Thermal Bridging

5.11. The significance of thermal bridging as a potentially major source of fabric heat losses is increasingly understood. Improving the U-values for the main building fabric without accurately addressing the thermal bridging will not achieve the desired energy and CO_2 reduction targets.

5.12. The dwellings will be constructed to minimise unnecessary bridging of the insulation layers, with avoidable heat loss therefore being reduced wherever possible. Accurate calculation of these heat losses forms an integral part of the SAP calculations undertaken to establish energy demand of the dwellings.

Air Leakage

5.13. After conductive heat losses through building elements are reduced, convective losses through draughts are the next major source of energy wastage. It is assumed at this stage that the dwellings will be designed to achieve an airtightness standard of no greater than 5.01 $m^3/h.m^2$@50Pa and the retail unit will target an air pressure of 3.00 $m^3/h.m^2$@50Pa. Pressure testing in accordance with Building Regulations and ATTMA standards is required on completion to confirm that the design figure has been met.

Active Measures

5.14. Where feasible internal low energy lighting will be used. External security and space lighting will be low energy and fitted with Passive Infrared Sensor (PIR) and daylight sensors where appropriate.

5.15. Heating generation and distribution systems throughout will be designed to give the occupants very good control over their use, encouraging and allowing energy-efficient behaviour. Time and temperature zoning controls will be included in each dwelling to avoid unnecessary heating of uninhabited spaces when not required (e.g., bedrooms during the day, living areas at night)

Provisions for Energy-Efficient Operation of the Dwelling

5.16. Energy consumption can be reduced by passive design features that ensure that the building systems and equipment are utilising energy in the most efficient manner possible. Improving energy efficiency is principally addressed through the buildings themselves through various measures outlined in this statement.

5.17. However, the occupant also has a more active part in reducing energy by ensuring efficient operation of the dwelling.

5.18. The occupant of the dwelling will be provided with all necessary literature and guidance relating to the energy efficient operation of fixed building services. All dwellings will be provided with modern heating systems, with controls enabling different temperature profiles in a minimum of two defined zones, a measure which serves to avoid unnecessary heating of spaces when not required - for example, bedrooms and living rooms with differing hours of occupancy.

Fabric Energy Efficiency Standard

5.19. By following the strategy described, the dwellings will significantly reduce energy demand and consequent CO_2 emissions beyond a Part L compliant development.

5.20. As previously discussed, the Fabric Energy Efficiency (FEE) rating is an additional metric by which the improvement performance of the dwellings as designed can be measured. Table 3 shows the average Part L compliant Target Fabric Energy Efficiency (TFEE) across the site and the as-designed calculated Dwelling Fabric Energy Efficiency (DFEE) to demonstrate compliance with the standard.

Table 3. Average site-wide Fabric Energy Efficiency as designed

	$kWh/m^2/yr$
Target Fabric Energy Efficiency (TFEE)	37.87
Dwelling Fabric Energy Efficiency (DFEE)	37.45
Improvement	1.1 %

6. Overheating Risk Mitigation

6.1. The project team should consider the risk of overheating in their building designs very early in the design process as it has the potential to not only cause discomfort for building occupants, but also cause potentially harmful medical conditions such as dehydration or heat exhaustion.

6.2. Dwellings constructed today may be operating in a substantially different climate over the coming decades, and therefore should be designed to ensure that they are able to adapt and reduce the risk of overheating with potentially higher summer temperatures and longer hot spells.

