Reading Friends of the Earth: Objections to Reading Planning Application 200713

Reading FoE object to this application - from Fairfax (Reading) Ltd & Reading Golf Club Ltd for construction of 260 houses - on grounds of Air Quality, Traffic and Transport, and Climate Change. Our failure to object on other grounds should not be taken to indicate approval.

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Air Quality:

CHAPTER 7: AIR QUALITY

In operation the development will increase traffic and while NAQOs (National Air Quality Objectives) may not be exceeded they are not safe thresholds and the science is evolving**.**

In particular while NAQO for annual PM2.5 is 25 ug/m^3 the WHO guide is 10 ug/m^3 and WHO are explicit that this is not a safe threshold.

Defra says: "levels of $PM_{2.5}$ (and population exposure) close to roadsides are often much higher than those in background locations." also "levels of $PM_{2.5}$ (and population exposure) close to roadsides are often much higher than those in background locations."

Table 7.3 shows how having an NAQO that is arguably too high results in changes due to development being assigned lower significance. 'Negligible' changes may not be show-stoppers for the development under planning law with present NAQOs. However Air Quality arguments still contribute to arguments for reduction of car use … and hence reduction of development or changes to the plans.

It is worth noting that Table 7.7 PM2.5 results are for an urban background site in the Cemetery in East Reading and are very much around the WHO guide level with no clear trend.

Appendix E says that "it has not been possible to calculate a specific adjustment factor for PM10 and PM2.5 and, therefore, the results have not been adjusted." However PM2.5 concentration can be inferred from PM10 and RBC estimated in 2018 it was 16.1 ug/m^3 annual average at RD1 on Caversham Road where there is an automatic monitor for NO2 and PM10 ... (Page 10 of https://democracy.reading.gov.uk/documents/s970/Item%206.pdf) … **so it should be possible to estimate concentrations of PM2.5 in neighbouring areas.**

Table 7.14 shows levels in Prospect Street above WHO guide level.

It is surprising that Table 7.14 shows such small changes in PM2.5 concentrations. Vehicle-emitted PM10 is now assumed to be all PM2.5 – see Emissions Factor Toolkit - So if PM10 increased PM2.5 should also increase … https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html

Key receptors identified are R13 to R17 on Prospect Street. Analysis of impacts of increased traffic on PM2.5 concentrations should be extended to RD1 on Caversham Road where there is an automatic monitor for NO2 and PM10. **The development is expected to increase traffic levels over Caversham Bridge and along Caversham Road and the IDR where congestion and air quality are both bad. Traffic should be modelled and resulting PM2.5 levels estimated for these locations to check that they are not increased by the development.**

Traffic:

CHAPTER 8: TRAFFIC & TRANSPORT

Introduction:

Traffic in Caversham is already appalling and this development would exacerbate it and increase carbon emissions e.g. through greater density of idling cars.

Public transport in Caversham has been reduced over the last few years so discouraging the use of it. It is not clear that residents of this development will make significant use of public transport or cycling or walking. Site is extremely up-hill from central Reading – certainly possible for reasonably fit cyclists but not easy or attractive for others.

Scope of Assessment: "8.3.36: The Guidelines for the Environmental Assessment of Road Traffic provides a general rule that can be used as a screening process to establish the extent of the assessment. The proposed study area for the transport and movement assessment will comprise links using these rules:

•Rule 1 - Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and

•Rule 2 - Include any other specifically sensitive areas where traffic flows have increased by 10% or more."

Problem with basing scope on > 10% increases in traffic flows rather than delays caused by congestion is that it excludes places where the increase in flow is less than 10% when:

- In a congested area it may not be possible to increase flow rate – increased demand may actually slow the traffic and reduce flow.
- Delays increase by approximately square or cube law with increase in traffic volume so small % increases in flow rate may have much more than proportionate increases in the time lost to congestion.

Figure 8.1 shows area under consideration.

It does not include areas closer to Reading where congestion is often encountered especially junction Peppard Road/Henley Road and junction Prospect Street/Gosbrook Road and further towards Caversham Bridge, Vastern Road and IDR. Probably because traffic is not expected to increase by more than 10%.

Traffic should be modelled for these busy areas and the impact on time lost to congestion presented to the Planning Committee.

