

Inquiry into
The London Borough of Southwark (Aylesbury Estate Wolverton 1-59) (No 2)
Compulsory Purchase Order 2012

Proof of evidence of Ms Catherine Bates ARB, BA (Hons), BSc, Dip Arch,
For the London Borough of Southwark

The logo for Southwark Council, featuring a stylized, handwritten-style 'S' that loops around the word 'Southwark' in a serif font. Below this, the word 'Council' is written in a smaller, sans-serif font.

Contents

1.	Qualifications and Experience	Page 3
2.	Scope of Evidence	Page 4
3.	District Heating Mains	Page 5
4.	Technical building features of the existing blocks on the Order Land	Page 8
5.	Planned Preventative Maintenance	Page 12
6.	Summary and Conclusions	Page 14
6.	Appendices	Page 16

1. Qualifications and Experience

- 1.1. My name is Catherine Bates and I am the Senior Design and Technical officer within the Aylesbury Team at the London Borough of Southwark (the Council), a position which I have held since December 2011.
- 1.2. I have been a qualified Architect since 1998. Prior to working as part of the Aylesbury Team, I was the Design Manager for Southwark's Building Schools for the Future (BSF) programme for four years, working within the Council's Local Education Partnership (LEP) and prior to that, project architect for three years in the Council's in-house multidisciplinary design office, Southwark Building Design Service (SBDS). In total I have 16 years professional experience of design and construction across both the private and public sectors.
- 1.3. My experience on the BSF schools project included managing the LEP's design processes from inception to completion and the safeguarding of the Council's interest in its investment in the new school buildings, including two new schools on the Aylesbury Estate.
- 1.4. My day to day duties include managing the team, whose workload currently includes the procurement of a development partner for the Estate; co-ordinating with other departments of the Council regarding technical aspects for the procurement briefing documentation; on-going matters relating to the technical aspects of sites currently under construction.
- 1.5. The nature of my role means that I am aware of the background to the regeneration of the Aylesbury Estate as a whole, the Council's vision for the regeneration and the reasons for the redevelopment of the Estate. I am also well placed to understand how the development of the Order Land fits into the delivery of that vision.

2. Scope of Evidence

2.1. My evidence sets out technical aspects, which support the Council's decision to include the Order Land within Phase 1 of the proposed development phasing as set out in the Aylesbury Area Action Plan (AAAP – CD 12), section 2.2.

2.2. My evidence addresses the Statement of Case (CD 8) paragraphs 4.10, 4.11 and 4.12, which include technical aspects, namely:

- i. paragraph 4.10 and 4.12: the Order land in relation to the layout of the District Heating System (DHS)
- ii. paragraph 4.11: access, environmental sustainability, structural features of the blocks on the Order Land;
- iii. paragraph 4.11: condition of the blocks and planned maintenance

2.3. The Council's decision to redevelop the Order Land within the Phase 1 of the development was rightly made in relation to the technical considerations relating to the District Heating system (DHS). My evidence sets out the specific aspects of the DHS layout and the complexities that this network system presents for phasing and sequencing the development.

2.4. My evidence also sets out why the Council rightly identified that the existing flat blocks on the Aylesbury estate are at the end of their service life; in doing so I will set out the specific technical problems which pertain to the blocks on the Order Land, along the other blocks on the estate. These include: existing access issues, the buildings' thermal performance, the inherent structural features of the block construction on the estate and the complexities this construction system presents for refurbishment, as well as the condition of the external and internal building fabric.

2.5. My evidence then goes on to set out why the Council was right in its decision, taken in 2005, to demolish and redevelop the estate instead of refurbishment.

2.6. It is worth noting that the condition of the buildings on the Order Land does not itself present a case for bringing forward the Order Land for Phase 1 of the development. These buildings are in no worse condition than that of other buildings on the estate. The evidence of Jane Seymour and Tim Cutts, which set out such aspects as site density and specific planning features, present the wider considerations which support the Council's decision to include the Order Land within Phase 1 of the redevelopment.

2.7. Finally, my evidence sets out that, in terms of technical provision, the Council has already begun works based on the assumption of demolition and refurbishment. My evidence sets out current status of the planned preventative maintenance (PPM) work for both the blocks and the district heating system. These PPM works have been devised to extend the life of the blocks and the district heating system only for the finite period of the development, that is 15 - 20 years; the sequence of PPM works has been organised around the development phasing plan set out in the AAAP, with the more extensive PPM work being undertaken to the sites in the last phase with no further work planned for the Order Land.

