

Travellers Lane
Hatfield
Herts
AL10 8XB

Grafton Rd
London NW5 4AT

5 October, 2023

Dear Undercurrent Architects,

RE: Ecodan Installation at Grafton Rd, London NW5 4AT

Thank you for requesting Pre-Sales Support to provide you with a proposal for the Installation of an Ecodan Heat Pump. We have pleasure in enclosing our proposal for the work which includes:

- Whole House Report
- Energy Performance Estimation

The covering letter will provide your client with an introduction to your company and the report. A contents list including and some general information can also be generated. This last paragraph should be personalised to your own need. We recommend you generate a report look at the covering letter and consider what changes you'd like to make and carry those out here.

Yours Faithfully

Pre-Sales Support

The Renewable Solutions Provider
Making a World of Difference

Heating

Project Reference Number
f80494fc

Proposal Reference
Barrington Court



Air Conditioning | Heating
Ventilation | Controls



| | |
|----------------------------------|---|
| Whole House | 3 |
| Ecodan Selection - PUZ-WM85VAA | 4 |
| Hot Water Report-EHPT21X-UKHDW1L | 5 |

This whole house calculation provides an approximation of the space heating load and run cost for the dwelling. It uses the following general data for the building which have been inputted:

Indoor - Outdoor delta T (°C)
22.82

Approximate Space Heating Run Cost (£/pa)
875

Peak heat loss at design
temperature (kW)
6.15

Approximate Space Heating CO2 Emissions
(kg CO₂ pa)
1647

Space heating energy requirement
(kWh/pa) 13185



Space heating electrical energy consumption (kWh/pa)
3185

| | |
|---|---|
| Average number of Air Changes per hour | 1 |
| Glazing to Wall Ratio (%) | 25 |
| Number of Roof Lights | 0 |
| Number of External Doors | 2 |
| Space Heating Electricity Cost (p/kWh) | 27.35 |
| Average Indoor Temperature (°C) | 21 |
| Total Floor Area (m ²) | 143 |
| Number of Storeys | 3 |
| Average Storey Height (m) | 2.6 |
| Number of External Walls | 4 |
| U Value Roof Lights (W/m ² K) | Not Applicable |
| U Value Roof (W/m ² K) | Current Building Regulations-2021 Edition. New Elements in New Build (0.16) |
| What is above the roof? | Air |
| U Value Windows (W/m ² K) | Current Building Regulations-2021 Edition. New Elements in New Build (1.6) |
| U Value External Walls (W/m ² K) | Current Building Regulations-2021 Edition. New Elements in New Build (0.26) |
| U Value External Doors (W/m ² K) | Current Building Regulations-2021 Edition. New Elements in New Build (1.6) |
| Ground Floor Type | Solid |
| U Value Ground Floor (W/m ² K) | Current Building Regulations-2021 Edition. New Elements in New Build (0.18) |

Other assumptions about the property :

Based upon the information that has been inputted into the calculation tool, the heat loss of the building has been calculated to be 6.15kW @ -1.82°C. The following unit is recommended for this application

PUZ-WM85VAA



The innovative, stylish and compact single fan monobloc outdoor unit utilises advanced technologies and R32 refrigerant to deliver improved efficiencies. Designed to satisfy domestic premises permitted development standards (MCS020), the market leading low noise levels virtually eliminate the need for planning permission and maximises installation options.

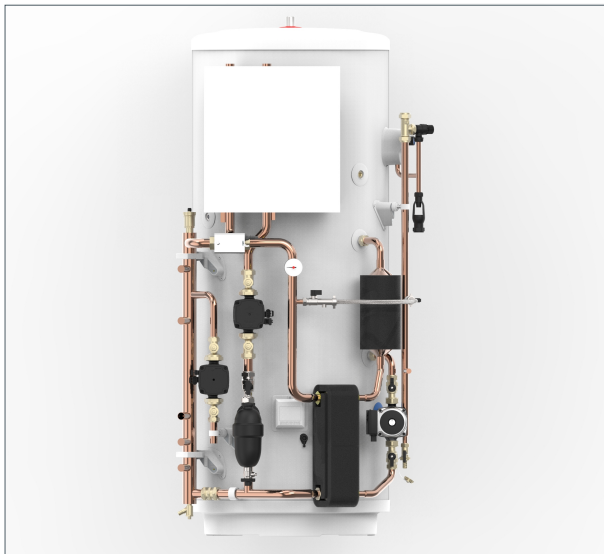
We have calculated the daily hot water demand as 180 litres per day for the dwelling . This is based upon either the number of bedrooms or number of known occupants of the building. The target cylinder storage temperature is 55°C

