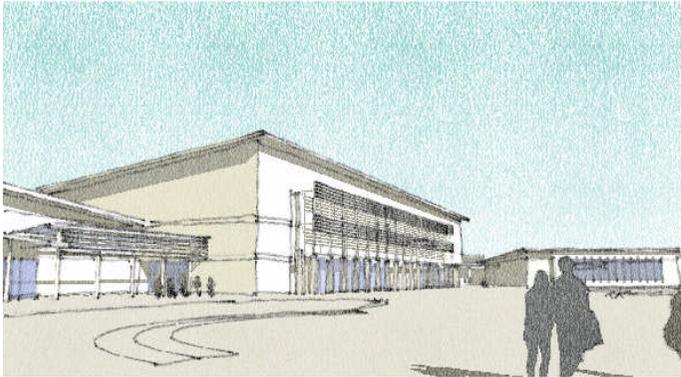


ELLON ACADEMY, CROMLEYBANK, ELLON

DESIGN STATEMENT / STAGE C REPORT



STAGE C REPORT

Feb 2011

Revision -

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Introduction

Background

The proposed new Academy at Cromleybank is a direct replacement for the existing split campus in Ellon Town centre. The site was identified from a number of possible options through a feasibility study taking into account location, ownership and time constraints. Negotiations are at an advanced stage with the developer to secure the site for the new academy.

Aberdeenshire Council's Property Service has been appointed as lead consultants for this new school.

The Design Team includes:

- Architects: Property Service, Aberdeenshire Council
- Mechanical & Electrical Consultants: AECOM & Property Service
- Civil & Structural Engineers: WA Fairhurst
- Cost Consultants: Property Service
- BREEAM Advisor: AECOM
- CDM Coordinator: Property Service
- Highland Landscape Designs

Aberdeenshire Council Property Service has been instructed to progress the project to Planning, Warrant and Tender stages. The purpose of this report is to collate a summary of the work completed as a record of progress to date.

Over the last year the design team has been working closely with Aberdeenshire Council Education, Learning and Leisure Service to develop the brief and then to produce an initial concept design for the building. This project has developed to the completion of RIBA stage C - Concept Design and Cost Reports.

Brief

Key Objectives

- To provide accommodation for 1200 students and staff and for community use
- To provide an effective and engaging educational environment
- To be safe & secure
- To provide a welcoming and spacious interior that maximises natural light and avoids 'institutional corridors'
- To enhance and facilitate "Curriculum for Excellence"
- To provide efficient and flexible teaching accommodation with integrated disciplines & activities
- A flexible teaching environment that can adapt to future curriculum changes and community needs
- To provide shared community sports and swimming facilities.
- To provide accommodation for outreach College facilities
- Potential provision of NHS facility
- Achieve a minimum BREEAM rating of 'Very Good for sustainability'
- Utilise SFT Guidance

Accommodation Schedule

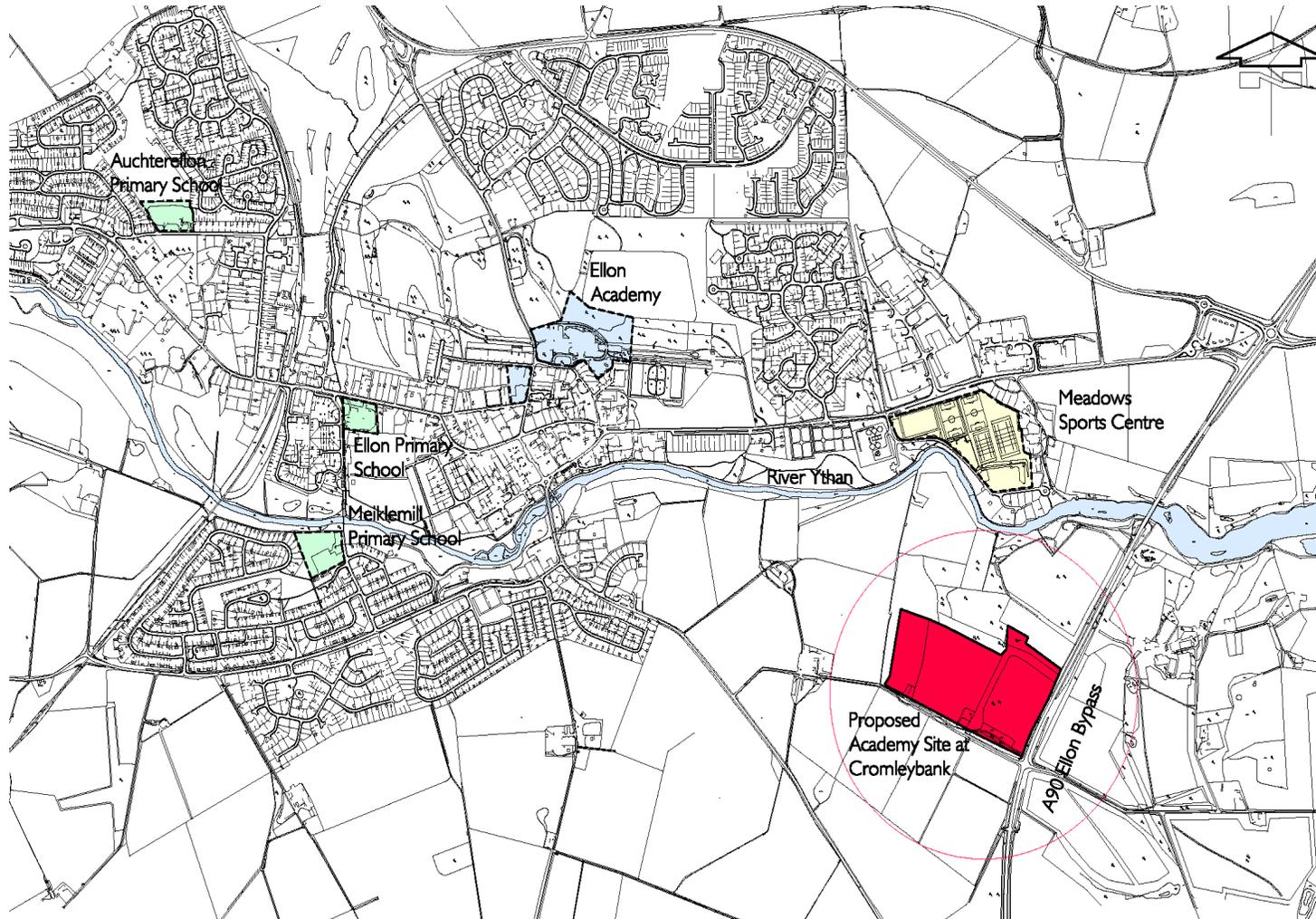
Room Schedule - Ellon Academy v3 Total area - 17786 m2			
Description	Area (m ²)	Community Use	Shared
Faculty of English, Mathematics, Modern Languages and Humanities			
Faculty workbase x 4	120		
Mathematics classroom 1 - 10	600		
Modern Languages classrooms 1 - 6	360		
Social Subjects classrooms 1 - 9	540		
RME classroom 1 and 2	120		
English classroom 1 - 11	660		
Store x 10	145		
total	2545	2545	
Faculty of BEICT			
Faculty workbase	20		
Business Ed/ Computing classrooms 1, 2, 3 and 4	340		
Business Ed classrooms 1 and 2	120		
Business Education store/Computing Store	30		
total	510	510	
Faculty of Health and Well-Being			
Faculty workbase	30		
4 Court Sports Hall A	646		
Gymnasium x 2	532		
SFL Tutorial Area	10		
Fitness Suite	105		
Sports Hall store 1	81		
Gymnasium mat store x 4	64		
Gymnasium equipment store x 2	70		
Dance Studio / Fitness room store	45		
Changing Areas/WC's/Showers 1 - 8	400		
Disabled Changing/WC's/Showers 1 - 4	40		
Staff Changing/WC's/Showers/Lockers (incl. cycling) 1 and 2	50		
External store/PE Store	55		
Home Economics classroom - food x 2	180		
PE/Home Economics textiles classrooms 1 and 2	120		
Technician/Food Preparation	20		
Cold store	15		
Home Economics store	15		
Laundry	10		
total	2488	2488	
Faculty of Creative and Aesthetic Arts			
Faculty workbase	30		
SFL Tutorial area	10		
Art and Design classroom 1 printroom/2 jewellery/3 ceramic	240		
Computer Design workbase	80		
Classroom store 1 - 3	30		
Resource store	20		

Kiln area	20		
S6 study area	20		
Drama studio 1 and 2	200		
Drama changing 1 and 2	30		
Music classroom 1 and 2	180		
Certificate practice room/instrumental room recording studio	40		
Music practiceroom 1 - 3	30		
Instrument store	20		
Drama and Music store	45		
total	1005	1005	
Faculty of Technology			
Faculty workbase	20		
Graphics and Technology area 1 - 3	270		
Craft and Design workshop 1 - 3	360		
Wood and metal store and General store	60		
Model store 1 and 2	40		
total	750	750	
Faculty of Science			
Faculty workbase	30		
Science lab 1 - 2	160		
Science lab 3 - 12	750		
Biology, Chemistry and Physics store, General Store	60		
Science technician area	75		
Chemical store and Flammables store	25		
total	1100	1100	
Faculty of Support for Learning/Guidance			
Classroom SFL unit 1 - 3	70		
Disabled toilet/shower/changing and store	22		
Guidance office 1 - 6	72		
Careers office	10		
PSE store 1 - 6	60		
total	234	234	
Senior Management Team/Admin/Medical and Miscellaneous			
Headteacher's office/meeting room 4	45		
CSN Support Services Coordinator	12		
Depute Rector's Office 1 - 5	60		
Reception/Foyer/Waiting	100		
Main Office/Reception/ PA	115		
Office Cloaks/Lockers	10		
Office store/archive room/SQA Store	25		
Reprographics room and Paper store	37		

