Design and Access Statement

For

Brooke Weston Trust:

Kettering Science Academy

New Block
1.0 Introduction

1.1 Background

The proposed new block for Kettering Science Academy (KSA) is a result of a funding initiative run by Northamptonshire County Council (NCC) to facilitate the need to increase the school’s Published Admissions Number by 2 forms of entry (60 places) bringing the school from a 7FE to 9FE. This requirement has been requested by the local authority in response to the rising birth rate, new housing developments and increase in migration to the county.

The sponsor for this Academy are The Brooke Weston Trust (BWT), who operate three other successful secondary Academies in the Northamptonshire area: the Brooke Weston Academy and the Corby Business Academy and the Corby Technical School. They began managing KSA in September 2009.

The existing secondary phase of the Academy school was built in 2012 to replace the former ISE Community College previously on the same site and was designed to accommodate 1100 students from Years 7 to 11, with a further 250 sixth form students. The existing primary school building (the Henry Gotch Primary and Junior schools) was retained and is now known as The Compass Primary Academy.

This statement should be read in conjunction with the planning statement prepared by CT Planning and the supporting documentation that accompanies the application.

1.2 The Consultant Team

Brooke Weston Trust have appointed a project team via the Scape Built Environment Consultancy Services (BECS) framework.

The consultant team comprises of the following:

- Architecture – Pick Everard
- Project Manager – Pick Everard
- Planning Consultant – CT Planning
- Civils Consultant – Pick Everard
- Structural Consultant – Pick Everard
- Building Services Consultant – CPWP Consultants
- Transport Assessor – HSP Consulting
1.3 Education Statement

Refer to the following document:

Proposal to increase secondary places within Kettering town by an additional 90 places per year group, 25/02/2019

This Consultation letter outlines the need for the additional 2 Form Entry expansion of the Kettering Science Academy.

1.4 Projected Increased Occupancy

The following table projects the increased pupil numbers:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>240</td>
<td>270</td>
<td>270</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>8</td>
<td>210</td>
<td>240</td>
<td>270</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>9</td>
<td>210</td>
<td>210</td>
<td>240</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>10</td>
<td>210</td>
<td>210</td>
<td>240</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>11</td>
<td>210</td>
<td>210</td>
<td>240</td>
<td>270</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>1050</td>
<td>1140</td>
<td>1200</td>
<td>1260</td>
<td>1320</td>
<td>1350</td>
</tr>
<tr>
<td>12</td>
<td>45</td>
<td>50</td>
<td>70</td>
<td>80</td>
<td>85</td>
<td>90</td>
</tr>
<tr>
<td>13</td>
<td>38</td>
<td>45</td>
<td>50</td>
<td>70</td>
<td>80</td>
<td>85</td>
</tr>
<tr>
<td>Total</td>
<td>1163</td>
<td>1235</td>
<td>1320</td>
<td>1410</td>
<td>1485</td>
<td>1525</td>
</tr>
</tbody>
</table>
2.0 Site Analysis

2.1 Site Context

Kettering Science Academy occupies a large site to the south-east of the town centre, with residential areas to the north, west and east and open ground to the east. The underlying characteristic of the site is the slope down from Windmill Avenue in the west to the Ise Brook in the east. This has been adjusted to form four plateau to suit the existing buildings and playing fields. The site offers a characteristic setting for the new building to be within the existing site which is very green, open and overlooking the Ise valley and adjacent playing fields.

The main views into the site are available from the junction of Deeble Road and Windmill Avenue. These views are filtered by existing vegetation. Secondary views can be obtained from the east where Deeble Road crosses the Ise Brook at a lower level. Generally a combination of existing topography and vegetation screens views from other points outside and within the site. Views along the adjacent Deeble Road are an important consideration.

The existing primary school faces Windmill Avenue at the western side of the site. This consists of two parallel buildings with the infants and juniors linked to form an open east-facing courtyard. The next plateau down the slope is occupied by the shared car park for existing primary and secondary school to the north and the tiered down to Multi-Use Game Areas. The third plateau contains existing main school with the main entrance accessed via a bridge leading directly from the car park in to the first floor level of the building. This leaves the remaining lower plateau on the east side for playing fields. The lowest plateau sits within Flood Zone 1 therefore not suitable for building on. These factors clearly start to define the proposed location of the new block which is identified in the site appraisal section of the proposed design.

The site is bisected by Deeble Road which separates the northern playing fields from the school buildings on the south. The northern site has two main levels, separated by an old hedge line. The area of the school site was explored in the site appraisal, however a compromise in pupil and staff safety during school operations consider this to be a risk with frequent crossing of Deeble Road.

