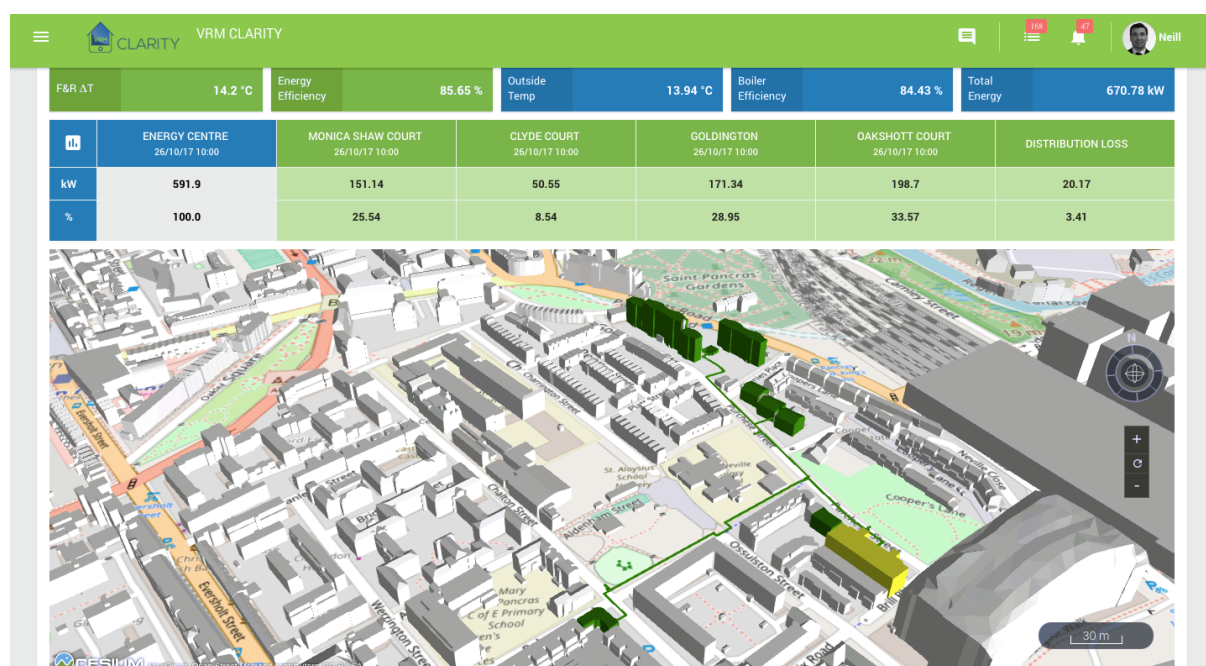


VRM Technology response to the CMA Heat Networks Market Study – Update Paper

VRM Technology is a UK tech solutions company providing software solutions to the public sector and is pleased to respond to the CMA’s Heat Networks Market Study – Update Paper dated 10th May 2018.

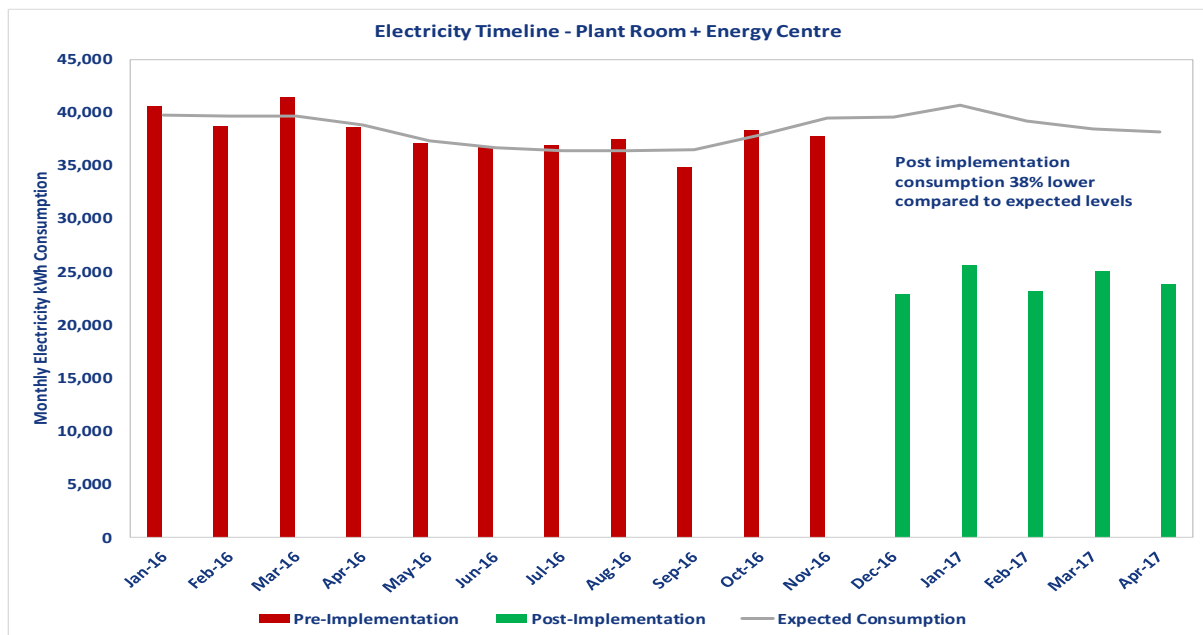
VRM is a member of the ADE and recently launched its energy monitoring platform for heat networks, VRM Clarity. The product was developed while working with Camden Council on an EU grant funded project. This innovative software, hosted in London on AWS, enables asset owners to take control of their district and communal heating networks, manage them more effectively and significantly reduce their costs and those of their residents whilst also ensuring regulatory compliance.

