Kennet Centre, Newbury – Erda GeoExc concept

Version 3.0 – October ‘24

Design basis – dependent information:

1. The residential / commercial units

Total Space, DHW and retail loads across development = 1083kW to 674kW – dependent on buffer storage volumes.

No change up, potential to reduce

Total energy demand = 1,570,675 kWh

4.4x fold increase

2. What efficiency targets are set?

CoP "as close to 4.0 possible" for efficiency targets

Direct DHW from HUI required therefore limited opportunity to reduce flow temperature. Feasibility stage target CoP 3.75 with an aim to improve in detailed design.

3. Grouping / distribution.

Erda | deep capacity shared across whole scheme. Detailed design required to examine grouping of Resi units onto each secondary circuit & therefore the size / resilience of each. Allow equal share at this stage therefore 363kW (min) per plantroom. CLIENT TO DETERMINE LEVEL OF RESILLIANCE REQUIRED IF ANY.

4. In-unit HIU / distribution strategy?

Not considered by Erda/BMD

Basis of information supplied by SAV, assumed network distribution by others.

Have worked out the approximate consumption from the methodology stated in the fee proposal. End results won't change from this, the report will just clarify how these values were obtained.

Type	Heating	DHW	Totals
	kWh		
Retail	10,766	836	11,602
Dwellings	613,188	945,885	1,559,073
			1,570,675

Email 30/09/24 – Energy loads v3.doc

FW: AE: Peak Plant Sizing for Kennet Centre SAV-118336

SB Sarah Ballantyne-Way <Sarah@lochailort-investments.com>
To Kevin Stickney
Cc Hugo Haig
You replied to this message on 10/10/2024 16:31.

Kennet Old Town Plots 1-82A, SAV-118336 - HIU, Peak Plant & Pipe Sizing.pdf 979 KB
Kennet Old Town Plots 83-170, SAV-118336 - HIU, Peak Plant & Pipe Sizing.pdf 922 KB
Kennet Old Town Plots 171-249, + Comm, SAV-118336 - HIU, Peak Plant & Pipe Sizing.pdf

From: Tom Parkhouse <Thomas.Parkhouse@sav-systems.com>
Sent: 26 September 2024 12:52
To: Nichola Outram <Nichola.Outram@edp-environmental.co.uk>
Cc: Allan Bertelsen <Allan.Bertelsen@sav-systems.com>
Subject: RE: AE: Peak Plant Sizing for Kennet Centre SAV-118336

Hi Nichola,

Please see the three sizings attached. I've balanced it so the peak plants of each are roug a DHW vessel is introduced, it is comfortably below this figure.

Energy Centre 1 - **Plots 1-82A**
- 50no VVX-IV 1-2 RAD
- 44no VVX-IV 2-2 RAD
- Peak Plant required = 361kW
- Peak Plant required with 5000L vessel = **225kW**

Energy Centre 2 - **Plots 83-170**
- 101no VVX-IV 1-2 RAD
- 15no VVX-IV 2-2 RAD
- 1no VVX-IV 2-3 RAD
- Peak Plant required = 361kW
- Peak Plant required with 5000L vessel = **225kW**

Energy Centre 3 - **Plots 171-249 + Commercial Space**
- 94no VVX-IV 1-2 RAD
- 13no VVX-IV 2-2 RAD
- Peak Plant required = 356kW
- Peak Plant required with 5000L vessel = **226kW**

Email 02/10/24 – Peak plant sizing

Erda | deep surface layout @ 25mØ subsurface spacing (pre-design)

21 Erda | deep boreholes at 300m long required.

(See attached PDF for full layout)

A single Erda | Deep array to serve 3 separate heat pump plantrooms.

Drilled in Southern part of site and ready to serve northern once ready for occupancy.

Single array allows for most efficient use at part loads.

Erda | deep subsurface sphere of influence

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Energy supply

Plantroom 1 (north):