Hot water calculations:

| | |
|---|------|
| Annual Electrical Consumption in Hot Water Mode (kWh) | 2250 |
| Annual Hot Water Running Cost (£) | 775 |
| Annual Hot Water CO2 Emissions (kg CO2/kWh) | 1163 |
| Number Of Bedrooms | 3 |
| Vd Average Heat Up Time (minutes) | 84 |

The following cylinder has been chosen for your project:

FTC6 Pre-Plumbed 210L Standard Cylinder



| | |
|--------|-----------------|
| Model | EHPT21X-UKHDW1L |
| Litres | 210 |

Immersion heater calculations:

| | |
|--|----|
| Annual Immersion Heater Energy Requirement (kWh) | 55 |
| Annual Immersion Heater Running Cost (£) | 25 |
| Annual Immersion Heater CO2 Emissions (kg CO2/kWh) | 28 |

Notes and assumptions – The hot water calculations include a 10% increase to the energy requirement due to heat loss from the pipework plus a 15% safety factor

MITSUBISHI ELECTRIC SIZING TOOL– TERMS & CONDITIONS OF USE

Please read and confirm your understanding;

Before you access the Sizing Tool you must confirm that you have read and understood the terms and conditions and accept these terms and conditions as binding on you. The terms and conditions include a privacy section which governs our use of your personal data – please see the Privacy section (section 8) below.

1. Access

Access to the Sizing Tool is only for:

- (i) current participants in Mitsubishi Electric's Partner Programme applicable to Ecodan heat pump systems, whether for domestic or commercial application, and
- (ii) housing associations or consultants as expressly authorised by Mitsubishi Electric and in each case who have been issued with valid log-in access permission by Mitsubishi Electric.

Log-in access permission may include a user ID & password to be issued by Mitsubishi Electric upon email request issued from your designated email address.

You will be required to nominate a designated lead user for your company's or business access and usage to receive this access permission. Your designated lead user will be Mitsubishi Electric's sole point of contact for the Sizing Tool. Your designated lead user shall be deemed to have read understood and accepted these terms and conditions on your behalf before your first access and usage.

You acknowledge these terms and conditions may be varied from time to time without prior notice: it is important that you take time to review any changes to these terms and conditions as may be indicated when you seek to access to Sizing Tool. Access shall be deemed as acceptance to the variation.

Your designated lead user is responsible for ensuring that any person accessing the Sizing Tool on your behalf understands and respects the terms and conditions and any variation to these terms and conditions as may be notified to your designated lead user and/or published on this Sizing Tool website from time to time.

You undertake to apply all reasonable measures for access control and data security. You are recommended to operate your own access control procedures for security of your log-in access permission and to take appropriate steps to ensure access to the Sizing Tool is made only by your authorised staff.

Mitsubishi Electric shall not be responsible for any unauthorised access to or use of the Sizing Tool by any member of your staff or by any third party who obtains your log-in access permissions or for any data inputs, data variations or deletions or reports generated by any person using your log-in access permission whether or not authorised by you.

By accessing the Sizing Tool you represent to Mitsubishi Electric as conditions to your access that:

- you (or your employer) meet the above entry pre-condition and hold a valid log-in access permission;
- you have all necessary knowledge and competencies required for MIS 3005 compliance and to undertake supply, design, installation, set to work, commissioning and handover of a microgeneration heat pump system and that you hold MCS certificated installer status (or undertake to achieve before you draw down any MCS Room-by-Room report from this Sizing Tool). Where you are not an installer then you represent that you hold all necessary professional training, competencies, qualifications and/or experience to understand and apply Mitsubishi Electric's information and data sets available through the Sizing Tool.
- you acknowledge that that you are competent in processing and applying sound data computed in accordance with Japanese technical standards as used by Mitsubishi Electric for specification of sound pressure levels and as factored into any sound report as may be available to you from the Sizing Tool based upon your data input.
- you represent that you have full knowledge of MIS 3005 (as amended from time to time) and prevailing legal obligations binding upon a designer and/or installer of a heat pump system.

If you consider that you do not meet any of these conditions then you do not have authority to enter or use the Sizing Tool and must not do so. You may only use the Sizing Tool to assess MCS compliance requirements for application of a Mitsubishi Electric Ecodan heat pump system for a property located within England, Wales and Scotland and to generate the corresponding data and report outputs.

