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Isleworth & Syon School for Boys
Interim High Level Feasibility Study

Rev 00
March 2014

usefulsimpleprojects

London Borough of Hounslow

Version	Date	Reason for issue	Produced by	Approved
Rev 00	04/04/2014	For review and costing	Neil Reeder, Barbara Shakespear & Catherine Ramsden	Catherine Ramsden

Contents

1.0 Executive Summary and Project Brief

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1.1 Introduction

In February 2014 USP were commissioned by the London Borough of Hounslow and Pick Everard to provide a multi disciplinary service in preparing a Feasibility Study for future expansion at Isleworth & Syon School for Boys. This commission builds on our work of a Strategic Masterplan for the full school site including the buildings and associated grounds and runs in parallel with our ongoing appointment with the school for a major refurbishment of the Humanities Wing.

The following issues were investigated as part of our original masterplan:

- Define a Project Brief
- Scope for increasing student capacity
- Identify development opportunities
- Carry out condition survey on existing facilities
- Map correlation between current area provision and the BB98 and recent DfE guidelines
- Key influences, from site and greater context
- Prepare a phased plan of works
- Provide outline costing

This report is a further development of that document and looks more closely at expansion opportunities from 6.5FE to 8FE.

1.2 Project Brief Summary

- To analyse the existing facilities in terms of provision of 6.5FE accommodation
- To consider how best the school can expand to provide 8FE accommodation while maintaining the ethos of the Masterplan
- To determine the maxiumum accommodation that could be allocated on the site
- To investigate the key issues associated with expansion and future development to include Planning, the Spring Grove Conservation Area and important environmental aspects such as renewable energy, flood risk and drainage strategies
- To prepare a Stage A/B conceptual scheme for expansion to 8FE and beyond if this is deemed feasible

1.3 Key Themes of the Strategic Masterplan 2013

These themes have informed our work with the school during the last year and are particularily relevant when considering the expansion proposals here.

- supporting and enriching an already very successful, active and lively school
- embracing the spirit of the school which is one that balances tradition and academic performance with forward thinking and enthusiasm for the arts, science and sport
- recognising those areas of the school that have value and ensuring any development reinforces this
- respecting the historical building fabric and the contribution the landmark tower and school frontage bring to the community and the Spring Grove Conservation Area
- acknowledging that the student population is likely to grow and identifying ways for the school to expand but also recognising that students numbers may fluctuate over the years so ensuring a good level of flexibility in the facilities so that different uses can be accommodate over time
- recognising the schools sporting success and ensuring the correct facilities are in place to nurture this, especially in the context of the Olympic legacy and the Hounslow Statement on Sport , Health and Well Being
- reinforcing the relationship with the greater community being environmentally aware and responsible and adopting good sustainable practice wherever possible

1.3 The proposals

Our initial investigation of the site and facilities suggests that 8FE can be easily achieved without compromising the quality and operation of the school but that further expansion to 10FE would require more significant re-workings and appears to be an over development of the current site area at this time. We have therefore focussed on the 8FE strategy and investigated 2 different options for achieving this.

Option 1

This is the minimal approach where we focus entirely on accommodating the growth and do not address any current shortfalls in condition of the existing school buildings.

The benefits to this approach are a smaller and simpler build programme for expansion alone which will keep costs and disruption to a minimum during this phase.

Option 2

This option has a broader remit and aims to be more efficient in the long term by addressing not only the expansion needs but also those areas of the school which are suffering from very poor condition. In particular the Arts and DT building which is failing on many fronts including poor internal layout, extreme overheating in summer, high energy consumption in winter and leaks in the roof and facade systems. This option allows for the replacement of that building as well as the addtional area needed for expansion.

There are multiple benefits in constructing them both at the same time in the same location:

- the costs will be lower overall
- the disruption to the school will be minimised
- a higher density is achievable thereby protecting the ground plane and play space, a key objective for the school.

1.4 Costs and Funding

We have prepared this document in line with guidance from Pick Everard in regards to possible funding strategies and understand that the Capital funding process is subject to change. Outline costs for the two options investigated here will be provided by Pick Everard and will accompany this document.

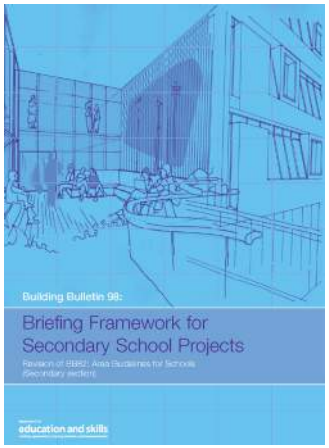
2.0 Analysis of Existing Area Provision

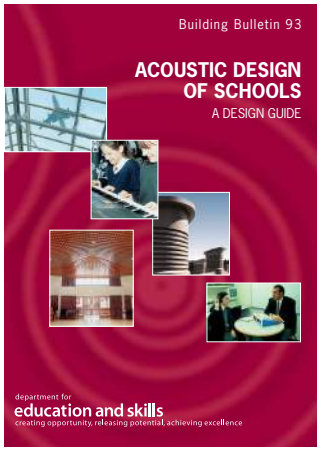
2.0 Analysis of Existing Area Provision

2.1 The guidance

This report is compiled with input from Building Bulletin 98: "Briefing Framework for Secondary School Projects" (BB98) and the Department for Education 2012 guidelines for development.

Further input was taken from Building Bulletin 93: "Acoustic Design of Schools".





Department for Education, 2012, Benchmark Secondary School for 1200

2.2 BB98 Assessment of Existing Facilities
5.8FE + 230 Sixth Form

Site Area
We have reviewed the school using the 'confined site' minimum areas as defined within BB98 (see table below) which exclude on-site pitches and consider all pitches off-site. The Existing school building footprint and population of 1,100 pupils sits comfortably within the school gross site area, which is 3%-26% above the Like Site Area from and to range of values for a school of 1,100 situated on a 'confined site'.

Minimum Building Area
The Existing building Net & Gross internal areas are 4% and 6% less respectively than the BB98 minimum building areas for the existing school format (5.8FE + 230).
Minimum Building Areas by Category
The table below is a review of the BB98 minimum areas by category. These values are minimums and are then expanded in areas of specific interest to the school utilising the 'Float' area allowance (approximately 8% of the total net building area) to allow the school to tailor the design to their individual needs.

Compare Existing to 5.8FE+230 Minimum Site Areas	Key Formulae	**Existing 2013/14**	**5.8FE + 230 N=1100**	**+ / -**
Pitches	provided 'off-site'		Off Site	
Soft informal and social	600 + 2.5N	3553	3350	203
Games courts (hard surface)	2000 (MUGA)	1419	2000	-581
Hard informal and social	200 + 1N	3845	1300	2545
Habitat	0.5N	0	550	-550
'Float'	remainder of site			
Total net site area	2800 + 4N minimum	8817	7200	1617
Likely site area: from	4000 + 5N	11927	9500	2427
to	5000 + 6N	11927	11600	327
Pitches - ON site	10000+35N	12311	48500	
Pitches - OFF site	provided 'off-site'	40480		
Pitches - TOTAL		**52791**	**48500**	**4291**

Existing assessment, BB98minimum site areas for secondary schools in confined sites

Basic Teaching area

The sum total of the Basic Teaching area within the existing school is approximately (-10% = 362m2) below minimum for the current school format 5.8FE + 230, although the number of existing teaching rooms is within guidelines. This area shortfall is due to the majority of teaching spaces within the existing school falling short of standard classroom sizes (9 x 44m2 Seminar rooms, 2 x 52m2 Small classrooms and 7 x 80m2 Science laboratories) all used to teach standard class groups of 30 pupils.

Halls, Learning Resources, Staff & Admin, Storage

The Existing school format has an over-provision (in terms of a BB98 minimum area review) of Hall (+18% = 169m2), Learning Resource (+75% = 334m2 due to a recent library extension to create a library and large seminar room), Staff & Admin (+32% = 151m2) and Storage space (+5% = 32m2).
The sum of these over provisions equates to just over the 'Float' total and reflects the schools current set-up of improved Learning Resources which support the large number of undersized Teaching spaces.

Dining and Social

The existing Dining and Social (6th form room) provision in the school is slightly under the minimum area requirement for the current school format. The school currently addresses this by using the main hall space, when possible, for social gathering and for eating packed lunches which thereby reduces pressure on the dining space.

		Current Allocation 2013/14	Existing - BB98 5.8FE + 230 6th FORM	BB98 5.8FE + 230 compared with Extg
11 to 16	No. of Forms	**6**	5.8	
	Form Size (G)	**28**	30	
	No. of years	**5**	5	
	Total 11-16(p):	**840**	870	
16-18	Sixth Form(P):	**180**	230	
Total no. of students (N):		**1020**	1100	

Minimum Building Areas	Key Formulae	N=1020	N=1100	
Basic teaching	200 + 3.06N	**3204**	3566	-362
Halls	600 + 0.3N	**1099**	930	169
Learning resources	125 + 0.29N	**778**	444	334
Staff and administration	125 + 0.31N	**617**	466	151
Storage	200 + 0.36N	**628**	596	32
Dining and social	100 + 0.26N	**364**	386	-22
'Float'	250 + 0.32N		602	-602
Total net building area	**1600 + 4.9N**	**6690**	**6990**	**-300**
Likely gross building area	2250 + 7N	**9286**	9950	-664
The funding for the gross areas of new school buildings is based on new formulae (01 Oct. 2012)	1050+350(if there is a sixth form)+6.3p(11-16) + 7p(16-18)		8491	795

BB98, Minimum Building Areas, Existing School Comparison

BASIC TEACHING	3204
HALLS	1099
LEARNING RESOURCES	778
STAFF AND ADMIN	617
STORAGE	628
DINING AND SOCIAL AREAS	364
FLOAT	0
EXISTING TOTAL NET AREA	6690
TOILETS & PERSONAL CARE	424
CIRCULATION	1463
PLANT (INCLUDING SERVERS)	167
AREA OF INTERNAL WALLS Assumed at 5% NET as per BB98	335
SCHOOL KITCHEN FACILITIES	206

BB98 Building Areas, Existing Actual

3.0 Existing Buildings and Site Issues

3.1 School Description

School Description
Isleworth and Syon is a state funded non-denominational secondary school with a population of 1050 students including the sixth form and approximately 115 members of staff. In March 2012 the school became an academy.

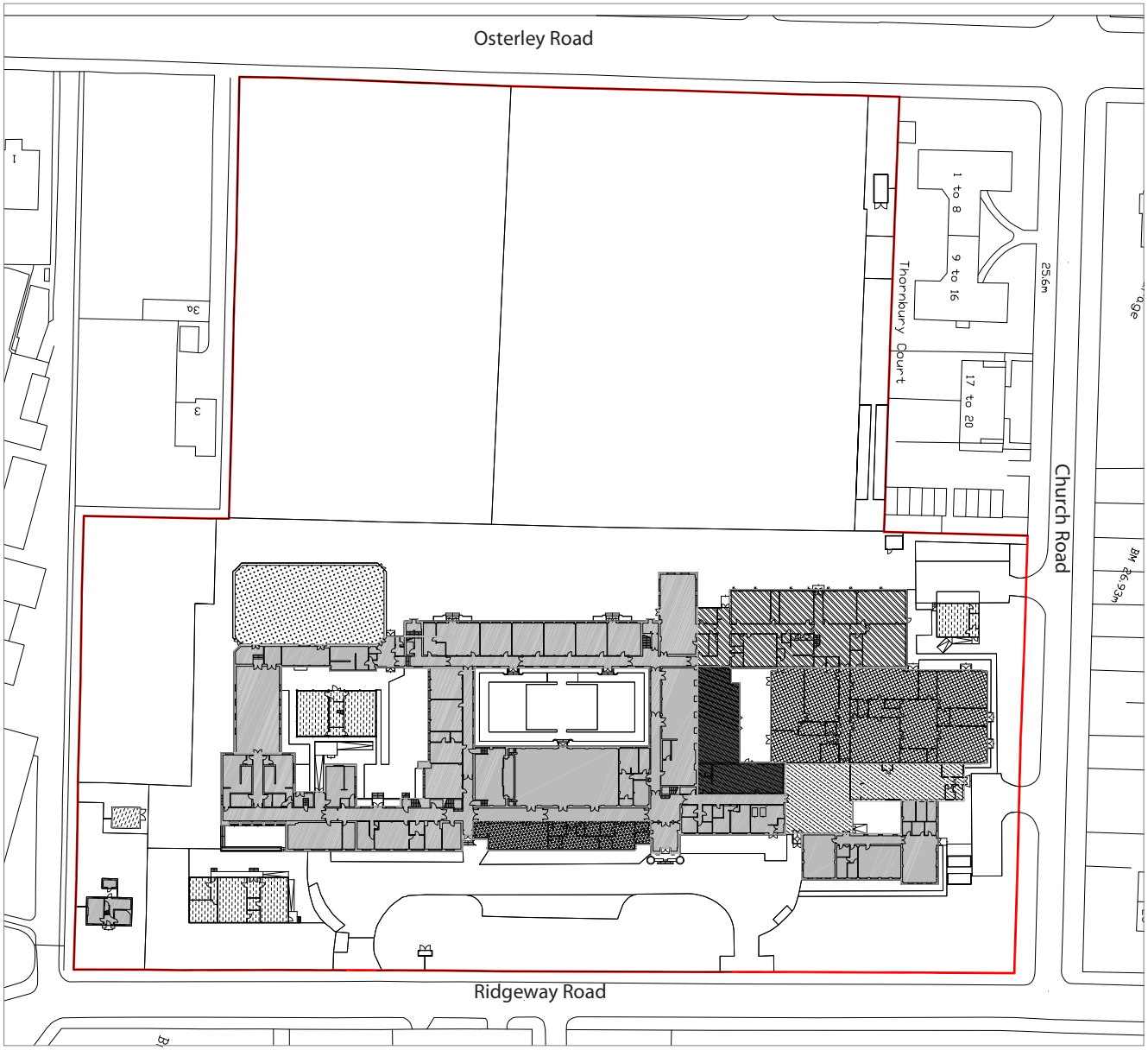
Buildings
The main school building was constructed in 1930-31 as Isleworth County School and became a grammar school under the 1944 Education Act. When Hounslow Council adopted the comprehensive system in 1979 the school was merged with Syon School for Boys and the school was significantly extended to create the current permanent building form.

Three separate mobile classroom units are located within the ground dating from the mid-2000s housing a total 7 classrooms and associated storage and office space.

An extension to the library and to create a food technology classroom was completed in 2010.

Key

- Site Boundary
- Original Building, 1931
- Access/Front Block, Late 70's
- D&T Block, Late 70's
- Humanities Block, Late 70's
- Kitchen and Dining Block, Late 70's
- Sports Hall, Late 1980
- Temporary Blocks, 2005-2007
- Library + Food Tech, 2010



Existing buildings

3.2 Site Description

Site Overview

Isleworth and Syon School is located in the London Borough of Hounslow near the A4 just south of Osterley Park. The site is located in a predominately residential area and is situated between Ridgeway Road and Osterley Road. A closely linked collection of buildings spread north to south across the site with the primary frontage and entrance onto Ridgeway Road with a large playing field and all weather pitch to the Osterley Road side of the site.

Access to the school is from Ridgeway Road and the site lies within the Spring Grove Conservation Area (designated in 2002).

The total gross internal area of the school comprises approximately 8,500m^2.

In addition to the main site there is also an off-site sports ground with changing rooms referred to as Busch Corner.

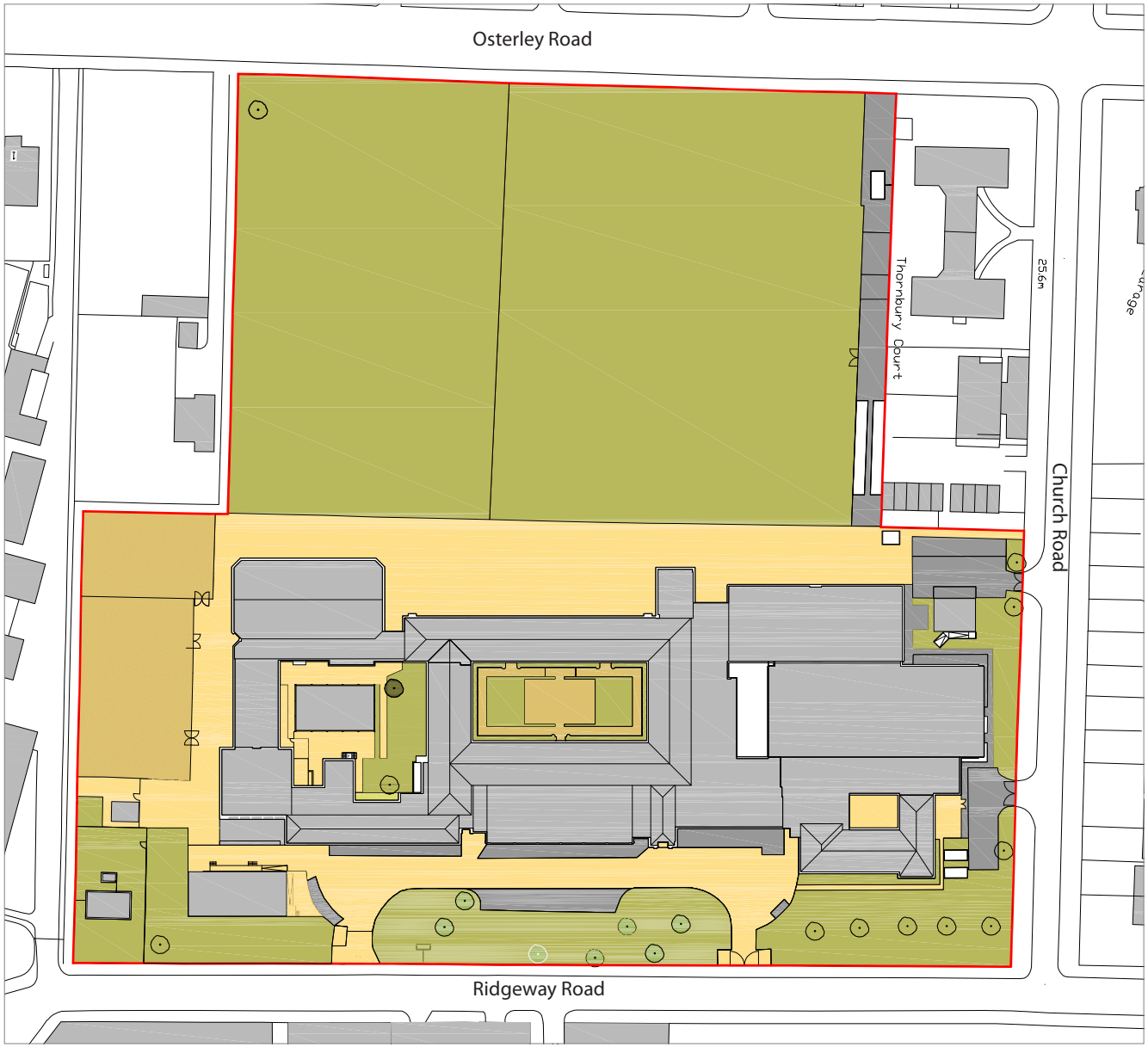
The turf area located on the western side of the site is designated as a Local Open Space in the Unitary Development Plan (UDP).

The area surrounding the site is primarily residential. A public footpath adjoins the south boundary of the school site.

