

# Summary for Input Data

|                      |   |               |                |            |
|----------------------|---|---------------|----------------|------------|
| Plot Reference       | BW Penland P2   |               | Issued on Date | 26/11/2025 |
| Assessment Reference | Design Stage - PV   | Plot Type Ref | Design Stage   |            |
| Plot Address         | P2, Penland Farm, Penland Green, Haywards Heath , West Sussex, RH17 5HR |               | SAP Version    | 10.2       |

|                                    |          |               |       |      |       |
|------------------------------------|----------|---------------|-------|------|-------|
| SAP Rating                         | 92 A     | DER           | 1.32  | TER  | 8.77  |
| Environmental                      | 99 A     | % DER < TER   |       |      | 84.95 |
| CO <sub>2</sub> Emissions (t/year) | 0.19     | DFEE          | 39.50 | TFEE | 40.88 |
| Compliance Check                   | See BREL | % DFEE < TFEE |       |      | 3.37  |
| % DPER < TPER                      | 60.95    | DPER          | 17.93 | TPER | 45.92 |

|                  |                                    |             |           |
|------------------|------------------------------------|-------------|-----------|
| Assessor Details | Mrs. Faye Mitchell                 | Assessor ID | V981-0001 |
| Client           | Penland Farm Project, Simon Davies |             |           |

## SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

|                            |                     |       |
|----------------------------|---------------------|-------|
| Orientation                | Southeast           |       |
| Property Tenture           | ND                  |       |
| Transaction Type           | 6                   |       |
| Terrain Type               | Suburban            |       |
| 1.0 Property Type          | House, Detached     |       |
| 2.0 Number of Storeys      | 3                   |       |
| 3.0 Date Built             | 2025                |       |
| 4.0 Sheltered Sides        | 2                   |       |
| 5.0 Sunlight/Shade         | Average or unknown  |       |
| 6.0 Thermal Mass Parameter | Precise calculation |       |
| Thermal Mass               | 66.58               | kJ/m² |

|                                |          |
|--------------------------------|----------|
| 7.0 Electricity Tariff         | Standard |
| Smart electricity meter fitted | No       |
| Smart gas meter fitted         | No       |

| 7.0 Measurements | Heat Loss Perimeter | Internal Floor Area  | Unheated Space Floor Area | Average Storey Height |
|------------------|---------------------|----------------------|---------------------------|-----------------------|
| Ground floor:    | 37.56 m             | 61.97 m <sup>2</sup> | 18.08 m <sup>2</sup>      | 2.50 m                |
| 1st Storey:      | 39.28 m             | 74.75 m <sup>2</sup> |                           | 2.76 m                |
| 2nd Storey:      | 40.11 m             | 65.92 m <sup>2</sup> |                           | 2.45 m                |

|                 |       |                |
|-----------------|-------|----------------|
| 8.0 Living Area | 16.29 | m <sup>2</sup> |
|-----------------|-------|----------------|

| 9.0 External Walls | Description     | Type         | Construction | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Res | Shelter | Openings | Area Calculation Type |
|--------------------|-----------------|--------------|--------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-------------|---------|----------|-----------------------|
|                    | External Wall 1 | Cavity Wall  | Other        | 0.15                         | 0.00                        | 282.95                      | 249.18                      | 0.00        | None    | 33.77    | Enter Gross Area      |
|                    | Sheltered       | Cavity Wall  | Other        | 0.15                         | 0.00                        | 18.02                       | 18.02                       | 0.00        | None    | 0.00     | Enter Gross Area      |
|                    | Dormer Cheeks   | Timber Frame | Other        | 0.18                         | 0.00                        | 19.52                       | 15.31                       | 0.00        | None    | 4.21     | Enter Gross Area      |