2. Use of the Ecodan SizingTool

a. Subject to the access conditions, Mitsubishi Electric Europe B.V. UK branch ("Mitsubishi Electric" or "We") grants you a non-transferable, non-exclusive licence to use the Sizing Tool solely for the purpose of assessing and compiling data within the Sizing Tool towards report outputs connected with:

- (i) the potential suitability of the property for installation of a Mitsubishi Electric Ecodan heat pump system. You will use the Sizing Tool only in support of a site-specific assessment.
- (ii) MIS 3005 compliant heat pump sizing procedure for the indicative potential sizing required for an Ecodan heat pump unit or Ecodan heat pump system design within a selected standard room area or heating area or building;
- (iii) Room by room heat loss calculation in accordance with BS EN 12831, supported by heat pump and heat emitter performance data (all as required MIS 3005 compliance);
- (iv) Estimated annual system energy performance calculations based upon Mitsubishi Electric product specifications and heat emitter specifications;

- (v) indicative energy costs of operating a Mitsubishi Electric Ecodan heat pump system in the property and indicative potential for any energy-saving against indicative energy costs of other heating systems. Any indicative energy cost data is provided is made in reliance upon your data inputs and taking account of Mitsubishi Electric's energy cost and usage assumptions
- (vi) compilation of a sound report for the Ecodan heat pump system as designed by you.

IMPORTANT:

Conformity to MIS 3005 design and installation requirements and the quality of any MCS Room-by-Room report and/or any other data output generated by you through the Sizing Tool depends on the quality of your data inputs.

- You are exclusively responsible for all room fabric assessment and all measurements and for any assumptions as may be applied by you in making data inputs.
 - You must factor into your data input any special user requirements and/or user's special design temperature requirements.
 - The Sizing Tool applies standard room dimensions and room net Sizing Tools: your site may not suit this standardised approach, in which case use of the Sizing Tool may not be suitable for your particular site application.
 - You are exclusively responsible for factoring into your data inputs all site specific issues.
 - You acknowledge that data entry time is recorded and that all data outputs (including any MCS report) will be date/time stamped.
 - You are exclusively responsible for updating your data inputs in the event of site changes or change in MIS 3005 or prevailing legislation.
- b. The Sizing Tool is structured so that the MCS Room-by-Room report can only be generated in a single MCS installer's name (and not joint names).
 - c. We do not grant you any licence or consent to copy, alter or modify the Mitsubishi Electric content within the Sizing Tool. You will not reverse engineer, decompile or disassemble that content or create any derivative works based on that content save for your data entries and your data as within the report formats for your particular sites. You do not acquire any intellectual property rights and/or database rights in the Mitsubishi Electric content within the Sizing Tool: all copyrights and other rights in that content are the property of Mitsubishi Electric.
 - d. The Sizing Tool may contain embedded software programs which are copyright of third party suppliers to Mitsubishi Electric: you have no right to use those programs except as part of your proper usage of the Sizing Tool.
 - e. You must not introduce any virus or other software to the Sizing Tool or otherwise harm any Mitsubishi Electric or third party data or content held in the Sizing Tool.
 - f. You must apply and maintain appropriate anti-virus software and firewalls on your equipment used to access the Sizing Tool and to receive any data output from Mitsubishi Electric.
 - g. We have endeavoured to avoid any software virus being embodied within the Sizing Tool. However, we shall not be liable for any data corruption or systems damage arising from any software virus affecting the Sizing Tool where you view Sizing Tool screens on your own PC or other equipment and/or create or access any report populated with Sizing Tool data and your own data inputs.
 - h. You will be responsible for the payment of all charges from your internet service provider or mobile device carrier incurred for your access to and use of the Sizing Tool, including any charges for your viewing of data from Mitsubishi Electric. You acknowledge that Mitsubishi Electric has no responsibility for such charges. Mitsubishi Electric is not responsible for the proper functioning of your access device, router and internet service provision.
 - i. **IMPORTANT:** You will be able to store both part-complete and completed data sets in the Sizing Tool and to recover those data sets and view/progress these when you next access the Sizing Tool. (However if you delete data then that data cannot be reinstated). You will retain ownership of all data inputs and any copyright in any report generated by your accessing the Sizing Tool. However, as a condition of your use you agree that **Mitsubishi Electric shall have a continuing non-exclusive, non-transferable licence** to view and use your data inputs, including without limitation any project data, site specific data and personal data as may be included within your data inputs. This licence shall apply both to all current data as held in the Sizing Tool and to any data as may be deleted by you. Whilst Mitsubishi Electric (and its third party Sizing Tool development and hosting service contractors supporting the Sizing Tool having access to your data inputs and usage records) shall maintain confidentiality of your data and shall respect privacy as provided in the Privacy section below, where Mitsubishi Electric reasonably considers that you are not able to progress any site specific project (for example, if you become insolvent or if you are an installer you cease to hold accredited installer status with Mitsubishi Electric for heating products) then upon prior written notice We shall be entitled to apply that site specific data in our own business development activity. In such case, We shall provide you with our notice a hard copy print-out of any input data then currently held in the Sizing Tool and you shall not make any further use of the Sizing Tool for that site specific project.
 - j. We reserve the right without prior notice to modify the Sizing Tool or suspend access to or withdraw access to the Sizing Tool in the event that any person alleges that the Sizing Tool infringes a third party's intellectual property rights or we have reason to believe that the Sizing Tool infringes a third party's rights.
 - k. User instructions, efficiency and other performance notices, webpages and notices set out in the Sizing Tool shall form part of these terms and conditions to the extent they set mandatory user requirements or explain how We compute any heat loss calculation and any indicative sizing guidance towards product selection process and any indicative operational costs or cost comparisons.
 - l. You undertake to hold harmless and indemnify Mitsubishi Electric against any actual or threatened claim alleging loss, damage, liability or expense arising out of or in connection with your use or application of the Sizing Tool and any data entered by you or generated from the Sizing Tool.