Public toilet (M) and (F), Admin Toilet	38		
Disabled toilet 1 and 2	16		
School Nurse's Room	14		
First aid room/medical/restroom	15		
Waiting area	8		
Shower/toilet	8		
Library /Open Learning and store	220		
Conference/meeting room 1, 2, 3, 5	90		
Theatre/Assembly/Drama studio 3	490		
Exam desk/chair store	30		
Theatre/arts store	30		
Social areas/lockers 1 - 3	425		
Staff Lounge with Kitchen/Servery	185		
total	1983	1983	
ICT Facilities			
ICT Technician base	15		
Server room	25		
ICT Store room	15		
Node room 1 - 5	25		
total	80	80	
Miscellaneous			
Kitchen preparation area	120		
Dry goods store 1 and 2, veg store	21		
Dispensable store 1 and 2	30		
Staff base, office and toilet	25		
Cleaner's store	4		
Laundry	5		
Dining area / Café / Servery	260		
Janitor's office	15		
General store 1, 2, 3	35		
Cleaner's store 1 - 5, Store Rooms	116		
Pupil toilets 1 - 5	230		
Disabled toilet 1 - 5	39		
Staff toilet 1 - 6	50		
Heating plant room	90		
Minibus garage	35		
External store 1 and 2	40		
Electric plant room and Electrical Distribution 1-7	58		
Plant Areas	195		
total	1368	1368	
Total net Usable Area	11838	11838	
Total Gross Area incl. circulation and partitions		15052	
Plant Areas			
Bus Access and Drop-Off			
Bus Park (16 buses), number to be confirmed			
Parking for 276 cars			

Pupil Drop-Off/collection			
Drop off facility for SFL Pupils			
Service access for kitchen/plant			
Bin storage area/collection			
Basketball / Netball surface play areas			
400m Grassed Running Track			
Grass rugby pitch, 2no Grassed Football Pitches			
Project Specific Accommodation			
SFL Unit			
Sensory room	10		
Lifeskills room (kitchen/ laundry/lounge)	25		
Resource base	25		
total	60	60	
Potential NHS Facility			
Rooms	270		
Circulation & Partitions 25%	90		
total	360	360	
Swimming Pool			
25m 5-lane swimming pool	485		
Gala viewing	65		
Pool store/Chemical store	70		
Staff Workbase and First Aid room	35		
Crèche Area	35		
Village changing for 27 single/double cubicles	180		
Family/group changing (off village changing) 4	48		
Accessible changing	25		
Cleaner's store 1	10		
Pool plant room	140		
Circulation & Partitions 25%	68		
total	1161	1161	
Community Learning			
Activity/Playrooms 2	100		
Community Room 1 and 2	75		
Community Room Store	11		
Staff workbase and Toilet	21		
Users WC - M and F	24		
General Community store	20		
Circulation & Partitions 25%	60		
total	311	311	
College			
Entrance / Vestibule	10		
Teaching Room 1 - 5	275		
Staff Room and Toilet	45		
Female/ Male Toilets Changing	40		
Stores	24		
Circulation & Partitions 25%	103		
Total	497	497	

Site Location



Appraisal

3.1 Historical Context

Ellon has been established as a settlement since the middle ages being located at a fording point over the River Ythan. Over the past 30 years the population has greatly expanded to almost 9000. Its close proximity to Aberdeen ensures Ellon is also a popular choice for commuters.

The new Academy is intended to replace the existing split campus and community facilities on one site. The community has three primary schools, Auchterellon, Meiklemill and Ellon, while also serving a number rural schools in the catchement area.

Sitting to the South-East of Ellon and currently separated from the town by the river Ythan to the north and fields to the West, the site at Cromleybank consists of gently sloping arable land with the Fechil Wood a prominent feature to the North edge. The main A90 forms the East boundary to the site.



View of site looking North to Fechil Wood

3.2 Planning

The area to the West and South of the site is zoned for Housing and Commercial development. Scotia Homes is developing a Masterplan for this area, however the details of this development have not been finalised.

Negotiations are ongoing to ensure the site's availability is brought forward and that site access routes and servicing will integrate with the overall masterplan.

As the site area is approximately twelve hectares, the planning application for the academy will be considered under the Major Development process.



View of site looking East towards cottages

3.3 Site Context

The majority of the site is open farmland with a minor access road forming the South boundary which links to the A90 Ellon Bypass, the main route from Aberdeen to Peterhead and Fraserburgh. This road is expected to be upgraded from the Ellon side and terminated at the Academy site. The two farm cottages along the access road are to be demolished to enable the full use of the site. A line of mature beech trees forms part of the North boundary to Fechil Wood.

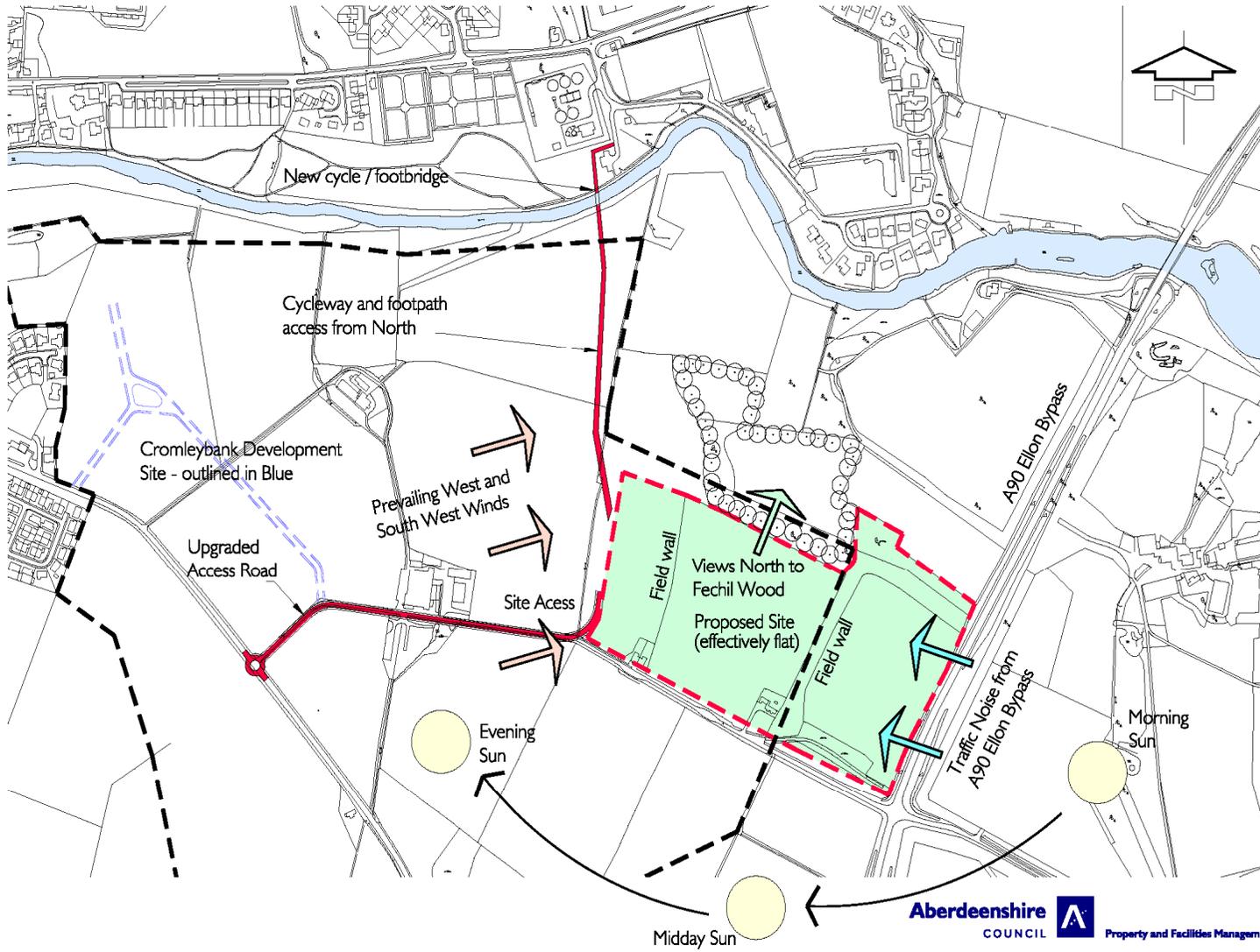
Consultation with stakeholder groups identified a preference for a North pedestrian / cycle route across a new footbridge to give a more direct route for students from the North and East part of Ellon. This would eventually link through with a road crossing as proposed in the masterplan.

The upgrading of the access road will include a cycleway for students which will link through to existing footpaths in the settlement. School bus and public transport links will form part of the Travel Plan.