VRM CLARITY was originally developed in close partnership with Camden Council’s Sustainability Team to create a live, multi-data source platform with client-configurable KPI’s and 3D building mapping to monitor the performance of networks. VRM piloted this at Camden’s Somers Town heat network that serves some 342 dwellings in Kings Cross. The figure below illustrates the site network 3D and “traffic light” visual dashboard to indicate when set thresholds were exceeded and alerts sent to specified team members to immediately pinpoint exact issues.



A key driver for the Camden pilot was to demonstrate cost savings from energy efficiency interventions implemented directly from the insight gained from the adoption of the CLARITY platform. To assess the impact of this pilot, VRM commissioned the leading independent Measurement and Verification (M&V) consultancy, EEVS Insight, to undertake an initial analysis of energy consumption, post implementation. The results showed verified electricity savings of 38% with gas savings of over 5% giving annualised cost savings in excess of £100k. Camden also saved considerably on internal management time as VRM CLARITY provided all the necessary reporting information in seconds rather than hours required by other monitoring systems and suppliers. The figure below shows the verified electricity savings from

pilot data collected from the Somers Town Energy Centre.



Source: EEVS Insight

The Somers Town Energy Network already had the best performing heat network in Camden as it was only installed in 2015 – typically operating at over 85% efficiency but it was still possible to secure additional substantial savings by adopting the VRM CLARITY platform. Based on the successful pilot, a contract was awarded to VRM to roll out the platform to over 100 other heat networks in Camden. The savings potential for this project is therefore considered to be significant given that the system efficiencies of the other sites are generally much lower than at Somers Town.

Our responses to the CMA report are therefore based on our practical experiences of improving the performance of heat networks from our platform used at Camden and other clients. We very much welcome the opportunity to respond to the CMA as although there are 17,125 registered heat networks¹ in the UK, the overwhelming majority of asset owners have little or no insight into the real-time performance of their network systems.

VRM’s responses to CMA’s consultation questions:

1. *Do you have views on our approach to analysis and our findings regarding heat network outcomes, misaligned incentives in the supply chain and transparency?*

We believe that the approach the CMA has used in its market analysis is generally robust and representative of the current market. However, we have concerns that the analysis is based on the Heat Metering and Billing Regulations 2014 requiring heat suppliers to notify the Secretary of State if they have an existing heat network. Our understanding is that data for 17,125 networks (as of February 2017) was received and that quality assured data of 1,893

¹ Source: BEIS Regulatory Delivery Directorate

networks has been undertaken. BEIS acknowledge that the low number of quality assured networks “reflects the fact that in a very large number of cases, insufficient or inaccurate data was supplied by the network and it has been a time-consuming and resource-intensive task to carry out the quality assurance”. Therefore, we believe that although the approach to the analysis is commendable, as is the exercise to gather data on the networks, there are still considerable gaps or issues with the data.

