RIDGE

PROPERTY & CONSTRUCTION CONSULTANTS

Homes for Haringey

OPTIONS APPRAISAL
(HEATING REPLACEMENT PROJECT)

31/01/18

Prepared for

Homes for Haringey
108 Gloucester Road
Tottenham
N17 6GZ

Tel: 020 8489 5611

Prepared by

Ridge and Partners LLP
Partnership House
Moorside Road
Winchester
SO23 7RX

Tel: 01962 834400

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1. INTRODUCTION AND EXECUTIVE SUMMARY

Following recent events at Grenfell and other DCLG concerns regarding the safety of tower blocks, Homes for Haringey (HfH) have reviewed the safety of the blocks on the Broadwater Farm estate (BWF). This review has identified that there is insufficient evidence or records to demonstrate that the nine 4-6 storey blocks, comprising a Large Panel System (LPS), currently comply with Government guidelines relating to progressive collapse in the event of a gas explosion.

The installation should consider the future of the BWF estate, although no regeneration options currently have approval. In this context, a lifecycle of at least 10 years should be considered for the new systems.

Following detailed destructive structural investigations of the blocks, it was concluded that the removal of the gas from the blocks was essential to mitigate this risk, alongside some structural strengthening works required to the flank end panels on the 4 storey blocks.

As a result, a plan was formulated to consider the various options to progress this aim, ranging from immediate removal of all gas (with the associated implications to tenants), to a phased mitigation of the risks. It was concluded by HfH that the impact of immediate gas removal on tenants and the alternative risks this introduced was not an option. Accordingly, HfH have embarked on a plan of action that progresses the actions over a phased approach.

Phases 1 and 2 (replacement of all gas cooking facilities, and the installation of gas monitoring/disrupters) has been commenced and is nearing completion. The next steps are to urgently progress Phases 3 and 4 (the replacement of all gas boilers and pipework which, given they are already subject to annual safety inspections, are considered a lesser risk).

Keepmoat were commissioned to progress Phases 1 and 2, and have already started to progress evaluation and initial mobilisation of Phases 3 and 4. Full appointment is subject to procurement review.

However, HfH need to ensure that the proposed solutions adopted are properly assessed and considered, taking into account the following key drivers:

1. Programme to mitigate the risk
2. Cost – in terms of capital outlay, life cycle costs, cost implications to tenants and overall VFM
3. Compliance with HfH Standing Orders in terms of procurement
4. Impact on tenants and leaseholders
5. Practicalities and logistics on site
6. Consequential impact of the works
7. Statutory compliance

This report considers the following options:

1. Keep the gas and carry out structural upgrade works to comply with the Government guidance
2. Replace existing gas solutions with all-electric solutions (heat storage or heating units)
3. Install a district heating solution fed from the existing central boiler house, or via plant rooms local to the blocks
4. A hybrid of the centralised and local plant room options

2. SUMMARY OF INSTRUCTIONS

In order to facilitate the prompt progress of this requirement and to supplement the existing Estates resources, HfH initially approached Ridge and Partners to manage the provision of an Options Appraisal report (incorporating options already explored by Keepmoat), and then to proactively manage the works to their earliest conclusion. This role includes PM, QS, EA, M&E and PD roles.

2.1 Aim of the project

The aim of the project is to quickly consider all options available for the removal of the gas risk, and the replacement with suitable alternative heating and hot water installations, and make recommendations for their prompt implementation via a compliant procurement and contractual route.

Consideration should also be given to any facilitating or enabling activities that can be progressed in parallel to the Options Appraisal to improve the delivery programme, and in terms of initial temporary solutions that allow earlier removal of the gas.

2.2 Scope of the Project

The scope of the project relates at this stage only to the 728 dwellings within the following nine blocks:

- Croydon – 74 units
- Debden – 104 units
- Hawkinge – 70 units
- Hornchurch – 80 units
- Lympne – 80 units
- Manston – 56 units
- Martlesham – 96 units
- Rochford – 80 units
- Stapleford – 88 units

All other blocks sit outside of the current scope, albeit there may be potential benefits in reconsidering them in light of the option selected (either in parallel or as a follow-on set of works).

2.3 Excluded areas

The project currently excludes any works to the two tower blocks and Tangmere, although investigations into these blocks are ongoing. There may be some aspects of the adopted solutions that would lend themselves to being considered further in respect of the excluded parts – i.e. opportunities to benefit from the planned works.

2.4 Contributions to this report

This report has been prepared by Ridge and Partners LLP, based on the brief set out in Sections 1 and 2, with additional technical input from Keepmoat/Engie and their appointed consultants, Trowers and Hamlin in respect of the Procurement options, and the Ridge and Partners LLP Structural Engineers engaged on the associated structural investigations project.

2.5 Limitations of this Report

It should be noted that this report is based on high level assessment of the solutions, costs, programmes etc. It is recommended that the preferred option/s are explored in greater detail to confirm the recommendations and budgets.

3. KEY DRIVERS AND CHALLENGES/CONSTRAINTS

3.1 Speed

It is important that the gas removal takes place at the earliest possible time and that all options are considered and compared in this respect. Advanced facilitating or enabling works should be explored.

It is essential that the essential surveys required for all options are progressed in parallel to the design works.

Consideration should be given to the provision of temporary installations that can provide early gas removal, pending conclusion of the estate wide actions (e.g. temporary boiler installations locally to the block, temporary generator power etc.), albeit this could add additional cost.

3.2 Value for Money

It is important to the Client that the proposed options represent value for money and that the cost to complete these works are not inflated to exploit of the urgency of the situation. The Ridge team will be vetting all costs to ensure they are justifiable and valid.

The Client may consider accelerated options at extra cost as part of the cost/programme considerations, incorporating temporary or permanent solutions.

3.3 Compliance with Standing Orders

The Client need to ensure that the project is managed and procured within their agreed authority under LA Procurement rules and OJEU criteria.

Trowers and Hamlin have been appointed to advise on the procurement options being considered to ensure compliance and best practice, that would be justifiable in an audit.

3.4 Minimal Disruption and Decanting

It is critical to consider the impact on the existing tenants and leaseholders. Whilst some access to properties will be required (and will be coordinated via the Resident's Association), the works should avoid the need for decanting or displacing people from their homes, unless absolutely essential. Considerations should include dust, noise, vibration, as well as impacting on the other aspects of the properties such as decorations, layout impacts etc.

It should also be noted that there are insufficient alternative properties available for the decanting of 728 properties and that the potential compensation considerations, and distress caused are major factors in any decision.

3.5 Planning

The requirement for Planning approval of the different options needs to be considered, as this could have an impact on the feasibility of the solution, or the programme for these works. See Planning in Section 8.0.