Site Location

Isleworth & Syon School

Ridgeway Road
Isleworth
Middlesex
TW7 5LJ



Existing Site Plan

3.3 Existing Site Photographs

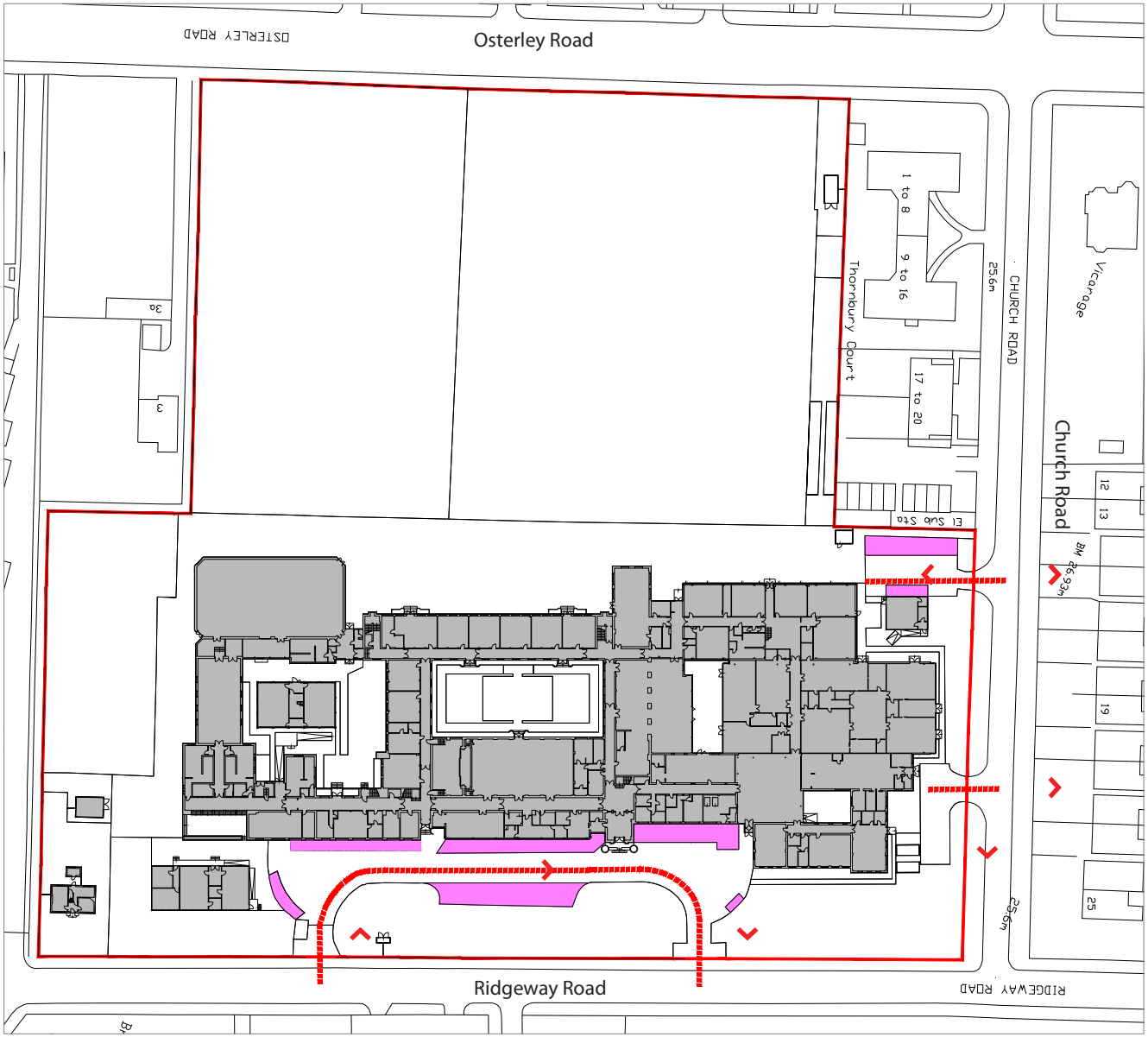
3.4 Existing Building Photographs

3.5 Site Access and Parking

Existing site access and egress for vehicles is shown in the adjacent diagram in red. We do not propose to alter the principle of these routes as part of any proposed alterations for expansion but a long term interest of the Strategic Masterplan is to reduce the dependence on the car.

Parking areas are shown in pink and demonstrate that this use is spread around the site and currently has an adverse effect on the school frontage and setting of the buildings. As a minimum the school would like to consider not providing any further spaces and over time try to reduce the provision. As development continues a long term goal is to consolidate the parking areas to lessen the impact of vehicle cirulation around the site.

We understand that the Borough's current policy is to provide no more than 1 (one) parking space per teacher or full time equivalent (fte). The exact number and implications would be calculated in association with the planning department as part of the expanded feasibility design.



Key

- Site Boundary
- Access Routes
- Car Parking Spaces

3.6 Landscape and Ecology

During our work on the primary Strategic Masterplan we undertook workshops with the school children, staff and governors. It was clear that the students understood the benefits of fresh air and exercise, both on their personal well being and health but also on their ability to concentrate and perform in the classroom. The opportunities for outdoor play and 'letting off steam' were very high priorities for the students and they would take these chances whatever the weather.

This outlook is very much aligned with current government policy, DfE education approach and the local borough of Hounslow who have recently published a document highlighting the local problem.

The primary goals of the masterplan for the outdoor areas:

- reduce the areas for vehicle traffic and parking
- protect building fabric by shifting active ball games
- provide a wide variety of outdoor activities, from very active to calm and contemplative
- address under utilised and 'leftover' areas
- embrace environmental practices, habitat and ecology

The expansion proposals embrace these goals.

Key

- Site Boundary
- Car Parking Spaces
- Playing Field, Grass
- All Weather Pitch, Astroturf
- Games Courts
- Soft Informal, Grass
- Soft Informal, Planted
- Hard Informal and Social
- Road and Path, Tarmac

3.7 Historical setting and the Spring Grove Conservation Area

Considerations and effects

A conservation area is described as an area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance.

The main effects of the designation of a Conservation Area:

1. Conservation Area Consent is required for the total or substantial demolition of all unlisted buildings (other than excepted buildings) in the area.
2. Permitted development rights under the Town and Country Planning (General Permitted Development Order 1995, are more restricted within the Conservation Area.
3. Trees within the Conservation Area are given special protection. It is an offence to cut down, lop top or uproot a tree, subject to certain exceptions, within the Conservation Area without giving at least 6 weeks' notice of intent in writing to the local planning authority.
4. Planning applications for development which would, in the opinion of the local planning authority, affect the character or appearance of the Conservation Area must be given publicity, and representations received as a result of the publicity must be taken into account in determining the application.
5. The local planning authority must in the exercise of its planning functions pay special attention to the desirability of preserving or enhancing the character or appearance of the Conservation Area.
6. It is the duty of the local planning authority from time to time to formulate and publish proposals for the reservation and enhancement of the Conservation Area.

A Residents Association exists that actually pre dates the formation of the conservation area. It is advisable that this group be consulted when considering any major development work. It is best to consult during the design process and engage the local expertise where possible.

SGRA, Spring Grove Residents Association

http://www.sgra-isleworth.org/conserv.html

Spring Grove, key considerations

The conservation area document for Spring Grove highlights a few issues which are directly relevant to the school:

- Original building and tower
- Landscape and Trees
- Context of St Mary's Church

The document describes these issues as follows:

Trees

Some of the streets in Spring Grove were designed as tree lined avenues. These streets retain their now mature trees, which are an important feature of the estate. Mature trees within gardens and private grounds, and in spacious front gardens, are also important to the character of the area.

Osterley Road

This is one of the most legible and attractive areas in Spring Grove. A wide, level and treelined avenue, it retains its Victorian charm to a degree that later additions go relatively unnoticed. The school on Ridgeway Road is visible, but is an attractive thirties design, and the neat playing field acts a buffer. Part of the northern section of the road was in the garden to Thornbury House. It would appear that the road was built to provide access from The Grove to St. Mary's Church, which may explain its design location, equidistant from both entrances to The Grove and opposite Spring Grove House.

The Church of St. Mary

The church was opened in 1856 and was designed by John Taylor the younger in the decorated style, using stone facing over brick: a new form of construction invented by himself.

Ridgeway Road and the School

Isleworth and Syon School, and the Crown Court, replaced a large number of properties on Ridgeway Road. Middlesex County Council constructed the Isleworth and Syon Boys' School in 1936-8. It has one and two storey ranges dominated by a powerful tower, with a more progressive tall, curved staircase window, a feature of the period and a worthy addition to the Estate.

Spring Grove Conservation Area, Relevant Issues

Historical photo of the main school building and tower

The school building built in 1936, a worthy addition to the estate.

Contemporary photos of the tower and ornamental framing around windows in the main courtyard

3.8 Potential Planning Issues/ Statutory Information

Planning and Context

The Isleworth & Syon School site is zoned for D1 Education use and is located within the Spring Grove Conservation Area, designated in April 2002.

Planning History

There are numerous planning application decision records held by The London Borough of Hounslow Council relating to the site. Details of applications received since January 1991 are available using a Planning Search facility on the Council website.

Key considerations when approaching planning consent will be the conservation area, the value of the historical buildings on the site, and consultation with neighbouring residents.

Planning Policy

The planning policy framework for the site is formed by policies at national, regional and local levels. This section provides an overview of relevant local (London Borough of Hounslow) policies for the current Isleworth and Syon School for Boys site. This mainly comprises consideration of the Council's Unitary Development Plan (UDP) with Supplementary Planning Guidance related to Conservation Area Character Appraisals.

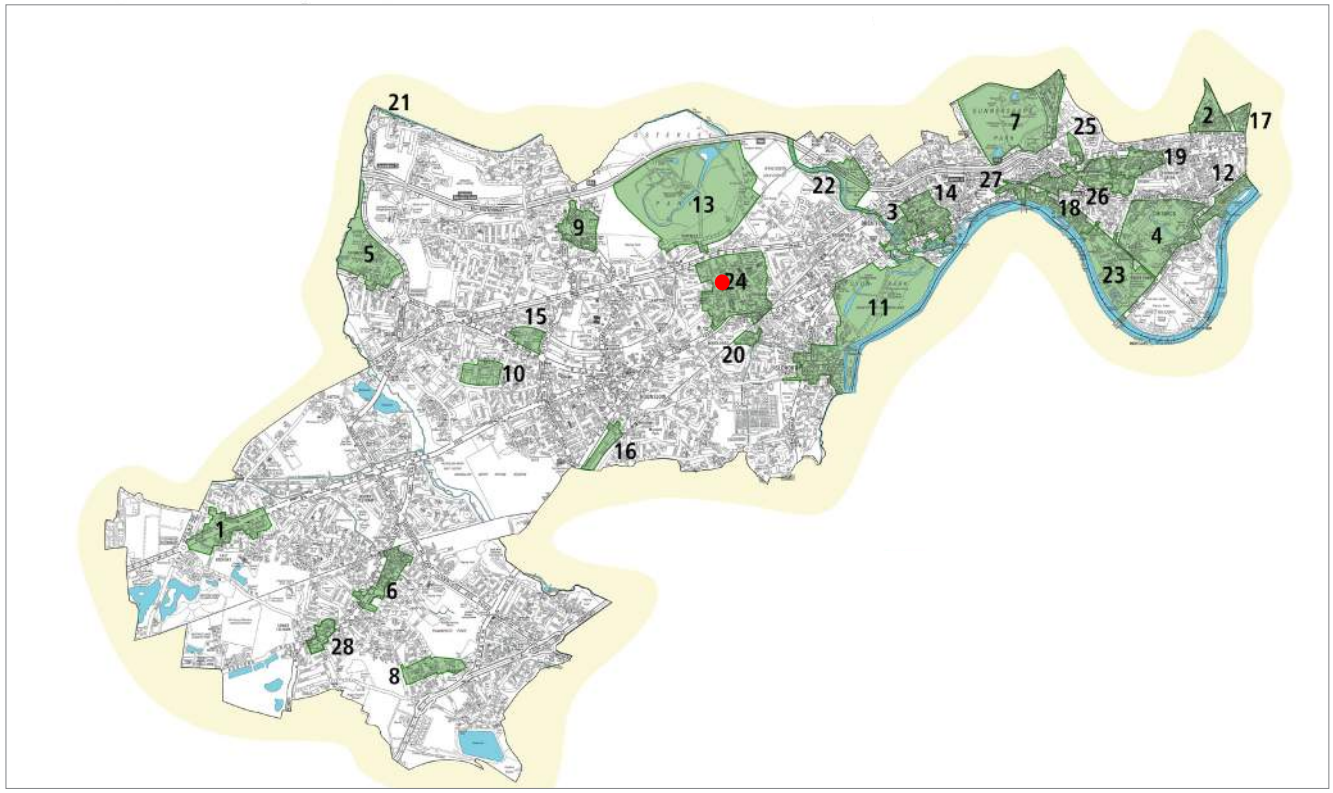
Unitary Development Plan (UDP)

The UDP for the Borough was adopted in 2003. Key planning considerations related to Policy, Transport, Development and other issues across the Council are summarised in a series of UPD maps made available by the Council.

The following comments are relevant to the school site in relation to the UPD maps:

Viewpoints and Landmarks

Viewpoints: The nearest protected viewpoint is located at a distance of approximately 1km from the site.
Landmarks: Landmark reference 'G' is local to the site.



London Borough of Hounslow - Map of Concervation Areas

Archaeological Priority Areas

The site is not located in an archaeological priority area. The nearest priority area is located over 1km away from the site.

Publicly Accessible Open Space Deficiency

The site is located within an 'Area of Publicly Accessible Open Space Deficiency'

Green Chain and Corridors

The site is not located with/along a Green Chain or Corridor.

Waterways and Areas of Flooding

The site is not located in an area of flooding or near local waterways.

London Cycle Network

Church Road and Ridgeway Road adjacent to the site form part of the existing London Cycle Network.

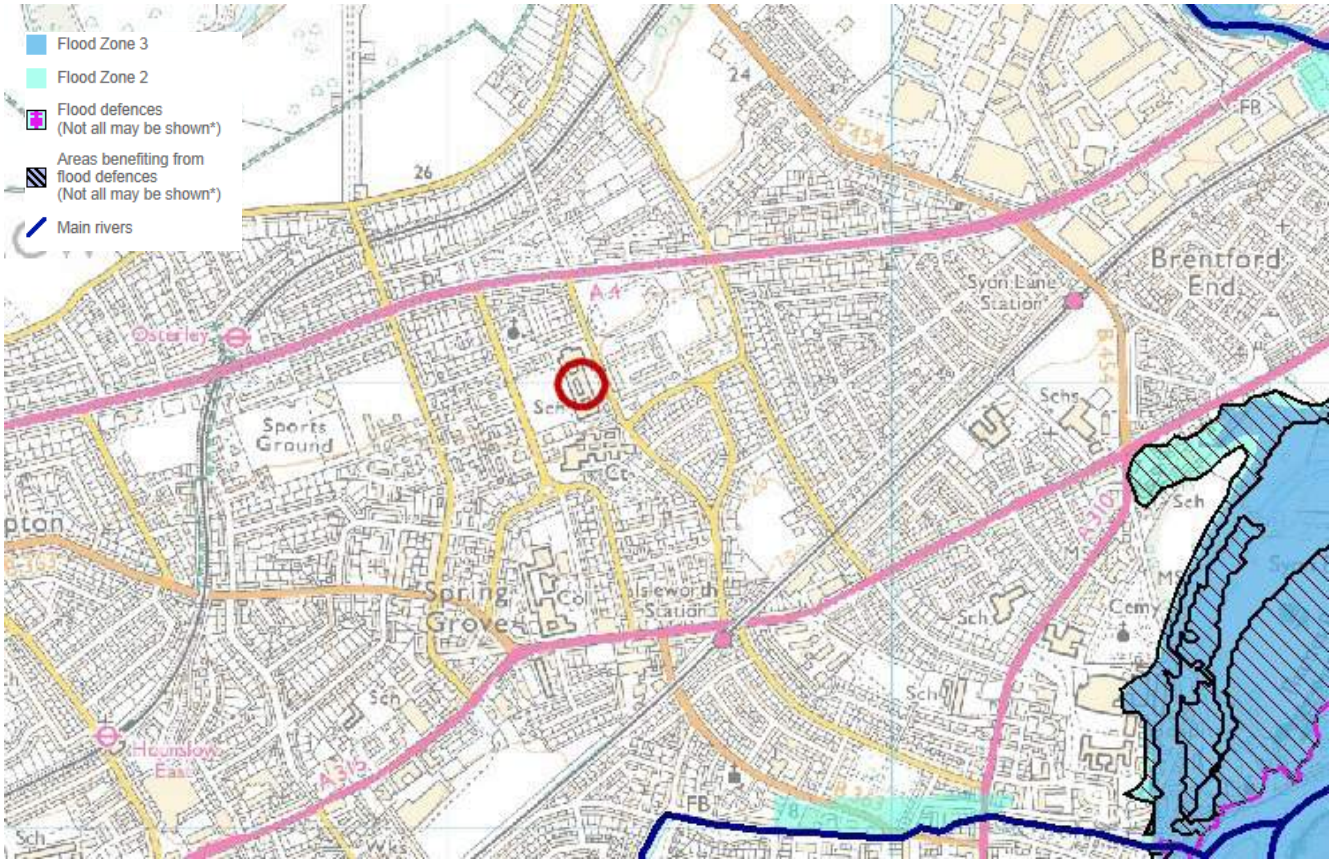
3.9 Flood Risk and Drainage: Existing + Expansion

Flood Risk
The site is shown to be in Flood Zone 1 on the Environment Agency flood map. This is the zone of lowest risk of flooding from rivers and sea. The 'red line perimeter' for the planning application will only include the parts of the school that will be affected by the proposed works, and will cover an area smaller than 1 ha. As such a flood risk assessment will not be required for the planning application.

Surface water drainage
A sustainable drainage scheme will be developed to ensure that any proposed works do not increase flood risk on-site and off-site, and that the new facilities are effectively protected from flooding.

With Option 1, most of the new building will occupy what is currently paved games courts. Peak surface water runoff rates will therefore remain the same although we are proposing a green roof which will reduce the overall peak runoff, reduce the urban heat island effect and enhance biodiversity. Areas of soft landscape will be maximised around the building and in the small courtyard created between the new building and the existing gymnasium. This option also assumes the removal of 2 small temporary buildings (area to be accommodated with in new block) and the cleared ground plane be converted into games areas and gardens. As such, it is expected that there will be a decrease in the peak runoff rate with this option. A review of the existing drainage arrangements will be carried out to establish whether the site currently drains to a sewer or to soakaways and what course of action is best considering the decrease.

With Option 2, the building footprint will not significantly change from existing, and a green roof is proposed. As with Option 1 the 2 small temporary buildings are to be demolished clearing the way for more games and garden areas. Peak surface water runoff rates will therefore decrease. The existing drainage arrangement will be reused.