6.3. Key design decisions can affect the potential risk of overheating:

- Poor consideration of orientation of large glazed facades
- High density development contributing to urban heat island effects
- High glazing ratios contributing to excessive unwanted solar gain
- Inadequate ventilation strategies
- Very high levels of thermal insulation without considering heat build-up

6.4. Other factors which additionally contribute to heat build-up within homes and should be addressed where possible include:

- High levels of occupation
- Appliance use contributing to internal gains

Cooling hierarchy

6.5. In common with sustainable heating strategies, it is possible to apply a sustainable 'cooling hierarchy' which sets out the priorities to ensure overheating risk is minimised:

- Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure.
- Minimise internal heat generation through energy efficient design:
- Manage the heat within the building through exposed internal thermal mass and high ceilings
- Provide passive ventilation
- Mechanical ventilation systems
- Provide active cooling systems

Building Regulations Part O

6.6. The 2021 Building Regulations also saw the introduction of 'Part O' to assess the overheating risk of dwellings. Dwellings may either be assessed under the 'simplified' or 'dynamic' methodology. A Part O assessment of the house types on this site will be undertaken at full design stage.

6.7. At this stage overheating risk has been considered within the energy strategy to ensure that the requirements of Part O can be met without the need for excessive mechanical ventilation requirements or mechanical cooling.

6.8. Taking in to consideration the location of the development a lower g-glazing value has been incorporated in to the energy strategy to minimise solar gains through glazing and ensure that the overall energy performance of the building will not be compromised.

6.9. One of the most effective ways of addressing the risk of overheating in homes is to have a well thought out strategy for purge ventilation (supply of large amounts of fresh air in a short period of time). This can be achieved by providing means for cross-ventilation, circulating large amounts of air through the home. Where mechanical ventilation is used, occupants should still be able to open windows adequately and in a secure manner, even if only for a short period of time.

6.10. Materials with high thermal inertia – including traditional masonry construction – take a number of hours to warm up in the conditions normally associated with the interior of domestic properties. By slowly extracting heat from the air inside a dwelling, they offer a heat sink and reduce overheating risk. The heat absorbed is then emitted during the night, offering a small amount of passive heating. The overall effect serves to smooth out the heat profile within the dwelling thus reducing the need for instantaneous heating and cooling.

6.11. Due to the measures described to reduce internal heat gain, natural ventilation provided through window openings and the opportunity for cross ventilation will allow sufficient air exchange rates to purge any heat build-up. Active cooling systems are therefore not proposed.

6.12. These measures will serve to ensure that the development builds in resilience to a potentially changing climate over the lifetime of the buildings and minimises the overheating risk that can be exacerbated by the drive to better insulated, more airtight homes if not considered within the design and construction process.

7. Be Clean - District Energy Networks and Combined Heat and Power (CHP)

7.1. The installation of heat networks and CHP systems are encouraged through the planning policy where they are demonstrably viable low carbon options.

7.2. Heat networks deliver heat from a single or small number of generating plant to the distributed loads across an area, from a single building up to city scale. Where operating from locally generated heat, as opposed to waste or unwanted process heat for example, they are most suitable where there are numerous different heat loads (i.e., not purely residential) to provide a fairly consistent baseload demand and allow for maximisation of plant efficiency.

7.3. The proposed development, as discussed, will promote substantial energy efficiency savings. As the entire parcel is to be primarily residential there is a relatively low space heating and hot water requirement within the dwellings.

7.4. Heat networks can be well suited where there are high densities of heat for example in city centres, or at a building scale in high rise apartment blocks. Over a larger area high heat losses can be associated with the long pipe runs required between buildings, particularly in lower density housing developments where the efficiency losses can typically be as much of a third of the heat demand.

7.5. For these reasons the construction of a new heat network is not considered suitable for this development.

Existing Heat Networks

7.6. Strategic Policy 7 states that development should connect to any existing or planned heat networks. The proposed development is not in an area where a connection to an existing district heating network is currently possible. There are also no existing or potential district heat networks in the surrounding area.

7.7. The West Sussex Sustainable Energy Study (2009) has been consulted to ascertain whether the site falls into an area identified as appropriate for a future heat network. There are currently no existing heat networks in this area, nor are there any proposed future heat networks within the facility of the proposed development.

Combined Heat and Power

7.8. When electricity is generated by the burning of fossil fuels (or, indeed, in any of the thermal generation processes), around half of the energy is wasted as heat. Harnessing this heat would halve the effective emission intensity of fossil fuel generation.