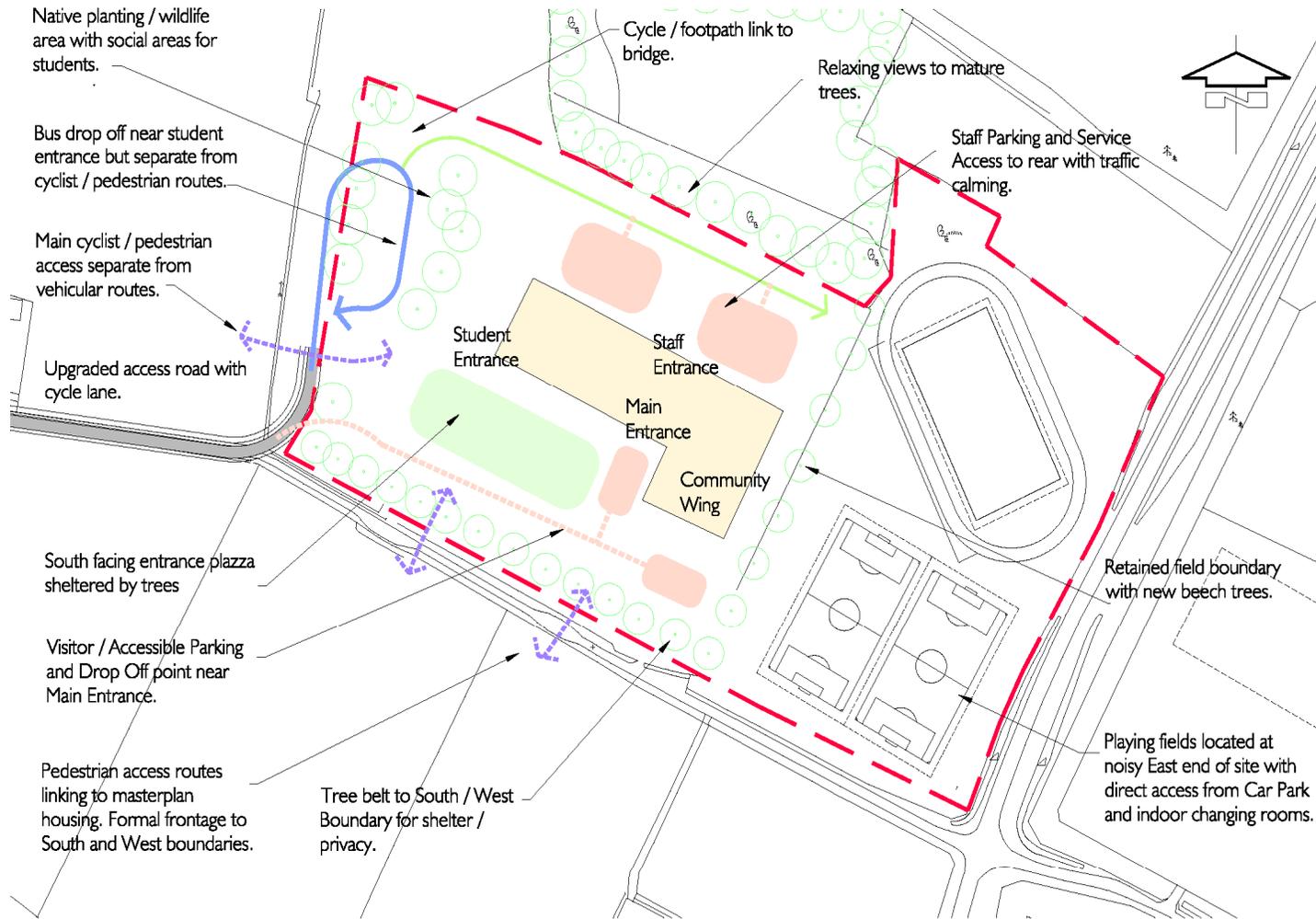


View of site looking West to Cromleybank Farm

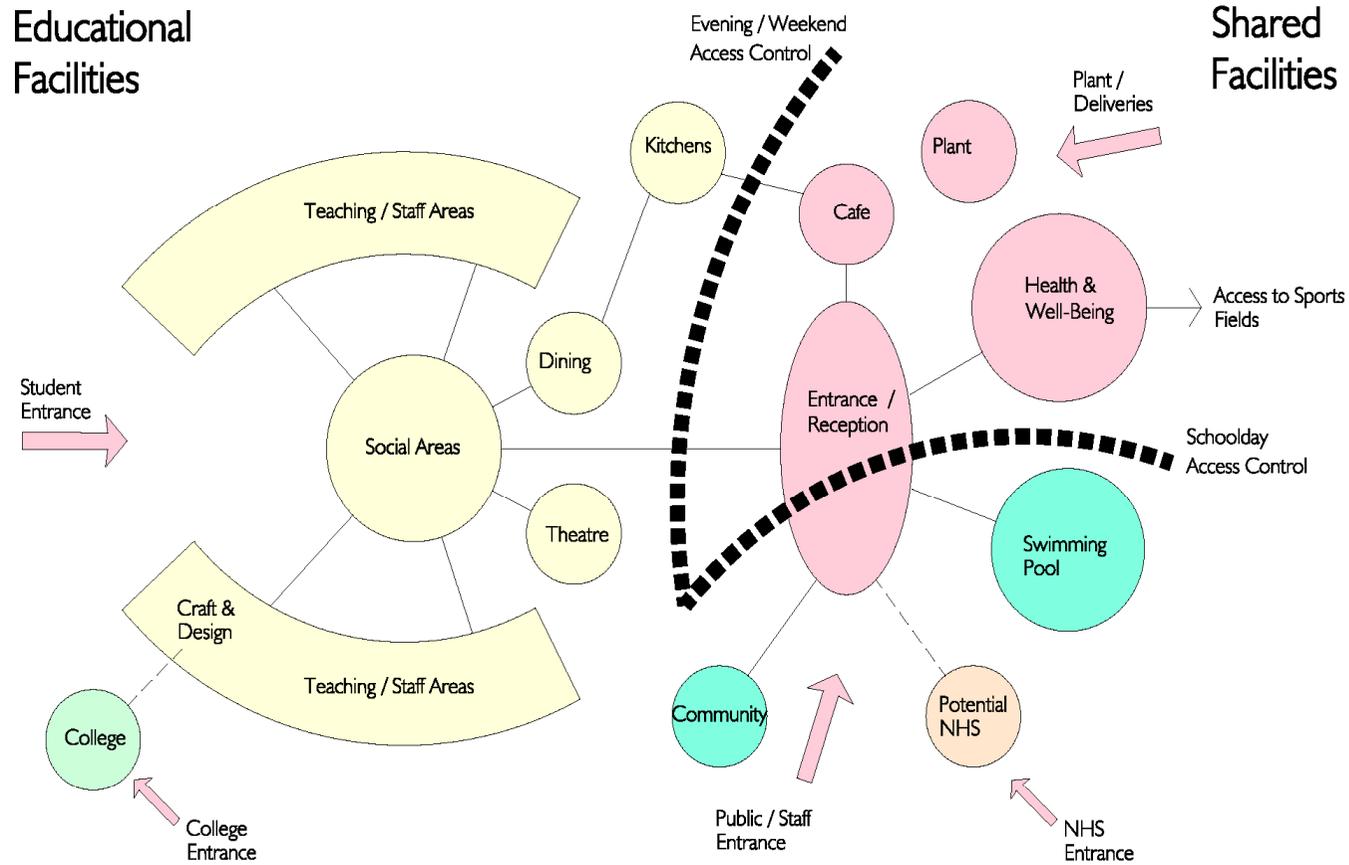
Site Analysis



Site Concept



Building Analysis

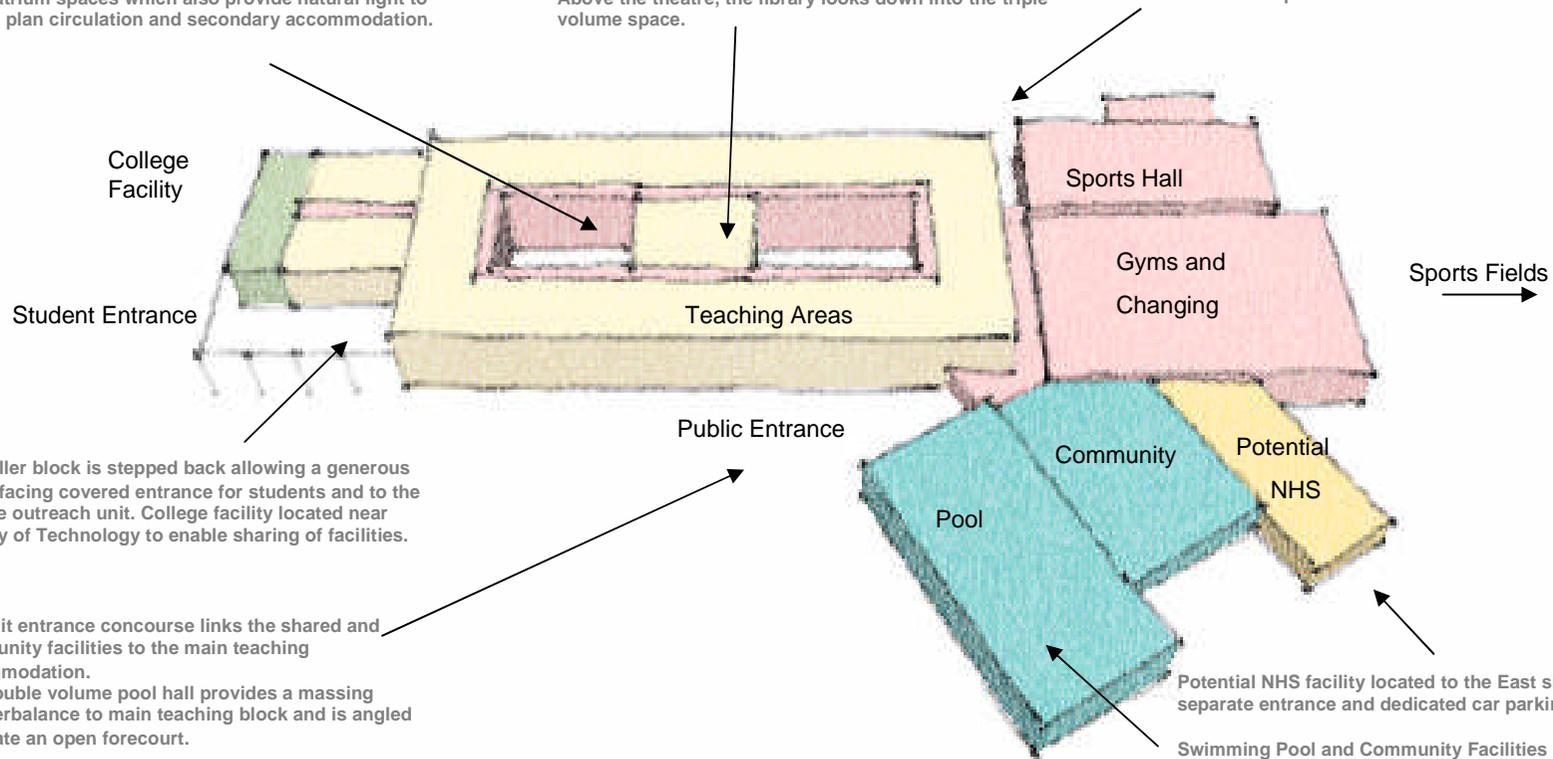


Building Concept

The main teaching areas are arranged around the perimeter of the 3 storey main block. Internally, social areas, assembly and dining areas are grouped around two atrium spaces which also provide natural light to open plan circulation and secondary accommodation.

