwork terminus – **9m**.
    - Extract fan – **6m**.
    - Supply ductwork terminus – **5m**.

The findings of this report will require written approval from the Local Authority prior to work commencing

Appendix A – Acoustic Terminology

A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure given by the following formula in decibels (dBA). $L_{pA} = 10 \log_{10} (pA/p_0)^2$. Where: pA is the A-weighted sound pressure in pascals (Pa) and $p0$ is the reference sound pressure (20 µPa)
Background Sound	Underlying level of sound over a period, T, which might in part be an indication of relative quietness at a given location
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time
Facade level	Sound pressure level 1m in front of the facade
Free-field level	Sound pressure level away from reflecting surfaces
Noise Criteria	Numerical indices used to define design goals in a given space
Noise Rating (NR)	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves
Octave Band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit
Percentile Level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for N% of a specified time interval
Rating Level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise
Sound Pressure, p	root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound
Sound Pressure Level, L_p	Quantity of sound pressure, in decibels (dB), given by the formula: $L_p = 10\log_{10}(p/p_0)^{2.}$ Where: p is the root-mean-square sound pressure in pascals (Pa) and $p0$ is the reference sound pressure (20 µPa)

Appendix B – Standards, Legislation, Policy, and Guidance

This report is to be primarily based on the following standards, legislation, policy and guidance.

B.1 – National Planning Policy Framework (2023)

Government policy on noise is set out in the National Planning Policy Framework (NPPF), published in 2023. This replaced all earlier guidance on noise and places an emphasis on sustainability. In section 15, Conserving and enhancing the natural and local environment, paragraph 180e, it states:

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

Paragraph 191 states:

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) *Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.*
b) *Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
c) *Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes, and nature conservation.*

B.2 – Noise Policy Statement for England (2010)

Paragraph 191 of the NPPF also refers to advice on adverse effects of noise given in the Noise Policy Statement for England (NPSE). This document sets out a policy vision to:

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

To achieve this vision the Statement identifies the following three aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

1) Avoid significant adverse impacts on health and quality of life.
2) Mitigate and minimise adverse impacts on health and quality of life.
3) Where possible, contribute to the improvement of health and quality of life.

In achieving these aims the document introduces significance criteria as follows:

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It is stated that *"significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development".*

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected. It is stated that the second aim refers to the situation where impact lies somewhere between LOAEL and SOAEL and requires that: *"all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also considering the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur."*

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. This can be related to the third aim above, which seeks: *"where possible, positively to improve health and quality of life through the pro-active management of noise while also considering the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim"*.

This is further expanded using the updated "Noise Exposure Hierarchy Table" which includes an additional level of impact referred to as the 'No Observed Adverse Effect Level' ('NOAEL'). It is stated that at this level: *"noise can be heard, but does not cause any change in behaviour, attitude or other physiological response"*. In addition, noise at this level *"can slightly affect the acoustic character of the area but not such that there is a change in the quality of life".*

The NPSE recognises that it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations and provides no guidance as to how these criteria should be interpreted. It is clear, however, that there is no requirement to achieve noise levels where there are no observable adverse impacts but that reasonable and practicable steps to reduce adverse noise impacts should be taken in the context of sustainable development and ensure a balance between noise sensitive and the need for noise generating developments.

Any scheme of noise mitigation outlined in this report will, therefore, aim to abide by the above principles of the NPPF and NPSE whilst recognising the constraints of the site.

B.3 – BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound'.

Overview

BS4142 sets out a method to assess the likely effect of sound from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises, on people who might be inside or outside a dwelling or premises used for residential purposes in the vicinity.

The procedure contained in BS4142 for assessing the effect of sound on residential receptors is to compare the measured or predicted sound level from the source in question, the $L_{Aeq,T}$ 'specific sound level', immediately outside the dwelling with the $L_{A90,T}$ background sound level.

Where the sound contains a tonality, impulsivity, intermittency, and other sound characteristics, then a correction depending on the grade of the aforementioned characteristics of the sound is added to the specific sound level to obtain the $L_{Ar,Tr}$ 'rating sound level'. A correction to include the consideration of a level of uncertainty in sound measurements, data and calculations can also be applied when necessary.

Rating Penalty

Section 9 of BS4142 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS4142 states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

a) subjective method.
b) objective method for tonality.
c) reference method."

