Carmichael Browns
renewable energy

Knole Cottage, Common Lane
The Ridge, Little Baddow
Essex, CM3 4RY

T- 01245 227100
F: 01245 222400
carmichaelbrowns.co.uk

Eve Campbell
HGH Consulting
45 Welbeck Street
London
W1G 8DZ

Dear Eve,

19th April 2018

Feasibility study on the design and installation of a Photo Voltaic system at
Athlone House, Hampstead Lane, Highgate, London.

Carmichael Browns Are an independent renewable energy company who have carried out a further study relating to the feasibility of installing a Photo Voltaic (PV) system of around 6 kWp to Athlone House Hampstead Lane, London.

A site visit was carried out on the 5th April 2018 and detailed drawings were reviewed of the proposed elevations relating to the swimming pool building and a flat roof garage area for consideration and assessment.

A Feasibility Study has been carried out previously in July 2017 in relation to the Planning Application (ref.2016/3587/P). At the time of the original application the accompanying Energy Strategy proposed the inclusion of PVs on the roof. Consequently, planning condition number 28 attached to the Decision Notice states:

"28. The development shall be constructed in accordance with the energy statement hereby approved (Engineering Services and Energy report by SWP dated July 2016). It shall achieve a 64.6% reduction in carbon dioxide emissions against the existing building baseline, including 9% through renewable technologies. Prior to occupation of the house, evidence demonstrating that the approved measures have been implemented shall be submitted and approved in writing by the Council; the measures shall be thereafter permanently retained and maintained."

Following the issue of the Decision Notice a revised Energy Strategy has been developed and a Section 73 application to vary the wording of the planning condition was submitted. The revised wording relating to condition 29 states:

"28. Prior to the commencement of development, except for demolition and site clearance, an updated Energy Statement will be submitted to and approved by the Council. As a minimum, the development shall achieve a 64.6% reduction in carbon dioxide emissions against the existing building baseline. The revised Energy Statement will include a PV feasibility study to demonstrate reasonable endeavours to target 9% through renewable technologies. Development shall be constructed in accordance with updated Energy Statement."

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This further report seeks to satisfy the requirements of the condition relating to the new proposed areas for consideration dated April 2018.

On 5th April 2018 a visual inspection was carried out of the following areas with a view to noting the feasibility and effectiveness of a solar PV array.

The proposed swimming pool roof has been requested to be investigated as a possible location for the provision of Solar PV modules.
The roof of the swimming pool is located on the western extension to the main house and it is a single storey extension.
The shading caused by the main house itself would reduce the effectiveness of the system until at best, mid-afternoon on a summers evening. Attached is a shading analysis of this area and evidence of the impact this will have on the PV system's generation. It is considered that this is not a viable solution to the arrays location. By installing 6.2kWp solar modules, the anticipated output would be in the region of only 1,600kWh/annum with 0.517kg of CO2 savings per kWh (20 tonnes over 20 years)

Following this, we were also asked to consider the new build flat roof garage area for an array of 6kWp. On inspection of the area, we note trees on plans which previously would have hindered the array by causing shading are no longer present, apart from one - which we are advised should no longer be present at the point of installation.
An array can be mounted on this flat roof area with relative ease, at a 10 degree pitch facing 0 degrees south on non-penetrative ballasted mounts if required.

We would suggest an array of 18 panels rated at 345w to meet the required 6kWp output, which is anticipated to meet the 9% renewables target on site.

I have attached also our report and proposal for this installation with the predicted system output, CO2 savings using the regional zone data as per the Microgeneration Certification Scheme (MCS) guidance.
This demonstrates that by installing 6.2kWp of solar modules the array would generate around 5,100kWh/annum and save 60 tonnes CO2 - three times as much CO2 versus using the swimming pool roof area.

