TOWN AND COUNTRY PLANNING ACT 1990

APPEAL UNDER SECTION 78

APPEAL BY BERKELEY HOMES (OXFORD & CHILTERN) LTD AGAINST THE DECISION BY READING BOROUGH COUNCIL TO REFUSE PLANNING PERMISSION FOR

Demolition of existing structures and erection of a series of buildings ranging in height from 1 to 11 storeys, including residential dwellings (C3 use class) and retail floorspace (A3 use class), together with a new north-south pedestrian link, connecting Christchurch Bridge to Vastern Road

AT

55 Vastern Road, Reading, RG1 8BU

INSPECTORATE REFERENCE: APP/E0345/W/21/3276463

READING BOROUGH COUNCIL REFERENCE: 200188/FUL

SURVEYOR REBUTTAL PROOF OF EVIDENCE BY CHRIS RUMBOLD

ON BEHALF OF READING BOROUGH COUNCIL

Date: 15 October 2021

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Appendices

1. Introduction and scope of rebuttal

1.1 I provide this rebuttal Proof of Evidence in response to the document, 'Proof of Evidence: Design, The Old Power Station, 55 Vastern Road, Reading' dated 27 September by Dave Taylor of Berkeley Homes.

1.2 This Rebuttal provides concise responses on the subjects of: the floor level and flood level to the Locally Listed Building (LLB) (Section 2); broadly identifies the extent of adjustments required to doors and doorways (Section 3); discusses the need for stairs within the LLB itself (Section 4); the adequacy of floor-to-ceiling heights which could be achieved (Section 5); and provides commentary on the assertion that an expensive internal structural framing system would be the only way to incorporate the LLB into the appeal scheme (Section 6).

1.3 For the avoidance of doubt, the fact that a matter in the Appellant's relevant PoE is not specifically addressed, should not be taken as an indication that it is accepted.

2. <u>Floor levels and flood level</u>

2.1 At paragraph 3.98, Mr Taylor refers to his surveys providing the key features within the building. As seen from the responses given in the email response as set out at Appendix 2 to my Surveyor PoE, that is not always the case, as there are inconsistencies in the information which has been surveyed. However, notwithstanding that the surveys do not in fact show the Finished Floor Level (FFL) to window cill height, I agree with Mr. Taylor's statement that, '*With the levels raised by 0.3m, the existing bay window on to Vastern Road would only sit 0.5m above finished floor level"*. From an external site visit/inspection and with reference to the Appellant's Heritage Statement (two photographs on page 20), it is advised that that is roughly correct.

2.2 This confirms that the flood level would be contained behind the wall to the bay and not over-top it, as is mistakenly shown in the DAS Section A-A, reproduced as Image 3 in Appendix 1 to my PoE. It is clear from this admission by Mr. Taylor that is in fact a markedly different situation from that depicted in Section A-A.

3. <u>The extent of adjustment to doors</u>

3.1 Also in paragraph 3.98, Mr. Taylor makes the statement, *"..that every door, including the entrance, would then only be 1.6-1.7m high, thereby requiring significant internal structural works"*. I examine this claim below, door by door, to assess the accuracy of this statement. For ease of reference and a blown-up version of the Appellant's survey plans, please refer to Image 4 at Appendix 1 to my PoE.

3.2 First of all, this is assuming that the current internal compartmentation of the locally listed building would not be altered, which may or may not be appropriate in considering inclusion of the heritage building, but for purposes of this discussion, I will assume all doorways would be retained and all should be considered for adjustment, as is claimed. There is a total of ten internal doorways at ground floor level in the building, including the front door in the recessed porch.

3.3 The works in each case, where such are required, would involve the insertion of a steel or precast concrete lintel, knocking out the bricks at the present door head and making good any decoration. Decoration is likely to involve adjustments to architraves only as there is likely to be significant space between lintel and cornices in most cases (the cornices in the main reception room are a maximum of 20cm tall, see the top photograph at page 23 of the Appellant's Heritage Statement).

3.4 The table below/overleaf sets out the feasibility in each case of providing a 2m high door, plus 10cm allowance for architrave. There are evidently steps on the ground floor at various points, unfortunately, these are not shown on the survey drawings. There is also the omission of ceiling heights in the western lobby and under the archway room.

