



Identifying and assessing District Heating Opportunities

3 Identifying and assessing District Heating Opportunities

3.1 Introduction

The section describes the process and presents the results of our analysis of the district heating opportunity maps and identification of locations within the district that could be explored in more detail.

3.2 Identifying district heating opportunities

In reviewing the maps we sought to identify locations with the most potential in the following areas:

Heat density

Using the South West Heat Map data we were able to locate areas within the district with the highest levels of heat density and interrogate these to determine which buildings were contributing most to the apparent heat density.

Total heat demand

We have estimated the total heat demand within a certain area based on the data presented in the South West Heat Map and supplemented with metered data from other sources where available. Assessing the total heat demand provided us with an indication of the size of revenue from the heat sales and therefore what level of initial capital investment could be supported.

Presence of Key Anchor Loads

Using the South West Heat Map, NI185 data and desktop surveys we have looked for locations where there are a number of buildings with high and stable heat demands in close proximity. A cluster of anchor loads could provide the initial load in the creation of a wider network.

Building types

We have looked for locations with building types which result in a good balance of heat demand profiles. For example a residential area will require heat in mornings, evenings and

weekends, but there is less demand for heat in the daytime. If commercial buildings are also present, which have a daytime heat demand, the overall demand profile is more consistent and will enable the system to operate more efficiently.

Future plans

As well as reviewing the existing heat demands and densities we have looked at the future development plans within the area to see if there is potential for future development and expansion. Clusters that are close to one another also open up the opportunity for future expansion.

Building ownership

By reviewing building ownership we have sought to gain an understanding of the likely ease with which a network might be created. It is easier to secure customers for a DHN if there is one point of contact to coordinate with, rather than many individual customers. For example, a block of 50 social housing dwellings could be connected more easily under one agreement with the Housing Association, rather than 50 individual private homeowners. Local Authorities are also usually more able to enter into long term energy supply contracts.

Proximity to key opportunities and constraints

As discussed in the previous section we have mapped opportunities such as existing district heating schemes, CHP engines and strategic waste sites. Potential areas around these existing opportunities have a higher potential. Equally there are a number of constraints that could adversely impact on the potential for establishing district heating in a particular location, such as air quality restrictions, listed buildings/roads or physical barriers such as rivers or railway tracks.

Capabilities on project:
Building Engineering

3.3 Initial identification of clusters

By reviewing the maps and looking for the best opportunities in each of the areas listed above and through discussion with B&NES we identified a long-list of 15 clusters for further analysis. A map showing the identified clusters is presented on the following page.

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Building Engineering

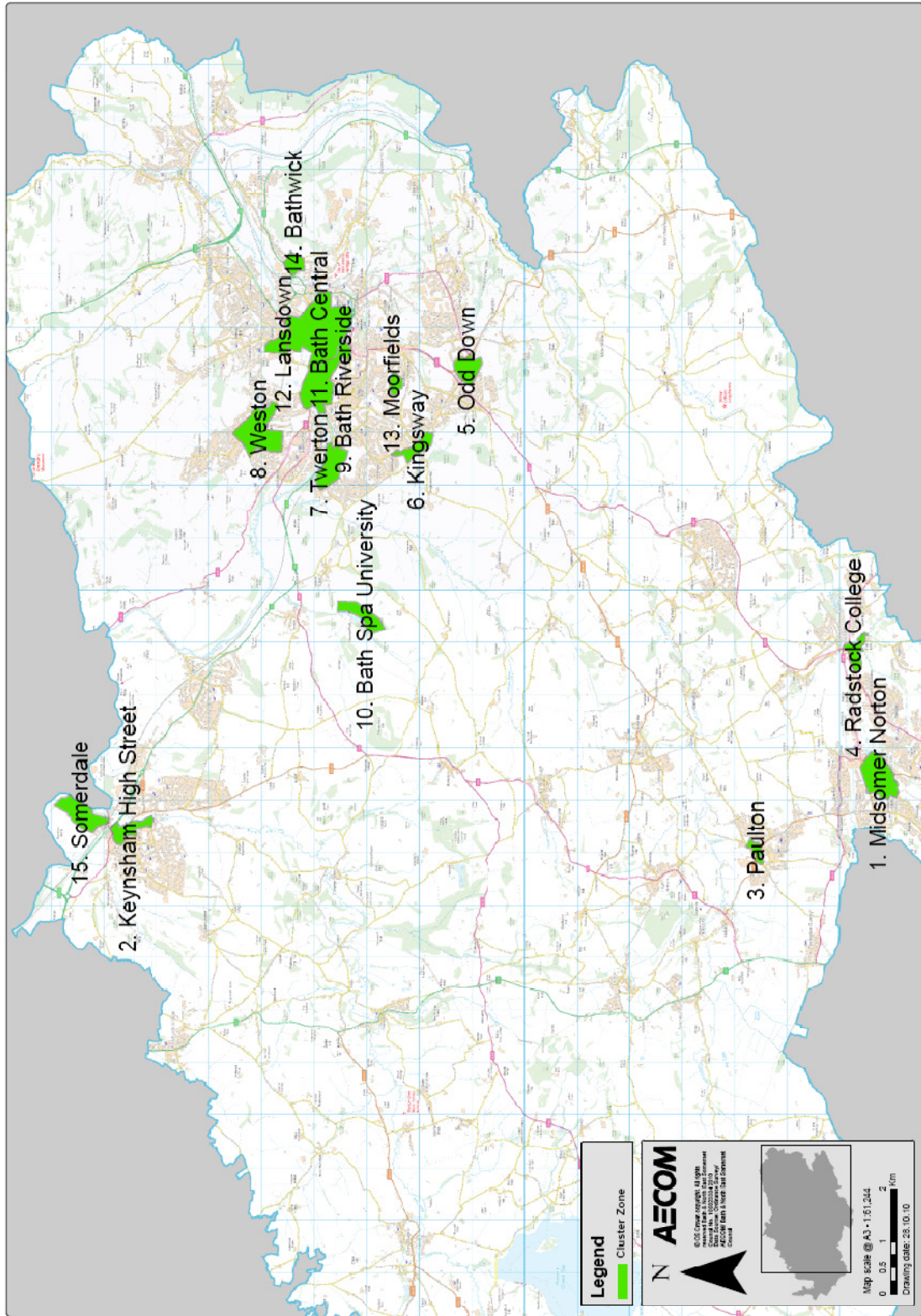


Figure 10: Map showing the 'long-list' of clusters within B&NES

Capabilities on project:
Building Engineering

3.4 Analysing the clusters

The long-list of clusters have been analysed in more detail to assess their potential. The results of this analysis have been presented in separate datasheets, which present the following information:

General overview

Introduction to the cluster outlining the building typology and any specific details relating to any existing features that are of interest as well as proposed development plans.

Map excerpt

An excerpt of the district heat opportunities maps showing the detail of the area which shows the location and rank of the key buildings within the cluster.

Cluster assessment summary

A summary of the relative potential of the cluster with regards to technical, financial and deliverability factors. See Section 3.6 for more details.

Summary of energy demands within the cluster

Details of the total energy demands within the area within the cluster boundary with

Review of the key opportunities and constraints

Details of the key opportunities and constraints within the cluster that could have an impact on the technical or commercial viability or the practical delivery of a network.

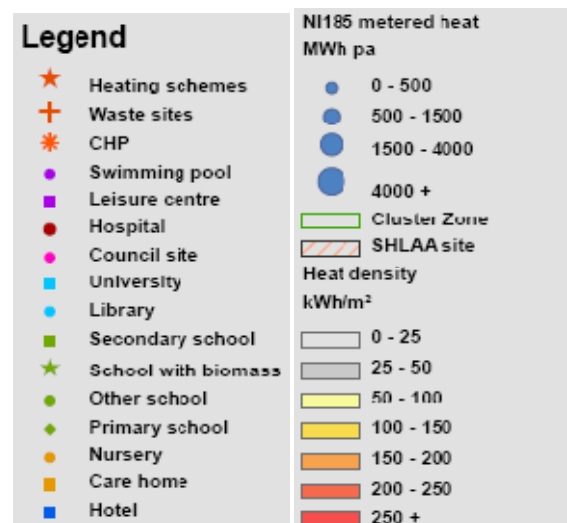
List of key existing buildings

Using the data within the south west heat map and metered data we have identified and ranked all the existing buildings within the cluster based on their heat demands. The names attributed to each of the sites has been taken from the South West Heat Map and it should be noted that these are reference names obtained from a variety of databases and therefore may not always match the current occupier or use.

List of proposed buildings

The proposed buildings within the cluster are also ranked based on the projected heat demands and the estimated delivery date is given based on information from the SHLAA.

The datasheets for each of the 15 cluster are presented over the following pages. The following legend should be used to understand the maps.

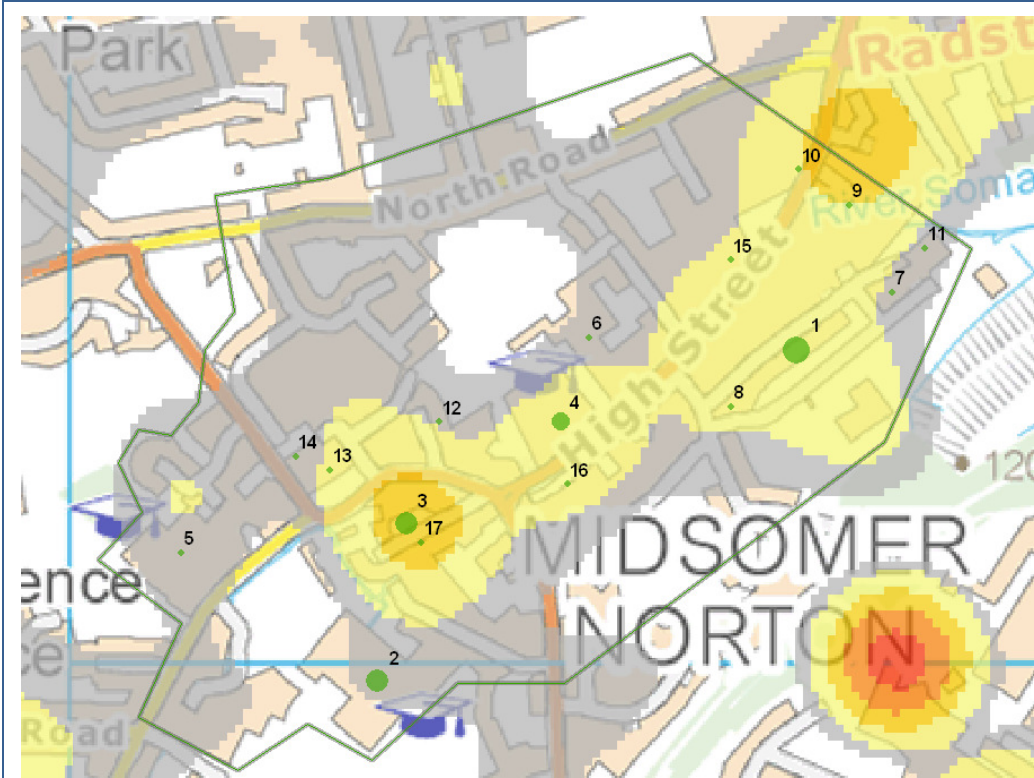


In addition the key buildings within each of the cluster zones have been represented with a green circle that is scaled to show the size of the head demand. The number represents the rank of the heat demand in terms of its size (1 being the highest). Further details of each of the buildings can be found in the 'List of key existing buildings' table.

1 Midsomer Norton

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Heat Map



General Overview

The heat demands within Midsomer Norton are mainly clustered in the centre of the town, but both the total loads and the density of the demand is relatively low. The major loads are a sports centre, three schools and two multi-residential buildings. There are plans to redevelop the High Street, which may include a number of new buildings (shown in brown in the draft masterplan below). This could potentially facilitate a strategic energy strategy for the town but would depend upon the timing and the nature of the proposed buildings.