Currently there is vehicle access from Deeble Road onto the main secondary school site between the primary and secondary school buildings, and leads directly in to the car park for visitors and staff to the primary school. In addition, there is a services access from the south-east via Cheyne Walk, with a site road running along its southern boundary, beside the gardens of houses facing Greenbank Avenue. This was not considered a main entrance when the existing building was constructed and therefore and future traffic use should be minimised.
Design and Access Statement

2.2 Survey Information

The following survey information has been acquired for the proposed site:

Greenhatch Group
Site Topographical Survey 32440_T Rev 0
Underground Services Survey 32440_UG Rev 0

HSP Consulting
Phase 2 Geo-Environmental Assessment Report, Issue 1, 23/01/2019

FPCR Environment & Design Limited
Arboricultural Assessment, Issue 1, 25/01/2019

Peak Ecology Limited Ecological Consultants
Preliminary Ecological Appraisal, Issue 1, 23/01/2019

Network Archaeology
Archaeological Desk Based Assessment, Issue 1, 31/01/2019

Couch Perry Wilkes
Energy Strategy Report & Statement, Issue 2, 08/02/2019

Couch Perry Wilkes
External Lighting Statement, Issue 1, 29/01/2019

Noise Impact Assessment – still awaiting report
2.3 Site Topography

Refer to Site Topography drawings 32440_T Rev 0 & 32440_UG Rev 0 by Greenhatch Group.
2.4 Planning Assessment

Refer to the following document:

CT Planning Limited
Planning Statement, Issue 1, 11/02/2019

The Planning Assessment has concluded that the following policies from the North Northamptonshire Joint Core Strategy (JCS), may be relevant to this application.

Policy 1 – Presumption in Favour of Sustainable Development
Policy 7 – Community Services and Facilities
Policy 8 – North Northamptonshire Place Shaping Principles
Policy 9 – Sustainable Buildings
Policy 10 – Provision of Infrastructure
Policy 20 – Nene and Ise Valley

2.5 Pre-Application Advice

A Pre-Application Advice meeting was held on the 17th January 2019 with Peter Moor, the Principal Development Control Officer at the Northamptonshire County Council. The Feasibility Report and updated architectural drawings were tabled for discussion.

Feedback on the scheme included a need to avoid a plain façade to the North and East elevations of the building that look out towards Deeble Road and the School playing fields.

Impact on local residents was not considered a high risk due to the development taking place in the northern part of the school site and the majority of housing being built up to the south.

It was also stated that the development should implement where practicable the recommendations made from the Site Survey Assessments that were ongoing.

2.6 Transport Assessment

Refer to the following document:

HSP Consulting
Transport Statement, Issue 1, 11/02/2019

It has been concluded that the proposed development is an appropriate scheme in line with current policies (both national and local) and should not have a material negative impact on the surrounding highway and transportation network, and therefore should be considered acceptable on highways grounds.
2.7 Flood Risk Assessment

The following information has been acquired using the Flood Map for Planning service on the Gov.uk website. It is understood that a Flood Risk Assessment is not required for the proposed site.

Zone 1 Definition: Low Probability Land
Having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as ‘clear’ on the Flood Map – all land outside Zones 2 and 3).

You don't need to do a Flood Risk Assessment if your development is in flood zone 1 and:

1. Smaller than one hectare.
2. Is not affected by sources of flooding other than rivers and the sea, for example surface water drains.

2.8 Archaeology

Refer to the following document:

Network Archaeology
Archaeological Desk Based Assessment, Issue 1, 31/01/2019

The desk based assessment established that the proposed development area does not contain, or lie immediately adjacent to, any heritage assets with formal designation as a Scheduled Monument, Listed Buildings, Conservation Area, Registered Historic Park and Garden or Registered Historic Battlefield. Therefore, development within the site will not adversely affect any such ‘designated heritage asset’ directly. The report advises of any further consultation that may be required as the project progresses.
2.9 **Ecological Assessment**

Refer to the following documents:

FPCR Environment & Design Limited  
*Arboricultural Assessment, Issue 1, 25/01/2019*

Peak Ecology Limited Ecological Consultants  
*Preliminary Ecological Appraisal, Issue 1, 23/01/2019*

Initial surveys suggest that the footprint of the proposed development will have little to no detrimental impact on the existing flora, fauna and natural habitats found on site. In addition, any changes to the external boundaries (new or relocated fences etc.) will be installed in accordance with the surveyors recommendations, which includes maintaining low level access routes for migrating wildlife.

The proposal keeps tree losses to a minimum, and in line with the surveyors recommendations, any tree loss will be mitigated or compensated for.

During construction works, where required all retained trees and habitat areas will be protected to avoid unnecessary long term damage.
3.0 Design Proposals – Site

3.1 Site Appraisal

During the feasibility study an appraisal was carried out on the land within the ownership of the school.