The theatre is located between the atrium spaces with the stage designed to give options of opening on to the atrium in addition to providing drama spaces. Above the theatre, the library looks down into the triple volume space.

Service and kitchen areas are located to rear to minimise cross circulation. This also allows safe access between changing rooms and external sports fields.



A smaller block is stepped back allowing a generous south facing covered entrance for students and to the college outreach unit. College facility located near Faculty of Technology to enable sharing of facilities.

A top lit entrance concourse links the shared and community facilities to the main teaching accommodation. The double volume pool hall provides a massing counterbalance to main teaching block and is angled to create an open forecourt.

South facing entrance plaza sheltered by trees providing outdoor social and teaching opportunities.

Potential NHS facility located to the East side with a separate entrance and dedicated car parking.

Swimming Pool and Community Facilities located near Public Entrance allowing separation for school security during school days.

Design Development

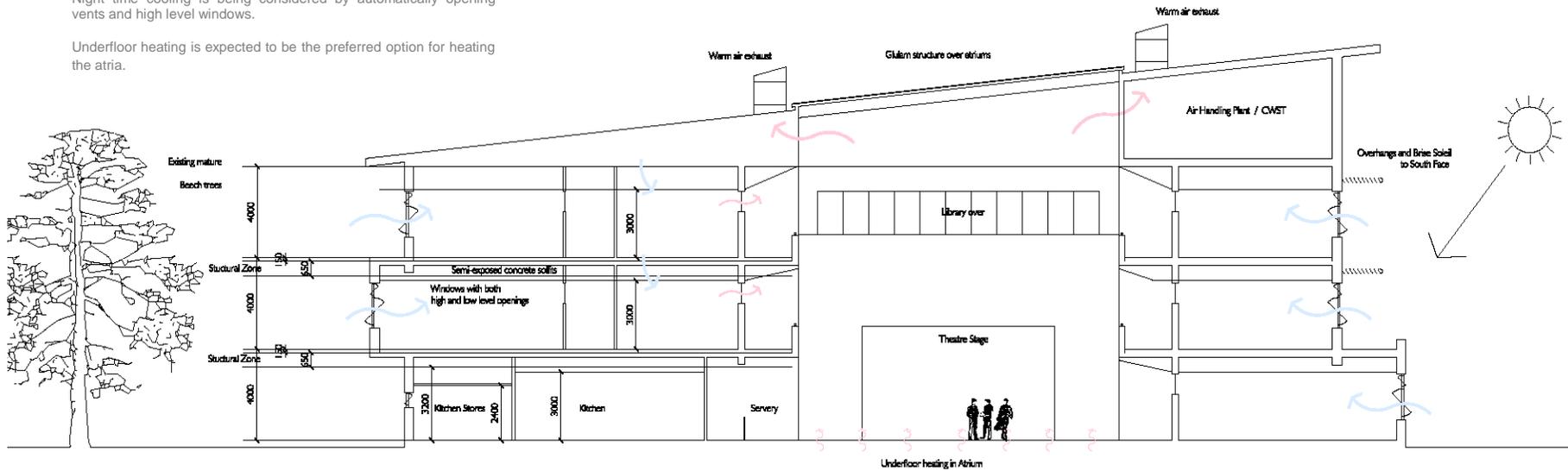
The central atria are expected to provide largely natural ventilation to the internal areas through the stack effect. Warm air is exhausted through the roof vents drawing cooler air in from outside.

Approximately half the classrooms, including Art and Technical subjects, are located to give North light. Windows facing South are protected from direct Summer sunlight by louvres.

Windows can be operated locally by building users and also have high level openings to avoid draughts. Cross ventilation is provided by vents to the corridor spaces.

Night time cooling is being considered by automatically opening vents and high level windows.

Underfloor heating is expected to be the preferred option for heating the atria.



Concept sketch through Atrium

Outline Specification

GENERAL ITEMS

The development will be designed, specified, constructed and commissioned in accordance with good practice within the UK building and engineering industries and relevant UK or equivalent Standards or Codes of Practice or better. The work shall comprise only materials, equipment, plant and other goods, which are of sound and merchantable quality.

All associated landscaping, sports fields, parking, access roads, service areas and external services will be constructed as part of the works.

All mains services, gas, water, electricity, surface water and foul drainage will be provided. Ducts will be provided for the installation of communications services.

The works will be designed and specified in accordance with the reasonable requirements of all relevant Statutory Local Authority and Fire Officer's requirements.

CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS

In compliance with the Construction (Design and Management) Regulations 2007 a CDM Co-ordinator will be appointed to produce the appropriate Health and Safety Plans and Files and to ensure all necessary Health and Safety Executive notifications are made in respect of the works.

NAMED MATERIALS

Where specific materials are named in this document any substitute materials later proposed will require to be of equal and approved quality.

DELETERIOUS MATERIALS

Deleterious materials will not be specified.

CONSTRUCTION SPECIFICATION

EXTERNAL WALLS

1. PROPRIETARY SMOOTH RENDER SYSTEM (Approx 75%)

Smooth render applied directly onto concrete block work on blockwork cavity wall infill.
Sto Rend Facade Render System or EAA

2. RAINSCREEN CLADDING (Approx 20%)

Pre treated 'Trespa' cladding boards on framing, with insulation, built off concrete block inner leaf.

3. TIMBER RAINSCREEN CLADDING (Approx 5%)

Pre treated timber-cladding boards on framing, with insulation, built off concrete block inner leaf. Proctor Group Osmose Royal or EAA.

PITCHED ROOFS

Aluminium standing seam roofing system consisting of outer sheet, insulation, vapour control layer and liner sheet modified to accommodate acoustic requirements by incorporating other layers such as high density insulation, boards and flexible membranes to reduce sound and by perforating the liner to provide increased sound absorption performance. Kalzip Liner Roof System or EAA
Perforated aluminium liner panel with acoustic insulation required over Swimming Pool hall.

INTERNAL VALLEY GUTTER TO ENTRANCE AREA

Lined with single ply membrane flat roof covering on proprietary insulated layer and galvanized metal deck complete with all necessary gutters, flashings, gratings, etc. Trocal or EAA.

STAIRS

All escape stairs to be of pre-cast concrete with feature balustrade and handrail fixed to walls. Stringers and skirtings to be redwood finish. All stairs to be finished to accept vinyl and proprietary nosings. Walls to be painted blockwork.

Feature stairs to be prefabricated steel with metal pans and concrete fill, to accept vinyl and proprietary nosings and perforated metal balustrade and feature handrail.

BALCONIES

Balconies to be solid block with plaster finish to corridor side and oak linings to atrium side. Oak 'cope' plates and wide handrail.

WINDOWS

Windows, curtain walling and other glazed areas are to be a unitised composite aluminium/wood triple glazed system with a uniform appearance, ie fixed lights have same sight-lines as opening lights. The system must be a fully ventilated and drained system with concealed drain-channels, thermally broken and prefabricated. Softwood windows with an external aluminium cladding will not be permitted. Velfac or EAA.

SOLAR SHADING

Proprietary system comprising oak aerofoil shaped fins held within powder coated steel frame held off frontage to provide solar shading to 3 storey south facing glazed elevations. Levalux or EAA

EXTERNAL DOORS

External door assemblies to incorporate stainless steel ironmongery, escape mechanisms, locks and security controls to meet operational requirements. Main entrance double doors to have Polyester powder coated aluminium frames stops and facings; stainless steel ironmongery. Additional pass doors to be automatically activated with free-standing or wall mounted push/pad controller. Entrance screens and doors to be colour coated aluminium curtain walling with glazing within 850mm of floor level to be toughened safety glass. Velfac or EAA.

MASONRY PARTITION WALLS

Walls forming sports halls, gyms, swimming pool, plant rooms, music, theatre and kitchen to be exposed concrete fairfaced blockwork with pre-cast concrete lintels over all openings.

METAL STUD PARTITIONS

Non-load bearing internal walls to be formed in HD metal stud partitioning. Metal stud walls to provide fire resistance to comply with the current building standards requirements and to meet Acoustic Standards. Plaster skim coat finish to walls greater than 3.0m high.

GLAZED SCREENS

Timber internal glazed screens to offices, library etc. Hall & Tawse Joinery or EAA.

INTERNAL DOORS

Internal fire doors to be factory produced modular door sets. Oak veneered flush solid core doors with matching hw frames, facings, stops and stainless steel ironmongery. Key suiting is to apply throughout.

Doors to be solid core throughout, fire rated as necessary. Doors to have vision panels unless specifically omitted. Hall & Tawse Joinery or EAA.

Doorsets shall be completed with high quality ironmongery comprising the minimum of 1½ pairs stainless steel butt hinges, five lever mortice lock where appropriate, "Dryad Architectural Ironmongery" or equal lever or pull handles and escutcheons, door closer, kick and push plates and door stops where necessary.