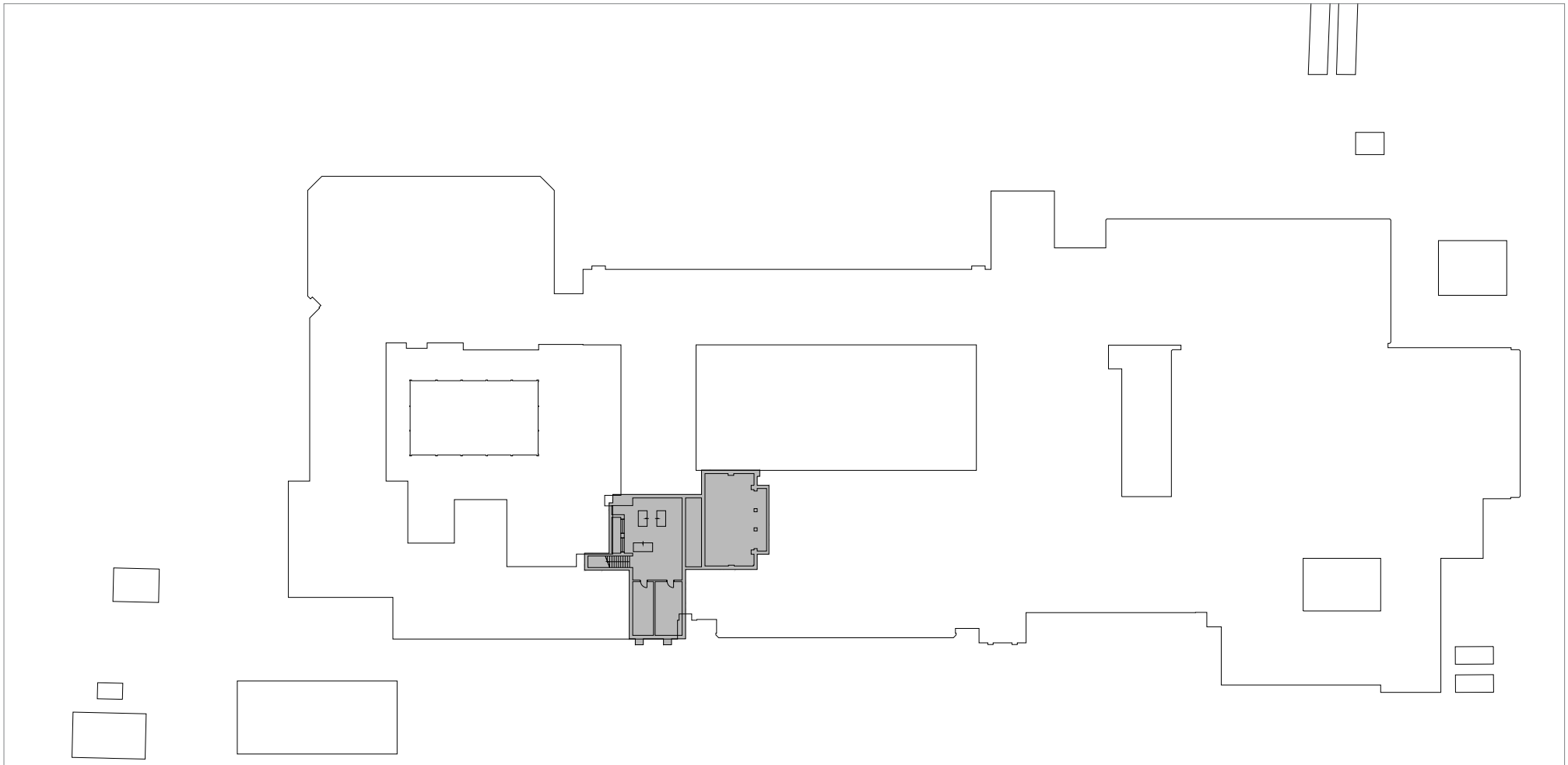


Environement Agency Flood Map

Foul drainage
With both options the new facilities will mainly consist of class rooms. The requirements for sanitary and water fittings remain to be confirmed, but it is expected that the number of new fittings will not be significant. Therefore with Option 1, any increase in foul flow is expected to be low and may be accommodated in the existing system.

With Option 2, the workshop and art facilities occupying the existing building include a number of sinks and water fittings. These will be replicated in the new development as well as the incorporation of new sanitary and water fittings although the extent of these is not yet determined. Foul flows are likely to increase to a small degree.

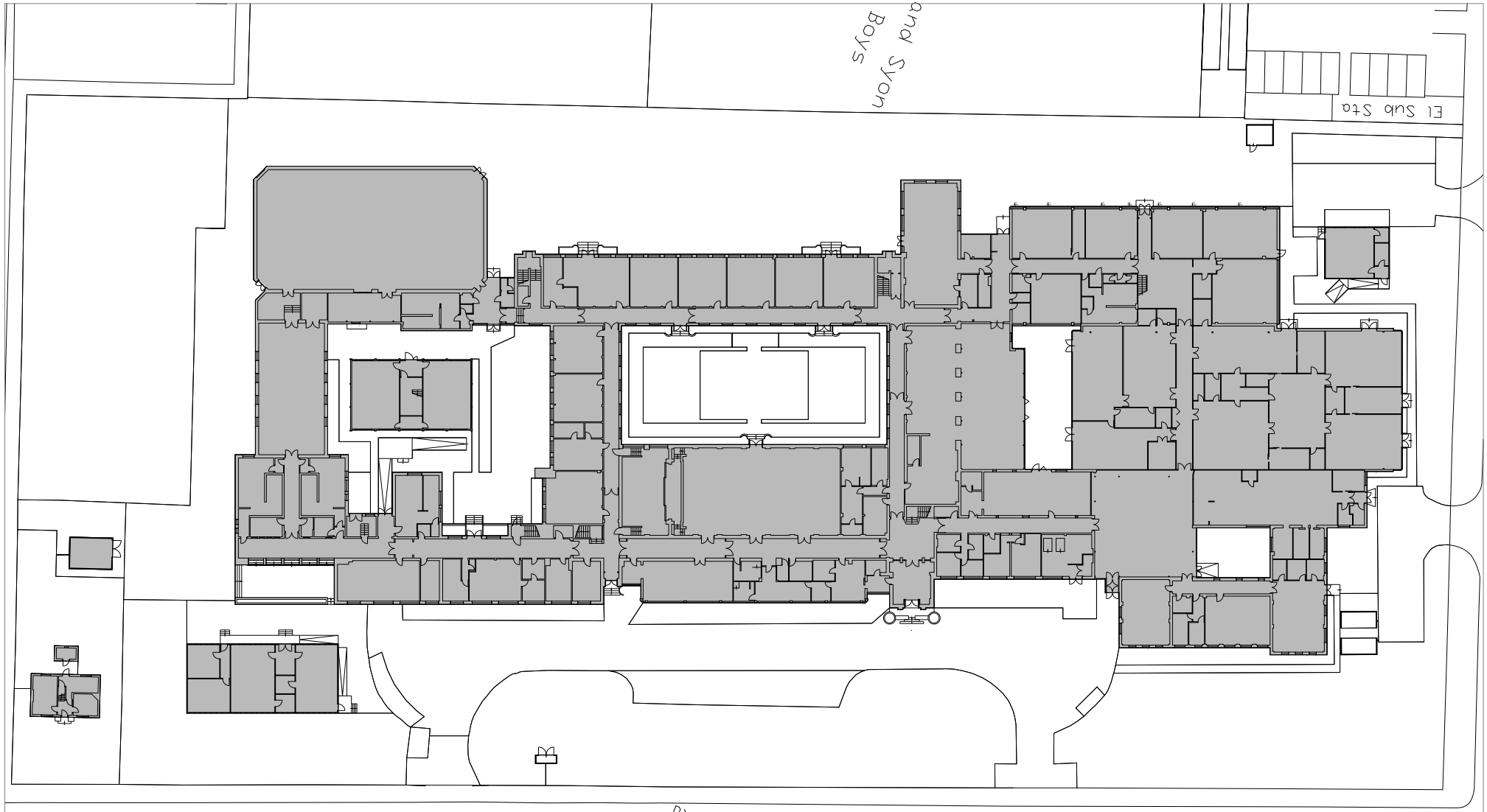
3.10 Existing Drawings/ Basement



Basement

Rev: C	Scale: 1:250 @ A1	Date Drafted: 21/07/2012	UPRN 4500	Isleworth and Syon School for Boys
Description: Updated	Drawn: SpInt	Checked: SpInt	Approved:	Ridgeway Road, Isleworth, TW7 5JL
Date Surveyed: 25/06/2012	Filename: 4500 - Isleworth and Syon School for Boys.dwg			Basement Plan

Existing Drawings/ Ground Floor



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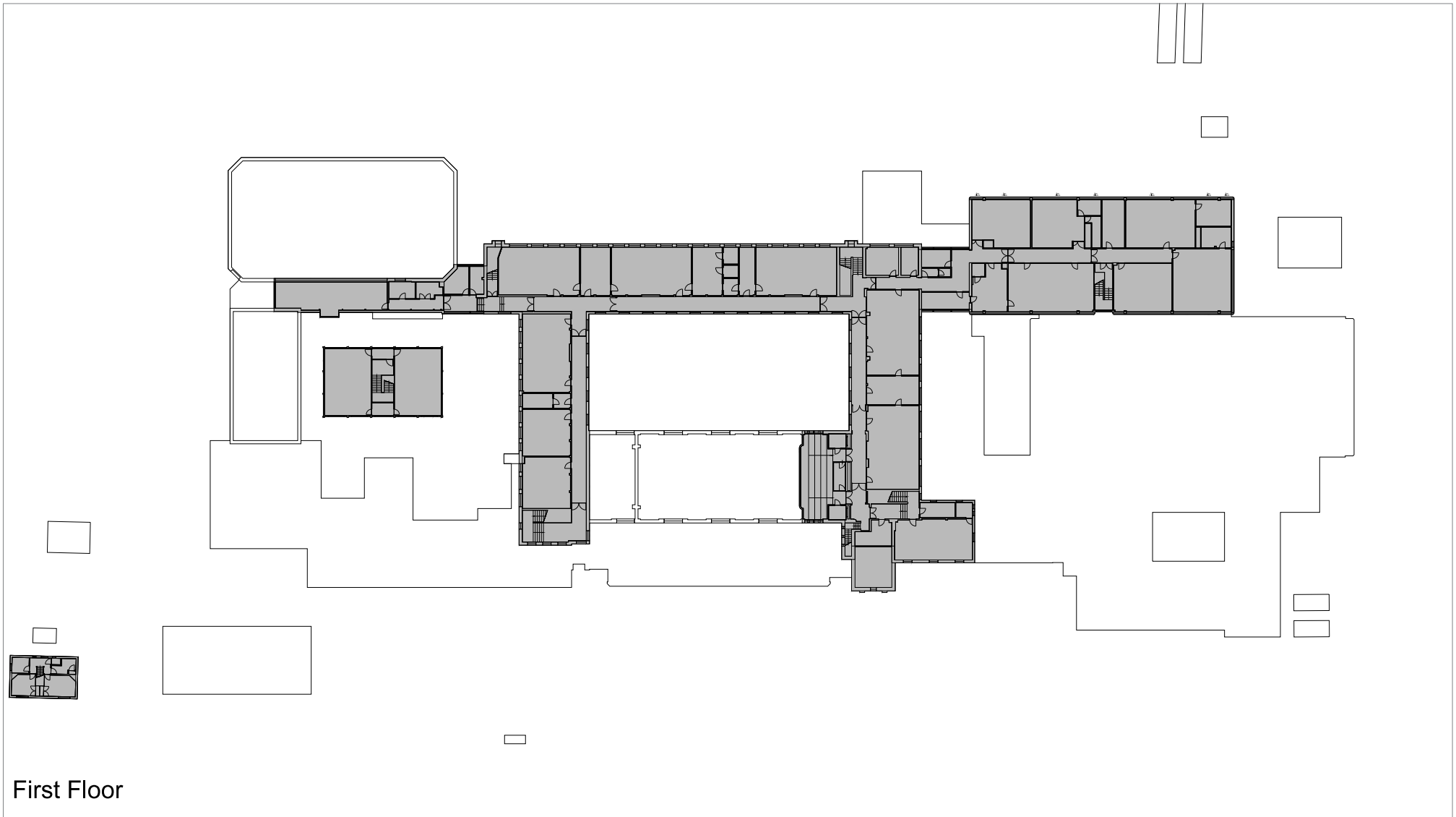
Date Surveyed: 25/06/2012	Filename: 4500 - Isleworth and Syon School for Boys.dwg			Ground Floor Plan (Sheet 1 of 3)

Existing Drawings/ First Floor



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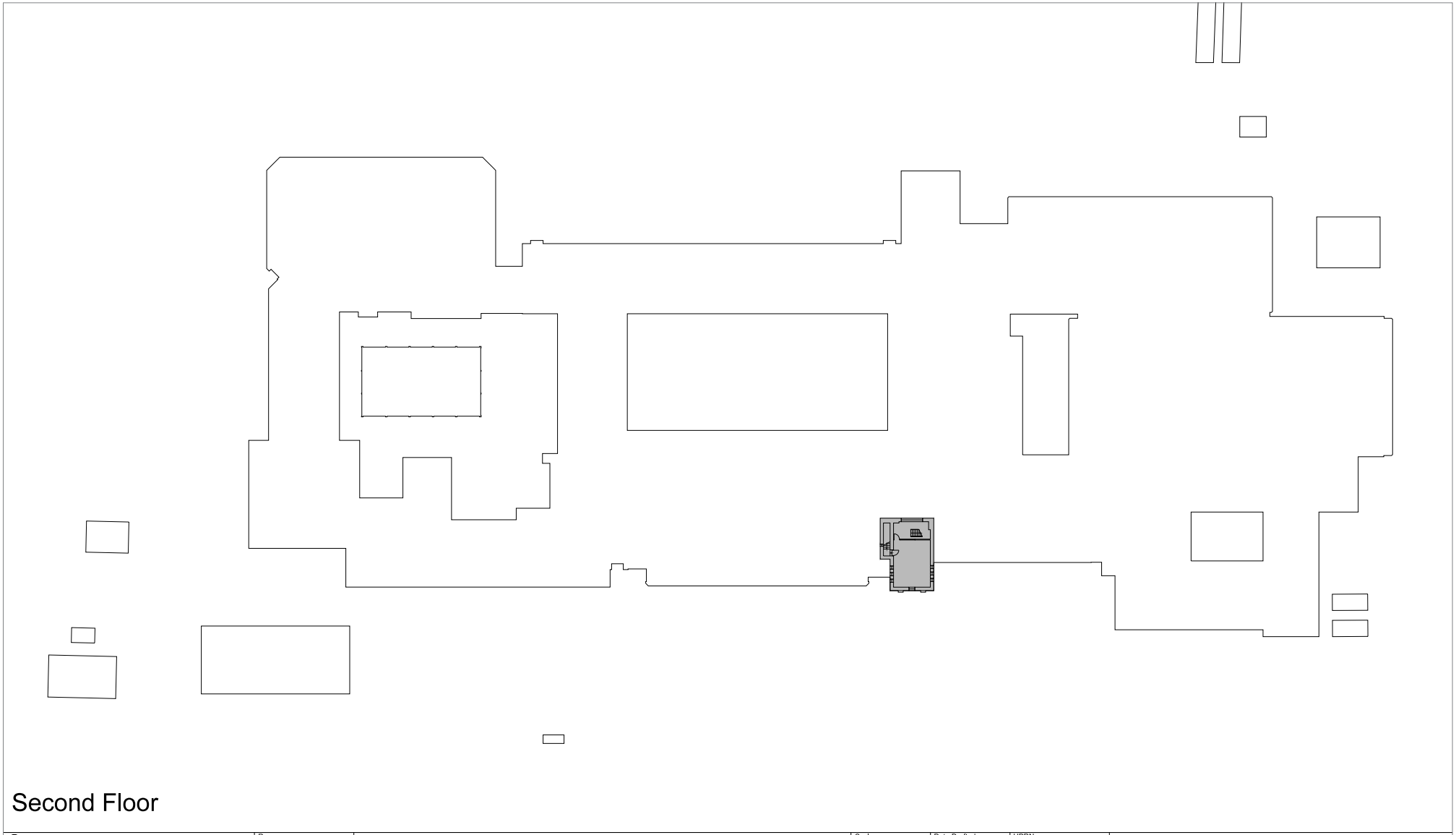
Date Surveyed: 25/06/2012	Filename: 4500 - Isleworth and Syon School for Boys.dwg			First Floor Plan (Sheet 1 of 2)

Existing Drawings/ Second Floor



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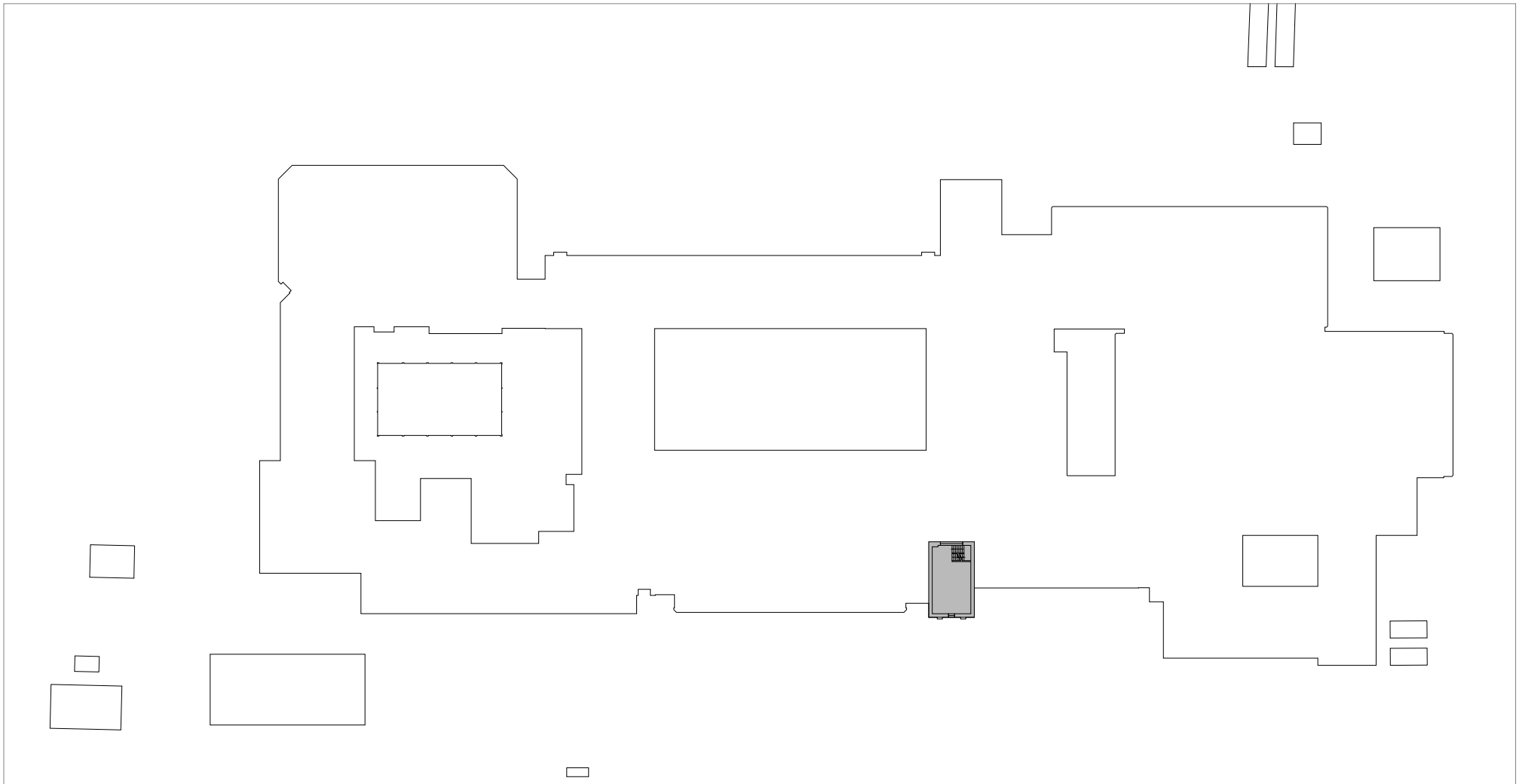
Isleworth and Syon School for Boys
Ridgeway Road, Isleworth, TW7 5JL