New Roundabout: "8.10.15 A mini roundabout arrangement has been designed at the junction of Kidmore End Road and Peppard Road to help better manage traffic flows and provide a form of traffic calming around the Emmer Green local centre and signalised pedestrian crossing on Peppard Road. An imprinted crossing is proposed at the exiting informal crossing point located on Kidmore End Road."

It seems likely that this will add significant delays to traffic on the Peppard Road.

The expected traffic at this junction should be modelled to quantify the increase in delays to traffic on Peppard Road and the impact on time lost to congestion presented to the Planning Committee.

Climate Change:

Chapter 13: Climate Change Resilience and Mitigation

Introduction:

Climate Change – Targets and Timescales:

- IPCC 2018 – for 50% chance of keeping below 1.5^{o}C temperature rise: emissions (global, absolute) need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050.
- RBC 'net zero' by 2030 - welcome sense of urgency but ignores:
    - out of area non-energy-supply emissions - so ignores imported carbon footprint of goods and materials
    - likely timing mismatch between local energy generation and consumption – so ignores implications for energy storage and possible use of fossil-fuelled backup supplies
    - implications of travel outside tightly constrained local area
- UK government: 'net zero' by 2050 … ignores embodied carbon in imports and exports and does not capture need for significant reductions in the short term.

Because carbon dioxide is not rapidly removed from the carbon cycle once emitted, but continues to contribute to 'global heating', it is very important to achieve early reductions in emissions as well as ultimate 'net zero' target. Estimates of 100-year lifecycle emissions are of long-term interest but the next ten, twenty and thirty years are critical.

Golf Course Development Proposals – questions to ask:

Almost any development or increase in population is likely to increase carbon footprint of Reading.

Developer statement 13.12.2 "It should be noted that the IEMA Guidance states: "*in the absence of any significance criteria or a defined threshold, it might be considered that* ***all GHG emissions are significant and an EIA should ensure the project addresses their occurrence by taking mitigating action***". {My emphasis. IEMA is Institute of Environmental Management and Assessment. EIA is Environmental Impact Assessment.}

BUT 13.12.2 continues "In this respect, whilst it is acknowledged that all emissions from the Proposed Development will contribute to the overall significant effect of climate change, it is considered that the project has and will adopt an appropriate and reasonable level of mitigation and the residual effects should therefore be considered not significant for the purposes of this EIA."

But 'all GHG emissions are significant' so what are the 'residual effects' and are they really 'not significant'?

1. How does the proposed development comply with local planning requirements?
2. Are constructional and operational phase emissions really mitigated to an 'appropriate and reasonable' level or should they be reduced by on-site design changes?
3. Given that central government dictates that Reading must aim to build a number of new homes every year is this proposal better or worse than other possible developments for homes? Would a smaller number and/or different style of dwelling on this site, or development in a different location, be more sustainable?

Summary Answers to Questions:

1/. How does the proposed development comply with local planning requirements?

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.

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."

It does not make significant use of on-site renewable energy generation options.

It does not give good account of impact and mitigation of felling 118 TPO'd trees.

2/. Are constructional and operational phase emissions really mitigated to an 'appropriate and reasonable' level or should they be reduced by on-site design changes?

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.

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 a district heating scheme (instead of air-sourced heat) would likely reduce operational CO2 emissions. It also gives potential for energy efficient cooling systems for anticipated higher summer temperatures in the future.

3/. Given that central government dictates that Reading must aim to build a number of new homes every year is this proposal better or worse than other possible developments for homes? Would a smaller number and/or different style of dwelling on this site, or development in a different location, be more sustainable?

Reducing the number of homes and/or building at higher density (as envisaged in Local Plan CA1b) would reduce its direct impacts and might make land available for alternative uses beneficial to the local community. Higher density would make some form of district heating more viable.

This development, by location and number of car parking spaces, seems likely to lead to relatively high use of private cars:

- A location within easier reach of central locations (in both distance and elevation) would likely result in lower levels local transport emissions and more use of 'active travel'.
- Car parking provision should be reduced –in a future with less car use it is a waste of space.
- There is only one and a half cycle parking space planned for every two flats.

In context of climate change it would be better to address demand for homes by measures to reduce the number of empty homes and vacant buildings than to build in this location.