| 9.2 Internal Walls | Description     | Construction                 | Kappa (kJ/m <sup>2</sup> K) | Area (m <sup>2</sup> ) |
|--------------------|-----------------|------------------------------|-----------------------------|------------------------|
|                    | Internal Wall 1 | Plasterboard on timber frame | 9.00                        | 382.99                 |

| 10.0 External Roofs | Description                    | Type                | Construction                             | U-Value (W/m <sup>2</sup> K) | Kappa (kJ/m <sup>2</sup> K) | Gross Area(m <sup>2</sup> ) | Nett Area (m <sup>2</sup> ) | Shelter Code | Shelter Factor | Calculation Type | Openings |
|---------------------|--------------------------------|---------------------|--|------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------|----------------|------------------|----------|
|                     | External Roof Flat Main        | External Plane Roof | Plasterboard, insulated at ceiling level | 0.11                         | 9.00                        | 28.28                       | 28.28                       | None         | 0.00           | Enter Gross Area | 0.00     |
|                     | External Roof Rafter           | External Slope Roof | Plasterboard, insulated slope            | 0.15                         | 9.00                        | 42.41                       | 40.37                       | None         | 0.00           | Enter Gross Area | 2.04     |
|                     | External Roof Dormer Flat Roof | External Flat Roof  | Plasterboard, insulated flat roof        | 0.11                         | 9.00                        | 7.31                        | 7.31                        | None         | 0.00           | Enter Gross Area | 0.00     |
|                     | External Roof Rafter Dining    | External Slope Roof | Plasterboard, insulated slope            | 0.15                         | 9.00                        | 7.53                        | 6.31                        | None         | 0.00           | Enter Gross Area | 1.22     |

| 10.2 Internal Ceilings | Description        | Storey          | Construction                                   | Kappa | Area (m <sup>2</sup> ) |
|------------------------|--------------------|-----------------|--|-------|------------------------|
|                        | Internal Ceiling 1 | Lowest occupied | Plasterboard ceiling, carpeted chipboard floor | 9.00  | 21.20                  |
|                        | Internal Ceiling 2 | +1              | Plasterboard ceiling, carpeted chipboard floor | 9.00  | 65.92                  |

# Summary for Input Data



## 11.0 Heat Loss Floors

| Description                | Type                  | Storey Index    | Construction                           | U-Value (W/m²K) | Shelter Code | Shelter Factor | Kappa (kJ/m²K) | Area (m²) |
|----------------------------|-----------------------|-----------------|--|-----------------|--------------|----------------|----------------|-----------|
| Heatloss Floor 1           | Ground Floor - Solid  | Lowest occupied | Slab on ground, screed over insulation | 0.14            | None         | 0.00           | 110.00         | 61.97     |
| Heatloss Floor Over Garage | Exposed Floor - Solid | +1              | Other                                  | 0.16            | None         | 0.00           | 0.00           | 20.31     |

## 11.2 Internal Floors

| Description      | Storey Index | Construction                                   | Kappa (kJ/m²K) | Area (m²) |
|------------------|--------------|--|----------------|-----------|
| Internal Floor 1 | +1           | Plasterboard ceiling, carpeted chipboard floor | 18.00          | 54.55     |
| Internal Floor 2 | +2           | Plasterboard ceiling, carpeted chipboard floor | 18.00          | 40.11     |

## 12.0 Opening Types

| Description      | Data Source  | Type             | Glazing       | Glazing Gap | Filling Type | G-value | Frame Type | Frame Factor | U Value (W/m²K) |
|------------------|--------------|------------------|---------------|-------------|--------------|---------|------------|--------------|-----------------|
| Solid Door       | Manufacturer | Solid Door       |               |             |              | 0.00    |            |              | 1.20            |
| Window           | Manufacturer | Window           | Double glazed |             |              | 0.70    |            | 0.70         | 1.20            |
| Glazed Door      | Manufacturer | Window           | Double glazed |             |              | 0.70    |            | 0.70         | 1.20            |
| Velux            | Manufacturer | Roof Window      | Double glazed |             |              | 0.40    |            | 0.70         | 1.20            |
| Dormer Window    | Manufacturer | Window           | Double glazed |             |              | 0.40    |            | 0.70         | 1.20            |
| Half Glazed Door | Manufacturer | Half Glazed Door | Double glazed |             |              | 0.70    |            | 0.70         | 1.20            |
| Roof Light       | Manufacturer | Roof Light       | Double glazed |             |              | 0.40    |            | 0.70         | 1.20            |

