Reading Friends of the Earth: Further Objections to Reading Planning Application 210018

In March 2021 Reading FoE objected to this application - from Fairfax (Reading) Ltd & Reading Golf Club Ltd for construction of about 260 homes - on grounds of Air Quality, Traffic and Transport, and Climate Change. The applicant has not produced a rebuttal to many of the points we raised.

The applicant has now produced a "RESPONSE TO KEG REPRESENTATIONS" (KEG is campaigning group Keep Emmer Green) document which contains criticisms of some of Reading FoE's objections which had been supported by KEG. The document is posted as "KEG rebuttal v3"on the Reading Borough Planning portal under application 210018 on the 8th page on contents.

This note addresses the applicant's recent comments on objections relating to Energy and Trees but should not be taken to replace our original objections which gave more detail on Energy/CO2 issues (especially embodied carbon) and covered other topics including Air Quality and Transport. Our failure to object or comment on other grounds should not be taken to indicate approval.

Final version: 20th May 2021. Contact: John Booth, 27 Instow Road, Earley, Reading RG6 5QH. info@readingfoe.org.uk

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RESPONSE TO KEG REPRESENTATIONS – section 9.0 Energy

While the application is, and was, compliant with Policy H5 of the Local Plan, and the proposed improvements are welcome, much better performance on 'operational phase' energy use and CO2 emissions could be achieved. In particular detailed consideration should be given to a Shared Ground Loop Array drawing on Reading's shallow geothermal aquifer to reduce running costs.

As stated in our original objection: "It does NOT meet the ideal of the Sustainable Design and Construction SPD that (3.11) 'In achieving Zero Carbon Homes for major residential developments, the preference is that new build residential of ten or more dwellings will achieve true carbon neutral development on-site.'"

Applicant has failed to address the point from our original objection on constructional phase emissions that "Construction phase emissions and mitigation should be better defined to identify and commit to improvements to reduce emissions. They are not remotely significantly mitigated by proposed tree-planting."

Responses below to applicant's tabulated comments on our original objections in the format of the 'RESPONSE TO KEG REPRESENTATIONS – section 9.0 Energy'

KEG Feedback Section J

Feedback Relating to Scope of Energy Strategy Response	Developer Response	Comment from Reading Friends of the Earth
Does the proposed development comply with local planning requirements? We agree that it meets the Policy H5 requirement to meet the zero carbon homes standard by invoking the permitted option to pay an offset fee to cover calculated residual emissions of around 250 TCO2e per annum. However, it does NOT meet the ideal of the Sustainable Design and Construction SPD that (3.11) 'In achieving Zero Carbon Homes for major residential developments, the preference is that new build residential of ten or more dwellings will achieve true carbon neutral development on-site.'	Although we believe the initial energy strategy was compliant with Policy H5, we note that the proposed updates to the energy strategy set out in Section 1.2 further enhance the carbon emission reductions that will be achievable on site – achieving an 83% reduction in emissions on site relative to the current version of Part L of the Building Regulations. This significantly exceeds the minimum of 35% reduction in emissions on site required by Policy H5. The remaining emissions will be liable for a carbon offset payment - we note that this money could be utilised by Reading Borough Council to target the least energy efficient buildings in the Borough that are most at need of energy efficiency enhancement measures.	True, proposal always appeared to be compliant with Policy H5, and the proposed further reduction in emissions is welcome. BUT Carbon offset payments, while allowed by RBC Local Plan, still leave this development with a carbon footprint. Reading's emissions would be lower if this development's emissions were lower and the measures elsewhere, proposed to be funded by the offset payments, were separately funded. **Developer does not comment on failure to meet SPD ideal of 'true carbon neutral development'.**