Comments following structure and numbering of 'Chapter 13: Climate Change Resilience and Mitigation'.

13.3. Key Legislation, Policy and Guidance Considerations

No mention here of Reading's Sustainable Design and Construction SPD (but it is referenced in the Developer's Sustainability Statement) which calls for an Energy Statement including "Cost information of technically feasible low or zero carbon renewable technologies, including additional insulation, low carbon decentralised energy, heat pumps etc;"

Have not found any quantitative analysis to address this requirement.

13.3.9 In discussion of the NPPF fails to mention NPPF Section 8 which defines sustainable development with three overarching objectives including:

"c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy. "

13.3.25 Reading Climate Change Strategy – developer summarises key points from current adopted strategy.

But this is due to be replaced in 2020. In particular the current consultation draft says:

"Clusters of houses and businesses will need to be powered using collective renewable heat and electricity generation equipment."

Action E10 says: 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

https://consult.reading.gov.uk/dens/reading-climate-emergency-strategy/user_uploads/reading-climate-emergency-strategy-2020-25---consultation-draft-for-rbc-policy-committee-9-march-20.pdf

13.4 Consultation:

13.4.2 Council response to Scoping Report was that "The loss of the mature trees found on the Site should be addressed"

Neither assessment of value of trees nor proposed mitigation is adequate – see below. Trees should be valued using CAVAT (https://www.ltoa.org.uk/resources/cavat) or similar process.

13.5 Assessment Methodology – Climate Change Mitigation

Good to see scope and methodology set out, including embodied carbon and emissions in construction stage. As discussed below in the short term tree planting can be a source of emissions and bought-in trees have their own carbon footprint.

Table 13.2 Key Anticipated GHG Emissions Sources and Sinks

Discussion generally looks good – especially in consideration of embodied carbon from off-site emissions defined in 13.5.9.

However no consideration of importance of taking account of timescales in any estimates of emissions and does not mention:

- *carbon loss from disturbance of vegetation-covered soils during construction work*
- *evidence that tree planting can take many years to become a net carbon sink and tree planting can only be considered a "sink" in the growth phase, not during planting.*

13.5.11 to 13.5.16 – Significance Assessment: No attempt to quantify 'substantial', 'notable' , 'slight' or 'imperceptible' changes in GHG emissions in context of UK Carbon Budgets.

13.6 Climate Change Mitigation – Baseline Assessment

Note that assertion on baseline conditions that "13.6.3 The Site includes many trees that absorb carbon dioxide during the daytime, and so the net emissions from the Site are considered likely to be negligible" is not supported by evidence.

13.7 Climate Change Mitigation - Identification and Description of Changes Likely to Generate Effect

"13.7.1 GHG emissions can arise through embodied carbon within the fabric of building materials, the transportation of materials and staff to and from the Site, and the running of the construction plant and facilities."

Omits mention of emissions from soil due to disturbance during works and loss of vegetation cover.

13.8 Assessment of Likely Significant Effect

Construction Phase (Emissions):

Construction materials:

"13.8.1 Due to the outline nature of the Proposed Development, there is limited detail available at this stage to fully define the GHG measures proposed. …"

"13.8.4 Although it is not clear how effective this mitigation would be at this stage, there will be opportunities to reduce the embodied carbon, and these could be considered at an appropriate design stage."

So they are not very sure about anything and don't commit to action with or without targets.

Tree Planting and Removal:

13.8.7 "The Proposed Development will be removing 118 mostly mature trees from around the Site" …

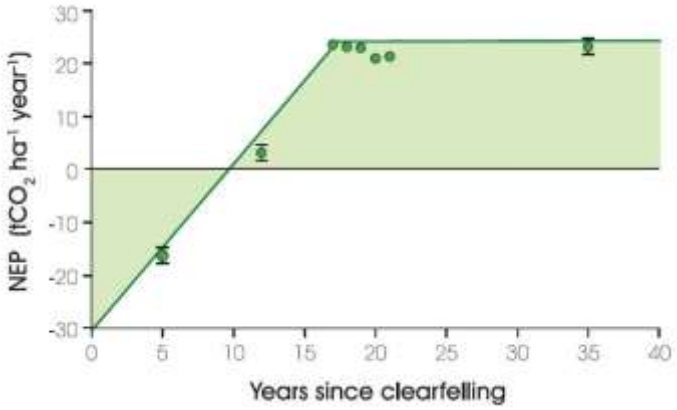
No discussion of how they will be disposed of so no account taken of their embodied carbon – no estimate of their embodied carbon. If they are burned would be an immediate release of perhaps 100 to 1000 tCO2e.

