SDStructures

Stephenson Davenport Structural Associates Limited

16 Boxwell Road, Berkhamsted, Herts., HP4 3EX

SD0130.0 St. Stephen's Church

Royal Free Trust – Comments on the Detailed Basement Construction Plan (dated 12th October 2017) for the construction of the proposed Pears Building and the implications on St. Stephen's Church and the School

Version: FINAL

Date: 9th November, 2017.

Author: Ian Stephenson

B.Sc (Eng), C.Eng, MIStructE, MICE

Director, SDStructures (Stephenson Davenport Structural Associates Limited.)

Executive summary

This report has been prepared for the St. Stephen's Restoration Trust. It sets out our engineering views on the Detailed Basement Construction Plan (DBCP) Revision E1, as prepared by Wilmot Dixon dated 12th October 2017. The DBCP has been prepared in response to the section 106 requirements relating to the proposed Pears Building. (Camden planning application number 2014/6845/P).

This review covers most of the document. Those sections where others have produced a separate report are highlighted in the report. Those reports have been submitted separately.

The following issues we have Identified are critical and which are very likely to cause problems for both the Church and the School if they are not fully addressed:

- Whilst this DBCP document is an improvement on the January 2017 version, the design remains in our view, uncoordinated and is far from complete in terms of the requirements of satisfying the section 106 agreement.
- There is still no detailed holistic design for the project and in reviewing the various appendices it is clear that even now, nobody seems to be taking an overall view of the design process. Many sections remain as a response to the requirements of the section 106 requirements.
- A detailed review of the calculation package shows that a very significant amount of information has not been provided. These include load take downs to size the piles, lift cores, pile caps, columns, etc. These are critical in terms of evaluating the design.
- There has been much information produced by way of soil investigation, ground modelling, etc. that has been suggested by the team of technical advisors advising the St Stephen's Trust that have not been properly co-ordinated into the design.
- The appendix on 'Appointments' contains no actual details of the appointments whatsoever. It is not clear what each of the members of the design team are doing and who is taking responsibility for the various elements.
- Compacting large amounts of backfill to form the piling mat, apparently with vibrating rollers, is not appropriate this close to masonry buildings of this age and type.
- The issue of the level of Noise, Dust and Vibration has been agreed by Camden in accepting the Construction Management Plan (CMP). This is unusual as the CMP is usually submitted either as part of the completed DBCP or afterwards.
- In doing so, Camden have ignored the fact that for example, based upon the proposed piling platform, a 20 meter high piling rig can be fully operational within 5 metres of the School.
- The approved CMP ignores the fact that the proposed trigger levels for noise dust and vibration are all well above the ambient levels around the site at present.
- The strategy for vehicles entering and leaving the site means that from a relatively early stage in the project this will be focussed on Pond Street. The turnaround times are, for example, the loading of the tipper trucks very optimistic and are unlikely to be met. As a consequence the programme will actually extend and the level of disruption will continue far longer.
- The monitoring strategy for the buildings has not been fully thought through in terms of what they are assessing by way of movement. There is also no clear line of communication between the owners of these buildings and the site in the event of any problems arising.
- The very crude approach in assembling the 'models' and the important exclusions in doing so, means that the outcomes are not realistic and therefore cannot be relied upon. It is highly

unlikely that the structures will comply with Burland Category 0 during and after the works are completed.

- From a positive start in earlier in the year by way of consultation between the Pear's building design team and the St Stephen's team of experts, there has been no consultation between those two groups in the critical three months in the final preparation of preparing the DBCP.
- The Q and A spread sheet in Appendix P gives a false impression of the real situation. There are many of the 97 items that were raised by the author in the previous report are deemed CLOSED, whereas in our view many are ongoing and still require further input.
- There is no indication in the DBCP document that Campbell Reith, who we understand are the Royal Free Trust's reviewing Engineers, have actually carried out this role on this version of the DBCP. We have seen a report on the Camden website that a report has been filed. We do question the approach that has been taken in terms of the review.

Overall, we remain of the view that the information provided is worryingly poor and does not demonstrate that the Royal Free Trust's proposals can be carried out without risk to both the Church and the School as well as making it extremely difficult, if not impossible for them to operate so close to the proposed construction site.

Contents

1 Introduction

1.1 This report has been prepared for St. Stephen's Restoration and Preservation Trust. The Trust has a long lease on St Stephen's from the Freeholder, the Diocese of London, and is responsible for the maintenance and operation of St Stephen's in Rosslyn Hill, London.

1.2 The adjoining property comprises St Stephen's Church Hall and a series of concrete based timber framed buildings. This site is leased from the Freeholder, the Diocese of London, by Hampstead Hill School.

1.3 The purpose of the report is in response to the revised **Detailed Basement Construction Plan** Revision E1 dated 12th October 2017. The document relates to the planning application number 2014/6845/P that was submitted to The London Borough of Camden on 28th October 2014 by the Royal Free Hospital Trust. The planning application deals with the proposal to redevelop the site to the west of the existing hospital that is to be called the Pears Building. The proposed works are on an adjoining site to St. Stephen's and the Church Hall.

1.4 The Detailed Basement Construction Plan was issued to the St Stephen's Trust by way of a 'soft copy' on the 13th October 2017.

1.5 We are of the understanding that the document has been issued to Camden Council around the same date.

1.6 The Detailed Basement Construction Plan (DBCP) comprises the following sections:

1.0 Introduction

2.0 Existing Conditions

3.0 Proposals

4.0 Proposed Temporary Works and Sequence

5.0 Hydrology / Hydrogeology

6.0 Trees

7.0 Ground Movement Assessment

8.0 Movement Monitoring

9.0 Construction Monitoring

There are a series of Appendices:

i S106 Matrix

A Details of Appointments

B Ground Investigation -Soil Consultants

C Water Pump Test - OGI

D Geotechnical Design Report - A-squared

E Structural Design/Calcs/Spec - HTS

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H Trees / Groundwater Statement

I Water Control Design - OGI

J Temporary Works – L + C

K WD Logistics Sequence – WD/Toureen/Bachey

L Construction Management Plan - WD

M GMA 3D Analysis – A-squared

N Monitoring proposals – WD/Mabey

O Condition Surveys – RFC

P Consultation with Third Parties – RFC

1.7 The document was issued in a complete format with all appendices included.

1.8 It is should be noted that two sections that formed part of the February 2017 report have not been included. These are the 'Amelioration and Monitoring of the Construction Traffic' and the 'Pre-commencement Project Risk Schedule (CDM2015)'. It is not clear why these have been overlooked. In the case of the latter document, we are surprised at this given the potential impact on two of the closest neighbours, being the School and the Church.

1.9 Where required in preparing this report, reference will be made to documents that were submitted at the start of the application process towards the end of 2014 and early in 2015. Whilst much of the original design of the basement structure that was submitted in late 2014 has been 'binned', there are documents (or sections of documents) that are still relevant and have been referred to in the recently submitted DBCP.