S Carmichael-Brown
Director

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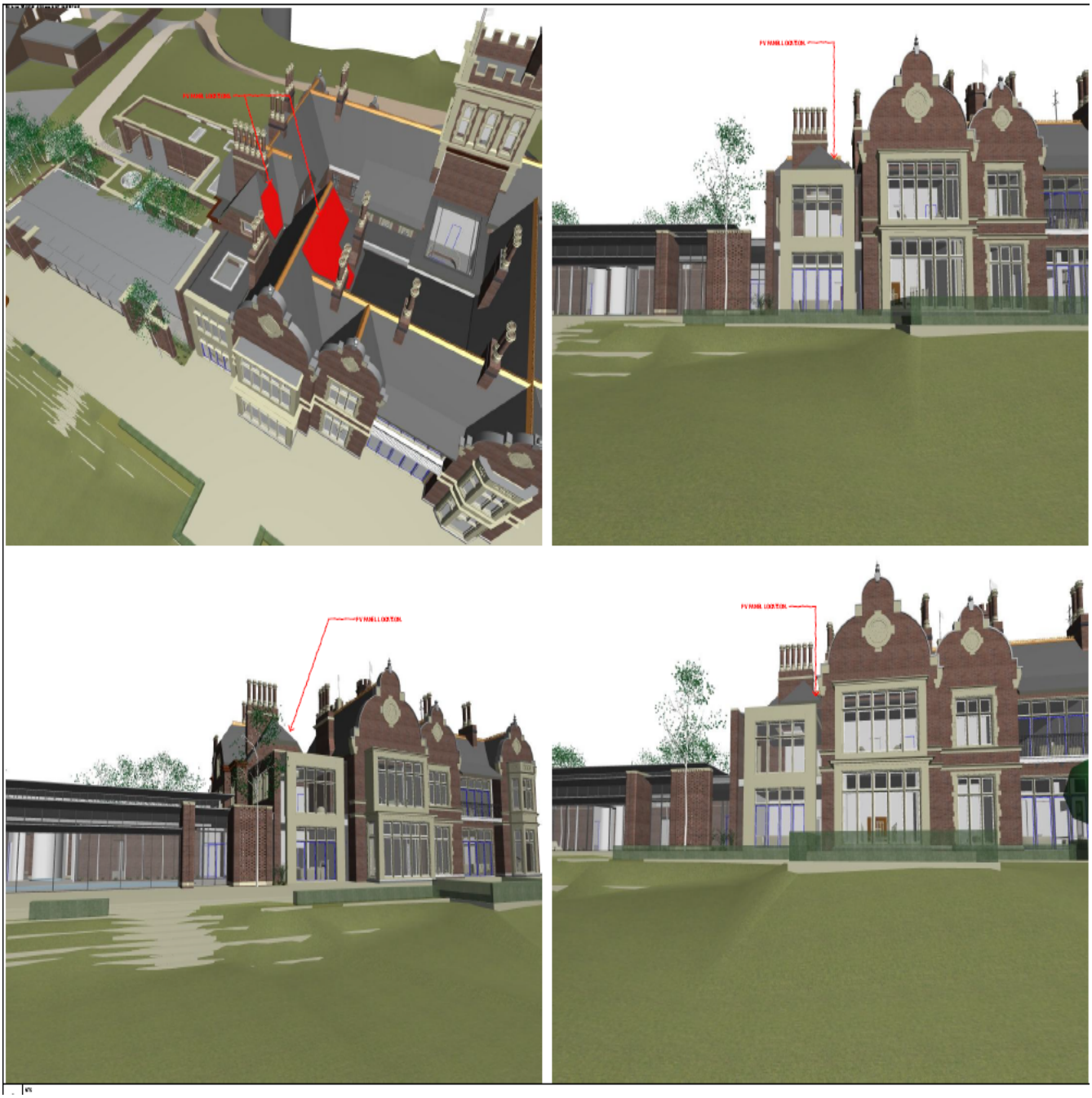
Drawing one;