{Burning a 3' diameter Oak weighing 10 tonnes could release about 18 tCO2e and 118*18 is over 2,000 tCO2e but trees to be felled are probably much smaller than 3' diameter so it won't be as much as this.} https://rgsgeogy.wordpress.com/mrcs-tree-carbon-content-calculator/ }

13.8.7 cont. … **"**but will be replacing these on a 1:1 ratio and will therefore be replanting 118 new trees on the Site … The replacement of mature trees with younger specimens is likely to marginally reduce the carbon sequestration from photosynthetic processes,"

Disagree with 'marginally' in context of urgency and RBC 2030 net zero target. 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.

Figure 3.7
Net exchanges of CO_2 following site preparation and planting. Emissions of CO_2 from the soil dominate until c. year 11 (the break-even point) followed by increasing net removals of CO_2 from the troposphere by the growing young trees, reaching a plateau at canopy closure c. year 17.



Above diagram from the 'Read Report' - (Read, D.J., Freer-Smith, P.H., Morison, J.I.L., Hanley, N., West, C.C. and Snowdon, P. (eds). 2009. Combating climate change – a role for UK forests) – for Sitka Spruce plantation shows **there was initial large loss of carbon and it took about 17 years to reach maximum capture rate** and then capture rate stayed constant.

The removal of mature trees has a significant impact on potential for providing shade for dwellings and community spaces, against local plan policy CC3. Replacing these mature trees with immature specimens cannot offer shade effects for several decades.

The potential impact of hot weather on the uses of open spaces is referred to in section 13.11, and suggestion is made for constructing passive provision of shading, an additional input of embedded carbon to the development. Better to review the design

"13.8.8: In addition, the Applicant is committing to planting approximately 1,000 new native trees at Cucumber Wood to the north of the Site early in the programme, to help to offset this and lead to a longer-term net reduction in carbon from trees."

Tree Report Part 1 3.3 says "An Ancient Semi-Natural Woodland (ASNW) known as 'Cucumber Wood' stands to the north of the survey area. This is also Priority Habitat Inventory Woodland with a separate small area on the course to the rear (west) of the properties on Brooklyn Drive:"

Three points:

- *Cucumber Wood is not in Reading and is not on-site.*
- *Planting at scale is likely to lead to short term loss of carbon until at least 2030 (see above)*
- *Question if planting of trees appropriate to wildlife interests of an ASNW will result in rapid carbon sequestration once they are established.*

"13.8.10 The total embodied carbon in the buildings' materials is approximately 5,094 tonnes of carbon dioxide equivalent (TCO2e)."

This is about 19.6 TCO2e per house. This seems very low compared to the 2007 estimate of 56 tonnes per house from Stockholm Environment Institute, but perhaps things have improved in 13 years?
http://www.carbonconstruct.com/pdf/comparative_carbon_footprint_analysis.pdf

"13.8.11 A detailed balance of carbon from trees is not practical as there are many being affected (removed and introduced). However, whilst there are likely to be minor adverse effects in the shorter term, Woodland Trust guidance states that a young wood with mixed native species can lock up 400+ tonnes of carbon per hectare of land. Given that the direct replacement trees and the 1,000 further trees roughly equates to one hectare of land we can assume that the Proposed Development will offset approximately 400 tonnes of carbon, which will be a minor beneficial effect in the longer term."

400 tonnes CO2 per hectare seems rather optimistic, even for a mature wood. 300 tonnes CO2e seems more likely estimate if left to mature and not harvested.

https://www.forestresearch.gov.uk/documents/953/FCRP018.pdf says

Oak: Max capture rate 13 tCO2/ha/y Long-term stock after 150 years 320 tCO2/ha

Sitka: Max capture rate 20.5 tCO2/ha/y Long-term stock after 180 years 256 tCO2/ha

Agree that roughly 1 hectare of trees should have minor beneficial effect (about 6%) offsetting embodied carbon in building materials in the long term – but there will be little impact in critical 2030 and 2050 timescales and does not take into account impact of loss of 118 trees on site.