3. Energy Cost Assumptions

IMPORTANT:

- a. Indicators and assumptions including energy cost assumptions will vary from time to time but with no prior notice to Sizing Tool users.
- b. Potential run costs and cost-savings are not warranted. Energy performance calculations and cost-saving computations are merely indicative: We apply your data inputs against estimated costs and potential savings compared to other types of heating systems. The markets for gas, oil and electricity are subject to significant price movements and pricing variations between energy suppliers. We cannot compute any actual cost saving or cost increase applicable to the property based on your data entry. We cannot compute any actual cost saving relative to any commercial user discounts or group user discounts which your user may negotiate with energy suppliers or which your user may be eligible to claim. Any RHI benefit calculation (if applicable) is merely indicative and assumes full compliance by you and your end user with all relevant statutory processes required for a user to benefit from RHI.
- c. For comparative energy costs, We use data published by the UK Department of Energy and Climate Change ("DECC"). This comparative cost data is historic and is liable to be updated by DECC without notice. We shall endeavour to publish a link to the then current DECC data on our website for the Tool. We will update the Sizing Tool to take account of any updating by DECC of its comparative cost data as soon as practicable. We are not responsible for any aging, errors or omission in DECC's data.
- d. Energy cost data shown is based upon the indicative costs per kWh of energy, Ecodan energy cost data being based upon the indicative cost of electricity. Actual energy costs are a market variable.

4. No offer

Any data accessed by you from the Sizing Tool or any contact requests made by you to Mitsubishi Electric does not represent an offer by Mitsubishi Electric to sell you or provide you with any goods or services.

5. Disclaimers

- a. The Sizing Tool is intended to facilitate your compliance to BS EN 12831 but is not designed to replace a professional site survey and your taking on-site measurements. Whilst you can generate from the Sizing Tool all necessary MCS Room-by-Room report and sound report content and output data for an appropriately sized Ecodan heat pump system, **the sizing procedure, heat loss calculation and other data fields and outputs are always dependent on the quality and accuracy of your data inputs. Please see Clause 2.a above.** You must apply your professional assessment to any special factors affecting the site and room by room usage requirements and factor your data inputs accordingly. You must input accurate room or heating area measurements, sound analysis data and other necessary data as may be required to achieve required performance levels including data indicating any improvements such as pipework and radiator or other emitter upgrades necessary for the efficient operation of a Mitsubishi Electric Ecodan heat pump system. You acknowledge that you will prejudice the quality and accuracy of the Sizing Tool's output data where you fail to take account of any special site factor or requirement and do not include factoring for the same as part of your input data. The Sizing Tool can only indicate which Ecodan air source heat pump should be selected based upon your data inputs. You are always finally responsible for the site specific accuracy of your data inputs.
- b. We do not warrant that the Sizing Tool is error-free. We shall endeavour to correct any error as this may become known: this shall not affect the exclusions and limitations of liability set out in the Terms and Conditions. We shall not be obliged to continue error correction where (i) We consider that the error is not material (i.e. not prejudicial to compilation of a valid MCS report or sound report); or (ii) that error correction is not economic and/or shall be held over to a new release of the Sizing Tool at a future date.
- c. We do not warrant that that access to the Sizing Tool and your data inputs will be available at all times or available without interruption. Whilst we will maintain a back-up to the Sizing Tool and take all reasonable steps to maintain in data security, we do not accept liability for any data reconstruction in the event of non-availability or loss or damage to your input data held in the Sizing Tool.