1.10 The report will also make reference to the SDStructures (Stephenson Davenport Structural Associates Limited) report dated 6th March 2017 as well as the S106 Q + A Master Document that forms part of Appendix P of the DBCP.

1.11 This report does not review the requirements of the two documents produced by Camden Borough Council relating to basements. These are respectively the guidance document 'CPG4 – Basements and Lightwells' and policy document 'Camden Development Policies 2010 -2025 - DP27 – Basements and Lightwells'.

1.12 The report does not address, issues such as rights of light, architectural and conservation setting, etc.

1.13 This report deals primarily with the Methodology and Sequence of Construction and the Construction Management Plan. The report will comment on most sections of the Detailed Basement Construction Plan (DBCP), but others will address some sections of the DCMP more fully.

1.14 It is to be noted that the DBCP is broken down into a series of sections that address specific requirements of the Section 106 agreement that Camden Council have specifically asked the developer to address. Most of the sections of the report only address a specific topic. Whilst some sections have been altered from the February 2017 report, the report remains somewhat disjointed and could not be described as providing an overall holistic overview of what is effectively a new structural engineering design for the basement of the building. That said, it is markedly better than the February document. It must also be recognised that there is a more logical approach in terms of the sequence of the appendices.

1.15 In light of the comment above, whilst there is an improvement, there is still a concern that in responding to the section 106 requirements, that the 'brief' for the structural engineering design has effectively been driven by the requirements of the section 106 agreement. Although significantly reduced, there remains a possibility that in following this approach critical elements of the design and methodology could have been left out. The purpose of this report is not to identify which elements have not been addressed but may do so if it is clearly obvious that they have not been addressed.

1.16 In preparing the report, the comments have where possible related to the various section numbers and appendices used in the DBCP.

2 Comments relating to sections 1 to 9 of the DBCP

2.1 1 Introduction

2.1.1 The report was prepared by Heyne Tillet Steele (HTS) who are fulfilling the role as 'Basement Design Engineers'. There is a letter in the report written by HTS to the Royal Free Charity dated 11th October 2017 confirming this.

2.1.2 In that letter HTS *'confirm, that best endeavours have been used to ensure that the design of the basement and the Detailed Basement Construction Plan are in accordance with the S106 agreement and appropriate conservative modelling relating to the local ground conditions, water environment and structural condition of neighbouring properties has been incorporated into the report.'*

2.1.3 On that basis, we are assuming that an individual or individuals within HTS have fully reviewed and commented upon all of the information provided in the DBCP.

2.1.4 It is noted that in section 1.2 there is a comment to the effect that in the earlier report *'Based on a slightly higher water level, the information regarding the St Stephens' Church Tower foundations, the Ground Movement Analysis showed that the Damage Category to exceed the requirements of the S106.'* They indicate that this report has addressed this.

2.1.5 The Design Team has been specified. Each of the firms involved are listed with the exception of Toureen Group who are listed further on in the document as the 'temporary works engineers'. In most instances, a senior person is named as being involved with the project.

2.1.6 There are more detailed comments made relating to the composition of the Design Team in the section dealing with appointments. (Refer to section 3.1)

2.1.7 It is noted in the third paragraph of section 1.4 which states that *'This plan (assumed to be the DBCP) is to read in conjunction with the **discharged** Construction Management Plan (CMP).'* It is surprising that this has been submitted and even more so that it has been approved as the CMP can only be formulated when the design of the basement is completed.

2.2 2 Existing Conditions

2.2.1 We note that the details provided are more comprehensive than the January submission.

2.2.2 One item that will not have been noted is the Church Hall, which forms part of the School has been listed.

2.2.3 There are therefore three building structures on this site that are listed. These are the Church, the boundary wall and the Church Hall that forms part of the School. St. Stephen's is Grade l Listed and the boundary wall and Church Hall are Grade ll Listed.

2.3 3 Proposals

2.3.1 A detailed set of comments are made in section 3.5 of this report that refers to Appendix E, the design of the basement structure. Comment will also be made in section 3.6 and 3.7 relating to the piling design.

2.3.2 We note the comment in paragraph 4 of section 3.1 *that 'it is understood that the proposed basement supports the surrounding ground, hence this report is used to show no detrimental effect to the neighbouring properties in the area.'* This is fundamental in that any movement of the retaining walls in the area near the Church will have an impact on the Church and the Church Hall.

2.3.2 Mention is made under item 3.6, that the *'surface water drainage calculations have been submitted and signed off.'* Who has done this?

2.4 4 Proposed Temporary Works and Sequence

2.4.1 More detailed comments will be made regarding Temporary Works and Sequence in sections 3.10 and 3.11 of this report which deals with Appendices J and K of the DBCP which deal with these topics.

2.4.2 We note the comment under paragraph 1 of section 4.1 and paragraph 1 of 4.2, that it is intended to have the ground retained with the use of the cantilevered piles. We remain concerned that the predicted deflections are significant and remain concerned that any movement may have serious consequences for the Church.

2.4.3 Mention is made of the requirement for A-squared to produce a document relating to ground borne vibration. This does not appear to have been included in the DBCP document. We are aware that substantial drilling has already caused damage to the Church Hall in the past two years with work on the LINAC building.

2.4.4 We note the comments regarding the drainage of the site during the works. However the water levels, etc in the surrounding ground is so fundamental that this does need to be looked at in conjunction with dealing with the water as part of the permanent works.

2.5 5 Hydrology / Hydrogeology

2.5.1 The proposals are noted and further comments will be made in section 3.9 of this report.

2.5.2 In summary, we are concerned that the system will require to be fully operational for the lifetime of the building, and as a consequence the design of this system needs to have a very high level of redundancy and it also needs to demonstrate that there is some system that can be used if this fails.

2.5.3 We also have concerns regarding the protection of the pipes beneath the basement slab whilst the pile caps, drainage, etc are all being installed. What measures are in place to protect the material during the construction process?

2.6 6 Trees

2.6.1 We note the proposal to provide land drains in the area where the trees are to be removed. Comments will be made in section 3.8 of this report that deals with Appendix H.

2.6.2 In the last paragraph of this section, a comment is made regarding the impact of the removal of the trees on the school outhouse rooms 'to be minimal'. It is not clear on what basis this is made as they are in some instances very close.

2.7 7 Ground Movement Assessment (GMA)

2.7.1 This will be commented upon in more detail in 3.13 of this report.

2.8 8 Movement Monitoring

2.8.1 This will be dealt with in more detail in 3.14 of this report.

2.9 9 Construction monitoring

2.9.1 We note the intention to have Heyne Tillet Steel undertake a regular review of the works. That is appropriate in that they should be fully aware of the design intent and hence able to deal with queries as and when they arrive. However, it must be noted that this is a D and B contract and that HTS's Client is Wilmot Dixon and not the Royal Free Trust.

2.9.2 There is a need to have an independent parties involved that look after the interests of the Royal Free Trust and in this case the adjoining owners, such as the Church and the School.