3.6 Coordination of Services

It is paramount that the existing below ground services across the site are considered when exploring the potential installation of a district heating scheme, or site-wide Utility distribution. This will allow full consideration and coordination of the new services, pit chambers, soft dig, export points and 'mole-ing' for road crossings or possible highways crossings applications.
This will be expanded upon once records of utilities have been received and interpreted further.

4. EXISTING INFORMATION AND FURTHER SURVEY REQUIREMENTS

4.1 Existing Situation and History

At the time of construction (circa 1970), the properties were serviced with a simple central district heating system via a centralised boiler house. Over the subsequent years these systems, due to various reasons, primarily poor control, maintenance and reliability, have become redundant and ultimately shut down or decommissioned. This has resulted in the retro-fitting of individual gas boilers, providing greater tenant control and independence, but without full consideration of the wider implications on the structure etc.

This historic solution has brought with it the requirement for a suitable fuel supply infrastructure – i.e. a new gas supply which is distributed around and up into the pre-cast structures where such provision had not been originally allowed for.

It is unclear whether the installation of this gas supply meets current safety requirements, particularly with regards to the methods of distribution, issues of fire stopping/barriers, coordination and access, and detection and protection measures.

It has been confirmed that limited information is available of the existing buildings or estate. Any recent or relevant inspections, reports etc. should be made available to facilitate further evaluation of options as the scheme is progressed to the design stage. If information does not exist, surveys should be carried out to address the missing information.

Subject to the option selected, the condition of existing pipework that will remain should be assessed and addressed and all remaining installations brought up to current standards.

4.2 Existing Systems

Before options of heat/fuel sources are considered, the existing systems must be understood. Subject to detailed surveys, the current typical dwelling configuration includes two variations:

i. A wall mounted combination gas boiler, serving a LTHW 71-82℃ radiator system, complete with local timer/programmer, some thermostatic radiator valves and single thermostat.

ii. A wall mounted system gas boiler, serving a LTHW 71-82℃ radiator system, complete with the above controls and feeding into an unvented/vented indirect hot water cylinder; controlled via the boilers programmer and possibly a 2-port valve arrangement.

The tenants' perception of control and independence is paramount - any diversion from the tenant's current arrangement without consultation is to be avoided.

4.3 Required Surveys

The following surveys are required for all options and should be commissioned urgently:

- Topo survey including radar ground services survey on services routes – existing and proposed
- Measured survey
- Utility records/surveys and loadings
- R&D Asbestos surveys

4.4 Calculations and Assumptions

The following is the high-level basis for the assessment of the options, loads etc.

As the investigations and design develop the more detail the assessment on performance and capacity will be determined. At this stage the following base line assumptions can be made:

- 728 dwellings (mainly single flats), with no ground level flats
- An existing service riser zone does exist from the previous district scheme
- Current boiler house includes 4N^{o} 1200kW boilers (being replaced)
- Dwellings include LTHW systems and either a combination or system boiler (cold water HWS cylinder)
- Construction circa 1970 pre-cast concrete
- Mixture of double/single glazed fenestration
- Minimal insulation works to façade, roof and under-croft

From the age of construction and consideration of any current fabric enhancements the overall heat load for the structure shall be determined as:

Typical dwelling footprint = 45-70m^2
Average = 60m^2
Typical heat loss: 70W/m^2 x 60m^2 x 728 = 3,077,600W
Peak – 3.07MW
@70/40 = 23l/s

Typical hot water demand is:
28kW x 728 = 19.8MW Diversity → 0.04 → 15.6MW or 123l/s
Overall QT = 146l/s (18MW)

These are very rough estimates and subject to surveys and modelling samples. In addition, we have applied diversity allowing for a factor of 0.04 based upon 728 dwellings in accordance with BS EN 806 – DS 439. This estimation affords us the facility to begin a plant and system selection point.

The potential connection to the local schools are primary, middle and secondary levels will be considered.

Broadwater Farm (Willow Primary) – 2,625m^2 @ 100W/m^2 = 262.5kW peak

The hot water loads for these will be separately addressed with independent plant and not considered.

The swimming pool size is undetermined and would require further investigation but a viable link for the heat export.

5. OPTION 1 – STRUCTURAL UPGRADE

5.1 Description

Following the structural investigations completed by Ridge's Structural Engineers, it was found that the twelve Large Panel System (LPS) blocks are potentially non-compliant with current building standards relating to 'over-pressure' loading and risk of progressive/disproportionate collapse.

Where gas is currently directly piped into the blocks (i.e. the ten 4/6-storey blocks), the structure should withstand an over-pressure test of 34kN/m^2. Blocks without a direct gas supply (i.e. the two tower blocks, Northolt and Kenley which are supplied via the district heating system) should withstand an over-pressure test of 17kN/m^2. Based on structural assessment of Manston and Hawkinge, it is anticipated these blocks will not meet these over-pressure requirements (particularly in the event of a gas leak/explosion) as sufficient vertical or horizontal ties were not installed during construction. The structural investigations to date suggest failure of a single flat could result in failure of surrounding units, resulting in progressive/disproportionate collapse.

It has been suggested that it may be possible to strengthen the vertical and horizontal ties using additional plates/brackets, thus mitigating the risk of failure and progressive/disproportionate collapse. A bespoke bracket would be attached on both sides of the weak walls and/or the ceiling and the floor of the flat above, then bolts would connect the two plates, securing the structure vertically and horizontally. In the corner of each room, these plates would resemble a 3D cross shape, connecting the walls, floors and ceilings on all sides. The Engineers have also advised, that whilst their review is ongoing and they have not surveyed all of the blocks individually, there may be instances where the blocks do not meet the over-pressure requirements and therefore require the addition of structural supports as well as the removal of the piped gas supply.

This option is likely to be the most intrusive option, as walls will need to be strengthened on all four sides (impacting flats on all sides at each joint, including those above and below) to meet the over-pressure requirements. However, strengthening the underlying structure of the blocks will allow the existing gas supply to remain in place, potentially offering future flexibility in choice of utility supply and resilience in the face of structural changes.

The plates would need to be fixed to the structure and therefore the wall, ceiling and floor finishes would need to be locally stripped back to allow access. The contractors would require access to all of the rooms around each junction, including those in the flats above and below. As a result, and in order to allow the contractors to work most efficiently and reduce their time on site, it is likely that each block would have to be fully decanted. As it is understood that the blocks may contain asbestos (chrysotile within the ceilings), precautions will have to be taken to mitigate the risk of contamination. Once the plates have been installed, the finishes will need to be made good. This is likely to include installing a coving to each of the rooms affected to conceal the ceiling mounted plates, installing a larger skirting in order to conceal the floor mounted plates, a level of re-decoration and repairs to the floor finish.

The bracket solution will slightly reduce effective space in flats, though the overall effect would be negligible (brackets are c. 12-15mm thick with a 200mm projection on each side). It is likely the impact on interior decoration will be a more important consideration. Although technically feasible, it is strongly recommended that residents should not be exposed to works during installation of brackets. As a result, it is anticipated that there may be difficulty gaining timely access, as residents will need to be decanted and located elsewhere while works are undertaken.