Are constructional and operational phase emissions really mitigated to an 'appropriate and reasonable' level or should they be reduced by on-site design changes? Insulation standards could be significantly better. U-values are well above typical Passive House levels. This would reduce future running costs and carbon emissions. On-site renewable energy generation should be increased by incorporating significant numbers of PV panels on suitable roofs. Ground-sourced heat with district heating scheme (instead of air-sourced heat) would likely reduce operational CO2 emissions.	It is proposed to enhance the proposed U values in line with emerging government guidance – refer to Section 1.2. It should be reiterated that the proposed U values significantly exceed the minimum standards required by the current version of Part L of the Building Regulations. In the UK's roadmap to net zero carbon (set out in the *Future Homes Standard*) Passivhaus standards are not the current performance requirements expected to be met by developers. It is also proposed to include roof mounted PV arrays to each of the dwellings in line with emerging government guidance – refer to Section 1.2. The feasibility of a district heating network was evaluated in full in Section 4.5 of the initial *Energy and Sustainability Report* document and established not to be a viable option for the site. For quick reference, key issues identified are listed below: -Distribution Losses. There can be significant distribution losses associated with the pipework distribution systems required on district	**<u>Construction Phase:</u>** **Developer does not comment on objection on constructional phase emissions.** Objection was that "Construction phase emissions and mitigation should be better defined to identify and commit to improvements to reduce emissions. They are not remotely significantly mitigated by proposed tree-planting." (For detail see original Reading FoE Objection linked from www.readingfoe.org.uk) **<u>Operational phase:</u>** slightly enhanced U values and inclusion of PV arrays are welcome. Should have been there from initial application and could go further. Passivhaus would be even better. Why does the developer not want to demonstrate excellence to its clients? It is not clear to what extent likely future carbon pricing has been taken into account when considering operational costs. Working with the Government's VALUATION OF ENERGY USE AND GREENHOUSE GAS document can give carbon prices of £223 per tonne CO2e in 2050 according to Wood. ***District Heating:*** Reading FoE are not qualified to give an expert assessment of potential for district heating. However: • Higher density development would make this more viable and leave more space for other uses of land.

	heating schemes. *CP1: Heat Networks: Code of Practice for the UK* sets the target for 10% distribution losses which is challenging for designers to achieve on schemes, and in reality is often exceeded in operation. Even on schemes where a 10% distribution loss target is met – this is still a significant loss of energy. The proposed local generation of heat for the dwellings reduces these transmission losses. Development Density. District heating networks are more feasible where there is a higher density of development - for example, in large apartment blocks. This is linked strongly with the issue of distribution losses. – Operational Costs. Standing charges – incorporating management charges, cost of maintenance and funding of plant replacement can be considerable and could pose a financial burden on the future residents of the site. The feasibility of the integration of ground source heat pumps was evaluated in Section 5.2 of the initial *Energy and Sustainability Report* document – it was determined to be a less appropriate	• Developer seems to consider (and reject) a classic DH network powered by a single 'Energy Centre' which would probably be gas-fired (so would emit CO2) and would use high temperature water flows around the site with consequent losses. • Developer has not considered combination of DH and GSHP technology such as Kensa's Shared Ground Loop Array system in which ground-sourced heat in circulating ambient-temperature water from boreholes (perhaps 8 to 10 Centigrade so low losses) is circulated to a number of buildings in each of which a GSHP upgrades the ambient heat energy to each dwelling. https://www.kensaheatpumps.com/district-heating/#4 • One of the benefits of a degree of sharing a network of ground-source heat among a number of dwellings rather than systems working at individual dwelling level is likely to be increased reliability of heating. ***Heat Pumps:*** Reading FoE are not qualified to give an expert assessment of potential for Ground Source Heat as opposed to Air Sourced Heat. However: • It seems very likely that many of the residents will be keen to have air conditioning in future hotter summers -

	solution than ASHPs for the site. COPs (measure of efficiency) are theoretically marginally higher for GSHPs than ASHPs, however, our experience has established that the theoretical COPs for GSHPs are often not achieved in practice due to design and operational issues. Notably, adopting GSHP at scale works best if the source can be 'recharged' – i.e. where fully air conditioned buildings are proposed, in summer heat can be rejected back into the ground. This is not the case on this development, and extensive arrays to serve the homes could result in degrading the source, affecting performance. There is also a greater capital cost associated with this form of technology, extensive groundworks would be required that may have a negative impact on trees and ongoing maintenance burden which would fall to the future residents of the site	which would help to recharge the source of ground-sourced heat using surplus power from the solar panels now proposed • At the relatively low density of development the summer sun will help to increase the temperature of the ground. • The best time to install GSHP and/or air conditioning is at time of construction. • Boreholes as an alternative to large areas of heat exchanger would reduce land disturbance and require less land area. • Reading is located over a very significant aquifer which has been identified to have potential for ground sourced heat. The geology and hydrology of Reading basin has been studied by British Geological Survey (BGS) in 2000 and reassessed by BGS in 2015 as part of a study to investigate the feasibility of high density subsurface heat extraction in urban areas by ground source heat pumps (GSHP). **Detailed consideration should be given to a Shared Ground Loop Array drawing on Reading's shallow aquifer.**