	Present FFL (proposed FFL)	Present Ceiling Height	Current Floor-to-Ceiling height (vs. Proposed)	Feasibility
Main reception room doors x3	38.34 (38.64)	41.54 recep room	3.2m (2.9m)	2m height door plus architrave allows 0.8m clearance to ceiling.
To rear of gateway- doors to eastern lobby x4	38.34 (38.64)	40.58	2.24m (1.94m)	This small part of the building would be too low for habitable space and could be used for storage, unless floor to ceiling height were altered.
Door to present WCs	38.33 av. (38.03)	41.54 (lobby) 41.85 (wc)	3.21m (2.91m) 3.52m (3.22m)	2m height door plus architrave allows 0.81m-1.12m clearance to ceiling.
Internal lobby door-west	38.66 (western lobby). Above flood level, no adjustment necessary.	Not surveyed, but assumed to be sufficient, as this is running the FFL of the adjacent more modern offices through to the LL building in this area.	Cannot tell	No adjustment to floor level or doorway required.
Internal lobby door-north	39.07 (above flood level, no adjustment necessary)	41.86	2.79m	No adjustment to floor level or doorway required.
*External door**	Set at 38.66 (above flood level, no adjustment necessary)	Not surveyed. By eye, this internal porch is approximately 3m tall internally	No change required	No adjustment to floor level or doorway required.

*External door (actually in the recessed porch). According to the Appellant's external survey plan (see extract at Photo 8 at Appendix 1 to my PoE) this is set on a threshold level of 38.66m (marked 'THL 38.66' on the survey plan).

3.5 In summary:

- There would be ample scope to adjust the 3x doors to the main reception room and the door to the present WCs.
- Three other doors would not appear require any adjustment at all.
- The doors to the small rear (eastern) lobby may be problematic to alter, if this small area was required and if the floor level above is retained in situ. This small area could alternatively be used for services, storage or stairs, for instance.

3.6 In my opinion, therefore, the statement that every door would need to be adjusted and there would need to be significant internal works is not correct. The above assessment has in fact concluded that about one third of the doors require no adjustment at all and another third could be relatively easily be adjusted. The assessment identifies a localised concern within the building concerning the remaining four doors which should be addressed in the design. As is often the case, you need to make allowances as a designer, for the various quirks of heritage buildings.

4. Staircase

4.1 At paragraph 3.106 of Mr. Taylor's proof, he raises concern with the loss of the original staircase. It is true that the original staircase has been removed at some point in the past. At this stage, however, we do not know whether inclusion of the building in the appeal scheme would necessitate a staircase in the building and its non-provision may even be preferable or could be provided in the area with lower ceiling heights.

4.2 Mr. Taylor's point about finished floor levels needing to tie in to the surrounding structure is noted; but they would in any event, as they do with the commercial offices at present. As noted in door #4 in the table above, the higher floor level from the more modern offices runs into the LL building already (the western lobby).

5. Floor-to-ceiling heights

5.1 At paragraphs 3.107-8, Mr. Taylor suggests that adequate floor to ceiling heights would not be achievable given the existing heights and Building Regulations requirements and in his estimation this would add an additional 200mm below the existing floor and 50mm above. Even assuming noise and fire suppression mitigation were to both need to be applied externally, in my experience, I find Mr. Taylor's estimate is excessive. In my estimation and with reference to similar projects I have been involved with for Reading BC, I would expect a maximum of 100mm total (above and below) for fire and noise suppression. This thickness could even be lessened by providing acoustic insulation under the floorboards. For the first floor, using my calculations, this would bring the floor to ceiling height to around 2.43m, which is considered an acceptable height, especially considering working within the parameters of a heritage building.

6. The level of structural support needed to include the locally listed building

6.1 Paragraphs 3.111 to 3.113 of Mr. Taylor's proof advise that a framed structure will be required to support the heritage building in order to conform to Part A of the Building Regulations. This matter has been checked with the Council's Building Control and Fire Safety Manager and is not agreed with, as set out in the Technical Note at Appendix 1 to this Rebuttal Proof and with reference to the relevant extract from the Building Regulations at Appendix 2.