The bracket design is effectively modular, allowing HfH to increase the specification and subsequent strengthening if desired (different materials, thicknesses etc. can be used for different strengths).

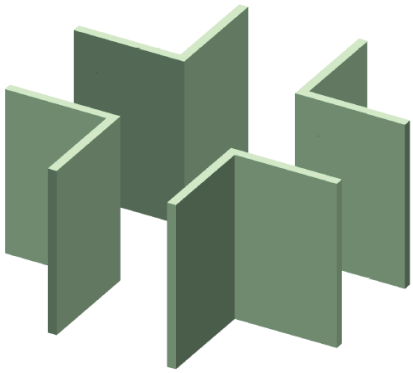

Figure 1: Indicative 3D model of proposed L-brackets, located in room corners to tie together the walls.

5.1.1. Programme Implications

Enabling Options to facilitate early implementation
There are no significant enabling/facilitating works prior to installation of the brackets beyond the conclusion of a structural assessment for each block to understand the extent of the structural improvements which are required. It will be important to liaise closely with residents to ensure decanting takes place smoothly and access is granted to works areas.

Design
The design period may be shorter than the other options, owing to the relative simplicity of the proposed bracket solution.

Procurement and Lead-in
It may be possible to find a suitable off-the-shelf solution, reducing the lead-in time required for a bespoke steel fabricator. Alternatively, it may be beneficial to approach a suitable fabricator early, to ensure orders can be placed in good time for works to be completed on site.

Implementation
It is feasible that that the set of brackets to secure each junction could take 2-4 weeks to install (1No week to strip back the finishes, 1-2No weeks to fix the brackets and 1No week to make good the finishes). Also, to allow the contractors to work efficiently the entire block may need to be decanted. It is anticipated that the implications of the decanting will extend this option over a much longer period than other options, and whilst difficult at this stage to quantify, it is likely that this option would take in excess of 18 months to conclude.

5.1.2. Methodology and Phasing

Works will be phased in accordance with the proposed zone plan (Appendix D). Residents will be decanted from blocks in the three zones sequentially, allowing works to flow smoothly across the estate.

The overall programme is completely dependent on the extent of decanting, the number of flats that can be released at any one time, and the access to multiple clusters of flats at any one time to install the brackets and to carry out the consequential improvements to the walls, ceilings, floors and decorations.

An indicative assessment of the overall period of up to 2 years has been made.

5.1.3. Costs

The installation of the brackets and completion of the structural works will involve elements that will disrupt existing finishes and floors and ceilings. There will be fairly significant requirements for making good, redecoration and floor finishes. In addition, there is a risk of disturbing asbestos containing materials.

Costs have been assessed based on the following approximate unit build up:

[redacted]	£250
[redacted]	£250
[redacted]	£1,000
[redacted]	£5,000
[redacted]	£1,500
[redacted]	£1,000
[redacted]	£500
[redacted]	£250
Total per Unit	**£9,750**
728 Unit Total	**£7,098,000**

However, this does not take into account the decanting and potential compensation requirements of the tenants and leaseholders.

5.1.4. Tenant Impacts

There will be significant disruption to residents during the works, as residents would need to be decanted in phases while the works are in progress due to the noise and vibration involved. This would involve whole blocks requiring alternative accommodation (if available) during the works and would be potentially difficult to implement and politically very sensitive.

The decanting will require detailed and careful liaison via the Residents' Associations to ensure all residents understand and buy-in to the programme ahead of installation dates.

5.1.5. Risks and Constraints

There is a significant programme risk due to the need to decant residents while works are undertaken. There are unlikely to be delays resulting from procurement/lead-in, as the brackets should be relatively straightforward to supply.

It is likely that some asbestos will be uncovered when undertaking invasive structural works. A full refurbishment/demolition asbestos survey is recommended; it may also be necessary to use specialist labourers to mitigate the risk.

No temporary options are likely to exist, meaning the gas risk remains until all brackets have been installed.

6. OPTION 2 – WET SYSTEMS

There are 3 main options within this category:

1. **District Heating** – utilising the space and capacity of the existing energy centre to provide supplies to the 9 blocks not already covered by this system
2. **Satellite Plant Rooms** - provide secondary satellite plantrooms either within existing blocks, in undercroft parking areas or as a new plantroom adjacent to the existing blocks.
3. **Hybrids** of the other 2 options

Within these options there are multiple solutions in respect of fuel sources and design approach, which can be further clarified as part of the design development phase, following clear instruction on the option to be adopted. For the purposes of this report, whilst these are mentioned to support the various options, they are not discounted for future consideration.

It should also be noted that there is a need to retain the existing energy centre, as it currently serves the school, nursery, swimming pool, and tower blocks (Kenley, Northolt, Tangmere), and there is no intention to re-provide supplies to these locations.

6.1 Centralised District Heating - Description

This option assumes provision of a central plant room located within the existing energy centre, with the estimated size of the plant room at circa 80-100m^2. A district scheme does work well where there is a collective 'hot water' demand. Typically, where there are approximately 200 dwellings or more connected.

The existing district scheme on site is now mainly redundant and decommissioned in places across the site. The existing gas boilers are typically located on the exterior wall of each dwelling, so any solution would need to provide an efficient way of connecting to these locations to limit the impact on the flats. In this scenario, the heating and hot water distribution around the flats could be retained, creating less impact on the flat layouts, consequential works such as decorations, making good etc.

A central approach does also mean the overall plant selection for this would be optimised to suit diversity of load, so the plant capacity is likely to be less than the aggregate total of separate boilers or grouped satellite plant rooms. This should also reduce the gas capacity required. The existing boilers currently under a replacement contract could be utilised, with buffer vessels and controls added.

Distribution around the site from the central location will be very disruptive in terms of trenching etc. given the size of the pipes.

The central plant could include a gas-fired CHP (Combined Heat and Power) unit, along with a bank of boilers. The CHP would be sized to suit the overall base line for all-year-round hot water. It is assumed that the CHP will be relatively efficient and can help to reduce CO_2 emissions by at least 30%.

Plate Heat Exchangers (PHX) will be required for the blocks and Heat Interface Units (HIUs) for each of the flats. The HIU's would be sited in place of the existing boilers within the dwellings (minimising the disruption to the tenant and their flat) and would be locally controllable by the tenants to suit their needs.

Each dwelling will have its own HIU, which with some minor pipework distribution and alterations can take the same position as the current boilers. Each HIU would be fitted with a heat meter and energy manager programmer. The tenant will see very similar control method as before which limits the risk of poor use or 'no buy in' as this will be familiar.

Any distribution externally on the buildings would need to be considered in terms of appearance, safety, security, weathering, robustness etc.