3. District heating mains

3.1. This part of my evidence sets out why the Order Land, being on the periphery of the estate and at the end of one of the primary heating mains, is rightly identified for development within Phase 1.

3.2. A key factor which governed the selection of sites, phasing and sequencing as set out in the AAAP (CD12) at figure 6 (page 27 AAAP) and appendix 7 (page 164 AAAP), was a practical and technical one, namely where the existing blocks were located in relation to the area network of the DHS. This is apparent when comparing the phasing sequence and site numbering of the AAAP. Though not explicitly set out in the AAAP, the consideration of the existing DHS network layout and how this would influence the sequencing of the redevelopment phasing was specifically referred to Options Report which informed the AAAP (Appendix 6 ' 8 Issues and Options report Part 3, Delivery

and Phasing', ref p. 153, October 2007). Further detailed research was undertaken on the DHS network, including the layout of the pipework, to inform the AAAP.

3.3. All the concrete blocks on the estate are heated from the centralised district heating system (DHS) (Appendix 1, Plan of Aylesbury DHS), which was constructed and installed at the time of the construction of the estate. The central boiler house is located on the junction of Thurlow Street and Inville Road; all underground primary heating main pipe runs, stem from the boiler house and are laid out radially over the estate area. Each primary main serves a chain of blocks.

3.4. In order to minimise disruption to residents and to minimise the extent of underground pipe work (diversions and the like), staged demolition requires that the blocks furthest out from the boiler house be disconnected and demolished before the ones further in.

3.5. Each of the sites in Phase 1 is also located at the end of pipe runs; each site is relatively easy to disconnect without disruption to any other site, requiring only cutting and capping off of the primary main.

3.6. The Phase 2 sites are all linked to one separate primary main, but this main is routed in a complex path across the three Sites 4a, 4b and 5, making the isolation of one site difficult without some diversion works. The Phase 3 sites are linked to the same primary main that serves the assumed capped-off Site 7 secondary main (in Phase 1). Phase 4 sites are linked to two primary mains; one of which serves the assumed capped off Site 1b/1c main (in Phase 1).

3.7. It is recognised that there are sites both in Phase 3 (8 and 9) and Phase 4 (3a and 3b), which, like the Phase 1 sites, are at the end of a single primary mains and which, therefore, could be brought forward earlier. Three key factors contributed to locating these sites in Phases 3 and 4 of the AAAP phasing sequence:

- o that Sites 8 and 9 include non residential functions which would have to be re-provided before demolition could occur

- o the poor condition of some of the blocks in Phase 2, which makes them a priority for re-development over Phase 3 sites
- o the proposed high densities of the redeveloped Phase 4 sites, which would require the enhanced public transport provision only deliverable towards the latter part of the development.

3.8. In the case of the Order land, which is in Phase 1, this site is located at the end of one of the underground primary heating mains which is routed through Site 6 (Phase 3), nearer to the boiler house. The blocks on the Order Land therefore are required to be demolished before Site 6. With the demolition of the blocks on the Order Land, the existing primary heating main will be cut back, capped and continue to serve Site 6.

3.9. Were the Order Land to be developed later - out of the sequence currently identified in the AAAP - diversion work would be required in order to de-couple the Order Land from Site 6 and link it directly to the boiler house. This work would involve a new below-ground primary main under the main highway (Thurlow Street), incurring costs and disruption to residents.

3.10. As currently planned in the AAAP development phasing plan, the existing boiler house will continue to be operational throughout the development period, serving the diminishing existing housing stock; preventative maintenance works have been planned accordingly, with the assumption of a reduced capacity on the boilers.

3.11. The AAAP identifies the location of for a new Combined Heat and Power Plant (CHP) on Site 10 (within Phase 1), adjacent to the existing boiler house. It is expected that, to meet the energy requirements of the London Plan, a new district-wide energy solution will be provided and located on this site. It is intended that the CHP plant will supply energy to the new development sites, the extent of mechanical equipment within the boiler house increasing as sites are developed.

3.12. Those development sites which are to be developed in advance of the construction of the new boiler house (the Order Land, and Site 1b/1c), will achieve the energy requirements by means of energy centres located on each site, however each will have a provision for future connection to the new district system. Site 1a already has such a system in place.