Indicative masterplan for the High Street (from the Draft Midsomer Norton Regeneration Delivery Plan, April 2010)

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing/timing issues
<p>The total modelled demand from all buildings within the cluster boundary is 16,211MWh per year.</p> <p>The key existing loads are South Wansdyke Sports Centre, Somervale School, St John's Primary School, Midsomer Norton Primary School, Mill Court (31 Flats) and The Hollies.</p>	<p>High Street redevelopment</p> <p>Potential new development at South Road car park</p>	<p>Link with the redevelopment of the high street will depend on the programme of this work.</p>
Site Opportunities	Site Constraints	Next steps if taken forward
<p>Leisure centre, council offices and a number of schools in close proximity</p> <p>A number of other large commercial sites within town centre</p>	<p>Potentially difficult to find space for an energy centre</p>	<p>Obtain further details of timing and plans for redevelopment</p>

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	South Wansdyke Sports Centre		1281 MWh	Metered	Data obtained from Aquaterra
2	Somervale School		945 MWh	NI185	LA owned
3	MILL COURT	BA3 2HA	919 MWh	SWHM	
4	THE HOLLIES	BA3 2DT	710 MWh	SWHM	
5	St Johns C of E Primary School MSN VA		305 MWh	NI185	LA owned
6	Midsomer Norton Primary School		265 MWh	NI185	LA owned
7	SOMER COURT	BA3 2SU	265 MWh	SWHM	
8	OLD SCHOOL HALL	BA3 2UG	249 MWh	SWHM	
9	RACKVERNAL COURT	BA3 2DH	168 MWh	SWHM	
10	43 HIGH STREET	BA3 2DL	148 MWh	SWHM	Commercial
11	ST CHADS SURGERY	BA3 2UH	136 MWh	SWHM	Commercial
12	CHURCH OF THE HOLY GHOST	BA3 2HS	122 MWh	SWHM	
13	ST JOHN THE BAPTIST CHURCH	BA3 2HX	122 MWh	SWHM	
14	ST JOHN'S CHURCH HALL	BA3 2HX	122 MWh	SWHM	
15	38 HIGH STREET	BA3 2DL	107 MWh	SWHM	Commercial
16	MIDSOMER NORTON LIBRARY	BA3 2DA	104 MWh	SWHM	LA owned
17	FARTHING & SHORT	BA3 2HQ	103 MWh	SWHM	Commercial

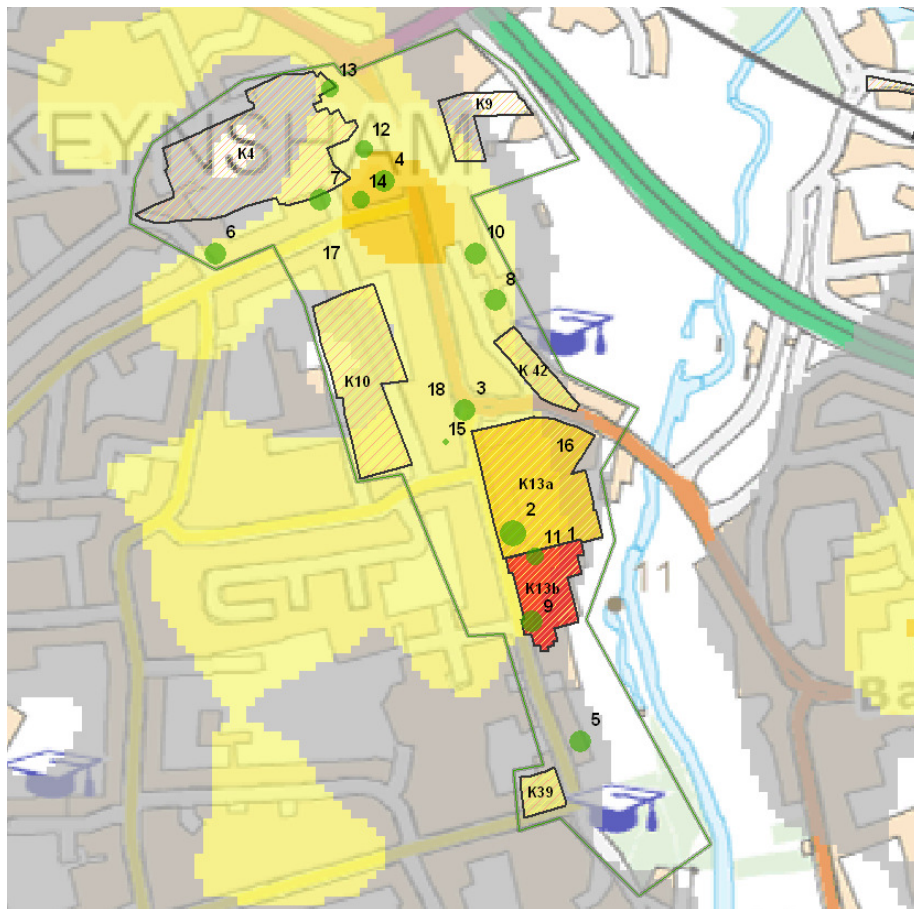
List of key proposed buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
None					

Capabilities on project:
Building Engineering

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

2 Keynsham High St **AECOM**

Heat Map



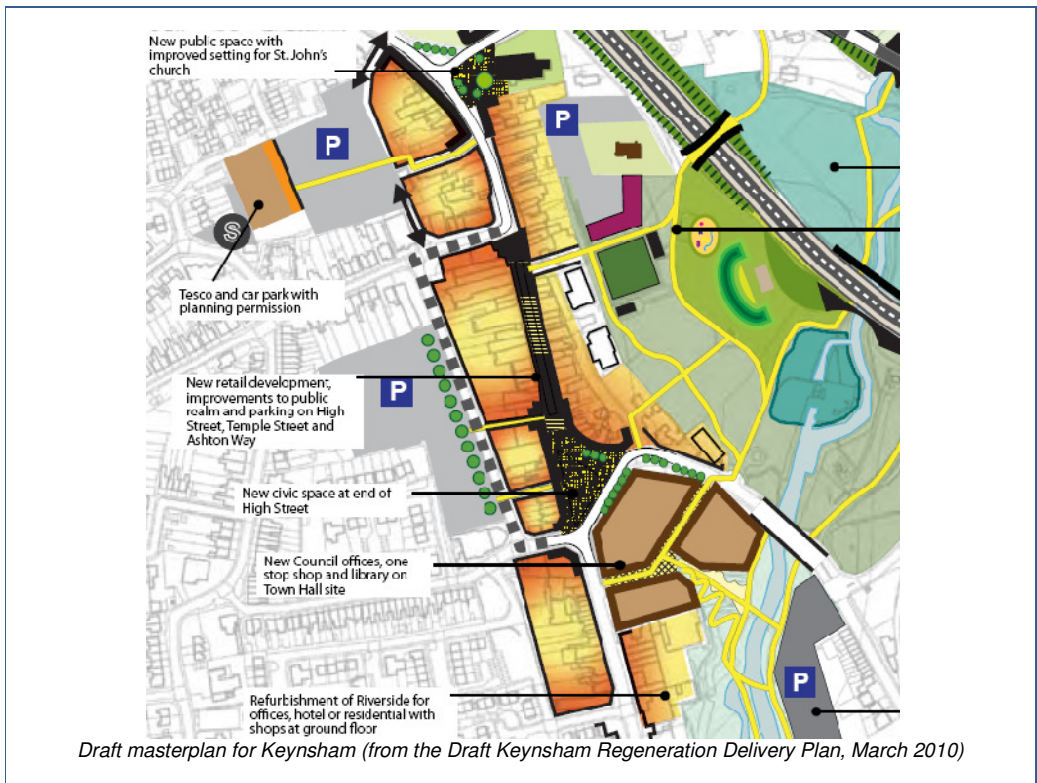
General Overview

The heating demands in Keynsham are located around the High Street and include a range of offices, retail, residential and commercial buildings. The highest heat demand is from the leisure centre, although there is the possibility that this could be considered for relocation.

The major new development in Keynsham will be the new Council Offices, which will include office space, retail, leisure and residential units. The adjacent Riverside building is also planned for refurbishment which could include a hotel, offices and/or retail in addition to residential units. This planned redevelopment could offer an opportunity to connect the energy infrastructure, particularly along High Street and Temple Street.

There are wider plans for the redevelopment of the High Street and a masterplan was produced in 2010 (see below). Depending on the timing of this in relation to the redevelopment of the Town Hall and Riverside building, the civil works for this could provide an opportunity to enable an expansion of a network to serve the retail units along this street.

Capabilities on project:
Building Engineering



Review of key issues		
Existing buildings	Proposed buildings	Phasing/timing issues
<p>The total modelled demand from all buildings within the cluster boundary is 7,817 MWh per year</p> <p>Good range of different existing loads including a number of LA buildings</p>	<p>Multiple development sites as part of overall redevelopment of high street</p> <p>The new town hall will include mixed uses with a library and retail. It is expected to have high thermal mass and high internal gains from IT and occupants so heat demands could be low.</p>	<p>Linked to town hall redevelopment</p>
Site Opportunities	Site Constraints	Next steps if taken forward
<p>Use of low carbon technologies could help to deliver high CO₂ savings for the new Council buildings.</p> <p>New Council building could enable an energy centre to be created</p> <p>Mix of anchor loads in close proximity</p> <p>Potential for some local extension and connection to Somerdale</p>	<p>The small overall heat demand may limit cost effectiveness of scheme</p> <p>Expansion constrained by river to the east and A4 bypass to the north</p> <p>Possible move of the leisure centre would significantly reduce the overall heat demands</p> <p>An AQMA has recently been declared within Keynsham for NO₂ along the high street.</p>	<p>Obtain further details on the proposed town hall redevelopment designs</p> <p>Review phasing of town hall relative to other developments</p>

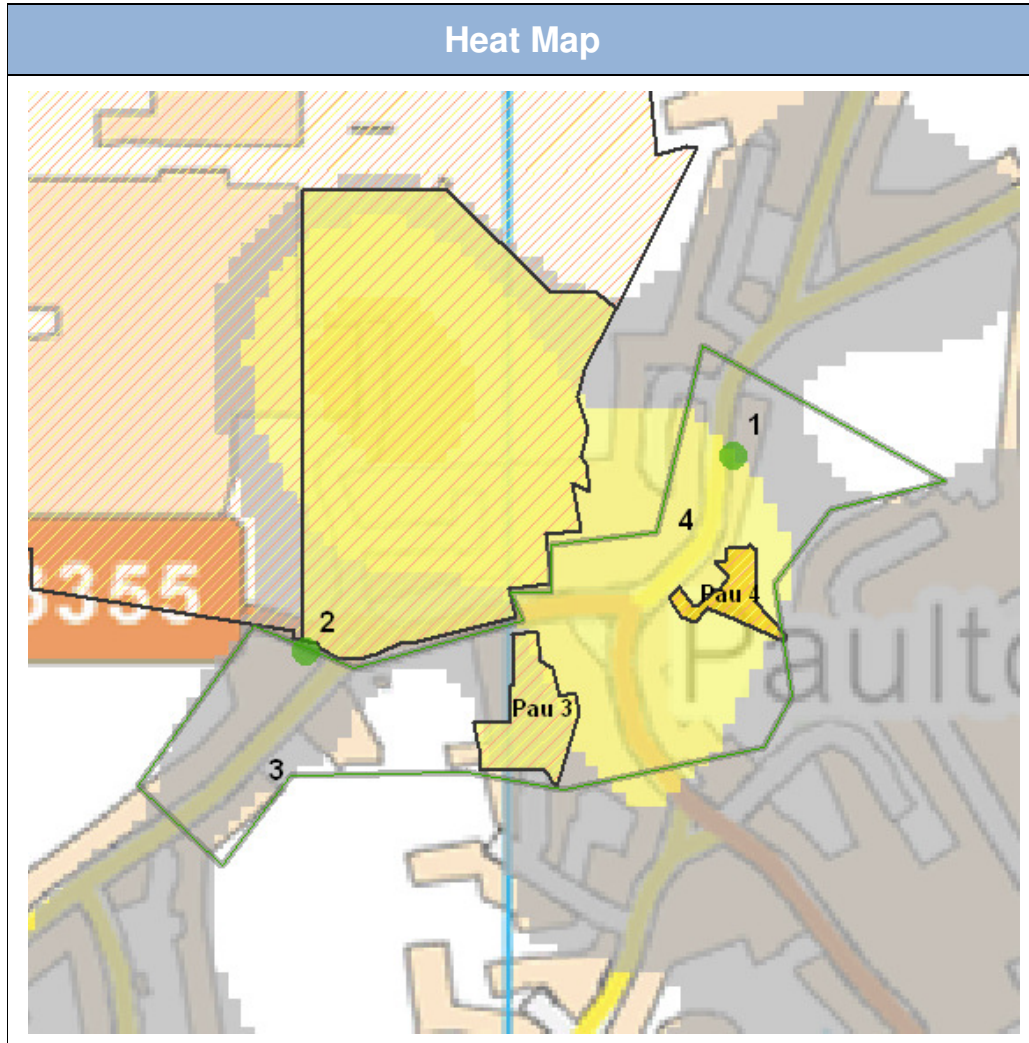
Capabilities on project:
Building Engineering