6.2 At the bottom of paragraph 3.112 of his PoE, Mr. Taylor states that,

> *"I also consider that introducing such a complex structural approach [a new framing structure which would need to be threaded through the Locally Listed Building] would significantly increase construction costs, thereby further affecting the viability of the scheme".*

6.2 This appears to be a completely unsubstantiated statement. No structural solution (or option solutions) have been presented to the Inquiry, so we do not know the impact that of any structural arrangements. As the Building Control Manager sets out at Appendix 1, there would appear to be a range of potential options.

6.3 No direct viability evidence has been presented to the Inquiry of the impact of the retention of the Locally Listed Building – of the framing option that Mr. Taylor says is necessary, or indeed any other option - on the overall viability of the Appeal Scheme. The impact in viability terms may actually range from a positive benefit (overall improvement to the quality and prestige of the overall scheme) to a negative impact, currently of an unknown amount/percentage.

6.4 Again, as I set out in my PoE, it comes down to the brief given to the designer and the will of the developer to seek the inclusion of the Locally Listed Building.

7. Conclusion

7.1 This Rebuttal Proof of Evidence has provided evidence on five topics.

7.2 Firstly, the Proof (in Section 2) welcomes the clarifications on floor levels and flood levels in relation to the building façade. This confirms that there is in fact an agreed position on where the flood level is in relation to the façade of the LLB.

7.3 Secondly, the Proof (in Section 3) clarifies the extent of adjustments required to internal doorways. The claim that all doorways would need to be adjusted has been proven to be inaccurate and my view is that the works required, by grouping certain doors, are either not required or else able to be accommodated. My view is that where there are inherent tensions given floor levels and ceiling heights (concerning four doors to the same room), these occur within a relatively compact part of the LLB and this would be a design matter for the architect/structural engineer to overcome. As is often the case with heritage buildings, allowances need to be made.

7.4 Thirdly, the Proof (in Section 4) provides commentary on the need for stairs. In short, it is too early for the Appellant to say with any certainty whether the removal of the stairs helps or hinders the inclusion of the LLB in the scheme, because no detailed design assessment of this element has been undertaken.

7.5 Fourthly, the Proof (Section 5) provides my alternative opinion on the adequacy of floor-to-ceiling heights which would be achievable.

7.6 Lastly, the Proof (at Section 6) rebuts the claim that it would not be structurally possible to retain the Locally Listed Building; and even if it were, construction costs would be 'significantly increased'. I make reference to the advice received from Mr. Rowaichi, the Council's Building Control Manager in this matter, where it is advised that there are a range of options open to the structural designer - either using the structure of the LLB or even being completely ‘structurally isolated’ from it - in order to comply with Part A of the Building Regulations.

Appendix 1: Technical note from Reading Borough Council's Building Control Manager

1. Introduction and experience

1.1 My name is Siamack Rowaichci and I am the Building Control and Fire Safety Manager for Reading Borough Council and have been employed in this position since March 2021. I was previously the Area Manager for a group of Approved Inspectors (AIs) in London for five years. Before that, I was the Head of Building Control and Standards for the Isle of Man Government for 17 years. I have approximately 35 years' experience as a building surveyor, predominantly within LABC (Local Authority Building Control).

1.2 I hold membership of various organisations, including Fellowship of the CIOB (Chartered Institute of Building); Fellowship of CABE (Chartered Association of Building Engineers) and I am a Member of IFE (Institution of Fire Engineers).

2. My advice

2.1 I have been asked to provide this Technical Note in relation to the evidence in Mr. Taylor's Design PoE and in particular Mr. Taylor's statements at his paragraphs 3.111 and 3.112, which are as follows:

"3.111. I turn to the prospect of integrating the existing building into a larger new building. Noting that the Local Authority consider the scale of the proposed building (9-11 storeys) in the location of the LLB is acceptable, to comply with Section A3 of Approved Document A of the Building Regulations for the use class and scale of building (residential apartments of between 4 and 15 storeys) it is necessary to introduce a framed structure to prevent disproportionate collapse (i.e., collapse of the building in the event of an accident). In this instance, the frame would be separate to the existing LLB".