As a cutting-edge technology organisation with a commitment to tackling climate change and improving access and the transparency of data, VRM believe that more support is required to improve the current challenges with obtaining accurate energy data. In our experience, this is a major issue with most social housing providers in that they do not have the internal resources or expertise to secure meaningful robust data to monitor their networks. As cited above from our pilot project at Camden Somers Town site, we believe there is considerable merit for clients in undertaking an independent Measurement and Verification (M&V)² analysis of their baseline energy consumption data with annual audits to provide proof that the energy savings are actually achieved and sustained over the long-term.

We have further concerns that:

- Throughout the report DHNs and communal systems are taken to be one and the same. However, the appendices do recognise the differences. We would welcome feedback on our understanding, in accordance with the Mayor of London’s 2016 Plan on tackling climate change, that the energy hierarchy places most priority on authentic district heat networks and not communal systems and whether, therefore, greater emphasis should be placed on district systems?
- We respectfully express concern that just 100 heat suppliers were randomly selected (point 4 Appendix A) and there are acknowledged vagaries. Only 82 questionnaires were sent out and 68 responses representing 445 networks (i.e. 4% of the known networks)
- VRM would like to participate in any drive to improve on the low number of dwelling level meters and would like to also offer concern regarding the use of assumptions on boiler efficiency/distribution losses. In our experience, assumptions on efficiency are contradicted when dwelling meter data is available as per case study³ done on nine communal and district networks in 2014/15 where actual efficiency (i.e. amount of gas reaching a dwelling as heat) ranged from 49% of all gas used to 80% plus.
- VRM agree that suppliers have “a relatively good knowledge of the major costs and charges associated with heat networks” and welcome the drive towards greater efficiency and transparency.

Pricing: Social housing networks, according to the CMA report, state they reconcile prices based on previous years’ consumption whilst private operators charge on expected costs for coming year. It would, in our opinion, be interesting to know what factors are taken for weather forecasts in both scenarios, as our understanding is that this may also be considered regarding social housing forward charging (i.e. take last years’ consumption but then factor in a contingency allowance in case of very low temperatures). Some housing providers end up with a surplus after reconciling accounts, and we believe it would be interesting to

² Under the International Performance Measurement and Verification Protocol (IPMVP)

³ Source: Internal Camden Sustainability Team Research Project -2015

understand how much this comes to and what is done with the surplus i.e. if anticipated low winter temperatures are always forecast, despite temperature trends, then suppliers will always be operating on a surplus which makes calls for greater transparency and accuracy even more important for end consumers.

VRM finds it interesting that privately operated or those with dwelling meters had higher unit prices. This may be because the latter are based on actual consumption rather than assumptions on the presumed boiler and network efficiency and provide therefore greater transparency (as per the Camden 2014/15 case study mentioned above) whilst the former may be due to poor quality or lack of purchasing power of privately owned networks to bulk buy fuel (unlike, for example, LASER members).

However, VRM would welcome differentiation between the drivers between social and private housing sectors. The former has the ability to use a “heating pool” where all costs are aggregated between high and poor performing networks whilst individually metered schemes on public sector sites are generally more transparent (i.e. compared to the “pool”). We believe that in some instances where “Pay as You Go” billing systems are not used and reconciliation is used instead, the charges to residents are far from transparent and can actually result in the threat of fuel poverty.

2. *Do you consider the individual household gas boiler price to be a reasonable benchmark for customers to be confident that their heat supply is value for money?*

We believe this to be the case based upon the majority of domestic customers having individual gas boilers.

3. *Have we accurately captured the two broad categories of delivery models in the heat networks market (described in section 5) employed by housing associations and private property developers and their impact on customer outcomes? Do you have any views on potential different categories?*

We believe this has been captured accurately. However, has consideration been given to new build mixed tenure housing undertaken by local authorities and how this might impact on delivery?

Regulation of heat networks

4. *Do you have views whether heat networks should be regulated? If you agree that they should be, please provide any views on which body might be best placed to act as the sector regulator.*

We believe that it is essential that regulation and governance of systems from inception to decommissioning takes place. We have an understanding of the tensions existing between drivers in heat network provision, for example, the appetite for an organisation to ‘win’ a tender handled by-and-large by marketing and commercial officers whilst operation and maintenance are frequently handled elsewhere in an organisation leading to a conflict between what is promised and what is delivered. Therefore, regulation which puts whole life costs at the fore of any approval for works delivery with greater emphasis on efficient

operating and maintenance will benefit the industry, the consumer and the climate.

