

Successful school design

Effective graphic approaches



Introduction

An essential part of any review by CABE's schools design panel is their visual presentation by design teams. To help teams find the best way to present proposals on the eight A1 sheets that the panel requires, CABE commissioned four architects to develop example drawings to illustrate different graphic approaches to communicating school designs.

Each set of drawings explains the proposed design and conveys how it conforms to the 10 criteria that CABE's panel uses to assess schemes. These graphic approaches are not meant to prescribe a fixed template or graphic style, but rather to demonstrate the scope and content of information required to illustrate different schemes, so that they can be easily understood and effectively reviewed.

The schools design panel looks for straightforward and succinct graphic presentations in which design strategies are clearly defined and translated into a cohesive proposal. Diagrams are extremely useful to convey strategic thinking across the project. Together with coherent architectural drawings, the presentation should deliver a comprehensive picture of the school design.

The 10 CABE criteria should be seen as a framework for the assessment of school designs rather than a method of structuring the presentations. Further detail on the presentation requirements and working through the assessment criteria can be found in the other two

publications that accompany this one in CABE's *Successful school design series: How CABE's schools design panel works and Questions to ask*.

The four example presentations represent anonymous designs for Building Schools for the Future schools. They include a range of sites and projects, each with its own aspirations and challenges. Their locations vary and include a new build/refurbishment in an urban conservation area; a new build in a rural conservation area that co-locates a mainstream school and a special needs unit; a new build/refurbishment in a constrained urban site; and a new build in a rural village.

The presentations represent the level of material submitted at the final bid submission of the schools design panel process. Initial bid submissions may not be as polished, but presentations should continue to cover the strategies and design proposal. The panel needs to understand the strategies that are translated into the design.

Photographs of presentation models displayed at the review alongside the eight A1 drawings are also shown here. Models are not specifically required or submitted in all cases, but they can be a useful tool for supporting drawings and presenting the scheme three-dimensionally. Models are particularly useful when they illustrate the immediate context, the character of the site, including its topography, the proposed massing and building arrangement, and school grounds provision. Clear sketch models are welcome.

Presentation 1: new build/ refurbishment in urban conservation area

This proposal aims to provide 21st-century teaching and learning spaces through an educational model that organises the school into departments. It is a mix of refurbishment and new build to an existing 1930s school in an urban conservation area. Existing accommodation will be rationalised to create a welcoming entrance, improve the location of departments such as science, enable accessibility and circulation in and around the school, and provide inspiring social spaces.

The design is informed by the need to replace a number of buildings that have come to the end of their lives, physically and educationally, with state-of-the-art facilities that allow innovative teaching techniques, for example, wet and dry science areas. Pupil and vehicle access to the school are combined; pupil circulation is not clear and did not meet Disability Discrimination Act requirements. The design seeks to simplify student movement and use the limited outdoor spaces to their full potential, providing a range of external teaching and social facilities, such as a first floor roof deck as an outdoor teaching space. The local community will continue to use sports, drama and hall areas, and may also use the new social hub adjacent to the dining area.

01 Location and place

Education Vision for the future of X School:

- Organise school departmentally
- Simplifying circulation throughout the school
- Ensuring the school provides good community use
- New student entrance and social spaces
- Placing SEN at the heart of school
- School specialism is Performing Arts
- Sustainability at the core of design
- Ensuring the school is DDA compliant and the school is fully inclusive
- Improving the dining facility



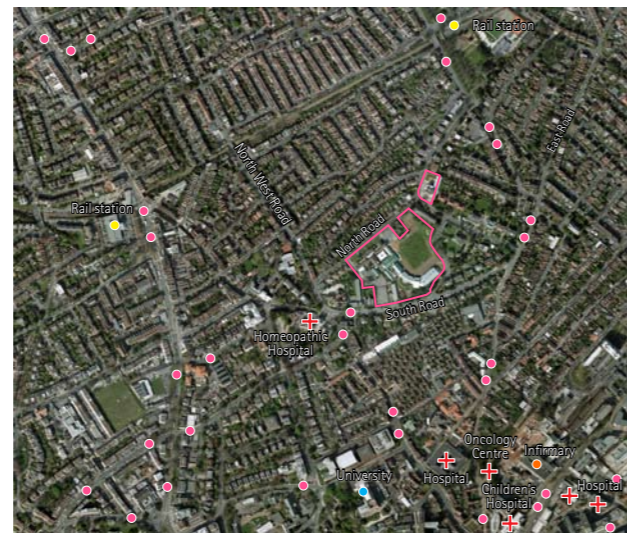
Aerial photo showing the main 1930's facade, which has an important civil presence within the conservation area, and the new school buildings to the South which are utilised by the community.



Conservation Area Map



External existing site section A-A



Aerial photograph illustrating the relationship with neighbourhood

- KEY
- Site boundary
 - Bus stops
 - Rail station
 - University
 - ✚ Primary Care Trust



Existing site plan and analysis / as bar scale

- KEY
- Original 1930's building retained and refurbished
 - New buildings to be retained
 - Buildings to be demolished
 - Potential building for new development
 - Site boundary
 - Bus route and stops
 - Pedestrian traffic
 - Adjacent neighbours
 - ▲ Point of entry into site
 - ▲ Building Entrance
 - ▲ Point of entry without disabled access
 - Sun path
 - Primary views across site
 - Indicative location of existing trees

School Name

Bidder

This drawing sets out the basis for the project by defining the key education objectives, an analysis of the site and its buildings, the school's relationship with its surroundings, and environmental characteristics across the site, such as prevailing wind direction and sun paths.

02 Existing buildings



Site photographs of school buildings

The site is characterised by the collection of disparate buildings added to the original 1930's building through the years. Due to the varying topography of the site and piecemeal development, buildings are isolated resulting in a lack of cohesion and unclear circulation routes.



Existing buildings in red identified to be demolished

The green playing fields are a valuable asset to the school and offer unobstructed views across the site. Hard play areas are in need of upgrading.

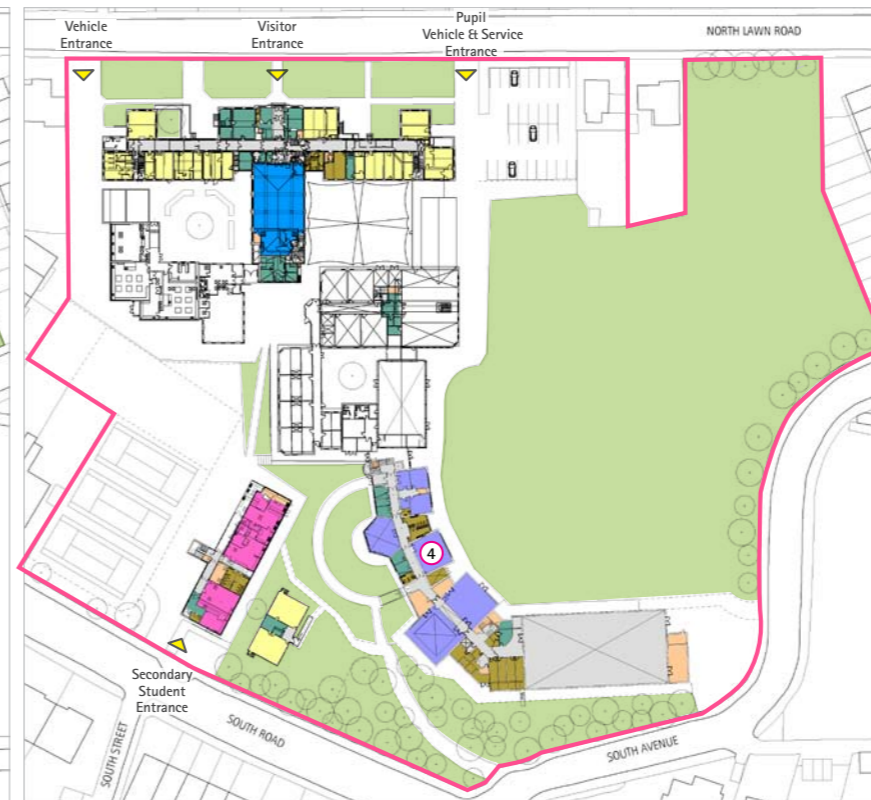
Issues with existing school buildings

- Poor wayfinding
- Unwelcoming dining space with poor access
- No internal student social spaces
- Shared student and vehicle entrance
- The older buildings are not DDA compliant and vertical circulation is tight
- Science on the top floor of the 30's building is not fit for purpose
- Block B overheats

KEY		Technology 402 sqm		Assembly Hall 269 sqm		Stores 631 sqm		Sports 656 sqm	
Total area 11,084 sqm		Science 640 sqm		Office / staff / admin 1325 sqm		Resource area 606 sqm		Circulation 1851 sqm	
Plant 123 sqm		Music / Drama 1023 sqm		External circulation		WC/changing 416 sqm		Art room 416 sqm	
Standard classroom 1978 sqm		Kitchen 96 sqm		ICT 316 sqm		Dining 226 sqm		SEN 65 sqm	



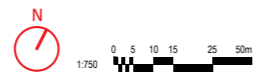
Existing Lower ground floor plan



Existing Ground floor plan



Existing First floor plan



KEY

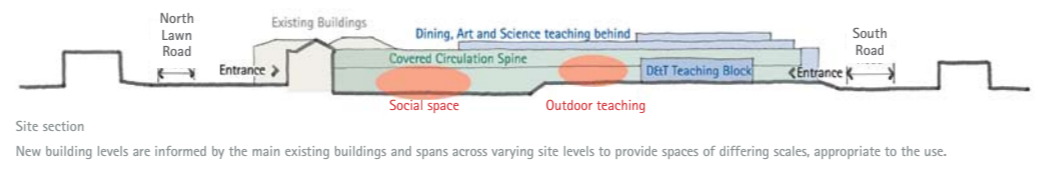
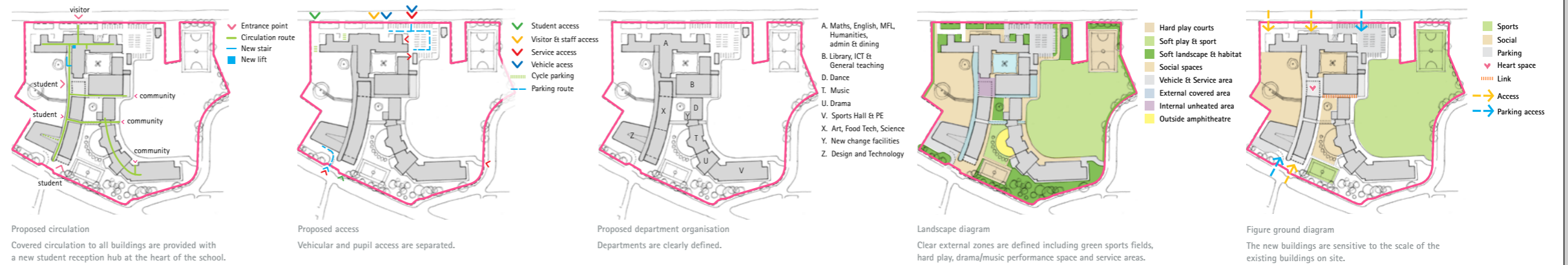
1. Courtyard - not used by school because of the lack of passive supervision
2. Dining space - Poor links to outside
3. Science - difficult to modify due to load bearing walls in 30's building
4. Newer building in good condition

School Name

Bidder

Photographs and drawings set out the demolition strategy based on an appraisal of existing accommodation.

03 Strategy



Massing studies
The scale of the new building is sensitive to the existing buildings on site and surrounding conservation area. The building is centered to the site, pulled back from site boundaries to provide external teaching and playing spaces and avoid overlooking issues.



1:750
0 5 10 15 25 50m
New building

School Name

Bidder

Design strategies are explained through key diagrams, including the scope of works, massing studies, access routes, and figure ground diagrams. The site plan integrates these aspects into a clear, cohesive proposal.