"3.112. As the LLB sits on the boundary to the SSE site, introducing a framed structure along the outside of the LLB along this boundary would not be a possibility. As such, the new structure would need to be threaded through the LLB (i.e., inside the building footprint). This would be a challenging if not impossible undertaking without resulting in significant damage to the existing building. In any case, this approach would result in no different a result to that explored and dismissed in 3.99 - 3.104. I also consider that introducing such a complex structural approach would significantly increase construction costs, thereby further affecting the viability of the scheme".

2.2 I am concerned with these claims that the only way to include the Locally Listed Building is with a steel-framed structure needing to be treaded through the LLB. This is not necessarily the case. The extract from the Building Regulations at Appendix 2 to this Proof is relevant.

2.3 Part A of the Building Regulations is entitled, 'Structure'. Approved Document A contains design standards and guidance for the structural stability and safety of all buildings and provides direction on how not to affect the structural integrity of other buildings.

2.4 Regarding the requirements of Part A(3) of the Building Regulations, and for buildings of 4-15 storeys in height (the 'upper risk group', Table 11, Building consequence classes) on page 2 of Appendix 2) there is no necessity for a framing system to be used in this case, as has been suggested by Mr. Taylor. Part A(3) seeks to ensure that any collapse should be, proportional to the development (see Section 5.1 a-d on page 1 Appendix 2) and sets out the relevant British Standards (BSs) that must be adhered to. Page 45 of this document (page 3 of Appendix 2) sets out alternative approaches which may be employed. The Building Regulations set the minimum standards. This leaves lots of options to the structural engineer in designing the scheme and these would essentially be either engineering solutions which do or do not connect to the structure of the heritage building itself, for instance:

- A new small frame, which has no structural connection to the rest of the building, for instance (ie. so it is isolated, structurally), could be used, if required.
- Cantilevered sections could be used. This could be completely separate from the heritage building, so there is no actual pressure on the heritage building itself.

- This building is small enough for it to be subject to underpinning or piling the existing floor, if such were required and there are specialist underpinning/foundation companies who specialise in historic buildings.
- A supporting system through the building could be considered and these can be integrated in many different ways, for instance, steels down chimneys, and it appears that the subject building has opportunity for this.

2.5 There are numerous engineering examples where a variety of approaches have been used to include high-rise buildings to have open-plan at lower levels, typically these have 'transfer floors', which will become the main floor of the upper building. This then minimises columns that would be required at ground floor level to provide a big span for commercial uses. A version of this would, in my opinion, be a logical approach to inclusion of the heritage building and such approaches are often used in London in order to preserve historic buildings within much larger commercial redevelopment schemes, such as theatres and hotels.

2.6. To investigate which option may be appropriate would require the instruction of a competent structural engineer. The Building Regulations are the minimum standards, that is all. The risk of collapse needs to be contained and localised in order to meet the Building Regulations. This would involve a design which minimises any collapse risk in terms of 'compartmentation' areas of the building anyway (Diagram 23 on page 3 of Appendix 3 shows this).

3. Conclusion

3.1 There is no need to demolish this historic building and there are going to be a variety of potential options for its inclusion. In short, you could build all around it or on top.

Appendix 2 Building Regulations Part A(3)Section 5 Reducing the sensitivity of the building to disproportionate collapse in the event of an accident.

Section 5: Reducing the sensitivity of the building to disproportionate collapse in the event of an accident

5.1 The requirement will be met by adopting the following approach for ensuring that the building is sufficiently robust to sustain a limited extent of damage or failure, depending on the consequence class of the building, without collapse.

a. Determine the building's consequence class from Table 11.

b. **For Consequence Class 1 buildings** – Provided the building has been designed and constructed in accordance with the rules given in this Approved Document, or other guidance referenced under Section 1, for meeting compliance with Requirement A1 and A2 in normal use, no additional measures are likely to be necessary.

c. **For Consequence Class 2a buildings** – In addition to the Consequence Class 1 measures, provide effective horizontal ties, or effective anchorage of suspended floors to walls, as described in the Standards listed under paragraph **5.2** for framed and load-bearing wall construction (the latter being defined in paragraph **5.3** below).

d. **For Consequence Class 2b buildings** – In addition to the Consequence Class 1 measures, provide effective horizontal ties, as described in the Standards listed under paragraph **5.2** for framed and load-bearing wall construction (the latter being defined in paragraph **5.3** below), together with effective vertical ties, as defined in the Standards listed under paragraph **5.2**, in all supporting columns and walls.