6. Not for use in high risk activity or application

The Sizing Tool is not specifically developed and is not authorised for use in designing any system requiring any real-time fail-safe performance environment and particularly any application safety-critical heating or hot water supply. You agree that you shall not attempt to hold Mitsubishi Electric or any third party supplier to Mitsubishi Electric liable for any claims or damages arising from any improper or unauthorised use towards application safety-critical heating or hot water supply: if, in breach of this obligation, you do so use the Sizing Tool then you agree to hold harmless and indemnify Mitsubishi Electric and its third party suppliers from and against all claims for loss, liability, damage or expense arising out of or in connection with such use.

7. Our liability to you

- a. Given your acknowledged levels of professional competence, any claims on your part, in particular any claim for damages due to failure of the Sizing Tool or for any damage loss or expense resulting from any error or defect in the Ecodan Sizing Tool, are excluded by Mitsubishi Electric to the maximum extent permissible by law. This limitation shall also apply for the benefit of any third party suppliers to Mitsubishi Electric.
- b. We do not purport to limit or exclude liability to you for:
 - i. death or personal injury caused by Mitsubishi Electric's negligence or that of our employees, agents or sub-contractors;
 - ii. breach of implied condition as to title;
 - iii. any fraudulent misrepresentation;
 - iv. any other liability that cannot be excluded by law.
- c. Subject to sub-section b. above, you acknowledge that all indirect and or consequential losses are not recoverable from Mitsubishi Electric or any supplier to Mitsubishi Electric.
We will not be responsible for any:
 - i. Loss or damage which is caused other than by breach on Our part;
 - ii. Commercial loss including any loss of: (a) profit; (b) business; (c) revenue, rental or sale; (d) goodwill;
 - iii. Other economic loss including: (a) loss or failure to achieve any anticipated savings, (b) failure to achieve the sale or disposal of the property; (c) loss and/or reconstruction of data; (d) any other special or indirect loss; (e) costs of alternative heating and/or hot water supply; (f) wasted time and expenditure; (b) any other loss, cost, damage or expense;related to your usage of the Sizing Tool or your inability to access the Sizing Tool at any time.
- d. We are not responsible for your time and expenditure in considering an Ecodan heating system:
 - i. where an on-site survey or assessment determines or would have determined that:(a) such a system is not suitable for the property; or (b) is not likely to achieve an energy cost saving or other benefit as may have been indicated through your usage of the Sizing Tool; or
 - ii. where the actual sizing or sound performance of an installed Ecodan heating system fails to meet any indicative data or report generated by your use of the Sizing Tool.

8. Privacy

- a. Where you use a business email address including your name or other email address, You provide us your personal data when you enter data in to the Website and/or press "SEND", "AGREE" or "CONFIRM". You may also provide us personal information (including that of your end user customer or other supply chain related parties) through your data entry and any associated correspondence and support calls.
- b. We will use the personal information that you provide us as set out below:
 - i. to provide the indicative guidance and report services offered by the Sizing Tool and to maintain an archive record of any data entered by you and any data or report drawn down by you;
 - ii. to develop and improve our services and products (so far as practicable your personal information will be de-personalised for these purposes);
 - iii. to provide you with details of new products and services which may be of interest to you if you have agreed to this (but not where you indicate to us at any time that you do not want Mitsubishi Electric to contact you with such details);
 - iv. to meet legal obligations applicable to Mitsubishi Electric and to respond to requests from law enforcement agencies and regulators;
 - v. We may transfer this personal information to countries outside of the European Economic Sizing Tool whose data protection regimes may not be as strict as those within the UK. Where we do so transfer we will do so only in accordance with the Data Protection Act 1998 and will ensure that the entity receiving such personal information observes the same standards of data handling and data security that Mitsubishi Electric must observe under the Data Protection 1998; and
 - vi. We may share this personal information with other Mitsubishi Electric group companies and our agents and contractors supporting the Sizing Tool for the purposes set out above. Those entities may use the personal information for those purposes and our

administration and control of the Sizing Tool.