04 Internal organisation

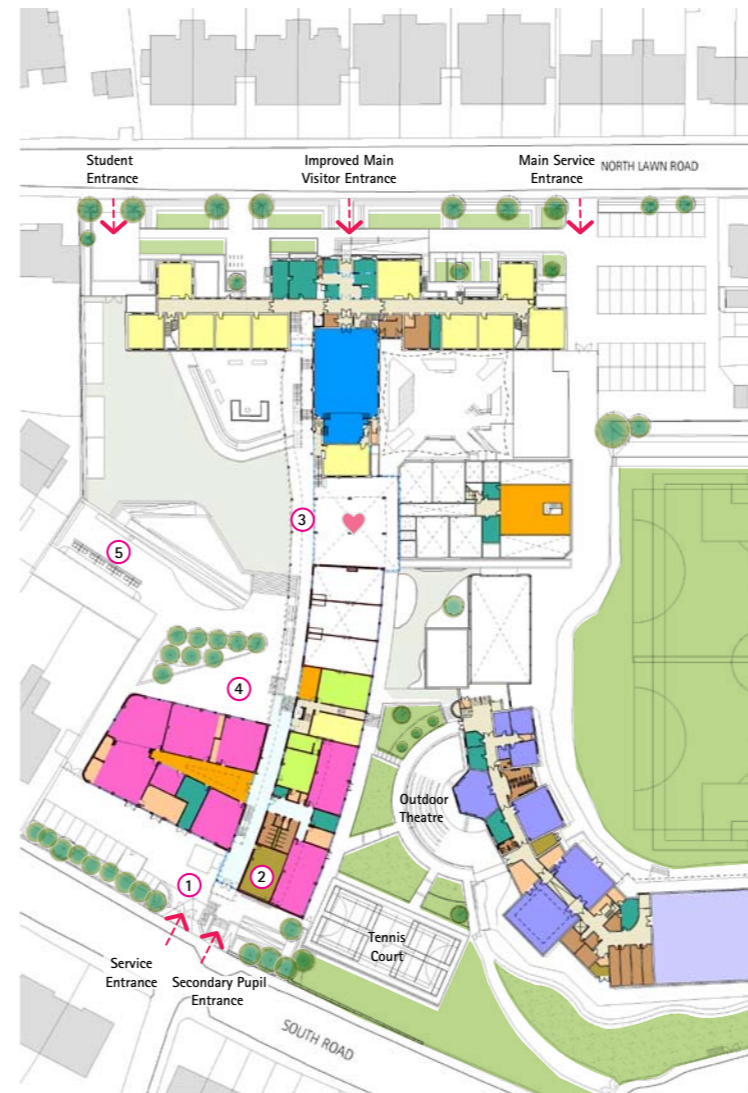
- | | | | | | | | | | | | | | | | | | | |
|---------------|-------|--------------------|------------|---------|-------------|---------|---------------|---------------------|----------------------|-----|--------|---------------|-------------|--------|--------|-------------|----------|-----|
| ♥ Heart space | Plant | Standard classroom | Technology | Science | Music/Drama | Kitchen | Assembly Hall | Office/ staff/admin | External circulation | ICT | Stores | Resource area | WC/changing | Dining | Sports | Circulation | Art room | SEN |
|---------------|-------|--------------------|------------|---------|-------------|---------|---------------|---------------------|----------------------|-----|--------|---------------|-------------|--------|--------|-------------|----------|-----|



Proposed Lower ground floor plan / as scale bar

Lower ground floor service areas in the existing building are retained and staff areas refurbished. Circulation through the dining area is improved and the kitchen is enlarged and remodelled. The SEN department, staff and admin areas are relocated into refurbished existing spaces. The area forming the connection between new and existing spaces forms a new student reception and double volume multi-functional hub space. A covered external circulation spine links external and internal spaces and buildings and departments across the site and provides new DDA access.

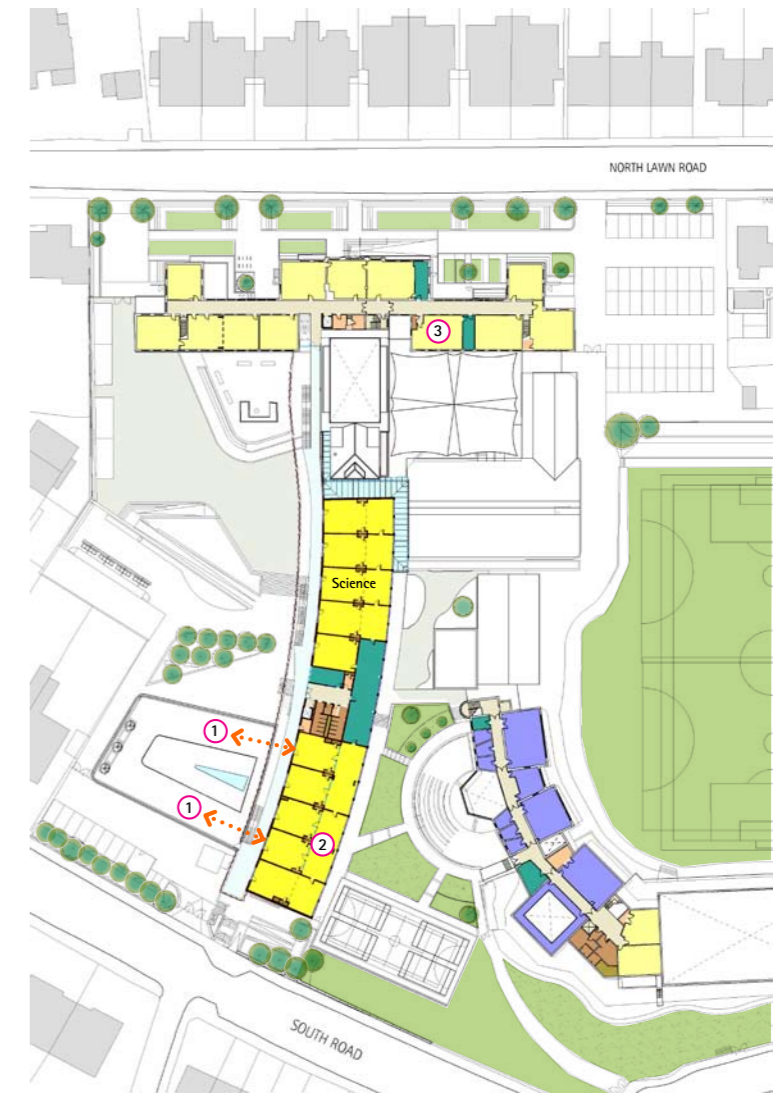
- KEY
1. Student Entrance Court
 2. Improved admin spaces
 3. Improved dining with good links to outdoors
 4. New student hub and additional dining area
 5. New covered link between theatre and hub
 6. SEN at the heart of school
 7. Double volume art rooms
 8. New lift
 9. New DDA access to front entrance
 10. Bike storage



Proposed Ground floor plan / as scale bar

The existing main reception is remodelled and general classrooms refreshed. The single storey Design & Technology block is separated from the main block to the south west for acoustic and associated ventilation reasons and is arranged around a central multi-use Resource space.

- KEY
1. Deliveries to D&T and biomass
 2. Biomass boiler
 3. New circulation linking into existing level of 30's building
 4. Outdoor teaching
 5. Sub-station and sprinkler tanks



Proposed first floor plan / as scale bar

The Science department is moved from the existing building, which reverts to general classrooms. Laboratories are transformational and split into wet and dry areas which provide flexible teaching spaces. Two of the wet areas are also interlinked creating the opportunity of offering a large flexible laboratory space.

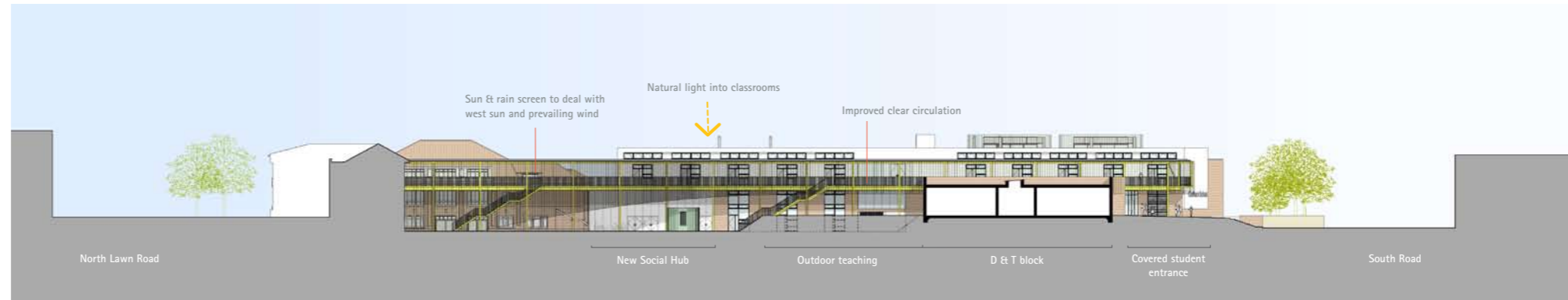
- KEY
1. Access to science Outdoor lab
 2. Transformational science offering different way of learning
 3. All general teaching in 30's building

School Name

Bidder

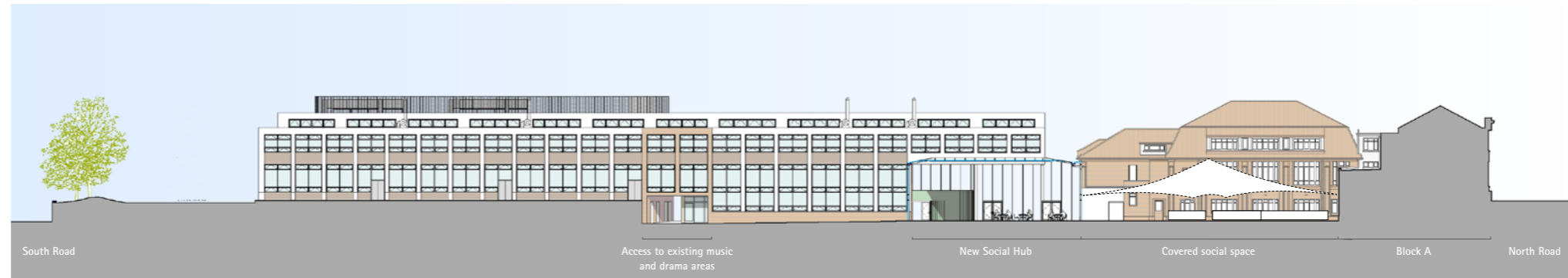
These plans illustrate the principles of internal organisation and distribution of accommodation at different levels.

05 Elevations and sections



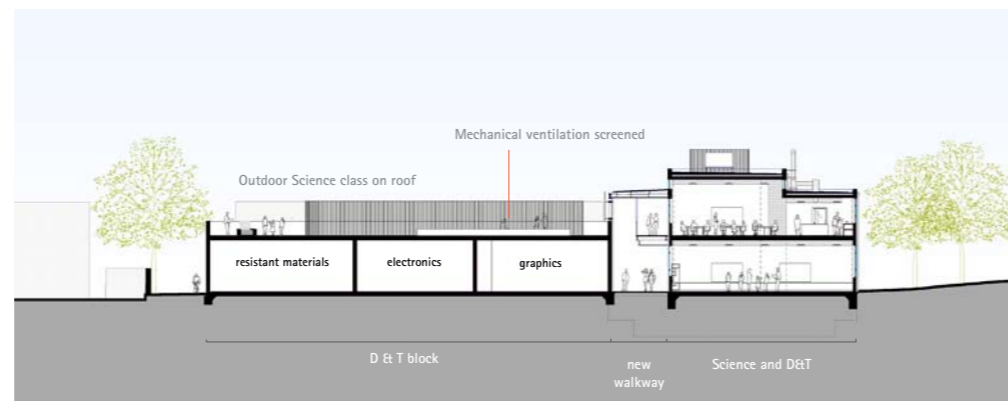
West elevation

The screened west elevation faces the new hard external social space and student assembly area leading on to the student hub and reception. This external space is overlooked by the external circulation walkway which spans the length of the new building and connects with the existing building. The materiality of the screen offsets the subtle materials used on the main building namely textured brick at low level and crisp render at high levels.



East elevation

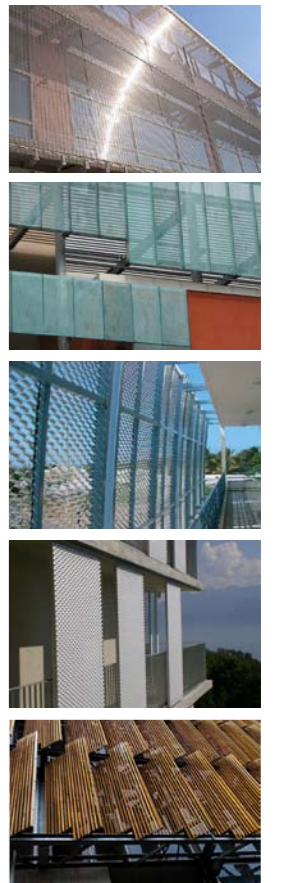
The east facade is less active and permeable than the west and provides the backdrop to the more intimate external performance area. The facade treatment is inspired by the 1930's building and is composed of structural bays expressed by brick piers, which continue the rhythm of the original building. The verticality of the bays are strengthened through the unification of glazed elements, by means of glass spandrel panels set within the continuous window frames.



