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Matter 14

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Bristol Draft Local Plan – Examination in Public

Matter 14 Statement: Climate Change and Flood Risk

Issue 14.1:

General Matters

Q14.2: Have the requirements of policies of NZC1 to NZC5 been subject to robust assessment of viability?

No, the requirements of policies NZC1 to NZC5 have not been subject to robust assessment of viability. Dandara have direct experience of connecting a development to the Bristol Heat Network along with discussions with Vattenfall on future connections on other sites. The Local Plan Viability Assessment (EVEV01) sets out within Table 4.12.1 cost assessments for the implementation of these policies as a % of build cost for a range of development types. For flats over 6 storeys and student accommodation (development types likely in the city centre or regeneration areas) it is stated that 4.5% of build cost is required to meet the requirements of Policy NZC2. This however is underestimated with no evidence to support this assumption.

Specifically, the connection and supply of heat and hot water from the district heat network is considered to equate to 4.5% of build costs alone, notwithstanding other requirements of Policy NZC2 in relation to operational carbon limits and renewable energy provision. Whilst it is noted that an alternative heat source (individual or communal air source heat pump - ASHP) could have a comparable infrastructure cost to that of the infrastructure to connection to the district heat network (dependant on the specifics of the site), the additional connection fees required for this heat source by the heat network supplier, Vattenfall, significantly increases the overall delivery costs, making this is a more expensive option in comparison to an ASHP. As set out in the response below to Question 14.4, ASHP also represents a better option in terms of carbon reduction. Dandara have experienced an increase of 172% between a connection fee paid on one project and a quote received for another development. Dandara

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are aware other developers have experienced similar increases in connection charge costs and Vattenfall, in discussion with Bristol City Council, are undertaking an independent review of connection charges with Vattenfall advising no updated connection quotes can be provided until this has been undertaken. This is also in contradiction to EXA037 West of England TER Study (October 2024) recently added to the examination library which states '*Bristol City Leap have a commitment to provide connections to new developments at an equivalent or lower cost than a communal ASHP system. After modelling the DHN scenarios, the difference in price uplift compared to the build cost of the same scenario with communal ASHPs is marginal (less than 1%)'.* No evidence is provided within this report to substantiate this claim of a marginal uplift and as set out above the cost of connecting to the heat network is not equivalent or lower than a communal ASHP system, which Dandara consider to be >10% based on recent connection charge quotes.

It is therefore absolutely clear that policies NZC1 – NZC5 cannot be based on a robust assessment of viability as the information simply does not exist to input into a viability assessment. There is also no transparency as to connection charge costs yet policy requires a mandatory connection to the heat network irrespective of the fact there is no fixed or regulated charging regime impacting the overall viability position. This will inevitably impact the delivery of developments, including the affordable housing provision they can viably provide.

Dandara therefore have a specific and significant objection to the requirement to connect, or future proof a connection, to the heat network based on viability. This cost needs to be accurately viability tested to a) make sure it is a viable heat source for development and b) understand and inform the requirements for affordable housing provision. Policy NZC2 effectively makes it mandatory for all new development in an area with a heat network to connect to it and in an area where a heat network is expected, the design of development

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should allow for a future connection. No exemptions are suggested which directly conflicts with the Government's emerging Heat Network Regulations, where the consultation sets out that there will be exemptions for new developments, which includes where a connection is considered to be 'too expensive' this being more expensive than a suitable counterfactual. Planning policy with the Bristol Draft Local Plan should not seek to replicate or be more onerous than legislation and therefore Policy NZC2 needs to be reworded to be flexible, allow for exemptions and be worded to allow future consistency/prioritisation of any legislative requirements.

Policy NZC2: Net zero carbon development – operational carbon

Q14.4: Is Policy NZC2 justified, consistent with national policy and effective? In particular a) Is the policy clearly written and unambiguous, such that it would be evident to an applicant what would be required and a decision maker how they should react to development proposals? b) Is it justified, or effective, to expect proposals for all development to submit an energy strategy, including any 'modelling' referred to in paragraph 12.1.20? c) Are the suggested main modifications set out in EXA002.1 to Policy NCZ2 necessary to make the policy sound? Would any additional modifications be necessary to ensure consistency with the WMS? d) Is the approach to Energy or Carbon offsetting justified and effective? Is it necessary, or effective, for the policy to include 'current' charges? e) Is it justified and consistent with national policy to allow compliance with PassivHaus Classic or higher standards? f) Under the 'delivering modelled performance' section, is it clear what would be expected with any development, or how it would be controlled?