## 13.0 Openings

| Name       | Opening Type     | Location                    | Orientation | Area (m²) | Pitch |
|------------|------------------|-----------------------------|-------------|-----------|-------|
| Front Door | Solid Door       | External Wall 1             | South East  | 1.98      |       |
| W1         | Window           | External Wall 1             | South East  | 1.34      |       |
| W2         | Window           | External Wall 1             | South East  | 4.10      |       |
| W3         | Window           | External Wall 1             | South East  | 2.50      |       |
| W4         | Window           | External Wall 1             | South East  | 2.05      |       |
| W5         | Window           | External Wall 1             | South East  | 2.63      |       |
| V1-4       | Velux            | External Roof Rafter        | South East  | 2.04      | 35    |
| W6         | Window           | External Wall 1             | North West  | 1.08      |       |
| W7         | Glazed Door      | External Wall 1             | North West  | 9.94      |       |
| W8         | Window           | External Wall 1             | North West  | 1.08      |       |
| RL 1-2     | Roof Light       | External Roof Rafter Dining | North West  | 1.22      | 35    |
| W9         | Window           | External Wall 1             | North West  | 1.84      |       |
| W10        | Window           | External Wall 1             | North West  | 1.12      |       |
| W11        | Window           | External Wall 1             | North West  | 1.11      |       |
| W12-13     | Dormer Window    | Dormer Cheeks               | North West  | 4.21      |       |
| W14        | Window           | External Wall 1             | North East  | 0.70      |       |
| GD 1       | Half Glazed Door | External Wall 1             | North East  | 2.30      |       |

## 14.0 Conservatory

## 15.0 Draught Proofing

 %

## 16.0 Draught Lobby

## 17.0 Thermal Bridging

## 17.1 List of Bridges

| Bridge Type                                      | Source Type              | Length | Psi  | Adjusted Reference: | Imported |
|--|--------------------------|--------|------|---------------------|----------|
| E2 Other lintels (including other steel lintels) | Non Gov Approved Schemes | 24.40  | 0.01 | 0.01 610106         | Yes      |
| E3 Sill  | Non Gov Approved Schemes | 22.49  | 0.02 | 0.02 610109         | Yes      |
| E4 Jamb  | Non Gov Approved Schemes | 47.58  | 0.01 | 0.01 610108         | Yes      |
| E5 Ground floor (normal)                         | Non Gov Approved Schemes | 37.56  | 0.09 | 0.09 610076         | Yes      |
| E6 Intermediate floor within a dwelling          | Non Gov Approved Schemes | 39.28  | 0.01 | 0.01 FALC4          | Yes      |
| E16 Corner (normal)                              | Non Gov Approved Schemes | 32.00  | 0.04 | 0.04 610110         | No       |
| R1 Head of roof window                           | Non Gov Approved Schemes | 2.24   | 0.11 | 0.11 610438         | Yes      |
| R2 Sill of roof window                           | Non Gov Approved Schemes | 2.24   | 0.12 | 0.12 610437         | Yes      |
| R3 Jamb of roof window                           | Non Gov Approved Schemes | 7.28   | 0.88 | 0.88 610439         | Yes      |
| R11 Upstands or kerbs of rooflights              | Table K1 - Default       | 6.24   | 0.24 | 0.24                | Yes      |