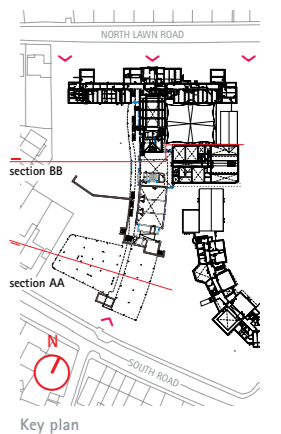
Section AA



Section BB



Screen Material Inspirational Images



Key plan

School Name

Bidder

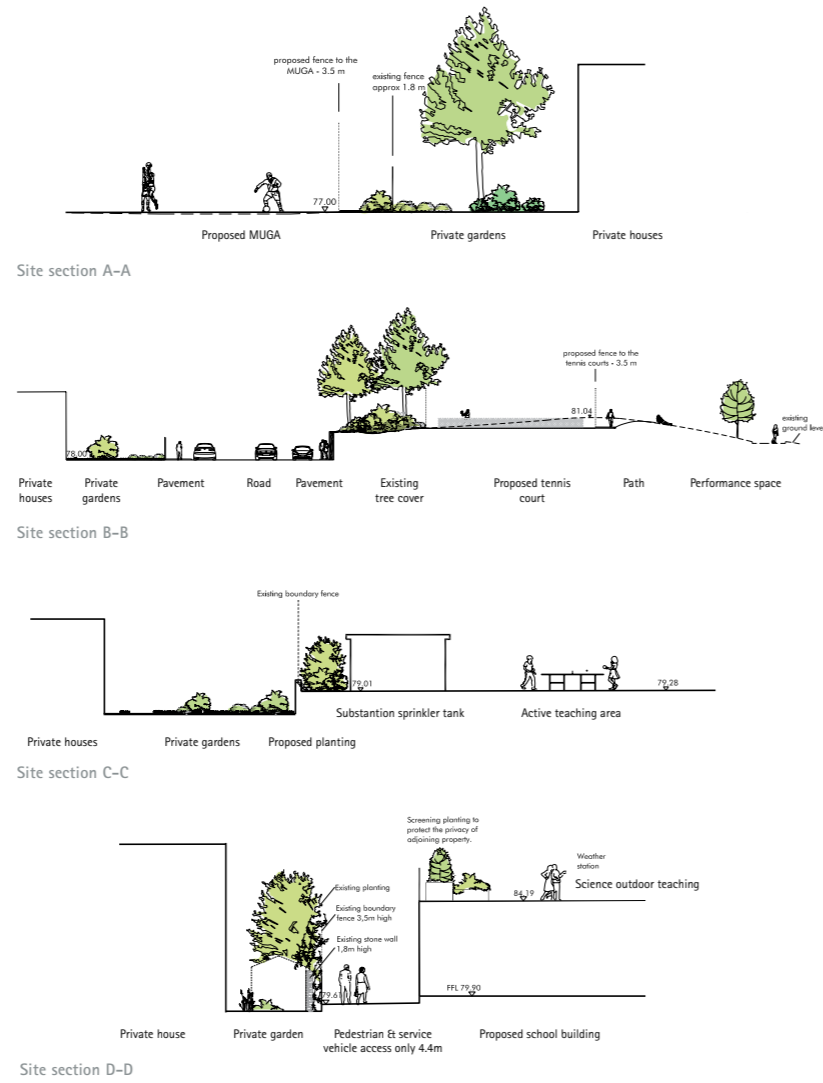
Key sections and elevations show facade treatments at different orientations.

06 Landscape

The landscape masterplan proposals respond to the historic setting of the site within the Conservation Area. The proposals respect the character of the building frontage on North Lawn Road and the contribution the existing landscape of the site makes to the neighbourhood. Within the site the proposed layout provides a range of new secure spaces suited to the social, educational and physical functions of the school that will also provide an attractive, high quality and sustainable setting to the school buildings.

The proposals provide segregation between the main vehicular and pedestrian access to the site, with this and improved arrangements for disabled access to the buildings and parking. The historic character of the main frontage will be restored and enhanced. Existing tree cover on the rest of the site frontages will be retained or replaced as an essential buffer to the surrounding neighbourhood.

Existing boundary treatment is to be retained.



Proposed landscape scheme

School Name

Bidder

The proposal for school grounds is supported by sectional studies which describe the quality of external spaces and how they relate to the school's immediate surroundings.

07 Environment

Renewable energy and sustainability

The new building works will include the following to enhance the sustainability of the building, reduce the energy consumption and limit the environmental impact:

- Highly insulated and air-tight buildings
- Optimised building form and orientation to maximise, natural daylight and natural ventilation
- Extensive use of natural ventilation and hybrid systems where possible
- Exposed thermal mass to reduce energy use and summertime overheating
- Daylight linked lighting control systems with absence detection
- Openable windows for all naturally ventilated and mixed mode ventilation systems
- Tamper resistant thermostatic control valves for all heat emitters
- Services will be linked to the Building Management System (time controlled and weather compensated)
- Metering strategy that will enable effective monitoring of energy consumption for targeting of savings and improvements
- Local controls for occupants
- Embedded energy efficient and water conservation measures

Renewable strategy

- Biomass boiler providing at 40% of the annual building load
- Supplementary high efficiency gas boilers with dual fuel gas/ biofuel burners
- Significantly reduces CO2 emissions over traditional systems
- Established fuel supply network
- Rainwater harvesting included to feed all new toilet areas
- Solar thermal panels providing hot water to ALL toilet areas

Ventilation and heating strategy

Energy efficiency

- High U-values
- Controlled lighting (occupancy sensor, daylight dimming)
- Controlled water flow

Ventilation and heating to classrooms

- High efficiency heat recovery
- Local control through thermostats, CO2 and occupancy sensors
- Guaranteed ventilation rates all year
- Night purge to provide cooling in summer

Daylight example

- Daylight aspirational target of 4%
- Dimming and presence control reduces energy consumption
- Classroom depths suitable for day lighting with very high floor to soffit
- Clerestory strip boosts daylight at rear of class
- Glare issues minimised with blinds

Orientation

-Existing buildings and site constraints result in the new building orientating east west. The western elevation windows will be screened by the walkway screen. South and eastern windows will include solar control glass to limit heat build up.

Performance of existing buildings

- Block B over heats - this has been attributed to the rooflights. The glazing in the rooflights is to be altered to reduce heat gain.
- Block C suffers from poor ventilation - this block is to be demolished.
- Block D overheats - this has been attributed to no insulation in the roof. New roof insulation is proposed.
- New efficient boilers feeding block A
- Increased insulation to roof of block A

- KEY
- Ventilation as existing
 - Mechanical
 - Natural ventilation
 - Mixed mode photography dark room

- A Design Technology
- B Art
- C Food Technology
- D Administration
- E Student hub
- F SEN
- G New ICT
- H Biomass boiler and plant area
- I Science department

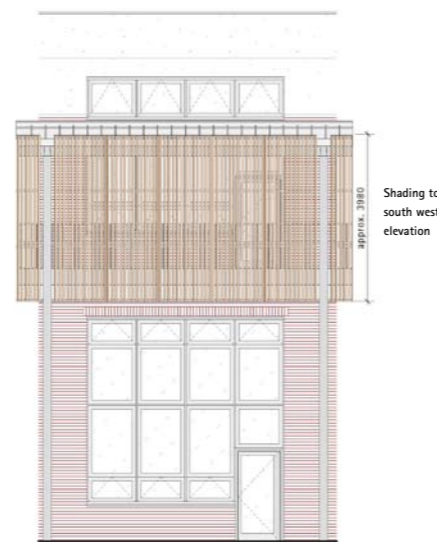


Plans showing ventilation strategy

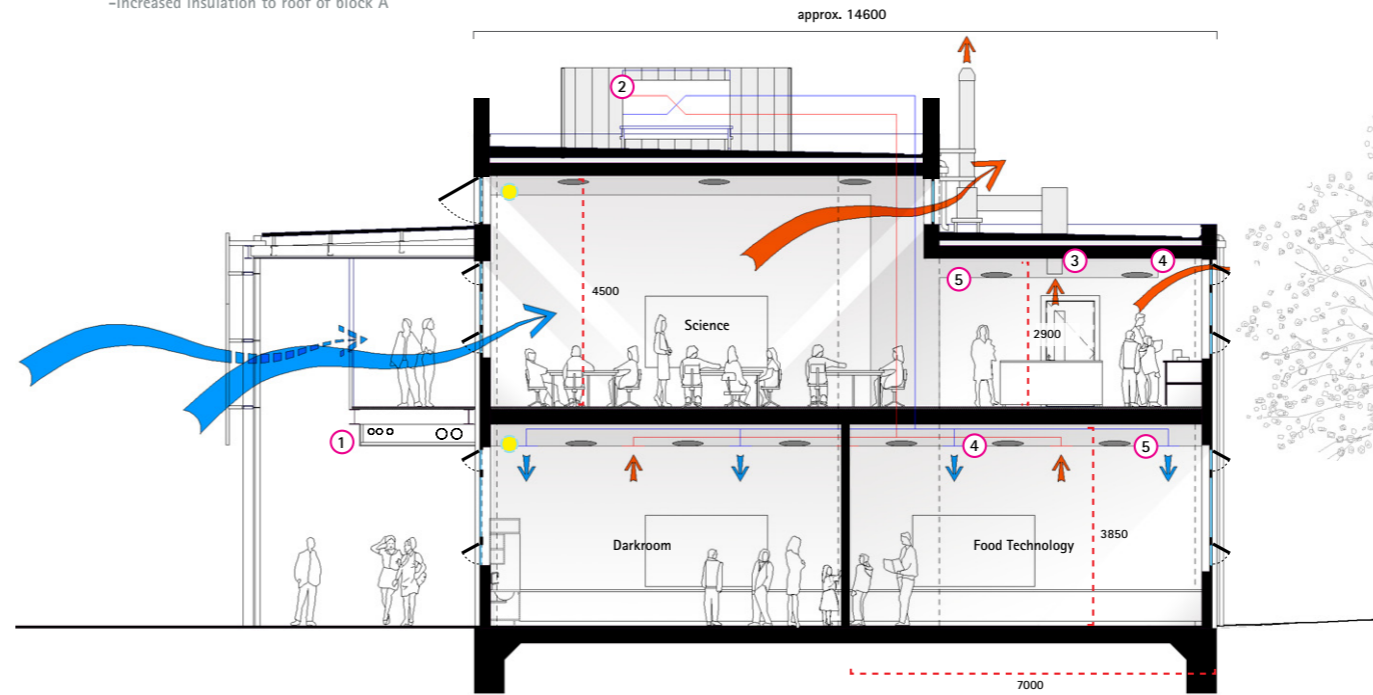
- KEY
- Day lighting
 - Weather protection strategy for external walkway
 - Ventilation
 - Wireless
 - 1 Service zone
 - 2 Heat recovery unit
 - 3 Fume extract
 - 4 Exposed concrete soffit for thermal mass
 - 5 Dropped bulkhead incorporating ventilation ductwork



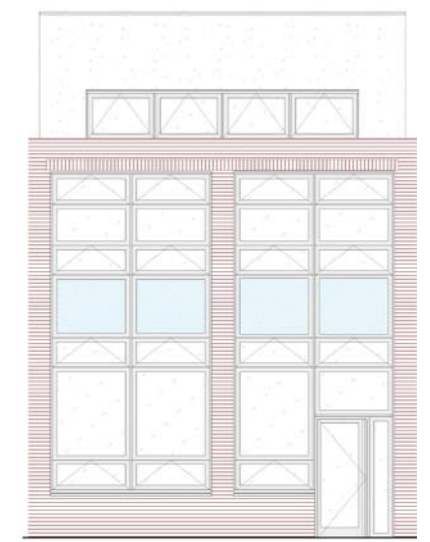
Typical lighting strategy for classrooms



South west Elevation showing typical window details



Typical cross section showing sustainability strategies



North east Elevation showing typical window details

School Name

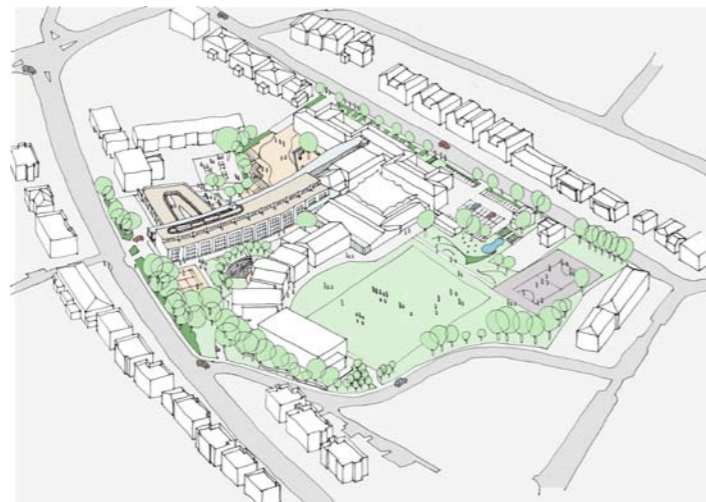
Bidder

The environmental strategy is presented at various scales. The different bay elevations indicate how the visual appearance is influenced by the building's orientation and environmental strategy. The section illustrates how internal comfort conditions are achieved. Key dimensions and graphic scales are extremely useful for the purposes of review.