CEILING FINISHES

Classrooms to be finished with acoustic mineral fibre tiles in a lay-in exposed grid. Ecophon Master or EAA.

Corridors, toilets, general offices and stores etc to be finished with acoustic mineral fibre tiles in a lay-in exposed grid. Ecophon Master or EAA.

Performance ceilings required to Theatre, Library, Pool Changing Rooms, Kitchen, and Gymnasiums.
Acoustic wall panels to walls of Sports Hall – no ceiling required.

General

Fire barriers to be fitted within suspended ceiling void area as required by Local Building Regulations.

Window soffit ingoes to be formed to allow blinds to be fitted

WALL FINISHES

Fermacell plasterboard on metal stud framing. Plaster skim coat finish to walls greater than 3.0m high. Paint finish throughout. Oak timber strip finish to atrium walls.

Exposed paint quality blockwork finished with spray applied paint system, Aquaflec or equal. Swimming pool walls, kitchen and changing areas lined with Altro Whiterock panels to 2.4m height.

Glazed ceramic wall tile splashbacks to disabled persons toilets. All other toilets finished with a full height IPS laminate panel system to all walls / cubicle doors / vanity units. Armitage Venesta or EAA.

WC suites, urinal bowls and wash hand basins are to be high quality glazed vitreous china.

All toilets to have full width mirrors above vanity tops.

Electrical warm air hand drying facilities are to be provided in all toilets, together with recessed towel dispensers, soap dispensers and recessed waste bins.

All exposed pipework to be chrome plated.

FLOOR FINISHES

Circulation Areas - Forbo Nairn Marmoleum. Entrance areas – Burmatex Entrance Collection.

Skirtings shall be veneered oak in circulations areas, theatre, library, meeting rooms. RW elsewhere. All 120mm high, finished with three coats lacquer.

Classrooms / Offices / Library – Burmatex 'Zip' Carpet tiles or EAA

Sports Hall / Gymnasiums - Junkers Sylvasport Premium sprung flooring

Stair / Toilets / Stores etc - Vinyl floor coverings. Gerlor or EAA

Pool Hall / Changing Areas – Anti slip quarry tiles.

Flooring in plant and ancillary areas shall be power floated structural slab, adjusted in thickness as required to carry design loadings and to finish flush with adjacent areas. All concrete surfaces are to be finished with anti-dust sealant and floor paint.

ROOFLIGHTS

Rooflights to atriums to be steel framed in polyester powder coated sections with double glazed roof panels comprising anti sun laminated glass.

All supported on glulam beam structure between steel frame trimming to openings.

Windcatcher ventilation stacks to provide warm air exhaust from atriums.

1200mm dia. Monodraught sunpipes to entrance concourse, village changing and library areas.

SLIDING PARTITIONS

Folding, sliding acoustic partitions 3m high to rear of stage and between Gymnasium 1 & 2. Min 51 dB rating.

EXTERNAL WORKS

Grass pitches and running tracks. No floodlighting.

WALLS AND FENCES

Stone effect piers and 2m high galv. and coated steel railings to South and West boundaries as shown on site plan.

4m high plastic coated weldmesh fencing to sports fields.

2m high plastic coated weldmesh fencing with 2no gates to North Boundary.

EXTERNAL WORKS / LANDSCAPING

ROADS

SERVICE ACCESS ROAD AND SERVICE YARD

WAF to confirm

PATHS AND PAVING

PAVING AROUND NEW SCHOOL BUILDING

Block paving silver grey concrete setts and kerbs. Infill between perimeter path and building to be crushed stone or gravel. Designed to take cherry picker and fire tender access.

INFORMAL PATHS

Informal paths elsewhere around school and from car parking to school building to be tarmacadam.

CAR PARKS

VISITOR AND STAFF PARKING

Car and coach parking areas to be paved with porous block paving appropriate for SUDS.

DRAINAGE

Due to site restrictions a number of different surface water drainage attenuated measures will be utilised:

- Porous paving.
- Over sized pipes.
- Detention Basin.
- Filter Trenches.

Foul water drainage from the building will be pumped to the existing sewage treatment works. Surface water will be disposed of on site.

SPORTS PITCHES

RUGBY PITCH

Grass pitch. No railings. No floodlights

400m RUNNING TRACK

Grass running track with associated sprint and jumping facilities.

2no GRASS FOOTBALL PITCH

Grass. No railings. No floodlights

WALLS AND FENCES

BOUNDARY SECURITY FENCE

1800mm high vertical bar, powder coated railings with reconstituted stone piers to West and South street frontages. 4m post and mesh plastic coated fence to other boundaries.

NEW PLANTING

TREES

In order to create a mixed-age woodland and also to encourage natural regeneration we intend to plant a variety of sizes and specification of new trees -

Semi-mature, root-balled, 20-25cm girth
Semi-mature conifers, root-balled, 200-300cm high
Selected Extra Heavy Standard, 16-18cm girth
Standard, 300-350cm high, 10-12cm girth
Feathered, 150-250cm high
Whips transplants, 60-150cm high.

Trees planted in paved areas will require a cast iron tree grid, 1500 x 1500mm, Buderus or similar approved. If close to services, root protection using a 2000mm diameter p.c. concrete underground ring will be required, incorporating underground guying etc.

SHRUBS AND HERBACEOUS PERENNIALS

Shrub beds will be formed and backfilled with good quality topsoil to BS 3882:2007 to a depth of 450mm.

As with tree planting we will aim to plant a variety of sizes and specification of nursery stock shrubs all grown in accordance with BS 3936-1:1992

This will include bare root and pot/container grown plants depending the size and nature of the plant and the season or ground conditions in which the planting is being carried out. Evergreen plants are best if container grown. Container-grown material offers greater flexibility in that it can be planted outwith the normal planting season of October to March.

Shrub beds will be mulched with bark to a depth of 75mm.

GRASS AREAS

Amenity grass areas will comprise of topsoil bed to BS 3882:2007 supplied and spread to a minimum depth of 150mm. For the most part amenity grass will be sown, either broadcast or by machine. Where programme does not allow seeding to take place, turf will be laid. Turf to be in accordance with BS 3969:1998.

WILDFLOWER MEADOWS TO NORTH WEST OF SPORTS FIELDS

Wildflower meadows will comprise a seedbed prepared without topsoil but in clean subsoil. Low maintenance, low cost wildflower/grass seed mixes selected to suit the soils will be sown, either broadcast or by machine.

Specific wild flowers will be introduced by planting plugs (rooted cells) of the selected species into established grass areas or into woodland edge situations.

Building Services

UTILITIES

Electricity

The local utility drawing has been received and it is anticipated that the electricity supply will be extended from the existing network to a new HV sub-station located within the site. This will supply the School via a LV switch room which will be located within the School. Further discussion will take place with the supply authority during the Stage D design period.

Telecoms

The local utility drawing has been received and it is anticipated that the main telephone and data network will be extended from the existing network and the existing Academy telephone numbers and IT links will be transferred to the new School IT data centre. Further discussion will take place with the supply authority during the Stage D design period.

Gas

The gas distribution network drawing identifies that there is a distribution pipe running parallel to the road to the south of the site. It is expected that a connection will be taken from this pipe, across the road and terminate in a gas meter housing at the site boundary. This pipe will be extended to the energy centre for distribution to the gas boilers and school. Further discussion will take place with SGN during the Stage D design period.

Water

The water distribution network identifies that there are supplies available to the north and west of the site. A connection will be taken from one of these pipes and routed to the energy centre to the rear of the building.

Energy Assessment

An energy assessment and renewable energy option study has been carried out for the school. This has considered a number of renewable energy technologies including biomass, solar hot water, CHP etc, and it is anticipated that a Biomass Solution will be selected for this project.

ELECTRICAL SERVICES –

Lighting

Provision will be made for an internal and external lighting installation. The lighting installation will be designed in accordance with CIBSE recommendations and will incorporate digital lighting control systems to reduce energy consumption. Emergency lighting will be provided in accordance with BS 5266 and BS4533 to all escape routes and all areas in excess of 60sq.m. Lighting for security purposes will complement the general external lighting design.

Power

Distribution will be sized to provide spare capacity for future alterations and sub metering will monitor electricity consumption within specific areas identified during the design process. Power will be provided throughout the building with final circuits provided to meet the requirements BS 7671:2008. RCD protection will be provided to all socket outlets.

Security and Fire

Security of the building will include an Intruder Alarm throughout ground floor and circulation areas installed to BS 4737. External CCTV will be dome type PTZ capable of operating in low light conditions. Internal cameras will monitor main access doors into the school.

Access Control will be incorporated to control access within the campus to visitors during the School day and provide further security though the building during evening operations.

A Public Address system shall be provided and will include class change period bell system.

Emergency call alarm system will be provided for all disabled WCs and stairwell refuse points linked back to the main reception and/or FM office.

An analogue addressable fire detection and alarm system in accordance with BS 5839, Part 1: 2002. will cover all areas of the school to Category L2.

Communications

A network will be installed throughout all areas to data outlets on Category 5e RJ45 outlets from local Node cabinets. Fibre Optic cabling will carry main data links between local nodes and the main data centre within the School.

Telephone system will utilise the data network cabling to distribute telephone points around the building.

Wireless network will be installed throughout the School which will allow visiting members of staff access the Council's network wirelessly.

A Digital Terrestrial TV distribution system will utilise the data network cabling to distribute television throughout the school. Lightning Protection

A lightning protection system in accordance with BS EN 62305 will be provided.

Building Services (Continued)

Mechanical Services.