2.9.3 We also have concerns that there does not appear to have anybody as part of the HTS team whose has any significant geotechnical experience to review the situation during the construction process and in particular the basement construction. This needs to be addressed.

3 Comments relating to the Appendices

3.1 A Details of Appointments

3.1.1 There is no description of what is actually provided in the appendix by way of an introduction.

3.1.2 This section of the document is supposed to deal with the appointments of each of the members of the project team but there are no details whatsoever and in fact does not address the appointments of any members of the project team at all.

3.1.3 There is no indication of the composition of the Willmott Dixon team other than a brief mention of the names of three individuals in the introduction.

3.1.4 This section does contain for example a comprehensive portfolio of work that Heyne Tillet Steel (HTS) have undertaken on basement design along with information on the key members of their team. Information has been provided both in terms of experience and key personnel by Lucking and Clark, Soil Consultants, A-squared and OGI. This ought to have been included for all of the project team.

3.1.5 On this project, HTS are fulfilling the role of what appears to be the Lead Consultant and it is important that the details of their appointment is included. This would include scope of services and responsibilities.

3.1.6 There is no indication of the experience of Toureen Group who are acting as the Temporary Works 'designer', or the key personnel that they are to provide. The same comment applies to Bachy Soletanche.

3.1.7 There is confusion earlier in the DBCP in that there is an indication that Lucking and Clark (L&C) produced the initial temporary works design. This design was superseded by a design produced by Toureen which was checked by L & C. So clearly during the design process, responsibilities have changed, but there is no documentation that sets out what either party is doing and who takes on the responsibility for the temporary works design.

3.1.8 There is no indication as to the Mabey team on this project. Monitoring of this project will be key. There was a concern expressed at the meeting at St Stephen's Church in June 2016 that the Mabey team did not have any experience in dealing with Listed buildings. There needs to be an appropriately senior person on board who is very experienced in dealing fully unde.

3.1.9 A request for information on the Campbell Reith team was made in February 2017. Details were promised in the Q and A document, but no information has been provided. We have no firm idea as to their exact role and note that there is no indication in the document that they have reviewed and signed off the DBCP. This ought to have been included in the document. We do note however that a report was filed by Campbell Reith to the Camden Council website to that effect. This will be discussed further on in this report.

3.1.10 There is no information on the Architect.

3.2 B Ground Investigation - Soil Consultants

3.2.1 This will be dealt with in more detail by the Eldred Geotechnics Limited and First Steps Limited joint report.

3.3 C Water Pump Test – OGI

3.3.1 This will be dealt with in more detail by the Eldred Geotechnics Limited and First Steps Limited joint report.

3.4 D Geotechnical Design Report - A-squared

3.4.1 This will be dealt with in more detail by the Eldred Geotechnics Limited and First Steps Limited joint report.

3.5 E Structural Design/Calculations/Specification – HTS

3.5.1 This appendix was prepared by Heyne Tillett Steel. It also includes the design of the surface water drainage.

3.5.2 The comments relating to the liner/retaining wall are noted, but in the text there is no mention that this wall is immediately adjacent to the contiguous piled wall. It implies that they are independent which they are not.

3.5.3 The floor slabs are noted to be slender and given the importance that they have in acting as a prop to the retaining walls, these do need to be reviewed in more detail in the calculation package.

3.5.4 The sizes of the slabs as proposed are extensive and there is no indication given as to how expansion and contraction of the slab is dealt with and if any joints in the slab are to be provided for. If they are provided for, how is stability dealt with.

3.5.5 The notion that the use of a hydrostatic pressure head of 8.7 metres is very conservative. This figure is quite realistic in our view.

3.5.6 The package of design calculations are dated September 2017. However, they appear to be similar to the ones that were produced in January/February 2017. As such there is no indication in the calculation sheets that demonstrate that the loading information from the contiguous wall has been taken on board. There is also no indication on the calculation sheets that the information provided by the various soil investigation works have been taken into account.

3.5.7 The pages are not sequentially numbered or not numbered at all and hence it is difficult to make reference to them in the report.

3.5.8 There does not seem to be a summary of the loads used in the design. It is accepted that all of the relative codes have been used, but it is important to show what loads have actually been used in the design.

3.5.9 In the calculation sheets two section are shown of the building at basement level. It would be useful if a third section was drawn along the centre line of St Stephen's given how critical this section actually is. A more robust approach needs to be taken.

3.5.10 In terms of the basement slab design, it appears that attention has only been paid to the vertical loads. There appears to be no attention paid to the fact that the slab is dealing with significant horizontal loads in providing restraint to the retaining wall.

3.5.11 There is a section in the calculation package that makes reference to the 'Liner Wall – Slab Diaphragms'. There is a page of calculations and then reference to TEDD Calculations. These however have not been provided. It is impossible to comment on that basis.

3.5.12 There is a calculation for an edge columns, but none for any of the typical columns, and the pile caps.

3.5.13 There is a one page of calculations for the basement shear walls. The loads used do not appear to be correct, but there is no clear indication where they come from.

3.5.14 There are no calculations for the design of the core walls or for the pile caps that support them.

3.5.15 There are no load take downs for the building. Hence it is impossible to comment on the pile loads that have been provided to the piling design engineer. What information did they work to?

3.5.16 From the piling schedule, there are piles that are likely to go into tension. This is not surprising, but no calculations have been provided to justify the loads used.

3.5.17 There is a significant package of information relating to the Surface water discharge and attenuation calculations. This information has only been briefly looked at and hence no comments can be made.

3.5.18 It is however noted that two large attenuation tanks will be required on the site. These are 50 and 120 cubic metres respectively.

3.5.19 We have no comments to make on the surface water and drainage drawings.

3.5.20 We note that the structural engineering drawings have now had a revision note to the effect that they are dated 15th September 2017 with the revision note 'Latest drawings for DBCP'.

3.5.21 There are no indicated changes to the drawings and hence the most recent revision were carried out in May 2016. This again begs the question, have these drawings been reviewed in terms of the latest design? There needs to be a clear statement that reflects that this is the case.

3.5.22 Drawing P211 P5 requires clarification. The sections show a detail in the liner walls that imply that they are shear and not moment connections. These need to be clarified as the moments in some of these walls are considerable and if built as drawn will fail.

3.5.23 As before, a brief review of the drawings and calculations was undertaken, but no detailed checks were made.

3.5.24 The specification provided is along the lines of an NBS specification. It has not been reviewed in any detail, but the contents are along the lines as to what would be expected on a project of this size and complexity.

3.6 F Piling - Contiguous Design/Calculations/Specification – Bachy

3.6.1 This appendix deals with the design of the contiguous bored piles and was prepared by Bachy Soletanche

3.6.2 We note that the report has taken into account the most recent set of information provided by the Soil Investigations.

3.6.3 The design correctly looks at the pile design over a series of critical points during the construction process. However in terms of the information produced it is very difficult to gain any understanding as to which point in the construction process each of the analyses is shown. It is very poorly presented and the size of the graphs presented make it extremely difficult to get any meaningful interpretation of the actual movements. We were given an undertaking that this would be addressed following the January submission. It has not.