08 The Whole



North West Isometric view



South East Isometric view



View over hard social area towards student reception and hub space



West approach on South Road



Interior view of student hub



North view of circulation spine



View of East facade and amphitheatre



Entrance on South Road

School Name

Bidder

Coloured sketches demonstrate a lively school environment – both inside and out. Sketches are extremely useful, and it is important that all material accurately represents the scale of the spaces.

Presentation 2: new build in rural conservation site

This new-build school in a rural setting had its own set of challenges. Its location in a strategic view on an important nature conservation site had a fundamental impact on the design. The site itself is an existing primary care trust campus due for demolition. The mainstream school and autistic spectrum disorder unit are co-located on the site, allowing independent and shared uses of internal and external spaces.

Key objectives were to create adaptable room configurations, respond to the 'schools within a school' vision but with a single school ethos, and provide flexible spaces for team teaching. The surrounding landscape is used as an important learning resource. The local community will be able to use sports facilities out of school hours and the location of the library is designed to encourage use both within and outside the normal school day.



01 Site Context

Existing Site



Aerial Photograph with School Site Indicated in Red



Existing Site Plan Illustrating Building Locations, Existing Trees and 'Ridgeline'

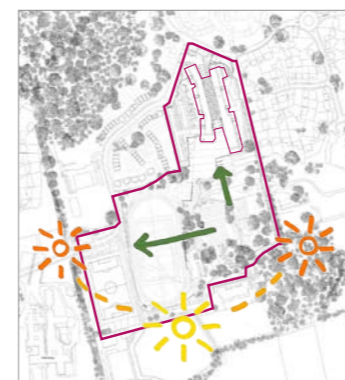
School in a Rural Setting

Month Year

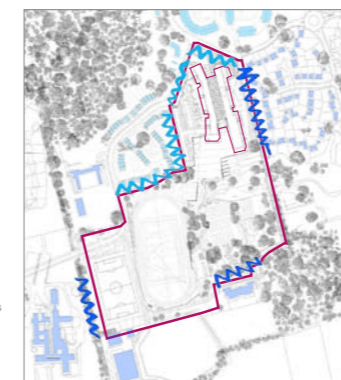
Site Analysis



Site Constraints (with Proposed Context Plan)

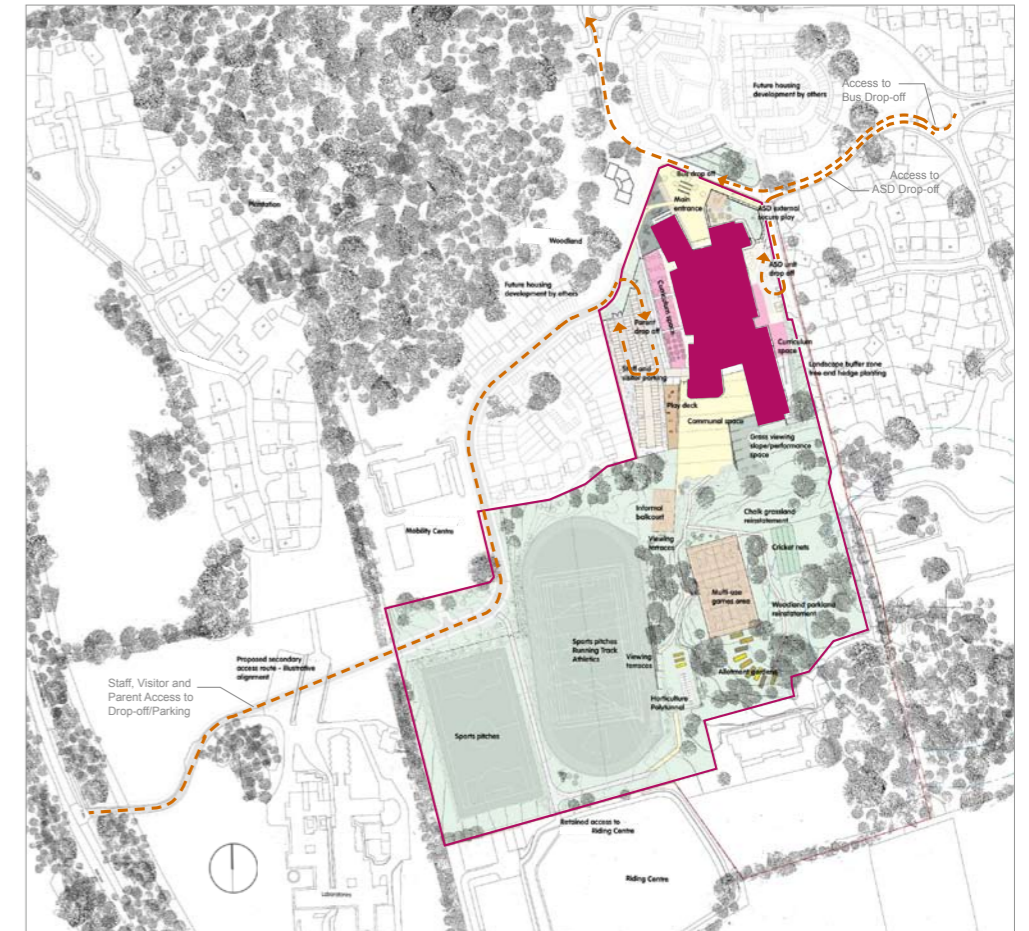


Site Analysis - Sun and Slopes

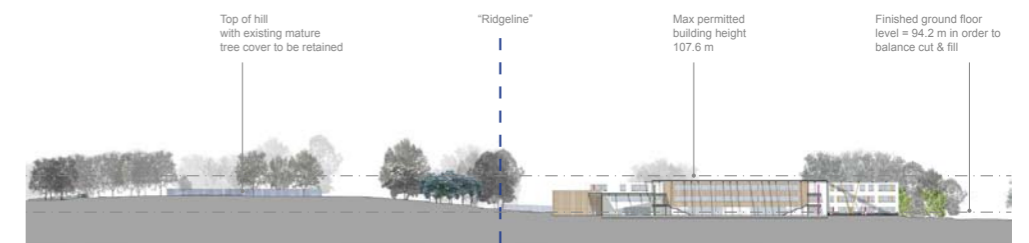


Site Analysis - Noise and Neighbours

Proposed Site



Proposed Site Plan



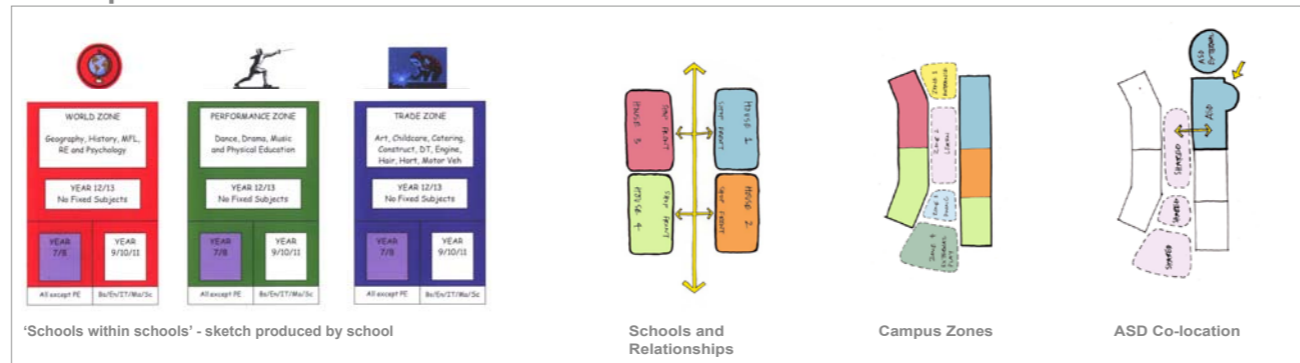
Section through Proposed Site looking West



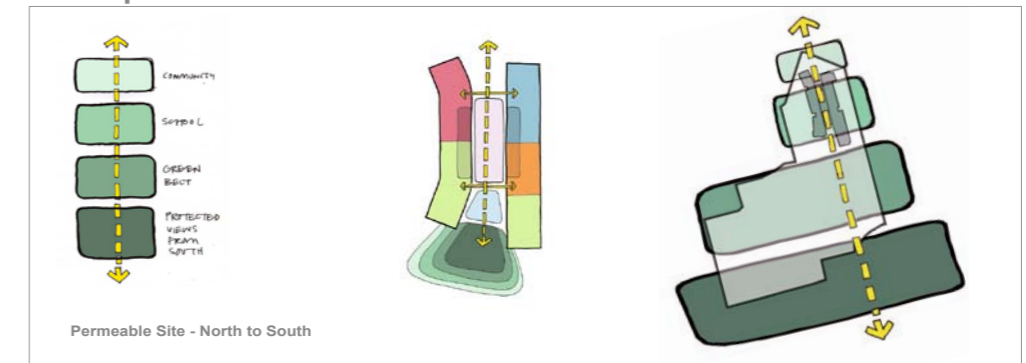
Site planning is analysed in relation to location, height, site topography and planning constraints. Pedestrian routes for students, staff, parents, and the wider community, as well as vehicular access for public transport and minibuses is shown. Public rights of way are also indicated on the site plan.