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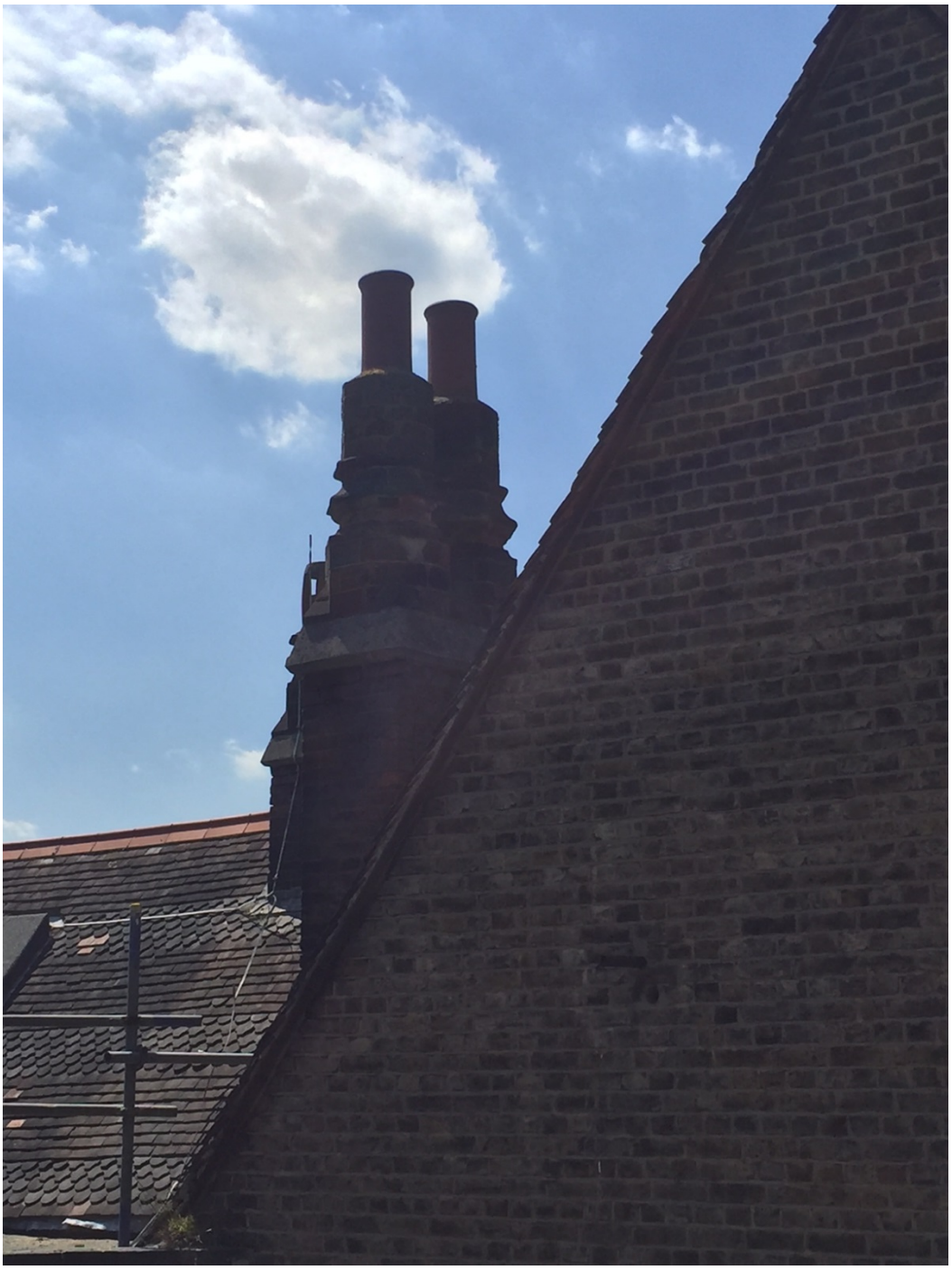
PHOTOS 1OF 6 NOMINATED ROOF AREA