Heating

It is proposed that the building will be heated by a low temperature hot water system (LTHW) with the hot water being generated by a biomass boiler with gas boiler standby/top up from an energy centre located to the rear of the school. The biomass boiler, with thermal storage, will be sized to cater for the base load of the building with gas top up boilers. The gas boilers will be sized to cope with the buildings peak demand so that the building can operate via gas only.

The heating of the various rooms will be as follows:

- General class rooms- underfloor heating.
- Science Classrooms/Classrooms with significant perimeter or floor mounted benches- ceiling mounted radiant panels.
- Dining area/social spaces- underfloor heating.
- Sports Hall/Games Hall- high level wall mounted perimeter radiant panels supplemented via an air system.
- Small office areas- underfloor heating or radiators.
- Swimming Pool Complex- under floor heating and an air system.
- NHS- underfloor heating.
- College- underfloor heating.

Heat meters will be incorporated to record the consumption of the school, swimming pool complex, the NHS department, the community use areas and the College.

Ventilation

The school will be predominantly naturally ventilated where possible via openable windows. A number of areas will be provided with natural ventilation systems eg windows, louvres or "wind catchers" and they will also be provided with mechanical systems where enhanced ventilation is required.

- General Purpose classrooms, <7.5m deep, will be provided with openable windows.
- Class rooms with a depth > 7.5m will be provided with openable windows and either cross flow ventilation or mixed mode ventilation to draw air to the rear of the class rooms.
- Science Classrooms will be provided with openable windows. In addition, mechanical ventilation via a ceiling void mounted heat recovery supply and extract unit will provide the facility to boost the ventilation rate during science experiments. Science rooms with ducted fume cupboards will have a ventilation route provided to the roof for the safe discharge of the fume cupboard extract system.
- Home Economic Classrooms will be provided with openable windows. In addition, mechanical ventilation via a ceiling void mounted heat recovery supply and extract unit will provide the facility to boost the ventilation rate during periods when the cookers are being used.
- Music Classrooms will be provided with openable windows and mechanical ventilation via a ceiling void mounted heat recovery supply and extract unit. This will allow the room to function as a naturally ventilated classroom and with the windows closed during music practice sessions to minimize noise break out.
- The Sports Hall/Games Hall will be provided with natural ventilation via louvres and/or roof mounted "Passivent/Windcatcher" terminals. Air Handling Plant will also be provided to both heat and ventilate the space when required.
- Changing rooms, toilets and Interior rooms will be provided with mechanical ventilation.
- The Social Space will be provided with natural ventilation via roof mounted "Wind catchers" and supplementary mechanical ventilation.
- The Gym Halls will be provided with natural ventilation via roof mounted "Wind catchers" and supplementary mechanical ventilation.
- The Library will be provided with natural ventilation via roof mounted "Wind catchers" and supplementary mechanical ventilation.
- The NHS department will be naturally ventilated where possible with mechanical ventilation provided where required.

• The College department will be naturally ventilated where possible with mechanical ventilation provided where required.

• The swimming pool complex will be provided with mechanical ventilation systems for the swimming pool and changing room facilities.

A preliminary study of a typical classroom has been developed to advise on glass area and free area required to meet the daylight and ventilation rates of the BREEM requirements and Building Bulletin 101. Energy modelling and internal environment analysis will be carried out using theIES suite of software throughout the Stage D design period.

BMS

The buildings will be zoned and controlled appropriate to the occupancy and thermal dynamics of the building to ensure that operational efficiency is maximized at all times. The heating system will be controlled by the BMS and will feature weather compensation, optimum start/stop with time clock override facilities. The BMS will also provide the required levels of zone control and energy monitoring, and will manage temperature set back regimes during periods of low occupancy. The BMS will be based on the Trend Excite system and be linked back to Woodhill House.

Sprinklers

The building will be protected by a sprinkler installation designed in accordance with BS EN 12845 and Technical Bulletin 221: Sprinkler Protection for Schools. It is anticipated that a sprinkler storage tank and pump house will be located adjacent to the energy centre, however a towns main fed solution will be investigated.

Environmental and BREEAM

Sustainable Design

BREEAM

AECOM has been commissioned to undertake a BREEAM Education 2008 assessment for the proposed Mearns Academy building. BREEAM seeks to minimise the adverse effects of new buildings on the environment at global and local scales, whilst promoting healthy indoor conditions for the occupants.

BREEAM is a voluntary scheme and projects are assessed using a system of credits. The credits are grouped within the following categories:

- Management
- Health and Well Being
- Energy
- Transport
- Water
- Materials and Waste
- Land Use and Ecology
- Pollution

BREEAM Scoring

Within each of the BREEAM categories there are a number of credit requirements that reflect the options available to designers and managers of buildings. An environmental weighting is applied to the scores achieved under each category enabling the calculation of a final BREEAM score. The weighting factors have been derived from consensus based research with various groups such as government, material suppliers and lobbyists. This research was carried out by BRE to establish the relative importance of each environmental issue. Adding up the weighted scores from each category gives the final scores.

BREEAM 2008 Mandatory Credits

To achieve a BREEAM rating, the minimum percentage score must be achieved. In addition, the mandatory standards applicable to the rating level must also be achieved.

BREEAM 2008 Innovation Credits

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above and beyond the level that is currently recognised and rewarded within standard BREEAM issues.

An additional 1% score can be added to a building's final BREEAM score for each innovation credit achieved (to a maximum of 10%). There are two different ways in which a building can achieve an innovation credit:

1. Exemplary Performance – Innovation credits are awarded where a development achieves the exemplary performance requirements outlined for a number of the BREEAM credits
2. Innovative Performance – An application is made to the BRE by the BREEAM assessor to have a particular building feature, system or process recognised as 'innovative'. If the BRE consider the feature/system/process to be 'innovative', an innovation credit can be awarded.

Mearns Academy BREEAM Assessment

A target of "Very Good" has been set for this project. This equates to a score of between 55-70%.

The key milestones of a BREEAM 2008 assessment are detailed below:

Pre-assessment Exercise (current position)

A Pre-assessment exercise has been undertaken at the planning / early design stages, prior to the design stage assessment. The Pre-assessment exercise is a useful tool for the design team in establishing the any changes which can be made to the final design to improve the BREEAM rating. The output from this stage of work is covered in a separate report.

The meeting for the pre-assessment was carried out 01/02/2011. The credits targeted during discussions in that meeting have been highlighted in the tracker summary report and will be re-iterated in the main guidance document.

The potential score from these credits is contained and updated within the Tracker document issued at regular intervals.

Design Stage Assessment

The design stage assessment and subsequent interim BREEAM Certification represents the performance of the building at the design stage of the assessment, typically prior to the beginning of operations on site. Certification at this stage does not, therefore, represent the building's final 'as built' BREEAM performance.

To complete a formal design stage assessment, the design must be advanced to the point where the relevant information is available to enable the BREEAM assessor to demonstrate the building's performance against the reporting and evidential requirements of the technical guidance. The formal design stage assessment should therefore be carried out at the scheme design or detailed design stages.

Post Construction Stage Assessment

The post construction assessment and subsequent final BREEAM certification represents the final 'as built' performance and BREEAM rating. A post construction assessment is carried out after practical completion of the building works, before handover and occupation of the building.

A post construction assessment serves to confirm the interim BREEAM rating achieved at the design stage, in accordance with the reporting and evidential requirements of the technical guidance.

A target of "Very Good" has been set for this project. This equates to a score of between 55-70%

Structural

Ground Conditions (for Building)

The dense granular soils provide at least a 200 kn/m² allowable bearing pressure for normal foundations. As this is a slightly above average bearing pressure, no special foundations are envisaged and normal cost allowances apply. External works should be taken to 450 mm below ground level for frost cover.

Structural Frame

A braced steel frame comprising of composite beams and metal decking topped with 150 mm of structural concrete is proposed. Metal decking has a satisfactory BREEAM rating from the "Green Guide".

A structural zone of approximately 650 mm should be allowed excluding any screed and insulation for underfloor heating. Cellform beams may be used and will facilitate services such as sprinkler pipes and cables. The frame will include central columns and shallow corridor beams such that larger services can pass along the corridors and be distributed laterally. It is not envisaged that ventilation services will need to pass through the main structural zone over the classrooms.

Steel design will be to BS 5950. Advantages of this Scheme – Economic for multi-storey.

Quick erection time

Reduced dead load over solid concrete floors.

Lesser foundation requirements compared to insitu or precast concrete.

Early weather protection.

Can be designed to avoid floor propping to clear working space for follow-up trades.

Large openings can be formed and bridled.

Stability

Overall building stability will be through diaphragm action of the floors transferring loads to the braced frame.

Structural Grid

Subject to exact design development and classroom modular sizes, a grid of approximately 10 m transversely and between 6 and 7 m longitudinally can apply.

Stair Cores

Structural steelwork will support pre-cast stairs. Masonry infill panels are anticipated.

Sub-Structure

All main column foundations will be reinforced concrete pads. Load-bearing walls and main masonry walls will be on 200 mm thick mesh reinforced strips.

Concrete design will be to BS 8110.

SW Drainage

Good infiltration values in the granular soils will allow SUDS to be provided by a combination of porous surfaces in car park and other hardstanding areas, with infiltration trenches. Two levels of SUDS will apply to roads and car parks. One level of SUDS, likely to be a 1.5 m x 1 m cross section stone filled infiltration trench, will be provided for roof water.

The SUDS system arises from infiltration testing undertaken during the detailed ground investigation, early in 2011.

All surface water drainage in the school curtilage will be privately maintained. Access road drainage which will require two levels of SUDS treatment, will be either a roadside conveyance swale or a filter trench, as may be agreed by the Roads Service for future adoption.

Other than the access road, all existing site run-off is greenfield.

Foul Drainage

No existing foul sewerage exists south of the River Ythan in the vicinity of the site. Investigations are underway with Scottish Water but a new foul sewer gravitating northwards and then being pumped across the river to the existing WWTW has been anticipated.