We believe that a blend of planning regulation accompanied by a governing body, potentially led by BEIS with the ADE and Heat Trust providing professional support (but involving industry stakeholders from design, build and energy sectors) would ensure that industry contributed to support and 'ownership' of the regulatory system

5. If there is sector regulation, should it apply to all communal and district heating networks, all delivery models and existing as well as new networks?

VRM believe it should apply to all networks but that technical and financial support, and training should be made available. The tension between regulation and encouraging the expansion of heat networks should be at the core of any service support and local or regional authorities may be well placed to administer this. Some large social housing providers (mainly local authorities) who own many of the older networks dating back potentially sixty years will need support and a different regulatory system. Just as the London Plan has an energy hierarchy, perhaps older, less reliable and less efficient should have an investment hierarchy starting with the easiest ways of improving system efficiency (such as variable pumps, water treatment, Building Management Systems (BMS) etc.)? VRM would be available to contribute to any work connected with this area.

6. Do you have views on whether regulation of heat network prices to end customers is appropriate? If there were a form of price regulation, should it be a cap at a certain level, or a 'principles based' approach with self-reporting against permissible contract terms and a regulator to investigate complaints? What factors should determine the maximum level of prices?

VRM believe it should be a 'principles' based approach due to the variable nature of price, especially between those who can bulk purchase gas, use renewables, or need to go to one of the 'big six' for energy. Factors for determining prices should include the cost of energy, the efficiency of the system (with end users not compensating for poorly operated and maintained systems), O&M costs, administration costs, and consideration should be given for a pain/gain cost – i.e. suppliers penalised for poorly performing systems but being incentivised by sharing the financial benefit of well performing systems with the end users. Clients adopting a M&V analysis and audit regime would assist in this.

7. Do you consider that any rules and guidance on pricing and quality should apply to all heat networks or, for example, only to those with ESCOs? Do you consider that it would be proportionate to ban 'capital contributions'?

VRM consider that effective regulation and monitoring would allow the continuance of capital contributions and that all networks should be monitored effectively. Differentiating between models may impede the aim of expanding the number of heat networks.

8. Do you have views on whether heat network customers should have similar consumer protections to customers of regulated gas and electricity utilities?

We believe that the work of the Heat Trust in providing a voluntary system is a model for consumer protection and complaint handling processes but that caution should be exercised

in having as stringent rules for a heat network due to the natural monopoly that a network has and therefore the complexity and cost in administering an Ofgem- type regulation and also the need to encourage expansion of networks. That is to say, whole life cost approach to regulation is appropriate for heat supply in a way which is not applicable to gas, electricity etc.

9. *Do you have views on the recommendations described in section 7 that we are minded not to pursue (e.g. banning capital contributions from ESCOs to property developers, and mandatory re-tendering of heat network operating and billing contracts)?*

VRM agree that there needs to be a fine balance between regulation and encouragement of networks, and that any regulation will only be successful if kept comparatively simple, proportionate and transparent; mandatory retendering, as seems to have been proven by the Germany case study in appendix C, appears to be a time consuming and costly exercise of little benefit.

Planning and technical standards

10. *Do you have views on how to improve technical standards, which cover the design and operation of heat networks, and make them enforceable? Could this be achieved in the absence of a regulatory regime requiring a licence to operate a heat network?*

As a technology company VRM believe standards and reliability could be improved considerably with the greater use of cost- effective “IoT” technology including sensors to monitor connected assets and systems at much greater granularity than at present. This would enable greater transparency and improved understanding of systems from boiler house/energy centres to the rooms in a home; alerts could trigger greater surveillance and tie monitoring back to contract suppliers, their KPI’s and provide lower system failures from more proactive maintenance.

We also believe that behaviour change is key with developers and installers being incentivised, by carrot and stick methods, to look at whole life costs rather than seeing the award of a contract as a means to an end. Improved training, awareness and understanding of how networks can impact on carbon emissions, renewables and, most importantly, the end user need to be understood by far more stakeholders with everyone from commercial and contract managers and designers to operating engineers and technicians understanding the importance of their role and their responsibility in contributing to successful and efficient networks.

- a. *What is the role of the CIBSE ADE CP1 Code of Practice in this process?*

VRM see the role of CP1 and introduction of technical standards allowing for a straight forward and understandable compliance as being pivotal in this process and that there should be a wrapping together of building standards, planning guidance and CP1 (as well as London Heat Networks standards, CHPQA, SAP etc) so that all present a consistent and logical framework for developers and suppliers and operators.

b. Do you have views on how these proposals could be embedded in the planning authorisation process?