Due to the nature of the development the subjective method has been adopted to derive the rating sound level from the specific sound level. This is discussed in Section 9.2 of BS4142, which states:

"Where appropriate, establish a rating penalty for sound based on a subjective assessment of its characteristics. This would also be appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed. Correct the specific sound level if a tone, impulse, or other characteristics occurs, or is expected to be present, for new or modified sound sources."

BS4142 defines four characteristics that should be considered when deriving a rating penalty, namely, tonality; impulsivity; intermittency; and other sound characteristics, which are defined as:

a) *Tonality*

A rating penalty of +2dB is applicable for a tone which is "just perceptible", +4dB where a tone is "clearly perceptible", and +6dB where a tone is "highly perceptible".

b) Impulsivity

A rating penalty of +3dB is applicable for impulsivity which is "just perceptible", +6dB where it is "clearly perceptible", and +9dB where it is "highly perceptible".

c) Other Sound Characteristics

BS4142 states that where "the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distance against the residual acoustic environment, a penalty of +3dB can be applied."

d) Intermittency

BS4142 states that when the "specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time … if the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied."

Background Sound Level

The background sound level is the underlying level of sound over a period, T, and is indicative of the relative quietness at a given location. It does not reflect the occurrence of transient and/or higher sound level events and is generally governed by continuous or semi-continuous sounds.

To ensure the background sound level values used within the assessment are reliable and suitably represent both the particular circumstance and periods of interest, efforts have been made to quantify a 'typical' background sound level for a given period. The purpose has not been to simply select the lowest measured value. Diurnal patterns have also been considered as they can have a major influence on background sound levels, for example, the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes.

Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound.

Assessment of Impact

BS4142 states: "The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs". An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

- "Typically, the greater this difference, the greater the magnitude of the impact."
- "A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."
- "A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."

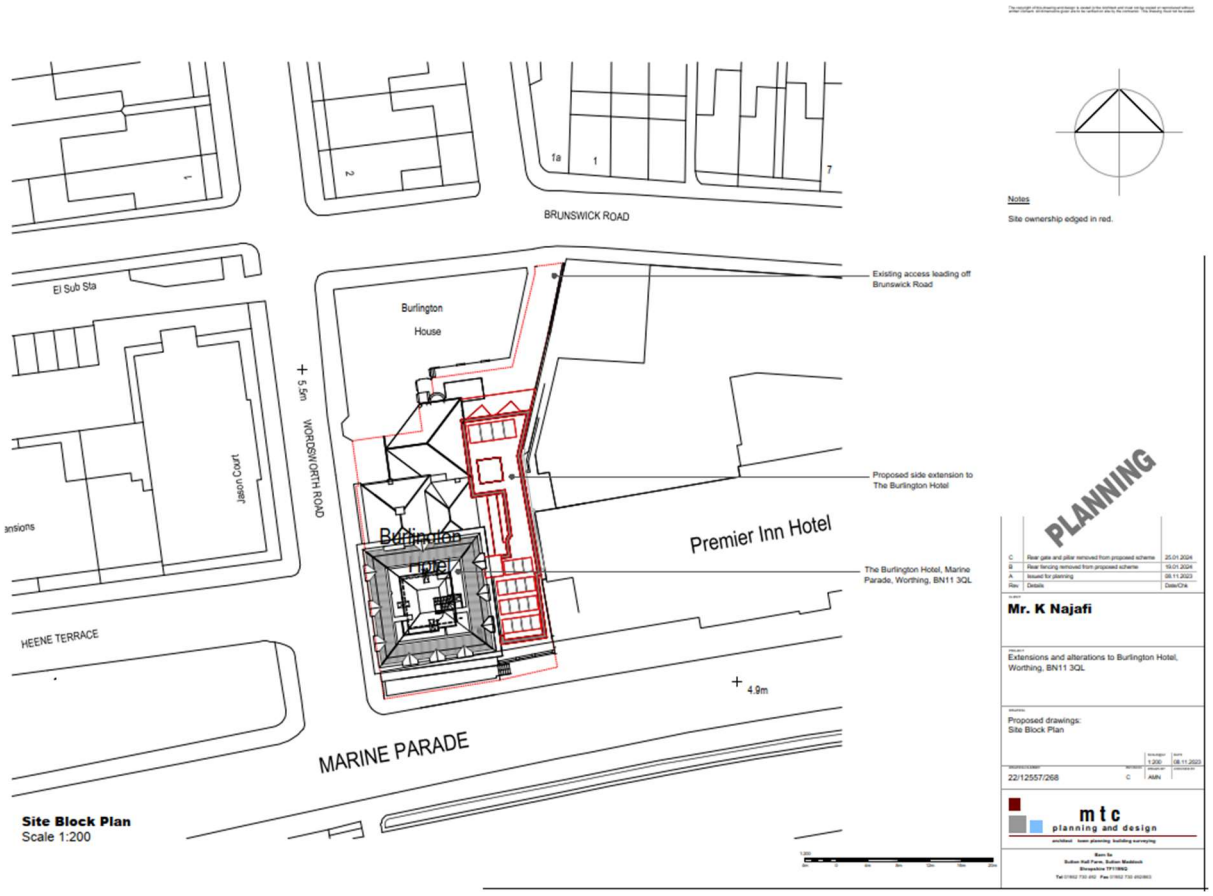
- "The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