It is unlikely that tenants would need to be decanted during the works.

6.1.1. Programme Implications

The following is the high-level overview of the likely programme implications of this option:

Design	3 months – by April 2018
Enabling works/temporary installation (Removal of old pipework, asbestos removal etc)	3 months – by June 2018
Installations/Gas Removal (subject to access to flats/decanting)	4 months – by Sept/Oct 2018
Conclusion of central works	6 months – by end of 2018/early 2019

6.1.2. Methodology and Phasing

Following instruction of the agreed solution, there is a need to immediately instruct the design and surveys to commence to feed into the final design development. In parallel, advanced orders need to be placed for the long-lead-in items and the larger quantities of plant etc. and H&S planning should commence.

In parallel to the survey and design phase, it would be possible to carry out enabling works (redundant pipework strip-out, asbestos removal, scaffolding etc.), preparation and submission of any Planning applications, and clarification of the exact access arrangements in consultation with the Residents' Association.

By installing temporary plant rooms, there is an opportunity to allow the installations in the flats to commence and gas removal to be progressed at the earliest possible stage, with extended works associated with central plant and distribution to follow the removal of the gas risk.

The current proposal is to carry out these works in 3 zones each requiring 3 phases of removal. This has been largely done to ensure that the works remain manageable, the quantity of labour on site remains at sensible levels and the disruption to the estate and the residents is kept to a sensible level, in terms of the works, the disruption, the loss of parking bays etc.

Should the Client wish to increase the speed of the gas removal, it would be possible for all 9 blocks to be worked on in parallel, but this would increase impact on the estate, and probably increase costs.

6.1.3. Costs

[redacted] have provided budget costs for the district heating option and these costs are summarised more fully in the appendices.

Ridge have reviewed these costs and made adjustments where it has felt necessary in order to provide a balanced view of the budget option. Ridge's current assessment is **circa £7.912m** excluding VAT.

The Ridge costs are summarised in accordance with Engie's submitted costs:

1. Central Plant
2. Distribution Pipework
3. Dwellings
4. Fees, Preliminaries, OHP & Risk

1. Central Plantroom Costs

These costs relate to the centralised plant room of circa 80-100m2 located in the existing energy centre. The costs comprise of pumps, vessels, thermal storage and associated controls and electrical works.

The central plant room costs also include an allowance of £225,000 which relates to temporary boilers for each block to enable gas to be removed at the earliest opportunity.

The centralised costs submitted by Engie appear reasonable however further interrogation of the budget and market testing is required.

2. Distribution Pipework

The distribution pipework relates to extending the services from the central plantroom into the buildings. An allowance is made for scaffolding the nine buildings and forming of external risers to accommodate the rising pipework. The distribution from the energy centre would be below ground and allowance for the pipework and associated groundworks / trenching is included.

The Engie distribution pipework costs appear reasonable bearing in mind the extensive network that will need to be created to serve the nine buildings. Stripping out of existing gas and heating pipework appears high and some further work has been done to rationalise and market test these costs. Groundworks costs appear low bearing in mind extent of open trenches, protection, and potential risk of below ground obstructions and services which may lead to diversion of originally designed routes.

3. Dwellings

The allowance for dwellings relates to distribution pipework within the buildings, installing heat interface units and to power flush the existing system and commission

Distribution pipework to dwellings appears high; the benefit of the district heating system is that the majority of LTHW pipework and radiators are to be retained although there will likely be alterations required and areas that are defective and need replacement. The most significant cost associated with the dwellings appears to be the heat interface units.

4. Fees, Preliminaries, OHP & Risk

These costs relates to design, handover & commissioning, an allowance for Main Contractor overhead & profit and preliminaries. There is an allowance of £230,000 saving for ECO funding and a contingency of £500,000 included

Engie's design allowance of £410,000 is fairly significant and our view is that this design cost could be reduce as professional appointments are made. Preliminaries are priced at 10-11% of the works costs which appears suitable for complex project with significant management that will be required.

Overhead & profit is included at 8%, this will need reviewing in light of the selected procurement method and assessment of agreed framework rates.

5. **Summary**

Generally costs have been well considered. Our view is that costs are conservative and savings will be possible against this budget. A more detailed assessment will be needed on below ground pipework rates and distribution routes / ground risk.

Depending on the selected procurement method, the pricing mechanisms will need review in regard to agreed framework rates for works, management and overhead & profit. In additional consideration should be made on introducing elements of competition / market testing of key elements of the works.

6.1.4. Tenant Impacts and disruption

The impact on the tenants will be limited locally to the access required to the flats to remove the redundant boilers, pipework etc. and the installation of the new HIU's. Externally there will be a need for scaffolding to the face of the buildings (a security consideration) and the need to drill connections through the existing façade panels.

Around the estate, there will be significant impacts to the grounds and roads in respect of the distribution pipework to all blocks, including the need to access undercroft parking areas for removal and installation of new pipework. This will mean temporary loss of parking spaces.

It is not anticipated that tenants will need to be decanted under this option.

This option should not have any significant impact on the tenants' fuel bills, and indeed it is hoped that the new system, based on new technology and a sustainable approach, could reduce running costs. How this is to be 'shared' with tenants is subject to separate review.

6.1.5. Risks and Constraints

The main risk associated with this option relates to the distribution around the site and the impacts on the site, the road system, other underground services etc.

The capacity of the existing plant room needs to be properly assessed, to ensure it can accommodate the additional plant required.

6.2 Localised Plant Rooms - Description

This option assumes provision of a separate plant room for each block (approx. 50-60 sq m) in one of the following locations:

1. On ground floor adjacent to the block
2. in the under-croft parking areas
3. within existing spare space within the block (if available)

The plant room should ideally be located on the ground floor and have at least one façade wall with clear access through double doors to allow for safe maintenance and equipment replacement as well as to support natural ventilation strategy.

The agreed fuel (likely to be gas) would be need to be distributed to these plant locations, and the plant housing designed or upgraded to withstand explosion risk and fire rating. The plant installed would need to be sized for the load required to the block only, with the current gas supply to the blocks assumed to be sufficient to take the same (or reduced) overall load of the new arrangement. It is anticipated that there would need to be some gas pipework modifications to suit the plant room locations and onward distribution.

The distribution to the flats would need to be provided to the external wall locations where current boilers are sited, with Heat Interface Units (HIUs) for each of the flats. The HIU's would be sited in place of the existing boilers within the dwellings (minimising the disruption to the tenant and their flat) and would be locally controllable by the tenants to suit their needs.

Each dwelling will have its own HIU, which with some minor pipework distribution and alterations can take the same position as the current boilers. Each HIU would be fitted with a heat meter and energy manager programmer. The tenant will see very similar control method as before which limits the risk of poor use or 'no buy in' as this will be familiar.