VRM has some concerns that the current planning process can prioritise carbon saving over whole life costs and that some developers may cynically use a 'tick box' attitude to delivering carbon savings merely to have their development approved by planning. By using online platforms, as VRM's CLARITY has shown, can enable planners and developers to assess the capacity of current DHN energy centres plus also assessing demand over the life time of a development. Anecdotal evidence has indicated that some developers do not accurately assess, for example, heat use even though they propose a CHP in order to comply with planning requirements. In some cases, the carbon saving technology is not used.

c. For potential heat network connections affected by Building Regulations and / or planning, how could appropriate technical standards could be embedded these processes at local, regional and national levels?

This would require a review of planning and building regulations and the technical standards CP1 compliance could be used as guidance. There also needs to be national consistency although this will mainly apply to urban areas due to the nature of DHNs.

d. Could operating technical standards be applied retrospectively to existing heat networks?

VRM believe that it could but as per comments in q5 above, these should be more of a light touch approach as CP1 guidance may be impossible to retrofit (e.g., pipework size and underground pipework insulation). Technical innovation should also be encouraged with a consideration of an R&D allowance to pilot new technologies.

11. How could local and development plans and their supplementary guidance be adjusted to take lifetime costs and customer prices into account? What would the impact of this be?

Some of the impacts of this could be:

- Schemes not going ahead
- Greater use of renewables such as ground source heat pumps
- Improved network efficiencies and a more combined approach between commercial and technical stakeholders within organisations
- Greater use of technology to monitor and manage systems effectively
- Greater resource for authorities in applying new guidance
- Improved reputation for DHNs
- Improved customer experience

12. How should a heat network quality assurance scheme be established and embedded into the regulation of heat networks? Should such a scheme seek to accredit the commercial, financial and contractual aspects of a heat network as well as the

technical?

VRM believe that as all of these elements are related to successful project delivery they should all be included, and as the contract underpins the entire project life cycle contract KPIs should be used to embed regulation of heat networks. A resource will be required to 'police' networks but this resource would not be as great as may be thought with the correct deployment of technology.

Transparency Pre-transaction

13. Is further information required to improve consumer understanding of the significance of living in a home with a heat network? If so, what information would be useful?

Yes, VRM believe that as only 2% of the UK has DHNs the knowledge and understanding is currently limited. The difference between heat and power should be made clear (i.e. fuel is lost when making heat from gas); what the benefits are of district heating networks including the safety aspect of not having individual gas runs into homes; how to control heating including the use of programmers, TRVs etc; explaining the monopoly element of DHs and also useful website links including CAB, Heat Trust etc. Billing frequency, what happens if you build a debit or credit; transparency of bills; complains procedure; online access to your heating (as per access to gas and electricity usage online). The purpose of a heat meter and PAYG.

14. Who should be responsible for ensuring that new leasehold agreements include a clear reference to the treatment of heat network assets connected to a leasehold property?

15. Should heat supply agreements or contracts which set out key performance indicators, such as guaranteed terms of service, be made compulsory?

VRM agree with this, as it will promote best practice and greater accountability as well as put O&M at the fore of tender and contract negotiations.

During residency

17. Should heat supply bills be improved? Is further information necessary? If so, what information would be helpful?

The efficiency of the system should be made clearer and what actions are undertaken to ensure the system is efficient – platforms like VRM can provide an online portal that can demonstrate to customers that the network is being efficiently run and monitored.

VRM have concerns that where PAYG is not used consumers are placed at risk of fuel poverty. This is because bills are estimated. VRM have knowledge of residents being over or under charged by hundreds of pounds, which means they could either be struggling to pay other bills only to have a large credit when bills are reconciled or run up a heat debt which then has to be recovered.

Part of the heat charge should include support for residents who are vulnerable or on tight incomes as is the case for other utilities.

18.Should there be specific requirements regarding the frequency of bills beyond that already required by the Heat Network (Metering and Billing) Regulations?

An online portal, or development of technology that can easily produce a bill should assist with the requirements of the Heat Regulations.

19.Should standard performance metrics for suppliers be produced –for example, in relation to planned and unplanned outages and heat temperatures? Should this information be published?

VRM believe that this would be best practice and should be monitored. However, publishing data may unreasonably disadvantage older networks and district networks as opposed to communal ones.

ENDS

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