Proposed Development
Hampstead Police Station
Rosslyn Hill
Camden
NW3 1PA

Review of Energy, BREEAM & ME Reports

S16-296
October 2019

R4

Prepared by :

Southwest Environmental Limited

On behalf of :

HCRD

1.0 Introduction

Acting on instruction from HCRD, Southwest Environmental Limited are to make review of the Energy, BREEAM & ME Issues relating to the proposed Primary School at Hampstead Police Station.

On the 1st of May 2019 MPs have approved a motion to declare an environment and climate emergency. Following the IPPCs 2018 report the world's leading climate scientists have warned there is only a dozen years for global warming to be kept to a maximum of 1.5C, beyond which even half a degree will significantly worsen the risks of drought, floods, extreme heat and poverty for hundreds of millions of people.

In light of these projections we would consider the energy efficacy measures, and lack of renewables offered by the project team very poor.

Zero effort has been put in to designed fabric energy efficiency measures. There is no consideration of insulation what so ever, no renewable energy systems, no provision for cyclist changing, no assessment of adequate daylight . . . . a near complete lack of sustainable design.

Our report has been edited as of 29th October 2019 in response to revised reports. Comments in Blue.

1.1 The Site

The site is occupied by a former metropolitan police station. It is intended that this building be repurposed as a school.

Address	Rosslyn Hill Camden London
Postcode	NW3 1PA
Grid Reference	526870, 185560

1.2 Proposed Development

The proposed development (2019-2375-P) is for a Primary School, comprising 1906m^2 gross space. There will be 36 staff members at the school.

2.0 Aims of this Report

The aims of this report are to examine the conclusions and workings of:

- Ridge - Energy Statement - Job: 5004713
- Ridge BREAMM Pre-Assessment - Job: 5004713
- Ridge Mechanical and Electrical Services Specification - Job: 5004713

3.0 Energy Statement

We have identified the following discrepancies. It is clear that the assessment relies heavily on the buildings listed status to avoid many easily implemented carbon reduction measures. SWEL have delivered BREEAM refurbishment reports which achieved an A rating for energy efficiency, there is no reason other than financial why the same could not apply on this project.

Some allowances have been made for loft insulation and secondary glazing. This secondary glazing has the potential to create summer overheating. The loft insulation is a positive measure, but it is unclear how well insulted is at present, for example, they may not be any room for additional insulation.

A newly built energy efficient building is modelled as having a 16.7 kgCO /m^2.annum. The proposed refurbishment will have an emission rate of 26.4kgCO2/m^2 reduced from 34.2 kgCO /m^2.annum in previous report. Over a given year compared to a new build scenario, this will create surplus emissions of 23,000 $kgCO^2$. This is equivalent to the footprint expected from 23,000 loaves of bread, or the manufacture of 3 small French cars.

According to figures taken from UN reporting, and adapted for use in this instance. The direct human cost for this quantity of CO^2 released to atmosphere over the building's 50 year life cycle equates to 15 additional climate change related deaths, when compared to a new purpose built school.

3.1 Inappropriate Baseline

The assessment uses a baseline taken from a pre-existing EPC. Although the proposed building was modelled with SBEM, and it is likely that this is the case for the EPC also, it is unclear what the input parameters for the original EPC were. This undermines the validity of the baseline value. This assumption still remains.

3.2 CHP

Combined heat and power is excluded as an option based on "*small heating demand*". Typically a CHP engine is sized to match lowest heating demand, if this is the case then a micro CHP plant should be used for base demand with cascading boilers for top up heat. There is no good reason given behind this exclusion of CHP.

3.3 Cooling

Energy for cooling will be required but is given a null value in SBEM model. Considered in combination of overheating potential of the Sick Bay and Therapy Room, this is a oversight that result in underrepresented emissions. The addition of secondary glazing will prevent any natural ventilation and cross ventilation, and external air quality prevents natural ventilation also. Air Source heat Pumps are briefly mentioned in some documents whilst other still refer to gas boilers, clarification is required here. All rooms will require cooling owing to lack of natural ventilation.