3.6.4 In the text, there is reference made to movements at the top of the piles of almost 60 mm. We have been assured that this is in an area of the site away from St Stephens. The likely deflection in regards to the wall near St Stephens have been indicated as of the order of 10 mm. We are of the view that this is excessive and have commented further below.

3.6.5 Given the very close proximity of St Stephens, there ought to have been modelling undertaken that focuses on a section in that area.

3.6.6 This is an issue that we have raised before as we feel that this is excessive. We have referred to the GCG comments in the original submission that the movement was to be no more than 5 mm. We also note the comment under point 5.5 that the WALLAP model overestimates the extent of the movement in the case of a cantilevered situation. That may be the case, but if this is so, then this sort of model should not be used as in this instance, as the piled retaining wall is all cantilevered along its entire length. So what we are seeing is not a true reflection of the situation and the figures presented are therefore meaningless.

3.6.7 It is not clear from the information provided if any real allowance has been made in the area nearest to St Stephens when the extensive amount of pile caps, drainage runs and sumps need to be constructed close to the retaining wall.

3.7 G Piling – Bearing Pile Design/Calculations/Specification – Bachy

3.7.1 This appendix deals with the design of the load bearing piles and was prepared by Bachy Soletanche.

3.7.2 As opposed to the last submission there is now a very close correlation between the pile loads on the HTS drawings and those on the Bachy drawings. As noted above, we cannot comment on the pile loadings as HTS have not provided a load take down schedule. This is fundamental to the design of the piles.

3.7.3 The design has taken into account and we assume utilised the most recent Ground Investigation reports that have been produced in the last couple of months along with earlier information.

3.7.4 The design proposes the use of a smaller diameter pile of 450 mm as opposed to 600 mm. This is acceptable subject to the confirmation of the piling loads.

3.8 H Trees / Groundwater Statement

3.8.1 The issue regarding ground water will be addressed in more detail in the in the joint report provided by Eldred Geotechnics Limited and First Steps Limited.

3.8.2 We do note that along the line between the new development and the school around 15 trees are planned to be removed. This will have implications on the ground water and should be included in the modelling. It is noted further in this report that this has not been.

3.9 I Water Control Design – OGI

3.9.1 We note the proposals for dealing with the groundwater once the Pears Building is completed. Others will comment on the findings of the ground water flows.

3.9.2 As noted earlier in the report, the operation of this system is fundamental in terms of maintaining the water levels in the vicinity of St Stephens at the correct level and ensures that the Pears Building does not act as some form of dam that allows the water table to build up. It is very clear that that would cause major problems for the Church.

3.9.3 In principle, this is one approach that could be followed, but we have concerns in using this system from a number of perspectives.

3.9.4 The system will need to be in place and fully operational for the life of the building. This is likely to be well in excess of 60 years.

3.9.5 Once installed, there does not appear to be any way of adding to or cleaning up any of the sections of the system.

3.9.6 It is not clear if the ground water quality has been tested to see if there are chemicals or substances in the water that could over time degrade the material being used in the system.

3.9.7 We are aware that a great deal of silt is present in the water as it flows under St Stephens and as it is this water that we are talking about, will this pose problems with the pipes clogging up.

3.9.8 The system relies on a high level of care in terms of its installation. This will all be happening in a site that has a massive excavation that will be followed by the installation of foul and storm water drainage, pile caps, etc.. It is noted that this requirement was not included in the Toureen drawings that form part of Appendix J, but have been taken on board in terms of the mark ups provided in Appendix K. Has this been taken into account in terms of the construction programme?

3.9.9 There are comments that a 50% level of redundancy has been provided to deal with a failure of certain sections of the system. We would question if this is sufficient.

3.9.10 There is a typical section of the drain as it runs under the base slab. Could there not at least be a series of access points to inspect and clean the pipes?

3.9.11 The raking drain (called a band drain in the report) is arguably the most critical part of the system. What are the risks of this being damaged during the installation? They need to be checked to see if they are 'operational' immediately after their installation.

3.9.12 It is not clear how the water is collected at the base of the wall and transferred to the horizontal pipes, nor how it actually discharges from the building.

3.9.13 As noted, this is a critical part of the design of the basement and does need to be further developed and fully detailed.

3.10 J Temporary Works - L + C

3.10.1 It is noted that the L + C design for the Temporary works has been superseded by that of Toureen, but the former is charged with reviewing the Toureen design.

3.10.2 The format is similar to the presentation to the last submission and is not very clear.

3.10.3 There is a section called 'Piling Mat Design Options' prepared by L + C. After brief notes, there are pages of calculations but no summary as to what is actually proposed. A simple sketch that showed the two piling mat areas with a simple section and note on the piling rig loads that have been allowed for.

3.10.4 The Toureen drawings in this submission are at least clear and readable.

3.10.5 We have no comment to make regarding the design of the temporary raking props themselves, including the local capacity of the existing wall and slab. However there is no clear indication as to how the horizontal forces in the base slab are transferred to the ground in the temporary condition and in particular how much of the ground bearing slab is retained prior to the start of the contiguous piling being completed.

3.10.6 We have not reviewed the L shaped walls as we understand that they are only required to support the higher level piling mat.

3.10.7 We note the construction sequence shown in the Toureen drawings 011 through to 021. These show the STAGES 1 to 11. Stages 12 and 13 deals with the concrete construction for the basement. This includes the columns, shear walls and suspended slabs to level 2. These drawings are not included. They ought to be as they are part of the basement construction. They formed of the last submission.

3.10.8 We note the proposal to compact the material that is to form the piling mat and that a rolling compacting machine is required to undertake this work. We remain concerned that this will cause vibration to the ground locally and therefore are concerned regarding the impact on both the School and the Church.

3.10.9 In terms of vibration, there is a requirement for we understand for Soil Consultants to produce a 'Vibration Prediction Model'. We cannot find this in this submission. It is important that this is calibrated now in order to understand at what level the use of both the Church and the School become untenable. The target must be set well below that.

3.10.10 From STAGE 5 through to STAGE 8, it appears that the lower level piling mat will encroach onto the pathway immediately south of the school and actually close the path for a significant period of time. Reviewing the Wilmott Dixon programme in Appendix K, this looks to be of the order of 17/18 weeks. In order to achieve this the site boundary will need to be shifted.

3.10.11 It also appears from the drawings that a section of the school wall will need to be dismantled and it looks like the site boundary will actually encroach onto the School site. This needs to be clarified. We are of the understanding that the owners of the School will not permit this.

3.10.12 In following this approach, it will be possible to bring a piling rig which could be of the order of 20 meters high to within a few meters of the School site.

3.10.13 The closing off of this section of the footpath will, we understand, close off the holding area(assembly point) for the school pupils and teachers in the event of a fire or fire drill. There are approximately 400 pupils and around 100 staff at the School. This proposal prevents this happening.