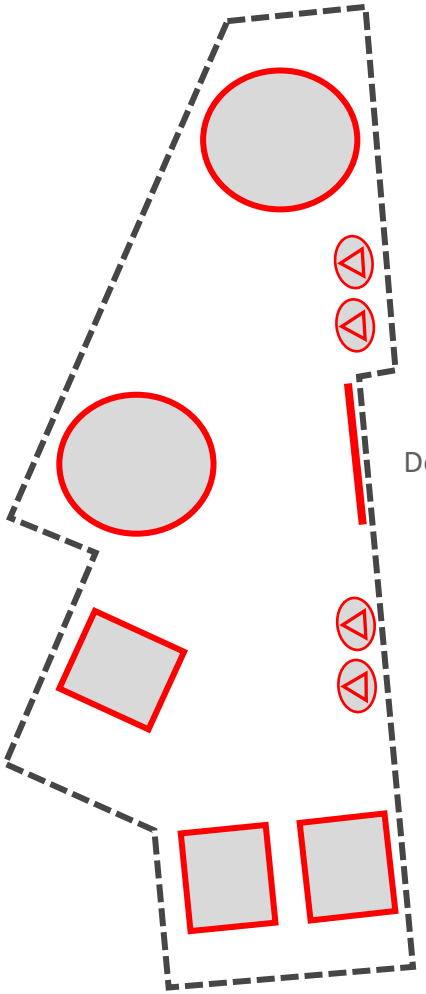
Allow for 364kW heat pump, LTHW buffer vessel(s), pump sets and pressurization. All sizes subject to detailed design.

SAV Network calcs:

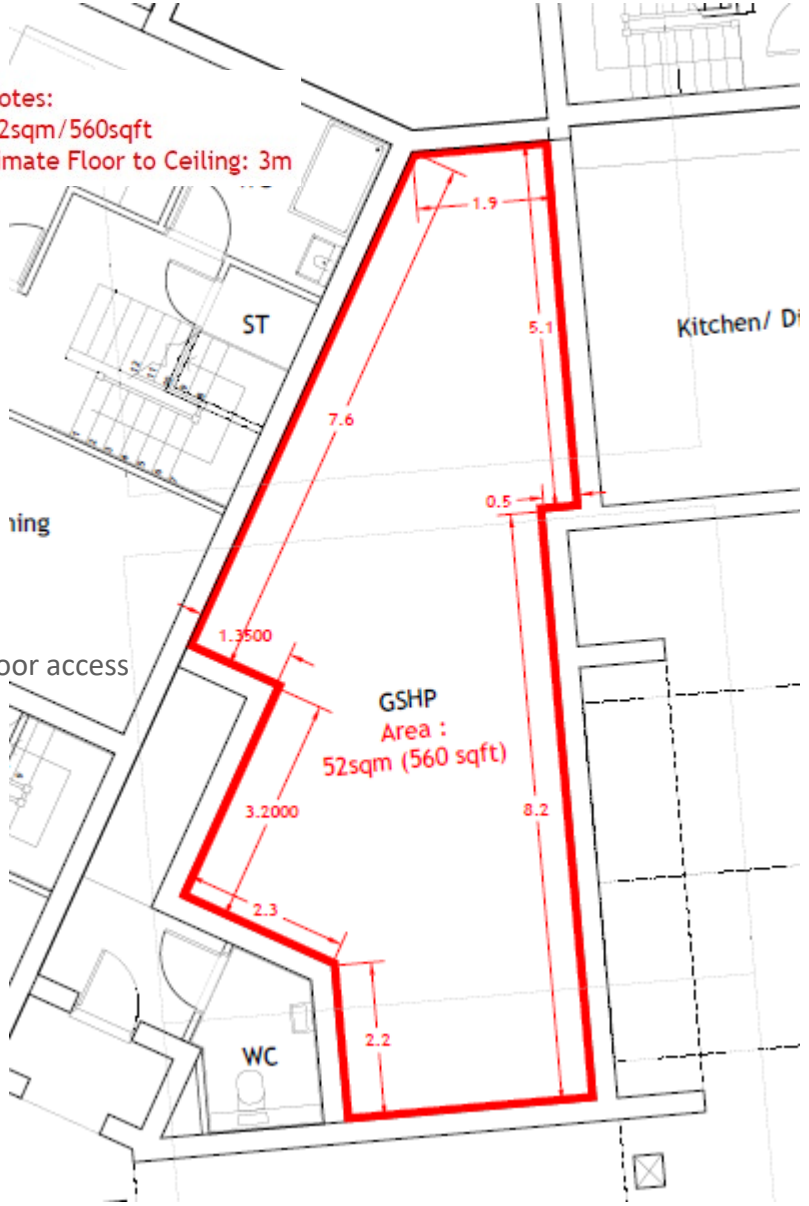
361kW peak – could be reduced to 225kW with 5000l of vessel storage

Energy Centre 1 - **Plots 1-82A**

- 50no VVX-IV 1-2 RAD
- 44no VVX-IV 2-2 RAD
- Peak Plant required = 361kW
- Peak Plant required with 5000L vessel = **225kW**



Double door access



Energy supply

Plantroom 2 (central):

Allow for 364kW heat pump, LTHW buffer vessel(s), pump sets and pressurization. All sizes subject to detailed design.