Alternatively, check that upon the notional removal of each supporting column and each beam supporting one or more columns, or any nominal length of load-bearing wall (one at a time in each storey of the building), the building remains stable and that the area of floor at any storey at risk of collapse does not exceed 15% of the floor area of that storey or 100m², whichever is smaller, and does not extend further than the immediate adjacent storeys (see Diagram 24).

Where the notional removal of such columns and lengths of walls would result in an extent of damage in excess of the above limit, then such elements should be designed as a 'key element' as defined in paragraph **5.3** below.

e. **For Consequence Class 3 buildings** – A systematic risk assessment of the building should be undertaken taking into account all the normal hazards that may reasonably be foreseen, together with any abnormal hazards.

Critical situations for design should be selected that reflect the conditions that can reasonably be foreseen as possible during the life of the building. The structural form and concept and any protective measures should then be chosen and the detailed design of the structure and its elements undertaken in accordance with the recommendations given in the Standards given in paragraph **5.2**.

Further guidance is given in Annexes A and B to BS EN 1991-1-7:2006 Eurocode 1: Actions on structures – Part 1.7: General actions – Accidental actions; with UK National Annex to BS EN 1991-1-7:2006 and BS EN 1990:2002+A1:2005 Eurocode – Basis of structural design; with UK National Annex to BS EN 1990:2002+A1:2005.

5.2 Details of the effective horizontal and vertical ties including tie force determination, together with the design approaches for checking the integrity of the building following the notional removal of vertical members and the design of key elements, are given in the following Standards:

BS EN 1990:2002+A1:2005 Eurocode – Basis of structural design; with UK National Annex to BS EN 1990:2002+A1:2005

BS EN 1991-1-7:2006 Eurocode 1: Actions on structures – Part 1.7: General actions – Accidental actions; with UK National Annex to BS EN 1991-1-7: 2006 and BSI PD 6688-1-7: 2009

BS EN 1992-1-1:2004 Eurocode 2: Design of concrete structures – Part 1.1: General rules and rules for buildings; with UK National Annex to BS EN 1992-1-1:2004 and BSI PD 6687-1:2010

BS EN 1993-1-1:2005 Eurocode 3: Design of steel structures – Part 1.1: General rules and rules for buildings; with UK National Annex to BS EN 1993-1-1:2005

BS EN 1994-1-1:2004 Eurocode 4: Design of composite steel and concrete structures – Part 1.1: General rules and rules for buildings; with UK National Annex to BS EN 1994-1-1:2004

BS EN 1995-1-1:2004+A1:2008 Eurocode 5: Design of timber structures – Part 1.1: General – Common rules and rules for buildings; with UK National Annex to BS EN 1995-1-1:2004+A1:2008 and BSI PD 6693-1:2012

BS EN 1996-1-1:2005+A1:2012 Eurocode 6: Design of masonry structures – Part 1.1: General rules for reinforced and unreinforced masonry structures; with UK National Annex to BS EN 1996-1-1:2005+A1:2012 and BSI PD 6697:2010

BS EN 1999-1-1:2007+A1:2009 Eurocode 9: Design of aluminium structures – Part 1.1: General structural rules; with UK National Annex to BS EN 1999-1-1:2007+A1:2009 and BSI PD 6702-1:2009

5.3 Definitions

Nominal length of load-bearing wall

The nominal length of load-bearing wall construction referred to in **5.1d** should be taken as follows:

- in the case of a reinforced concrete wall, the distance between lateral supports subject to a maximum length not exceeding 2.25H,
- in the case of an external masonry wall, or timber or steel stud wall, the length measured between vertical lateral supports,
- in the case of an internal masonry wall, or timber or steel stud wall, a length not exceeding 2.25H,

where H is the storey height in metres.