3.4 Lack of Renewables

There are no renewable energy systems. No doubt there is a case to be made that solar panels cannot be included owing to listed building status. But it is unclear whether listed building controls have been approached regarding this.

It is unclear whether the Listed Building Department have been asked directly as to whether solar panels are allowable. Considering the context of the recently declared climate emergency one might imagine it would be allowable, they will not damage the building if installed carefully.

The NOx emissions from gas boilers are still not considered. Electricity as a primary energy source is a sensible option. ASHPs are mentioned, but so are Gas Boilers, indicating a contradiction within the strategy.

Significant ground works are required for ground source heat pumps, but if these are installed in vertical wells, disturbance could be minimised. Also this can be done in 2 weeks, if two drilling rigs are used simultaneously which we would suggest could easily fit within time frame.

Ground source heat pumps have higher efficiencies compared to ASHPs, a hybrid system could be considered.

3.4 Fabric Energy Efficiency

This perhaps the weakest section of the report. There are few FEE improvements detailed in the report. There are numerous solutions that could be applied internally that would not affect listed status.

- Internally Applied Wall Insulation
- Passive House Air Permeability Standards
- Loft Insulation - This Suggestion is Now Incorporated.

In addition single pane glazed units could be replaced with thin profile Argon Filled DG Units such as CN Heritage Slim Double Glazed Units. In more recent reporting secondary glazing has been suggested as an alternative.

There is little detail with regards to window opening and sealing of windows post development. If these are not specifically designed then any HVAC system could draw inside air in to the room through poorly sealed closures, which would reduce efficiency of heat recovery unit and also degrade indoor air quality.

4.0 BREEAM Pre-Assessment

Some improvements have been made in the BREEAM Pre-Assessment overall rating has improved from "Good" to "Very Good". The report submitted contains less detail, than the Ridge report previously assessed, and this calls in to question delivery methods for "new" points declared as achievable.

4.1 HEA 01 VISUAL COMFORT

To have made no attempt to quantify day lighting levels in classrooms, show a lack of empathy for the end user. If day lighting standards are not achievable, then this can only have a negative impact on the children and staff using the class rooms.

All teaching rooms, staff rooms and treatment rooms should have an ADF of 2% or more. Without this they fail basic lighting standards as set out in BRE 209.

This 2% criteria could be easily met via the use of sun tunnels and reflective paints, meeting this criteria would reduce energy consumption, carbon emissions, and provide a pleasant learning environment for staff, children and enterprise suite users.

4.2 HEA 02 INDOOR AIR QUALITY

An Indoor Air Quality Plan and monitoring scheme will be essential to safe guard staff and pupils and staff in line with MDHS96, and to verify efficacy of the pollution removal system.

A "new" point has been awarded for indoor air quality. On reviewing plans submitted by Ridge 05/09/2019 the strategy includes for use of air from rear courtyard area. Extract ducting is marked as green, supply as yellow. In some case intakes and exhaust are just 9 meters apart when HEA 02 criteria require a spacing of 20 meters.

A number of the input grills are situated on Ground and 1st floors. The flu from the large gas condensing boilers (referred to in specifications) will be situated at roof top level. Will this be suitable distance from ventilation intakes. There is clear possibility here that the proposed ventilation system will draw in exhaust gasses from boilers. Has down wash and turbulent air been considered? It is not possible to assess requirements without boiler specifications, which are not provided.

4.3 ENE 01 -OPTION 1 A

It is entirely possible to provide fabric improvements. Please see section 3.4 for details.

4.4 ENE 04 LOW CARBON DESIGN

Despite being a policy requirement and a BREEAM requirement this has been overlooked at design stage, with no justification given.

> *"we have now gone past the design stage to incorporate this"*

It would appear in order to provide a policy compliant building that the design stage needs to be revisited.