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No, Policy NZC2 is not justified, consistent with national policy or effective. As explained, above there are clear viability issues with the mandatory requirement of Policy NZC2 to connect to the heat network. This is directly inconsistent with Para. 166 of the NPPF which requires planning applications to comply with development plan policies for decentralised energy supply unless it can be demonstrated that it is not feasible or viable. Policy NZC2 makes no allowance for either viability or feasibility, in either an immediate connection or future proof scenario, so cannot be considered consistent with national policy. Whilst the objective to support low carbon energy and heat sources is recognised and supported, if these have not been adequately viability tested, as is the case for Policy NZC2, then it is counter intuitive to force a mandatory connection which will result in developments not being delivered or require viability testing resulting in lower delivery of lower affordable housing. Policy NZC2 can therefore not be considered to be justified as being the most appropriate strategy, when alternative approaches could provide more viable options, as set out above, although it is important to note that the connection charges to the heat provider is the most notable cost difference rather than the infrastructure costs of a heat network in comparison to air source heat pumps.

Dandara are also concerned as to the wording of Policy NZC2 and the requirement to connect to a new classified heat network from point of occupation given a previous requirement to connect to a heat network that did not exist and had to be provided via temporary fossil fuel powered generators situated within the street. It is questioned how this approach is 'better' than a low carbon ASHP alternative which aligns with both the overall draft Plan objectives and national policy in terms of carbon reduction.

In addition to considering the viability implications of Policy NZC2, Dandara instructed Turley to consider the heat network connection requirements of Policy NZC2 in terms of lifetime CO2 emissions, costs, operational issues and changes in expected regulations. Below is an extract from Turley's assessment.

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The logic for heat networks is that they provide a cost-effective way to decarbonise heating. Using the Vattenfall document "Bristol Heat Networks (BHN) Part L2021 Guidance Note" enables analysis of the projected mix of heating technologies in 2026 and 2027. The projected emission factors are shown below for the BHN, compared to a new development using air source heat pumps with a reasonable co-efficient of performance.

Table 1 - $kgCO_2$ per kWh delivered heat Comparison BHN versus ASHP

	2026	2027
BHN (Part L 2021)	0.086	0.081
ASHP (CoP 3)	0.045	0.045

(Calculations can be provided)

The results indicate that a new development with an ASHP will be nearly half as carbon intensive as the heat network. The gap will increase when the electrical emission factors are updated for Building Regulations this year. Even if the overall heat network removes fossil fuels by 2030, the blend of air source heat pump, water source heat pump and electric boiler heat projected, suggests that it will be significantly higher carbon than a development using air source heat pumps, due to network losses. The result is that a typical new development committed to being all-electric using air source heat pumps will be lower carbon for its entire life and use less electricity than the BHN. It is extraordinary that a development would be forced to emit more greenhouse gas emissions and use more energy as part of policies dedicated to achieving net zero.

Broader Evidence on Heat Networks and experience shows that the analysis carried out in the supporting evidence for this draft policy has not taken a balanced approach. Examples of issues are set out below;

Current Heat Networks and Legacy Issues - most existing heat networks are so high carbon that they could not be used for new development. The government had to develop an