Y-value  W/m²K

## 19.0 Mechanical Ventilation

### Mechanical Ventilation

Mechanical Ventilation System Present

## 20.0 Fans, Open Fireplaces, Flues

Number of open chimneys

Number of open flues

Number of chimneys/flues attached to closed fire

Number of flues attached to solid fuel boiler

Number of flues attached to other heater

Number of blocked chimneys

Number of intermittent extract fans

Number of passive vents

# Summary for Input Data

|  |   |   |                            |                           |                     |
|--|---|---|----------------------------|---------------------------|---------------------|
| Number of flueless gas fires                     | <input type="text" value="0"/>  |   |                            |                           |                     |
| <b>21.0 Fixed Cooling System</b>                 | <input type="text" value="No"/>   |   |                            |                           |                     |
| <b>22.0 Pressure Testing</b>                     | <input type="text" value="Yes"/>  |   |                            |                           |                     |
| Designed AP <sub>50</sub>                        | <input type="text" value="4.90"/>   | m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50 Pa |                            |                           |                     |
| Test Method                                      | <input type="text" value="Blower Door"/>                                      |   |                            |                           |                     |
| <b>22.0 Lighting</b>                             | <input type="text" value="No"/>   |   |                            |                           |                     |
| No Fixed Lighting                                | <input type="text" value="No"/>   |   |                            |                           |                     |
|  | <b>Name</b><br>Lighting 1   | <b>Efficacy</b><br>80.00                    | <b>Power</b><br>6.00       | <b>Capacity</b><br>480.00 | <b>Count</b><br>24  |
| <b>24.0 Main Heating 1</b>                       | <input type="text" value="Database"/>   |   |                            |                           |                     |
| Description                                      | <input type="text" value="ASHP"/>   |   |                            |                           |                     |
| Percentage of Heat                               | <input type="text" value="100.00"/> %   |   |                            |                           |                     |
| Database Ref. No.                                | <input type="text" value="106392"/>   |   |                            |                           |                     |
| Fuel Type  | <input type="text" value="Electricity"/>                                      |   |                            |                           |                     |
| In Winter  | <input type="text" value="307.82"/>   |   |                            |                           |                     |
| In Summer  | <input type="text" value="282.02"/>   |   |                            |                           |                     |
| Model Name                                       | <input type="text" value="Ecodan 8.5kW"/>                                     |   |                            |                           |                     |
| Manufacturer                                     | <input type="text" value="Mitsubishi Electric Europe B.V."/>                  |   |                            |                           |                     |
| System Type                                      | <input type="text" value="Heat Pump"/>  |   |                            |                           |                     |
| Controls SAP Code                                | <input type="text" value="2207"/>   |   |                            |                           |                     |
| Controls description                             | <input type="text" value="Time and temperature zone control by arrangement"/> |   |                            |                           |                     |
| Is MHS Pumped                                    | <input type="text" value="Pump in unheated space"/>                           |   |                            |                           |                     |
| Heating Pump Age                                 | <input type="text" value="2013 or later"/>                                    |   |                            |                           |                     |
| Heat Emitter                                     | <input type="text" value="Underfloor"/>                                       |   |                            |                           |                     |
| Underfloor Heating                               | <input type="text" value="Yes - Pipes in thin screed"/>                       |   |                            |                           |                     |
| Flow Temperature                                 | <input type="text" value="Enter value"/>                                      |   |                            |                           |                     |
| Flow Temperature Value                           | <input type="text" value="45.00"/>  |   |                            |                           |                     |
| <b>25.0 Main Heating 2</b>                       | <input type="text" value="None"/>   |   |                            |                           |                     |
| <b>26.0 Heat Networks</b>                        | <input type="text" value="None"/>   |   |                            |                           |                     |
| <b>27.0 Secondary Heating</b>                    | <input type="text" value="None"/>   |   |                            |                           |                     |
| <b>28.0 Water Heating</b>                        | <input type="text" value="Main Heating 1"/>                                   |   |                            |                           |                     |
| Water Heating                                    | <input type="text" value="Main Heating 1"/>                                   |   |                            |                           |                     |
| SAP Code   | <input type="text" value="901"/>  |   |                            |                           |                     |
| Flue Gas Heat Recovery System                    | <input type="text" value="No"/>   |   |                            |                           |                     |
| Waste Water Heat Recovery Instantaneous System 1 | <input type="text" value="No"/>   |   |                            |                           |                     |
| Waste Water Heat Recovery Instantaneous System 2 | <input type="text" value="No"/>   |   |                            |                           |                     |
| Waste Water Heat Recovery Storage System         | <input type="text" value="No"/>   |   |                            |                           |                     |
| Solar Panel                                      | <input type="text" value="No"/>   |   |                            |                           |                     |
| Water use <= 125 litres/person/day               | <input type="text" value="Yes"/>  |   |                            |                           |                     |
| Cold Water Source                                | <input type="text" value="From mains"/>                                       |   |                            |                           |                     |
| Bath Count                                       | <input type="text" value="1"/>  |   |                            |                           |                     |
| Immersion Only Heating Hot Water                 | <input type="text" value="No"/>   |   |                            |                           |                     |
| <b>28.1 Showers</b>                              |   |   |                            |                           |                     |
| <b>Description</b>                               | <b>Shower Type</b>  | <b>Flow Rate</b><br>[l/min]                 | <b>Rated Power</b><br>[kW] | <b>Connected</b>          | <b>Connected To</b> |
| SHOWER 1   | Combi boiler or unvented hot water system                                     | 7.00  |                            | No                        |                     |
| SHOWER 2   | Combi boiler or unvented hot water system                                     | 7.00  |                            | No                        |                     |
| SHOWER 3   | Combi boiler or unvented hot water system                                     | 7.00  |                            | No                        |                     |
| SHOWER 4   | Combi boiler or unvented hot water system                                     | 7.00  |                            | No                        |                     |