A "new" point has been awarded here. But what is it for, criteria for meeting ENE 04 cannot be verified as met without more detail.

4.5 INN 01 APPROVED INNOVATIONS

Where better to include innovative features than a school, where the pupils could benefit via applied learning.

4.6 POL 03 FLOOD RISK AND REDUCING SURFACE WATER RUN-OFF

There is no betterment provided. Low cost options such as permeable paving could be offered here.

4.5 TRA

The credibility of this section is undermined by the fact that the school is situated outside of its catchment area. This would indicate at best that walking and cycling will be less favourable than other school sites, and picking from a broad selection of Transport Assessments we have prepared for schools across the UK, we have never seen better than 5% cycling and 20% walking.

In addition if you would like to encourage cycling then you will need facilities for changing and preferably showering. If staff are expected to cycle to work along congested roads, breathing unsafe air, then common decency might include a shower and somewhere comfortable to change on arrival.

The alternative might be a peeling off wet clothes in a stationary cupboard or whilst standing in the staff toilet.

5.0 Mechanical and Electrical Services Specification

Page 80 and 81 cover main ventilation systems. There is no mention of any mitigative NO^2 removal system. The document is large at 118 pages a key word search for nitrogen, NO2 and pollution returned no results.

The conclusion; that despite being recommended in the Air Quality Assessment the mitigative systems have not been specified, in the MES Report.

8.0 Conclusions

Although measures have improved very slightly in these revised reports, there remains a heavy reliance on the building's listed status to avoid numerous fabric energy efficacy measures. A myriad of fabric energy efficiency features that could be used to lower operational carbon emissions and score higher in the BREEAM Pre-Assessment are absent, and remain unconsidered. Resulting is 23 tons of unnecessary carbon emissions annually

Solar Panels could well be accepted by Historic England, but there is no record of them being consulted on this matter. In light of the Climate Emergency and provided the building is not damaged they may well allow a PV array. Solar panels could be incorporated on the rear canopy as an alternative.

Whilst the pre-assessment mentions the *"building has been designed to minimise the concentration and recirculation of pollutants"* this is not represented in the Mechanical and Electrical Services Specification. There is also significant disparity between documents, Air Source Heat Pumps are mentioned in Energy Statement, but the Specification has not been updated to show this. The ventilation system shows inadequate external spacing's for input and extract points, and the location and sizing of any boiler flu is a key concern that is not adequately described.

We would expect a better justification for not including ground source heating. This could provide financial and carbon savings over the life of the school.

The BREEM Assessment indicates good scores for Hand Over and Soft Landings. This management documentation needs to be included as part of the application. All equipment should be thoroughly specified with a specific maintenance plan where designated responsible parties should be identified and sign for responsibility prior to approval of planning.

This ascribing of responsibility is required for documents as temporal as CEMPs and as such it should surely be vital for a system that protects children from dangerously polluted air.

A condition of planning should be a monitoring regime for indoor air quality with the provision of NOx filtration of incoming air conditioned, if findings are negative. These measures should be included in any management document to be signed off.

9.0 Certification

This report is produced for the sole use of the Client, and no responsibility of any kind, whether for negligence or otherwise, can be accepted for any Third Party who may rely upon it.

The conclusions and recommendations given in this report are based on our understanding of the future plans for the site. If, however, the site is developed for a more or less sensitive use, then a different interpretation might be appropriate. Information within this report should not be utilised in making of assumptions and judgements with regard to the financial value of land or property.

For the avoidance of doubt this report does not form a guarantee express or implied against negative impacts of pollutants or other emissions on persons, property or amenity value within the vicinity of the proposed site.

It necessarily relies on the co-operation of other organizations and the free availability of information and total access.

The scope of this Assessment was discussed and agreed with the Client. No responsibility is accepted for conditions not encountered, which are outside of the agreed scope of work.

This report may suggest an opinion regarding possible concentrations on site and in the vicinity of the site. However, this is for guidance only and no liability can be accepted for its accuracy.