4. Technical building features of the existing blocks on the Order Land: access, environmental sustainability, structure and general condition

4.1. The following paragraphs set out building features of the blocks on the Order Land: paragraphs 4.4 and 4.5 set out aspects which demonstrate that the blocks provide poor dwelling accommodation in comparison to new buildings constructed to current Building Regulation standards; Paragraphs 4.6 – 4.9 set out structural issues pertaining to the blocks; paragraphs 4.10 and 4.11 set out the condition of the internal and external fabric of the blocks. The building features and condition of the blocks on the Order land are common to all the concrete blocks on the estate.

4.2. This part of my evidence therefore sets out why, from a technical point of view, the Council was right to decide to reject the option of refurbishing the blocks on the estate generally in favour of demolition and redevelopment.

4.3. This part of my evidence does not seek to present a case for bringing forward the Order Land for Phase 1 of the redevelopment on the basis of the condition of the blocks; that case is presented is on the basis of other factors, namely its location in relation to the DHS and other aspects set out in the evidence of Jane Seymour and Tim Cutts.

Access

4.4. Access to the two blocks on the Order Land, 1-27 Wolverton and 28 – 59 (4 and 5 storeys respectively) is poor and does not meet the requirements of current Building Regulations. The blocks comprise maisonettes to the ground

and first floors, and flats to the second and third floors. Access to the maisonettes is from individual ground floor front doors; access to the second and third storey flats is by means of a ramp (located at the eastern end of 1-27 block) or stairs (located along the 29-59 block). The vertical access is remote from front doors to flats on the second and third storeys, the route to these being along raised access decks. With regards to current Building Regulations the buildings do not comply in certain aspects including: the gradient of the ramps; the spacing of landings; the staircases, in terms of being narrow and that they are not enclosed within a fire resistant; the length of escape route distances from some dwellings. Neither of the blocks is served directly by a lift. Lift access is only available via the lift located in Wendover nos. 1-36; access from the lift to the blocks on the Order Land is via a raised walkway routed along nos. 1-36 Wendover and nos 60-84 Wolverton via two pedestrian link bridges.

Environmental sustainability

- 4.5. The environmental sustainability aspect of the blocks on the Order Land is poor and does not meet Building Regulations. In particular the thermal performance of the external envelope of the buildings, roof, walls and windows is poor. No specific values are available on this, but industry knowledge of buildings built at this time and with this construction system indicates that these buildings fall significantly short of current standards. By way of example, a typical measure of thermal conductivity (U-value) for such buildings would be a U-value of 0.6 W/m²K roof, 1.0 W/m²K walls and 5.7 W/m²K for single glazed windows, (based on Building Regulation requirements 1974), compared to the current values of 0.2 W/m²K roof, 0.3 W/m²K walls and 2.0 W/m²K for double glazed windows 0.6W/m2K.

Structural robustness

- 4.6. The two blocks on the Order Land are constructed using a concrete large panel system (LPS), which is a construction system formed of large panels for the walls, floors and roof slabs. The 5-storey block on the Order Land does not meet British Research Establishment (BRE) recommendations in terms of structural robustness. This feature is common to all 5 and 6 storey blocks on

the estate. Although not explicitly set out in the statement of case, this feature of the structure was a key factor in the Council's decision to demolish and refurbish and is set out in the Council's 2005 Executive report (Appendix 2). The following paragraphs explain the issue of structural robustness.

4.7. The question of structural robustness arose during the preparations for the refurbishment of Site 1a in the South West corner of the estate. A structural report (Appendix 3, Briefing Report on Structural Robustness of 5 and 6 storey Jespersen blocks by Alan Conisbee and Associates, BPTW partnership and Levitt Bernstein Architects Nov 2004) was commissioned to assess the structural robustness of the 5 and 6 storey LPS blocks. The key points of the report are summarised as follows. It identifies that the blocks on the Estate are constructed with the Jespersen LPS system, it explains the relationship of structural collapse and LPS construction, and it sets out the compliance of the blocks in relation to Building Regulations. Its findings are that, whilst the blocks over 6 storeys comply with Building Regulation, the 5 and 6 story blocks are un-strengthened and do not meet the structural aspects of the 1987 BRE recommendations. It puts forward options for works, including structural strengthening and removal of gas connections, with costs and the extent of disruption to residents identified. (All dwellings on the Estate over 3-storeys have now been fitted with electric hobs.)