7.9. Combined Heat and Power (CHP) systems perform this function by running electricity-generating plant based on heat demand, and capturing the heat to warm homes, buildings and processes. CHP plant is most economical at large scale, where combined heat loads from numerous buildings, preferably with differing uses provide a consistent baseload heat demand which can then be connected to a single heat source.

7.10. The capital investment in CHP plant at scale is substantial, therefore it is important to run plant consistently to achieve maximum returns. Idle plant accrues no benefits, so it is important that CHP plant maximises operational hours.

7.11. As the entire parcel is to be primarily residential there is a relatively low space heating and hot water requirement within the dwellings. The year-round base heat demand required to make CHP feasible is not met by the summer hot water load within the development.

7.12. Although more efficient than a mains gas boiler, the efficiency of a CHP system is now rivalled by other technologies such as heat pumps, which have the potential to lower carbon emissions further and will continue to decarbonise the site as more renewable sources are used to supply grid electricity.

7.13. Furthermore the site does not currently benefit from an existing mains gas connection and so fuel would have to be delivered to site. As such, the installation of a CHP system is not considered viable or preferable at this development.

8. Be Green - Renewable Energy Systems

8.1. In accordance with Regulation 25A of Part L and Horsham Planning Policy, a full range of low carbon and renewable energy technologies have been assessed to establish their suitability for the site and in meeting the requirements of the planning policy.

8.2. The final stage of the energy hierarchy requires the assessment of appropriate low carbon and renewable energy technologies to offset residual emissions to meet the planning policy. The following section therefore considers large scale and building scale technologies to establish the most appropriate system(s) for the building under assessment.

8.3. A range of technologies have been assessed for potential incorporation into the scheme in accordance with Regulation 25A of the Building Regulations and with the intent of meeting 19% reduction CO_2 emissions as well as 10% of the energy requirements of the development.

8.4. These options are considered over the lifetime of the development and incorporated at early stage design to ensure that they are integrated successfully.

Wind Power

8.5. A preliminary examination of the BERR Wind speed database[2] indicates that average wind speeds at 10m above ground level are around 4.6m¬/s. Wind turbines at this site are therefore unlikely to generate sufficient quantities of electrical energy to be cost effective.

8.6. Additional issues encountered at this site include the required area of land on-site for effective operation and maintenance, and significant turbulence introduced by locating turbines in urban locations such as this, surrounding buildings and other topography adjacent to the site. The intermittent and unpredictable nature of wind resources in urban locations means that installation of a wind turbine is not recommended.

8.7. Combined with the potential environmental impact from noise and vibration and the visual impact on landscape amenity, wind power is not considered feasible at this site.

Appraisal of Building Scale Renewable Energy Systems

8.8. The remaining renewable or low carbon energy systems considered potentially feasible are at a building scale. The advantages and disadvantages of the following technologies are assessed in tables 4-9.

- Individual biomass heating
- Solar hot water
- Solar photo-voltaic (PV)
- Air Source Heat Pumps (ASHP)
- Ground Source Heat Pumps (GSHP)
- Hot water heat pumps (HWHP)

[2] https://www.rensmart.com/Maps#NOABL

AES Sustainability Consultants

Individual Biomass Heating

Table 4. Individual biomass heating feasibility appraisal

Potential Advantages	Risks & Disadvantages
• Potential to significantly reduce CO_2 emissions as the majority of space and water heating would be supplied by a renewable fuel • Decreased dependence on fossil fuel supply	• A local fuel supply is required to avoid increased transport emissions • Fuel delivery, management and security of supply are critical • Space is required to store fuel, a thermal store and plant • A maintenance regime would be required even though modern systems are relatively low maintenance • Building users or a management company must be able to ensure fuel is supplied to the boiler as required. • Local environmental impacts potentially include increased NOx and particulate emissions
Conclusions	
Sustainable and local fuel supply is critical to ensuring predicted CO_2 emissions savings for biomass energy systems. Fuel storage capacity on site dictates the length of time required between deliveries and the volume of fuel delivery required. With limited space for access and storage of fuel more frequent deliveries would be required. For these reasons, biomass is not considered a preferred fuel source for this proposed development.	