Roads and Car Parks

There is an existing public road, unclassified, running approximately east-west between the A90 and the A920, which provides access to existing farm land and buildings. Alternatives of part reconstruction of this road and a new adjacent road construction have been proposed at this stage.

A 3 m wide cycle way will be required parallel to the A920 and access road from the south boundary of the built up area, to the school.

Street lighting will extend from the town to the school.

A new access junction with right turn stacking lane will be formed at the A920 principal road. The existing u/c road will be stopped up east of the school.

Car and coach parking areas will be macadam or asphalt with a proportion of porous surfacing to address SUDS.

All road and related make-ups will be 450 mm minimum. The new access, outwith the school boundary, will be to adoptable local distributor road standard.

SUBSTRUCTURE

The proposed steel frame is being supported on RC pad/concrete strip foundations. All reinforced concrete elements will be designed in accordance to BS81110.

STRUCTURAL FRAME

Braced steel frame building comprising of composite steel beams supporting 150 mm deep composite metal decking flooring system. Overall structural zone would be in the region of 650 mm including 25 mm for deflection. Steel work to be designed in accordance to BS5950.

Floor to floor heights shall be designed to accommodate adequate structure and services zones and the following minimum criteria.

Total floor to floor : 4.00 m.

Floor to ceiling height (Classrooms) : 3.00 m

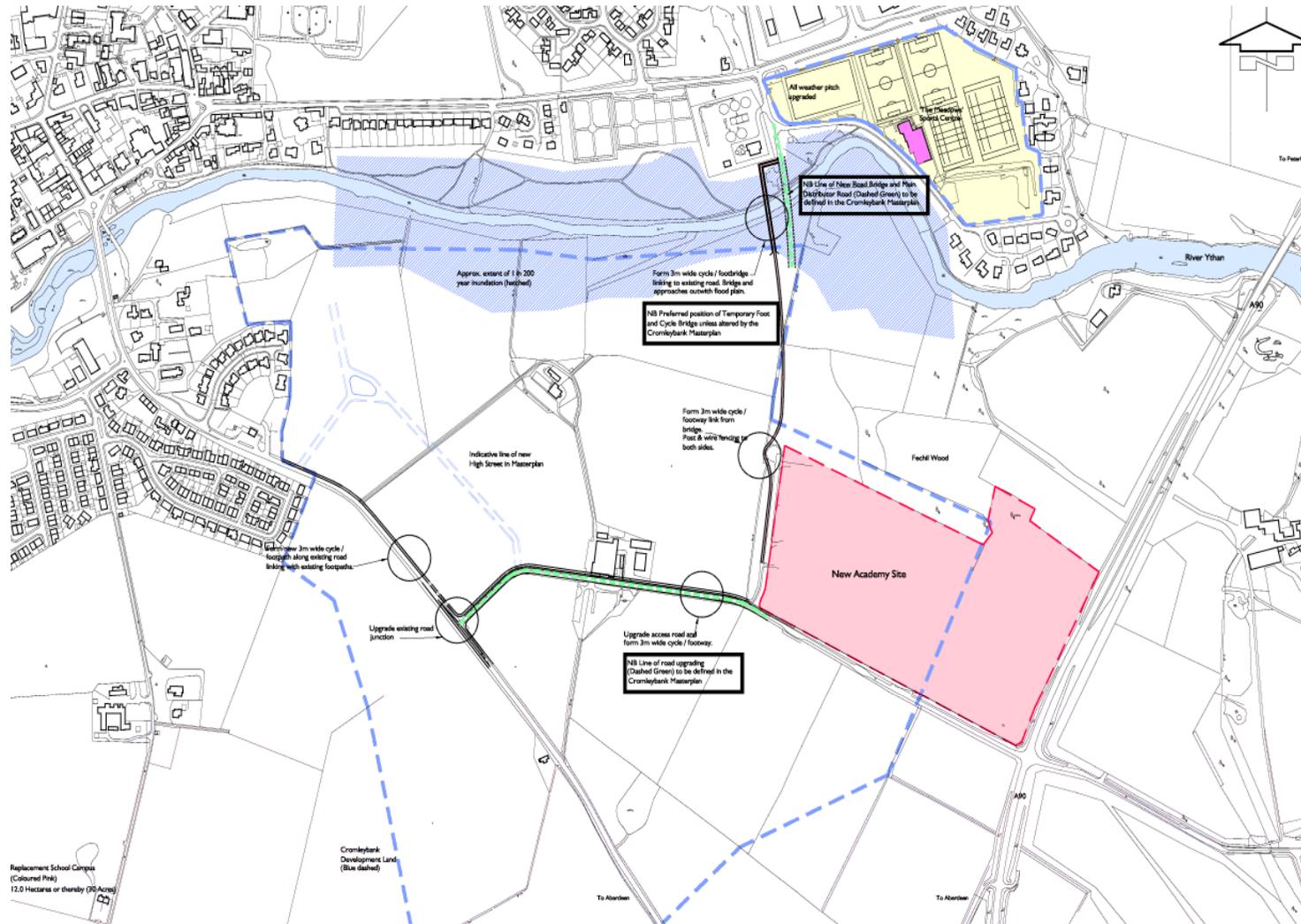
Floor to ceiling height (Games Hall) : 7.600 m clear minimum

Floor to ceiling height (Theatre) : 7.000 m clear minimum.

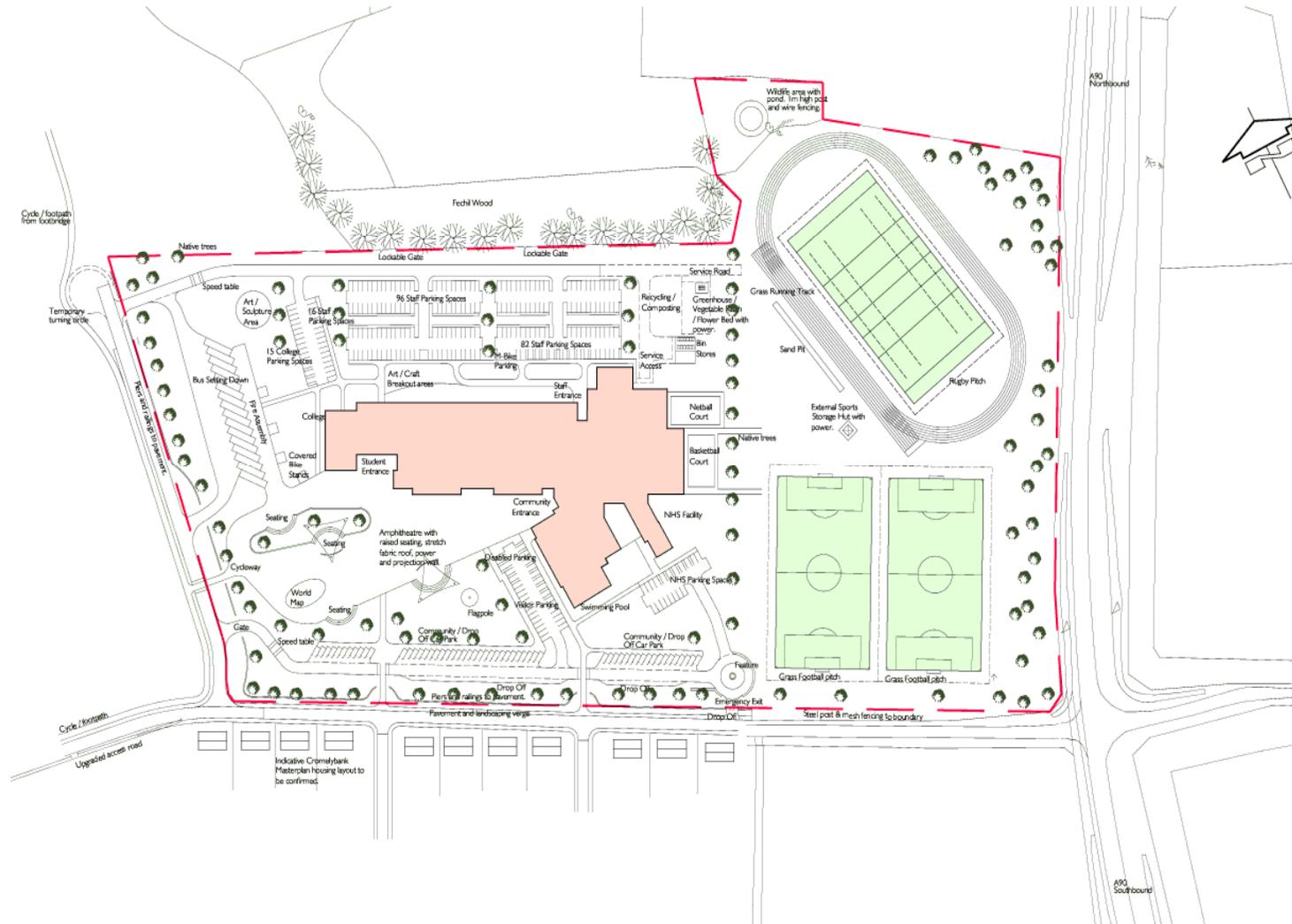
FLOORS

150 mm deep composite metal decking flooring system. Overall structural zone would be in the region of 650 mm including 25 mm for deflection.