"13.8.12 Given that the total design life for the Proposed Development is expected to be 100 years, the effect is considered to be **minor adverse** in the context of the local carbon reduction targets and **negligible** at a higher spatial level."

Disagree. As discussed in introduction all emissions are significant. Averaged over 100 years the embodied carbon in construction materials is 51 tonnes CO2e per year which is about 0.01% of RBC 2017 annual emissions (Table 13.4 in which Grand Total of 556.2 is in ktCO2e). But RBC target is net zero by 2030 which in round numbers implies a total of 2,500 ktCO2e for the period. So construction materials for this project alone account for 0.2% of Reading's ten year budget.

Construction Traffic:

"13.8.15 The quantity emitted will correlate with the construction traffic profile, with more being produced during peaks in construction activity. Overall, approximately 3.4 TCO2e would be produced, which is considered minor adverse, and negligible against the local targets."

This estimate is almost certainly wrong unless they mean 3.4 TCO2e per house.

- *If it is for the total development it is about 13 kgCO2e per house which is the emission of a saloon car driven for about 80 miles.*
- *This seems extraordinarily low compared to the 2007 estimate of 2.6 TCO2e per house from Stockholm Environment Institute – which would imply a site total of 676 TCO2e – more than 10% of the embodied carbon in construction materials and therefore significant.* http://www.carbonconstruct.com/pdf/comparative_carbon_footprint_analysis.pdf
- *If it is per home then it totals 884 TCO2e – more than 17% of the embodied carbon in construction materials and therefore significant.*

Construction Plant:

"13.8.18 Over the course of the programme, a substantial amount of carbon would be generated, which could be **minor adverse** and significant in a local context."

So they don't quantify this 'substantial' contribution to the emissions.

Operational Phase Emissions:

"13.8.20 The 'Be Lean' approach will be utilised by ensuring highly efficient building fabrics, mechanical ventilation with heat recovery, 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."

Good to see proposals for mechanical ventilation with heat recovery and for heat pumps – although note that there is no commitment to zero usage of gas. Ground-source heat pumps would likely be more efficient than air-source and there is a requirement in the local plan to consider ground source/district heating systems for developments over 20 units.

Sustainability Statement Table 3.3 shows U-values of 0.18W/(m²K) for walls and 0.13W/(m²K) for ground floor and roof and Sustainability Statement Table 6.1 shows Building Fabric Efficiency around 8% below Part L Target.

If higher insulation standards (lower U-values) were used energy consumption could be further reduced. e.g. Passive House https://passivehouse-international.org/index.php?page_id=80
"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 coefficients (U-values) do not exceed 0.15W/(m²K), meaning that no more than 0.15 watts of heat energy are lost though the external envelope per degree Kelvin and square meter. For free standing, single family homes, these U-values are often under 0.10 W/(m²K)."

"13.8.21 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."

Government policy is to phase out gas boilers. This should be acknowledged in the "be green" approach and requires only electricity to power new units. Only having 5 kWp PV solar panels on medical centre, and nowhere else, seems a totally wasted opportunity and is merely window-dressing to claim compliance with local policies. Installing PV solar panels on new-build must be quite good value for money and the

developers could set up an energy supply company to collate and market all the 'spare' power from the development as a solar farm.

"Sustainability Statement 3.4.1 Appropriate analysis will be undertaken at design stage to ensure that the dwellings and health centre are adequately provided for by natural ventilation in summer, so that the introduction of comfort cooling at a future date and associated cooling system electricity usage is avoided."

'Appropriate analysis' is not reported and it is likely that summer cooling will be needed as high temperature events become more frequent and extreme – can be powered by local solar PV in daytime.

Thermal solar panels should also be installed on each house/unit to provide the hot water during the summer months and limit the need for electrical top-up during the winter.

"13.8.22 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."

Sustainability Statement Table 6.3 says Residential Total is 252 tonnes CO2 per annum. And Sustainability Statement 6.3.7 says that "On the basis of the remaining 252 tonnes of CO2, this equates to an offset payment of £453,600 to achieve net zero emissions."

So there is a minor difference between Sustainability Statement 252 tonnes and 13.8.22 245 tonnes.

