Subject:	**ELECTRIC HEATING AND PHOTO-VOLTAIC INSTALLATIONS AT THE AFFORDABLE HOUSING DEVELOPMENTS AT KIMBERLEY CLOSE AND STOCKDALE GARDENS**
Meeting and Date:	**Special Cabinet - 19 July 2021**
Report of:	**Helen Lamb, Head of Finance and Investment**
Portfolio Holder:	**Councillor Derek Murphy, Portfolio Holder for Social Housing and Port Health**
Decision Type:	**Non-Key Decision**
Classification:	**Unrestricted**

Purpose of the report: To agree to install electric heating at Kimberley Close and Photo-Voltaic (PV) installations at both Kimberley Close and Stockdale Gardens.

Recommendations:

(a) To approve the upgrade to the incoming electricity main to Kimberley Close, allowing electric heating to be installed in lieu of gas, and the associated additional budget required.

(b) To approve the installation of enhanced PV systems to both Kimberley Close and Stockdale Gardens developments, and the associated additional budget required.

1. Summary

1.1. This decision previously went to Cabinet on 5 July 2021 but was deferred to allow additional information on the prospective tenants' energy costs to be compiled for further consideration.

1.2. Cabinet has previously approved projects to build a total of 24 flats as interim housing for homeless people at two DDC owned sites at Kimberley Close, Dover and Stockdale Gardens, Deal.

1.3. The additional expenditure of £160k, (£6,666 per flat) will allow electric heating to be installed in all 24 flats, avoiding the use of gas fired boilers, and provide enhanced PV installations to all the buildings.

1.4. These measures will significantly reduce the environmental impact of the developments and reduce the long-term heating costs for the tenants, helping mitigate fuel poverty concerns whilst housed in the accommodation.

1.5. Dover District Council's net zero carbon target will include avoiding the use of gas as a fuel in line with the anticipated changes to legislation not to permit new domestic buildings to use gas from 2025. It is therefore considered sensible to avoid its use in

all new build affordable housing going forward, including those currently being delivered.

2. Introduction and Background

2.1. On 2nd October 2017 Cabinet approval for the development projects was granted, with future decisions delegated to the Strategic Director (Corporate Resources), in consultation with the Strategic Director (Operations and Commercial) and the Portfolio Holder for Housing and Health.

2.2. Planning consent has been obtained for both projects to provide 16 Studio flats at Kimberley Close and 8 one-bedroom flats at Stockdale Gardens for interim accommodation.

2.3. The projects have been tendered and Jenner Contractors Ltd have been appointed under a JCT Design & Build Contract to deliver the accommodation. These appointments were agreed under the Delegated Executive Key Decision dated 29th September 2020.

2.4. The tenders returned for each of the developments were based on the use of gas for space and water heating, however this has been reviewed during the tender assessment and design process, considering the imminent changes in legislation regarding the use of gas for residential heating and the effect this has on the environment.

2.5. The decision was taken early in the technical design process to increase the thermal performance of the building envelopes to allow an electric heating system to be installed either now or in the future, bearing in mind the anticipated changes to the Building Regulations to discourage the use of gas and the likely increase in the supply cost of gas and the effect this will have on DDC's Tenants energy bills. The upgrade of the building envelopes at both sites, which includes increasing the thickness of insulation in external walls, has been achieved at no extra cost to the contract.

2.6. The Future Homes Standard is a set of standards that will require new build homes to be subject to higher energy standards in the future. In 2019 the Ministry of Housing Communities & Local Government put out a consultation paper on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for new dwellings. Because the government already has in law a target to bring all greenhouse gas emissions to net zero by 2050, they are looking at ways to ensure compliance and achievability with the target. With that in mind, the idea is to start looking at how new builds are constructed now, to ensure the future standards are met.

2.7. However, to date the Future Homes Standards that are being consulted on, have not yet become law and the full details of what will become law are still being mapped out through further consultations. It is likely that what comes out of the consultations will be implemented in law in, or around 2025. It is widely accepted that part of the Future Homes Standards, will mean that any new domestic property would not be permitted to be connected to the gas grid and fossil fuel heating systems would also not be permitted. Currently, for new builds erected now, this is still permitted in law.

3. Implications and Benefits of Electric Heating

3.1. In their negotiations with UK Power Networks (UKPN) for the Stockdale Gardens site, Jenner Contractors have confirmed that the required increased capacity of the new incoming electricity main can be achieved at no extra cost to the contract.

3.2. UKPN have advised that there is currently insufficient capacity in the electricity network at Kimberley Close to provide a suitably sized incoming supply and additional reinforcement work will be necessary.