Second Floor Plan

Existing Drawings/ Third Floor



Third Floor

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Date Surveyed:	25/06/2012

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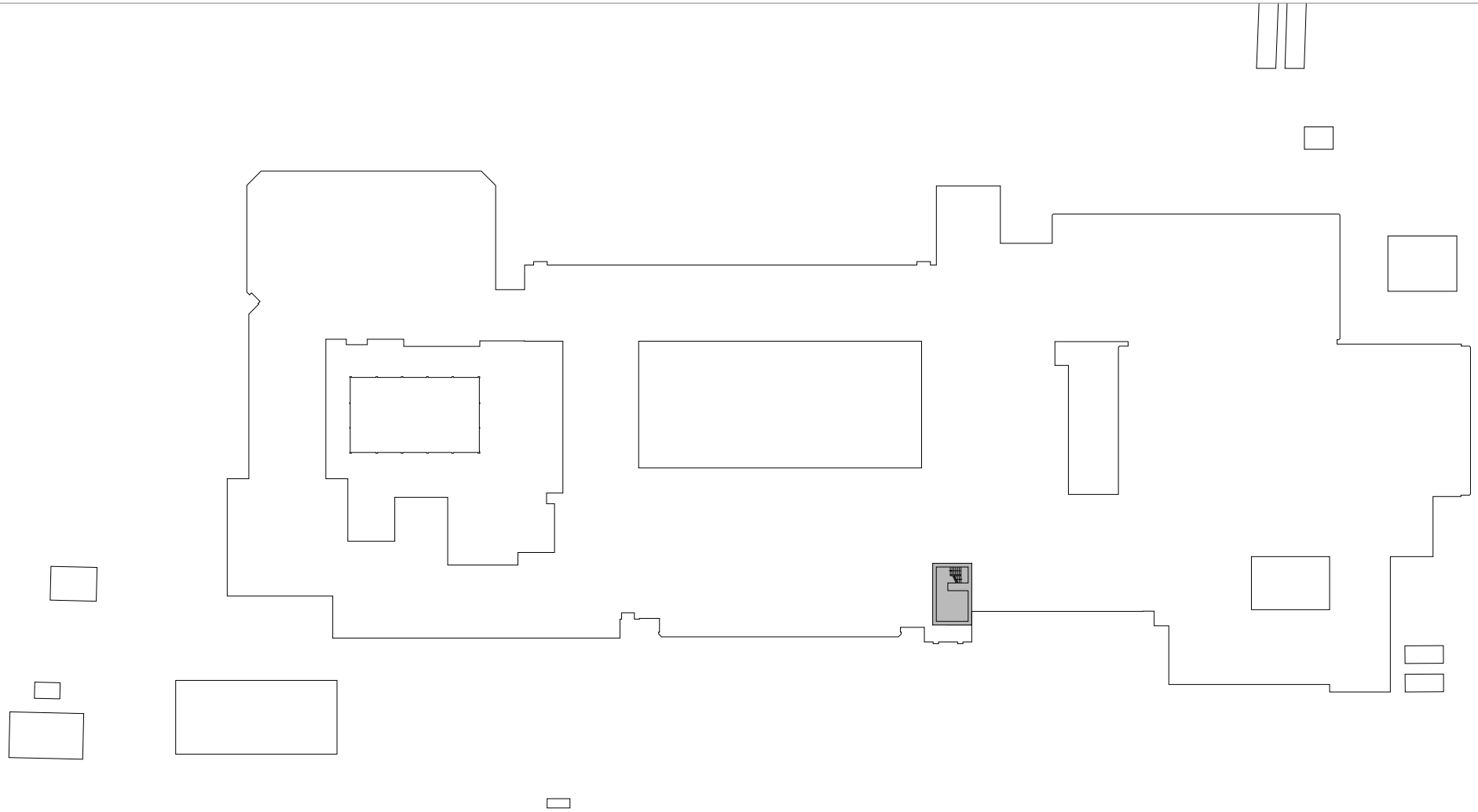
Drawn: SpInt	Checked: SpInt	Approved:
Filename: 4500 - Isleworth and Syon School for Boys.dwg		

Isleworth and Syon School for Boys

Ridgeway Road, Isleworth, TW7 5JL

Third Floor Plan

Existing Drawings/ Fourth Floor



Fourth Floor

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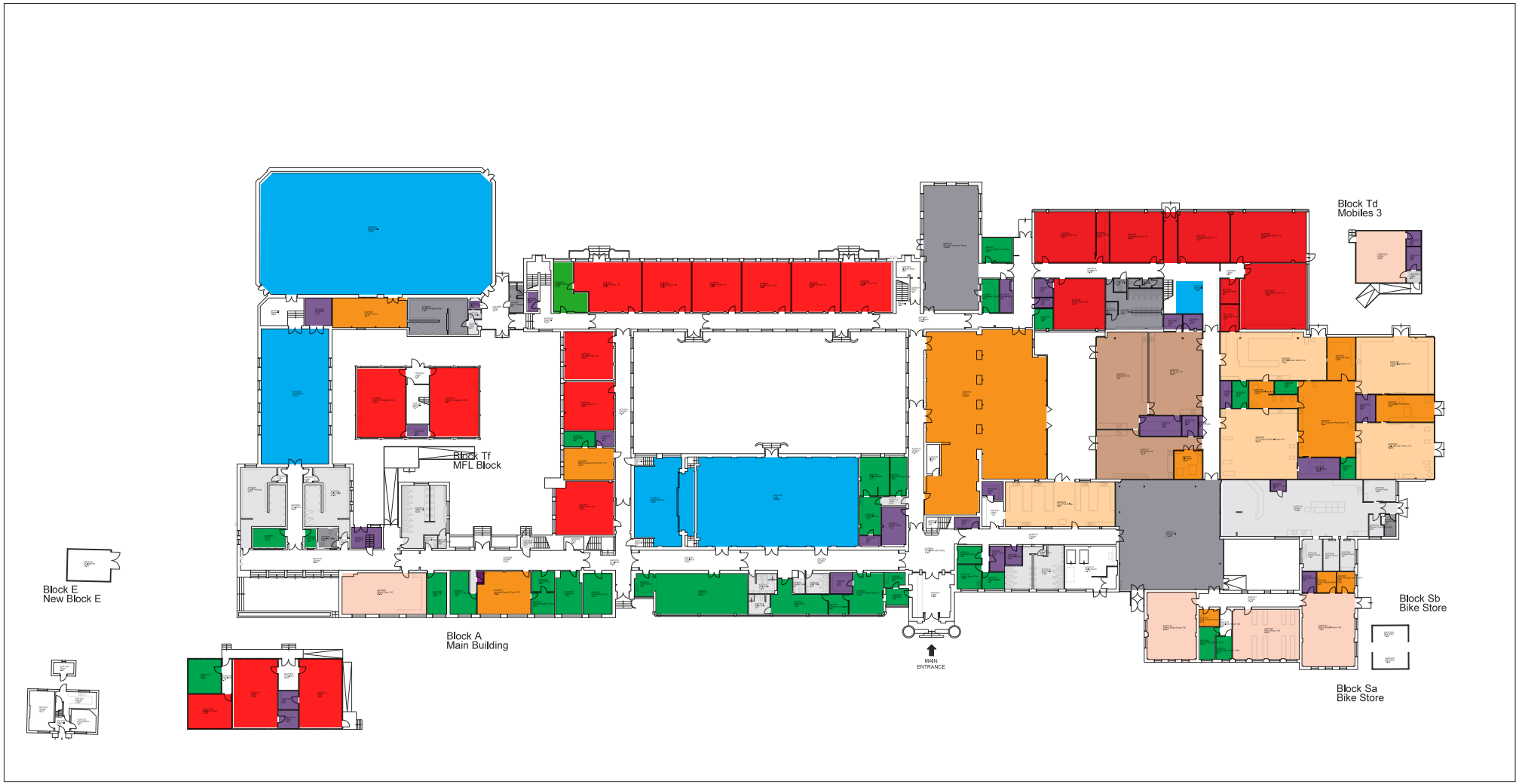
Description: Updated	Drawn: SpInt	Checked: SpInt	Approved:
Date Surveyed: 25/06/2012	Filename: 4500 - Isleworth and Syon School for Boys.dwg		

Isleworth and Syon School for Boys
Ridgeway Road, Isleworth, TW7 5JL

Fourth Floor Plan

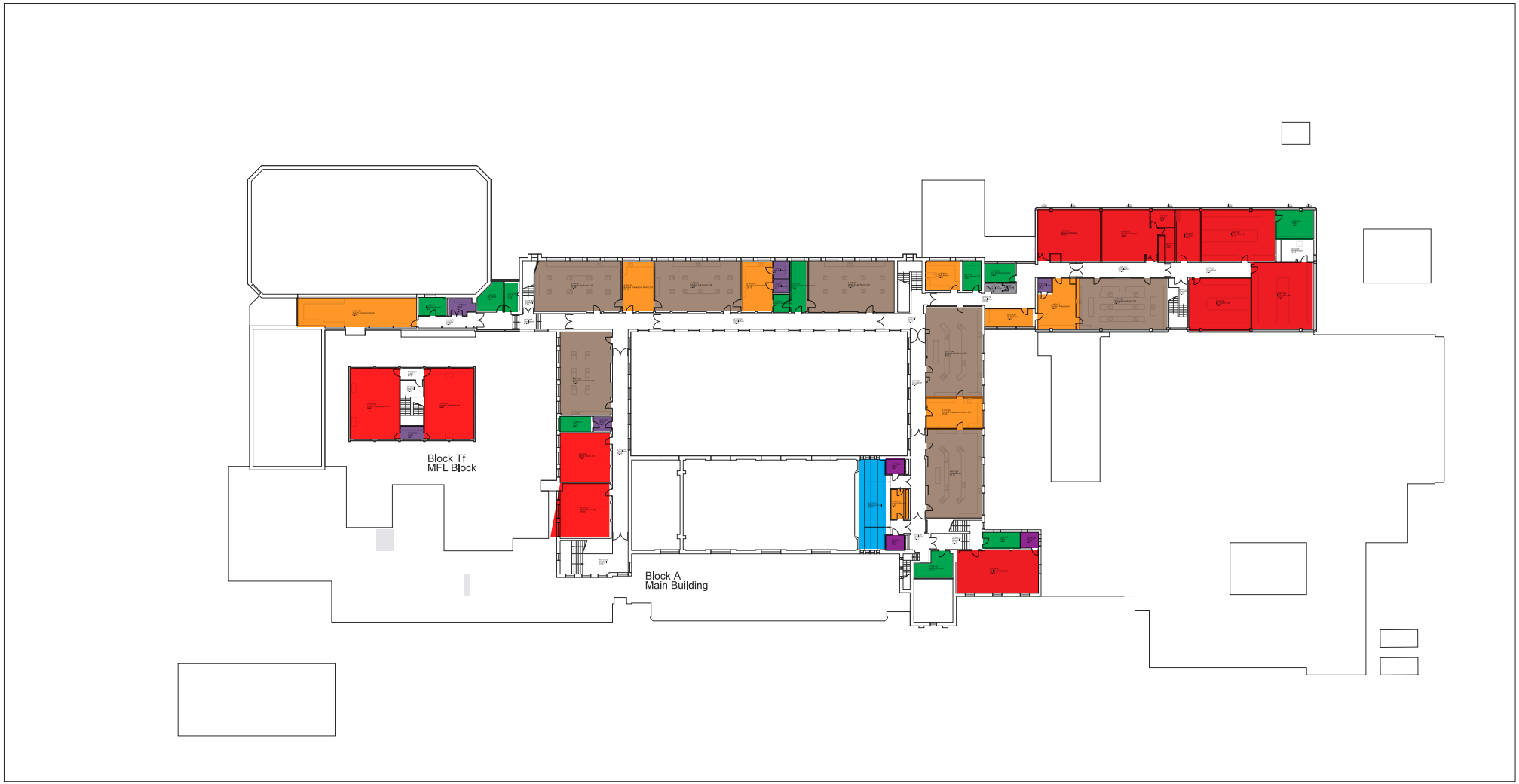
3.11 Existing Accommodation Schedule Relative to BB98

Ground Floor



	General Teaching		Music and Media		Halls and Dining
	Science		Learning Resources		Dining and Social
	Design and Technology		Staff and Administration		Toilets and Changing and Kitchen
	Art		Storage		Lift

First Floor



- General Teaching
- Science
- Design and Technology
- Art
- Music and Media
- Learning Resources
- Staff and Administration
- Storage
- Halls and Dining
- Dining and Social
- Toilets and Changing and Kitchen
- Lift

3.12 Description of Existing Building Stock + Structural Appraisal

Foundations
All the existing buildings dating from the 1930s, 1979 & the recent 2010 library extension are assumed to be founded using pad and strip footings onto the underlying Gravels.

Structural Frame
1930 Original Building
The 1930 original buildings appear to consist of a concrete encased steel beam and column frame supporting a reinforced concrete first floor and flat roof to the corridor.
1979 Extension
The Humanities Block is formed using a concrete encased steel frame on the external perimeter and a load-bearing 140thk dense blockwork spine corridor wall in the centre of the building to support a bespoke 305w x 254dp precast prestressed beam and block flooring system.
The DT & Art block appears to be formed in a steel frame potentially braced by the masonry elevations. Exposed tubular steel roof trusses span the width of the building supporting the roof.
The Dining Hall is built using a steel framed pyramidal roof form including a large central rooflight and timber roofing.

External Walls
The 1930 original building is clad in solid masonry while the 1979 extension blocks are formed in cavity masonry likely to comprise of an empty 50mm cavity.
The new gymnasium has solid masonry walling up to approximately second floor level and lightweight cladding to the pop-up roof.

Internal Walls
Internal walls are generally formed in masonry brick in the 1930s building and blockwork in the 1979 building and built off the concrete floor slabs.

Ground Floor
The ground floors throughout the school for both original 1930, 1979 extension and recent 2010 extensions all appear to consist of ground bearing solid concrete onto which the floor finishes include original 1930 parquet timber flooring and terrazzo to the stairs.

First Floor
The First floor of the 1930s building appears to consist of reinforced concrete spanning between concrete encased downstand steel beams.
The 1979 Humanities block has a bespoke precast prestressed beam and block First floor system with a reinforced 60mm thick structural concrete topping

Roof
1930 Original building
Flat roofs over the corridor and original gymnasium are generally formed in reinforced concrete spanning between concrete encased downstand beams.
Pitched roofs over the classrooms are formed in timber rafters, strengthened using collars, purlins and props to loadbearing ceiling joists.
The mansard shaped roof over the main school hall in formed in a steel truss spanning between steel columns set within brick piers. Timber purlins span horizontally between the steel trusses to support the roof tiles.
1979 Extension Buildings
The Humanities block roof is formed using a bespoke precast prestressed I-beam and block system with a 50mm screed topping and 20mm asphalt waterproofing. The original built-up mastic asphalt roofing was overlaid in 2012 with a Bauder 'Bauderflex' roof – a reinforced elastomeric bitumen membrane over new rigid PIR insulation.
The DT & Art block roof is formed using a series of exposed structurally expressed triangular tubular steel trusses supporting what appears to be a timber roof
The New Gym roof is formed using steel portal frame, steel purlins and lightweight profiled metal decking roof sheeting.

Stairs
The stairs to the building are formed in insitu concrete.

Windows
1930 Original building
Windows have generally been replaced to now consist of UPVC double glazed units.
1979 Extension Buildings
Windows in the Humanities block have been replaced as part of the 2014 refurbishment with double-glazed units
Windows in the DT & Art block and dining hall remain as the original single glazed units.

Visual Condition of Current Building Stock (Roofs N/A)
1930 Original Building
The 1930 original buildings have been well maintained and no now visible signs of significant defects. The buildings are serviceable and generally fit-for-purpose in their current form. The windows have generally been recently replaced with new UPVC double glazed units extending life-span, and improving thermal and acoustic performance.

1979 Extension
The Humanities Block is undergoing a full refurbishment including new windows and Mechanical Heat Recovery Ventilation to be completed late Spring 2014.
The Dining Hall & New Gym areas are show no significant defects.

The DT & Art block situation between the Dining Hall and the Humanities block is not considered serviceable and fit-for-purpose in its current form as it suffers from a number of service problems as listed below: -

- significant overheating in the summer
- lack of ventilation to the rooms without opening windows
- condensation and heat-loss in the winter
- Acoustic break-in from the aircraft noise
- Poor internal circulation – access to some rooms are through others, this may impact on secondary means of fire escape.

These issues are mainly caused by the large proportion of single-glazing in both the elevations and the mansard section of the roof over the elevation and the lack of any form of mechanical ventilation.
The lack of internal circulation between rooms also restricts air-flow but appears to be been conceived to maximize the room sizes.

4.0 Strategy for Expansion to 8 Form of Entry (8FE)

Options 1 & 2

4.1 Area Calculations for Expansion, 8FE + 320 Sixth Form

Introduction
Having documented the existing condition in the previous chapters we now turn to the expansion capacity at Isleworth & Syon. The 2 options work from the same premise in terms of capacity but the first approach focuses entirely on meeting the needs of the additional students and keeping growth and improvements to an absolute minimum. The second option takes a broader and longer term approach solving existing condition problems, recognising a high priority for maximising outdoor space while also meeting the needs of expansion.

BB98 Assessment of Expansion Capacity
8FE + 320 Sixth Form

Site Area

The Expanded 8FE + 320 sixth form - 1,520 pupil school, would be the maximum expansion the current school hard-paved site can accommodate without taking some of the on-site pitch area based on BB98 minimum site areas for a 'confined site'.

Using the current school building footprint including the temporary classrooms, the expanded school will comply with the minimum gross site area and have 327m2 = 2.8% area to spare. For contrast the current school falls short of the top-value of site area within the BB98 range by 15% = 2193m2.

When the site is analysed into separate net areas, for both the Existing and Expanded formats there exists a lack of Soft-Informal landscaping and Habitat areas and an over provision of Hard-Informal and Social areas – but the net sum of the imbalance roughly equates.

Comparison of the total pitch areas 12,300m2 on-site and 40,500m2 off-site show a shortfall of -16% = 10,400m2 when compared to BB98 pitch area totals.

Thus new school expansion should aim to take as little as possible further building footprint area at ground floor level than the current provision which includes temporary classrooms (temporary classrooms will be demolished and their areas incorporated within expansion schemes). Secondly, expansion proposals should potentially review converting some Hard-Informal external space to Soft-Informal external and / or Habitat. In addition, expansion proposals may consider the potential of new or additional hard games court areas (MUGA) courts or similar.

Minimum Building Area

The Existing building Net area is -35% = -2358m2 short of the BB98 minimum area for the proposed expanded school format (8FE + 320) when compared to a new-build school to current space and area requirements. By category these areas are predominately Basic Teaching & Dining.