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allowance for new development connecting to existing heat networks to be allowed a higher CO2 emissions threshold than development using individual or communal solutions. The Future Homes/Buildings Standard consultation of 2023 has also proposed allowances for new development connecting to existing heat networks to use a method called sleeving, whereby low carbon heat capacity added to existing heat networks can be considered as dedicated to the new development. The Charted Institute of Building Services Engineers (CIBSE) consultation response, explained why this is likely to lead to higher carbon emissions: "CIBSE disagrees with the proposed methodology for assessing "spare capacity" i.e. that which can be "sleeved". The proposed method is based on total generation capacity vs diversified demand. This is very misleading: most networks which have a low carbon plant (e.g. a heat pump, biomass boiler) will also have gas boilers of much higher capacity operating alongside for peak and back-up. This means that, even if in reality the low carbon plant already operates for long hours, it could easily be notionally marked "spare capacity" and therefore "sleeved" i.e. allocated to the new connexion. In practice, the network would then not on average decarbonise, in fact it is likely that its back-up gas plant would instead operate longer hours to serve the expanded network i.e. leading to higher total emissions, and higher average carbon content i.e. go counter the stated objective of encouraging decarbonisation of existing networks." The evidence is that heat networks are generally more carbon intensive than individual developments with heat pumps and even as they decarbonise, will continue to be so. Allowances have had to be made repeatedly to allow them to be comparable.

<u>Heat Losses Losses</u> on heat networks are much higher than expected. Work in 2016 by the SAP Scientific Integrity Group, which defines the methods used in Part L Building Regulations calculations, found that heat network losses were around 40% to 50%. The Bristol Heat Network quotes 8% primary losses but does not indicate secondary losses. The average secondary loss on heat networks is 29%. This is not included in the calculations or information provided by the heat network. This suggests losses of around 30% for the current network and this will grow as the network expands further from the heat sources.

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Temperature Inflexibility – because each network in Bristol has to operate at a single supply temperature of hot water, it cannot meet the needs of new development and existing development well. New development can be designed to run at much lower flow temperatures than existing development. A single flow temperature means that existing development often requires greater expense on fabric and emitter upgrades and forces new development to operate more inefficiently because the flow temperature has to be higher, which increases the risk of overheating.

Overheating – proposed Policy NZC4 - Adaptation to Climate Change emphasises the need to design new development to reduce the risk of overheating. It does not mention district heating, despite this being a major hazard for overheating in new developments. This is show in the Good Homes Alliance Early Stage Overheating Risk Tool which is referenced by the draft Plan document.

Energy flexibility – the use of heat networks means that new developments do not have hot water storage of their own which reduces their opportunity to use energy flexibly. Although the heat network operator can use hot water storage, the benefit does not accrue directly to the building occupants and the overall amount of thermal flexibility is reduced. In addition, with the solar power expectations, elsewhere in the draft Local Plan, there will be extended periods when a building will be generating more electricity than they can use. They will be exporting electricity, whilst importing heat. If a building has its own heating and hot water generation, there is a greater opportunity for the building to use the self-generation, reducing bills and reducing the strain on electrical networks.

Inefficiencies for non-domestic heating and cooling systems – most non-domestic buildings are required to have cooling, due to the heat gain from IT equipment, catering, etc. It is standard for these types of developments to use a variable refrigerant flow (VRF) system. This allows for rejected heat to be captured for providing hot water. When these developments are forced to connect to a heat network, it makes this kind of system less efficient.

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In summary, Policy NZC2 is currently likely to lead to increased cost of development, higher running costs and higher CO2 emissions. Exemptions for new development should be allowed in planning applications where it can be demonstrated that there will be:

- *overall increase in CO2 emissions*
- *an increase capital cost*
- *significant issues with timing*
- *consumers will be unacceptably affected.*

Dandara fully support the need for new development to connect to low carbon energy and heat sources in order to support the transition to net zero by 2050, however the proposed mandatory connection to the Bristol Heat Network will not result in the lowest carbon lowest cost heat source for development and cannot therefore be considered justified or consistent with national policy. The requirement to connect to a heat source which impacts viability and produces more carbon than alternative sources is inconsistent with the wider policy objectives of the draft Local Plan and the forthcoming Heat Network regulations. Dandara consider that these regulations are the most appropriate way to ensure future development connects to lowest carbon lowest cost heat sources rather than through duplication in policy, but in an event if a policy is to remain in the local plan it should be appropriately viability tested, aligning with the other requirements of the local plan policies such as affordable housing provision, and be reworded so as to be flexible in those situations where it is not feasible or viable.

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