Many factors were taken into consideration whilst assessing land availability for the new teaching block. These included:

- Physical constraints and opportunities regarding topography, accessibility, proximity to nearby residences and environmental impact to nearby flood zones etc.
- Economic and community considerations to retain existing uses to areas such as MUGA’s and sports fields.
- Considerations to efficiencies in construction, cost, time and health and safety of all who use the school site.
3.2 Site Development Options

**Opportunities**
- Level site.
- Minimal disruption to school operations during construction.
- Site and compound can be kept within a single zone.
- Potential for positive frontage along Deeble Rd.
- Unrestricted views across sports fields.

**Constraints**
- Disconnected from main school site.
- No existing infrastructure.
- Security / health & safety risk associated with pupil transition.
- Potential planning risks associated with height/ mass/ crossing/ adjacent residence.

---

**Opportunities**
- Majority of site is level.
- Minimal disruption to operations during construction.
- Good adjacency
- Potential for positive frontage along Deeble Rd.
- Unrestricted views across sports fields.

**Constraints**
- Potential planning constraints relating to building line along Deeble Rd.
- Re-route of existing footpath and steps
- Overshadowing from main building
- The above issues may require a 3 storey solution.
- No clear physical connection to main building.

---

**Opportunities**
- Good adjacency.
- Prominent position.
- Potential for positive frontage facing the car park.
- Potential for sheltered connection to main building entrance.

**Constraints**
- Costs incurred by 1:3 ground fall i.e. substructure/retention.
- Tight footprint requiring 3 storey solution.
- Overshadowing from main building.
- Restricted construction space with detached compound.
- Disruption to school operations towards school frontage.

---

**Opportunities**
- Level site with expectation of good ground conditions.
- Minimal disruption to main building operations during construction with access via service road.
- Site and compound can be local to development site.
- Potential for positive frontage along Deeble Rd.
- Unrestricted views across sports fields.

**Constraints**
- Location of existing ground source heat pump serving main building.
- No physical connection to main building.

---

**Opportunities**
- Level site.
- Minimal disruption to main building operations during construction with access via service road.
- Site and compound can be local to development site.
- Potential for positive frontage along Deeble Rd.
- Unrestricted views across sports fields.

**Constraints**
- Loss of all-weather sports pitch.
- Loss of revenue as a community facility.
- Risk associated with sports pitch relocation i.e. required space/ infrastructure/ planning risk for floodlights/ Sports England approval.
- Half of the sports field is within Flood Zone 2.
3.3 Preferred Site Development Option (Option 2)

**OPTION 2A**

Option A explores an arrangement that reflects the teaching zones of the existing building with north and south teaching wings (for daylight and ventilation) running either side of the internal circulation with a full height atrium. This allows flexibility to all communal spaces and study zones within the central run of the building.

* These arrangements were carried out prior to receiving the Schedule of Area requirements.

**OPTION 2B**

Option B explores an arrangement that makes full use of the views across the sports fields allowing good use of daylight and ventilation opportunities into the general teaching classrooms. The square footprint creates a well proportioned, flexible central space for communal activity zones, with a full height atrium to introduce light down to ground floor.
3.4 Developed Site Proposal (based on Option 2B)
3.5  Fire Assembly Point & Fire Tender Site Access
## Design Proposals – Building

### 4.1 Schedule of Areas

<table>
<thead>
<tr>
<th>Type of Space</th>
<th>Secondary Area m²²</th>
<th>No Rooms</th>
<th>Total Area m²²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classroom bases</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS3 &amp; KS4</td>
<td>55</td>
<td>13</td>
<td>733</td>
</tr>
<tr>
<td>ICT classroom</td>
<td>65</td>
<td>2</td>
<td>130</td>
</tr>
<tr>
<td><strong>Learning Resource Spaces</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Group Rm</td>
<td>14</td>
<td>9</td>
<td>42</td>
</tr>
<tr>
<td>Library</td>
<td>30</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>ICT (Class/resource)</td>
<td>30</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Common Room</td>
<td>65</td>
<td>1</td>
<td>65</td>
</tr>
<tr>
<td>Large quiet study area</td>
<td>70</td>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td><strong>Halls &amp; Dining</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halls</td>
<td>140</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dining</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td><strong>Staff Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reception/Admin</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Headteacher/Principal</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Deputy</td>
<td>10</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Premises Mgr</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Conference/Training Rm</td>
<td>20</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Careers Office</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Staff Room</td>
<td>40</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Staff work preparation room</td>
<td>20</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Interview Room</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coats / Bags</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Locker recesses</td>
<td>5</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Classroom resources</td>
<td>10</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Library Store</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>ICT store</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Furniture</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Conference/Training room store</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>General Equipment store</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Admin Store</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Central Teaching resources</td>
<td>18</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Premises Store</td>
<td>10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Cleaners' store</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>General Stores</td>
<td>10</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total Area NET area</strong></td>
<td></td>
<td></td>
<td>1456.333</td>
</tr>
</tbody>
</table>