3.3. During consultations with the Asset Management Team, due to the type of accommodation being provided (one bed flats / single room bedsits of short duration tenancy), the use of gas boilers in each unit will present challenges and additional costs to the operation and maintenance of the properties going forward. They included:

- The need for a Landlord Gas Safety Record (LGSR), (currently approx. £66/unit) to be carried out at each change in tenancy, together with an audit of the gas safety process by the DDC independent consultant.
- Annual servicing and safety checks, currently £63 p.a./unit. It should be noted that servicing and repair costs for electric heating are less at approximately £38 p.a./unit.
- Gas installations also require an annual LGSR (currently £38/unit), whereas electric installations are checked every 5 years.

3.4. The efficiency of using gas boilers in small residential units was also considered. The cost to install a gas fired wet system is cheaper when greater numbers are installed but not significantly so. The main cost issue is the provision of the gas supply. There is the cost of trenching, meters, external pipework, etc. Electric is a necessity so must be provided and using electric heating is making the most of the incoming servicing and avoiding the extra capital installation cost of gas.

3.5. At the end of their design life the gas boilers will most likely have to be replaced with electric heating, due to the change in Government environmental policy. The electricity upgrade as described in 3.2 would then need to be carried out to allow the change in heating system at that time if it is not undertaken as part of the new-build contract. This will involve increased costs and significant disruption to the tenants.

3.6. Ongoing repair and maintenance: damage caused to a gas fired wet heating system does result in water damage. The radiators/pipework is usually exposed making it more prone to vandalism/damage. Although boilers are fitted with standard safety devices should the gas supply be interrupted, there is the risk of gas escape from pipework before the boiler, with the obvious dangers that involves. Electric systems are on their own circuit and protected by RCDs, etc within the consumer unit. Generally, electric systems are more difficult to vandalise/damage and have better built in safety devices.

3.7. Future replacement: gas boilers are likely to be replaced with non-gas alternatives under planned maintenance to meet future environmental policies – although there is technology being developed to maintain a form of gas supply (hydrogen mix) which will require a conversion to the boilers if this solution is adopted.

4. Tenant Running Costs

4.1. Running cost comparisons have been carried out between gas and electricity, which have noted that currently the cost of electric heating will be more expensive than gas. It should be noted that this is likely to change in the future, with the possible transfer of levies from electricity to gas supply costs, making gas less attractive to use for domestic heating. The calculations below are based on current costs, and do not take into account uncertain future tariff changes.

4.2. To offset the recognised increase in costs of electric over gas and provide additional green energy generation to reduce the carbon footprints of the developments, costs have been provided for enlarged PV installations to both developments.

4.3. Seasonal changes in the performance of the PV panels have had to be considered in assessing the installations, as the accommodation is intended for short stay tenancies of up to 6 months, whilst permanent accommodation is found for the tenants. This is to ensure that a tenant occupying during the winter months is not disadvantaged due to insufficient performance of the PV when assessed against the running costs of gas.

4.4. It should be noted that the estimated costs provided do vary from flat to flat as the electricity produced by the PV panels is dependent on the orientation of the building and where the panels are installed on the roof. Panels facing due south produce more electricity than east or west facing units.

4.5. The Standard Assessment Procedure (SAP) used to demonstrate compliance with the Building Regulations and estimate the yearly energy costs for the units, is not able to calculate the split of energy usage between the winter and summer, due to the number of variables involved such as seasonal temperature variations. A UK Government article on 'Seasonal variations in electricity demand' (March 2014) stated that 'on average, the demand on a winter's day was 36% higher than on a summer's day'. For a household that primarily uses gas for heating, the percentage of gas energy used through the winter is likely to be significantly greater than this figure.

4.6. The tables below split the yearly energy costs for the flats, calculated using the Standard Assessment Procedure, between the winter months (Oct-Mar) than the summer (Apr-Sep) using 36% higher energy usage in the winter, which is considered conservative when gas heating is used:

Kimberley Close	**Gas**	**Electric Heating**	**Electric Heating with Additional PV**
Winter months	£139 to £142	£177 to £198	£26 to £93
Summer months	£65 to £67	£83 to £93	£12 to £44
Yearly	**£204 to £209**	**£260 to £291**	**£38 to £137**

Stockdale Gardens	**Gas**	**Electric Heating**	**Electric Heating with Additional PV**
Winter months	£177 to £184	£263 to £298	£0 to £90
Summer months	£83 to £86	£124 to £140	£0 to £42
Yearly	**£260 to £270**	**£387 to £438**	**£0 to £132**

4.7. Using these calculations, it indicates that when using the additional PV, this more than offsets the additional cost of the electric heating against gas costs over the year. In addition, even if the tenant incurs all the yearly energy costs, on the assumption the PV installations do not contribute during the winter months, then this is still less expensive than the cheapest winter months gas cost in both cases.

4.8. Additional modelling on the comparative costs has also been undertaken to consider the impact of alternative increases in consumption between Summer & Winter to allow for variations in the assumptions. Modelling larger increases, at both 50% and 75% higher for a Winter day compared to a Summer day results in a consistent forecast with the above modelling to show an increase in costs from gas to electric heating, but a resultant reduction, below the cost of gas, from adding the investment in PV.