Solar Thermal

Table 5. Solar thermal systems feasibility appraisal

Potential Advantages	Risks & Disadvantages
• Mature and reliable technology offsetting the fuel required for heating water (typically gas) • Solar thermal systems require relatively low maintenance • Typically, ~50% of hot water demand in dwellings can be met annually	• Installation is restricted to favourable orientations on an individual building basis • The benefit of installation is limited to the water heating demand of the building • Safe access must be considered for maintenance and service checks • Buildings need to be able to accommodate a large solar hot water cylinder • Distribution losses can be high if long runs of hot water pipes are required • Visual impact may be a concern in special landscape designations (e.g., AONB)
Conclusions	
Solar hot water systems for flatted blocks are only suitable where a central boiler plant room is provided to accommodate a central thermal store, and in individual houses where water storage is available. The efficiency of solar thermal compared to other technologies is also relatively low taking into account low residential water use. For these reasons, solar thermal is not considered an appropriate technology for this proposed development.	

Solar Photovoltaic

Table 6. Solar photovoltaic systems feasibility appraisal

Potential Advantages	Risks & Disadvantages
• The technology offsets grid supplied electricity used for lighting, pumps and fans, appliances and equipment • Mature and well proven technology that is relatively easily integrated into building fabric • Adaptable to future system expansion • Solar resource is not limited by energy loads of the dwelling as any excess generation can be transferred to the national grid • PV systems generally require very little maintenance • Occupiers could benefit from Smart Export Guarantee payments • Service and maintenance requirement minimal, and 2-3 storey buildings should not require significant additional safety measures (man safe systems etc) for roof access.	• Poor design and installation can lead to lower than expected yields (e.g., from shaded locations) • Installation is restricted to favourable orientations • Safe access must be considered for maintenance and service checks • Visual impact may be a concern in special landscape designations (e.g., AONB) or conservation areas • Reflected light may be a concern in some locations
Conclusions	
PV panels are considered technically feasible for all buildings with suitable roof orientations. The relatively low cost, high carbon saving potential and limited additional impacts mean that PV is considered a feasible option for this development, where additional savings are required to meet our Building Regulations target.	

Air Source Heat Pumps

Table 7. Air source heat pump feasibility appraisal

Potential Advantages	Risks & Disadvantages
• Heat pumps are relatively mature technology providing heat using the reverse vapor compression refrigeration cycle • Heat pumps are a highly efficient way of providing heat using electricity, with manufacturers reporting efficiencies from 250% upwards • Can be of increased benefit where cooling is also required, therefore particularly relevant to commercial buildings	• It is critical that heat pump systems are designed and installed correctly to ensure efficient operation can be achieved. Users must be educated in how heat pump systems should be operated for optimal efficiency. • Air source heat pump plant should be integrated into the building design to mitigate concerns regarding the visual impact of bolt-on technology • Noise in operation may be an issue particularly when operating at high output
Conclusions	
Air source heat pumps are technically feasible for the buildings in this scheme and have the potential to deliver high carbon savings across the site. The site does not currently benefit from a mains gas connection, therefore their potential to provide a highly energy efficient main heating system means that they are a preferred technology on this site.	

Ground Source Heat Pumps

Table 8. Ground source heat pump feasibility appraisal

Potential Advantages	Risks & Disadvantages
• Heat pumps are relatively mature technology providing heat using the reverse vapor compression refrigeration cycle • Heat pumps are a highly efficient way of providing heat using electricity, with manufacturers reporting efficiencies from 320% • Can be of increased benefit where cooling is also required, therefore particularly relevant to commercial buildings	• A hot water cylinder is required for water heating • It is critical that heat pump systems are designed and installed correctly to ensure efficient operation can be achieved. • Ground source heat pumps either require significant land to incorporate a horizontal looped system or significant expense to drill a bore hole for a vertical looped system
Conclusions	
Ground source heat pumps are not considered technically feasible for buildings in this scheme due to the requirement for horizontal ground loops or boreholes for the heat exchangers.	