### Other

| Plant                              | 80                 | 1        | 80             |
| File Server/hub room               | 4                  | 2        | 8              |
| **Net internal area**              |                    |          | 1712.3         |
| Circulation % GA                   | 30%                | 513.7    |                |
| Partitions % GA                    | 4%                 | 68.6933  |                |
| **Total Non-Net Area**             |                    |          | 582.193        |
| **Total Gross Area**               |                    |          | 2294.527       |
| **Overall GMP Allowance**          |                    |          | 2040           |
| **Balance**                        |                    |          | 645.4733       |
4.2 Building Concept

Comments:

- The indicative proposal is 3 storey high based on the SoA provided by the client.
- The indicative proposal has been developed based on design intent information of the site and existing school, provided by the client.
- Existing ground conditions unknown.
- The indicative proposal is subject to other professional consultants design review i.e. Structures, Building Services, Civils, Landscapes etc.
- It is recommended that an early review by the Local Planning Authority is carried out due to the proximity of Deeble Road.
4.3 Developed Building Proposal

4.3.1 Ground Floor Plan
4.3.2 First Floor Plan
4.3.3 Second Floor Plan
4.3.4  Roof Plan
4.4 Elevations & Appearance

4.4.1 Precedents / Aspirations
4.4.2 Elevations

1 Brick
2+ GL Casting Panel System
3 Aluminium PVC Window Units
4 PVC Aluminium Window Units
5 Glazed Curtain Walling System
6 Glazed PVC Aluminium Exterior Doors
7 Solid PVC Aluminium Exterior Doors
8 External Steel Framed Canopy
9 Aluminium Flashing
10 Aluminium Hoppers with Downspout

To match existing
Grey
To match existing
To match existing
To be confirmed
To match existing
To match existing
Design and Access Statement

Kettering Science Academy
New Block

4.4.3 Sections

Proposed Section A

Proposed Section B

Proposed Section C

Proposed Section D

Brooke Weston Trust

PICK EVERARD
4.4.4 Scale & Massing

Following the same monolithic brick style of the exiting building, the proposed 3 storey new build block also adopts a similar scale and massing. Clean in its geometry and featuring the same punctured openings with deep set reveals, only slight alterations can be seen to the windows themselves, as there functionality differs slightly to that of the existing windows, due to the adoption of a different building services strategy.

Internally the accommodation is neatly arranged around a central full height atrium space above the Dining Area with the principle teaching spaces positioned along the North and East Elevations looking out towards Deeble Road and the school playing field.
Material selection is generally in keeping with the existing school where the Academy Trust had previously sought to achieve a high standard of finish both externally and internally.

The new build block will predominantly be clad in buff brick to match existing, with the addition of a vertical strip laid metal cladding material to articulate the projecting staircases in plan. All frames to windows and doors will also match the existing along with any manifestation colour’s used for blank glazing panels. Some window units will feature louvered panels to facilitate the ventilation system.

Expanses of curtain walling have been placed in areas that require greater levels of diffuse daylight. This includes the ground floor Study and Library facility along with the larger, 3 storey high section of curtain walling that flanks the atrium above the Dining Area. The use of curtain walling in this way echoes what has already been achieved with the exiting building and further supports the Academic Trusts desire for openness and visibility throughout their school premises.

The proposed external materials will provide the same levels of robustness and durability of the existing school and again further maintain the attractive visual appearance of the school for many years to come.

In line with the interior design strategy of the exiting school, fair faced unpainted blockwork will be used with carpets and carefully considered soft furnishings to mitigate any institutional feeling. Accent colour’s shall be picked up in key teaching spaces, door faces and wayfinding signage. Internal screens throughout the interior will create a fully visually connected series of spaces.
Illustrative view from Deeble Road
4.4.6 Internal Environment

Illustrative view of internal atrium
5.0 Structural Engineering

5.1 Frame Philosophy

A steel frame is proposed for the structure of the building. The frame of the structure will be formed with columns and beams on grids generally at spacings between 6 and 8m. The repetitive nature makes this an economical way to form the spaces required whilst also allowing for future alteration of the room layout if required.

The suspended upper floors will be 200mm thick pre-cast concrete planks with a 75mm non-structural screed. These span between primary steel beams which transfer the loads to columns and then to foundations. In order to satisfy disproportionate collapse class 2B for three story educational building, the planks are tied to the primary frame with embedded reinforcement cast around shear studs.

The roof slab will be 200mm pre-cast concrete planks with a 75mm insitu concrete structural topping to receive a hot melt roof covering. Falls will be achieved in the roof slab with falls in the steelwork.

External walls consist of a mixture of brick and block restrained by proprietary windposts and curtain walling. The internal walls consist of blockwork.