If the numbers for the pupil expansion alone are considered (i.e. 2.2FE + 90) and the existing school format with the -10% = 362m2 (approx. 6 classroom) under-provision of Basic Teaching space is accepted the expansion requirements are reduced to -2058m2 of Net Building Area required from an expansion programme.

Further reductions in expansion area requirements can be made by understanding the current school format & needs and allocating some of the 'Float' area such that expansion targets predominately Basic Teaching with a little extra Learning Resource, Staff Office and Storage.

Our proposed Expansion provision allows for an additional building Net building area of approximately 1,550m2 and a Gross internal area to the new DfE funding formulae October 2012 of approximately 1,915m2.

Compare Existing to 8FE+320 Minimum Site Areas	Key Formulae	**Existing 2013/14**	**8FE + 320 N = 1520**	**+ / -**
Pitches	provided 'off-site'			
Soft informal and social	600 + 2.5N	3553	4400	-847
Games courts (hard surface)	2000 (MUGA)	1419	2000	-581
Hard informal and social	200 + 1N	3845	1720	2125
Habitat	0.5N	0	760	-760
'Float'	remainder of site			
Total net site area	2800 + 4N minimum	8817	8880	-63
Likely site area: from	4000 + 5N	11927	11600	327
to	5000 + 6N	11927	14120	-2193
Pitches - ON site	10000+35N	12311	63200	
Pitches - OFF site	provided 'off-site'	40480		
Pitches - TOTAL		**52791**	**63200**	**-10409**

Expanded assessment, BB98minimum site areas for secondary schools in confined sites

		Current Allocation 2013/14	Full School - BB98	BB98 8FE + 320	Expansion Only - BB98	Proposed Expansion Provision
			8FE + 320 6th FORM	compared with Extg	2.2FE + 90 6th FORM	2.2FE + 90 6th FORM
11 to 16	No. of Forms	**6**	8		2.2	2.2
	Form Size (G)	**28**	30		30	30
	No. of years	**5**	5		5	5
	Total 11-16(p):	**840**	1200		330	330
16-18	Sixth Form(P):	**180**	320		90	90
Total no. of students (N):		**1020**	1520		420	420

Minimum Building Areas	Key Formulae	N=1020	N = 1520		N=420 (Multiples of N only)	
Basic teaching	200 + 3.06N	**3204**	4851	-1647	-1285	-1285
Halls	600 + 0.3N	**1099**	1056	43	-126	Existing Over Provision
Learning resources	125 + 0.29N	**778**	566	212	-122	-80
Staff and administration	125 + 0.31N	**617**	596	21	-130	-40
Storage	200 + 0.36N	**628**	747	-119	-151	-20
Dining and social	100 + 0.26N	**364**	495	-131	-109	Use Main Hall at Lunchtime
'Float'	250 + 0.32N		736	-736	-134	-120
Total net building area	**1600 + 4.9N**	**6690**	**9048**	**-2358**	**-2058**	**-1545**
Likely gross building area	2250 + 7N	**9286**	12890	-3604	-2940	-2201
The funding for the gross areas of new school buildings is based on new formulae (01 Oct. 2012)	1050+350(if there is a sixth form)+6.3p(11-16) + 7p(16-18)		11200	**-1914**	**-2709**	**-1913**

BB98 Minium Building Areas - 8FE + 320 Sixth Form, Proposed Expansion

8FE + 320 Additional Basic Teaching Area by Curricula

The additional teaching areas for the extra 330 No. 11-16 year olds and the 90 No. 16-18 year olds (2.2Fe + 90) may comprise of the following distribution shown adjacent.

Additional Teaching Space Schedule – ASSUMED – TBC by School		**8FE + 320**	
Room Type	**No. of**	**Typical Room Area m2**	**Total Net Internal Area (NIA) m2**
Basic Teaching	12	60	720
Science Laboratory	4	90	360
Drama - Large	1	90	90
General Art Room	1	90	90
IT / BS Room (Sixth Form)	1	60	60
Sixth Form Study Area (LR)	1	80	80
Staff and administration		40	40
Storage		20	20
'Float'			120
TOTAL			**1580**
Toilets			+21 WCs

4.2 Design Strategy, Options 1 + 2

School Goals + Objectives

During the original masterplan strong common themes were identified which enabled a clear set of goals to be established. The goals are general enough in nature that they will stand the test of time and ensure a long life and a robust guide for development. These goals have informed our proposals here.

School Goals + Objectives, the Masterplan Brief

Key Curriculum Items

When addressing the expansion we have also considered a series of key curriculum items for both options:

- The new block is an ideal opportunity to consolidate and house, for the first time, distinct English and Maths departments. These are currently distributed through-out the school which is inefficient and lacking in identity.
- Existing undersized 45m2 English rooms will be knocked together to form the additional 90m2 Science laboratories required. 4 No. 90m2 standard size Science labs can then be created on Ground Floor in proximity to the existing science labs on First Floor.
- The Maths portacabin which houses 2 No. classrooms along the school frontage is to be demolished and combined into the expansion proposals.
- The undersized Drama portacabin at the rear is intended to be demolished and accommodated within the new expansion proposals
- The Drama room in the music block is considered for conversion into a multi purpose Music classroom + Recital room with office for both internal and possibly shared community use
- Provide a new Sixth Form Study Area and Sixth Form IT / BS room in the proposed expansion

Option 1, Key Characteristics

- Total GEA of 1,920sqm over 2 floors - minimal area to meet expansion demands of 8FE
- Stand alone new build on what is currently a games area and tennis court
- Natural links into the existing school circulation routes ensuring clear wayfinding
- Good orientation for daylight
- Building positioned (4.5m from boundary) to enable solar shading on the long south facade. This can be achieved with an external canopy that has a dual purpose of providing cover for outdoor play and teaching opportunities
- This distance from the facade is positive in planning terms, keeping the mass away from the boundary and also set back away from the primary frontage
- Demolition of the existing Maths portacabin along Ridgeway Road will improve the quality of the primary frontage and be very positive in planning terms, improving the setting for the historical central quad building and tower.
- Demolition of the existing Drama portacabin on the northwest corner will clear the area for outdoor games and soft social space as well as enabling the removal of associated unsightly ramps, pathways and old tarmac pads

Roof areas should be optimised + are ideal for education opportunities

Brise soleil can also provide protected canopy areas for outdoor classrooms + play

Use of materials to add clarity + distinction between old and new

Use of sustainable materials, renewable and re-usable

- The loss of games areas, a priority issue for both the school (key goal + objective) and Sport England, is mitigated in 2 key ways: (1) by the increase in outdoor space when demolishing the 2 portacabins and by providing a roof garden on the new building. The demolition at ground level results in more gain than the portacabin footprint itself as both temporary buildings are set in a context of pathways, tarmac surfaces and pockets of under utilised outdoor space. By repossessing these areas and converting them to designated games areas a large gain is made. (2) This is then complimented by the roof garden which apart from having multiple environmental benefits is also ideal for providing soft informal and habitat areas - previously identified as having a shortfall against the BB98 criteria.

Access for All

Both options under consideration will provide inclusive access and be designed to meet Part M and the Equality Act 2010 & BS 8300. Not only will both options ensure level access to the new areas but also enable better access to the existing parts of the school, certainly at First Floor which is currently not served by a lift anywhere . Access for All will also address other important areas of equality to include generous corridors, clear signage and lighting and careful use of colour to meet contrast criteria. These development proposals will ultimately improve the entire school campus as a whole.

Daylight, indoor gardens and good ventilation: all contribute to better learning

Construction Typology and Materials

A traditional approach to construction in the form of a braced steel frame with concrete infilled metal decking floors or precast prestressed widespan flooring planks for floors and flat roof can be advantageous in terms of durability, thermal mass and acoustic benefits but the final proposals will require further consideration. Alternative approaches such as off site pre fabrication and the use of timber should not be ruled out. Foundations are likely to mirror existing with concrete pads and strip footings to the underlying Gravels.

External Appearance

Any proposals will need to be considered with great care in regards to the Spring Grove Conservation Area and the strong characteristics of the central quad building and tower. Proposed materials must respect and compliment this context but could achieve this with a series of different approaches to include timber cladding, kingspan and brick.

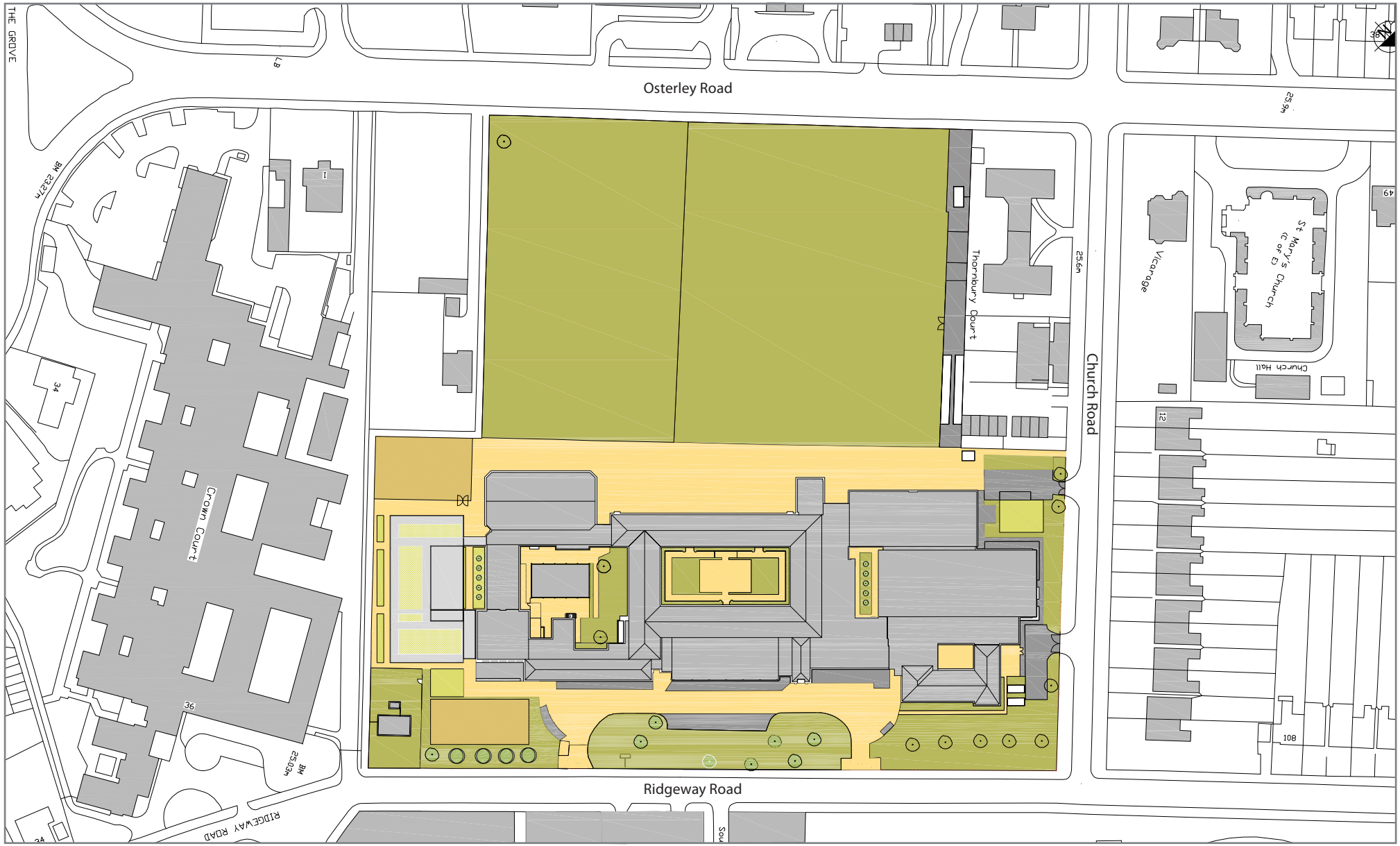
Acoustics

While the school does not suffer from road traffic noise the impact from being positioned within the Heathrow flight-path is a concern and one that needs to be allowed for in any design proposals. A dense form of walling is proposed for acoustic benefits which would likely include a dense masonry inner leaf and prefabricated panel cladding system to the exterior. There is scope for off-site construction such as precast concrete panels (walls and floors) or cross laminated timber CLT to be considered as a build option once the outline scheme is developed and potentially after a contractor is brought into the design team. However, it should be noted that these solutions are often supplier / sub-contractor specific limiting market choice and can constrain the building layout.

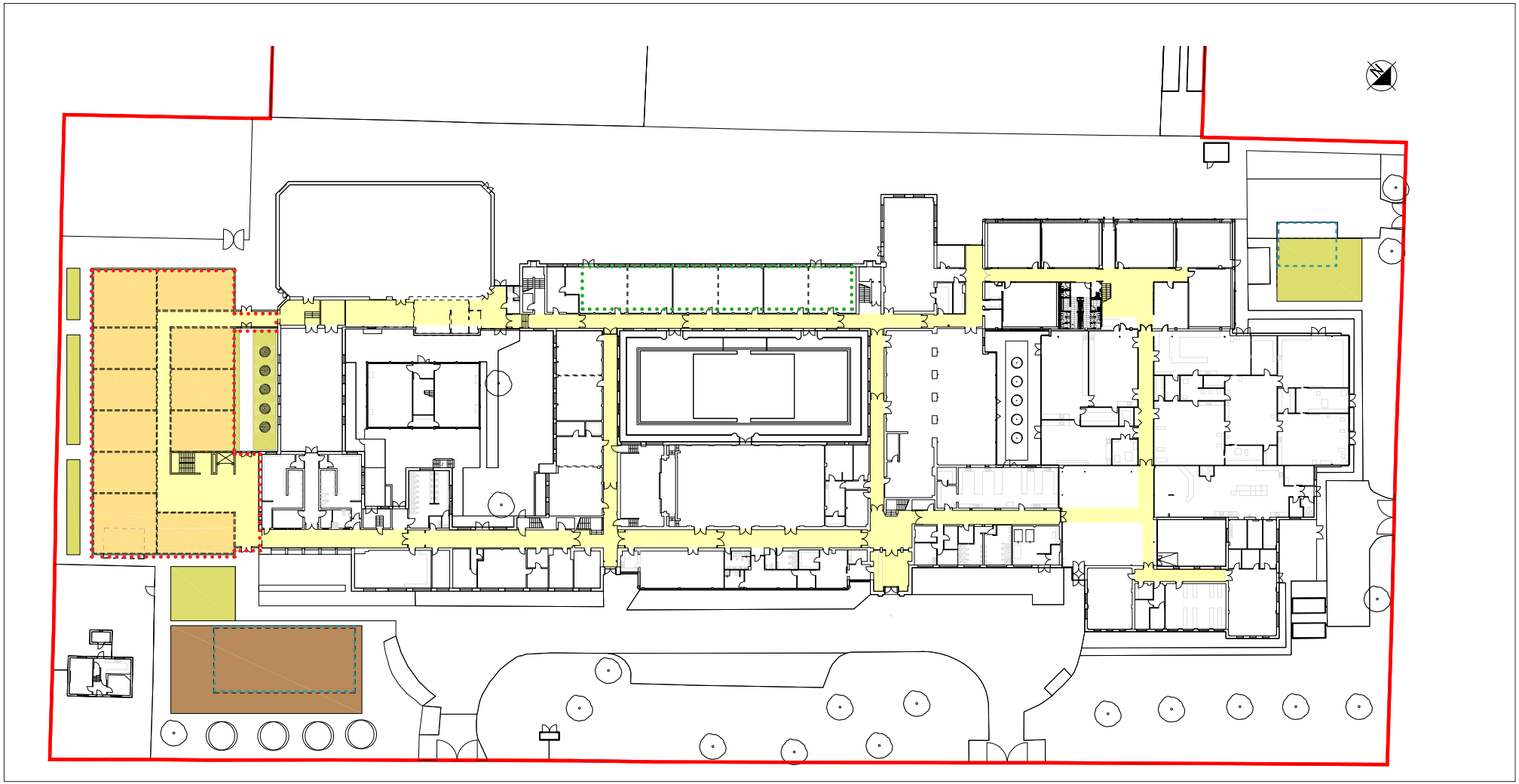
The design of the mechanical ventilation system will directly respond to this condition and is outlined in Chapter 5. Given the degree of noise levels any natural ventilated system was proven to be impractical in our refurbishment work for the Humanities Wing. The recent installation of a mechanical system, with heat recovery, is providing a very high quality teaching environment that is well ventilated, acoustically sound and highly efficient.

4.3 Proposed Drawings: Option 1, Aerial View

Option 1, Site Plan



Option 1, Ground Floor (total GEA: 1920 sqm)



Proposed New Two Storey Building

Removal of Temporary Buildings (Total GEA: 260 sq m)