KEG Feedback Section K

Feedback Relating to Scope of Energy Strategy Response	Developer Response	Comment from Reading Friends of the Earth
The applicant discusses the Reading Climate Strategy and summarises key points from current adopted strategy. But this was due to be replaced in 2020. In particular, the current consultation draft states: "Clusters of houses and businesses will need to be powered using collective renewable heat and electricity generation equipment." The applicant also appears to have ignored Action E10 which states: 'Renewable Heat – Ground Source – Work with developers to maximise district energy solutions in line with Local Plan policies on decentralised energy: Establish District Heating Investigate the potential of rivers, ground and aquifers in Reading for renewable heat Implement heat pump schemes Develop skills of local installers'	As addressed in the responses to comments included in Section J, the initial *Energy and Sustainability Report* document established why district heating and ground source heat pump technology were not opted for in the proposed energy strategy, in favour of air source heat pump technology. Notably this is aligning with the drive of Reading to adopt air source heat pump technologies (refer to E12 of *The Reading Climate Emergency Strategy 2020-25*) and will aid in creating a demand and development of skills of local installers. With regards to open loop water source heat pumps that are alluded to, we note that these systems are very much dependant on obtaining Environment Agency licenses – which are not guaranteed.	See discussion of ground-source heat and district heating in Section J above. Developer should evaluate Shared Ground Loop Array systems drawing on Reading's shallow aquifer. **Policy CC4 of the Local Plan says:** "Any development of more than 20 dwellings and/or non-residential development of over 1,000 sq m shall consider the inclusion of decentralised energy provision, within the site, unless it can be demonstrated that the scheme is not suitable, feasible or viable for this form of energy provision." Not convinced that the applicant has the right balance between short-term economics and long-term savings of carbon emissions and therefore costs. **Referring to *The Reading Climate Emergency Strategy 2020-25*** *(E11 was quoted in original objection and has not been commented on in the Developer response):* It still says "Clusters of houses and businesses will need to be powered using collective renewable heat and electricity generation equipment."

		Action E11 discusses Ground Source Heat and says: "Work with developers to maximise district energy solutions in line with Local Plan policies on decentralised energy: • Establish District Heating • Investigate the potential of rivers, ground and aquifers in Reading for renewable heat • Implement heat pump schemes • Develop skills of local installers" The original objection did not 'allude to' 'open loop water source heat pumps' as appropriate for this development – it merely quoted the text of former Action E10 in its entirety. **Action E11 (which replaces draft Action E10) also says potential of ground and aquifers should be investigated and this has not been done.**

KEG Feedback Section M

Feedback Relating to Scope of Energy Strategy Response	**Developer Response**	**Comment from Reading Friends of the Earth**
The application states, "The 'Be Lean' approach will be utilised by ensuring highly efficient building fabrics, mechanical ventilation with heat recovery,	As addressed in the responses to comments included in Section J, the initial *Energy and Sustainability Report*	See comments on Section J above. Developer should evaluate Shared Ground Loop Array systems and the potential of ground source heat from aquifers in much more detail.

maximisation of daylighting and consequently passive solar heating and energy requirements. The 'Be Clean' approach will incorporate measures such as the use of air source heat pumps in order to meet the thermal energy loads of the houses, apartments and medical centre." We are pleased to see these proposals, in particular mechanical ventilation with heat recovery and heat pumps. Ground source heat pumps would likely be more efficient than air source.	document established why ground source heat pump technology was not opted for in the proposed energy strategy, in favour of air source heat pump technology.	
The applicant states, "The 'Be Green' approach has been implemented in the form of Low or Zero Carbon technology using photovoltaic (PV) installations on the roof of the medical centre. At this stage it is proposed a 5kWp PV array is provided." Only having 5kWp PV solar panels on the medical centre and nowhere else, seems a totally wasted opportunity and we assert that this is merely window-dressing to claim compliance with local policies. Installing PV solar panels on new-builds must be good value for money and the developers could set up an energy supply company to collate and market all	Please refer to Section 1.2 regarding proposed residential PV provision. At this stage it is not proposed for the Medical Centre to be comfort cooled, but rather solar control glazing and optimisation of window openings for natural ventilation will be incorporated as part of the detailed design proposals as a means of 'passively' addressing overheating risk. It is anticipated that the Medical Centre would incorporate the flexibility to undertake refurbishment/ retrofit with air con in the future if required, with the enhanced building	Increased PV provision is very welcome. As stated in Reading FoE Objection: "It is likely that summer cooling will be needed as high temperature events become more frequent and extreme and this can be provided by local solar PV." It would be sensible to arrange to 'comfort cool' the medical centre and the dwellings – this can be conveniently included in ASHP and GSHP setups. Solar PV is likely to be a source of low carbon electricity at times when cooling loads are high.