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	Keynsham Leisure Centre		3398MWh	Aquaterra	Possible relocation
2	FIRE STATION	BS31 1EL	390 MWh	SWHM	Part time use only
3	ST KEYNA COURT	BS31 1HB	319 MWh	SWHM	Multiple tenants
4	30 HIGH STREET	BS31 1DQ	302 MWh	SWHM	
5	ST CADOC HOUSE	BS31 1HD	270 MWh	SWHM	
6	THE WILLOWS	BS31 2DJ	247 MWh	SWHM	
7	ROYAL BRITISH LEGION	BS31 2JA	226 MWh	SWHM	
8	THE REGENTS	BS31 1DG	225 MWh	SWHM	
9	Riverside Offices		197 MWh	NI185	LA owned
10	THE HYDES	BS31 1DG	191 MWh	SWHM	
11	RIVER TERRACE	BS31 1HE	152 MWh	SWHM	
12	22 HIGH STREET	BS31 1DQ	144 MWh	SWHM	
13	8 HIGH STREET	BS31 1DR	138 MWh	SWHM	
14	ABBEY APARTMENTS	BS31 2JA	136 MWh	SWHM	
15	4 TEMPLE STREET	BS31 1EN	107 MWh	SWHM	
16	KEYNSHAM LIBRARY	BS31 1ED	104 MWh	SWHM	LA owned
17	KWIK-FIT	BS31 2UF	101 MWh	SWHM	Commercial building
18	62C HIGH STREET	BS31 1EA	101 MWh	SWHM	Commercial building

List of key proposed buildings by total heat demand					
Rank	Name	Ref	Heat Demand	Source	Notes
1	Town Hall	K13a	2034MWh	SHLAA	Offices, Flats, Retail
2	Riverside	K13b	638 MWh	SHLAA	175 Flats
3	Ashton Way Car Park	K10	328 MWh	SHLAA	90 Flats
4	St Johns Ct Charlton Rd	K4	141 MWh	SHLAA	10 Flats, 1750sqm A1
5	Temple Junior School	K 42	77 MWh	SHLAA	15 Flats

Cluster assessment							
	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Technical							
Financial							
Deliverability							

3 Paulton

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General Overview

The existing heat demands within Paulton are very limited and this is clearly evident in the heat map. Although there are a number of development sites in close proximity the density of development is low and likely to be unsuitable for district heating. Also, the largest of these (Pau 1) has received planning permissions and is already in construction.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>The total modelled demand from all buildings within the cluster boundary is 2,478 MWh per year</p> <p>The existing loads in the area are very small.</p>	<p>There are a number of residential sites in various stages of development.</p>	<p>Some of the sites have received planning approval and the largest site (Pau1) is already under construction.</p>
Site Opportunities	Site Constraints	Next steps
	<p>No large anchor loads.</p> <p>Cluster relatively dispersed</p> <p>Low density of the new development probably not suited to district heating, other energy strategies more likely</p> <p>Little opportunity for future expansion</p>	

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	MILLWARD TERRACE	BS39 7NP	184 MWh	SWHM	Residential
2	PARK CORNER	BS39 7LW	147 MWh	SWHM	Residential
3	FIRE STATION	BS39 7LW	105 MWh	SWHM	Public owned
4	THE ROYAL BRITISH LEGION	BS39 7NW	102 MWh	SWHM	

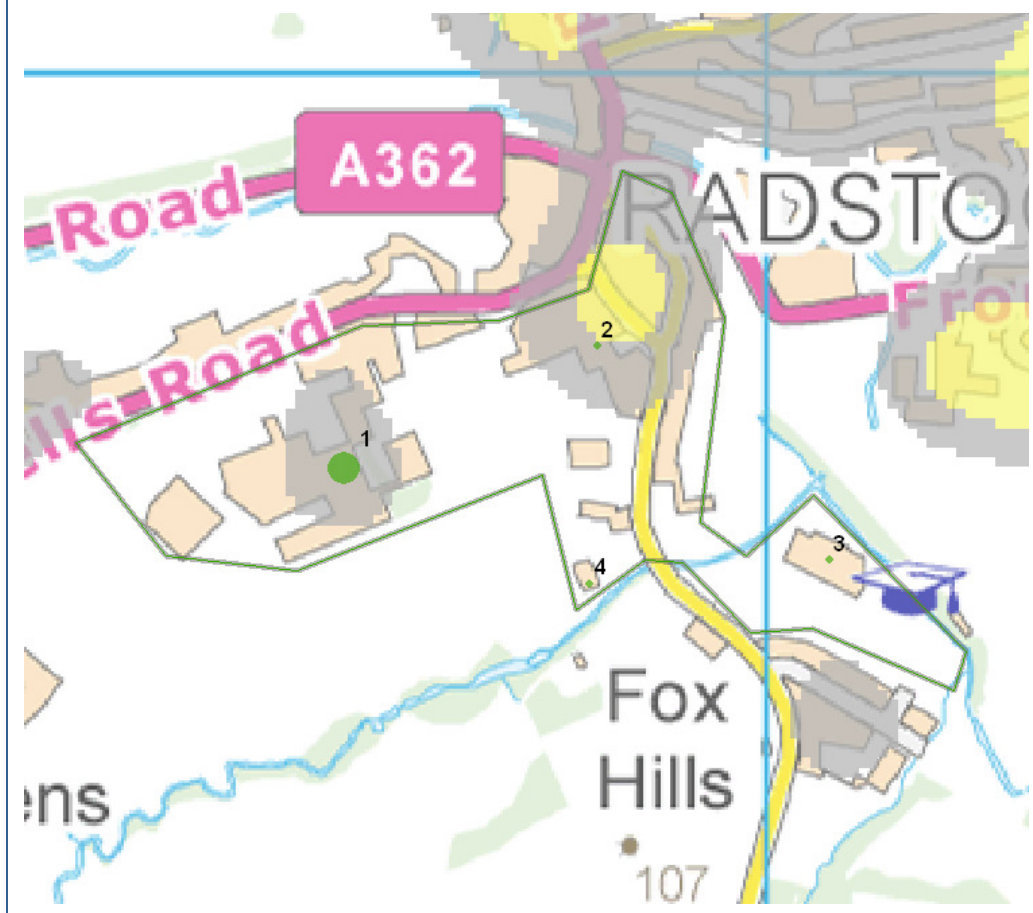
List of key proposed buildings by total heat demand					
Rank	Name	Ref	Heat Demand	Source	Notes
1	Polestar Purnell	Pau 2	2,459MWh		421 Houses (in construction)
2	Heal House, High Street	Pau 4	180 MWh	SHLAA	25 Houses
3	Builders Merchants	Pau 3	100 MWh	SHLAA	14 Houses

Cluster assessment							
	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Technical							
Financial							
Deliverability							

4 Radstock

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Heat Map



General Overview

The density and size of the heat demands within Radstock appear to be low. One potential opportunity however is North Radstock College which has a reasonably high demand. This could potentially be met using a low carbon energy system which could then be used to deliver heat to other buildings, although the distance is likely to make it unviable from a financial perspective.

Capabilities on project:
Building Engineering

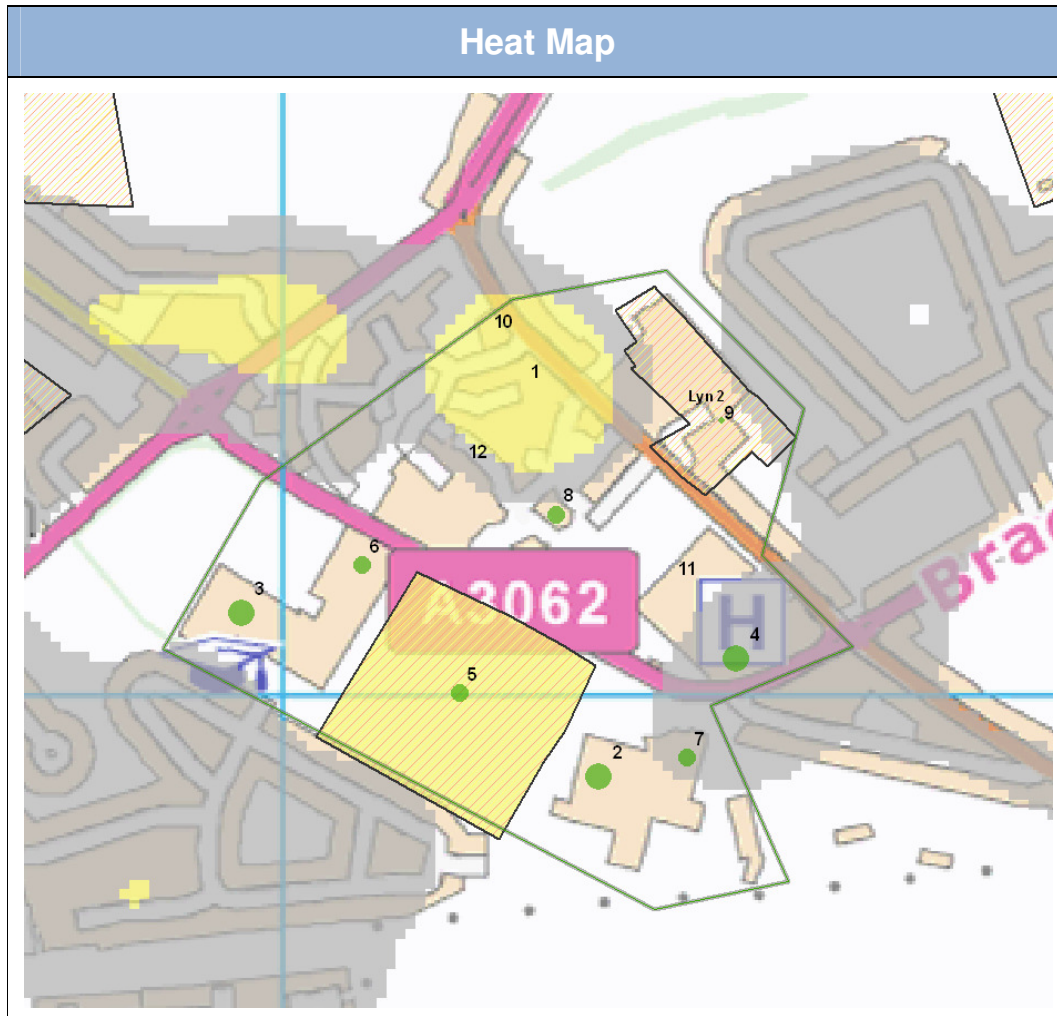
Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>Small cluster based around the College</p> <p>Total modelled cluster demand: 2,569 MWh per year</p>	<p>No new developments expected near cluster</p>	<p>No phasing constraints identified</p>
Site Opportunities	Site Constraints	Next steps
<p>Potential to install a low carbon energy system in the College that could be connected to neighbouring buildings.</p>	<p>Small overall heat demand may limit viability of a scheme</p> <p>Little opportunity for expansion beyond town centre.</p> <p>The college is at a reasonable distance (100-200m) from other buildings identified as suitable for connection</p>	<p>Review the data for the commercial uses</p> <p>Metered energy data for the Co-op superstore</p>

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	Radstock College		1114MWh	NI185	LA Owned
2	RADSTOCK HOUSE	BA3 3PR	210 MWh	SWHM	
3	St Nicholas C of E Primary School		164 MWh	NI185	LA Owned
4	TEA & TRADE TEA ROOMS	BA3 3QG	122 MWh	SWHM	Commercial
5	ST NICHOLAS CHURCH	BA3 3QG	92 MWh	SWHM	

List of key proposed buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
none					

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

5 Odd Down

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General Overview

This cluster shows a number of public buildings and two development sites in relatively close proximity. The existing loads comprise of PCT offices, schools and residential dwellings. The proximity of these buildings and the new development that is due to come forward in this location could make a combined system worth exploring. However, the PCT are due to relocate and the future of the site on which the hospital and offices stand is uncertain.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>Hospital and PCT HQ are in the process of ending operations at this site. Future site uses are unknown.</p> <p>Total modelled cluster demand: 3,376 MWh per year</p>	<p>Lyn 1: Hayesfield School Playing Field, Frome Road. 99 residential units and 4000m2 of A1.</p> <p>Lyn 2: Midford Road Employment Site. 53 residential units</p>	<p>Lyn 1 is expected for development in the next 5 years.</p> <p>Lyn 2 not expected to come forward in the plan period</p>
Site Opportunities	Site Constraints	Next steps
<p>Mixed use development can act as catalyst for connecting existing heat demands from adjacent schools</p>	<p>Small overall heat demand may limit cost effectiveness of scheme</p> <p>Dependent on development coming forward.</p> <p>Large existing heat demand from hospital being removed.</p> <p>The hexagon may have an electric heating system which could increase the cost of converting to a communal heating system.</p>	<p>Obtain metered data for the hospital site and more information on its future</p> <p>Obtain more information on the Hexagon</p>