Conversion to Larger Science Rooms

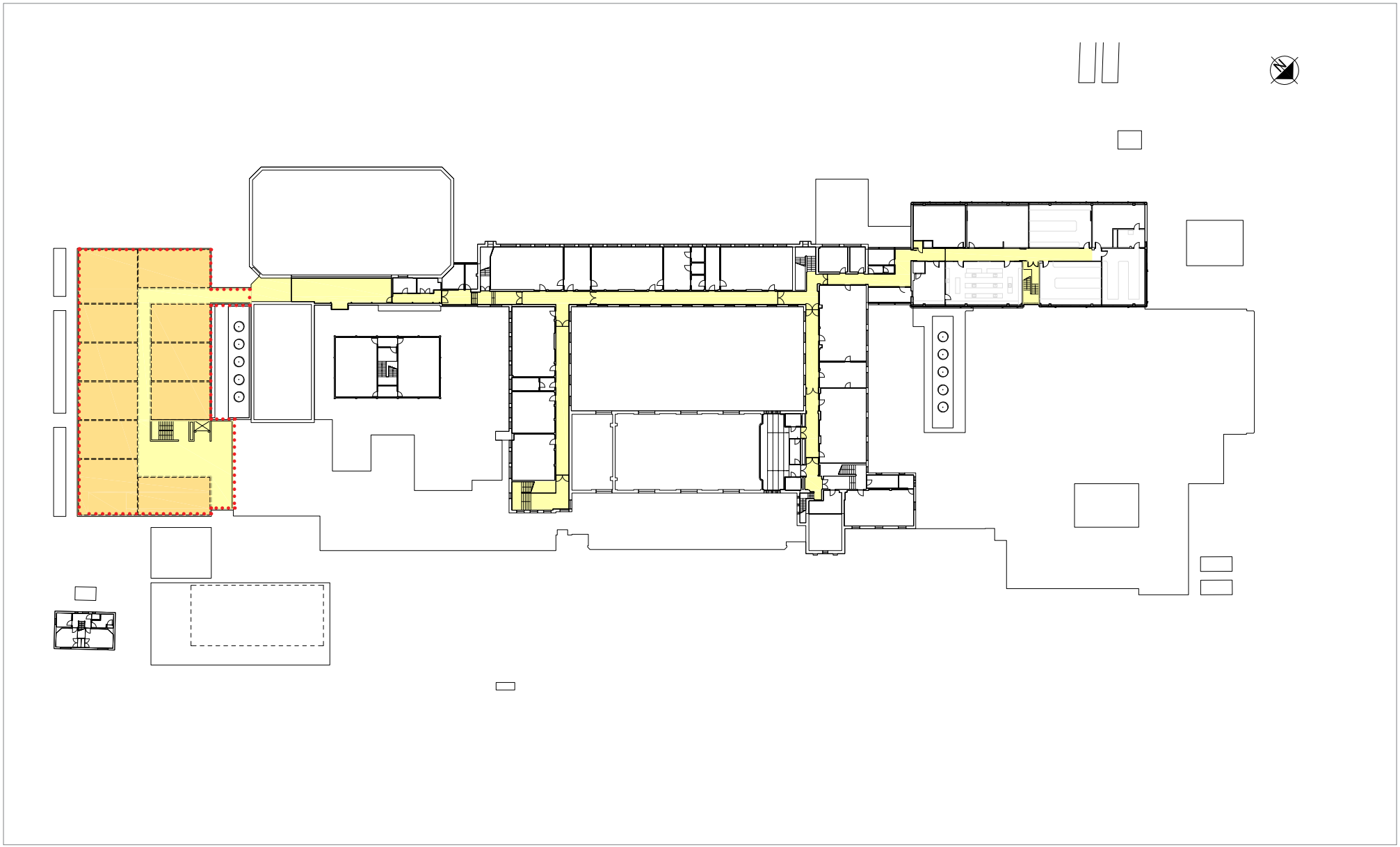
Classrooms/ Teaching Area

Circulation

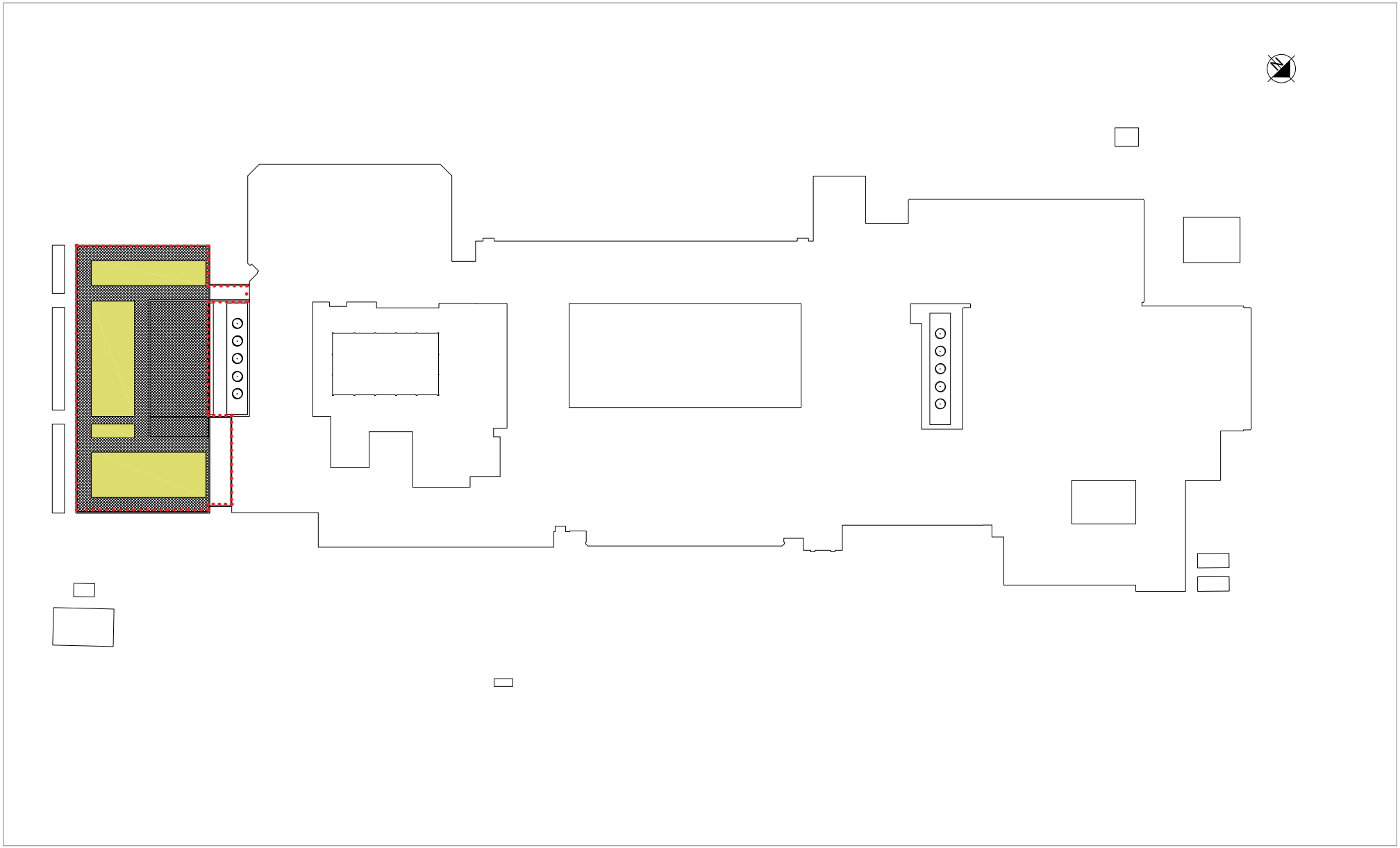
Proposed New Gardens/Ecology Areas

Proposed Games Area

Option 1, First Floor



Option 1, Roof Plan



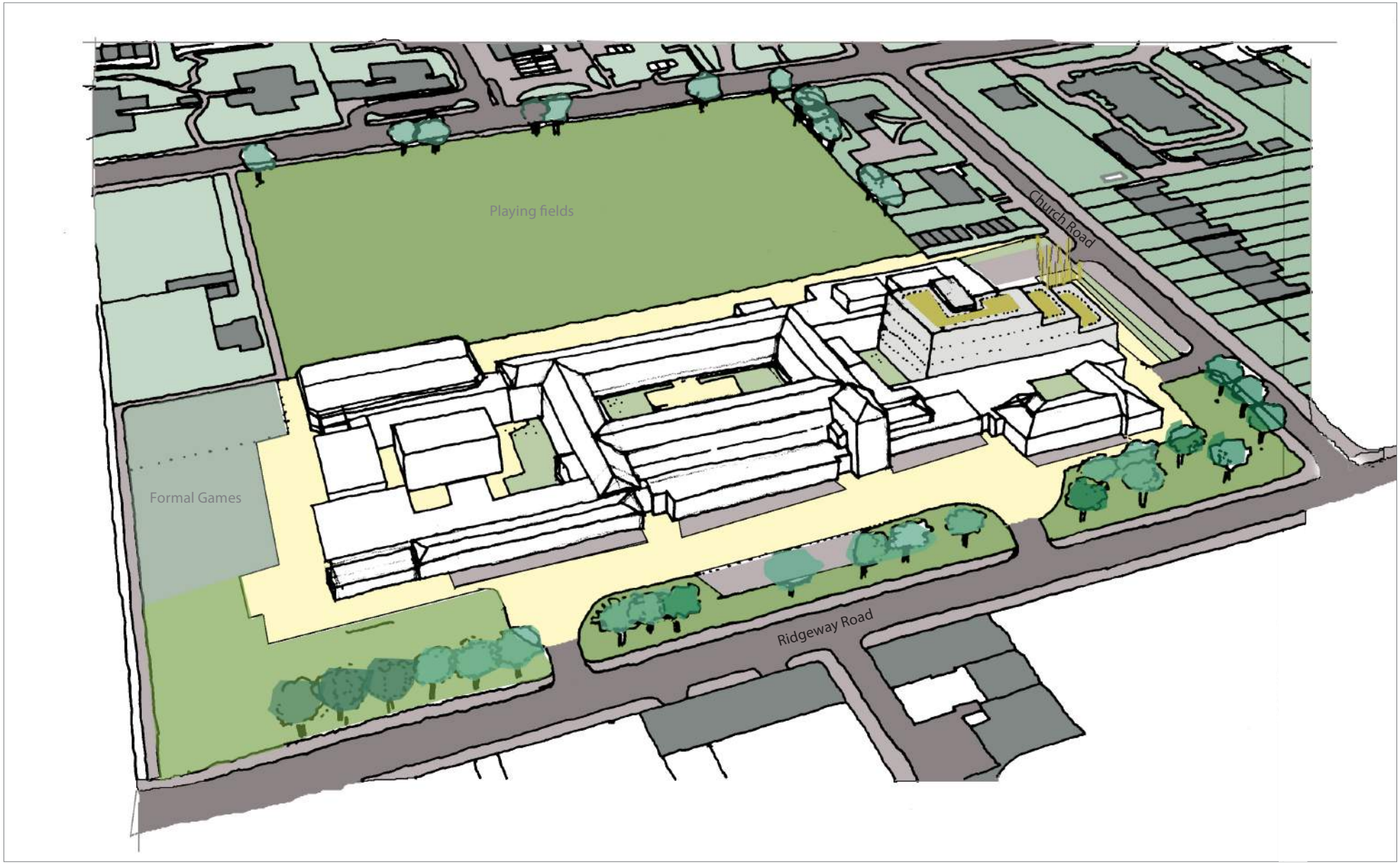
4.4 Design Concept, Option 2

Option 2, Key Characteristics

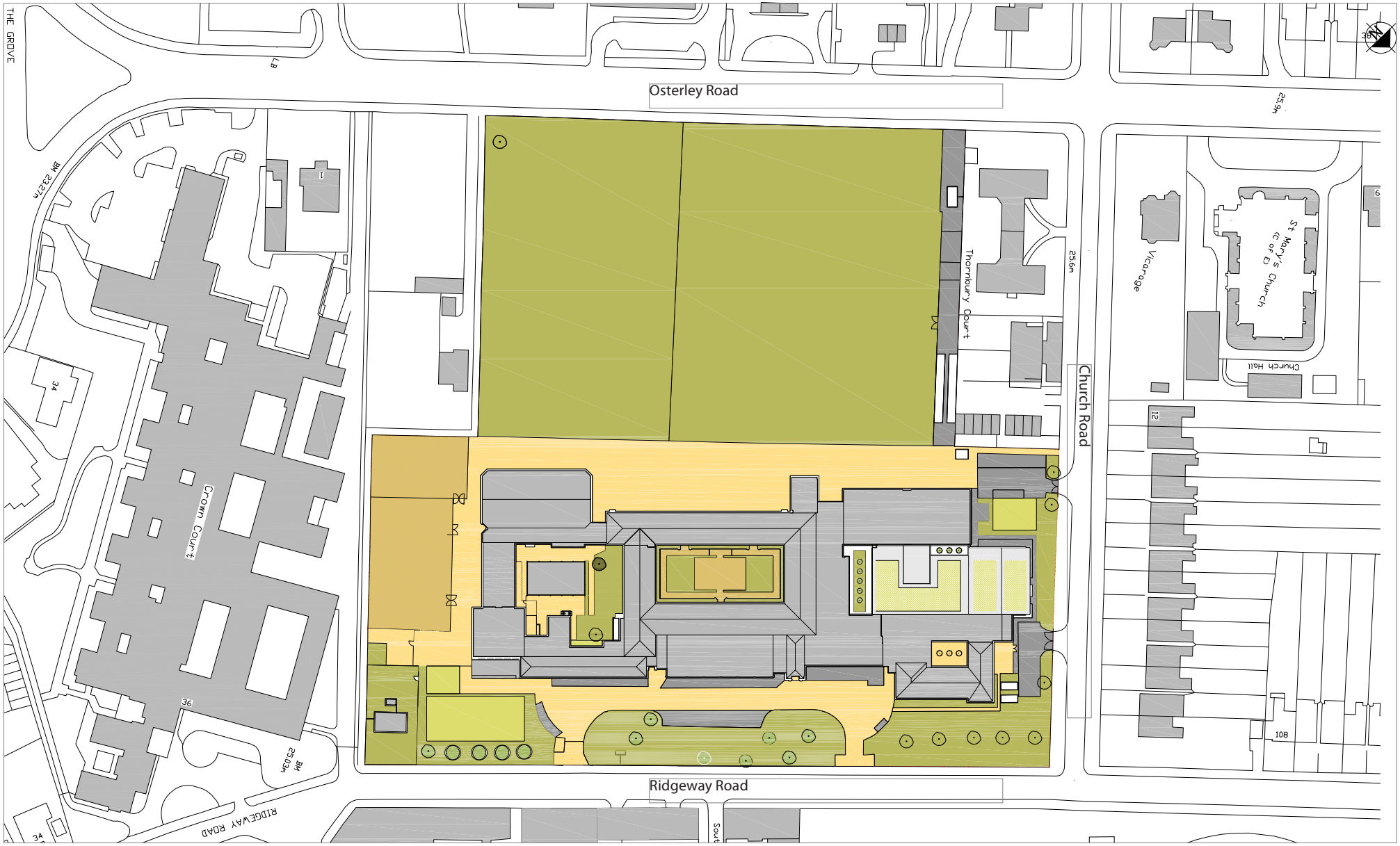
- Total GEA of 3,045 sqm over 4 floors of which 2,130sqm is for expansion and the remainder is replacement of the derelict Arts/DT block and 2 small portacabins
- Existing footprint of Arts/DT block is maintained with no loss of existing ground plane
- Improved circulation and teaching areas for the Arts + DT curriculum which currently operate from sub standard rooms that are interlinked
- Improved air quality and thermal control for the Arts + DT which currently suffer from very poor environmental conditions which led to closure in some periods of the 2012/13 academic year
- New layout ensures better links into the existing school circulation routes ensuring clear wayfinding
- Good orientation for daylight into atriums and naturally self shading due to terracing to northwest
- Building positioned well away from the boundaries ensuring a landscape buffer to adjacent residential neighbours
- Positioning and terraced form are positive in planning terms, keeping the mass away from the boundary and also set back away from the primary frontage
- Demolition of the existing Maths portacabin along Ridgeway Road will improve the quality of the primary frontage and be very positive in planning terms, improving the setting for the historical central quad building and tower.
- Demolition of the existing Drama portacabin on the northwest corner will clear the area for outdoor games and soft social space as well as enabling the removal of associated unsightly ramps, pathways and old tarmac pads
- In regards to Sport England and the school the ability to increase density and not suffer any loss of games and outdoor space is very beneficial. When taking into account the increased ground plane from the demolition of the portacabins coupled with the new outdoor areas on the roof this option actually increases the outdoor provision and greatly enhances the overall setting of the existing buildings.

Existing DT + Arts Building (top 2 images) and Drama Portacabin

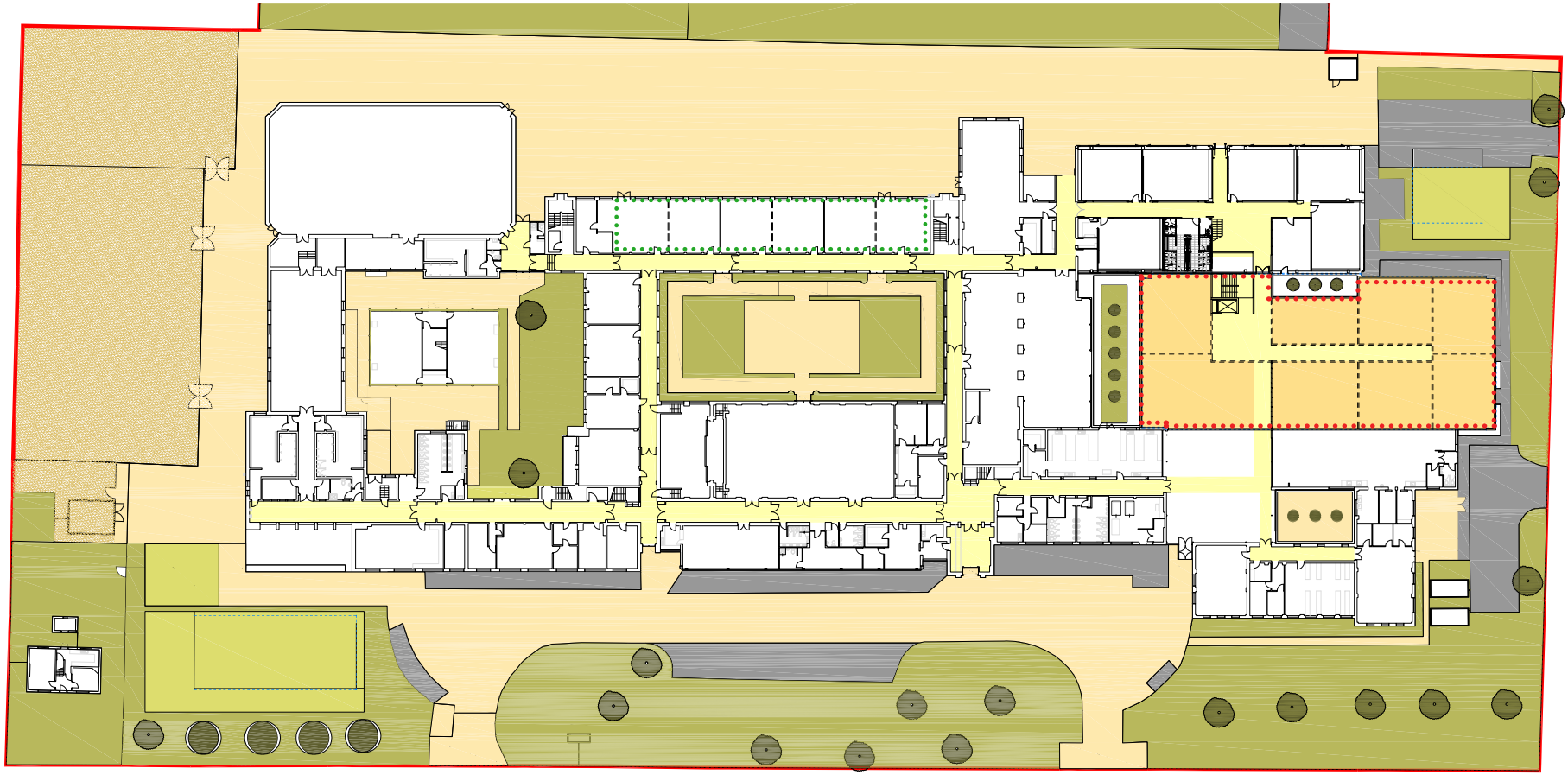
4.5 Proposed Drawings: Option 2, Aerial View



Option 2, Site Plan



Option 2, Ground Floor



Removal of D&T Single Storey Building (Total GEA: 915 sq m)

Proposed Building (Total GEA: 3,045 sq m) (New: 2,130 sq m + Rebuild of GF)

Removal of Temporary Buildings (Total GEA: 260 sq m)