4.8. The report offers a brief history of the Building Regulations with respect to LPS which were changing at the time of the design and construction of the Aylesbury estate: following the collapse caused by a gas explosion at Ronan Point, in 1968 (also an LPS construction building), Building Regulations stipulated that LPS buildings over 6 storeys were required to be tied together in the event of an (gas) explosion; this was later adapted to pertain to buildings to which gas was not supplied. In 1970 the revised Building Regulations clarified that the requirement applied to LPS buildings over 4 storeys. Regulations are, and were, not retrospective, so many 5 or 6 storey blocks built by 1970 such as those on the Aylesbury, were left un-strengthened. It was not until 1987 that the BRE recommendations required existing blocks to be checked for robustness if greater than 4 storeys.

4.9. The assumption made in the report that all 5 and 6 storey blocks on the estate do not meet BRE recommendations was later confirmed in a subsequent structural reports carried out the following year (Appendix 4, Robustness consideration report to inform risk assessment by Alan Conisbee and Associates March 2005). One of the blocks on the Order Land is a 5-storey block and therefore the findings of the reports apply to it, as one of the Estate blocks which does not meet the BRE recommendations, with respect to structural strengthening.

Condition of the structural concrete elements

4.10. The structural concrete of the blocks is in need of substantial repairs. The two key aspects of deterioration are the extent of carbonation, particularly to the in situ concrete, and the corrosion of the reinforcement bars caused by water penetration. (Appendix 5, Structural Survey of the External precast concrete cladding panels and in situ concrete elements of housing at the Aylesbury Estate, Southwark by Jenkins and Potter Consulting Engineers 1997). The Codes of Practice to which the concrete structure of the Aylesbury was built (1965) have since been superseded by later standards; in that time concrete technology has progressed significantly. For example, new standards stipulate an increase 'cover depth' to concrete reinforcement bars and a reduction to chloride content. The structural concrete of the Aylesbury blocks suffers from extensive carbonation which exceeds the 'cover depth' of the concrete, causing the reinforcement bars to be exposed. Another cause of deterioration to the concrete is the water penetration occurring through the structure via joints between the precast concrete slab units forming access decks and private balconies, through cracks in the in situ concrete balcony and floor slabs, external stair and ramps. Such water ingress is widespread across the estate blocks and has caused significant deterioration of the structural concrete.

Condition of the internal fabric

4.11. The internal fabric is in poor condition mainly due to leaks from internal the heating pipes. The complexity of the LPS makes these pipes difficult to access and leaks are therefore only dealt with by means of responsive repairs

(as opposed to planned preventative maintenance). In a conventional frame construction, the building will have a structural frame (columns and floor slabs) into which are inserted service risers and non-load bearing partitions for walls. With this construction type, walls can be moved and services can be accessed without disturbing the structure. However, in the case of LPS construction, the blocks LPS panels the walls, ceilings and floors are, themselves, the structure; the panels interlock to act as diaphragm structure. This has the consequence of severely limiting modifications to the internal layout of the blocks, where each dwelling is compartmentalised within structural walls. More onerous are the problems around accessing the services for repair and replacement; routed within cavities between the wall panels, the services are embedded in the structure. In most cases, access to the services can only be gained with intrusive work into the structural fabric of the building.

4.12. The complexity and extent of issues regarding the existing buildings on the Order Land and the Aylesbury estate, and the considerable works and cost required to address these, were reflected in the Council's 2005 Executive report (Appendix 2). This document identified that existing Aylesbury housing stock was in need of considerable works to bring it up to decent homes standard. It noted that these improvements would deliver virtually no visible improvement to the estate, and that, to deliver sustained and visible improvement, significant further works would need to be carried out on internal and external improvements. For these reasons, the Council rightly decided to reject the option of refurbishing the blocks on the estate generally in favour of demolition and redevelopment.

5. Planned Preventative Maintenance

5.1: The following paragraphs sets out the Councils planned preventative maintenance programme of works (PPM) which is based on an assumption of demolition and construction. The sequence of PPM works has been organised around the development phasing plan set out in the AAAP, with the more extensive PPM work being undertaken to the sites in the last phase with no further work planned for the Order Land.