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	THE HEXAGON	BA2 5RS	1115 MWh	SWHM	Residential
2	The Link Special School		651 MWh	NI185	LA owned
3	St Martins Garden Primary School		439 MWh	NI185	LA owned
4	ST MARTIN'S COURT	BA2 5RQ	402 MWh	SWHM	Residential
5	HAYESFIELD SCHOOL PLAYING FIELD	BA2 5RE	181 MWh	SWHM	
6	ST MARTIN'S GARDEN CHILDRENS CENTRE	BA2 5RE	181 MWh	SWHM	
7	MARGARET COATES SPECIAL SCHOOL	BA2 5RF	181 MWh	SWHM	
8	THE OLD STABLES	BA2 5SR	153 MWh	SWHM	Residential
9	73 MIDFORD ROAD	BA2 5RT	108 MWh	SWHM	Commercial
10	THE OLD BAKERY	BA2 5RB	76 MWh	SWHM	
11	ST MARTIN'S HOSPITAL	BA2 5RP	76 MWh	SWHM	Closed, PCT offices only
12	ST MARTIN'S HOSPITAL PCT HEADQUARTERS	BA2 5RP	76 MWh	SWHM	PCT offices are expected to close, future use unknown

List of key proposed buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	Haysfield Playing Field, Frome Rd	Lyn 1	920 MWh	SHLAA	99 Homes
2	Midford Road Emp. Site	Lyn 2	194 MWh	SHLAA	53 Homes

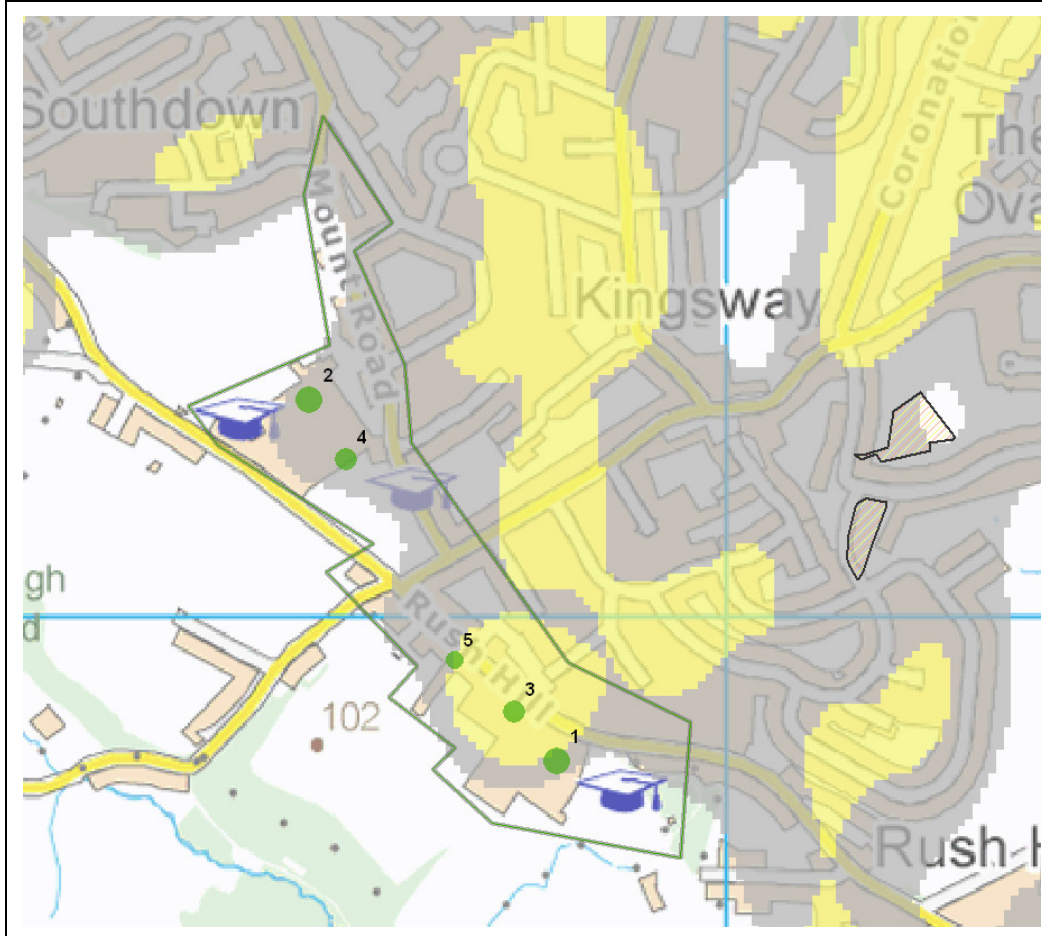
Capabilities on project:
Building Engineering

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

6 Kingsway

AECOM

Heat Map



General Overview

The proximity of Culverhay school to Culverhay Leisure Centre suggests that the option of connecting the two buildings with an energy system could be explored. There are two other schools in relatively close proximity but the site is on the edge of the city and thus the surrounding buildings are mostly low density housing so further expansion is limited. The main stumbling block to the progression of this option is the long-term future of the school, which is currently uncertain.

Capabilities on project:
Building Engineering

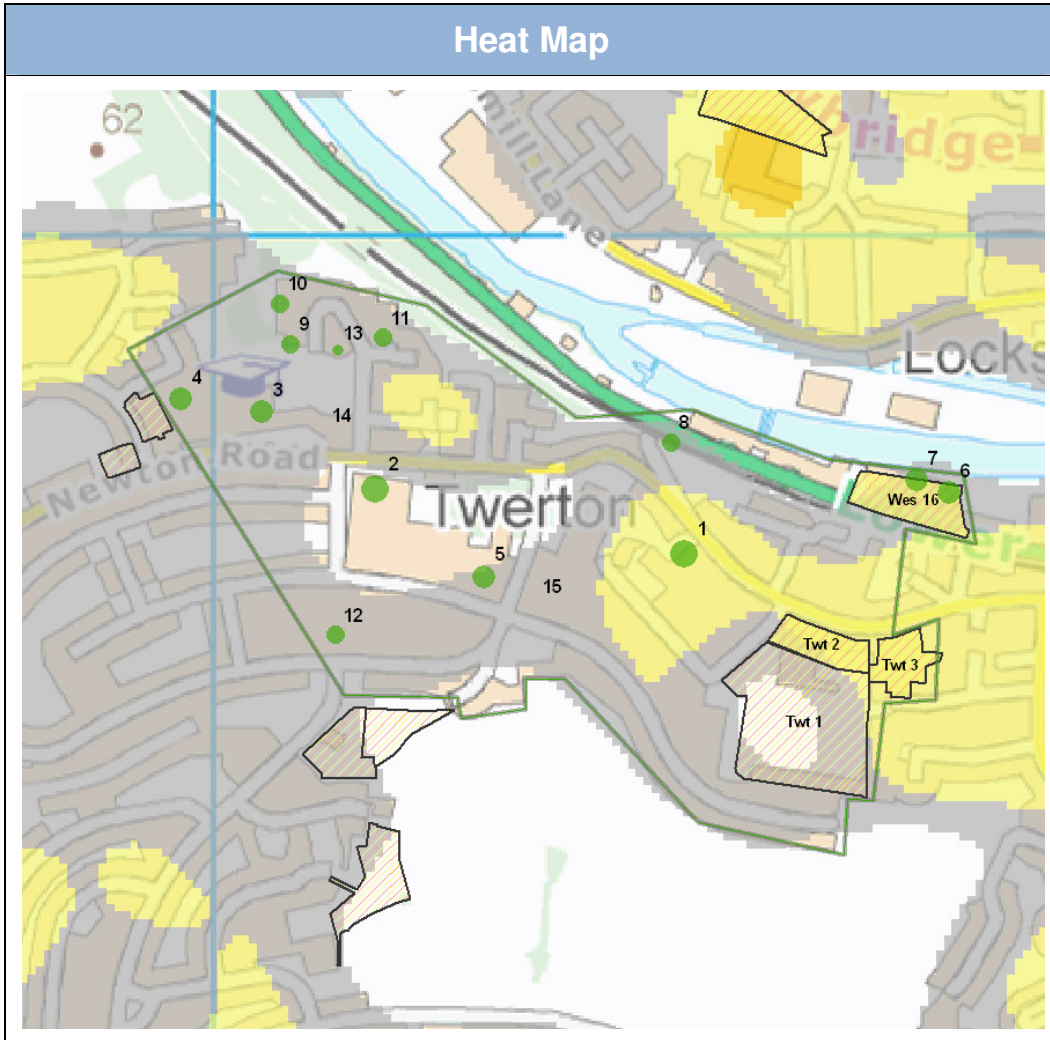
Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>The total modelled cluster demand is 4,050 MWh per year</p> <p>The key loads in this location are three schools and a leisure centre.</p>	<p>No new developments expected near cluster</p>	<p>No phasing constraints</p>
Site Opportunities	Site Constraints	Next steps
<p>Leisure centre could act as a good anchor load</p>	<p>Existing buildings are primarily low density residential housing setback from the main road which would increase costs of connection</p> <p>Small overall heat demand.</p> <p>Distance between some of the demands is significant</p> <p>Cluster located at the edge of the urban area, limiting opportunities for future expansion.</p> <p>Possible closure of the school</p>	<p>Obtain further details of the future of the school and pool</p>

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	Aquaterra Culverhay Sports and Leisure Centre		715 MWh	Aquaterra	
2	Southdown Junior School		456 MWh	NI185	LA Owned
3	Culverhay School		227 MWh	NI185	Future of the school is uncertain.
4	Southdown Infants School		227 MWh	NI185	LA Owned

List of key proposed buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
None					

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

7 Twerton



General Overview

The centre of Twerton includes a number of Council owned buildings and blocks of flats as well as a few new development sites in close proximity. This cluster is located just to the west of the Bath Riverside (no. 9) so would have the potential for future connection or expansion. However the total heat demands and density in this location is much lower than some of the other clusters so it is a relatively less attractive location.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>The total modelled cluster demand is 9,544 MWh per year</p> <p>Key existing load include a number of residential blocks, care homes, commercial units and schools.</p>	<p>Twt 1: Twerton Football Club 73 units</p> <p>Twt 2:High Street West Twerton 20units</p>	<p>New developments may have already been completed</p>
Site Opportunities	Site Constraints	Next steps
<p>Number of council operated heat demands, such as schools and offices close to residential care homes</p>	<p>Small overall heat demand may limit cost effectiveness of scheme</p> <p>Little opportunity of extension to the surrounding neighbourhood.</p> <p>Finding location for energy centre.</p>	