Note: Annex A of BS EN 1991-1-7:2006 with its UK National Annex provides corresponding guidance.

Key elements

A 'key element', as referred to in paragraph **5.1d**, should be capable of sustaining an accidental design loading of 34kN/m^2 applied in the horizontal and vertical directions (in one direction at a time) to the member and any attached components (e.g. cladding etc.) having regard to the ultimate strength of such components and their connections. Such accidental design loading should be assumed to act simultaneously with all other design loadings (i.e. wind and imposed loading) in accidental actions loading combination.

Table 11 Building consequence classes

Consequence Classes	Building type and occupancy
1	Houses not exceeding 4 storeys
	Agricultural buildings
	Buildings into which people rarely go, provided no part of the building is closer to another building, or area where people do go, than a distance of 1.5 times the building height
2a Lower Risk Group	5 storey single occupancy houses
	Hotels not exceeding 4 storeys
	Flats, apartments and other residential buildings not exceeding 4 storeys
	Offices not exceeding 4 storeys
	Industrial buildings not exceeding 3 storeys
	Retailing premises not exceeding 3 storeys of less than 2000m^2 floor area in each storey
	Single-storey educational buildings
	All buildings not exceeding 2 storeys to which members of the public are admitted and which contain floor areas not exceeding 2000m^2 at each storey
2b Upper Risk Group	Hotels, blocks of flats, apartments and other residential buildings greater than 4 storeys but not exceeding 15 storeys
	Educational buildings greater than 1 storey but not exceeding 15 storeys
	Retailing premises greater than 3 storeys but not exceeding 15 storeys
	Hospitals not exceeding 3 storeys
	Offices greater than 4 storeys but not exceeding 15 storeys
	All buildings to which members of the public are admitted which contain floor areas exceeding 2000m^2 but less than 5000m^2 at each storey
	Car parking not exceeding 6 storeys
3	All buildings defined above as Consequence Class 2a and 2b that exceed the limits on area and/or number of storeys
	Grandstands accommodating more than 5000 spectators
	Buildings containing hazardous substances and/or processes

Notes:

1. For buildings intended for more than one type of use the Consequence Class should be that pertaining to the most onerous type.
2. In determining the number of storeys in a building, basement storeys may be excluded provided such basement storeys fulfil the robustness requirements of Consequence Class 2b buildings.
3. BS EN 1991-1-7:2006 with its UK National Annex also provides guidance that is comparable to Table 11.

BS EN 1990:2002+A1:2005 with its UK National Annex provides guidance on accidental design loading and accidental actions loading combination for 'key elements' and expressions 6.11a and 6.11b of that Standard are relevant.

Note: Annex A of BS EN 1991-1-7:2006 with its UK National Annex provides corresponding guidance for 'key elements'.

Load-bearing construction

For the purposes of this Guidance the term 'load-bearing wall construction' includes masonry cross-wall construction and walls comprising close centred timber or lightweight steel section studs.

Alternative approach

5.4 As an alternative to Table 11, for any building which does not fall into the classes listed under Table 11, or for which the consequences of collapse may warrant particular examination of the risks involved, performance may be demonstrated using the recommendations given in the following Reports and Publication:

'Guidance on Robustness and Provision against Accidental Actions', dated July 1999.

'Proposed Revised Guidance on meeting Compliance with the requirements of Building Regulation Part A3'. Revision of the Allott and Lomax proposals. Project Report No. 205966.

Both of the above documents are available on www.planningportal.gov.uk

'Practical Guide to Structural Robustness and Disproportionate Collapse in Buildings' dated October 2010. Published by The Institution of Structural Engineers, London.

Seismic design

5.5 Seismic design is not usually required for buildings classified by Table 11 as being in Consequence Classes 1, 2a and 2b. For buildings classified as Consequence Class 3 the risk assessment should consider if there is any need to carry out seismic design, although such a need is not an explicit requirement for these buildings.

Diagram 24 **Area at risk of collapse in the event of an accident**

See para 5.1d