3.10.14 It is noted that from STAGES 2 through to 8, access to the site is from both Pond Street and Rowland Hill Street. Clarification is required as to the amount of construction traffic will be generated at each of these entrances.

3.10.15 We note that the access for the piling rig for the contiguous piles and the concrete deliveries is from the upper piling level and hence Rowland Hill Street.

3.10.16 From STAGE 9 onwards, it is clear that all construction traffic movement is via the Pond Street site entrance.

3.10.17 We note the inclusion of a pair of drawings of a section of the School wall that were prepared by L + C in August 2002.

3.11 K WD Logistics Sequence – WD/Toureen/Bachy

3.11.1 The appendix starts with listing the construction items that need to be followed for the construction of the basement. These are summarised in the same 11 sequence drawings that were prepared by Toureen and included in Appendix J are again included in this appendix. The only apparent difference is that they now show the inclusion of the land drainage behind the basement wall. As noted above stages 12 and 13 are missing.

3.11.2 Effectively all of the comments raised regarding appendix J apply here.

3.11.3 We disagree with the comment made in this section that it is not necessary to show the details of STAGES 12 and 13. These are important parts of the basement construction and the full details need to be provided. They were included in the February 2017 submission and we cannot now see why they are excluded.

3.11.4 The Construction Sequence Overview on pages 18 to 23 have been reviewed and we have no major comments to make.

3.11.5 We do note that there is no mention of the usage of the tower cranes. There is a response in the Q and A section that forms part of Appendix P, but there needs to be far more detail in this section as to what is proposed.

3.11.6 The issue of over sailing both the School and the Church is critical. Reassurances have been given by the RFC that this would not happen. There is a sketch on page 10 of the CMP that shows the site layout with the cranes in position. Both have a reach of 45 metres and could easily over sail both the School and the Church. There needs to be a section in this part of the report that summarises exactly what is proposed and how the crane jibs will be prevented from over sailing the sites.

3.11.7 We have reviewed the programme on page 21 and note that the time allowed for the construction of the basement is of the order of 12/13 months. It is not clear if this includes for the installation of the ground water collection system. This appears to be a significant amount of work.

3.12 L Construction Management Plan – WD

3.12.1 This appendix, the Construction Management Plan (CMP) was prepared by Willmott Dixon in response to the Section 106 requirements proposed by Camden Council. Although this Appendix forms part of the DBCP, we note it is dated July 2017 and we understand was submitted to Camden at around that time and approved by the Council.

3.12.2 We find this surprising as the CMP is usually prepared in conjunction with or after the DBCP as much of the information that forms part of the DBCP is needed in order to pull together a CMP. Items such as the construction programme dictate the number of truck movements, etc.

3.12.3 We are of the understanding that in the three months prior to the submission of the CMP to Camden, there was no consultation with either the Church or the School as to what was being proposed.

Traffic Management

3.12.4 The programme shown in section 16 on page 22 is incorrect. It shows works starting in April 2016 and finishing in March 2018. This is a ridiculous statement given where we are now. This indicates a programme time of 24 months. This is not in line with the programme shown on sheet 15 which has a programme of 30 months. This needs to be clarified as it has a massive impact on the neighbours.

3.12.5 Looking at the Weekly Movement Programme on page 29, this also shows a construction period of 30 months.

3.12.6 There appears to be some inconsistencies between the table on page 29 showing the weekly movements per week and the table of traffic movements per work stage. Looking for example at the former there is a peak of just under 400 movements per week in Month 7 versus a cumulative total on the latter graph of around 170 per week. In terms of the latter graph, month 5 shows a total of around 330 movements per week versus a figure of 150 movements on the graph on page 29. This needs to be clarified.

3.12.7 We are also of the view that the sound exercise that has been followed where vehicle movement per week are identified for each task is extended to identifying the amount of vehicle movement at the Pond Street Entrance and the Rowland Hill entrance.

3.12.8 We have major concerns regarding the muck away trucks at the Pond Street Entrance to the site. The diagram on page 31 shows 6 in and 6 out movements per hour (12 total). That is based on a perfect day with no hold ups. Based on a 7 hour day in terms of loading and unloading during term times, it will be very difficult to achieve the required 76 movements per day (38 in and 38 out) over a consistent period. This will have an impact on the programme and therefore extend it.

3.12.9 We also note the assumption that three tipper trucks can stand on the site at any one time. We do not believe this is achievable. Close examination of the Robert West drawing SK-023 shows the swept path analysis for tipper trucks entering and leaving the site. Realistically, there can only be one 'holding' space for one vehicle whilst another is filled. That 'holding' area would be as a vehicle turned off Pond Street into the car park. It would only be able to move into position once the truck being filled has moved out. It also looks as though no allowance has been made that the car park will remain operational whilst construction works are taking place. This situation reinforces the fact that 12 movements per hour will not be met.

3.12.10 The sketch on page 37 showing the Pond Street Access/ Egress having a turning circle well within the site is laughable. Looking at both the STAGE 1 to 11 drawings and the swept path analysis for the major vehicles, none would even come remotely close to achieving that.

3.12.11 We are therefore of the view that there will be many instances where tipper trucks (and ready mixed concrete trucks) will be on site longer than anticipated churning out exhaust fumes, as well as resulting in tipper trucks having to stand in Pond Street waiting to access the site. This will result in both further pollution as well as resulting in vehicles having to

queue near the site. With the current programme demands, we cannot see how this can be achieved.

3.12.12 We note that the swept path diagrams now do make allowance for trucks entering the site from the top end of Pond Street and returning the same way. On reviewing the swept path analysis for the Pond Street site entrance, the large tipper trucks, concrete trucks and articulated vehicles will all require having to take up part of the oncoming lane when exiting the site. In the case of the articulated vehicles, the distance is of the order of 35 meters. In this instance there will need to be a significant on street management by the contractors.

3.12.13 Referring to the articulated vehicles, it is pretty evident that only one of these can occupy the site at any one time and no other vehicles will be able to be no site at the same time.

3.12.14 We note the requirement for a 17 week period to close the public footpath that runs alongside the Rowland Hill Street link road. We have concerns regarding that as it is a very busy thoroughfare and the overspill when it is closed and requires pedestrians to walk up around the church will have an impact in the area outside the School. There are times when the number of pedestrians in this area are high, particularly during school drop off and collection time is considered. We are of the view that this has not been properly looked at.

Noise

3.12.15 We note the information provided by the Ove Arup report based on a survey taken in May 2014. That survey included a noise survey taken at point 3 which was between the existing car par and the School.

3.12.16 From the survey, it seems that the average noise level was between 55 dB and 61Db.

3.12.17 We note the noise levels that will be generated by the plant that is likely to be used on the project which are shown on pages 44 and 46. Reviewing the list, it is fair to say that with 3 exceptions all of the plant will at a distance away of 10 meters generate a noise level of 75dB for a significant part of the working day. Most show these levels in excess of 70% of a construction day. This is excessive and needs to be addressed as there are school classrooms and a large part of the play area falls within that distance from the site.