5.2 Ground Floor Slab

The ground floor construction will be a 250mm thick in situ reinforced concrete suspended slab. A suspended slab is proposed due to the presence of made ground covering the site, which has the potential to settle to varying degrees.

5.3 Foundations

It is anticipated that a piled foundation solution will be required due to the extent of the made ground in order to provide adequate bearing capacity and factor of safety against settlement. All columns will transfer load directly through pile caps whilst perimeter ground beam will pick up the external envelope. Ground floor internal masonry partitions will be supported on the ground floor slab, through which load will be transferred to the pile caps and ground beams.

In order to reduce the amount of excavated material during construction of the foundations, the pile caps and ground beams will be cast monolithically with one another.

5.4 Stability

The steel frame will be designed with simply supported beams and columns, wind load and notional force acting on the building will be transferred through floor and roof diaphragms to the braced bays and into the foundations.

The bracing is typically diagonal steel flats to be concealed within cavities and coordinated to miss openings proposed by the Architect. The foundations will be sized to resist the increased bearing pressure and for uplift forces generated by the bracing.
5.5 Temporary Stability

The steel frame will need to be stable during construction phase. During its erection it is assumed none of the façade will be in place and therefore the frame will only be required to resist nominal lateral forces.

We propose that the sequence of erection should be following the curing of the foundations. The braced bays should be constructed first and then the columns and floor beams can be installed. In the temporary case, the members may require additional temporary bracing linked to the braced bays or guys to maintain stability. The contractor must ensure that the temporary works design addresses the erection sequence in detail.

5.6 Loading

Dead loads will be calculated from the known weights of materials supplied or from BS648: 1964 – Schedule of Building Materials. The design allows for floor loadings in accordance with Eurocode 1 part 1-1. The design will allow for the following imposed floor loading in the areas specified.

<table>
<thead>
<tr>
<th>Category</th>
<th>Load (kN/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Classrooms</td>
<td>3.0</td>
</tr>
<tr>
<td>Plant Rooms</td>
<td>7.5</td>
</tr>
<tr>
<td>Corridors / Staircases</td>
<td>4.5</td>
</tr>
<tr>
<td>Storage Rooms</td>
<td>7.5</td>
</tr>
<tr>
<td>Partitions</td>
<td>1.5</td>
</tr>
<tr>
<td>Ceiling</td>
<td>0.15</td>
</tr>
<tr>
<td>Services</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Wind loading will comply with Eurocode 1 part 1-4 and snow loading to Eurocode 1 part 1-3.

5.7 Deflection Control

Typically the dead and imposed load deflections are in accordance with the requirement Eurocode 1 part 1-1.

5.8 Demolition

The Structural Design has been developed with an understanding of how the building will be operated, maintained and ultimately demolished.

Final issue drawings and structural statement will be included in the health and safety file for review by an experienced Structural Engineer at the end of the operational life of the building when it is due to be demolished. These documents will identify all structural types, stability elements and loadings.

It is not proposed that the structure will not contain any pre-stressed concrete elements that would be CDM concern during demolition.

5.9 Sustainability

The building will have a design life of 50 years. Wind and snow loading analysis is undertaken to the latest Eurocodes, as a result the building will remain serviceable under elevated loading as a result of climate change.

A regular structural grid is proposed in order to make adapting the building in the future possible, without alteration to the primary structural frame. Final issue drawings and loading will be included in the health and safety file so that extension of the building is possible.
6.0 Civil Engineering

6.1 Existing Site

The proposed site for the new teaching block lies within the boundary of the existing Kettering Science Academy grounds. The site is currently grassed, and mostly level, with a significant adjacent change in level leading to the lower playing field area.

6.2 Proposed Site

The development is to include a 3 story teaching block, with associated external paving to link to the existing site footpaths.

6.3 Existing Foul Water Drainage

The existing site is served by a part-adopted foul water drainage network, which drains in a generally easterly direction before leaving the site. It is understood that the site drainage discharges to the public foul water sewer network adjacent to the River Ise.

6.4 Proposed Foul Water Drainage

The foul water drainage to the building will discharge via several vertical risers to new chambers located on the existing adjacent foul water drainage. A diversion of the existing site foul water drain will be required to re-route around the proposed building location.

6.5 Existing & Proposed Surface Water Drainage

The existing site is served by a comprehensive surface water drainage network, incorporating several attenuation features, before discharging to an offsite 450mm dia surface water sewer. It is understood that this in turn discharges to the adjacent River Ise.

An existing below ground attenuation feature is located adjacent to the proposed development. This comprises twin oversized storage pipes with a flow control on the downstream end. As part of the works for this project, part of the oversized pipes will be re-provided at the opposite end of the existing storage facility, in order to provide sufficient space for the new building. Flows from the new building will also be discharged to this storage facility.