the 'spare' power from the development as a solar farm. Also, it is likely that summer cooling will be needed as high temperature events become more frequent and extreme and this can be provided by local solar PV.	fabric in place already to aid in mitigating the energy loads on these systems. The PV installation on the Medical Centre could be increased in size at this point in time to compensate for the increase in operational energy usage associated with air con systems	
The applicant states, "The combination of Be Lean, Be Clean and Be Green measures results in a CO2 emissions reduction of 43% over a Part L compliance baseline, exceeding the mandatory 35%. The anticipated regulated CO2 emissions for domestic buildings is 245 tonnes CO2 per annum. This represents a total CO2 emissions reduction of 185 tonnes CO2 per annum. This meets the requirements of RBC Local Plan." While this is compliant with the Local Plan, 245 tonnes CO2 per annum is still a lot more than zero and the Council's Climate Emergency aim is net zero by 2030. 245 tonnes CO2 per annum is 0.11% of Reading's total Domestic emissions in 2017. Furthermore, in the applicant's Sustainability Statement 6.3.7 it states, "On the basis of the remaining 252 tonnes of CO2, this equates to an offset payment of £453,600 to achieve net	The reference to 245 tonnes of CO2 is a superseded reference to version 1.0 of the *Energy and Sustainability Report* (the calculations in which were based on fewer dwellings than version 2.0). Please refer to Section 1.2 – the proposed enhancements to the scheme will result in the net CO2 emissions on site reducing from 252 tonnes of CO2 per annum to 75 tonnes of CO2 per annum.	Good to see the proposed enhancements to the scheme – how will these be documented in the approval of the planning application? The calculation of net CO2 emissions does not seem to be documented in detail so is hard to criticise. How much is due to the PV panels, and on what basis is this calculated? The small changes in U values – to improve the 'Fabric Energy Efficiency' – seem unlikely to save enough energy to reduce CO2 per annum from 252 tonnes to 75 tonnes. U Values (in W/m2K) for External Walls and Floors are unchanged at 0.18 and 0.13 respectively, and for Roof reduce from 0.13 to 0.11 and for Windows from 0.14 to 0.12.

zero emissions." So it is not clear whether eventual emissions will be 252 tonnes or 245 tonnes.		As stated in the original objection the Passive House standard is much better - "For free standing, single family homes, these U-value are often under 0.10W/m2K." So it is likely that most of the calculated reduction in CO2 is down to the PV Panels. **But the buildings will still require almost as much energy in the winter as before, at times when PV output will be very low, and it is likely electricity prices and carbon footprint will be relatively high.** Improved 'Fabric Energy Efficiency' <u>as well as</u> PV panels would be an even better outcome – ideally carbon footprint would become negative!
With reference to comparison to the figure of 245 TCO2e per year: This is confusing because the applicant's Sustainability Statement Table states that the sitewide total is 575 TCO2e per year.	Table 6.1 within the *Energy and Sustainability Report* that reports a sitewide total of approximately 575 TCO2e per year was based on the current SAP 2012 emission factors for gas and electricity and includes for the medical centre as well as the dwellings. As explained in Section 6.3 of the *Energy and Sustainability Report*, the residential emissions have then been converted to reflect the emerging SAP 10 emission factors, as per the guidance in the	OK