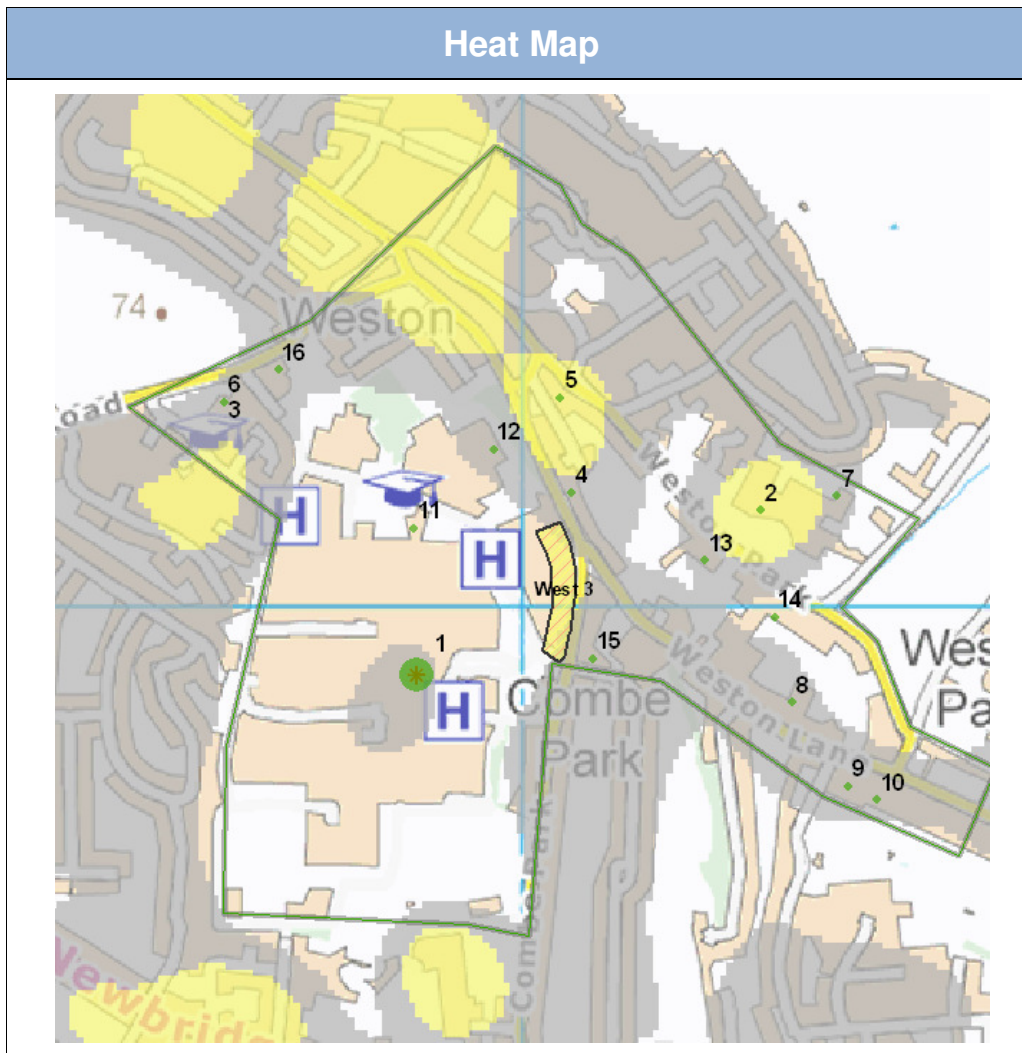
List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	BATH FOYER	BA2 1DF	552 MWh	SWHM	Sheltered Housing – 31 units
2	Carrswood		409 MWh	NI185	LA Owned
3	St Michaels C of E Junior School		284 MWh	NI185	LA Owned
4	THE HUT	BA2 1RX	269 MWh	SWHM	
5	PENNARD COURT	BA2 1RH	242 MWh	SWHM	
6	TWERTON MILL	BA2 1EW	221 MWh	SWHM	
7	ASTRA HOUSE	BA2 1HB	216 MWh	SWHM	Residential
8	ARCH 9	BA2 1EP	181 MWh	SWHM	
9	CADBY HOUSE	BA2 1SW	174 MWh	SWHM	Residential
10	RODNEY HOUSE	BA2 1SN	170 MWh	SWHM	Residential
11	CARR HOUSE	BA2 1SR	170 MWh	SWHM	Residential
12	NAISH HOUSE	BA2 1SF	155 MWh	SWHM	Residential
13	BRUNEL HOUSE	BA2 1SP	123 MWh	SWHM	Residential
14	FIRST STEPS NURSERY	BA2 1SY	105 MWh	SWHM	
15	FIELDING HOUSE	BA2 1DP	98 MWh	SWHM	Residential

List of key proposed buildings by total heat demand					
Rank	Name	Reference	Heat Demand	Source	Notes
1	Twerton Football Club	Twt 1	266 MWh	SHLAA	73 dwellings
2	Carrs Mill	Wes 16	164 MWh	SHLAA	
3	Marjorie Whimster House	Twt 3	137 MWh	SHLAA	
4	High Street West Twerton	Twt 2	94 MWh	SHLAA	20 dwellings

Capabilities on project:
Building Engineering

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

8 Weston



General Overview

The Royal United Hospital already has a heat distribution network linking several of the buildings on the site. This is currently fed by gas-fired boilers but we understand that plans to install a gas-fired CHP have recently been approved and this should be in operation soon. Expansion of existing DHN's are often much more cost effective than creation of new systems. Subject to the appetite of the RUH there could be the potential for extension to serve the neighbouring schools and also the proposed development that is planned adjacent to the site.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
Cluster located around hospital estate, with metered demand of 34,117 MWh per year. The rest of the cluster has modelled heat demand of 12,845 MWh per year	West 3: Land at Royal United Hospital. 32-40 residential units	West 3 is expected to come forward within 10 years
Site Opportunities	Site Constraints	Next steps
Existing CHP heating scheme planned for the RUH. Expansion of existing networks are often more cost effective. A number of schools sites in relative proximity to the hospital estate	Area around hospital estate is low density residential School buildings are relatively far apart (250-650m)	Obtain further details of the RUH heating system and potential and interest in expansion

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Notes
1	Royal United Hospital		34,116MWh	NI185	Existing DHN
2	WOODLAND GROVE	BA1 4AS	884 MWh	SWHM	
3	ST MARYS RC PRIMARY SCHOOL	BA1 4EH	302 MWh	SWHM	School
4	MANOR VILLAS	BA1 3PF	276 MWh	SWHM	Residential
5	ST CLEMENTS COURT	BA1 4BZ	213 MWh	SWHM	
6	St Marys Catholic Primary School Bath		188 MWh	NI185	LA Owned
7	THE ELMS	BA1 4AR	179 MWh	SWHM	
8	SUFFOLK HOUSE	BA1 4AB	173 MWh	SWHM	
9	KING EDWARDS PRE-PREP SCHOOL	BA1 4AQ	159 MWh	SWHM	School
10	KING EDWARD SCHOOL	BA1 4AQ	159 MWh	SWHM	
11	CATERPILLAR DAY NURSERY	BA1 3NG	151 MWh	SWHM	
12	CYNTHIA MOSSMAN SCHOOL	BA1 3NJ	151 MWh	SWHM	School
13	MULBERRY HOUSE	BA1 4AN	125 MWh	SWHM	Residential
14	LATHOM HOUSE	BA1 4AN	124 MWh	SWHM	Residential
15	43 COMBE PARK	BA1 3NS	103 MWh	SWHM	
16	CENTRE 69 YOUTH CENTRE	BA1 4EH	102 MWh	SWHM	

List of key proposed buildings by total heat demand					
Rank	Name	Reference	Heat Demand	Source	Notes
1	Land at Royal United Hospital	West 3	170 MWh	SHLAA	32-40 Dwellings

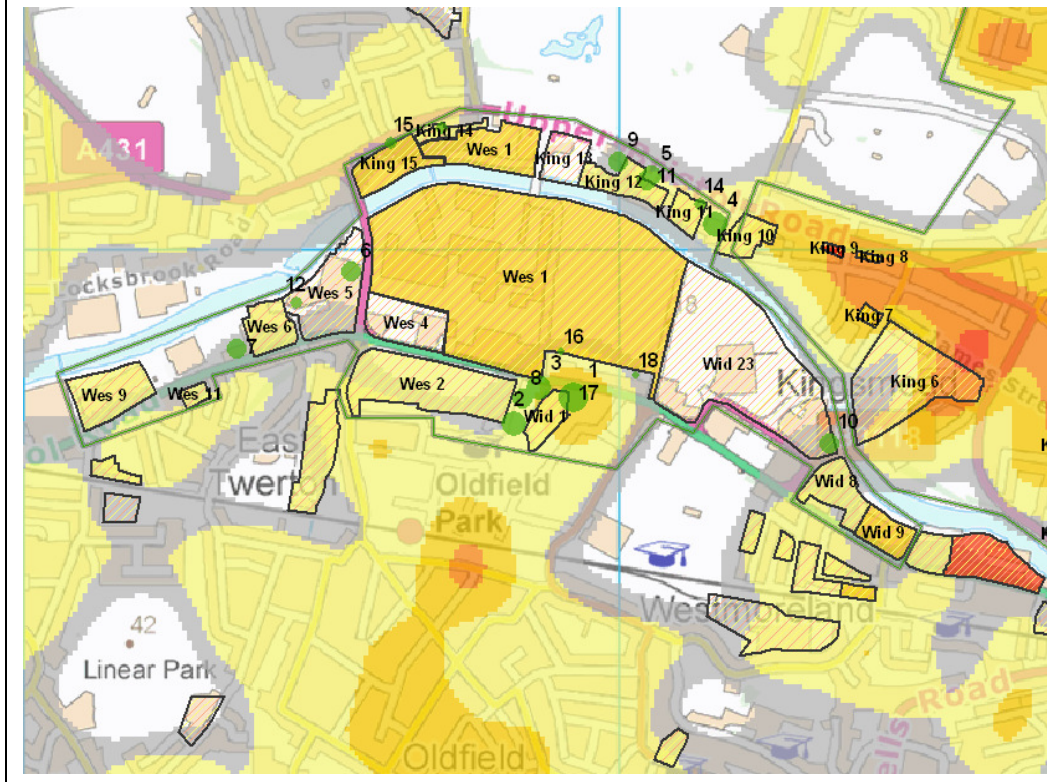
Capabilities on project:
Building Engineering

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

9 Bath Riverside



Heat Map



General Overview

Bath Riverside is the largest growth area within the city of Bath and comprises a number of development sites stretching west of the city on both sides of the river. The largest of these sites (Bath Western Riverside - Wes1) is being taken forward by Crest Nicholson and includes a significant number of new high density residential dwellings as well as some commercial and community uses. The plans for this site include a district heating network, although the exact design and technical specification of the system is still being finalised.

The proximity of such a large number of development sites throws up the opportunity to consider a more strategic view of delivering low carbon development as opposed to individual site specific strategies. The development of Bath Western Riverside could potentially help to enable this idea to be taken forward.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
Total modelled cluster demand: 10,948 MWh per year Key existing loads:	Lots of new development sites in close proximity:	The sites are phased to deliver new housing and commercial floorspace over the entire plan period Timing of each site is uncertain and will depend on the market as well as the individual developers.
Site Opportunities	Site Constraints	Next steps
	The river presents a significant constraint to linking the north and south of it. We understand that this was investigated as part of the BWR energy strategy but deemed to be unfeasible.	

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	18 ST PETER'S TERRACE	BA2 3BT	930 MWh	SWHM	
2	OLDFIELD PARK INFANT SCHOOL		325 MWh	NI185	LA Owned
3	ST PETER'S PLACE	BA2 3EP	306 MWh	SWHM	Residential
4	VICTORIA BRIDGE COURT	BA1 3AY	275 MWh	SWHM	Residential
5	7-9 COMFORTABLE PLACE	BA1 3AJ	186 MWh	SWHM	Commercial
6	STABLE YARD	BA2 3AY	183 MWh	SWHM	Residential
7	CHARLTON BUILDINGS	BA2 3EA	157 MWh	SWHM	Commercial
8	ST PETER'S COURT	BA2 3RF	153 MWh	SWHM	Residential
9	PARK VIEW	BA1 3AW	151 MWh	SWHM	Residential
10	UNIT 4	BA2 3QS	148 MWh	SWHM	Commercial
11	THE OLD MALTHOUSE	BA1 3AJ	146 MWh	SWHM	Commercial
12	BATH PANEL BEATING CO	BA2 3DX	132 MWh	SWHM	Commercial
13	7-10 KELSO PLACE	BA1 3AU	129 MWh	SWHM	Commercial
14	ONEGA CENTRE	BA1 3AG	125 MWh	SWHM	Commercial
15	VICTORIA PARK BUSINESS CENTRE	BA1 3AX	121 MWh	SWHM	Commercial
16	PARK VIEW	BA2 3EJ	113 MWh	SWHM	
17	17 ST PETER'S TERRACE	BA2 3BT	111 MWh	SWHM	
18	5-6 VICTORIA BUILDINGS	BA2 3EH	105 MWh	SWHM	Commercial

List of key proposed buildings by total heat demand					
Rank	Rank	Postcode	Heat Demand	Source	Status
1	Crest Phase DPA1	Wes 1	9867 MWh	SHLAA	DHN planned
2	BWR East (exc Help Hire)	Wid 23	911 MWh	SHLAA	
3	Bath Press	Wes 2	835 MWh	SHLAA	
4	Westmark	King 15	452 MWh	SHLAA	
5	Herman Millar Building	Wes 9	450 MWh	SHLAA	
6	Travis Perkins to Renault Garage_wid 9	Wid 9	327 MWh	SHLAA	

Capabilities on project:
Building Engineering

7	Travis Perkins to Renault Garage_wid 8	Wid 8	327 MWh	SHLAA	
8	Unigate Dairy	Wes 6	248 MWh	SHLAA	
9	Comfortable Place	King 12	222 MWh	SHLAA	
10	Eastern Part	Wes 5	219 MWh	SHLAA	
11	B F I Waste Systems	Wes 4	152 MWh	SHLAA	
12	Onega Centre	King 11	131 MWh	SHLAA	
13	Regency Laundry LBR	Wid 1	120 MWh	SHLAA	
14	Argos River Frontage	King 13	97 MWh	SHLAA	
15	Kelso Place	King 14	71 MWh	SHLAA	
16	Yard between Argle and Vernon Terrace	Wes 11	34 MWh	SHLAA	

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

10 Bath Spa University **AECOM**



General Overview

Bath Spa University Newton Park Campus is located on the outskirts of Bath. The campus comprises educational buildings, offices and student accommodation. The University have plans for a significant redevelopment of the campus and recently presented a revised masterplan at a public consultation. The university has stated that they intend to build to high standards of sustainable design and construction and the buildings on Phase 1 will be targeting a BREEAM Excellent rating, which will require a mandatory energy standard to be achieved. The new development opens the possibility for undertaking a strategic campus-wide energy strategy that could also serve the retained buildings on the site. However, the distance from the campus to other buildings with significant heating demands means that expansion from the site is not likely to be an option.