3.12.18 We note that there are proposals to have a hotline in the case of problems arising with noise levels and an indication that noise levels will be monitored. There is mention of a Section 61 Agreement but no details of this are given.

3.12.19 There are proposals to have noise barriers installed, but no details are given and mention of ‘noise monitoring points’ installed but there is no mention of where they will be and any agreement reached on the noise thresholds.

3.12.20 All of the above must be fully resolved before work is allowed to commence.

Vibration

3.12.21 We note the comments regarding the intention to monitor the vibration levels. As with noise, there are no levels that are set or agreed to as to what is reasonable in this document.

3.12.22 We note that monitoring points are to be installed at least three months prior to start of the works. We are not aware that this has happened.

Dust

3.12.23 Again we note proposals for the monitoring of the dust levels on the perimeter of the site. As with noise and vibration, there are no threshold levels set. There is mention of an 'Amber Alert' and a 'Red Alert', but no actual trigger levels have been proposed and agreed in this section of the document.

Temple Report

3.12.24 This document was written in October 2014. It focuses on the proposed works and is not a summary of what is currently happening and the existing dust levels in the area. It focuses on the future and ought to have been revisited once the final scheme was agreed and in particular the key points of exiting the site.

3.12.25 The report does highlight that 'track-out' of the site is High Risk and that the School is a 'High Sensitivity' Receptor.

3.12.26 The mitigation measures however only deal with really deal with what happens should a problem arise rather than setting out a clear proposal as to how this is to be tackled.

Dust mitigation measures – Appendix D in this section

3.12.27 This is a table that sets out all of the possible mitigation measures that need to be addressed as part of the works. It is essentially a 'tick box' exercise as to what needs to be checked along the way, but does not lead to any firm proposals that come from the document.

General

3.12.28 This report, the CMP which, as noted, has been submitted and we understand approved paints a picture that all of the monitoring items have all been sorted out and are fully in hand. This is not actually the case. There is no mention of the actual trigger levels in this section and one needs to refer to Appendix N where these items are actually set out. These will be discussed in more detail in that section as we feel that the trigger levels are set far too high.

3.13 M GMA 3D Analysis – A-squared

3.13.1 This section of the report will be addressed in more detail by the joint report produced by Eldred Geotechnics Limited and First Steps Limited.

3.13.2 The primary purpose of this exercise is to prove that that particular element that is checked has satisfied the Burland requirement of satisfying category 0.

3.13.3 We note that the model does not allow for the removal or pollarding of trees. This will be happening between the Church and the new development and the School and the new development on a significant scale. Hence this ought to have been taken into account in the model.

3.13.4 It also excludes movements associated with the over-excavation of the proposed basement. There is a risk that this may happen and this should be evaluated to understand what the implications were if that were to happen. This may be an over-excavation of say 1 meter.

3.13.5 Finally it also excludes the impact of ground borne vibration induced ground movements. This ought to have been looked at as part of the analysis particularly during the construction process.

3.13.6 We note that HTS supplied details of the loadings from both the Church and the School. In terms of the former, this is considerable. Have they been reviewed and if so by whom? and they ought to have been included as some form of appendix. It is in any case impossible to read the notes on the drawings that have been provided within the text.

3.13.7 We understand from the notes, that in modelling both the Church and the School, the new undercroft and basement have not been included in the former and the underpinning in the latter. In considering a wall in the Church there has been no regard that it is not a linear two dimensional object. There are buttresses that bear onto the walls at 90 degrees. All of these are critical in assembling the 'model'.

3.13.8 In our view, by not fully taking on board all of the items above the 'model' is a very poor representation as to what is there and as such the out put from the 'model' cannot be deemed an accurate representation of what may happen and therefore cannot be believed. On that basis, we do not believe that the Burland category 0 has been either proven or achieved.

3.13.9 On a minor point, we note that in figure 40, the North and South have been incorrectly shown.

3.13.10 On another minor point, we note that figure 19 is wrongly labelled. This is not a view of the crypt but the underpinning of the nave columns. The Narthex, N and S porches and all of the nave columns were underpinned but nothing else. Further excavation has shown that all foundations beyond that point, including the tower, will be 2.2m+ below ground level at approximately + 71.6m OD.

3.14 N Monitoring Proposals – WD/Mabey

3.14.1 We note the proposed equipment that is to be used for the demolition. The proposed equipment has noise levels that generate noise levels of between 77 and 85 dBL at a distance of 10 metres from them when they are operational. They will also be operating at more than 60% of the time averaging at 75% of the time.

3.14.2 The Ove Arup report shows the average noise level between the School and the site as being 53dBL and around 61dBL.

3.14.3 In terms of noise levels, Wilmott Dixon have still to apply to the London Brough of Camden for a 'Prior Consent' in order to agree the 'Trigger Level' and the 'Action Level' which are 75

dBL and 80 dBL respectively. This is well above the existing levels in the area between the School and the site.

3.14.4 In terms of dust levels, the Action level is set at 250ug/m3 based on PM10 concentrations with a Trigger level set at 200ug/m3. It is not clear how these figures were arrived at. We also note that the Temple Report clearly identifies that the School is a High Risk receptor but makes no recommendations as to what levels should be set. Instead, it sets a series mitigation measures that we would expect any responsible contractor to follow in any case.

3.14.5 The strategy regarding the Ground vibration levels is fundamentally flawed. The base levels that have been set are based on table 8.2 on page 21. In the table that is being used, there is reference to reinforced of framed structures, industrial and heavy commercial buildings, etc.. No reference has been made to the fact that both the Church and the School are masonry buildings that will respond very differently to any of the types of buildings that have been used as a reference.

3.14.6 We note the proposals regarding the reporting to the adjoining owners regarding the monitoring. The intention is to do so on a monthly basis, unless there is sign of movement in which case it will be on a fortnightly basis. This is woefully inadequate particularly in the case of an adjoining Listed Building.

3.14.7 What is of even greater concern is that there is no system in place in the event of there being sudden movement that could have a significant impact on the occupants of the properties. There is no strategy or system proposed much less installed whereby the occupants are informed quickly and that action is required.

3.14.8 We note that there mitigation and contingency measures proposed. We note that there is a process that is to be followed, but it appears that the process that is to be followed is time consuming and it will be a significant delay before these measures are implemented.

3.14.9 There does not appear to be a system in place in terms of the monitoring whereby external parties can draw attention to the fact that there is a perceived trigger point that has been reached, but is not being dealt with on site.

3.15 O Condition Surveys – RFC

3.15.1 We have reviewed the Condition Survey on the Church, School Building and the site boundary wall that was undertaken by Ryan Bunce and Co. The date of issue is the 30th September 2017. We note that Sinclair Johnston and Partners Ltd., contributed to the report.