Hydraulic modelling of the new development has been undertaken in order to quantify the additional length of oversized pipe required to attenuate flows from the new building. Details are shown on the relevant drawing.

A Flood Risk Assessment was considered. Since the proposed development lies in flood zone 1, is less than one hectare and is not in a critical drainage area, a flood risk assessment is not required.
6.6 **Site Hard Landscaping**

The hard landscaping at this site is limited to a new path that will run between the new teaching block and the existing school buildings. Drainage is provided to convey surface water flows to the attenuation tank mentioned in 4.1 above, and sufficient volume is provided for this. Further details of the surfacing material will be developed as the design progresses.

6.7 **Foul Water Drainage**

The most sustainable solution is to connect the new system into the existing foul drainage system. The provision of a local treatment unit e.g. Klargestor offers no advantages at this location.

6.8 **Surface Water Drainage**

The proposed surface water solution is SUDs compliant. The proposal effectively reduces the impact on the environment. It potentially reduces pollution due to the use of the underground retention tanks.
7.0 Building Services

7.1 Low Energy & Sustainable Design

With the aim to deliver an environmentally responsible development, an exemplar construction approach will be adopted utilising low energy design principles. The aim is to minimise energy demand of the proposed new block at Kettering Science Academy through fabric first approach and proficient use of services. It is intended to increase the new building’s energy efficiency by influencing the materials of construction and by delivering passive engineering solutions.

The utilisation of passive measures to deliver energy efficient solutions invariably proves to be the most economical and socially acceptable inclusions on any scheme. As a consequence, the focus of the design at this early stage is to achieve compliance with the conservation of fuel and power requirements of Building Regulations Approved Document Part L by means of good passive design combined with a lean engineering approach. An Outline Energy Assessment for Planning is appended to this Design and Access Statement.

The following areas have been targeted to this proposed design philosophy:

1. Fabric First Approach-Improved Building Envelope ‘U’ Values & Air Permeability
2. Hybrid Ventilation with Heat Recovery
3. Natural Daylighting
4. Passive Cooling via Exposed Thermal Mass
5. Night Purge Ventilation
6. Smart Building Management System incorporating Zoning and Metering

Building Envelope

With regard to the building envelope, the construction standards to be adopted on the proposed new block building will generally exceed the requirements of the 2013 edition of Part L. The following ‘U’ Values will be adopted for the new Building Envelope:

<table>
<thead>
<tr>
<th>Building Element</th>
<th>Part L Limiting Factor (W/m².K)</th>
<th>Kettering Science Academy/School (W/m².K)</th>
<th>Betterment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed Wall</td>
<td>0.35</td>
<td>0.21</td>
<td>40</td>
</tr>
<tr>
<td>Roof</td>
<td>0.25</td>
<td>0.18</td>
<td>28</td>
</tr>
<tr>
<td>Exposed Floor</td>
<td>0.25</td>
<td>0.21</td>
<td>18</td>
</tr>
<tr>
<td>Windows inc. Frames</td>
<td>2.20</td>
<td>1.31</td>
<td>40</td>
</tr>
</tbody>
</table>

A building’s air permeability has a direct impact on the energy consumption, as such we will target a figure of 5.0 m³/hr/m² for the proposed development.
Passive Cooling Strategy
A common problem with the design of modern educational facilities is the potential to overheat. The building geometry and façade has been designed to minimise the potential cooling load to allow a passive cooling approach thus maintaining comfortable conditions without the need for energy intensive comfort cooling. The design solutions used to achieve and exceed compliance with BB101 are outlined below:

Thermal Mass - A heavyweight building is able to absorb (or release) heat into the building fabric which helps to reduce the variation in internal temperature as conditions change. On a summer/spring evening, the space will be filled with cool night air which removes the heat built up in the heavyweight building fabric thus ‘charging’ the thermal mass ahead of the next working day. The typical classroom contains exposed thermal mass in the form of blockwork walls to perimeter and internal corridor and exposed concrete (painted for aesthetics and increased reflectance for daylight).

High Performance Glazing - The glazing specification is critical to achieving a pleasant internal environment. Modern high performance glazing has been selected to minimise the solar transmittance (or heat gains), whilst maximising the natural light transmittance by filtering the varying wavelengths of the sun energy, or electromagnetic radiation.

Hybrid Ventilation - The hybrid ventilation strategy has the additional benefit of increasing air movement during the summer months to supplement the natural ventilation openings in removing the heat gains. The hybrid ventilation also facilitates a secure means to ‘night purge’ without the need for opening windows which may otherwise present a security threat.
7.2 Domestic Services Strategy

A new mains cold water supply shall be provided to the building complete with stopcock, mains meter, leak detection metering, sub-circuit/primary consumer metering and isolation at point of building entry.