Proposed masterplan (from Bath Spa University Public Consultation July 2010)

Capabilities on project:
Building Engineering

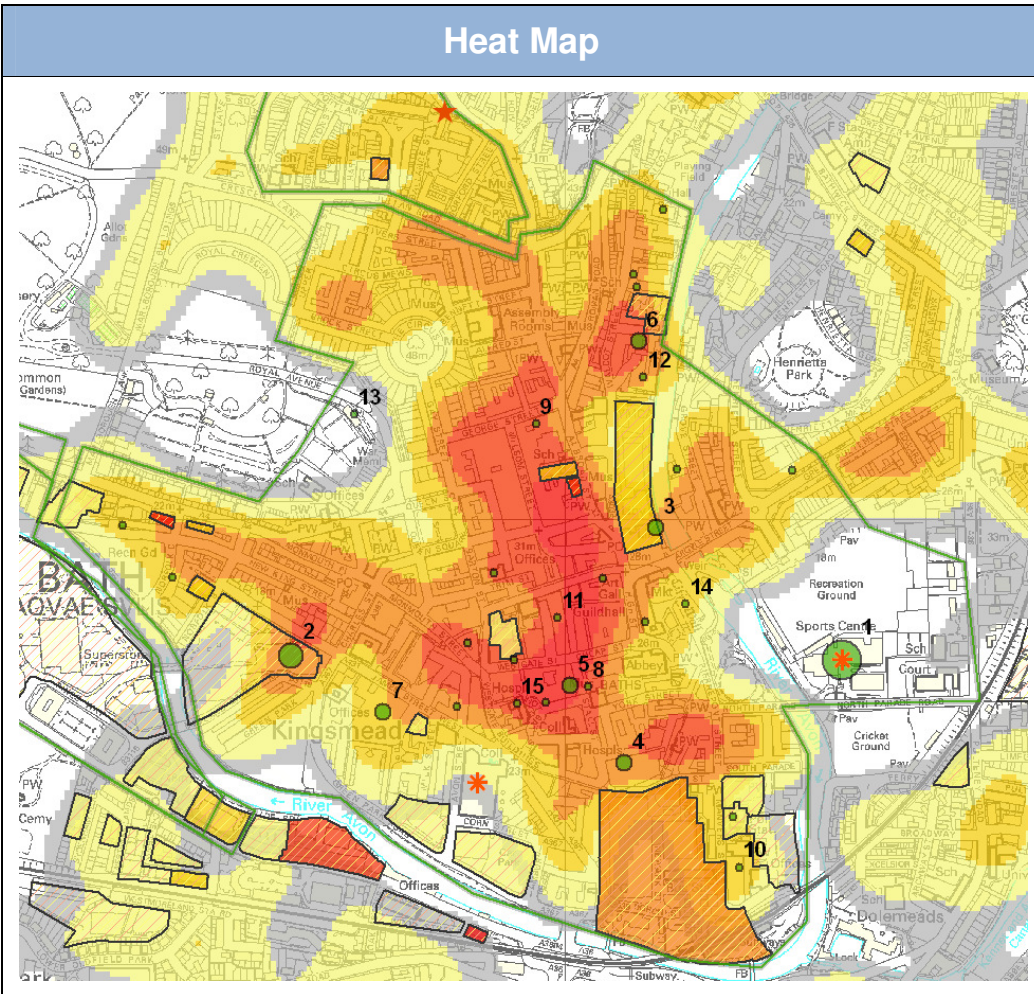
Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
The total modelled cluster demand is 987 MWh per year	New campus buildings planned	The development of the new campus would be the likely instigation for the development of a network
Site Opportunities	Site Constraints	Next steps
Development of an energy network would be made easier by the fact that this is a single site with a single owner. When completed the campus is likely to have a high and dense heat demand which could potentially support a network. The development of a low carbon energy network could help the university to meet building regulations requirements and corporate aspirations for the new buildings. On a rural site the use of biomass could be more likely	No opportunities for extension beyond campus Council has no role in bringing forward network	Further information regarding planned buildings and heat demands from existing buildings

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	MORETON	BA2 9BW	131 MWh	SWHM	
2	DAY NURSERY	BA2 9BE	30 MWh	SWHM	
3	NEWTON	BA2 9BN	30 MWh	SWHM	
4	STANTON	BA2 9BW	30 MWh	SWHM	
5	TWIVERTON	BA2 9BW	30 MWh	SWHM	
6	NEWTON ANNEX	BA2 9BW	30 MWh	SWHM	
7	WELLOW	BA2 9BW	30 MWh	SWHM	
8	LIBRARY	BA2 9BW	30 MWh	SWHM	
9	STABLE	BA2 9BW	30 MWh	SWHM	
10	TWINHOE	BA2 9BW	30 MWh	SWHM	

List of key proposed buildings by total heat demand					
Rank	Name	Reference	Heat Demand	Source	Status
1	New campus development		unknown		

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

11 Bath Central



General Overview

The centre of Bath has the highest heat densities found within the district and many of the largest heat loads, making it the most promising location for heating network. However the centre of Bath is also the most constrained location. Its historic and archaeological assets constitute a considerable constraint on the extent and location of networks. Further, it introduces additional site risks in terms of project delays and additional costs.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>Total modelled cluster demand: 123,359 MWh per year</p> <p>Key existing loads: Hilton The Podium Northgate House Guildhall Pump Rooms Trimbridge House Library</p>	<p>Multiple sites expected for development across city centre: King 1 & 4-10 Abb 1-8 & 10</p> <p>A number of new build hotels expected</p>	<p>The sites are phased over the plan period and beyond</p>
Site Opportunities	Site Constraints	Next steps
<p>High existing heat density and large overall heat demand.</p> <p>Mix of building types and users</p> <p>Key development sites (particularly the development of the podium) can act as catalysts for establishing network</p> <p>Multiple opportunities for expansion and connection to proposed neighbouring networks at Lansdown and Bath Riverside.</p> <p>Potential energy centre locations designed into new developments</p> <p>Potential to improve Council owner properties – help reduce CO2 emissions and raise profile</p>	<p>Archaeological and designations could constrain network routes</p> <p>Greater disruption from works</p> <p>Multiple agents would need to enter contracts to make scheme viable</p> <p>Locating an energy centre could be difficult given the high land value.</p> <p>Controlled dig depths</p> <p>AQMA designation</p>	<p>Obtain more hotel data</p> <p>Obtain information on Town Hall biomass study (to understand potential as an energy centre)</p> <p>Obtain details on land ownership</p>

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	Aquaterra		3820 MWh	NI185	
2	Green park station	BA1 1JB	2020 MWh	SWHM	
3	The podium	BA1 5AL	1494 MWh	SWHM	
4	Marks and Spencer plc	BA1 1QB	1277 MWh	SWHM	
5	39 stall street	BA1 1QH	1261 MWh	SWHM	
6	New workshops	BA1 5BT	1168 MWh	SWHM	
7	Kingsmead leisure complex	BA1 2BX	888 MWh	SWHM	
8	Pump rooms		833 MWh	NI185	
9	York buildings	BA1 2EB	758 MWh	SWHM	
10	20 Manvers street	BA1 1PX	700 MWh	SWHM	
11	Kings court	BA1 1ER	689 MWh	SWHM	
12	The Tramshed	BA1 5BB	663 MWh	SWHM	
13	Royal Victoria park pavilion		631 MWh	NI185	
14	The empire	BA2 4DF	590 MWh	SWHM	
15	St john's hospital	BA1 1SL	586 MWh	SWHM	
16	Guildhall		555 MWh	NI185	
17	Ladymead house	BA1 5BG	502 MWh	SWHM	
18	Seven dials	BA1 1EN	480 MWh	SWHM	
19	Connaught mansions	BA2 4BP	470 MWh	SWHM	

Capabilities on project:
Building Engineering

20	Westpoint	BA1 1UN	469 MWh	SWHM	
21	Northanger court	BA2 6PE	453 MWh	SWHM	
22	Cumberland house	BA1 2BG	450 MWh	SWHM	
23	Nelson house	BA1 2TL	414 MWh	SWHM	
24	27a Westgate street	BA1 1EP	414 MWh	SWHM	
25	108 Walcot street	BA1 5BG	413 MWh	SWHM	
26	St Swithins yard	BA1 5BG	411 MWh	SWHM	
28	Avon & Somerset constabulary	BA1 1JN	390 MWh	SWHM	
29	Northgate house	BA1 1RG	390 MWh	SWHM	
30	9-10 bath street	BA1 1SN	390 MWh	SWHM	

List of key proposed buildings by total heat demand

Rank	Rank	Postcode	Heat Demand	Source	Status
1	B4 Southgate	Abb 2	3938 MWh	SHLAA	
2	B16 Podium and Hilton	Abb 6	2960 MWh	SHLAA	Hilton redevelopment unlikely in the plan period
3	Avon Street Car Park	Abb 1	1511 MWh	SHLAA	
4	Coach Park	King 1	1511 MWh	SHLAA	
5	Manvers Street Police Station and Car Park_abb 5	Abb 5	837 MWh	SHLAA	
6	Manvers Street Police Station and Car Park_abb 4	Abb 4	837 MWh	SHLAA	
7	Green Park Station	King 6	353 MWh	SHLAA	
8	Hinton Garage	King 10	196 MWh	SHLAA	
9	Saw Close	King 5	127 MWh	SHLAA	
10	Smile Stores St Georges Place	King 8	84 MWh	SHLAA	
11	14_16 Monmouth Place	King 9	71 MWh	SHLAA	
12	Alexander House Norfolk Place	King 7	69 MWh	SHLAA	
13	Former King Edwards School/Broad St Car Park_RDP 1	Abb 8	66 MWh	SHLAA	
14	Walcot Yard Walcot Street	Abb 7	57 MWh	SHLAA	
15	7_9 Broad Street	Abb 10	51 MWh	SHLAA	
16	Manvers Street Royal Mail Sorting Depot	Abb 3	36 MWh	SHLAA	
17	1_3 James Street West	King 4	36 MWh	SHLAA	

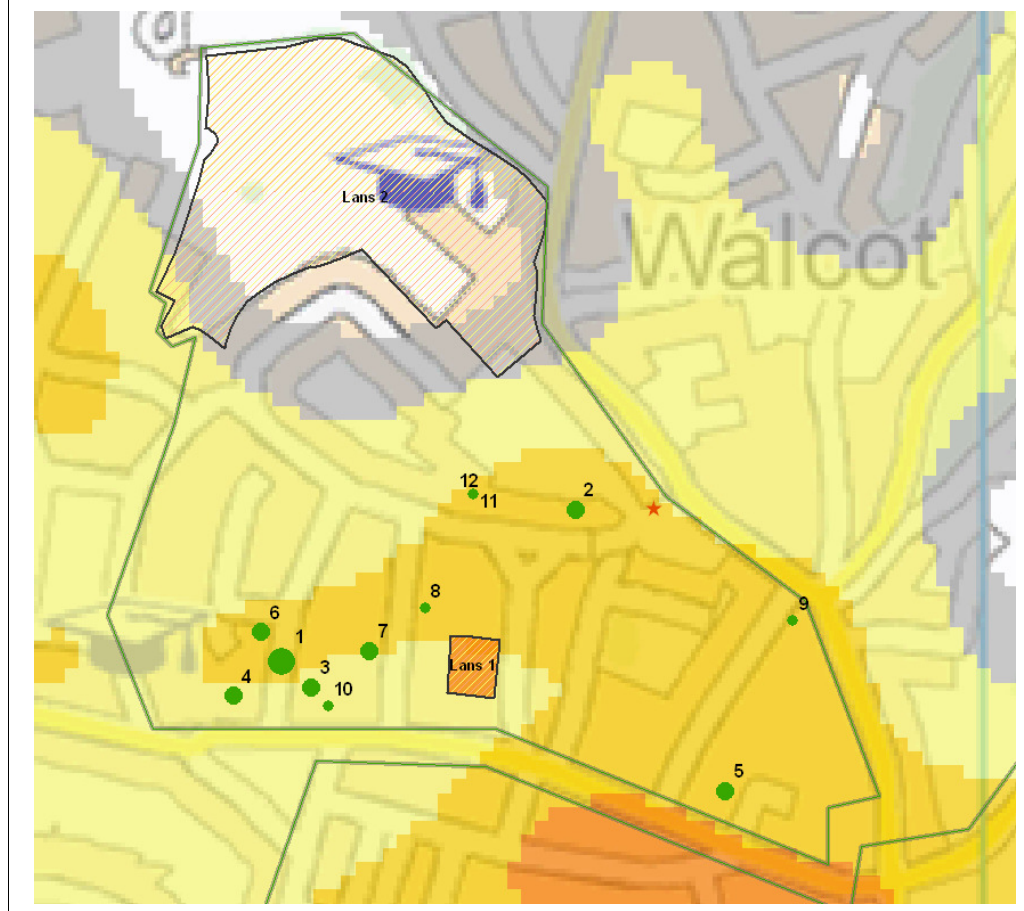
Cluster assessment

	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Technical							
Financial							
Deliverability							