02 Educational Vision

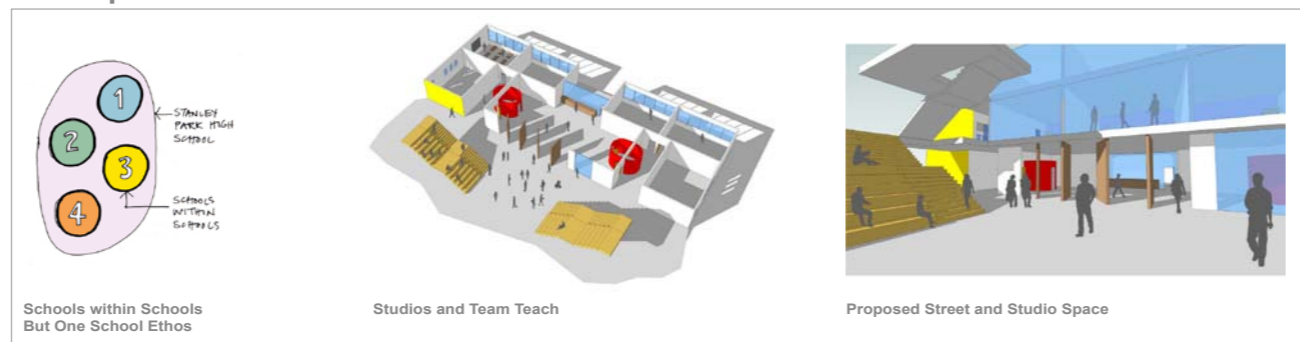
Concept: Schools within Schools



Concept: Permeable Site



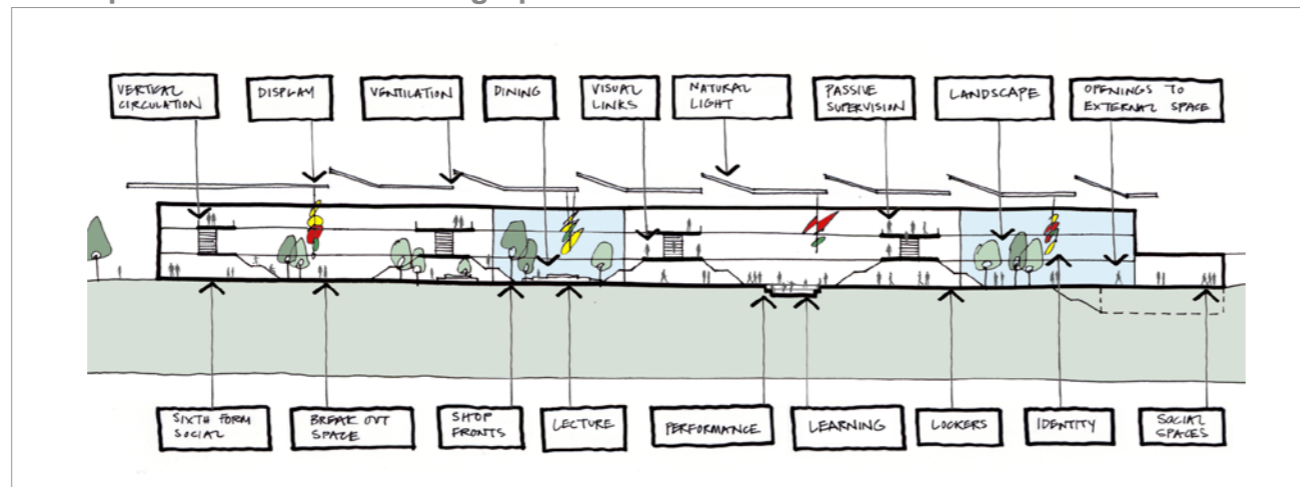
Concept: One School Ethos



Specialist Status: Business Enterprise with a Rural Dimension



Concept: The Street as Learning Space



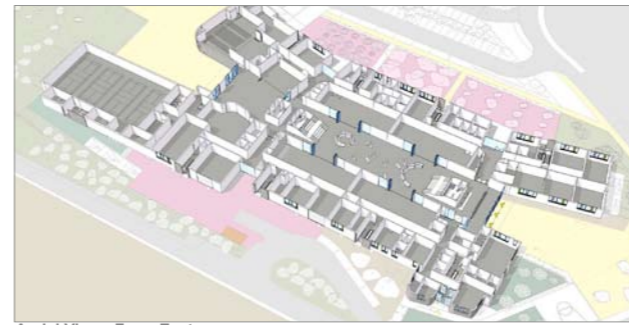
School in a Rural Setting

Month Year

Consortium

This drawing demonstrates how the learning model and school ethos have been translated into an education environment. The vision has been defined in terms of curriculum delivery, the relationship of internal and external spaces, and co-location.

04 Organisation and Massing



Aerial View - From East



Front Elevation - North



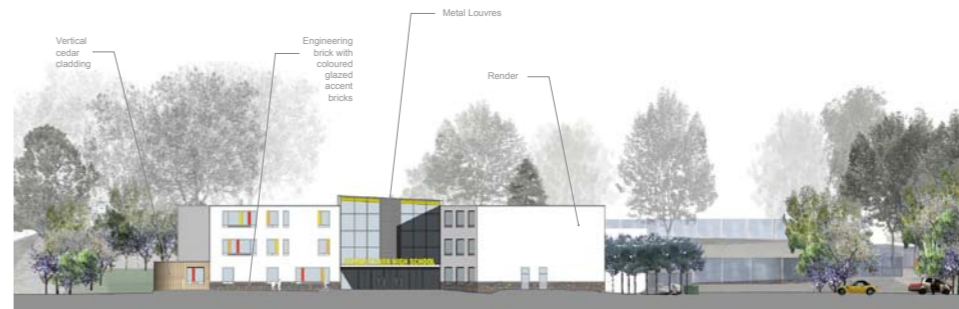
West Elevation - From South



West Elevation - From North



East Elevation



North Elevation

School in a Rural Setting

Month Year

Consortium

These diagrams explain how the buildings have been organised to respond to pastoral learning, community zoning, circulation, and ICT delivery. Elevations show how the massing and material treatments respond to internal functions and different orientations.

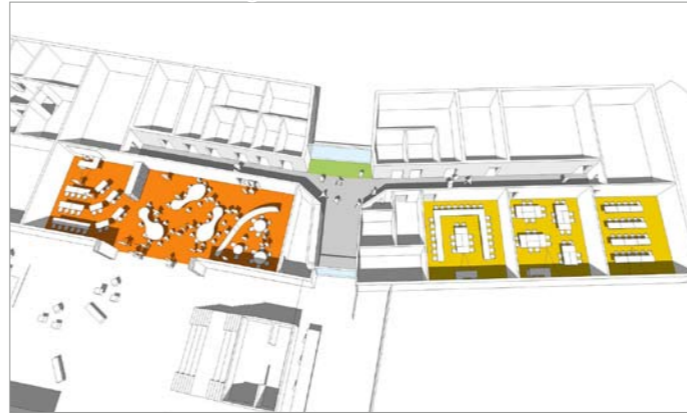
05 Long Life/ Loose Fit

Short-term Flexibility



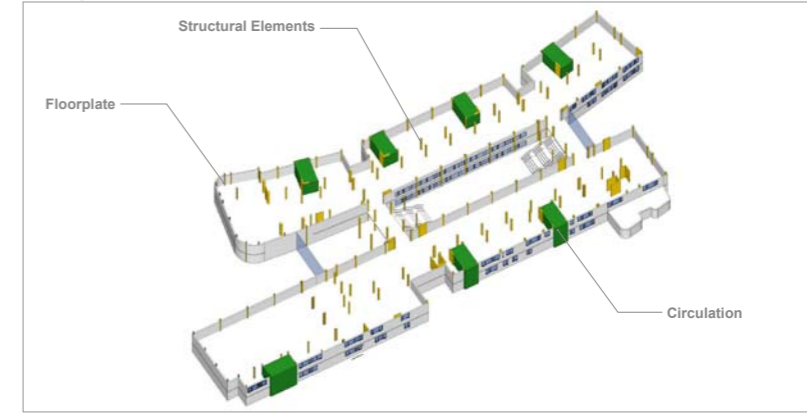
Performance and Presentation

Mid-term Flexibility



Current Arrangement: Ground Floor Studios Only

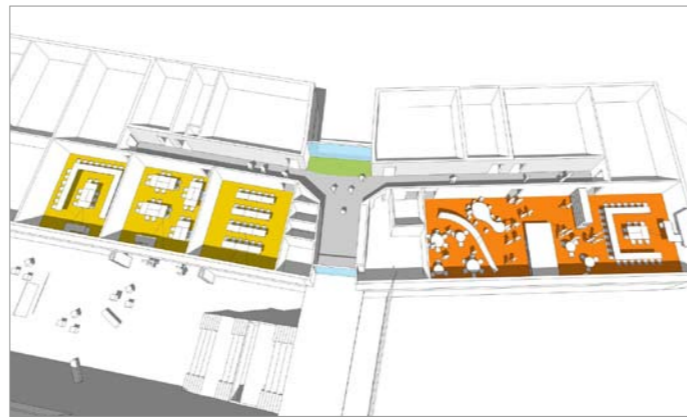
Long-term Flexibility



Due to planning and site constraints a significant future extension to the school will not be possible in this location. However flexible floorplates and minimal structural elements allow for maximum future adaptability of the building.

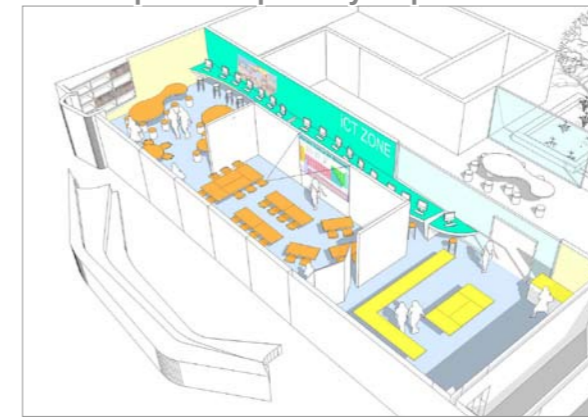


IT-rich/ Group Working



Potential for Studios on Upper Floors

Studio Space Adaptability - Option 1



Whole School



Potential for Additional Large Studios

Studio Space Adaptability - Option 2



School in a Rural Setting

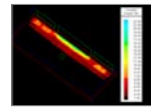
Month Year

Consortium

The definition of 'flexibility' can vary from school to school. In the brief for this school, it is understood in terms of time. Structural solutions for different options over time are shown. Expansion is not a possibility given planning constraints, and this is clearly noted.

06 Environmental Strategy

Ventilation and Heating Strategy



Daylight Example

- Daylight factors above 2%
- Glare issues minimised with blinds
- Room depth meets daylighting room depth criterion
- Energy saved through sensor control lighting



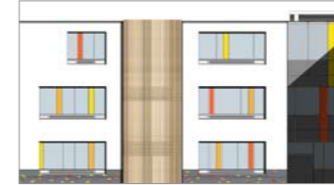
Energy Efficiency

- High U values
- Efficient ICT
- Controlled lighting (occupancy sensor, daylight dimming)
- Controlled waterflow
- Heat recovery

Typical window design

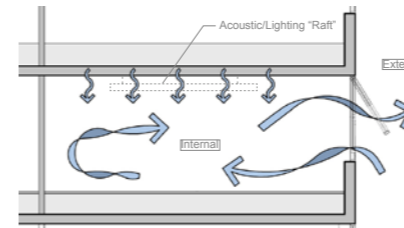
- Opening lights for added natural ventilation in summer and to give user control.
- MVHR extract and intake vents from under floor to window units, concealed within wall system.
- Blinds to control glare.

Typical Windows in Elevation



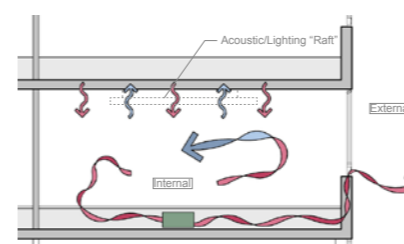
Summer day natural ventilation to curriculum spaces

- User control of windows during summer months.
- Coolth from exposed concrete slab.



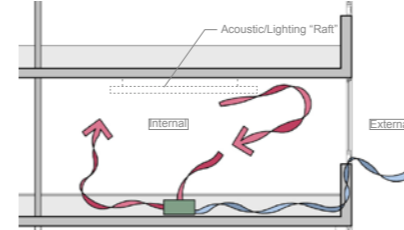
Summer night ventilation

- Room is purged through MVHR floor unit, allowing all windows to be kept shut for added security.
- Exposed slab is recharged for next day.



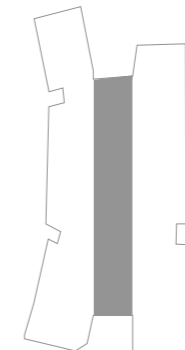
Winter day heating

- Windows kept closed to retain all heat and not cause cold draughts.
- Room warm air is recovered and reused.
- No heater coil required on ultra efficient MVHR units.
- This system uses one tenth the energy of a naturally ventilated system.



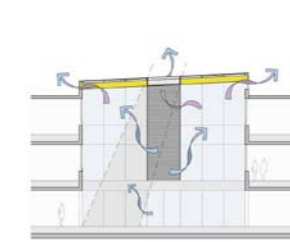
Orientation

Orientation of Building is constrained by site and building location. Glare and excessive solar gain in east-west facing classrooms is achieved through solar control glass.



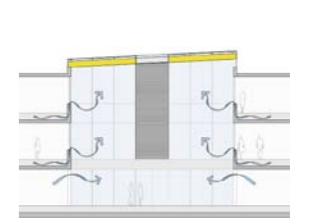
Natural ventilation to atrium

- End wall and roof edge louvres on BMS automatic actuators.
- 20% shading to roof glazing to reduce solar gains



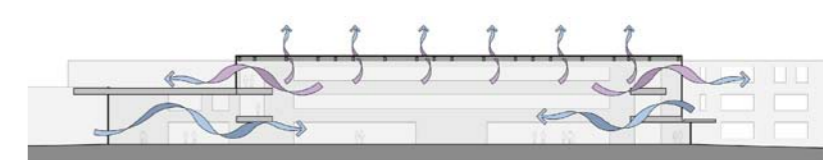
Mixed mode ventilation to atrium

- MVHR systems aids the natural ventilation at heat peak summer periods
- Free cooling is gained from classroom MVHR units.
- Atrium is purged at night using BMS controlled louvres at high level.