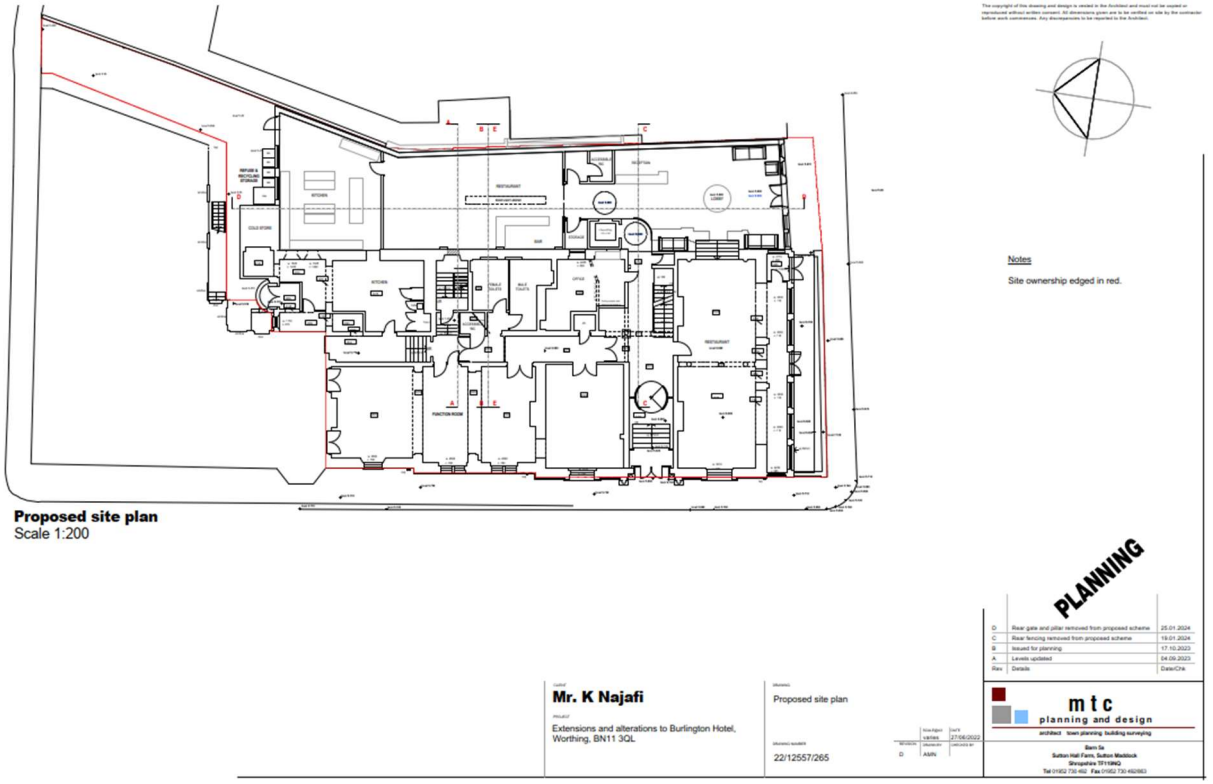
Interpreting the guidance given in BS4142, with consideration of the guidance given in the NPSE and NPPG Noise, an estimation of the impact of the rating sound is summarised in the following text:

- A rating sound level that is +10dB above the background sound level is likely to be an indication of a 'Significant Observed Adverse Effect Level'.
- A rating sound level that is +5dB above the background sound level is likely to be an indication of a 'Lowest Observed Adverse Effect Level'.
- The lower the rating sound 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 sound level does not exceed the background sound level, this is an indication of the specific sound source having a low impact and would therefore classify as 'No Observed Adverse Effect Level'.
- At levels significantly below the measured background sound level (i.e. greater than 10dB), this is an indication of a 'No Adverse Effect Level'.

During the daytime, the assessment is carried out over a reference time period of 1-hour. The periods associated with day or night, for the purposes of the Standard, are 07.00 to 23.00 and 23.00 to 07.00, respectively.

Appendix C – Location and Site Plans





Appendix D – Environmental Survey

D.1 – Time History Noise Data

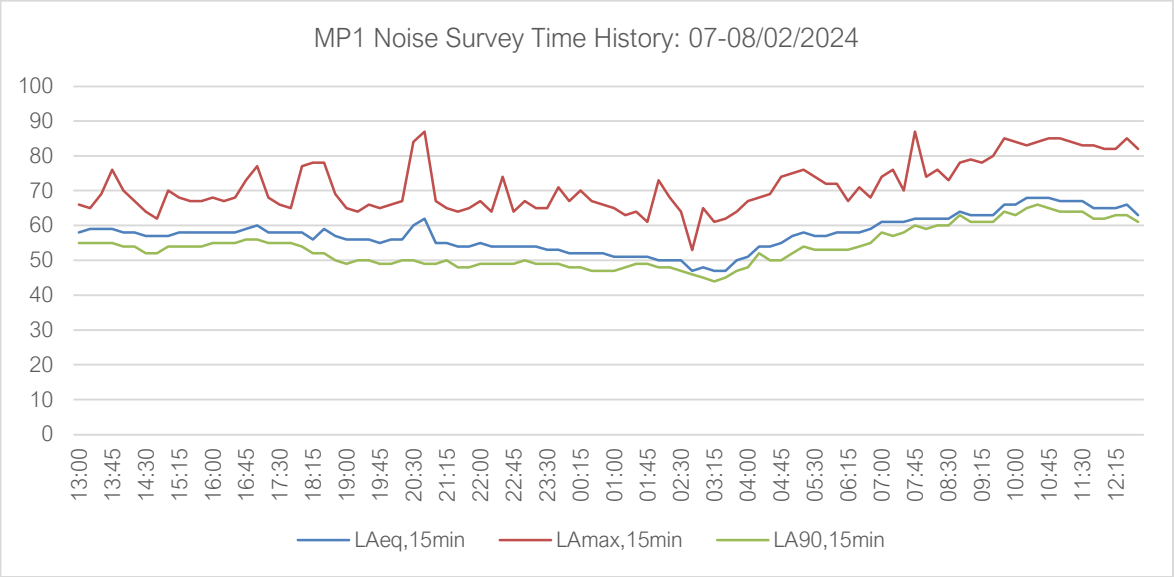


Figure 7 – MP1 Noise Survey Time History

D.2 – Surveying Equipment

Piece of Equipment	Serial No.	Calibration Deviation
CESVA SC420 Class 1 Sound Level Meter	T244499	≤0.1
CESVA CB006 Class 1 Calibrator	902441	

Table 8 – Surveying Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with negligible deviation noted. All sound level meters are calibrated every 24 months, and all calibrators are calibrated every 12 months by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period. Calibration certificates can be provided upon request.

D.3 – Meteorological Conditions

As the environmental noise survey was carried out over a long un-manned period no localised records of weather conditions were taken. However, all measurements have been compared with met office weather data of the area, specifically the closest weather station, and the data from the weather station is outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially to be affected by the local weather conditions have been omitted. The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The table below presents the average temperature, wind speed and rainfall range for each 24-hour period during the entire measurement.