Conversion to Larger Science Rooms

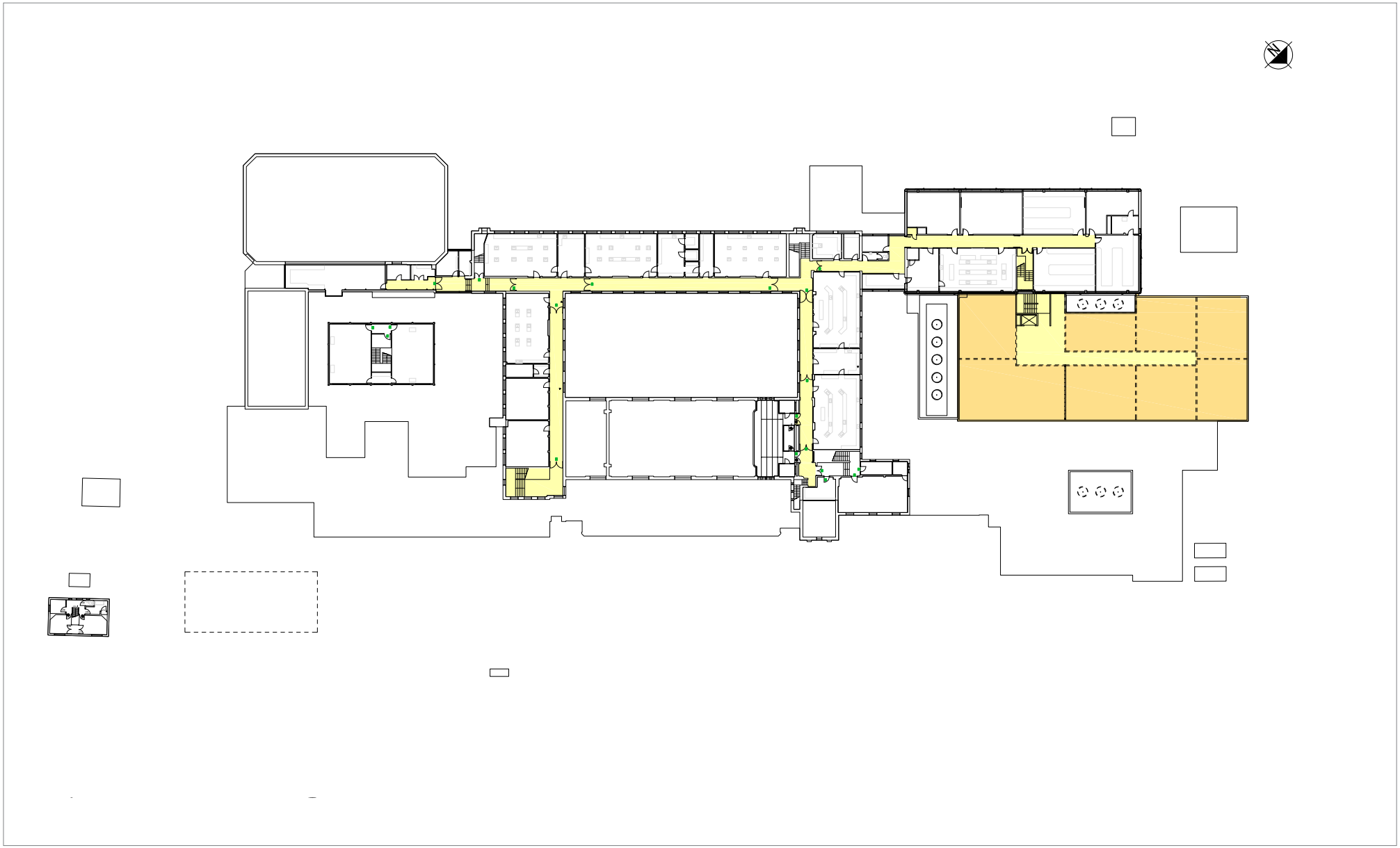
Classrooms/ Teaching Area

Circulation

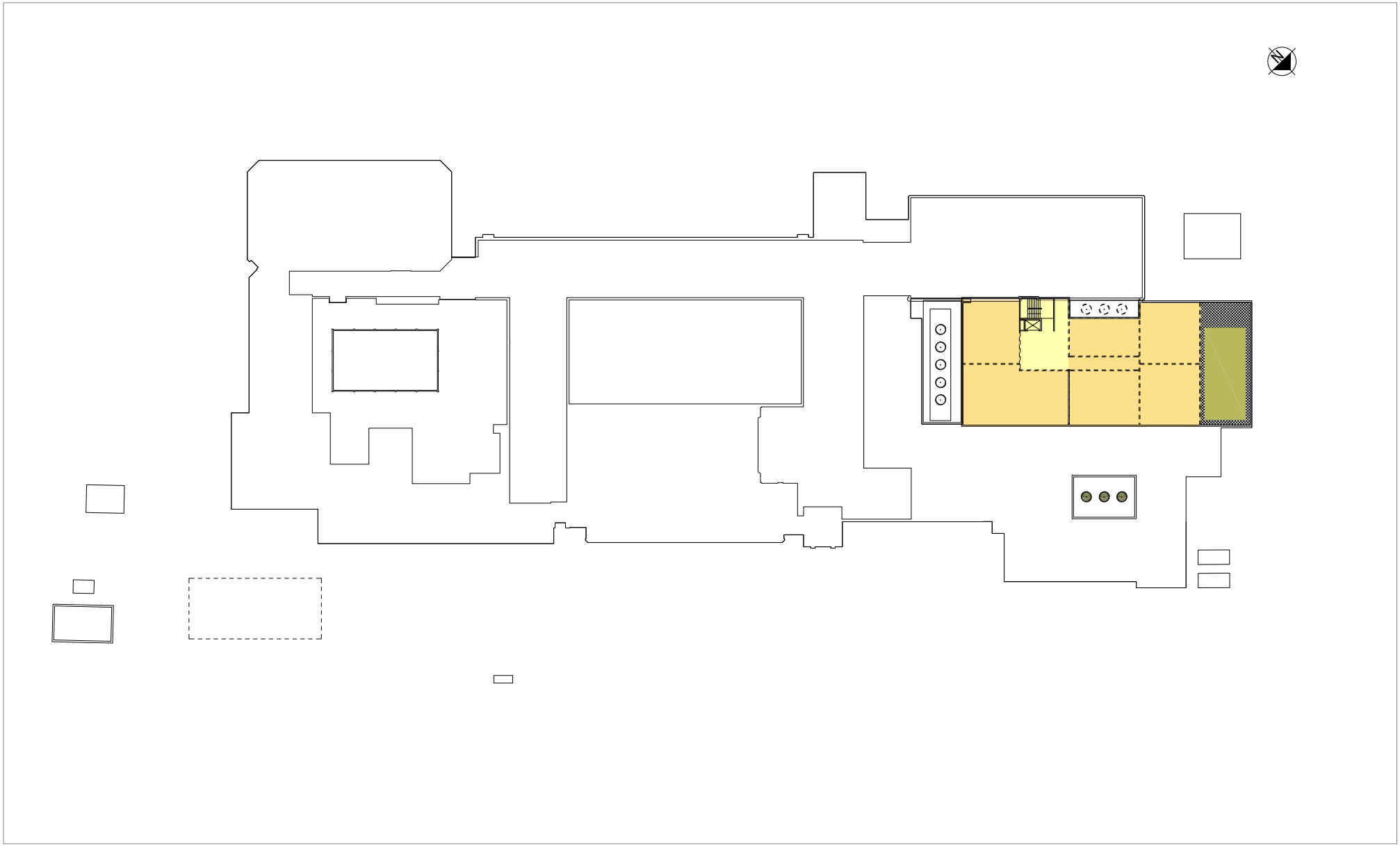
Proposed New Gardens/Ecology Areas

Proposed Games Area

Option 2, First Floor

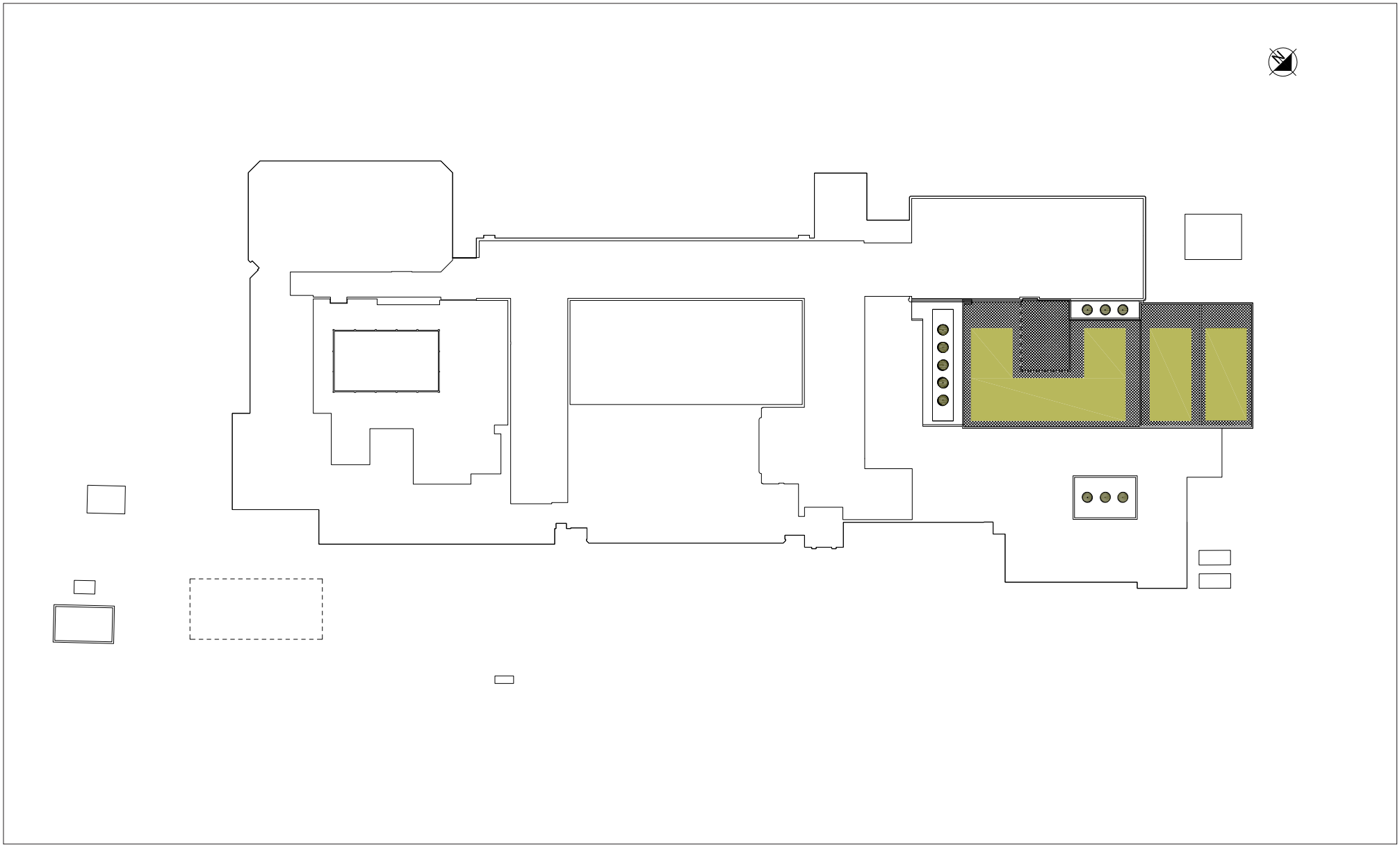


Option 2, Second Floor



Option 2, Third Floor

Option 2, Roof Plan



5.0 Building Services and Sustainability Strategy

5.1 Policy + Guidance

Building Regulations Part L

Both proposals will be subject to Approved Document L2A, where the proposed extension has a total useful floor area that is both: greater than 100m2; and greater than 25 per cent of the total useful floor area of the existing building. Otherwise, the extension will be subject to Approved Document L2B, which addresses energy efficiency requirements of existing buildings.

Currently our proposals only satisfy one of the above criteria. They are larger than 100m2 but less than 25 per cent of the existing school. As such the new extensions may not be regarded as "new buildings" and in terms of Building Regulations compliance will only need to meet the requirements of Approved Document L2B.

Specifically "elemental compliance" will be required, which sets out minimum standards for controlled fittings (windows, doors); controlled services (heating and hot water systems, mechanical ventilation, mechanical cooling, fixed internal lighting, renewable energy systems); and thermal elements.

The construction of the new extensions will trigger the requirement for consequential improvements as the existing building has a total useful floor area over 1000m2. The value of consequential improvements should not be less than 10% of the value of the principal works.

Consequential improvements should be made to improve the energy efficiency of the whole building. However, the regulation does not require anything to be done that is not technically, functionally and economically feasible. Typically, measures are to achieve a simple payback not exceeding fifteen years or seven years for on-site low and zero carbon energy-generating systems.

The London Plan

From 2013 The London Plan requires major developments (over 1000m2) to meet a 40 per cent improvement on 2010 Building Regulations (Part L2A).

London Borough of Hounslow

It is understood that the following has been agreed with Planners and Building Control for all London Borough of Hounslow (LBH) projects, as per discussions with Pick Everard.

As The London Plan reduction is established against an improvement on Part L2A, the 40 per cent improvement target is only applicable to major developments that also meet the requirements for Part L2A.

Therefore it is understood that LBH do not require an extension subject to Part L2B to meet The London Plan target for major developments.

It is also understood that LBH require new major developments, which exceed 1000m2, to achieve BREEAM Very Good against BREEAM 2011 New Construction. This is described in more detail later in this chapter.

5.2 Energy Strategy

Demand Reduction

The priority of any energy strategy is to reduce energy demand. Once this is achieved efficient means of supplying energy can then be considered. The following sets out strategies to reduce the energy demand of the new extension.

Passive Design Measures

Passive measures are intended to limit the energy demands for space heating, cooling and lighting through the appropriate selection of the following:

- Building fabric
- Thermal bridging
- Air tightness
- Thermal mass
- Features which affect lighting and solar gain

Building fabric insulation, airtightness and thermal bridge free standards need to be maximised before energy generation is considered. This will minimise the size of expensive equipment required and ensure significant CO2 reductions over the buildings life.

Building Envelope

The building envelope is the primary climatic modifier and its enhancement can significantly reduce the energy demand of the proposed expansion. The building envelope is likely to be retained throughout the life of the building and it is prudent to focus investment here.

As such the building envelope will aim to achieve an excellent standard of thermal insulation and air tightness, helping to reduce the amount of heat energy required during the winter months for space heating.

Enhanced solar control (g-value) for windows will limit the ingress of solar gains, reducing peak internal temperatures, minimising the risk of overheating.

As a minimum controlled fittings and thermal elements should meet the necessary standards outlined by Part L2B, summarised in Table 01.

Building Element	U-value (W/m2k)
Windows	1.8 (for the whole unit)
Doors	1.8
Wall	0.28
Flat roof	0.18
Floor	0.22

Table 01: Minimum building fabric parameters

In line with Part L2B the area of windows and rooflights in the extension should generally not exceed 40% of the exposed wall. (Part L2B building type: places of assembly, offices and shops).

Thermal Mass and Free Cooling

The proposals will use the thermal mass of their structure (via exposed ceilings/walls) to store heat in the winter (from occupants and equipment) and provide cooling in the summer (via a night-time cooling strategy).

Working with the thermal mass of the building, night-time ventilation (via openable windows or mechanically assisted) will cool the structure, using the cool night air to remove daily heat gains.

Solar shading

Although solar gains are required to reduce heating demand in the winter, there is a potential for overheating in the summer. Careful attention should be given to shading from the high summer sun angle particularly on south and west façades.

Typical strategies for reducing winter heat losses such as superinsulation and good air tightness also help to reduce summer heat gains and work well in minimising overheating, providing there is adequate solar shading.

Solar shading to reduce the risk of overheating during summer will be delivered via strategically located overhangs and shading devices. Correct positioning of fixed shading devices will allow maximum use of direct solar gains from the lower angled winter sun when it is most needed.

Energy Strategy cont.

Daylight

Electrical demand for artificial lighting (and associated heat gain) will be minimised by optimising natural daylight into spaces and applying a light palette of colours to the interior, improving daylight penetration.

North facing roof-lights and sun-pipes could be considered to provide natural light while minimising solar gain.

Active Design Measures

The proposals will aim to incorporate a number of low energy design concepts, outlined below.

Low Energy Lighting

Fixed lighting systems are proposed to be energy efficient with lighting control systems that will help to reduce the use of artificial lighting.

Typically all of the lighting will be controlled by occupancy sensors. A fully dimmable lighting system with daylight control will optimise the use of natural light, reducing the reliance on electric lighting to achieve required lighting levels. Manual override switches will be positioned locally.

Mechanical Ventilation with Heat Recovery

Ventilation losses account for a significant component of the total heat losses in a building. Mechanical Ventilation with Heat Recovery (MVHR) is used to recover ventilation heat losses during the winter.

Given the acoustic issues on the site, windows are unable to be opened and either proposal is expected to utilise mechanical ventilation throughout the year. To counteract the energy use associated with running mechanical ventilation; low specific fan powers (SFP), high efficiency heat recovery and variable speed fans must be targeted.

To ensure an overall reduction in CO_2 emissions a greater reduction in space heating energy is needed to offset the increased electricity consumption required to operate mechanical ventilation with heat recovery (MVHR). Improving air tightness will reduce unwanted air infiltration and minimise the air that needs to be heated to maintain internal temperatures. Variable speed fans on CO_2 sensors and fresh air optimisers will help to minimise fan power.

Control

Intelligent building and energy management controls shall be designed to optimise and monitor energy consumption within the extension.

Key architectural features, daylight and low energy lighing

Canopies for shading and outdoor learning

5.3 Environmental Strategy

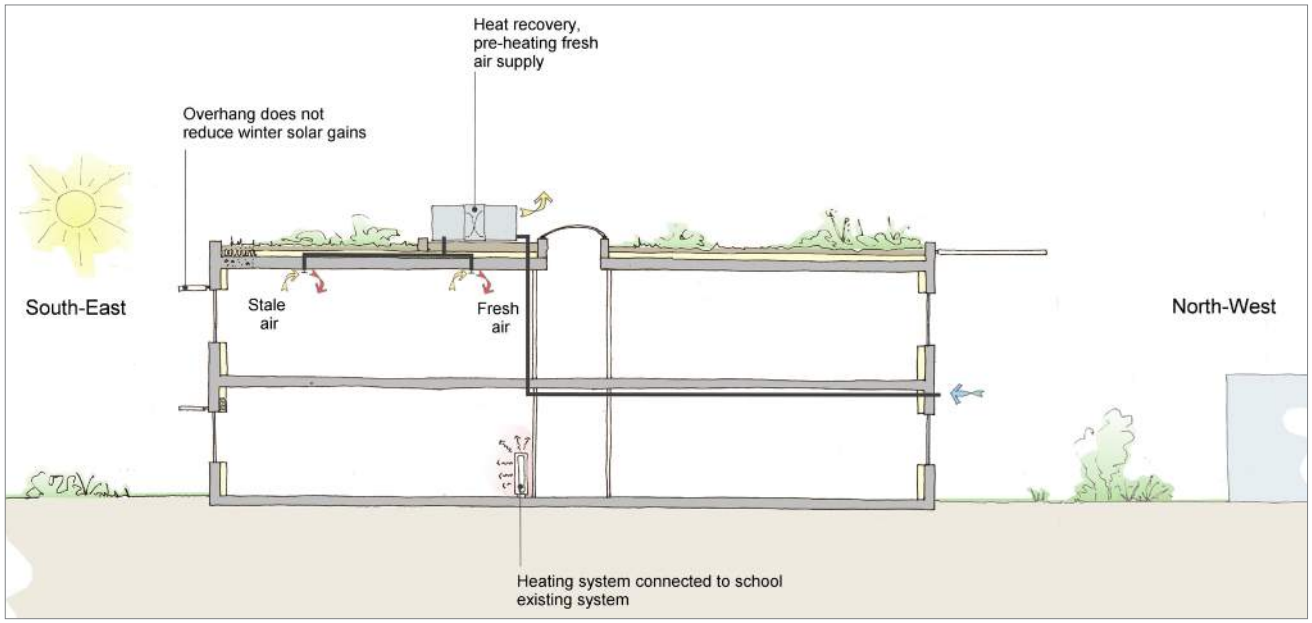
The adjacent diagrams are indicative of either proposal with the same principles applying to both.