Extensive natural ventilation to atrium. End walls and roof vents

- End wall and roof louvres on BMS automatic actuators



Acoustic Strategy

- BB93 requirements are met through acoustic modelling and detailed consideration
- Suspended baffles and lighting/acoustic 'rafts' to improve acoustic of exposed soffits
- Particularly sensitive areas are fitted with localised soffit fixed acoustic 'rafts' and wallpanels without compromising night-purging/heating strategy
- Atrium acoustics are substantially improved through acoustic lining boards behind timber cladding.

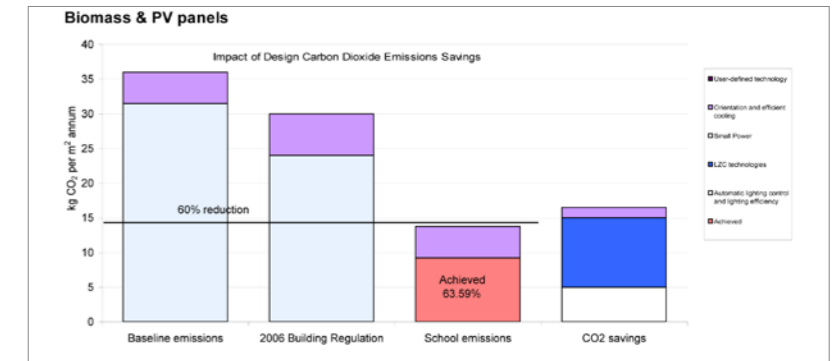
Renewable energy and sustainability targets

Targets:

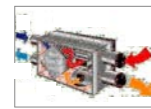
- 60% carbon emission reduction from 2002 Building Regulation to meet DCSF requirements
- BREEAM very good as minimum
- 20% renewables

Strategy:

- Mix of technologies to minimise risk, maximise benefits
- Mixed mode strategy to maximise natural ventilation when feasible and reduce heat loss and costs during winter months through MVHR units.
- Utilise Photovoltaic, water controls, biomass, thin client IT and intelligent ventilation.



Sustainability Strategies



Heat recovery units throughout the building



Promote public transport/dedicated bus drop-off



Green Roofs



Thin client IT strategy



Biomass renewable energy



Photovoltaic energy system



Recycling and Waste Compactor



Maintain and Enhance Wildlife



Allotments and Polytunnels



School in a Rural Setting

Month Year

Consortium

At site level, the building's orientation, ecological response and access to green transport inform the sustainability strategy. At building level, it is met through ventilation and heating strategies (illustrated for both summer and winter), which are demonstrated in more detail in the fenestration design. Daylighting acoustics, and ICT strategies are also addressed.

07 School Grounds

External Spaces



Proposed site plan

School in a Rural Setting

Month Year

The school site provides a unique opportunity to create an exemplar school environment.

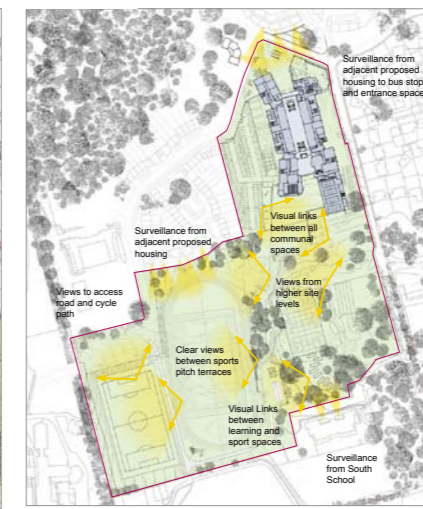
External teaching, social, sports and performance spaces are set within the context of the existing mature landscape, whilst ensuring the sustainable management of the site's ecological, heritage and natural assets.



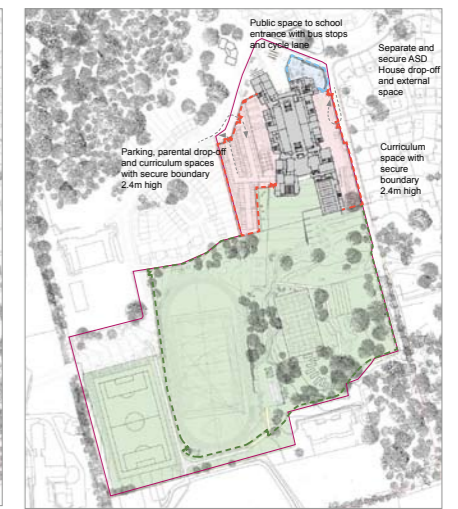
Visual Links and Boundaries



Visual Links between Interior and Exterior



Visual Links across the Site



Boundaries

Feeling Safe



Visual links between external spaces



Section West - Building set within Landscape

Consortium

A range of practical places for learning, socialising and exercising are shown. The fencing strategy has been well integrated with the building and landscape to define the use of the external spaces by students in the mainstream school, autistic spectrum disorder unit and local community. The strategy balances school security with the regard for the natural landscape, topography and openness of the site.

08 Identity and Context



Entrance



Social



Learning Street



Section South



Section West

School in a Rural Setting

Month Year

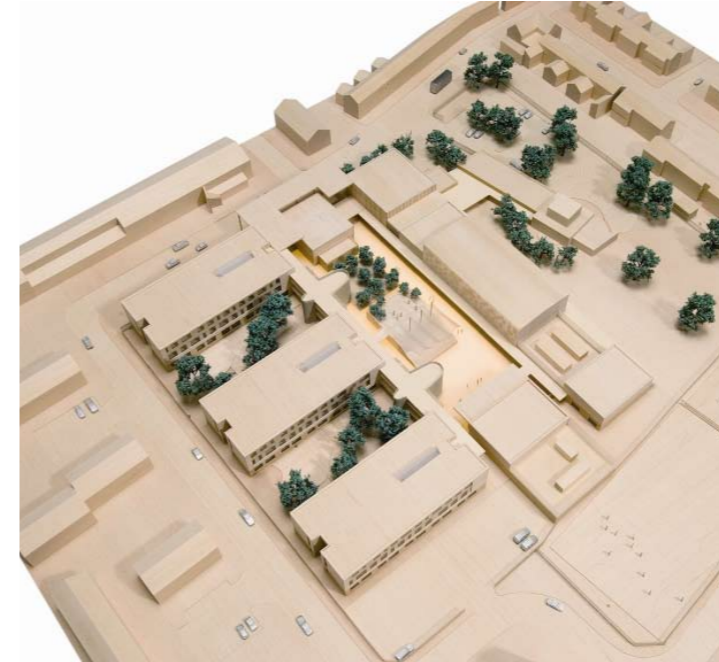
Consortium

External and internal visualisations show the whole school experience – from entrance to informal play - and the quality of materials used. The interior visualisation indicates the function and atmosphere as well as the details of ventilation, light and acoustics within the main 'street'.

Presentation 3: new build/ refurbishment in constrained urban site

This scheme proposes a mix of refurbishment and new-build accommodation on an urban site near a railway. Because of site constraints, sports provision will be delivered off-site. The school aims to provide for students with severe learning difficulties and provide purpose-built accommodation. The proposal reinforces the school's specialisms, provides base areas for years 7 and 8 and improves existing sports facilities. The location of the building was important to minimising disruption and maintaining educational standards during construction.

The design of the new school is central to the social and economic regeneration of the local neighbourhood. The new school will be a full-service, extended school open to the wider community, and its position next to the primary school will maintain a successful existing partnership. Care has been taken to create a welcoming entrance and facilities to encourage community use. Areas such as performing arts and learning resource centre are located and designed to encourage parent use and adult learning use throughout the school day.