Weather Conditions – Graham Road, Worthing (Approx. 536m NE of Site)				
Time Period	Air Temp (°C)	Rainfall (mm/h)	Prevailing Wind Direction	Wind Speed (m/s)
07/02/2024: 00:00 – 23:59	5.6 – 10.5	0.0 – 2.5	E	0.0 – 7.7
08/02/2024: 00:00 – 23:59	5.8 – 10.9	0.0 – 2.5	SSE	1.6 – 8.1

Table 9 – Weather Conditions

Appendix E – Manufacturers' Datasheets

3P 4G

8kW

4G NEW



Solis 3P 4G Three Phase Inverter

- Solis 4G Three Phase Range
- 160V-850V MPPT voltage range-ultra low startup
- Dual MPPT design with precise MPPT algorithm
- THDi<1.5%, low harmonic distortion against grid
- Over 98.7% Max.efficiency
- RS485, WiFi/LAN/GPRS (optional) interface
- Multiple protections levels
- WiFi monitoring available-iphone and android app available
- 5 years standard warranty, 20 years optional upgrade

Model:

Solis-3P8K-4G

Features:

THDi	IP65	160-850	AFCI	WiFi/GPRS	App Store
<2%		MPPT voltage range	Optional	Real time monitoring	App Store

Datasheet

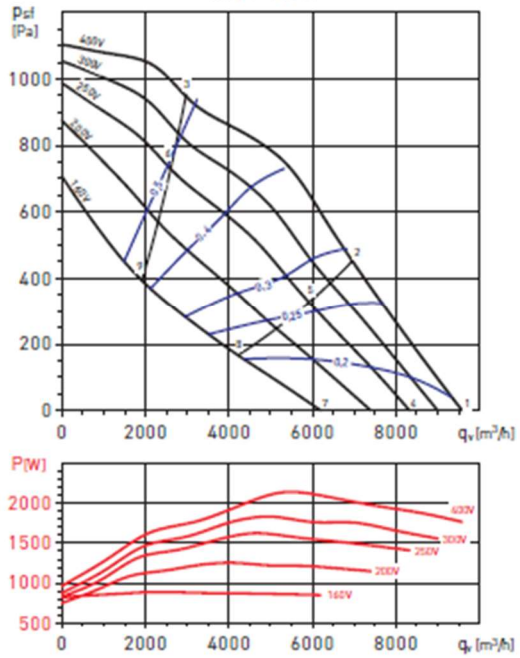
Model	Solis-3P8K-4G
Energy Source	PV
Input Side(DC)	
Max. DC input power(kW)	9.6
Max. DC input voltage(V)	1000
Start-up voltage(V)	180
MPPT voltage range(V)	160-850
Max. input current per MPPT(A/B)	11A+11A
MPPT number/Strings per MPPT input	2 / A:1; B:1
Output Side (AC)	
Rated output power(kW)	8
Max. apparent output power(kVA)	8.8
Max. output power(kW)	8.8
Rated grid voltage(V_{ac})	400
Grid voltage range(V)	313-470
Rated grid frequency(Hz)	50/60
Operation phase	three
Rated grid output current(A)	11.5
Max. output current(A)	13.4
Power Factor (at rated output power)	0.8 leading ... 0.8 lagging
THDI (at rated output power)	<2%
DC injection current	<0.5%In
Grid frequency range(Hz)	47-52 or 57-62
Efficiency	
Max.efficiency	98.7%
EU efficiency	98.1%
MPPT efficiency	>99.5%
Protection	
DC reverse-polarity protection	Yes
Short circuit protection	Yes
Output over current protection	Yes
Output over voltage protection	Yes
Insulation resistance monitoring	Yes
Residual current detection	Yes
Surge protection	Yes
Islanding protection	Yes
Temperature protection	Yes
Integrated DC switch	Optional
General Data	
Dimensions(mm)	310W*538H*158D
Weight(kg)	14.1
Topology	Transformerless
Self consumption (night)	<1W(Night)
Operating ambient temperature range	-25~60℃
Ingress protection	IP65
Noise emission(typical)	<30 dBA
Cooling concept	Natural convection
Max.operation altitude	4000m
Designed lifetime	>20 years
Grid connection standard	EN50438, G59/3, AS4777, VDE0126-1-1, IEC61727, VDE N4105
Relative humidity	0~100%
Safety/EMC standard	IEC62109-1/-2, AS3100
Features	
DC connection	MC-4 matable
AC connection	IP67 rated plug
Display	LCD,2*20 Z.
Communication connections	4 pins RS485 connector
Warranty	5 years standard (extend to 20 years)