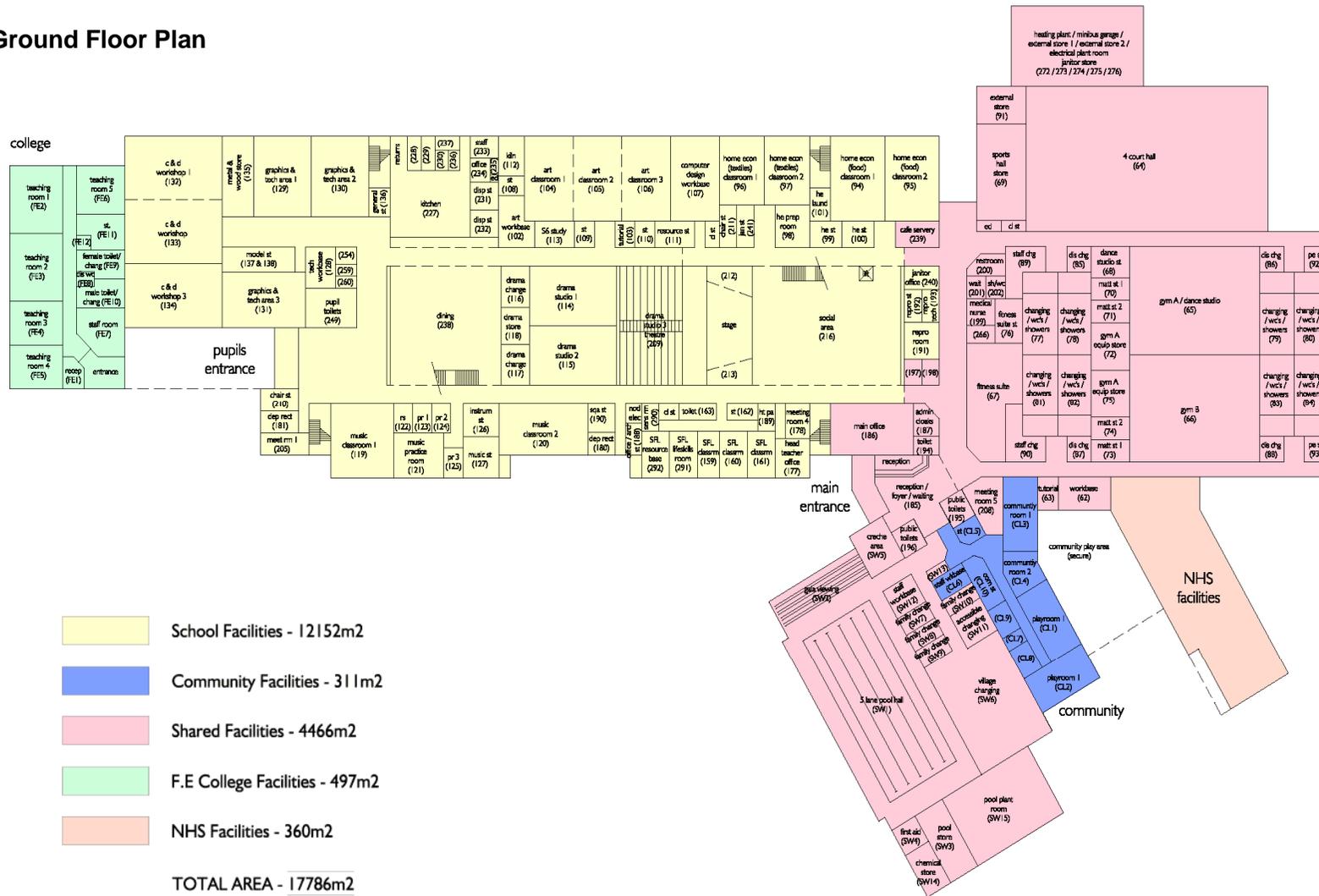
Architectural Drawings : Location Plan



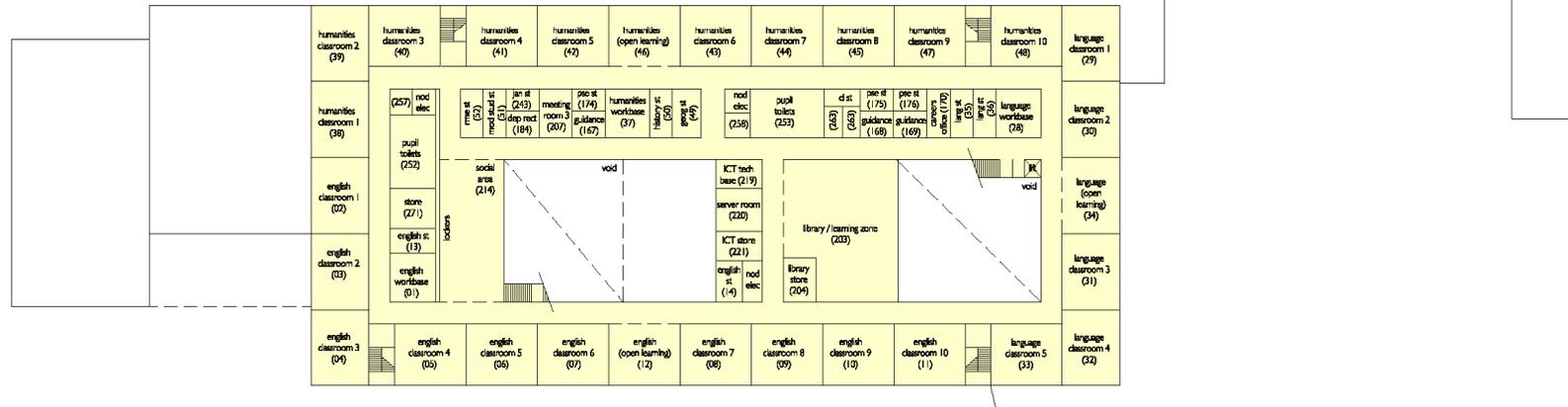
Site Plan



Ground Floor Plan

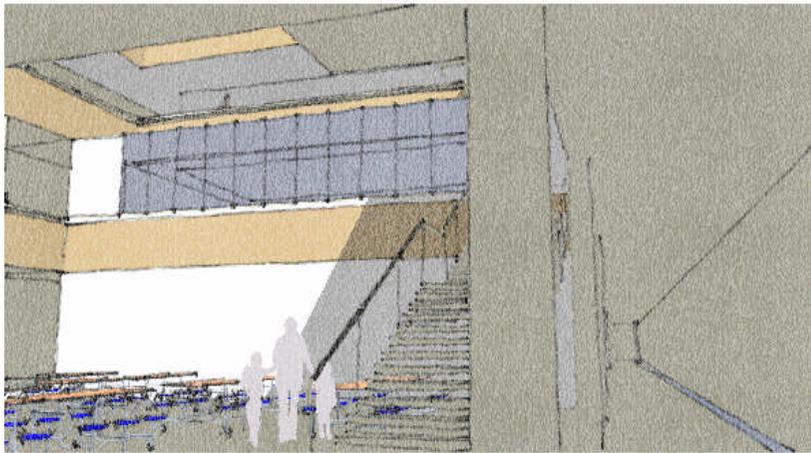
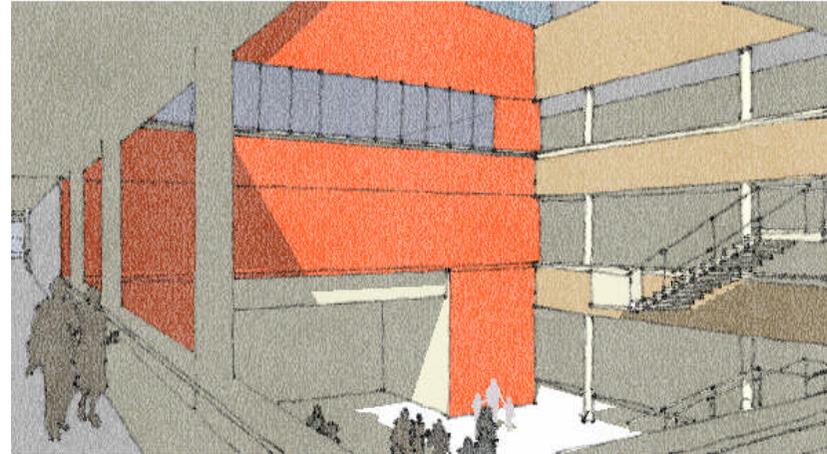
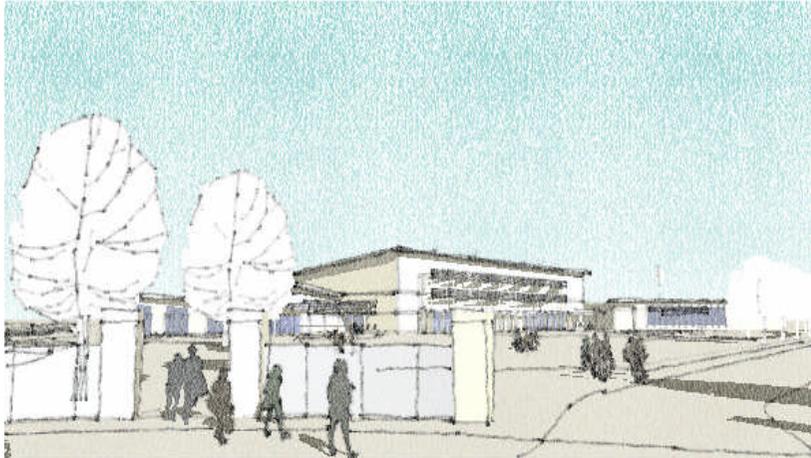


Second Floor Plan



- School Facilities - 12152m²
 - Community Facilities - 311m²
 - Shared Facilities - 4466m²
 - F.E College Facilities - 497m²
 - NHS Facilities - 360m²
- TOTAL AREA - 17786m²**

3D Images



Cost Report

The Stage C estimated cost is currently amounting to slightly more than the Assessment Study Estimated Cost.

A review of estimated rates together with a value engineering exercise is currently being undertaken with a view to ensuring that the design will be within the approved budget.

Programme