Location Plan



1 View from south east corner.



2 View from existing building



3 View from adjacent primary school



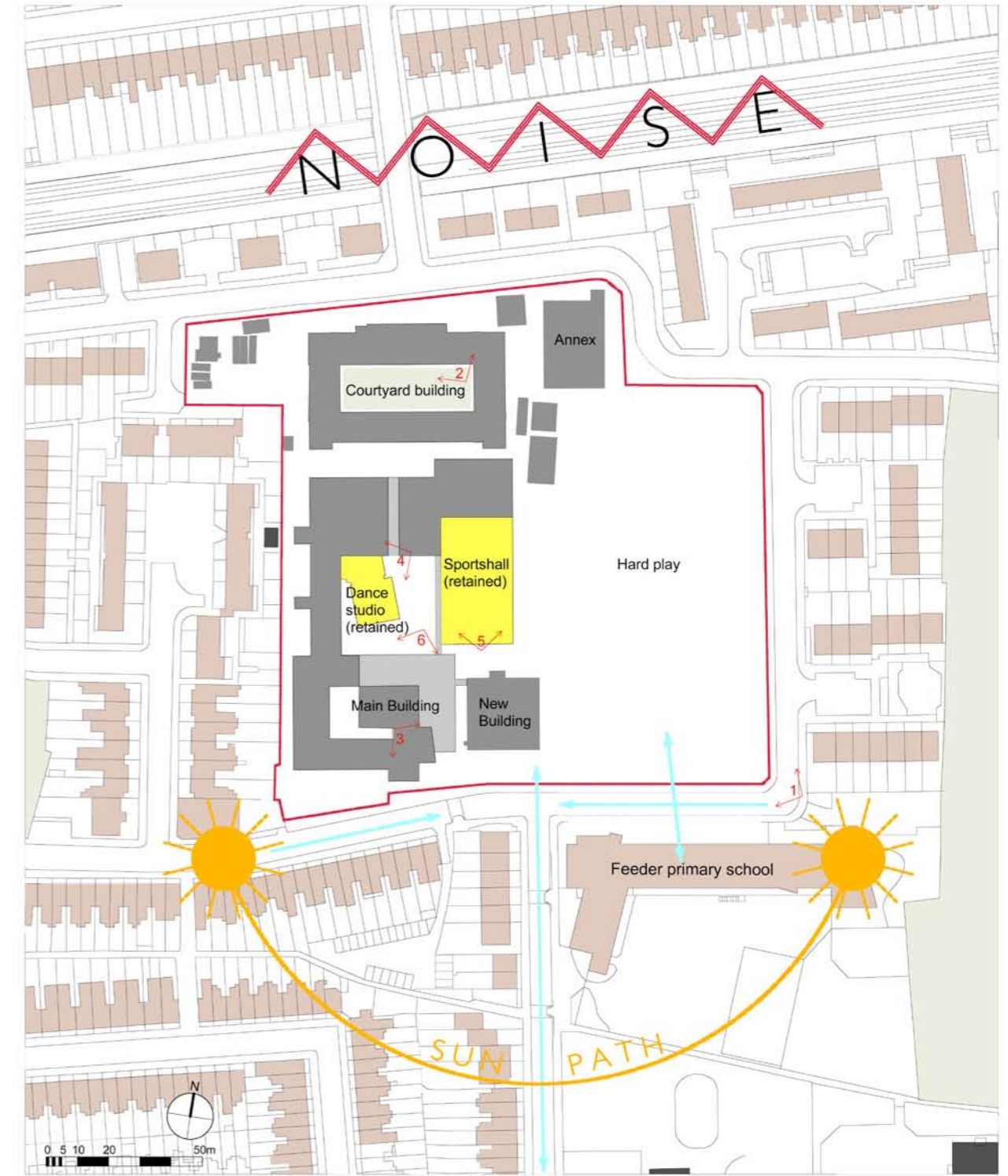
4 Dance studio retained



5 Sports hall retained



6 Existing building

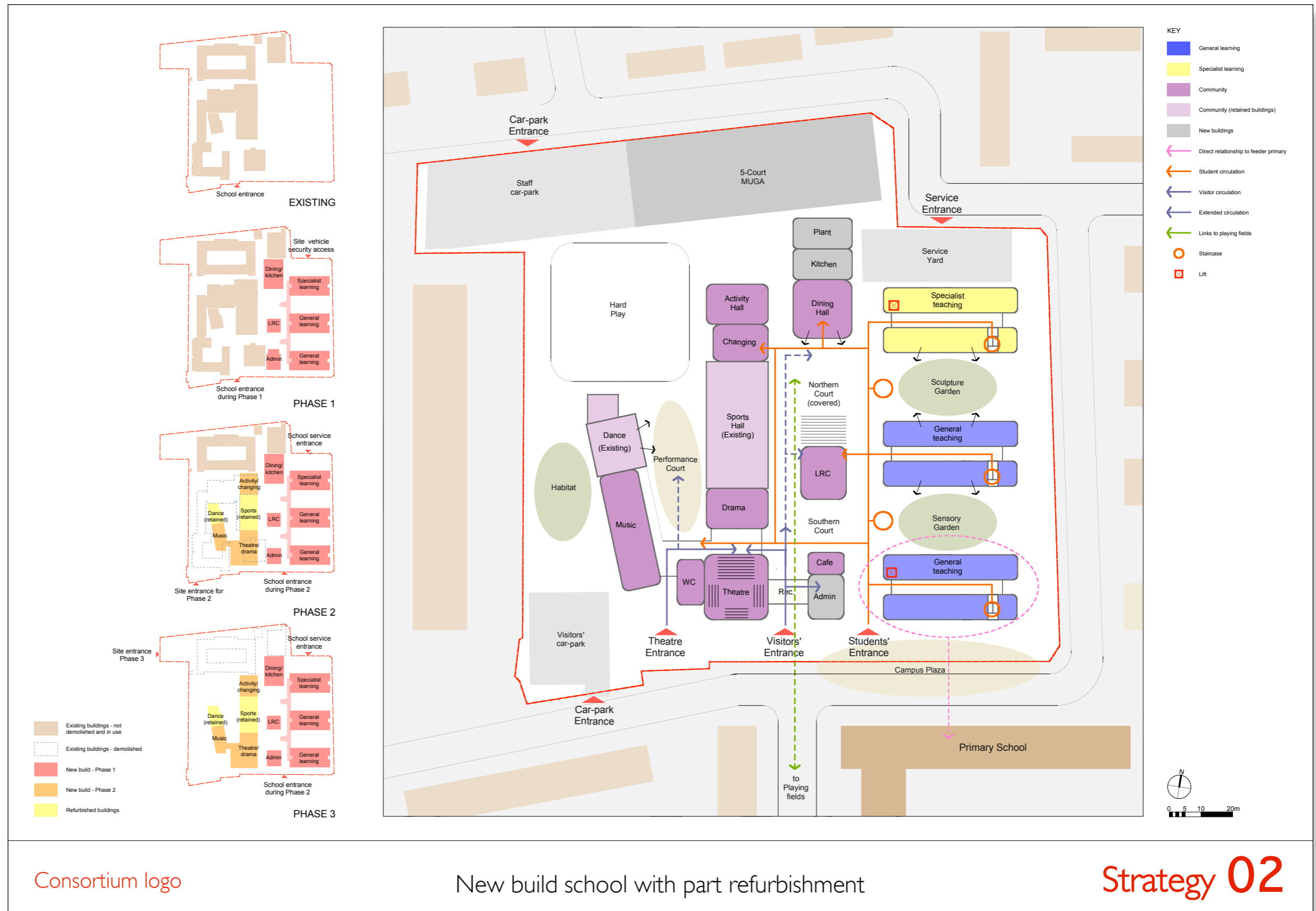


Consortium logo

New build school with part refurbishment

Site Information 01

This drawing explains site location in relation to public transport, off-site playing fields, and other educational and community facilities. The analysis indicates accommodation that can be retained and environmental characteristics of the site in terms of noise and sun paths.



Consortium logo

New build school with part refurbishment

Strategy 02

The design strategy is explained through the construction phasing, which impacts site planning and the school organisation.

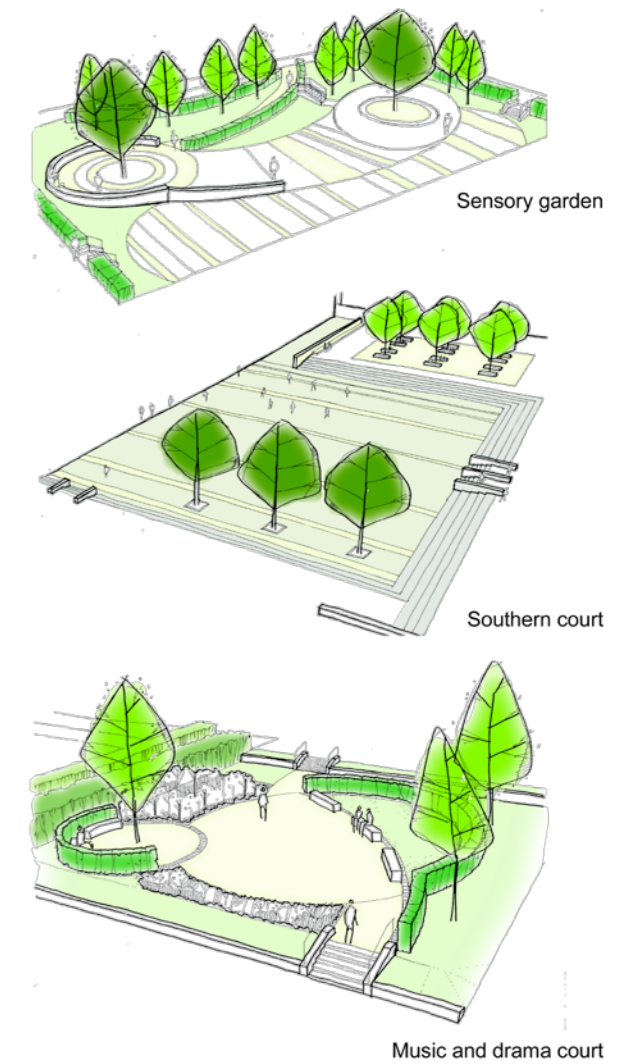


Ground floor plan showing integrated landscape



Second floor plan

First floor plan



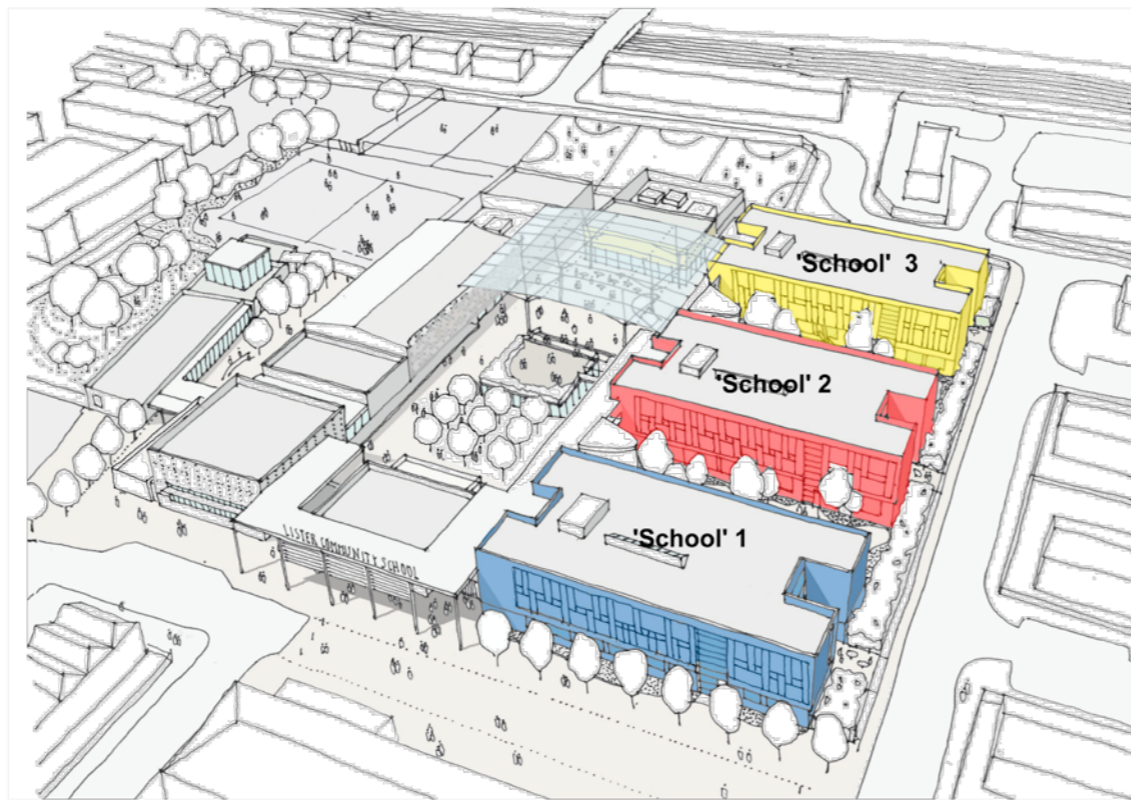
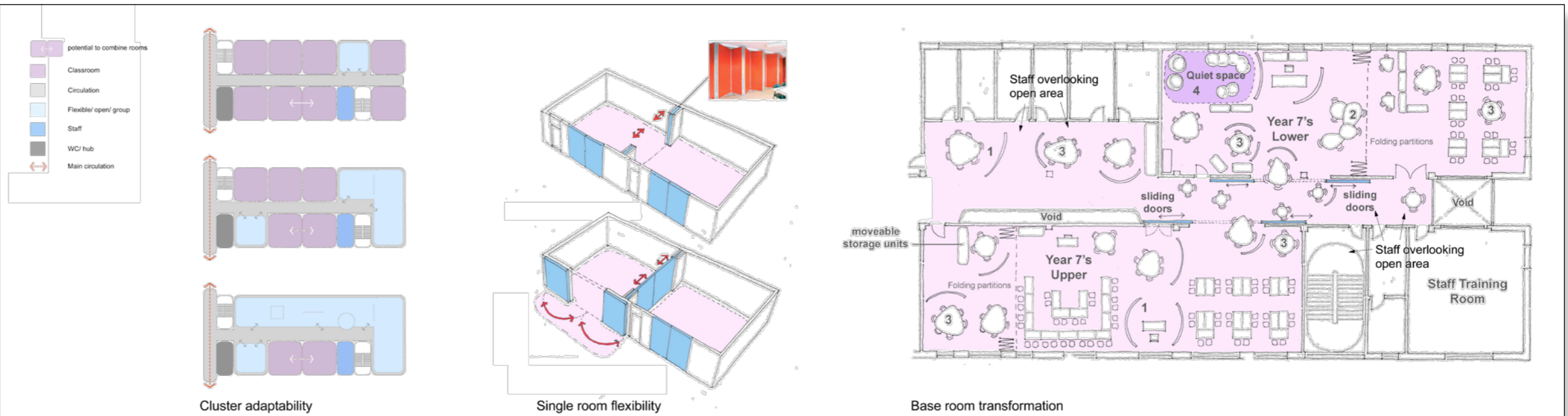
- KEY
- General teaching
 - Science
 - Design and technology
 - Art
 - ICT
 - Music/ Drama
 - Learning resources
 - Staff and admin
 - Storage
 - Halls and dining
 - Toilets and changing
 - Non-net area
 - Circulation

Consortium logo

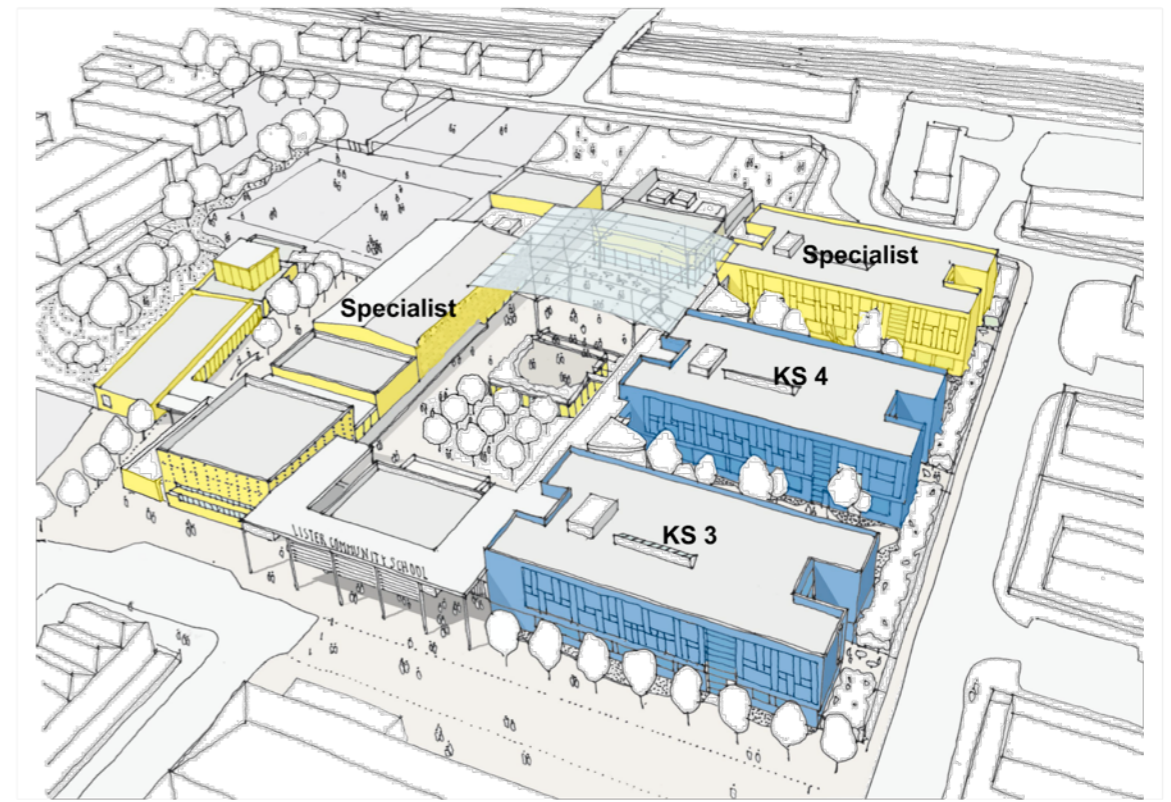
New build school with part refurbishment

Plans 03

This site plan identifies the main entrances to the school. The plans relate the interior planning to the adjoining external spaces. The sketch vignettes show external spaces that can be used for exercise, learning, and socialising.