This does show compliance with the Local Plan Policy H5 but 245 tonnes CO2 per annum is still a lot more than zero when RBC Climate Emergency aim is net zero by 2030.

245 tonnes CO2 per annum is 0.11% of Reading's total Domestic emissions in 2017 (from Table 13-4)

It is far from 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."

"13.8.25 If the Proposed Development was designed to be compliant with the Part L 2013 of the Buildings Regulations (with 2016 amendments), with the below mitigation measures implemented, the carbon emissions associated with regulated uses would be 245 TCO2e per year**."**

Sustainability Statement Table 6.1 says Commercial Unit emissions are 13 tonnes CO2 per annum which would make (13 + 252) 268 tonnes CO2 per annum for the whole site.

"13.8.26 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 RBC Climate Emergency aim - net zero by 2030 – this is not good at all.

<u>Operational Traffic:</u>

"13.8.32 In total, the operational emissions arising from transport are considered to be approximately 339.4 tonnes CO2 for the total 100-year lifespan of the Proposed Development. This is considered to be negligible (and not significant), although reductions could still be achieved as described above."

This statement should be explained in more detail – the meaning of the figures and their interpretation is not obvious – it does not seem to make sense.

In document I:

- Table 3 the total declared Annual Average Daily Total (vehicles on road link * link length) calculates as 79,517 vehicle km – equivalent to 305 vehicle-km per day per household – seems far too high! It would mean the annual figure would be around 29 million km.
- Table 4 the total Operational Traffic CO2e tonnes based on 100 year lifecycle is stated as 441 tonnes (not 339.4 as in Climate document 13.8.32)

In 2017 total UK transport emissions were 118 million tonnes CO2e and there were approximately 39 million licenced vehicles (ONS) so average vehicle emitted about 3 tonnes.

The site provides parking spaces for 485 vehicles.

- Cars in UK travelled an average of 7,134 miles in 2017 (ONS). So at 80% occupancy of spaces vehicles from site would travel 2.77 million miles (4.43 million km) in a year.
- At 142 g/km emissions would be around 630 tonnes CO2e per annum.

While emissions would be expected to fall as vehicles change to electric power if this were to be achieved by linear decline over ten years this would still amount to 3,150 tonnes CO2e which is significant.

13.11 Measures for Adapting to Climate Change

Some climate change adaptation measures need to be addressed at an early design stage and built into the construction. Greywater/ rainwater harvesting for reuse within buildings requires substantial underground storage systems, probably best sited under car parking areas and retrofitting is far more expensive and leads to further emissions; rainwater harvesting for use on the land requires open areas to be left between development blocks that can hold a SUDS system in the future without damaging trees; control systems for buildings need to be for heating and cooling and imply systems that can provide both in an energy efficient manner.

13.12 Residual Effects

Table 13-6 Significant Residual Effects

Note that mitigation for five out of eight areas is to 'Consider …' improvements - there is no certainty or commitment.

Do not agree that the adverse effects are not significant in context of Reading Borough and its climate emergency strategy goal of net zero by 2030.

END 24th September 2020.

Appendix: Reading Local Plan 2019

CA1b	*PART OF READING GOLF COURSE, KIDMORE END ROAD*

Development for residential and replacement clubhouse, subject to the future provision of golf on the remainder of the Golf Club site, which fulfils an important sports and leisure function for Reading, being secured. On-site facilities should be provided to mitigate impacts on community infrastructure, including for healthcare. On-site public open space will be provided.
Development should:
- *Avoid adverse effects on important trees including those protected by TPO;*
- *Provide a green link across the site from Kidmore End Road to the remainder of the golf course, rich in plant species and habitat opportunities;*
- *Ensure that vehicular access is provided from suitable roads to the area to be retained for golf;*
- *Take measures to mitigate impacts on the highway network, particularly on Kidmore End Road and Tanners Lane;*
- *Include all parking requirements within the site to avoid exacerbating parking issues on existing streets;*
- *Take account of potential archaeological significance; and*
- *Take account of the potential impact on water and wastewater infrastructure in conjunction with Thames Water, and make provision for upgrades where required.*

Site size: 3.75 ha	*90-130 dwellings, community provision including healthcare and replacement clubhouse*