# Summary for Input Data

## 28.3 Waste Water Heat Recovery System

### 29.0 Hot Water Cylinder

|                          |                                  |         |
|--------------------------|----------------------------------|---------|
| Hot Water Cylinder       | Hot Water Cylinder               |         |
| Cylinder Stat            | Yes                              |         |
| Cylinder In Heated Space | Yes                              |         |
| Independent Time Control | Yes                              |         |
| Insulation Type          | Measured Loss                    |         |
| Cylinder Volume          | 200.00                           | L       |
| Loss                     | 1.97                             | kWh/day |
| Pipes insulation         | Fully insulated primary pipework |         |

### 31.0 Thermal Store

None

### 32.0 Photovoltaic Unit

|                        |
|------------------------|
| One Dwelling           |
| Export Capable Meter?  |
| Yes                    |
| Connected To Dwelling  |
| Yes                    |
| Diverter               |
| No                     |
| Battery Capacity [kWh] |
| 0.00                   |

| PV Cells kWp | Orientation | Elevation | Overshading    | FGHRS | MCS Certificate | Overshading Factor | MCS Certificate Reference | Panel Manufacturer |
|--------------|-------------|-----------|----------------|-------|-----------------|--------------------|---------------------------|--------------------|
| 3.00         | South East  | 30°       | None Or Little |       | No              | 1.00               |                           |                    |

### 34.0 Small-scale Hydro

None

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

## Recommendations

### Lower cost measures

None

### Further measures to achieve even higher standards

|                     | Typical Cost | Typical savings per year | Ratings after improvement |                      |
|---------------------|--------------|--------------------------|---------------------------|----------------------|
|                     |              |                          | SAP rating                | Environmental Impact |
| Solar water heating |              |                          | A 92                      | A 99                 |
| Photovoltaic        |              |                          | 0                         | 0                    |
| Wind turbine        |              |                          | 0                         | 0                    |