IN-LINE RECTANGULAR DUCT FANS
IRB-IRT Series

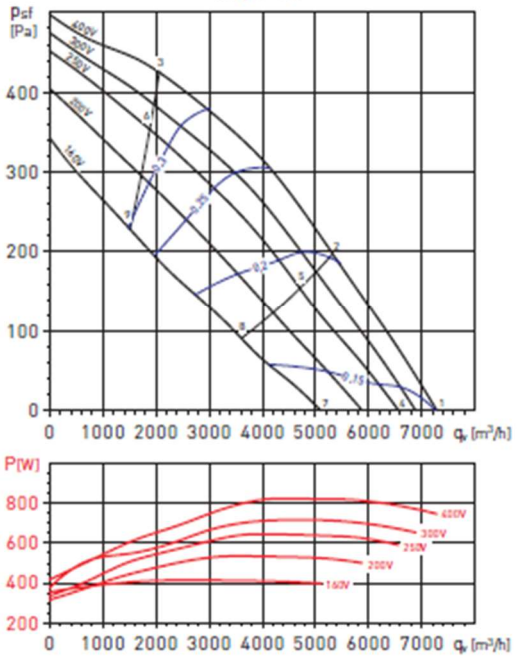
PERFORMANCE CURVES

- q_v: Airflow in m³/h.
- p_{sf}: Static pressure in Pa.
- SFP: specific fan power in W/m³/h (blue curves).
- P: Input power in W.
- Performance data in accordance with ISO 5801.

IRT/4-400 B



IRT/6-400



Sound power level spectrums in dB(A)

Working point		63	125	250	500	1.000	2.000	4.000	8.000	LwA
1	Inlet	66	80	83	87	85	83	75	70	91
	Outlet	62	85	89	93	93	89	81	75	98
	Radiated	62	72	73	78	72	69	62	56	81
2	Inlet	61	78	78	81	79	76	70	63	86
	Outlet	59	80	83	87	87	80	73	66	92
	Radiated	57	70	68	72	66	62	56	49	76
3	Inlet	62	76	75	78	76	73	68	62	83
	Outlet	62	77	81	84	84	77	71	66	89
	Radiated	58	68	65	70	63	59	54	48	74
4	Inlet	64	79	79	83	81	79	71	65	88
	Outlet	61	82	85	89	89	85	76	70	94
	Radiated	60	73	70	75	69	65	58	51	78
5	Inlet	58	75	73	76	74	71	65	58	82
	Outlet	56	76	80	82	82	74	67	61	87
	Radiated	54	69	63	68	62	57	52	44	73
6	Inlet	60	73	71	74	72	69	64	58	79
	Outlet	59	73	77	80	79	73	66	61	84
	Radiated	56	66	62	65	59	55	50	44	70
7	Inlet	62	74	71	75	72	68	63	54	80
	Outlet	58	76	78	80	80	74	67	60	85
	Radiated	58	67	61	66	60	54	50	40	71
8	Inlet	57	69	64	67	64	60	54	46	73
	Outlet	57	74	71	72	71	64	57	51	79
	Radiated	53	62	55	58	51	46	42	33	64
9	Inlet	56	64	62	65	62	60	55	47	70
	Outlet	55	67	68	71	70	64	58	53	76
	Radiated	52	57	52	56	50	46	42	34	61

Sound power level spectrums in dB(A)