Hot Water Heat Pumps

Table 9. Hot Water Heat Pump Feasibility Appraisal

Potential Advantages	Risks & Disadvantages
• Hot water demand met through grid electricity with low effective emissions factor • Heat pump element increases efficiency over immersion heater, circa 200%+ • Particularly suited to apartments as there is no external heat exchanger requirement, only intake and exhaust duct runs • Low noise levels • Compact solution in same footprint as hot water cylinder	• Maximum length of duct runs means that cylinder positioning needs to be considered within the dwelling • Less appropriate for larger dwellings with higher hot water demands due to potentially slower recharge rate • Some noise, however likely to be easily suppressed with appropriate cylinder location • Space heating must be met through separate system
Conclusions	
Hot water heat pumps are considered feasible for dwellings with relatively low number of wet rooms and appropriate cylinder location to allow for duct runs to building façade.	

Feasible Renewable Energy Technologies and Energy Generation

8.9. The building scale renewable or low carbon energy systems considered feasible at this site are Solar PV, Air Source Heat Pumps, and Hot Water Heat Pumps.

8.10. Solar PV systems are considered appropriate for the development if further carbon savings are required by updated regulatory changes. Solar PV also has the potential to be integrated in to the development in the future.

8.11. As the site does not currently benefit from a mains gas connection, the potential of ASHPs to provide a highly energy efficient main heating system with low associated carbon emissions means that they are the preferred technology.

8.12. ASHPs require an outdoor condensing unit and therefore whilst suited to houses with outdoor ground space for the unit to be located, they are less suited to apartments.

8.13. Hot Water Heat Pumps may offer a more technically feasible solution to provide a significant proportion of the heat demand from a renewable source in apartments. The proportionally lower heating demand would then be met by electric panel heaters.

9. Energy demand and CO_2 Emissions Reduction

9.1. Through a combination of the described fabric first approach to sustainable construction and the incorporation of heat pump technologies, the development will deliver overall CO_2 emission reductions of over 59%, far in excess of the minimum reduction required under emerging planning policy.

9.2. Table 10 demonstrates the total CO_2 reduction achieved through the combination of the Fabric First approach and the addition of renewable technology:

Table 10. Total CO_2 savings

	Part L compliant emissions (tonnes CO_2/year)	As-designed emissions (tonnes CO_2/year)	Improvement %
Residential	284.9	115.9	59.3
Non-Residential	0.8	0.7	11.6
Site-wide emissions	285.7	116.7	59.2

9.3. Table 11 demonstrates the total reduction in primary energy demand for the residential and non-residential spaces as well as the site as a whole.

Table 11. Indicative site-wide performance – Primary Energy

	Part L compliant Primary Energy Rate (MWh_{PE}/year)	As-designed Primary Energy Rate (MWh_{PE}/year)	Improvement %
Residential	1,496.8	1,209.9	19.2
Non-Residential	9.1	7.9	10.4
Site-wide demand	1,505.4	1,217.6	19.1

9.4. The savings shown have been calculated from a range of sample house and apartment types and extrapolated over the site. As such these calculations do not account for orientation or potential overshading of specific plots, however they are considered representative of the site as a whole. and full design SAP and DSM calculations will be undertaken at detailed design stage to ensure that policy requirements are maintained.

BREEAM Energy Requirements

9.5. Strategic Policy 8 requires a BREEAM rating of 'Excellent' to be achieved for the non-residential development.

9.6. As demonstrated the non-residential aspects of the development constitute only a minor proportion of the overall emissions and energy use on the site, making up less than 1% of the site. Furthermore, the retail unit is at this stage to be developed to a scope of shell only, with the incoming occupier responsible for fitting the building services.