3.15.2 We note that the timber School buildings are not covered in the report. They ought to have been considered.

3.16 P Consultation with Third Parties – RFC

3.16.1 This section relates to the various emails, notes, circulars, minutes of meetings, etc that form part of the consultation with third parties. Much of it we cannot comment upon.

3.16.2 We note there is a set of minutes dated September held at Wilmott Dixon office regarding a meeting between the Pear's Building Design Team and the technical advisors to St Stephen's Trust. Whilst confirming that the meeting occurred and our attendance, we are surprised that this forms what is nor a public document given that we were not allowed to review the minutes and on doing so as part of reviewing the DBCP found that there are a couple of inaccuracies.

3.16.3 We note that this section includes an updated version of the S106 Q and A document. This is a very comprehensive document and the intention is not to respond to this entirely, but to focus on the items numbered 300 through to 396 that were raised by SDStructures in their submission dated 6th March 2017.

3.16.3 We had sight of the first response from Wilmot Dixon on 16th May 2017. We were not in agreement with many of the items that were deemed to be CLOSED, but in reality they had been noted and were in the process of being dealt with. They ought therefore to have been left OPEN. At the time, of the 97 items, 59 were deemed CLOSED. Our view was very different as of those of those 59 items, 42 still had actions required and hence should not be called CLOSED.

3.16.4 The current list has been updated. However it now reflects that all 97 items are CLOSED. We fundamentally disagree with this as there are still many of the items that have not been fully addressed or are still in the process of being addressed. It is also a fundamentally flawed assumption that by simply providing in some instances a very brief answer or simply making a statement to refer to the DBCP, then that item is CLOSED. This is not the case and by following that approach it gives a very false view of the actual situation.

3.16.5 We are of the view that the following items still remain OPEN as there is very clearly more input required as part of the DMCP submission is concerned. This list does not contain all of them, but a selection of those many of which we feel are critical.

3.16.6 These are as follows (a brief comment is made as to the reason for the statement and in some cases a reference is made to the relevant clauses in this report):

302 We are of the view that the document as tabled, whilst improved could not be called an 'holistic overview' of the project. This also includes 303.

309 We disagree with the comment that the effects on the Church are minimal. This statement is based on the GMA report which we feel is not a true reflection of the situation.

315 Also applies to 316,317 and 318. This is being addressed by the First Steps report.

320 There still is no clear actual section at reasonable scale that shows the Church in relation to the new development.

321 We believe that this is not a conservative approach but it reflects reality. Same comment applies to 322.

324 There is still no vibration study been undertaken. Hence this cannot be described as CLOSED.

327 Whilst the idea of removing the trees has been agreed by Camden, the ground movement analysis has ignored it.

328 The design of the temporary works on any project must be reviewed in line with the proposals for the permanent works. Clarification of responsibilities not clear. See 330 also.

329 We remain concerned regarding the proposals for the monitoring.

331 We remain unconvinced that the results of the GCG comments regarding the retaining wall should be dismissed. This is related to 332 and 333.

334 This item has not been addressed regarding the monitoring action plan. Similar comments apply to 335, 336 and 337.

342 In terms of the depth of the excavation for the pile caps, etc. it is not clear that this has been allowed for.

344 Concerns have been made regarding the collection of ground water.

345 There is a contradiction in the response in the Q and A and the programme submitted to Camden. The former gives a time scale for the forming of the piling mat of 13 weeks whilst the latter shows 5 weeks.

346 We cannot find any record of the Vibration Study in the submission.

351 This has been raised earlier regarding the pile deflections.

353 There is no load take down for the piles so it is not clear that the correct loads have been used in the design of the piles. Also applies to 354 and 355.

356 There is still no clear indication as to how loads are transferred, stability, how the shear walls are working, etc.

357 Still a lack of clear sections on the drawings.

367 These relate to drainage and have been raised earlier in the report. Also applies to 368 and 369.

369 Refer to the section on Appointments listed above.

373 The Vibration Action Plan does not appear to have been issued.

374 There are still no details about Campbell Reith and therefore cannot be CLOSED. Also applies to 375.

378 We can only find a short sentence on visual intrusion. It is not clear how this will work in the event of a large item of plant being close to the site boundary nearest the School.

382 This relates to the Construction Management Plan. This has not been fully dealt with as have items 383, 384, 385, 386, 387, 388, 389, 391, 392, 393, 394 and 396.

404 The Pre-Commencement Risk Schedule has been removed. There is no indication why this has been done.

4 General Comments

4.1 The purpose of this section of the report is not to comment on the various elements of the DBCP, but more to make comments as to what was included in the January 2017 submission and what ought to have been included in this package.

4.2 The Pre - Commencement Risk Schedule has been removed. There is no indication why this has been done. This was a very useful statement that gave a clear indication that a whole series of risk had been identified and demonstrated the approach that was being followed in dealing with them. These are always 'live' documents and always need updating. The inclusion would show that these items are being addressed.

4.3 In the last submission there was a section on traffic amelioration. It is not clear as to why this was deleted from the DBCP.

4.4 We have noted above the concern that Campbell Reith do not seem to have provided any documentation to show that they have reviewed and commented upon the DBCP in the actual report as there ought to have been. We have however established from the Camden Council website that a report, prepared by Campbell Reith was in fact tabled around the 12th or 13th of October.

4.5 We have reviewed that report. It is not clear to us if the completion of the document is simply signing off that they have reviewed the DBCP document and that the contents of the document provide written information in response to the Section 106 requirements or does it demonstrate that they have carried out a very rigorous and detailed review of the contents and signed that off. Our understanding of the requirements and role of a 'reviewing engineer' ought to be the latter, but in the case of the amount of queries raised in this report and the report prepared by Eldred Geotechnics Limited and First Steps Limited , they can only have carried out the former.

4.6 In section 5.2 of our report dated 6th March 2017 relating to the January submission, we made comment regarding the need for a 'Design Team Leader'. There were many issues that were raised in that section that included that it was felt that the design was not holistic, that it was not co-ordinated, that there were no clear 'Employers Requirements' and that there was no individual that was leading the Design.

4.7 Between April and June, the St Stephen's Trust Technical Team did meet key individuals as part of some form of consultation which for some reason unknown to the writer, this was stopped. At those meetings that were chaired by Wilmot Dixon the focus was discussion of the technical issues relating to the design of the building and in particular the very real concerns that our team had regarding the Geology.

4.8 Over that period, a process was seemingly getting into place of a process that was required that needed to be followed and that it was all part of a 'tick' process. This was driven by Wilmot Dixon from the perspective of achieving a goal of completing a process and achieving an holistic design. Whilst this process was being followed however, it was never clear to us that there was no individual who had a very high level of technical expertise giving an overview of the design and pulling this together.

4.9 Having attended the meeting at the end of September and reviewing the DBCP, that opinion from March has not changed. This is really critical, for that without the key person in place, this will never be achieved in this design.

5 Summary

5.1 Whilst this document is an improvement on the January 2017 version, the design remains uncoordinated and is far from complete in terms of the requirements of satisfying the section 106 agreement.