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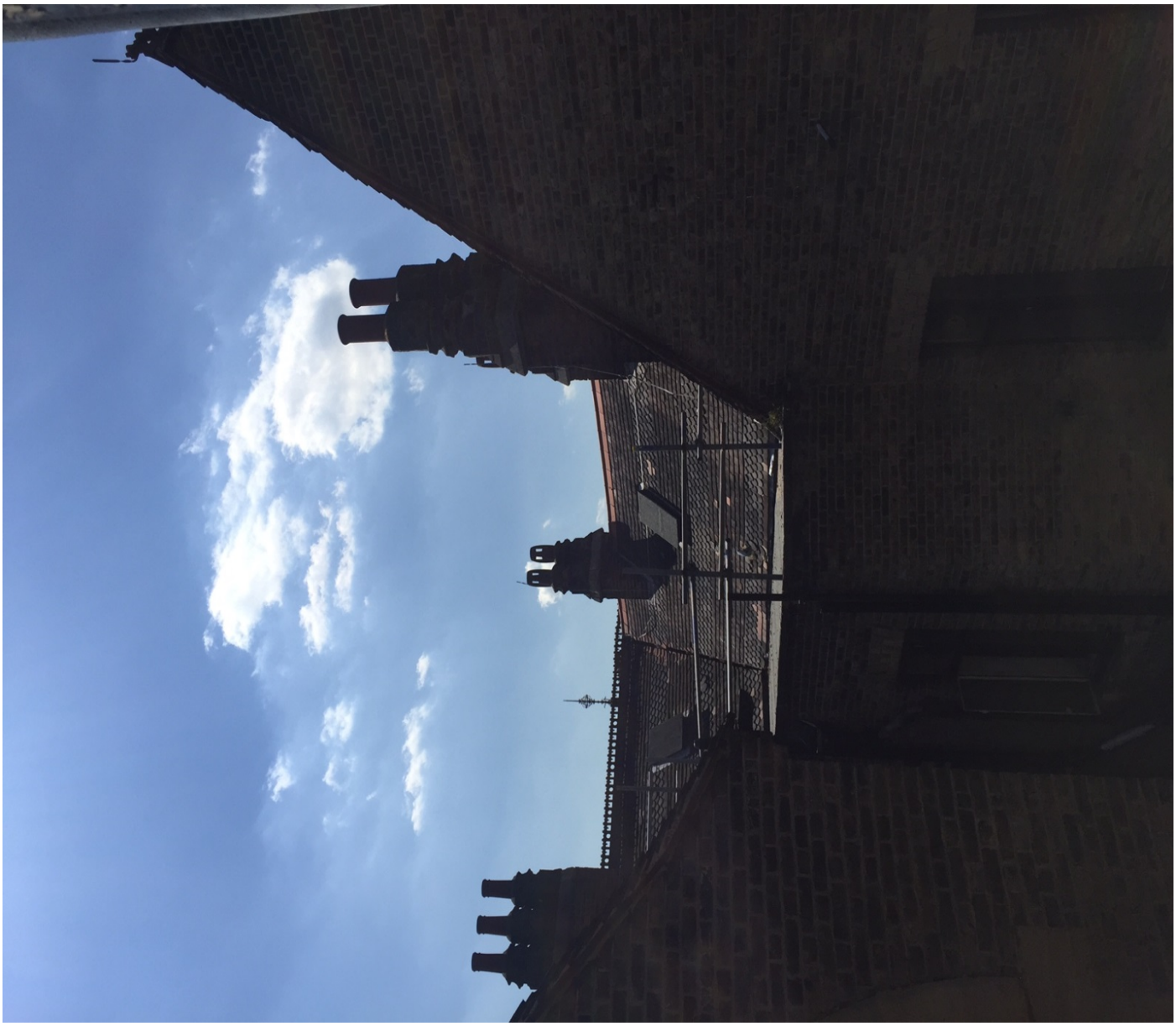
PHOTOS 2 OF 6 NOMINATED ROOF AREA