It is unlikely that tenants would need to be decanted during the works.

Any distribution externally on the buildings would need to be considered in terms of appearance, safety, security, weathering, robustness etc.

6.2.1. Utility Requirements

With stand-alone satellite plant rooms to each block (excluding Kenley, Northolt and Tangmere) a supply of approx. 100ATP&N would be required per block.

The existing landlords electrical supply to each block would need to be checked to see if this provides sufficient power locally to supply the new plant rooms, or if it could be upgraded to provide the required power supply. If the supplies are insufficient, there would need to be a new supply for the plant rooms or an upgrade of the existing supply.

If a new supply is required for each block this will equate to 9No 100A TP&N supplies, which may require an upgrade to the existing network, which would involve Utility applications and the delays that could be associated with this option.

6.2.2. Programme Implications

The following is the high-level overview of the likely programme implications of this option:

Design	3 months – by April 2018
Enabling works/temporary installation (Removal of old pipework, asbestos removal etc)	3 months – by June 2018
Installations/Gas Removal (subject to access to flats/decanting)	4 months – by Sept 2018
Construction and intallation works (Construction of the 9 new plant rooms)	9 months – by Spring 2019

6.2.3. Methodology and Phasing

Following instruction of the agreed solution, there is a need to immediately instruct the design and surveys to commence to feed into the final design development. Advanced orders need to be placed for the long-lead-in items and the larger quantities of plant etc. and H&S planning should commence.

In parallel to the survey and design phase, it would be possible to carry out enabling works (redundant pipework strip-out, asbestos removal, scaffolding etc.), preparation and submission of any Planning applications, and clarification of the exact access arrangements in consultation with the Residents' Association.

Firm costs should be agreed with the selected Contractor as soon as design is complete and the methodology has been agreed.

By installing temporary plant rooms, there is an opportunity to allow the installations in the flats to commence and gas removal to be progressed at the earliest possible stage, with extended works associated with the new permanent plant space and distribution to follow the removal of the gas risk.

The current proposal is to carry out these works in 3 zones each requiring 3 phases of removal. This has been largely done to ensure that the works remain manageable, the quantity of labour on site remains at sensible levels and the disruption to the estate and the residents is kept to a sensible level, in terms of the works, the disruption, the loss of parking bays etc.

Should the Client wish to increase the speed of the gas removal, it would be possible for all 9 blocks to be worked on in parallel, but this would increase impact on the estate, and probably increase costs.

A further option that could be explored is whether the temporary plant could in some way remain in place as the permanent installation, albeit this should not be at the expense of any delay to the temporary installations.

6.2.4. Costs

[redacted] have provided budget costs for the localised plantroom option and these costs are summarised in the appendices.

Ridge have reviewed these costs and made adjustments where it has felt necessary in order to provide a balanced view of the budget option. Ridge's current assessment is **circa £9.047m** excluding VAT.

1. **Plantroom Costs**

These costs relate to nine new plant rooms that would be local to the buildings, the costs include gas supplies, stripping out of existing plantrooms and associated controls, electrical wiring and commissioning.

The Plantroom costs from [redacted] appear excessive at around £[redacted] per block which is not comparative with any other options priced. Our assessment is an allowance of £[redacted] per block which includes the enclosure and central plant. Gas supplies are needed however capacity should be available and in the approximate locations of the blocks (due to current gas arrangement). Control costs also appear high and our assessment is based on £[redacted] per plantroom.

2. Distribution Pipework

The distribution pipework relates pipework between the localised plantrooms and to the building (via external risers). These have been referenced as gas pipework but our understanding is that these would be low temperature hot water pipework. The costs also include the external risers, scaffold, builders work and localised groundworks.

The distribution pipework costs are misleading as described by [redacted] as 'Gas distribution'. The intention on this option is for low temperature hot water to be distributed to the building, removing the gas infrastructure. The Ridge allowance includes for LTHW pipework. External risers and scaffolding costs remain as the previous option. A reduced allowance is made for civils as only localised groundworks would be required rather than a network of trenches from the energy centre.

3. Dwellings

The allowance for dwellings relates to distribution pipework within the buildings, installing heat interface units and to power flush the existing system and commission

Distribution to dwellings appears reasonable, minor alterations may be required to existing pipework however the significant cost is the installation of heat interface units.

4. Fees, Preliminaries, OHP & Risk

These costs relates to design, handover & commissioning, and allowance for Main Contractor Overhead, Profit and Preliminaries. There is a contingency allowance of [redacted] included.

As previously noted. the design cost seems high from [redacted], and preliminaries is currently assessed on a percentage basis. Overhead and Profit has been allowed by [redacted] at [redacted] which is subject to agreement on procurement route / agreed framework rates.

5. Summary

Generally costs feel marginally higher, but driven primarily with the difference in cost in the localised plantroom costs.

6.2.5. Tenant Impacts and disruption

The impact on the tenants will be limited locally to the access required to the flats to remove the redundant boilers, pipework etc. and the installation of the new HIU's. Externally there will be a need for scaffolding to the face of the buildings (a security consideration) and the need to drill connections through the existing façade panels.

Around the estate, there will be impacts locally to each building where new plant rooms are constructed, including the need to access undercroft parking areas for removal and installation of new pipework. Distribution around should have less impact

It is not anticipated that tenants will need to be decanted under this option.

This option should not have any significant impact on the tenants' fuel bills, in indeed it is hoped that the new system, based on new technology, could reduce running costs. How this is 'shared' with tenants is subject to separate review.

6.2.6. Risks and Constraints

This option relies on the reuse of the existing gas and electrical supplies to the buildings – the size and condition of which are unknown.

6.3 Hybrid Options – Description

The hybrid options consider the following:

1. Central main plant with localised secondary plant
2. Localised plant rooms serving a cluster of 3 blocks (reduces distribution around the site, but increases plant and plant space locally)

The first sub-option is effectively the same as the District Heating option, but with some of the plant located locally to the blocks rather than in a larger form centrally. This would require plant space to be either identified or built locally. This has the advantages of the centralised option, but with localised control and a potentially reduced scale of distribution around the site.

The second sub-option is effectively the same as the Satellite Plant room option, but with 3 plant rooms each serving a cluster of 3 blocks. This significantly reduces the large-scale distribution around the site, but increases the requirements for space and Utility supplies locally.

6.3.1. Utility Requirements

With satellite plant rooms to each block or cluster of blocks, a supply of approx. 100ATP&N would be required per block/cluster.

The existing landlords electrical supply to each block would need to be checked to see if this provides sufficient power locally to supply the new plant rooms, or if it could be upgraded to provide the required power supply. If the supplies are insufficient, there would need to be a new supply for the plant rooms or an upgrade of the existing supply.

If a new supply is required for each new cluster plant area this may increase the size of the supplies, which may then require an upgrade to the existing network, which would involve Utility applications and the delays that could be associated with this option.