5.2 There is still no detailed holistic design for the project and in reviewing the various appendices it is clear that even now, nobody seems to be taking an overall view of the design process. Many sections remain simply as a response to the requirements of the section 106 requirements.

5.3 We note that HTS have an important role in this process in terms of co-ordinating this and feel that their involvement needs to be far greater.

5.4 A detailed review of the calculation package shows that a very significant amount of information has not been provided. These include load take downs to size the piles, lift cores, pile caps, columns, etc. These are critical in terms of evaluating the design.

5.5 Currently, the piling design is fundamental on the load take down being provided, for example. That information does not form part of the package.

5.6 There has been much information produced by way of soil investigation, ground modelling, etc., over the last six/seven months. Virtually all of that work and investigation has been suggested by the team of technical advisors advising the St Stephen's Trust and without that input would never have taken place.

5.7 Despite a very positive working relationship between the Pear's building design team and the St Stephen's team, there has been no communication or consultation between the two teams over the critical four month period whist the DBCP was being pulled together and finalised. We are of the view that had this consultation continued at the earlier level, many of the issues raised above and in other reports will have been avoided.

5.8 The appendix on 'Appointments' contains no actual details of the appointments whatsoever. So it is not completely clear what each of the members of the design team are actually doing and who is taking responsibility for what.

5.9 There is no clear indication in the DBCP as to the role played by Campbell Reith and there is no documentation that they have fully reviewed and signed off the DBCP as there ought to have been. We note however that there is a document on the Camden Council website that they have undertaken that role. We did under item 4.5 above question the actual role undertaken by them. Was it a review that all of the documents in the DBCP showed that all of the documents tabled addressed the requirements of the Section 106 requirements or did it undertake a detailed review of the actual contents of the document. We suspect it was the former, but as a 'reviewing engineer', it ought to have been the latter.

5.10 Compacting large amounts of backfill, apparently with vibrating rollers, is not appropriate this close to masonry buildings of this age and type. This is an issue that has been raised before and seems to have been ignored. It is fundamental to address this issue.

5.11 The submission of the CMP well before the completion of the DBCP and seeking approval and gaining approval of this from Camden is unacceptable. Camden have in effect signed off on a process that will, it appears allow a far higher levels of noise, dust and vibration that would reasonably be acceptable on this or any other site for that matter.

5.12 In the DBCP, the Contractor is proposing a far higher level of noise, dust and vibration than the current levels in the vicinity of the site. The proposed trigger points for noise dust and vibration are far higher levels than those currently encountered.

5.13 The submission of the Construction Management Plan (CMP) to Camden, prior to the issuing of the DBCP is very unusual. It is the latter package of documents that 'informs' the former. Often the CMP follows after the submission of the DBCP.

5.14 An example of allowing this and Camden agreeing to the CMP in its current format, Camden are allowing the pathway between Pond Street and Haverstock hill to be closed for a period of at least four months. (refer to the Robert West drawings 16, 17 18, 19 and 20). The drawing shows what is a piling mat extending over the footpath up to the School boundary wall. As a consequence, Camden have in fact allowed for example, for a piling rig to use that area during the piling operations. This rig will be of the order of 20 meters high to be operational within meters of one of the School buildings. Whilst not there continuously, it will be in the vicinity for a large proportion of the piling contract.

5.15 This raises a massive issue of Health and Safety as no consideration for example has been given to the potential of a piling rig toppling over or the very high noise levels so close to the School. The piling rig will at times be within metres of the School. When operating it generates 89dB at a 10 meter radius. This is unacceptable. A sketch that highlights this situation is provided as part of other submissions.

5.16 Apart from the very serious Health and Safety aspect and the issue of noise, dust and vibration, it is also very difficult to see how any form of measures can be undertaken to prevent visual intrusion. The DBCP mentions screens as a means of separation between the site and the School.

5.17 The closing of the footpath will mean that the School will effectively loose a section of the area that they use as an assembly point in the event of a fire or fire drill.

5.18 The strategy for vehicles entering and leaving the site means that from a relatively early stage in the project this will be focussed on Pond Street. The predicted turnaround times are for example, the loading of the tipper trucks are in our view very optimistic. The site entrance and manoeuvring space as seen in the swept path analysis will only allow two vehicles to be on site at any one time. It is therefore very difficult to see how a turnover of six per hour will be achieved.

5.19 As a consequence this will not only extend the programme, but will often require trucks to have to linger in Pond Street before being able to access the site. This runs contrary to the proposal that there would be no requirement for any 'holding areas' for the duration of the project.

5.20 The monitoring strategy for the buildings continues to raise concerns in terms of movements of the buildings. We have constantly stated that there needs to be an understanding of the building structure and how it may behave if there were to be movements and if so, where

there is likely to be cracking. Only then can a monitoring strategy in terms of movement be developed. This has not happened and instead a random approach has been followed that allows the monitoring to be placed in a regular pattern that ignores how the building structure will behave.

5.21 As far as noise dust and vibration are concerned, the trigger levels and action levels that are proposed are well above the existing surveyed levels in the area between the Church, School and proposed development.

5.22 There remains at this stage, promises of a line of communication, but this is not happening. We understand that whilst monitoring of noise, dust, etc. are taking place, this is not being conveyed to interested parties at the Church or the School. There is also no clear proposal in place in the event of a situation if there is a major problem on site with the potential of significant ground movement that would have an impact on the Church and the School.

5.23 A very crude approach has been followed in assembling the 'models' that have been used in the GMA analysis. There are key items like the removal of trees that have been ignored as well as the presence of major foundations. As a consequence we strongly feel that the outcomes are not realistic and therefore cannot be relied upon.

5.24 The one page print out for a critical section of wall tells very little as to how the answer was reached and therefore it is unlikely that the structures will meet with the Burland Category 0 both during and after the works are completed.

5.25 The Q and A spread sheet in Appendix P gives a false impression of the real situation. Virtually all of the items are listed as CLOSED. By implication that implies that no further work is required on that particular topic. There are many where this has happened, but there are many that are in reality are OPEN still as that item is still being in the process of being addressed. It must be accepted that as part of this exercise there are some items that will be ongoing and will never be CLOSED until well into the construction phase.

5.26 There are many of the 97 items that were raised by the author in the previous report are deemed CLOSED, whereas in our view they are of the order of 30 that are still ongoing and still require further input.

5.27 The removal of the 'Pre Construction Risk Register' from this October submission is significant. Whilst there was still some work to be undertaken on the document in the previous submission, this sort of document should capture critical items and therefore it ought to have been included.

5.28 We also note that the section on Traffic Amelioration has not been included in this submission.

5.29 We still have concerns regarding the temporary works package. There are still elements that are not clear such as the approach regarding the design of the piling mat for example.

5.30 There is only very sketch information regarding the provision of screens to prevent visual intrusion with the School.

5.31 A much more robust section of information needs to be included regarding the cranes and the fact that undertaking have been given that the jibs will not overfly the School or the Church grounds.