	Reading Sustainable Design and Construction SPD, which resulted in net residential emissions being reported as 252 TCO2e per year.	
The applicant states, "In the context of the Government's target to reduce CO2 emissions by at least 100% of 1990 levels by 2050, this would represent a minor adverse effect, which is significant." In the context of the Council's Climate Emergency aim (net zero by 2030), we assert that this is not good at all, unless electricity supply can be totally decarbonised by 2030.	Please refer to Section 1.2 – the net emissions for the site with the proposed design updates are now 75 Tonnes of CO2 per annum. The scheme is proposed to be a fully electric scheme – with no natural gas supply – to facilitate the further decarbonisation of the homes with the ongoing decarbonisation of the national electricity grid.	Good to see no gas supply intended. 75 tonnes CO2 is still not zero or negative, and, as discussed above, does not account for carbon intensity of winter electricity supply in 2030.
In the applicant's Sustainability Statement Table, it shows U-values of 0.18W/m2K for walls and 0.13W/m2K for ground floor and roof. If higher insulation standards (lower U values) were used energy consumption could be further reduced e.g. Passive House states "All components making up the building envelope must be well insulated. Edges, corners, connections and penetrations must be planned with special care in order to avoid thermal bridges. All opaque building components should be so well-insulated that their heat transfer of heat energy are lost through the external envelope per degree Kelvin and square meter. For free standing, single family	With regards to the proposed U values – please refer to the response provided in Section J. With regards to thermal bridging, we note that enhanced thermal bridging performance standards have been proposed for the dwellings to minimise the heat losses that will occur at building fabric junctions– refer to Section 3.3.1 of the *Energy and Sustainability Report* where an Accredited Detail level of performance is proposed.	As discussed above higher performance can be achieved and would reduce energy consumption and CO2 emissions.

homes, these U-value are often under 0.10W/m2K."		

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RESPONSE TO KEG REPRESENTATIONS – section *10.0 Tree section*

On Page 71 of "RESPONSE TO KEG REPRESENTATIONS" under the heading 'Ecology and Conservation' Arbortrack say:

Trees & tree related matters are discussed in several sections of this report *{presumably referring to KEG's Objection}* and, unfortunately, error/inaccuracy or conjecture has inadvertently crept in.

Section 1 'Preserving the trees' (page 4) accurately points out that the trees on the site are protected by a TPO and that 122 of them (of a total of 333) are proposed for removal.

The author then states that the proposed 1:1 replacement planting is 'not of benefit to the site' {a}, that there are 'risks to new & retained trees due to their proximity to the proposed housing', further compounded by 'inaccurate estimates of growth rate of mature planting stock'{b}.

He/she then advises that the new planting will absorb little or no carbon in the first ten years and (I paraphrase) will probably die anyway {c}.

He/she then incorrectly states that the 'environment will simply have suffered an immediate loss of the carbon absorbing capacity of 122 *mature* (our italics) trees … {d}

To be clear we have established that the maximum number of mature trees lost to development is approximately 32% of total removals. The large majority of trees to be removed are, in fact, semi mature or early mature. It is also reasonable to point out that very few trees on site predate the establishment of the golf course (excepting tree 53 and some other oaks for instance-all valuable & all retained) and were planted to deliver buffering/screening between/beside fairways and as hazards for golfers. Frequent amongst species chosen are Sorbus, Prunus or Betula genera, which are relatively short lived & predominantly non-native.

Reading FoE comments:

{a} 1:1 replacement planting is certainly not of net benefit to the site in the short term – not for landscape, wildlife or carbon sequestration.

{b} Not aware of this – Arbortrack need to be more specific and provide their own estimates

{c} Reading FoE objection said: "Trees planted will typically be 5m high – some may die, all will take some time to get going, and some may well be pruned to keep in scale with development. Loss of soil carbon at establishment should be considered. At best canopies may have expanded by 2030 but sequestration in hardwood will scarcely have started by 2030. Need a credible short-term estimate of sequestration to 2030." Reading FoE objection contained references to academic work on carbon sequestration rates of various tree species and effect on soil carbon of planting. Arbortrack offer no evidence on this point.

{d} In the application document CHAPTER 13: CLIMATE CHANGE RESILIENCE AND MITIGATION paragraph 13.8.7 says "The Proposed Development will be removing **118 mostly mature trees** (our emphasis) from around the Site" *… and …* "The replacement of mature trees with younger specimens is likely to marginally reduce the carbon sequestration from photosynthetic processes"

- Reading FoE objection responded to 13.8.7 with: "Disagree with 'marginally' in context of urgency and RBC 2030 net zero target.
- '118 mostly mature trees' does not equate to 32% of 122 trees which would be 39 mature trees – Arbortrack should explain which statement is incorrect.

END