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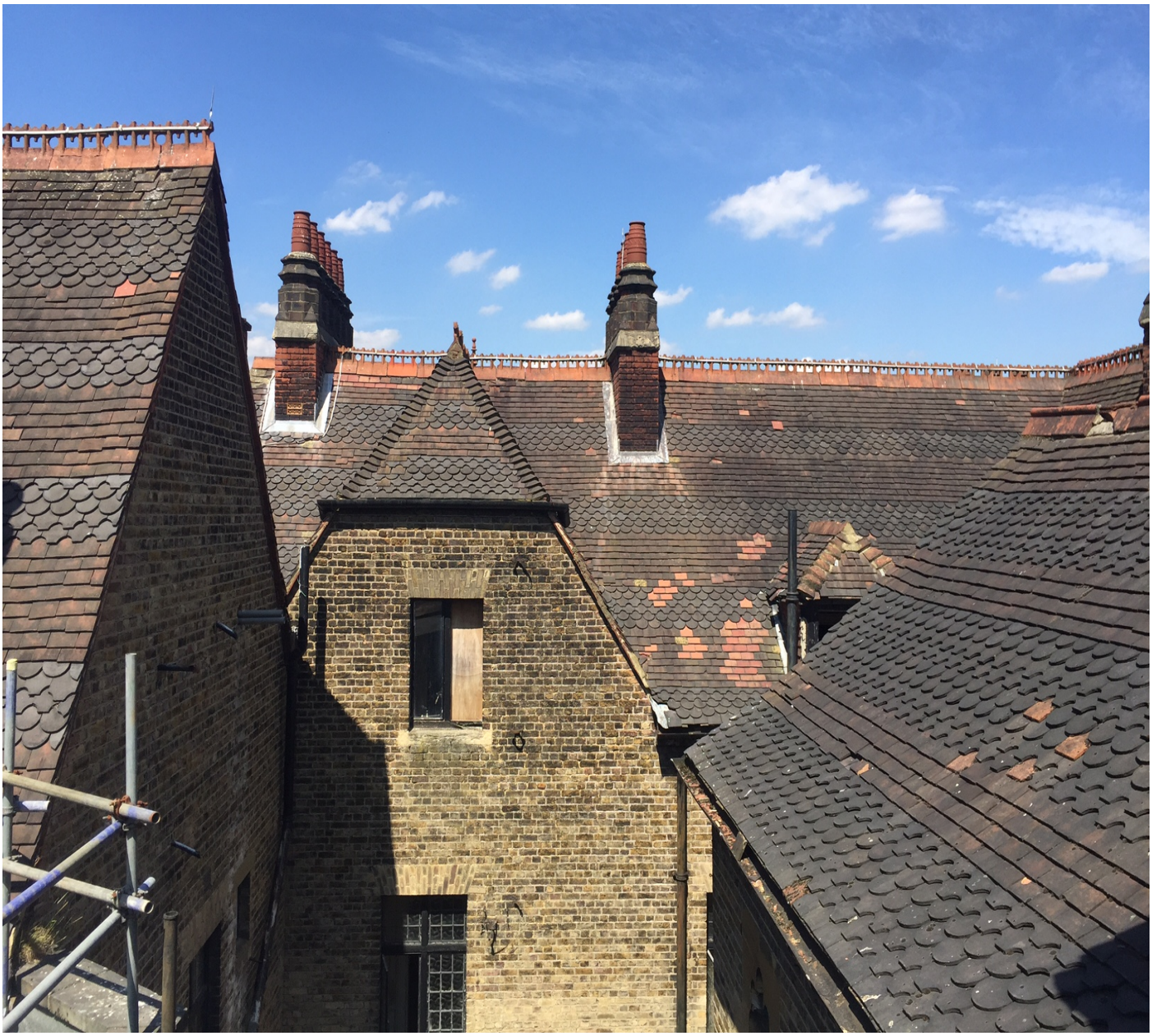
PHOTOS 3 OF 6 NOMINATED ROOF AREA



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PHOTOS 4 OF 6 NOMINATED ROOF AREA