6.3.2. Programme Implications

The following is the high-level overview of the likely programme implications of this option:

Design	3 months – by April 2018
Enabling works/temporary installation (Removal of old pipework, asbestos removal etc)	3 months – by June 2018

Installations/Gas Removal (subject to access to flats/decanting)	4 months – by Sept 2018
Conclusion works (Construction of the 3 new plant rooms)	9 months – by Spring 2019

6.3.3. Methodology and Phasing

Following instruction of the agreed solution, there is a need to immediately instruct the design and surveys to commence to feed into the final design development. Advanced orders need to be placed for the long-lead-in items and the larger quantities of plant etc. and H&S planning should commence.

In parallel to the survey and design phase, it would be possible to carry out enabling works (redundant pipework strip-out, asbestos removal, scaffolding etc.), preparation and submission of any Planning applications, and clarification of the exact access arrangements in consultation with the Residents' Association.

Firm costs should be agreed with the selected Contractor as soon as design is complete and the methodology has been agreed.

By installing temporary plant rooms, there is an opportunity to allow the installations in the flats to commence and gas removal to be progressed at the earliest possible stage, with extended works associated with the new permanent plant space and distribution to follow the removal of the gas risk.

The current proposal is to carry out these works in 3 zones each requiring 3 phases of removal. This has been largely done to ensure that the works remain manageable, the quantity of labour on site remains at sensible levels and the disruption to the estate and the residents is kept to a sensible level, in terms of the works, the disruption, the loss of parking bays etc.

Should the Client wish to increase the speed of the gas removal, it would be possible for all 9 blocks to be worked on in parallel, but this would increase impact on the estate, and probably increase costs.

A further option that could be explored is whether the temporary plant could in some way remain in place as the permanent installation, albeit this should not be at the expense of any delay to the temporary installations.

Following completion of the initial gas removals with temporary plant, the residual works would relate to the time to conclude the construction of local plant areas and any resultant distribution of the supplies or utilities to these locations.

6.3.4. Costs

The cost for these options, based on the costs for the other wet options will **be circa £8-9m** depending on the options adopted.

6.3.5. Tenant Impacts and disruption

The impact on the tenants will be limited locally to the access required to the flats to remove the redundant boilers, pipework etc. and the installation of the new HIU's. Externally there will be a need for scaffolding to the face of the buildings (a security consideration) and the need to drill connections through the existing façade panels.

Around the estate, there will be impacts locally to each building where new plant rooms are constructed, including the need to access undercroft parking areas for removal and installation of new pipework.

It is not anticipated that tenants will need to be decanted under this option.

This option should not have any significant impact on the tenants' fuel bills, in indeed it is hoped that the new system, based on new technology and a sustainable approach, could reduce running costs. How this is shared with tenants is subject to separate review.

6.3.6. Risks and Constraints

The hybrid option shares many of the risks and constraints as the other main wet options, so would be subject to detailed review of the options adopted.

7. OPTION 3 – ELECTRIC HEATING

7.1 Electric Heating Options

There are several options within the wider heading of Electric Heating, which are explored within this section. It should be noted that whilst the complete removal of gas within the blocks would make an immediate reduction to the explosion risk, there is still be a minor fire risk with electric options and appliances, particularly appliances under tenant control.

Under the electrical heating solutions, the new flat installations would comprise a hot water cylinders and electric panel (or storage) heaters. All hot water would be via a direct electric cylinders complete with dual immersions and heating via electric panels (fanned or unfanned) or storage heaters. In the case of dwellings where they have been on a combination boiler, additional space would be required for a cylinder.

Electrical hot water within each flat will comprise of a 3kW hot water cylinder, requiring a space of approx. 600mm x 600mm (depending on manufacturer) which will need to go into a cupboard. It will also need its own power supply from the local consumer unit located within the flat.

The heating within each flat will comprise of electric heaters in the Kitchen = 1kW, Lounge = 1kW, Bedroom 1 = 1kW, Bedroom 2 = 1kW, Bathroom = 1kW. Total heating load = 5kW. These can either be electric panel or storage heaters. We would use 2No circuits, 1No upstairs and 1No downstairs

With 3 No additional circuits required to supply the hot water and heating, the existing consumer unit may not have enough spare ways, resulting in the consumer unit needing to be replaced. If we replace the consumer unit we will have to ensure it is compliant to the latest BS7671

There would also be quite extensive interior alterations to the dwellings. All redundant radiators and pipework, boilers and flues would need stripping out and making good plus the new wiring for the electric panels and cylinders, impacting on decorations etc.

Direct electric heaters, whilst they can provide instant heat and are controllable by the tenants, are liable to high energy consumption and are expensive to run. This is partly due to poor control in the form of complex programmes.

Storage heater options rely on dual tariff supplies, and are less controllable with limited heat emitting periods. They can also be seen as chunky and inconvenient.

7.1.1. Utility Requirements

Utility requirements for the all-electric option are a major consideration from a cost and deliverability perspective.

Initial high-level calculations for power usage have been carried out based on the following assumptions, show that the existing infrastructure is unable to accommodate the additional electrical loads:

- 728 properties, average 2 bedrooms
- Electric hot water generation allowance = 3kW, Electric Heating Allowances = 5kW
- Allow 0.5 diversity for heating and hot water loads, Total electrical load per property = 5kW + 3kW = 8kW, with 0.5 diversity = 4kW, Power factor 0.85

The total additional site load therefore equates to a 1142kVA, 1648A TP&N supply. The existing electrical infrastructure will not be able to supply this size of electrical load without the installation of additional substations throughout the site.

However, it should be noted that as each building has its own incoming electrical supplies for landlord and residential services, it is generally not possible to add other electrical supplies into the buildings from another source i.e. a different substation. Therefore, it is highly likely that the incoming services to each block would need to be reconfigured so that the additional capacity for the electric heating and hot water along with the existing loads can be supplied from the same substation (existing or new).

When splitting the areas in line with the contractor's initial zoning programme, the electrical loads are:

- Zone 1 – 584A TP&N, 405kVA
- Zone 2 – 466A TP&N, 323kVA
- Zone 3 – 598A TP&N, 414kVA

This indicates one 500kVA substation per zone will be required for the new heating and hot water generation only. The existing substations are located at first floor due to the risk of flooding, so there is unlikely to be sufficient space at first floor levels to install new substations, meaning that these may need to be relocated externally in new (raised?) enclosures.

The electrical network operators will have to confirm if there is capacity on the HV network to allow for the installation of additional substations. This could highlight the need for off-site reinforcement and the associated costs and programme implications involved.

Irrespective of the reinforcement requirements, the new installations will be very costly and require significant programme periods. Whilst temporary generators could be used to ensure gas removal can take place at the earliest opportunity, there is a significant risk that the tenants could need to rely on generator supplies for in excess of 12 months.