12 Lansdown



Heat Map



General Overview

Lansdown is an area comprised of mainly Georgian buildings, protected by conservation designations. However on Balance Street, Somer Housing own a large block of flats that are connected to a communal heating system served by several large gas boilers. This existing system represents a potential opportunity for expansion and there are a number of buildings with reasonably large heat demands in the neighbouring area. This area is also of particular interest because of the opportunity that district heating poses to addressing the CO₂ emissions associated with energy use in the existing housing stock which, because of its age and conservation designations, will be hard to treat through other means. However, the lack of any major public sector anchor loads in the areas and the lower total heat demand and density relative to some of the other clusters, it is potentially less attractive than some of the other options.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
Total modelled cluster demand: 8,587 MWh per year Key existing loads: Balance Street Georgian Housing	Lans 1 St Mary's School: 15 units Lans 2 Hope House: 35 units	Lans 1 already built but Lans 2 expected within the next 5 years.
Site Opportunities	Site Constraints	Next steps
Balance Street housing is heated by a large existing communal heating system. Expansion of existing networks often more cost effective Surrounding residential area is primarily large Georgian terraces. Few interventions available to reduce their emissions. District heating could be a better option.	Small overall heat demand may limit cost effectiveness of scheme Few anchor loads Multiple residential users more complex and costly to integrate The cluster is located on a hill, increasing pumping demands	Obtain more detail on the heat demands, specification and energy centre location of the existing communal system at Balance Street.

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	PHOENIX HOUSE	BA1 2SL	354 MWh	SWHM	
2	8 PORTLAND PLACE	BA1 2RU	155 MWh	SWHM	
3	PHOENIX HOUSE	BA1 2SL	155 MWh	SWHM	
4	St Andrews C of E Primary School VA	152 MWh	NI185		
5	CHRISTCHURCH HALL	BA1 2RB	139 MWh	SWHM	
6	7 NORTHAMPTON STREET	BA1 2SN	138 MWh	SWHM	
7	PHOENIX HOUSE	BA1 2SL	133 MWh	SWHM	
8	THE OLD SCHOOL HOUSE	BA1 2SF	132 MWh	SWHM	
9	25 BELVEDERE	BA1 5ED	131 MWh	SWHM	
10	PHOENIX HOUSE	BA1 2SL	124 MWh	SWHM	
11	2 PORTLAND PLACE	BA1 2RU	121 MWh	SWHM	
12	1 PORTLAND PLACE	BA1 2RU	103 MWh	SWHM	

List of key proposed buildings by total heat demand					
Rank	Rank	Postcode	Heat Demand	Source	Status
1	Hope House Lansdown Road	Lans 2	231 MWh	SHLAA	
2	B14 St Mary's School	Lans 1	77 MWh	SHLAA	

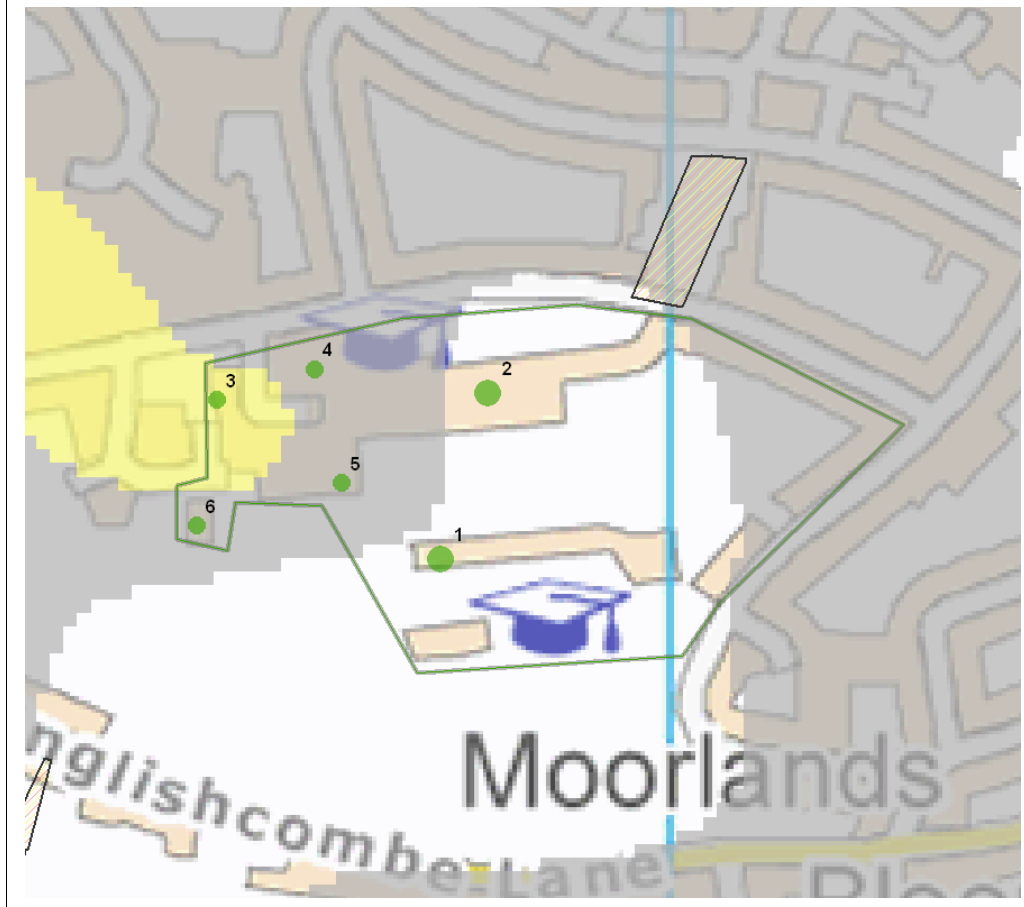
Capabilities on project:
Building Engineering

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

13 Moorfields



Heat Map



General Overview

The cluster identified at Moorfields is very small but it could potentially offer the option of delivering a micro-network linking two schools and some blocks of flats that are in close proximity. However, relative to most of the other clusters identified the potential is much lower.

Capabilities on project:
Building Engineering

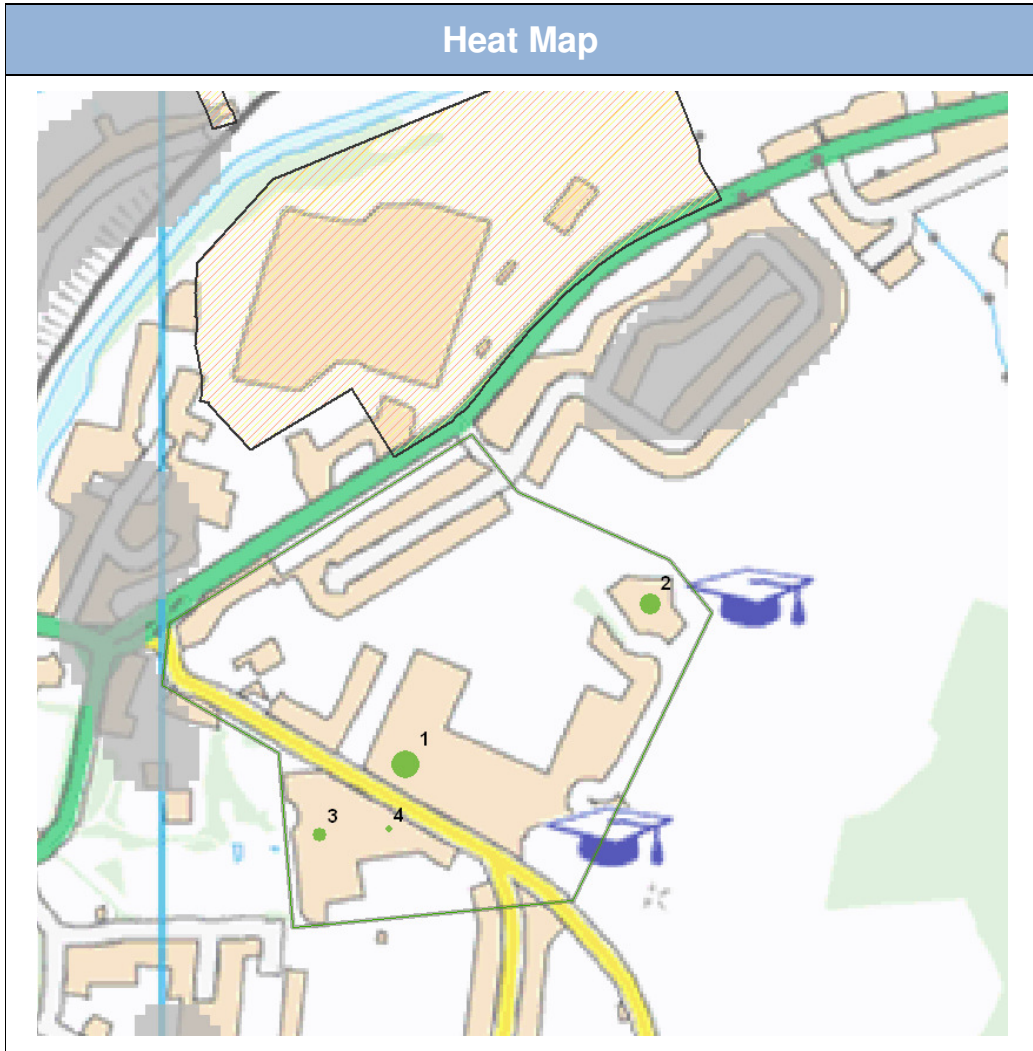
Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
Cluster of existing school buildings and small blocks of flats Total modelled cluster demand: 1,784 MWh per year	Old 6: Willow Green, Cotswold Rd /Moorfields Road	Network would be based on existing heat demands
Site Opportunities	Site Constraints	Next steps
Network based on connecting existing school buildings together. Buildings located close together. Backbone on greenfield area. Should be possible to locate plant room.	Surrounding residential areas low density setback from the street. Small overall heat demand may limit cost effectiveness of scheme	Obtain more details on the 5 multi-residential buildings

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	Moorlands Junior School		874 MWh	NI185	
2	Moorlands Infant School		399 MWh	NI185	
3	PITMAN HOUSE	BA2 2HS	170 MWh	SWHM	
4	ASCENSION HOUSE	BA2 2HX	170 MWh	SWHM	
5	THE MOORLANDS	BA2 2EF	170 MWh	SWHM	
6	SOMERSET HOUSE	BA2 2HU	165 MWh	SWHM	

List of key proposed buildings by total heat demand					
Rank	Rank	Postcode	Heat Demand	Source	Status
None identified					

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

14 Bathwick



General Overview

Bathwick is another small cluster of schools and a hotel although it is close to a strategic development site at a former MOD site. Whether this site would improve the potential for delivering district heating would greatly depend upon the type of development, its scale and its density.