SAV Network calcs:

361kW peak – could be reduced to 225kW with 5000l of vessel storage

<u>Energy Centre 2</u> - **Plots 83-170**

- 101no VVX-IV 1-2 RAD
- 15no VVX-IV 2-2 RAD
- 1no VVX-IV 2-3 RAD
- Peak Plant required = 361kW
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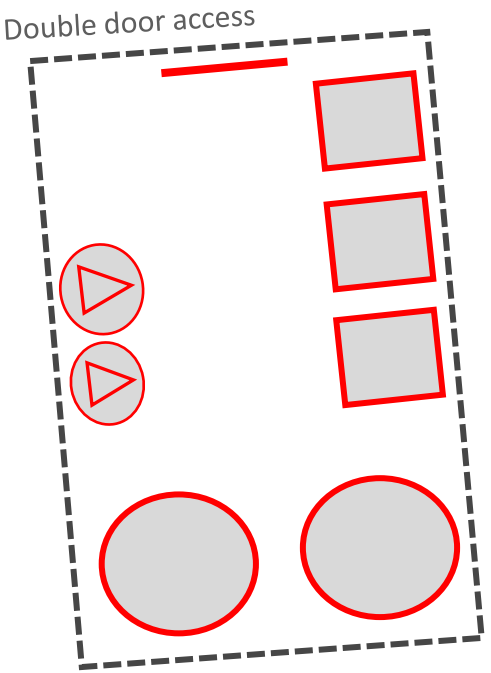
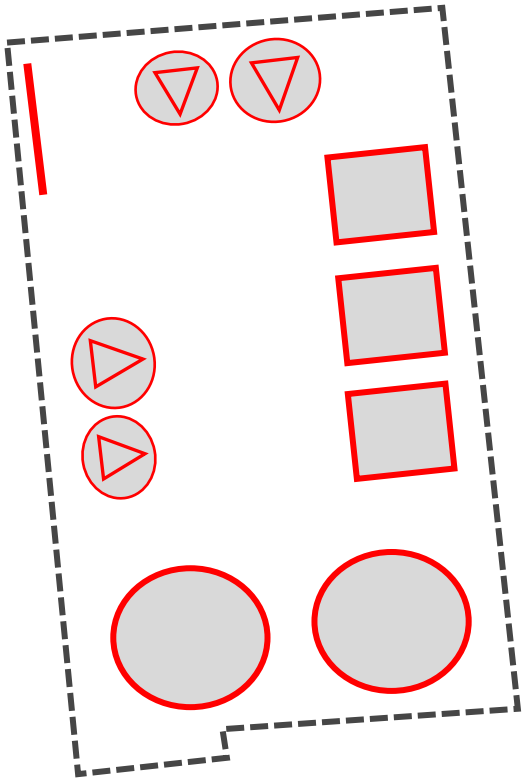
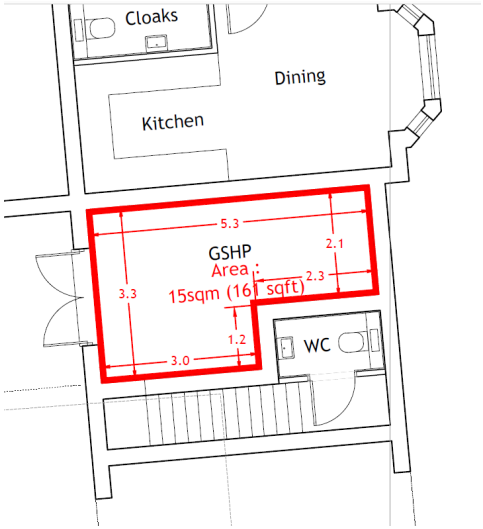


GSHP Notes:
Area: 31.5sqm/340sqft
Approximate Floor to Ceiling: 3m

Energy supply

Double door access at ground level – maintenance access to basement level





GSHP Notes:
Area: 15sqm/161sqft
Approximate Floor to Ceiling: 3m

Plantroom 3 (south) PLUS 4 (pump station):

Will require ~ 32m² plantroom space – at basement level below road access. Allow for 364kW heat pump, LTHW buffer vessel(s), pump sets and pressurization. All sizes subject to detailed design.

SAV Network calcs:

356kW peak – could be reduced to 226kW with 5000l of vessel storage

Energy Centre 3 - **Plots 171-249 + Commercial Space**

- 94no VVX-IV 1-2 RAD
- 13no VVX-IV 2-2 RAD
- Peak Plant required = 356kW
- Peak Plant required with 5000L vessel = **226kW**

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