- c. We will continue to hold and use the information you have provided in accordance with section 8.b generally in accordance with Mitsubishi Electric's personal data retention policies save that details of any log-in access data issued to you, any data entry, variation or deletion made by you and all indicative guidance and reports generated for the Sizing Tool will be maintained to the extent Mitsubishi Electric reasonably determines necessary in order that we can to respond effectively to any claim against Mitsubishi Electric.
- d. Mitsubishi Electric Europe B.V. is registered at the UK Data Protection Registry with registration number Z6943649. If you have any questions about Mitsubishi Electric's use of your personal information or wish to exercise any of your rights under the Data Protection Act 1998, including your right to obtain details of your personal information that we process, please contact:
- Data Protection- Sizing Tool
Address: Travellers Lane, Hatfield, Herts, AL10 8XB
Email: Ecodanselectiontool@meuk.mee.com

9. Termination

We may withdraw our consent to your accessing to the Sizing Tool by notice in writing to you on any of the following grounds:

- (i) that you are bankrupt or have made an arrangement or composition with your creditors or are unable to pay your debts as they fall due or have entered into other insolvency proceedings;
- (ii) that you are in breach of these Terms and Conditions of Use.

In addition, your rights of access and usage shall cease in the event you cease to meet the access conditions set in Clause 1.

10. Confidentiality

Your right of access and usage are limited as set out in these Terms and Conditions of Use. Your rights of access and use are personal to you.

As conditions to your access and use, you undertake:

- not to allow access to or usage by or on behalf of any unauthorised third party;
- not to copy or adapt the Sizing Tool for your benefit or that of any third party;
- not to disclose to any third party competitor to Mitsubishi Electric any information concerning the structure, content and operation of the Sizing Tool including without limitation these Terms and Conditions of Use and/or any data input field and data parameters and/or output report.

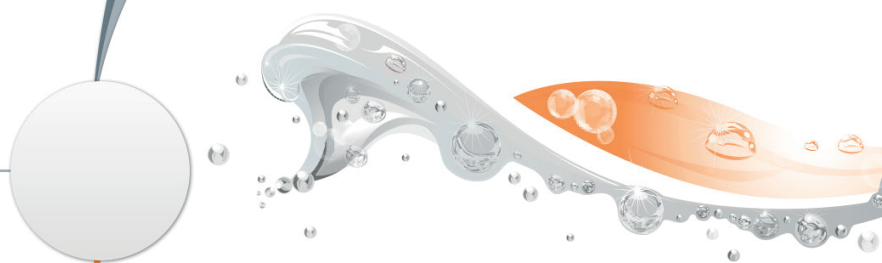
11. Other important terms

- a. Any right of access is not assignable or transferable by you. No other person can enforce your rights under these Terms and Conditions.
- b. Except for any third party suppliers to Mitsubishi Electric who rank as third party beneficiaries to your obligations set out in these terms and Conditions of Use, all third party rights under The Contracts (Rights of Third Parties) Act 1999 are excluded.
- c. Subject only to Mitsubishi Electric's User instructions, efficiency and performance notices, notes and notices set out in the Sizing Tool, these Terms and Conditions of Use represents the entire agreement and understanding concerning your access and operation of the Sizing Tool and supersede any prior agreement or arrangements in respect of the subject matter.
- d. Any notice required to be sent to you may be delivered by hand or first class pre-paid letter and shall be deemed to have been served if by hand then delivered and if by first class post 48 hours after posting.
- e. Any illegality, invalidity or unenforceability of any section or sub-section and/or provision of these Terms and Conditions of Use shall not affect the legality, validity or enforceability of the remainder.
- f. Any delay or failure by Mitsubishi Electric to insist that you perform your obligations does not rank as a waiver of Mitsubishi Electric's rights.
- g. These Terms and Conditions of Use shall be governed by and construed in accordance with English law and you submit to the non-exclusive jurisdiction of the English Courts.

Mitsubishi Electric Europe B.V. is a Netherlands limited liability company with a registered English branch (number FC19156, BR003391) and trading from Travellers Lane, Hatfield, Herts., AL10 8XB.

Project Reference Number
f80494fc

Proposal Reference
Barrington Court



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