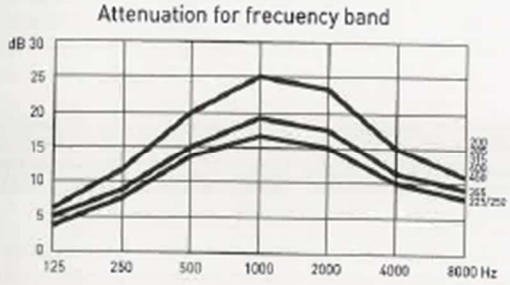
Working point		63	125	250	500	1.000	2.000	4.000	8.000	LwA
1	Inlet	63	76	75	77	76	73	66	59	83
	Outlet	62	78	81	84	85	78	71	64	89
	Radiated	60	67	67	67	63	60	51	63	73
2	Inlet	57	72	70	72	70	66	60	53	78
	Outlet	57	73	77	79	78	71	64	58	84
	Radiated	55	64	62	62	57	54	45	56	68
3	Inlet	60	70	67	69	66	64	59	53	75
	Outlet	58	70	72	75	74	67	61	55	79
	Radiated	57	61	58	59	53	51	44	57	66
4	Inlet	63	75	73	74	73	69	63	54	80
	Outlet	62	78	78	81	81	74	68	60	86
	Radiated	61	64	63	62	59	54	48	38	69
5	Inlet	57	70	67	68	66	62	56	49	74
	Outlet	59	73	73	75	74	67	60	54	80
	Radiated	55	60	58	56	52	48	41	33	64
6	Inlet	56	66	64	66	64	61	56	50	72
	Outlet	56	69	69	71	70	64	58	52	76
	Radiated	54	56	55	54	50	47	41	34	61
7	Inlet	61	65	66	67	65	61	57	46	73
	Outlet	59	67	72	74	74	66	62	52	79
	Radiated	59	51	57	55	51	47	41	31	63
8	Inlet	54	59	61	61	58	55	48	40	66
	Outlet	53	61	66	68	66	59	53	46	72
	Radiated	52	45	52	48	44	40	33	25	57
9	Inlet	53	57	58	59	57	55	49	41	65
	Outlet	52	59	63	65	64	57	51	45	69
	Radiated	51	43	49	47	43	40	34	26	55

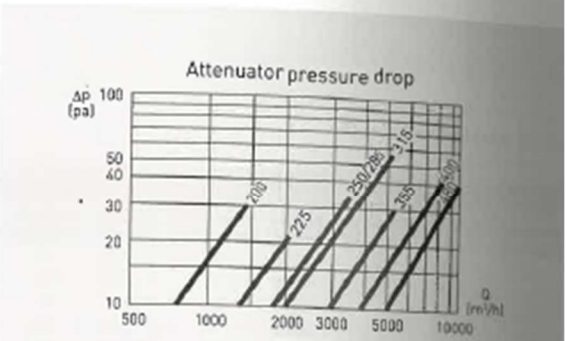
MOUNTING ACCESSORIES
Air vents (Air inlets)



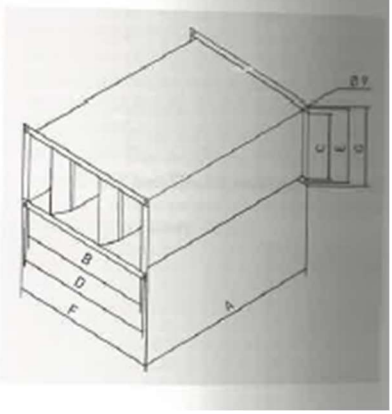
IAA

Sound attenuators
Designed to reduce in-duct sound levels.
All models are designed in 1m length.





Model	A	B	C	D	E	F	G	Weight (kg)
IAA-200	1000	400	200	420	220	440	240	18,6
IAA-225	1000	500	250	520	270	540	290	23,0
IAA-250	1000	500	300	520	320	540	340	23,0
IAA-285	1000	600	300	620	320	640	340	28,2
IAA-315	1000	600	350	620	370	640	390	30,0
IAA-355	1000	700	400	720	420	740	440	34,6
IAA-400	1000	800	500	820	520	840	540	44,2
IAA-450	1000	1000	500	1020	520	1040	540	56,0





1 x CONTRA ROTATING CASED
AXIAL FAN - TCBBx2

FAN ACOUSTIC DETAILS - TCBBx2 / 4 560

PLEASE NOTE:
The sound levels shown correspond to the value of sound pressure dB(A),
The table also shows the sound power level spectrums in dB(A) measured with the fan ducted both inside (inlet) and outside (Outlet)

Model	Air volume m³/h	63	125	250	500	1000	2000	4000	8000	Global
560 Inlet	13.720	50	85	87	88	91	85	78	73	95
	10.800	57	79	83	86	89	84	78	72	93
	9.000	63	79	81	86	89	84	78	72	92
560 Outlet	13.720	74	86	85	91	94	88	81	75	97
	10.800	70	82	84	88	92	87	81	74	95
	9.000	74	81	85	89	92	87	81	74	95