Potable cold water storage and associated booster set shall be located within the ground floor plantroom and shall be a sectioned GRP tank split into two with dedicated service and bypass valving arrangement to enable safe maintenance on either section. Subject to local water quality analysis and for the inhibition of hard scale formation, an electromagnetic water conditioning units shall be considered on the cold feed to the domestic hot water storage plant. Low usage appliances shall be provided and auto-isolation on absence detection to all toilet supplies.

Domestic hot water shall be generated from a LTHW indirect storage calorifier located in the ground floor plantroom, complete with secondary flow and return pipework and bronze circulator in the secondary return to ensure hot water is readily available and to fully comply with legislation regarding the risk of legionella growth.

Domestic hot water for all sanitary ware items shall be distributed in accordance with the relevant BS standards and guidelines to mitigate any risk of legionella growth. The toilet blocks shall be complete with all necessary safeties devices to blend the water supply to eliminate the possibility of scalding.

For the inhibition of hard scale formation, an electromagnetic water conditioning unit shall be installed on the cold water incomer. The entire WRAS system shall be WRAS approved and be suitable for potable water.

7.3 Heating Strategy

All Constant Temperature (CT) pipework shall be insulated throughout in accordance with building regulations. All Variable Temperature (VT) pipework shall be insulated where concealed and insulated within all plant areas.

New LTHW plant shall be provided to service the new building, via new gas condensing boiler plant.

The LTHW heating system shall comprise control facilities for optimum start and weather compensation. Pump sets shall be variable speed type and complete with integral speed controllers and pressure transducers located at suitable locations within the index leg. Pump-sets shall be twin-head type. Self-regulating differential pressure control valves shall be provided on all sub-circuits to avoid disparities in hydraulic pressure from the variable speed circuits. A packaged pressurisation unit shall be provided along with a combined dirt/air separator and other ancillary equipment necessary to make the system operate correctly.

Radiator and radiant panel installations shall comprise of heating circuits (zones) to promote flexibility in out of hours use and operational energy efficiency. Final number of zones shall be dictated by the requirements of good thermal comfort control of the LTHW system.

The heating system shall be designed for intermittent operation and shall be capable of maintaining the minimum internal design temperatures listed in design standards section of the specification.
7.4 External Lighting Strategy

All external lighting will be in accordance with CIBSE Lighting Guide and BS EN 13201 and BS 5489.

External lighting shall be provided to the proposed circulation routes around the proposed new block and the associated main entrance, generally as indicated on the external lighting philosophy drawing.

The entire external lighting scheme shall provide a uniform and visually attractive environment to emphasise the architectural features of the building but in keeping with the school’s needs.

Control of all external lighting shall be via time clock and photocells. A manual override facility shall also be provided.

The external lighting shall be:

1. Designed in accordance with DCSF Building Bulletin 90, covering car parks, sports facilities, walkways and roads, entrances, particular building features and security requirements;
2. incorporates lamps having an efficacy of at least 65 lumens per circuit watt fitted with both time controls and daylight level photocell controls
3. achieve safe environments for people, traffic and the building;
4. minimise light pollution and ensures light levels are kept within the limits as required by BS 5489 and avoid nuisance to the adjacent neighbourhood.

7.5 Utility Statement

Gas Service

Existing medium pressure gas infrastructure runs along Deeble Road, to the North of the school site. A new buried PE connection shall be made in Deeble Road from the existing infrastructure to serve the block for Kettering Science Academy. The new supply will terminate within a new GRP gas meter house located to the North of the site, at which point the gas shall reduce to a standard low-pressure supply before going onto enter the new building via the ground floor plant room.

An application will be made based upon an initial estimate of 400kW gas load to serve boiler plant. The supply will terminate to a suitably sized emergency control valve within the gas meter house.

Water Utility Service

A single new connection will be provided to serve the new school building.

The new infrastructure load for the school has been assessed as 1.5 litres/second peak flow rate.

Enquiries have been submitted to the Utility Authority in regard to the dedicated new supply on this basis.

Fire Hydrant

Fire Officer’s requirements are to be confirmed.
Electric Utility Services
Desktop record information received from Western Power Distribution (WPD) shows infrastructure local to the area of the new development.

There are currently a three options being pursued including a new LV connection from WPD, and new LV connection from GTC or a connection onto the exiting schools LV system. We are awaiting cost options from the utility companies to inform the discussion.

Initial diversified new infrastructure loads have been estimated in the region of 140 kVA; although this figure will need to be re-assessed during the design development stage and as more detail is obtained.

It is anticipated at this stage that no diversion/lowering works are required for WPD infrastructure.

Telecommunications Utility Services
The proposed new block shall be linked into the existing schools ITC system via diversely routed underground fibre optic and copper cable, providing full connectivity.