7.1.2. Programme Implications

The following is the high-level overview of the likely programme implications of this option:

Design	3 months – April 2018
Enabling works/temporary installation (Generators/removal of old pipeworks)	3 months – June 2018
Installations/Gas Removal (subject to availability of boilers and access to flats/decanting)	12 months – Nov 2019
Conclusion of works (Inc. final Utility Connections)	18 months – Early 2020

7.1.3. Methodology/Phasing

Following instruction of the agreed solution, there is a need to immediately instruct the design and surveys to commence to feed into the final design development. Advanced orders need to be placed for the long-lead-in items and the larger quantities of plant etc. and H&S planning should commence.

In parallel to the survey and design phase, it would be possible to carry out enabling works (redundant pipework strip-out, asbestos removal, scaffolding etc.), preparation and submission of any Planning applications, and clarification of the exact access arrangements in consultation with the Residents' Association.

Firm costs should be agreed with the selected Contractor as soon as design is complete, and the methodology has been agreed.

A significant initial challenge will be to source the required electrical boilers – to date this has proven challenging and would seriously impact on the ability to commence these works, even with temporary generator power.

Once all new appliances are secured, by installing temporary generators rooms, there is an opportunity to allow the installations in the flats to commence and gas removal to be progressed at the earliest possible stage. The extended works associated with the new power supplies and the associated distribution is currently unknown, given the reliance on the Utility companies.

The difficulty will be in relation to the extent of disruption required to the flats and whether it would be possible for the tenants to remain in occupation whilst the new installations are progress, layout changes are made, and areas are redecorated etc.

7.1.4. Costs

Costs were requested from Engie on the basis of an all electric option, however it became apparent that their option included oiled fired boilers and associated electrical upgrade.

On this basis, Ridge assessment of costs is summarised **which totals £10.886m**

1. **Plantroom Costs**

Plantroom costs include a provision for temporary plant / generators to enable gas to be removed as soon as possible. Other costs include the mechanical strip out and enabling works to existing plant rooms and associated works to enable these as electrical plant rooms.

2. **Distribution**

Distribution is based on enhanced submains and distribution boards to blocks where the electrical heating has increased the electrical load. Whilst some scaffolding cost is allowed for external stripping out of mechanical pipework, the intention would be to route submains internally where possible.

3. **Dwellings**

Costs to dwellings included localised electrical works and the supply and installation of electric boilers, radiators, and hot water cylinders. A significant cost is the builders work in connection which includes to remove the existing gas boilers, radiators and associated making good and redecoration.

4. **Fees, Preliminaries, OHP, Risk & Substations**

As previous options, the design cost seems high. Preliminaries is currently assessed on a percentage basis but has been enhanced for the electric option on the basis of the disruption, liaison and phasing required to the dwellings.

Within this section [redacted] included a provision for Substations and upgrading utilities capacity. Where the electrical loads of the building are likely to signficiantly increase it is anticipated replacement Substations will be required. The ability to procure these Substations will be dependant on local power availability and there is a risk that off-site reinforcement to the electrical network may be required. These costs may be significant however our view of this risk is lower than [redacted] submitted budget cost.

5. **Summary**

[redacted] costs relating to this option are largely not relevant. Ridge's assessment of cost is largely prohibitive due to the cost of internal works to the dwellings and cost / risk of substation and electrical reinforcement costs.

7.1.5. Tenant Impacts

The electrical options would have a significant impact on the tenants' as it is highly likely that there would need to be layout changes to the flats to accommodate the hot water storage cylinders, as well as the potential for the distribution to multiple rooms within the flat, which could impact on decorations etc. The works will be disruptive as essentially every room will require works to install the required circuits for the electric heating, and removal of the existing radiator system.

Given the extent of the works involved, there is a risk that this may require decanting of the tenants to facilitate the works, as well as their potential reluctance to accept the changes to their accommodation.

There is potential for tenant bills to be significantly higher in this scenario.

7.1.6. Risks and Constraints

There are number of risks and constraints to this option:

1. Potentially higher tenant bills
2. Availability of the required power within the programme
3. Risk of having to run on generator power until Utility supplies are connected (and costs of fuel and maintenance/management
4. Availability of Elec boilers in the UK – restricted numbers are available
5. Disruption to tenants
6. Consequential improvements

7.2 Alternative Technologies

An alternative to direct-acting electric panel would be heat pumps. Still avoiding the use of gas but these would be more efficient. A typical heat pump will operate on the basis of for every 1kW of input you can typically get 3-4kW of heat output.

There are two types of heat pumps available, Ground Source (GSHP) or Air Source (ASHP).

Ground Source Heat Pump (GSHP) involves a vast amount of ground works associated with either the deep piles or the ground trenches (depending upon bore holes, loop array or 'slinkies'). Communal spaces would need to be used to accommodate such systems, and the type of ground would need to be carefully checked for suitability.

Air Source Heat Pump (ASHP), are small building mounted equipment linked to an internal heat exchanger to provide heating and hot water. For the blocks the ASHP arrangement could be provided via a central collection of VRF (ASHPs); this could then have a central HWS storage per block.

However, ASHP and GSHP ideally need an underfloor heating arrangement (which we do not currently have), as its optimum delivery temperatures are 35-50℃. This would mean, from a connection point of view with the existing LTHW radiator systems, an incompatibility. The current LTHW system works on either a 71-82℃ (flow and return) or if condensing 60-80℃ (flow and return) not where the heat pumps would ideally operate. To overcome this issue, the radiators would most likely need to be changes to larger panels, probably a 150-200% increase to ensure compatibility.

Currently the dwellings all have a typical 100A supply with several spare ways free should we need to link or wire in a supply for the ASHPs on an individual basis.

This option does mean extensive wiring arrangements between external plant on the roof or under-croft routed back to each dwelling.

The sensible arrangement to avoid this would be a centralised ASHP bank linking to delivery HIUs at each dwelling. The only concern here would be infrastructure, the main supply to each building will need reviewing. Although probably already receiving a Three Phase Supply, this may already be close to its limit. A survey of the incoming main will be required for each block if this option is pursued. In addition to this the main substation capacity will require review.

The site currently is not intensely servicing a high electrical demand; therefore transferring over to an all-electric will have a dramatic effect on this and should be reviewed.

If the electrical options are accepted, these technologies could be further explored to exploit their efficiencies and reduced running costs, albeit initially they are not considered wholly suitable for this site.

8. PLANNING

As part of the options presented, all have been discussed with Haringey Council Planning Department (Neil McLellan and Dean Hermitage including a meeting with Neil on 25th Jan 18) in order to understand the risks associated with them.

The Officers have been very supportive of working with HFH to find and approve a solution that addresses the potential safety issues presented, and are happy to provide further advice and consultation, during design and construction. It should however be noted that, whilst Officer advice is beneficial and comforting, any works would need to be considered formally as part of a Planning Application.