4.9. It should be noted that the calculations are based on the SAP assessment and actual costs will be dependent on the individual's usage and how this compares with the standardised values.

4.10. The electric panel heaters proposed for use in the developments are modern energy efficient units, incorporating thermostats, eco operating modes and intelligent control, open window technology and adaptive start features, all to improve energy efficiency. Please refer to the technical literature in Appendix 1 for further details.

4.11. Considering the costs above, installing the PV installations will more than offset the current additional running cost of electric heating for the tenants, even if they are only housed during the winter months, and support these remaining low for the foreseeable future.

4.12. Due to the complexity of needs of some of the tenants in interim accommodation we provide an intensive housing management service to give additional support as required. This service includes, but is not limited to, support and advice to assist tenants in maintaining their tenancy, dealing with food and fuel poverty concerns and to prepare them for moving on to a longer-term tenancy. This service will be used to work with tenants to monitor their utility usage, advise on energy use and feedback to the Council any concerns raised, or issues identified, in managing the utility costs, obtaining appropriate tariffs, etc. This information will be used to inform future decisions and assist in understanding the sustainability of these types of units

5. Alternative Allocation Options

5.1. Consideration has been given to providing a central supply for each block to be recharged to tenants to reduce the difference caused by block orientation and also to smooth the impact of the PV gain in the Summer months across the course of the full year. The ability to undertake this would be restricted to a block by block basis and so there would remain a disparity between PV gains in each block due to the orientation to the sun.

5.2. Additionally, a standard charge across the year would result in higher costs to tenants resident in the units for the Summer months only, despite having a lower energy requirement. This could lead to tenants housed for the Summer period paying a higher cost at the interim accommodation and then also incurring higher, Winter, costs once moved into permanent accommodation. A smoothing charge could also risk acting as a disincentive to tenants to manage their energy consumption in the most efficient manner and result in higher costs being incurred across the blocks.

5.3. Tenants in existing interim accommodation units are required to arrange their individual utility supplies and this process is currently working effectively. These new units are not expected to be used for very short term stays of only a few days allowing time for arrangements for utility suppliers to be made on a tenancy by tenancy basis.

6. Identification of Options

6.1. Option 1 – Agree to the UKPN upgrade at Kimberley Close to allow electric heating to be installed, together with the additional PV installations at both sites to reduce running costs for tenants and reduce the carbon footprints of the developments, totalling £160k.

6.2. Option 2 – not proceed with the UKPN or PV upgrades and retain gas heating at Kimberley Close.

7. Evaluation of Options

7.1. Option 1 is the recommended option as this will allow electric heating to be installed in all 24 flats, future proofing the developments against the phasing out of gas. The increased use of green technology will also provide benefits of reducing both the tenants heating costs and the carbon footprints of the developments.

7.2. Option 2 is not recommended as it does not reflect the Council's carbon reduction targets and the likely future requirement for residential buildings.

8. Resource Implications

8.1. The schemes remain viable with the increased budget of £160k. The total scheme funding will be a mix of Retained Right-to-Buy receipts, HRA reserves and borrowing, to be determined by the Section 151 officer on completion of the scheme.

9. Climate Change and Environmental Implications

9.1. There is a strong desire to ensure that housing provided by the Council is constructed with consideration to its impact upon the environment – not only immediately but also in the long term.

9.2. The building envelopes are being constructed to reduce heat loss and improve the efficiency of the electric heating being installed, reducing the effect on the environment.

9.3. These developments will exceed building regulations in relation to Conservation of Fuel and Power, and the proposals demonstrate the use of green technologies by extensive installations of PV panels, serving each dwelling.

10. Corporate Implications

10.1. Comment from the Section 151 Officer: Members are reminded that the Council's revenue and capital resources are under pressure and so they will wish to assure themselves that all proposals progress the Council's priorities, are the best option available and will deliver value for money. (AC)

10.2. Comment from the Solicitor of the Council: The Solicitor to the Council has been consulted in the preparation of this report and has no further comments to make. (BD)

10.3. Comment from the Equalities Officer: This report does not specifically highlight any equality implications, however in discharging their duties members are required to comply with the public sector equality duty as set out in Section 149 of the Equality Act 2010 http://www.legislation.gov.uk/ukpga/2010/15/section/149

11. Appendices

Appendix 1 – ATC Lifestyle Electric Thermal Radiator
Appendix 2 – Example SAP Regulations Compliance Report: Kimberley Close
Appendix 3 – Example SAP Regulations Compliance Report: Stockdale Gardens
Appendix 4 – Gen2 Report: Cost comparison between Gas and Electric including PV installation
Appendix 5 – Kimberley Close: Yearly energy costs for gas and electric heating
Appendix 6 – Stockdale Gardens: Yearly energy costs for gas and electric heating

12. Background Papers

Cabinet report Development of Interim Housing - 2 October 2017

Delegated Executive Key Decision dated 29th September 2020

Contact Officer: John Mount, Housing Development Officer - ext 42252