Capabilities on project:
Building Engineering

Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
<p>There are three schools and a large hotel with a pool in relatively close proximity, although the general typology is low density housing.</p> <p>The total modelled demand within the cluster is 1223 MWh per year</p>	<p>Wal1: MoD Warminster Road, 139 dwellings @ 40dpa with restricted elevations; similar to Solsbury Park</p> <p>Wal 2: 12-16 Hampton Row New build + refurb of terrace. Total of 15 units. Appx. 500m from King Edwards School</p>	<p>Availability of Bwk 1 between 2016 & 2026. Assume site would be developed in a single phase.</p>
Site Opportunities	Site Constraints	Next steps
<p>Could be catalysed by Bwk 1 with connections extended to school buildings</p> <p>Potential for laying backbone on greenfield land</p>	<p>Opportunities for expansion limited. Green fields to the east and river and railway to the north and west. Small overall heat demand may limit cost effectiveness of scheme</p> <p>Within the Bath Conservation Area and World Heritage Site.</p> <p>Relies on MoD site coming forward for development</p>	<p>Obtain metered heat demand from school buildings</p> <p>Further details on date when the MOD site will be brought forward.</p> <p>Obtain metered data for hotel</p>

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
1	KING EDWARDS SCHOOL	BA2 6HY	170 MWh	SWHM	
2	KING EDWARDS JUNIOR SCHOOL	BA2 6JA	151 MWh	SWHM	
3	HERITAGE THE BATH SPA HOTEL	BA2 6JF	87 MWh	SWHM	
4	DARLINGTON COURT	BA2 6JF	66 MWh	SWHM	

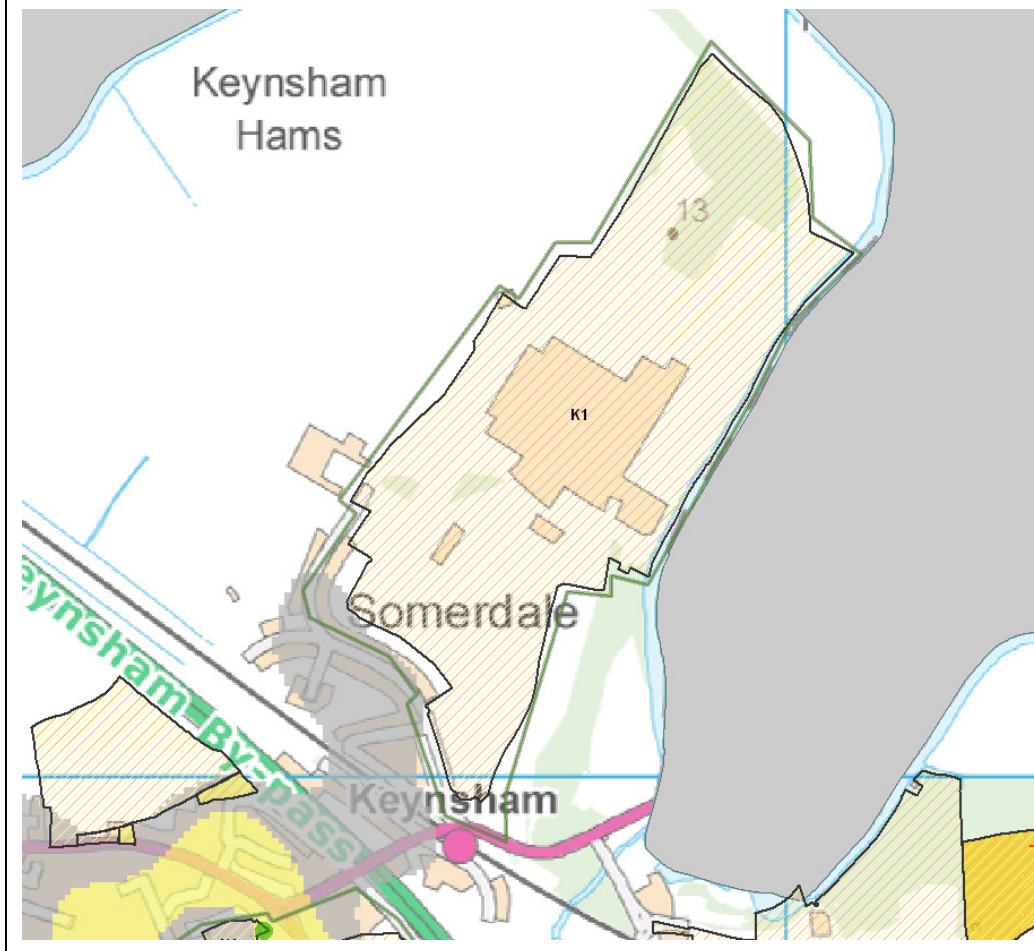
List of key proposed buildings by total heat demand					
Rank	Rank	Postcode	Heat Demand	Source	Status
None identified					

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

15 Somerdale



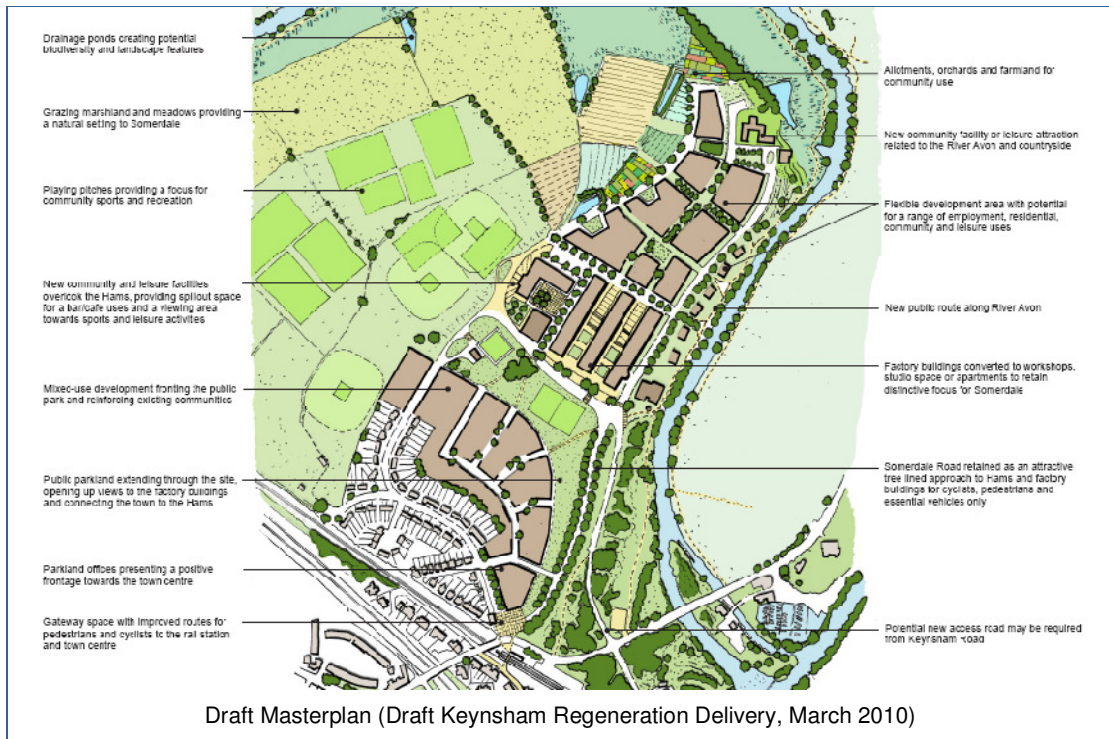
Heat Map



General Overview

Somerdale is a Cadbury's factory due to close operations in 2011, the site is anticipated to be redeveloped as a mixed use development site with residential, retail and leisure uses. The number and density of dwellings and the scale of the other uses is likely to be a key factor in deciding whether a district heating solution is feasible for the site.

Capabilities on project:
Building Engineering



Review of key issues		
Existing buildings	Proposed buildings	Phasing /timing issues
New development site	Total area 90ha Site may include 600 + dwellings and 20,000m2 of office space (B1, B2 and /or B8) + primary school	Development begins 2011/12 125 units by 12/13 with rest at later date
Site Opportunities	Site Constraints	Next steps
Single site, single owner. Includes commercial/ industrial anchor loads Proximity to the Keynsham Town Centre cluster	Low density and small overall heat demand predicted No public sector involvement	Obtain more details of proposals and programme for redevelopment

List of key existing buildings by total heat demand					
Rank	Name	Postcode	Heat Demand	Source	Status
None identified					

List of key proposed buildings by total heat demand					
Rank	Rank	Postcode	Heat Demand	Source	Status
1	Somerdale	K1	4550 MWh	SHLAA	

Capabilities on project:
Building Engineering

Cluster assessment							
Technical	Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Council Benefit
Financial							
Deliverability							

Capabilities on project:
Building Engineering

3.5 Stakeholder Workshop

On the 10th September 2010, the work completed up to this point was presented to key stakeholders at a Low Carbon Future Day. The workshop included a wide range of stakeholders both from within the Council and from other key organisations and interest groups.

The aim of the workshop was to both inform the stakeholders of the study that was being undertaken as the first part of a capacity building and awareness exercise but also to get feedback on the maps and 'long-list' of clusters to assist in our analysis. The information was added to the cluster datasheets above and helped to provide a more robust basis on which to prioritise the clusters.

More information on the attendees and particular issues raised at the workshop is presented in Appendix A.

3.6 Prioritising the clusters

A relative assessment of the potential of each of the clusters was conducted on the basis of the quantitative and qualitative information collected. Based on discussions with B&NES the following factors were used to perform the assessment:

Technical potential:

Our assessment of the relative technical potential of the clusters was split into the following issues:

Load size – a relative assessment of the total size of the annual heat demand within each of the clusters.

Density of Load – a relative assessment of the density of the key loads within each cluster

Existing services – a relative assessment of the presence of existing infrastructure or systems that could instigate or assist the development of an energy network.

Phasing – an assessment of the issues surrounding the phasing of the key heat demands. Clusters with more new

developments for which the delivery date is uncertain represent less of an opportunity compared to existing buildings.

Future expansion – a relative assessment of the potential for expansion of a network within and out from a cluster.

Carbon savings – a relative assessment of the likely scale of CO₂ savings that could be realised.

Benefit to the Council – a relative assessment of the number and size of the public buildings within the cluster. This also increases the attractiveness of a scheme because, as previously noted, public buildings are more likely to be able to enter into long term energy supply contracts.

Financial potential:

Without carrying out a full assessment it is very difficult to understand the relative capital cost and long term revenue from district heating networks. However, based on relative size and density of the key heat loads we have tried to give an initial indication of the relative viability of each of the clusters.

Deliverability potential:

Our relative assessment of deliverability is based on a number of factors. It takes into account the relative practical opportunities and constraints in each of the locations. Opportunities include existing systems that could be connected, new buildings that could provide an energy centre or facilitate a network if the phasing allows it. Constraints could include barriers such as rivers or major roads/rail lines, space constraints or high land values that could make it hard to site an energy centre, air quality issues or heritage/conservation designations.

3.7 Cluster assessment matrix

Our relative assessment of the long-list of clusters has been summarised in the table on the following page. For each of the factors assessed we have highlighted where the relative potential is low (red), medium (yellow) or high (red).

Capabilities on project:
Building Engineering

Cluster Assessment Matrix										
		Technical Factors						Financial	Deliverability	
		Load size	Density of loads	Existing services	Phasing	Expansion potential	Carbon Savings	Benefit to Council	Overall indicator	Overall Indicator
1	Midsommer Norton	Yellow	Yellow	Red	Green	Yellow	Yellow	Yellow	Yellow	Yellow
2	Keynsham High Street	Yellow	Green	Red	Red	Yellow	Yellow	Green	Green	Yellow
3	Paulton	Red	Red	Red	Yellow	Red	Red	Yellow	Red	Red
4	Radstock	Red	Red	Red	Green	Red	Red	Yellow	Yellow	Yellow
5	Odd Down	Yellow	Yellow	Red	Yellow	Red	Green	Yellow	Yellow	Yellow
6	Kingsway	Yellow	Yellow	Red	Green	Red	Yellow	Yellow	Red	Yellow
7	Twerton	Yellow	Yellow	Red	Yellow	Red	Yellow	Yellow	Yellow	Yellow
8	Weston	Yellow	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
9	Bath Riverside	Green	Green	Green	Red	Green	Green	Yellow	Green	Green
10	Bath Spa University	Yellow	Yellow	Yellow	Yellow	Red	Yellow	Red	Yellow	Yellow
11	Bath Central	Green	Green	Yellow	Green	Green	Green	Green	Green	Yellow
12	Lansdown	Yellow	Yellow	Green	Yellow	Yellow	Green	Yellow	Red	Yellow
13	Moorfields	Red	Yellow	Red	Green	Red	Yellow	Yellow	Yellow	Yellow
14	Bathwick	Red	Red	Red	Red	Red	Red	Yellow	Red	Yellow
15	Somerdale	Yellow	Yellow	Red	Yellow	Yellow	Yellow	Red	Yellow	Yellow

Figure 11: Cluster Assessment Matrix

Capabilities on project:
Building Engineering

3.8 Key clusters

Based on our relative assessment of the potential of the 'long-list' of clusters and informed by stakeholder consultation we have selected the following three clusters to be taken forward for more detailed technical and commercial assessment:

1. Bath Central
2. Bath Riverside
3. Keynsham

These clusters are discussed in more detail in the following section.