Sustainability
There is not a requirement to achieve BREEAM for this project. However, design aspects that would achieve BREEAM credits shall be adopted to provide a standard of best practice and to reduce energy and water consumption for the new block.

Maintenance & Access
Main items of plant that shall require regular maintenance shall generally be installed within dedicated services areas, such as the ground and first floor plantrooms, the ground floor switch-room, services risers and the roof plant enclosure.

The ground floor plantroom and switch-room shall be accessed via the external walls which shall facilitate maintenance access requirements for plant within these spaces, including mains cold water storage tank, pump sets, and electrical switch gear.

The main plant room on the second floor shall be accessed from the main corridor and shall contain the main heating and domestic water plant used to serve the new block. Boiler plant, calorifiers and pump sets are likely to exceed the lifting limitations of the proposed lift and therefore shall require stair access. Suitable manoeuvring equipment shall be required to lift heavy plant up the staircases and will require an access strategy where the staircases are not in use by the building occupants during manoeuvring plant up the stairs.
Plant to be located on the roof shall include the dining area air handling unit which shall require maintenance access for changing/cleaning filters and for replacing parts. The plant will initially be required to be lifted into place on a skid. The roof plant shall be within an enclosure, primarily for acoustic purposes, which shall also act as suitable prevention method for maintenance staff from falling from the roof. Any small items of equipment and filters that are required to maintain the air handling unit shall be carried up to the roof via the stair access and hatch to the roof top from the plant room.

Any plant or equipment that is installed on the roof top outside of the plant enclosure shall be installed as far away from the edge of the roof as possible. A parapet shall prevent people from falling from the roof.
Statutory Approvals

8.0 Statutory Approvals

8.1 Accessibility

The building proposals present a fully accessible facility, minimising barriers both to access and learning. The raised building level adds some complexity but level access is fully provided between the existing building and the main entrance/exit points to the new block.

The internal arrangement is simple and legible: the plan provides a simple principal circulation arrangement around a central open dining area space. This legibility is strengthened further by direct visual connections to the external landscape (playing fields), the existing building and internally between the key activity spaces through the inclusion of glazed partitions.

WC facilities are within prescribed travel distances and in accordance with AD: Part M.

A Part M compliant platform lift provides vertical movement.

WC Provision

Occupancy projections are 27 pupils per classroom, and the building is providing an additional 2 Form Entry between Years 7 – 11. This represents an increase of the school capacity by 270 pupils.

We have designed the building to accommodate the relevant WC provisions required under the School Premises Regulations 2014 / The Education (Independent School Standards) Regulations 2014.

To ascertain the projected provision of WC’s we have used the unisex ratio of 1 WC per 20 pupils as stated in the Advice On Standards For School Premises document. On that basis we require 13.5 additional pupil WC’s. The building layout provides in excess of this with 5 no. toilets per floor of the building with 1 on each floor allocated as an Accessible WC (shared use with staff).

With the provision of 4 Accessible WC’s which are shared used between pupils and staff, there is capacity for 80 additional staff members based on the 1 WC per 20 employees ratio found in the Workplace (Health, Safety and Welfare) Regulations 1992. Regulation 20, Sanitary conveniences. On the basis the WC provisions within the new block should adequately meet the increased needs of the staff and pupils.
8.3 Acoustic Design

The internal passage of sound from room to room needs to be assessed with the Acoustic Consultant to agree dB ratings for walls to ensure the acoustics meet the requirements of BB93. Additionally, the level of acoustic absorption within each space and the relevant ceiling condition and wall absorption will need to be further considered.

It is not anticipated that the internal activities will be adversely affected by any existing environmental noise, as the site does not present any major acoustic issues and the ventilation strategy incorporated is mechanical which therefore provides additional resilience in terms of reducing window opening requirements.

Conversely, it is not anticipated that the proposed internal activities will contribute to local noise pollution in a detrimental way; plant will be designed to meet established parameters and agreed with the planning authority as the detailed design progresses.

8.4 Waste Minimisation, Recycling & Storage

Recycling areas will be incorporated both internally and externally. Waste will be collected and segregated in the building, and daily collections will be made to transport waste to the external waste and recycling store to suit Kettering Science Academy waste protocols.

Waste storage provision has been provided in the new block to act as a temporary holding for day-to-day activities. The bins will be managed with the school’s current waste collection plan and emptied at the main site store.

The existing external site waste store is located to enable refuse vehicle access from the school’s service access.
Design and Access Statement

Kettering Science Academy
New Block

9.0  Sustainability

9.1  BREEAM Overview

BREEAM Accreditation will not be sought on this project as it not a requirement under Policy 9 of the Northamptonshire County Council's JCS.

However the information contained within this Design And Access Statement expands upon key elements of the proposed design and its building services that promote an environmentally considered and sustainable approach.