SIL-CZO

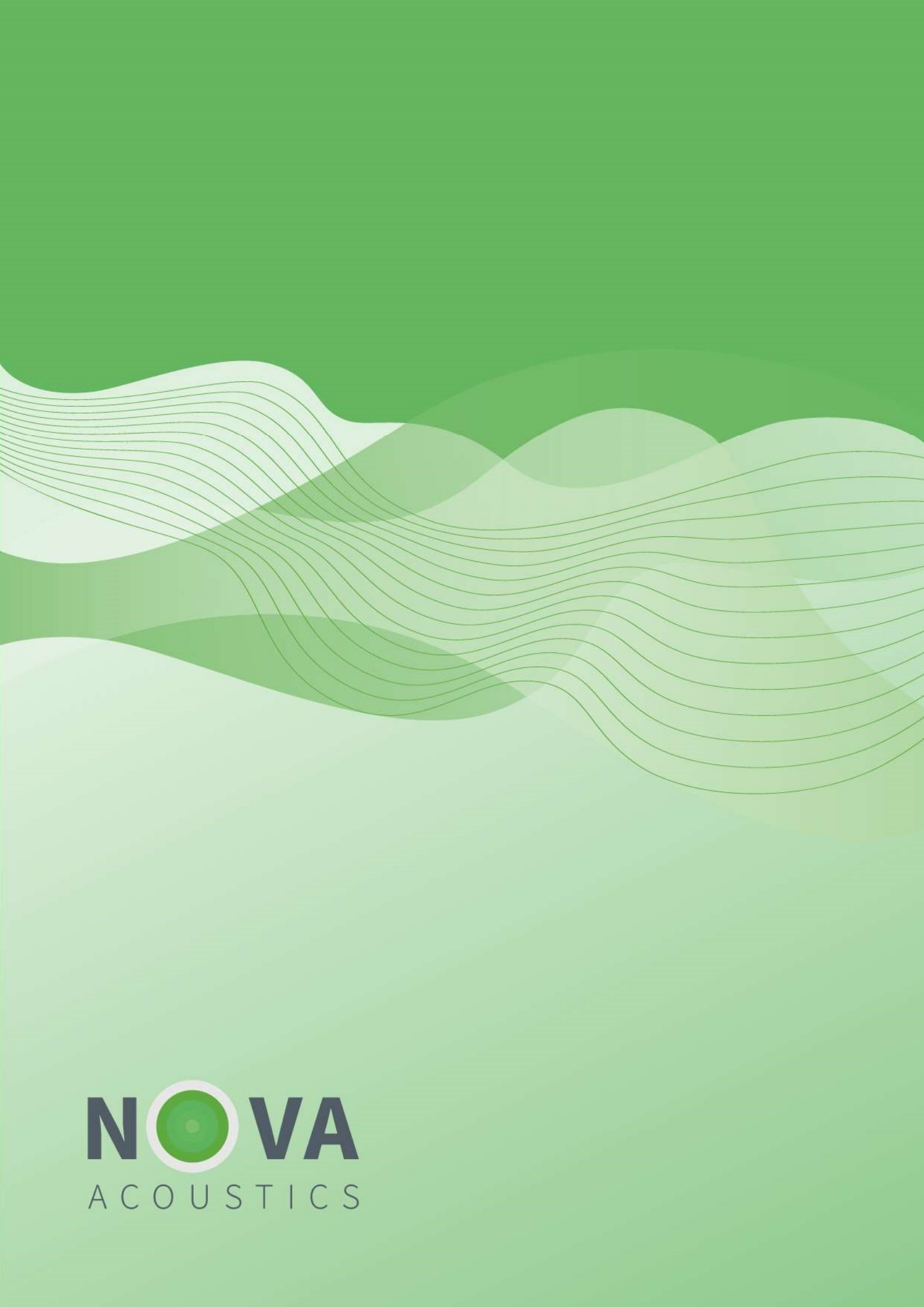
2 x SOUND ATTENUATORS
SIL-CZO

SOUND ATTENUATION BY FREQUENCY BAND (TABLE BELOW)

PLEASE NOTE:
BOTH SOUND ATTENUATORS USED HERE TO MELINEX LINED TO PROTECT THE ROCKWALL FINISH OF THE ATTENUATORS

SIL-CZO-560

125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
2	12	27	41	35	18	12


NOVA
ACOUSTICS