Permitted Development does not apply to flats.

The Planning liaisons have also identified the level of information required to support the application and to avoid any pre-commencement conditions which could delay the works.

The timing of any Planning application needs to be considered in respect of the time required for design and submission, ahead of the impacts of Local Authority Elections in May 18. All in all, with the detailed design process required in advance of these two stages you could be looking at least 3 – 4 months in total. It is recommended that a pre-app process be followed to ensure coordination of proposals alongside design.

Planning could take up to 8 weeks from submission (6 weeks for statutory consultation) and a 6-week JR period (albeit challenge is not likely).

Of the various options:

Structural option	– minimal Planning risk as largely internal
Electric Option	– low/medium Planning risk for any new substation enclosures and external cabling impacts
District Heating Option	– very low Planning risk for external distribution to flats. A letter of comfort has been offered by Neil McLennan, subject to images/mock-up of the proposals being provided.
Satellite Plant Rooms/Hybrid Option	– medium Planning risk for up to 9No new Plant room buildings under or adjacent to the blocks, as well as external distribution pipework. The loss of any parking spaces for plant space will require a full application

9. OTHER STATUTORY APPROVALS/CDM

All options will be required to comply with the requirements of the Building Regulations and other relevant regulations and best practice guidance. As the design evolves, it is important that the team work closely with the Building Control Dept (or approved inspector) and seek specialist fire engineering advice if appropriate to ensure that the planned actions are not only in accordance with the regulations, but that there are no consequential impacts of the works on other aspects of the regulations or safety requirements.

It is possible that during these works, there will be instances where the existing structure or installations are noted to be non-compliant or unsafe, and should be considered for upgrading at the same time – e.g. fire stopping, ventilation, security etc. It is suggested that a contingency be allowed by the Client to deal with any such instances.

Throughout the design and installation process, the solutions should be coordinated and agreed with the Principle Designer under the CDM Regs to ensure that the design and installations are safe in use, but also in respect of future maintenance, access etc.

10. PROCUREMENT

Trowers and Hamlins (T&H) have considered the various procurement options which are available to HfH for the award of the Phase 3 and 4 works to Keepmoat, the risks associated with each option in terms of any potential non-compliance with the Public Contracts Regulations 2015, and the possible risk mitigation strategies. Having reviewed the Outline Framework Specification, T&H advise that it appears that some of the works comprising the Phase 3 and 4 Works (the Works) are within the scope of the Framework Agreement. However, depending on the finalised scope of the works, it is possible that some of the works (especially those relating to the installation of a new district heating system and associated infrastructure, and the strengthening works) are not covered.

T&H set out the following procurement options which are available that might provide the flexibility to award the Phases 3 and 4 Works without a full tender process:

10.1 Option 1 – Award under the Early Works Agreement

As the Works involve works that are in addition to the works covered by the Early Works Agreement, this would constitute a variation to the terms of the Early Works Agreement. T&H advise that this option would create a risk of a legal challenge, either from the other Framework Contractors or the wider marketplace. The Council and HfH could look to limit the period in which challenges could be received by publishing a Contract Award Notice to advertise the variation of the Early Works Agreement.

10.2 Option 2 – Direct Award under the Framework Agreement

The rules in Schedule 1 of the Framework Agreement only allow a Direct Award to be made when the Council and HfH can establish from Keepmoat's previously tendered rates that they will offer the most economically advantageous bid. The award of the Works will require Keepmoat to submit new prices for any works not covered by the Framework Agreement, and therefore the Council and HfH would not be able to meet the requirements of the Framework Agreement rules, and therefore a Direct Award in these circumstances would be likely to breach the rules of the Framework Agreement. In addition, a Direct Award in these circumstances is likely to breach the Regulations which prohibits substantial modifications being made to the contract documents and which allows direct awards under framework agreements only where all the relevant terms are set out in the original contract documents. This option would also create a risk of a legal challenge either from the other Framework Contractors or the wider marketplace. The Council and HfH could look to limit the period in which challenges could be received by publishing a Contract Award Notice to advertise the variation.

10.3 Option 3 – Mini-Competition for Framework Contractors

The award of the Works will require the Framework Contractors to submit new prices for any works that are not covered by the Framework Agreement. As per Option 1, this process would constitute a variation to the terms of the Framework Agreement. T&H advise that while an argument could be made for Ground 5 to apply (on the basis that the value of the contract may not be "substantial" when viewed against the total value of the Framework Agreement). However, they advise that this has not been subject to scrutiny by the courts, and a counter-argument could be made that the real substantial change is not simply one of value and turnover, but also one of a different scope and type of works than provided for in the Framework Agreement. In addition, awarding the Phase 3 and 4 Works could be argued to breach the Regulations which prohibits substantial

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

T&H have advised that if Option 3 is selected and one of the other framework contractors challenge, they would only be able to raise a 'damages only claim' which would entail the loss of profit they stood to make if they had been awarded the contract less a discount due the number of participants in the mini-competition.

T&H advised that a 70% / 30% division between quality and cost should be applied to any tender or competition to ensure that the contractor who is best placed to deliver the project is considered and not just the lowest tenderer.

10.7 Conclusion

Based on the advice set out in T&H's report, the options can be rated as follows in order of least to most risk of challenge:

- Option 5 – New Tender Exercise
- Option 4 – Third party Framework
- Option 3 – Mini-Competition for Framework Contractors
- Option 1 – Award under the Early Works Agreement
- Option 2 – Direct Award under the Framework Agreement

As the programme implications of Option 5 are likely to be substantial, assuming that an appropriate third party framework can be identified Option 4 is the optimum option.

11. TENANT BILLING

A more detailed proposal is awaited from Engie in respect of the future billing arrangements and options.

However, in simple terms, the options need to be considered in respect of the impact on the tenants' future bills going forward. It is not anticipated that the cost of these works would be re-charged to the tenants or leaseholders, but the revised systems installed need to be considered from the point of view of the cost impacts on the tenant bills.

The efficiency and sustainability of any new installations should be beneficial in overall terms.

- Structural works – would not increase tenant bills as existing heating arrangements remain
- District Heating option – should not increase tenant bills
- Satellite Plant rooms – should not increase tenant bills
- Electric Heating – potentially higher bills

12. OTHER CONSIDERATIONS / RESIDUAL RISKS

The selection and ongoing design of the solutions should consider all aspects to ensure that risks are removed, reduced or managed going forward. However, it may not be possible to completely remove all risks, so the Client should be aware of the residual risks that remain, including:

1. Consequential impacts – B Control
2. Discoveries of other non-compliance or unsafe situations
3. Earliest to gas removal
4. The quality and remaining life of existing infrastructure or plant being used in the installations
5. Procurement risk
6. Planning challenge
7. Residents' perception of the works, disruption, billing etc.