Proposed Winter Strategy

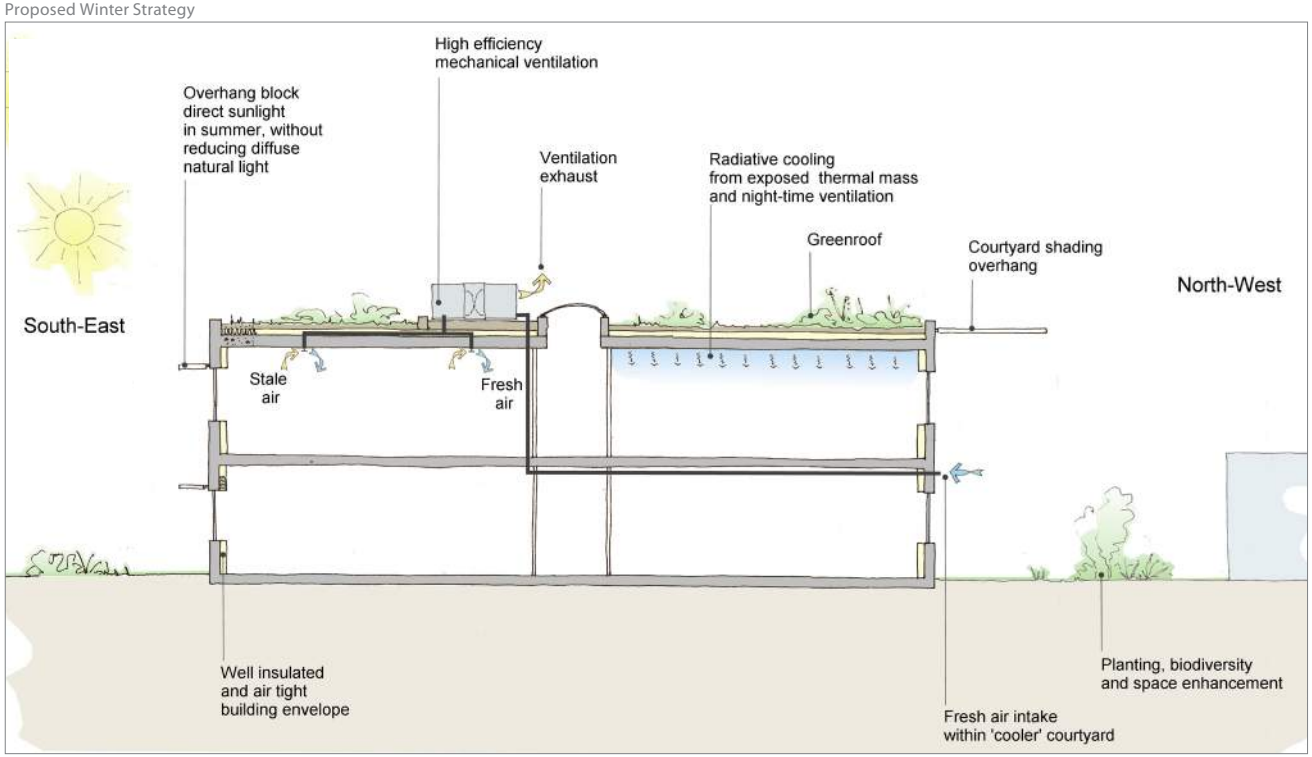
During winter, heat loss will be minimised via mechanical ventilation with high efficient heat recovery

Proposed Sumer Day-Time Strategy

During the summer cooler air will be taken from the shaded courtyard and supplied to the spaces within the extension. "Coolth" stored by the thermal mass throughout the night, well help to prevent spaces from overheating.



Proposed Winter Strategy



Proposed Summer Day Time Strategy

Environmental Strategy cont.

Proposed Summer Night-Time Strategy

Working with the thermal mass of the building, night-time ventilation (via openable windows or mechanically assisted) will cool the structure, using the cool night air to remove daily heat gains.

Renewable Technologies

There are no explicit renewable targets for the expansion proposals and considering the site context there are few technologies that would be suitable. The flat roof would lend itself to a Photovoltaic installation; although such a system would compete for space with the proposed roof gardens.

Water Strategy

Minimising water consumption will be achieved through the specification of water efficient fittings. In our experience a significant reduction of water consumption is likely to be reached through careful specification alone. During the next phase of design, the team will engage with the supply chain to identify technologies and develop appropriate specifications.

Material and Waste Strategy

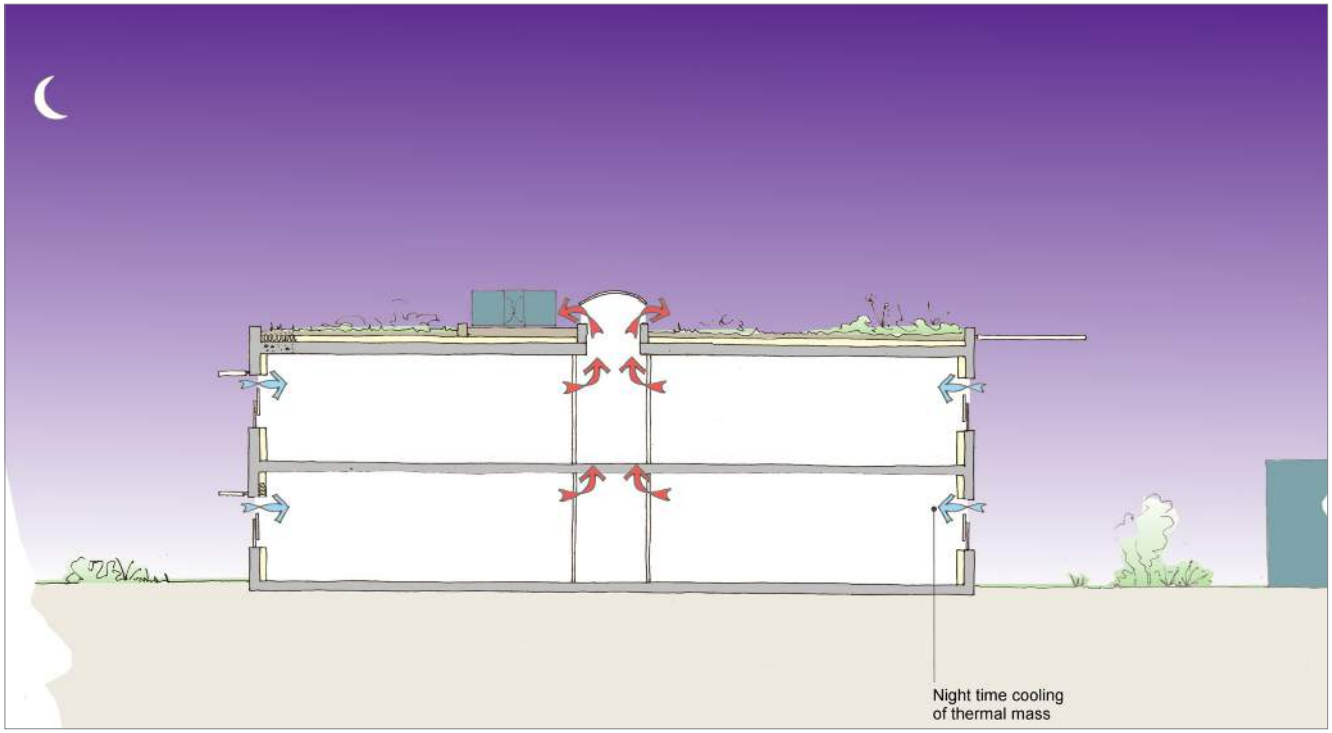
The new buliding will aim to minimise the environmental impact of materials by maximising the use of sustainably-sourced, low impact and recycled materials.

Material choices for structural and non-structural elements will be carefully evaluated to ensure healthy, low embodied energy materials are selected using the BRE Green Guide and Environmental Product Declarations (EPD's), where data is available.

Where possible building elements will be specified to meet a BRE Green guide rating of A or A+.

Recycled and secondary aggregates will be considered along with cement replacements for the concrete elements of the extension.

Offsite construction where possible will help to minimise waste during construction.



Proposed Summer Night time Strategy

Ecology

Roof top gardens/ecology areas are proposed which will enhance biodiversity, adding to potential lines of habitat connectivity at roof /tree level.

The roof gardens will also help to reduce surface water run-off and would improve the thermal performance of the roof.

Where feasible, exposed finishes will be used to further reduce embodied impacts and contribute to the internal air quality of the building by avoiding materials that contain VOC's.

Durable materials consistent with the design life of the building will be specified.

5.4 BREEAM

BREEAM Rating

The Isleworth and Syon expansion proposals are required to achieve a BREEAM rating of 'Very Good' under BREEAM 2011 New Construction assessment for Educational Buildings. To reach 'Very Good' the project must achieve a score of at least 55% and meet the minimum requirements set out in the Table adjacent.

Roof gardens support biodiversity but also education + recreation

Sustainable drainage, natural swales

BREEAM Issue	Minimum standards for very good	Details	Owner
Man 01 Sustainable procurement	One credit	Credits are available for: • Involving client, building owner, design team and contractor in design from stage B onwards; • Appointing a BREEAM Accredited Professional; • Thermographic surveying; and, • Aftercare and commissioning	Client and Design Team
Hea 01: Visual Comfort	Criterion 1 only	All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts	MEP
Hea 04: Water quality	Criterion 1 only	All water systems in the building are designed in compliance with the measures outlined in the health and safety executive's guidance and other best practice guidance	MEP
Ene 02: Energy monitoring	First credit (sub-metering)	Monitor on separate meters major energy consuming systems such as space heating and domestic hot water and lighting and small power	MEP
Wat 01: Water consumption	One credit	Reduction of water consumption in building by a minimum of 12.5% against a baseline	MEP
Wat 02: Water monitoring	Criterion 1 only	Specify water meter on mains supply to each building. Should be done for the existing building	MEP
Mat 03: Responsible Sourcing	Criterion 3 only	Confirmation that all timber used on the project is sourced in accordance with the UK governments Timber Procurement Policy	Architect/Contractor
LE 03: Mitigating ecological impact	One credit	Change in ecological value of the site to be greater than -9 using BREEAM LE03/LE04 calculator	Landscaping

Minimum requirements to achieve a rating of BREEAM 'Very Good'

BREEAM cont.

As well as meeting the mandatory requirements, the current design is expected to achieve a score of 60.98%. This score sits comfortably above the 'Very Good' threshold.

BREEAM is quite a detailed assessment and as such it can be difficult to provide an accurate assessment at this early stage in the project. For this reason we have identified a number of additional potential credits which could be targeted if, at a later stage, current expected credits prove to be unachievable. These additional credits are listed in the table adjacent.

It is useful to be aware of these credits from the early stages of a project as targeting some of these credits may be beneficial to the project.

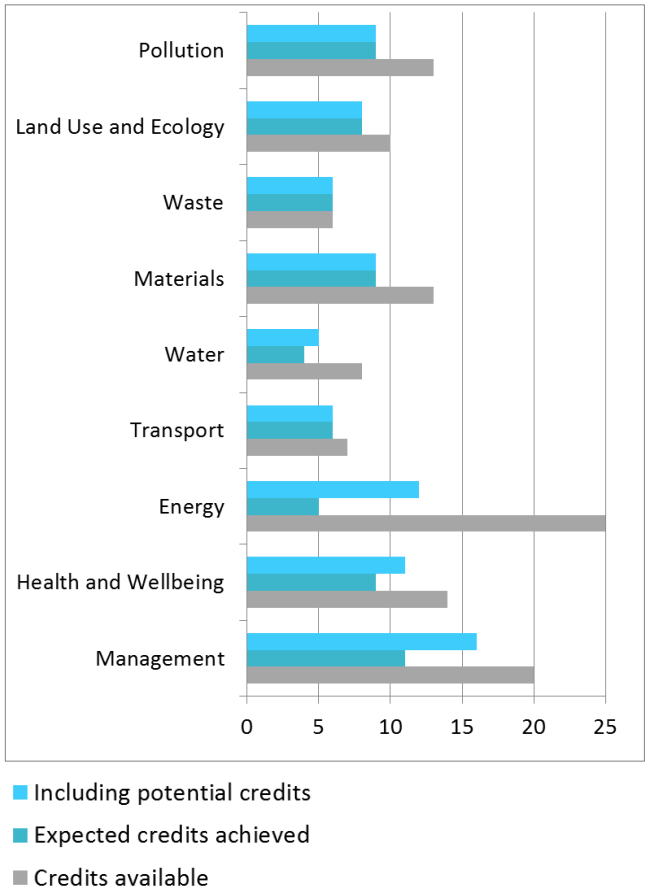
BREEAM includes a number of credits which require actions to be carried out in the early stages of a project, these are illustrated in the Figure onerleaf.

BREEAM Issue	Number of potential credits achievable	Details
Man 01	3 credits	Appointment of a BREEAM Accredited Professional.
Man 02	1 credit	Require the contractor to score above 32 under the Considerate Constructors Scheme.
Man 05	1 credit	Life cycle cost analysis including construction, maintenance and operation.
Hea 02	1 credit	Post construction testing of levels of formaldehyde and volatile organic compounds.
Hea 06	1 credit	Engage a specialist security consultant.
Ene 01	6 credits	Reduction in CO2 emissions No credits are currently targeted under Ene 01. While the energy strategy is expected to achieve reductions in CO2 emissions the project does not require an Energy Performance Model under Part L of the building regulations, this would usually form the evidence for Ene 01. If modelling were to be carried out we expect 6 credits could be achieved.
Ene 04	1 credit	Carry out a feasibility study for low and zero carbon technologies.

Potential credits identified to achieve an 'Excellent' Rating

Expected BREEAM Rating

BREEAM cont.



Credits targeted in each section

BREEAM Issue	Details	Stage A/B	Stage C	Stage D	Stage E
Man 01	A BREEAM AP is appointed to facilitate the setting of BREEAM related goals.	■			
Man 05	A LCC appraisal covering service life estimations and maintenance implications.	■			
LE 04	Ecologist carries out survey at Stage B.	■			
Man 01	A BREEAM AP is appointed to monitor and report on BREEAM related goals.		■	■	■
Man 04	During preparation of the brief all relevant parties must be consulted.		■		
Hea 05	An acoustician is appointed.		■		
Hea 06	Engage with security consultant.		■		
Ene 04	Feasibility study for LZC technologies carried out by energy specialist at Stage C.		■		
Man 05	LCC study carried out based on the proposals developed during Stages C/D.		■	■	
Man 05	LCC study updated during work stages D/E.			■	■

Schedule of actions for BREEAM credits with associated deadlines

6.0 Useful Simple, Who are we?

6.1 Key individuals

Catherine Ramsden
Useful Simple, Project Director

Catherine is a highly experienced architectural designer who combines excellent conceptual design skills with a wealth of delivery experience. She worked for several years as an Associate Partner at Foster & Partners and now works with Useful Simple Projects, principally on educational projects.

Whilst at Foster & Partners Catherine led the design team on the Thomas Deacon Academy one of the country's largest school projects catering for 2200 students. With Useful Simple she has recently completed a masterplan for the Isleworth & Syon School and the design for a high profile footbridge at Chiswick Park and a new major Sports Hall at St Marks.

Catherine also has a first class academic pedigree. Her degrees include a Bachelor of Science in Environmental Design at the University of Colorado, Boulder, a year studying architecture in Copenhagen and a Masters in Architecture from the University of Pennsylvania where she finished with the highest academic achievement in her year and won just about every prize going.

Neil Reeder
Expedition Engineering, Associate

Neil has managed, designed and delivered a wide variety of building projects in all sectors from concept to completion.

His experience includes major commercial & residential mixed-use developments and arts & leisure facilities. He has a particular expertise in working with existing buildings and structures; often through the addition of new stories and basements as part of major refurbishment works.

Since joining Expedition, Neil has been working on maximising the potential of several commercial and residential redevelopments in prominent central London locations including Tottenham Court Road, Euston Road and the Hammersmith Palais site. Neil has also completed various pre-planning structural feasibility studies to assist clients and architects in unlocking sites and developing their proposals.

Fred Labbe
Useful Simple, Associate

Fred is an experienced designer with a background in the design of sustainable water infrastructures, flood risk management and environmental planning.

His key experience include Terminal 5 at Heathrow Airport where he was involved in the design of the pollution control and water supply systems. He also played a key role in the development of the sustainable water strategy for the London 2012 Olympic Park.

He is currently working on a number of sustainable urban drainage and flood alleviation projects in the UK, and the development of the sustainable water strategy for the Rio 2016 Olympic Park.

Fred is bilingual French/English, and speaks Spanish fluently. He is completing a part-time MSc Environmental Design and Engineering at the Barlett in London.

Daniel Raymond
Useful Simple, Sustainability Strategies

A strong technical ability and knowledge of sustainability from first principles allows Daniel to develop innovative, practical and cost effective sustainability and carbon management solutions.

Daniel brings with him a wealth of design team experience allowing him to quickly and accurately understand and meet client aspirations. He is responsible for sustainability led building development and design processes, producing strategies to reduce energy usage and carbon emissions of new and existing buildings.

Daniel is experienced in the design of higher education facilities for improved environmental performance and is currently leading the sustainability and energy strategy for a number of projects with UCL, including the flagship New Student Centre; the refurbishment and extension of Wates House, a 1970's seven story building; and the new extension to the Anatomy Building.

6.2 Relevant experience

St Mark's Catholic School Sports Hall

Useful Simple Projects has been appointed to provide a full design and management service to St Marks School for the delivery of a new sports hall. We are acting as the lead consultant providing masterplanning, architecture, structures and strategic environmental design with subconsulants for detailed building services and costing. USP are also acting as client representative and project managing the scheme from the early concept stage through to completion.

The sports hall building is 1200sqm and includes a reception, hall, studio, changing rooms, spectator viewing and an outdoor classroom. The building is striving for a BREEAM excellent rating with passive ventilation, PV power, natural daylight and an integrated landscape and urban design proposal.

The scheme is due for completion in May.

Isleworth & Syon Masterplan + Refurbishment

Useful Simple Projects has produced a Strategic Masterplan for Isleworth and Syon with the scope of the study covering the full extent of the school grounds including the buildings, play areas, and landscape as well as off site facilities. In the current economic climate and with the recent review of government capital expenditure for schools it is critical that investment decisions are highly efficient and part of a cohesive vision. The school have been proactive in commissioning this report and are already benefiting with successful finding bids and strategic investment.

USP are also working on a major refurbishment at the school providing a full service of architecture, structural engineering and project management. This scheme is due for completion in June 2104.

Thomas Deacon Academy

Catherine led the team for the Thomas Deacon Academy during her time at Foster & Partners.

Conceived as part of the Local Education Authority's city-wide reorganisation of secondary schools, the Academy merges the activities of two existing schools and one Community College to provide facilities for 300 staff and 2200 students aged between 11-19.

Sponsored by the Deacons Trust and Caterpillar (UK), the educational concept departs from a conventional model of secondary schooling in favour of a university type environment with lectures, seminars and tutorials.

South Hampstead High School

Useful Simple Projects' engineering company, Expedition, are currently acting as structural and civil engineers for the redevelopment of South Hampstead High School in Camden, involving the replacement of approximately 70% of the existing buildings over a two-year period.

The new basement sports hall and teaching facilities will replace existing Victorian buildings to provide facilities of a standard that reflect best practice in teaching and learning.

An essential requirement of the project is for the school to remain fully operational throughout the duration of the construction works. We have developed the building design and construction sequence to minimise disruption to the working school environment.

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Thank you.

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