- 5.2. A programme of planned preventative maintenance (PPM) to the existing blocks has been put in place to extend the life of the buildings for the duration of the development period only (15 – 20 years). These works address only necessary repairs and aspects that impact on safety and operations.
- 5.3. The PPM works include works to bring the blocks up to basic decent homes standards only. They include the Warm Dry Safe programme, which covers basic roof repairs, internal electrical repairs, window repairs and where necessary bathroom replacements; upgrades to external emergency lighting; internal duct cleaning; lift repairs. Works associated with fire risk assessments have recently been carried out.
- 5.4. A similarly limited scope of PPM works are in place on the DHS. The system, installed at the same time the estate was constructed, is at the end of its service life, with some of the failing underground pipe work causing extensive water loss (up to 15,000 litres per week), and falls short of current energy standards. The planned works have been designed to extend its life for the duration of the development period only (15 – 20 years). They include repairs to the boilers and selective repairs and replacement of sections of underground pipe work where the leaks are worst.
- 5.5. Both the PPM works to the blocks and the DHS have been designed in line with the phasing sequence of sites defined in the AAAP, i.e. more works planned to extend the life of the blocks and pipe work located in Phase 4. Minimal works only are programmed for the Order Land.

6. Summary and conclusions

- 6.1. My evidence sets out the technical reasons supporting the Council's decision to include the Order Land as one of the sites in Phase 1 of the redevelopment of the Aylesbury estate.
- 6.2. The Order Land's location at the periphery of the Aylesbury District Heating System (DHS) network means that, within the sequence of demolition and redevelopment of sites on the Aylesbury Estate, it should be demolished before the sites further in, nearer to the DHS boiler house, are demolished.
- 6.3. On this basis, the blocks on the Order land require to be developed before the blocks on the adjacent Site 6. Were they to be developed after Site 6, then works would be required to lay a new below-ground primary mains pipe along the main thoroughfare, Thurlow Street. This would incur costs and disruption to residents.
- 6.4. Other similarly located sites, on the end of a primary mains pipe run, are also in Phase 1 (Site 1b/1c, Site 10). Whilst there are sites in Phase 3 (site 8 and 9) and Phase 4 (3a and 3b) which are also at the end of a primary mains pipe run, other reasons contributed to their place in the phasing sequence, as set out in my evidence.
- 6.5. The issue of the DHS consideration presents a technical factor which, combined with other factors set out in the evidence of Jane Seymour and Tim Cutts, justifies the Council's decision to identify the Order Land for Phase 1 of the redevelopment of the Aylesbury estate.
- 6.6. My evidence also sets out technical building features of the blocks on the Order Land. In terms of access provision, environmental sustainability, structural robustness and general condition, the blocks on the Order Land fall short of current Building Regulation and BRE recommendations.
- 6.7. These technical building features of the blocks on the Order Land are common to all the concrete panel buildings on the estate. Therefore this part of my

evidence is not presenting a case for bringing forward the Order Land in the redevelopment phasing, but rather to present a general technical summary of the blocks, which justifies the Council's position to redevelop the Aylesbury estate in favour of refurbishment.

6.8. Finally my evidence sets out that in terms of planned preventative works, the Council has already implemented the phasing and sequencing of the AAAP. Works are scheduled in relation to maintaining the blocks and the DHS on the estate for the finite period of time anticipated as the development period and works have structured in accordance with the phasing sequence set out in the AAAP, with more work planned for the sites in Phase 4 and only minimal work planned for the Order Land and the other sites in Phase 1.

7. Appendices

- Appendix 1 Plan of Aylesbury District Heating system, by Ramboll 2007
- Appendix 2 Executive report in 2005
- Appendix 3 Briefing Report on Structural Robustness of 5 and 6 storey Jespersen blocks by Alan Conisbee and Associates, BPTW partnership and Levitt Bernstein Architects. Nov 2004.
- Appendix 4 Robustness consideration report to inform risk assessment by Alan Conisbee and Associates March 2005
- Appendix 5 Structural Survey of the External precast concrete cladding panels and in situ concrete elements of housing at the Aylesbury Estate, Southwark by Jenkins and Potter Consulting Engineers 1997.
- Appendix 6 8 Issues and Options report Part 3, Delivery and Phasing, October 2007, Extract only ref p. 153