9.7. The building services, including heating and lighting, play a large role in determining the emissions and energy efficiency of the unit. At this stage of development, the developer is only able to influence the building fabric, which has been designed to reduce energy demand as low as practically possible.

9.8. Given the size of the non-residential aspects of the development and low level of influence that the developer has over them, a full BREEAM assessment is considered overly onerous, and it is instead proposed that the building is designed to ensure that the necessary minimum energy credits are achieved by the building fabric, to ensure that the energy standards equate to those of a BREEAM 'Excellent' building, without the need to produce a full assessment.

9.9. Under BREEAM UK New Construction, it is mandatory to achieve a minimum of 4 Ene01 credits to achieve an Excellent rating.

9.10. Liaising with the architects to optimise the building fabric, air pressure, and the quantity of glazing between providing an appropriate amount of lighting and solar gain and reducing heat loss. A design solution which achieves the required 4 credits has been achieved. The credits have been confirmed using the outputs of the DSM calculation and the approved BRE calculator.

9.11. The design would therefore be compliant with the energy requirements of a BREEAM Excellent scheme.

10. Sustainability

10.1. This section of the reports details the wider sustainability considerations of the project, taking into account the additional requirements of Policies 35, 36 and 37.

Mitigating the Effects of Climate Change

10.2. The impacts of construction materials range from the depletion of natural resources to the greenhouse gas emissions and water use associated with their manufacture and installation.

10.3. Within the development choices will be made in order to reduce the consumption of primary resources and use materials with fewer negative impacts on the environment, including but not limited to the following:

- Use fewer resources and less energy through designing buildings more efficiently,
- Specify and select materials and products that strike a responsible balance between social, economic and environmental factors.
- Improve environmental, economic and social sustainability of construction products by recognising and encouraging the selection of products with responsible sourcing certification.
- Wherever possible materials will be diverted from landfill through re-use, recycling, return to supplier or recycling.
- In addition to promoting the use of public transport, cycling is being encouraged through the provision of accessible and secure cycle storage.

Waste

10.4. Sending waste to landfill has various environmental impacts, such as the release of local pollution, ecological degradation and methane emissions, in addition to exacerbating resource depletion. Waste in housing comes from two main streams; construction waste and domestic waste during occupation.

Household Waste

10.5. In this respect regard has been given to the policy advice contained in the NPPF together with the Council's current strategy in terms of waste and recycling to ensure that the new dwellings are provided with adequate storage facilities for both waste and recyclable materials.

10.6. Horsham District Council currently operate a household collection service through which households are able to recycle materials including paper and cardboard, plastic bottles, tins, glass and cartons, along with a separate collection for garden waste. Future occupiers of the dwellings will be provided with an information pack detailing the Council's current collection arrangements for waste and recycling and advising of the nearest recycling centres to the Application site.

Construction Waste

10.7. The development will additionally be designed to effectively and appropriately monitor and manage construction site waste. Target benchmarks for resource efficiency will be set in accordance with best practice – e.g. m^3 of waste per $100m^2$ / tonnes waste per m^2.

10.8. Wherever possible materials will be diverted from landfill through re-use on site, reclamation for re-use, returned to the supplier where a 'take-back' scheme is in place or recovered and recycled using an approved waste management contractor. A target to divert 85% by weight/volume of non-hazardous construction waste will be applied.

Sustainable Drainage and Flood Prevention

10.9. Flood risk associated with the Proposed Development has been identified and will be managed to minimise the risk of localised flooding both on and off site, watercourse pollution and other environmental damage.

10.10. A Flood Risk Assessment (FRA) has been carried out. It states that the site is shown on the Environment Agency (EA) flood Map for Planning (Rivers and Sea) to lie within Flood zone 1 (low risk), which is described as having a less than 0.1% annual probably of fluvial flooding and the NPPF Planning Practice Guidance for 'Flood Risk and Coastal Change' confirms that the development site is contained within Flood Zone 1; defined as 'Land having a less than 1 in 1,000 annual probability of river or sea flooding' in any year.

10.11. Surface water arising from a developed area will as far as practicable, be managed in a sustainable manner to reduce the surface water flows arising from the site, reducing the flood risk on the site itself and elsewhere, taking climate change into account.

10.12. Post-development, the site will be positively drained, thereby reducing the risk of surface water flooding. In order to mitigate the impact of storm exceedance or infrastructure failure and to safeguard properties, consideration shall be given to minimising the number of low-lying properties.

10.13. A surface water drainage strategy has been produced, that adheres to appropriate guidance, and the surface water drainage hierarchy will be considered. In order to ensure that the rate of surface water run-off from the site does not increase as a result of the proposed development, the surface water discharge rates will be restricted to greenfield equivalent run-off rates and surface water will be designed and managed to ensure that the system can cope with a 1 in 100 year + 40% climate change storm event.

10.14. Specific drainage features will include; permeable pavement to driveways, swales for attenuation and to convey surface water through the site, where levels allow, detention basins and the retention and planting of appropriate trees throughout the site.

10.15. To ensure appropriate water runoff is achieved it will be determined that the road alignment, gradients and drainage measures are sufficient, thus minimising chances of standing water and localised flooding

Biodiversity

10.16. In order to protect and enhance the ecology of the site, strategies have been developed to enhance opportunities for biodiversity through the introduction of extensive planting on site. Landscape proposals have been designed as part of the application.

10.17. A programme of ecological measures and enhancements have been developed, including new shrub and herb planting, wildflower seed being sown on bare soil areas and the introduction of log piles to offer shelter for hibernating small mammals and insects, as well as a foraging area for some birds. Hedgehog homes could also be placed within the southwest corner of the site to provide areas of shelter for hedgehogs within the site, helping support the local population.

10.18. Recommendations for enhancements have been made within the ecology report, aimed at improving the ecological value of the site and providing a net gain in biodiversity post development.

Water Conservation

10.19. Water will be managed effectively to reduce the water consumption associated with the proposed development. Internal potable water consumption will be limited to 85 litres/person/day in accordance with the emerging planning policy.

10.20. Water efficiency measures including the use of efficient dual flush WCs, low flow showers and taps as well as the use of smart meters will be encouraged with the aim to limit the use of water during the operation of the proposed development.

10.21. Water calculations for the dwellings will be carried out on the proposed specification in accordance with Approved Document G in order to ensure that the water use of the development does not exceed 85 litres/person/day.

11. Conclusions

11.1. This Energy and Sustainability Statement has been prepared by AES Sustainability Consultants Ltd on behalf of Riverdale Developments to detail the approach to sustainable construction to be employed at Land At Mercer Road.

11.2. The primary purpose of this statement is to address relevant planning policy and conditions, as contained within the Horsham District Planning Framework (HDPF) and emerging Local Plan.

11.3. The statement sets out a fabric first approach to sustainable construction, demonstrating that improvements in insulation specification, a reduction in thermal bridging and unwanted air leakage paths, together with further passive design measures will ensure that energy demand and consequent CO_2 emissions are minimised.

11.4. A range of potentially appropriate low carbon energy technologies have been assessed for feasibility in delivering a reduction in energy demand in line with planning policy requirements, concluding that Air Source Heat Pumps constitute the preferred technology for this site, with the potential to use a combination of direct electric heating and Hot Water Heat Pumps in apartments where ASHPs may not be technically feasible.

11.5. Calculations demonstrate that the design specification will deliver carbon dioxide savings of approximately 59.2% over the Part L 2021 standards, far improving over the minimum requirements of planning policy.

11.6. The savings shown have been calculated from a range of sample house and apartment types and extrapolated over the site. As such these calculations do not account for orientation or potential overshading of specific plots, however they are considered representative of the site as a whole.

11.7. In compliance with planning policy, the site has taken into consideration a number of wider sustainability issues, including mitigation of climate change, biodiversity and sustainable travel. The predicted average water use will be calculated in terms of litres/person/day to meet the 85 litres/person/day target required to meet Planning Policy