Mini schools arrangement
Potential to create 3 schools within a school. The envelope of each teaching wing is identical, allowing future reconfiguration of the classrooms if desired.



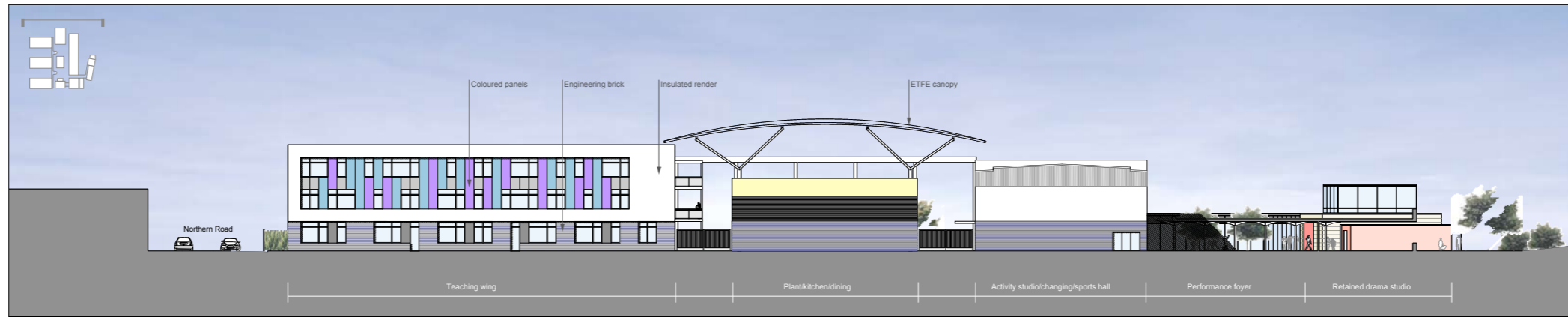
Key stage arrangement
School adaptability into upper and lower schools split with specialist teaching facilities maintained. Key stage 3 and 4 split into blocks - higher years of key stage 3 would take ground floor of central block.

Consortium logo

New build school with part refurbishment

Transformation 04

Moveable partitions allow a variety of teaching arrangements and the modules of the building wings are designed for future adaptability. On a larger scale, the whole building is designed to deliver both key stage curriculum and 'school within a school' educational models.



North Elevation



Engineering brick



Cast glass planks



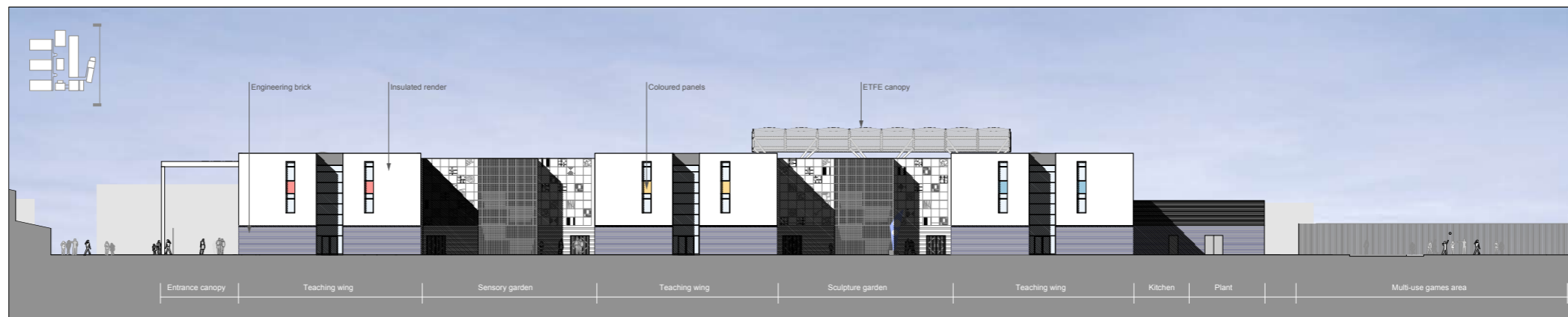
South Elevation



Insulated render



Coloured panels



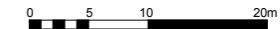
East Elevation



ETFE canopy



Insulated render and panels between windows



Consortium logo

New build school with part refurbishment

Elevations 05

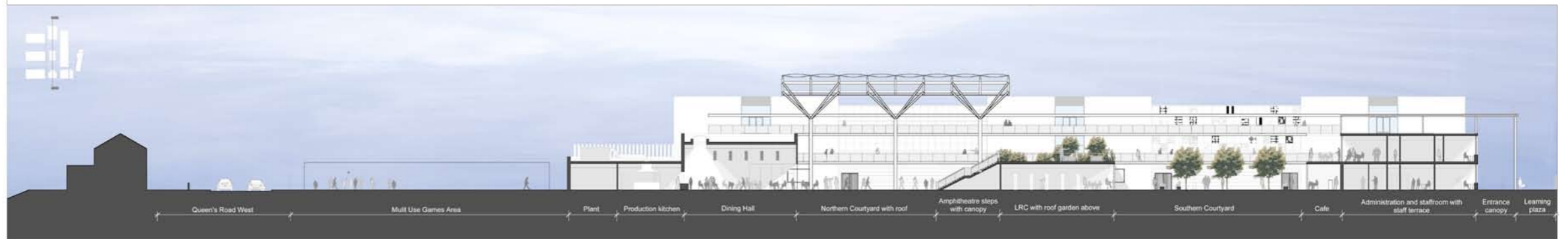
The elevations indicate visual appearance, including signage and graphics, and relate the massing of the building to neighbouring residences.



LRC



Flexible learning area



Section BB



Section EE



Consortium logo

New build school with part refurbishment

Elevations - Interiors 06

Long section drawings articulate the range of internal spaces, and the continuity between the internal and external school environment. Detailed coloured sketches support the sections and illustrate the atmosphere, as well as ICT usage, furniture, acoustics and lighting, of the internal spaces.

Energy Hierarchy:

1. Use Less Energy

Passive measures are the priority

- Air-tight building
- Improved insulation
- Heavyweight construction - nighttime cooling from exposed concrete soffits
- High level window openings connected to BMS to facilitate nighttime cooling
- North-South orientation - teaching spaces face north and south to reduce solar gain
- Locate rooms requiring mechanical ventilation in noisiest part of site
- Avoid excessive solar gain - solar control glass used on south facing windows
- Maximise use of daylight
- Natural ventilation - where possible
- Mixed mode - where rooms are deep and heat loads are high, used only during very hot weather
- Rooms required to be mechanically ventilated located in noisiest part of site.

2. Supply Energy Efficiently

Combined heat and power where possible

- Intelligent lighting control
- High efficiency heating
- Heat recovery ventilation
- Demand LED controls
- Flexible time control
- Metering strategy to enable effective monitoring of energy targets

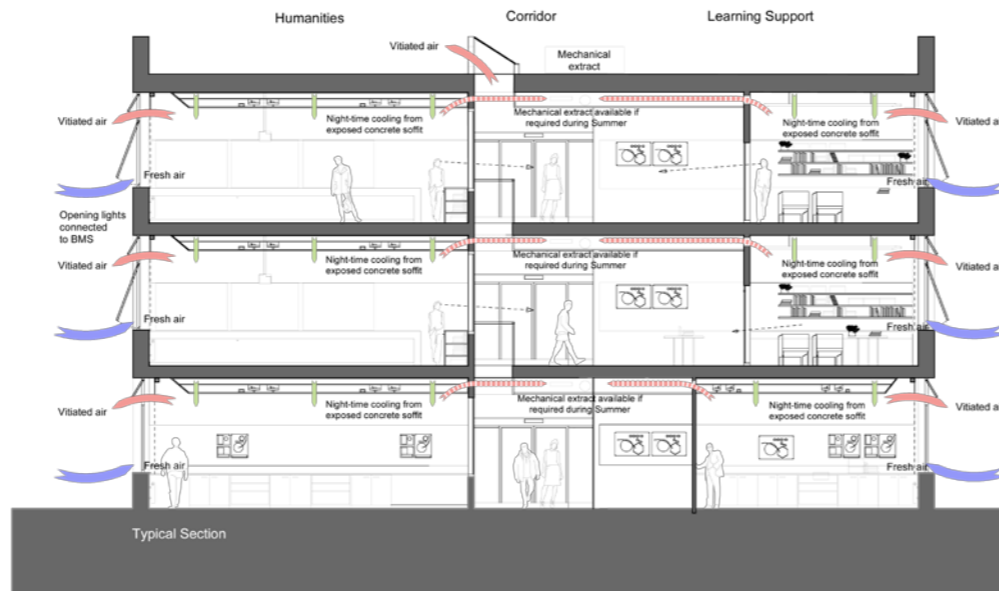
3. Use Renewable Energy

Ground source, wind turbines labyrinth cooling also considered

- Biomass to provide 60% of annual heating/hot water load
- Biomass fuel supplied from local source
- High-efficiency gas boiler back-up
- Approximately 52% reduction in CO2 emissions



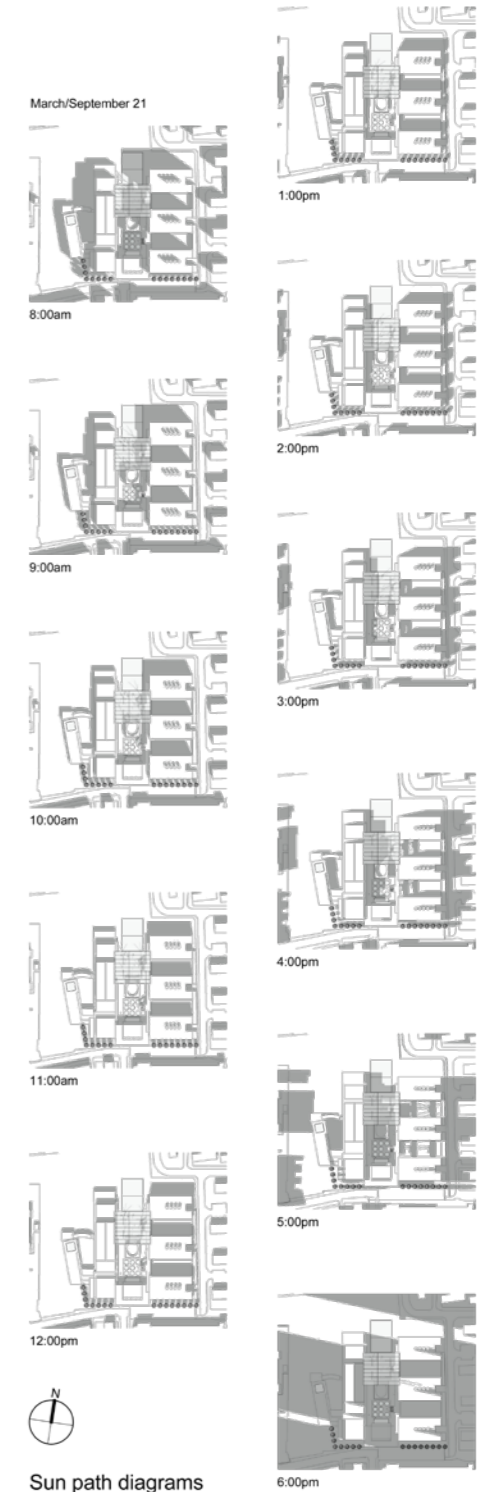
Siteplan - ventilation strategy



Mixed mode ventilation strategy - natural ventilation mechanically assisted if required during periods of high heat loads (Summer)

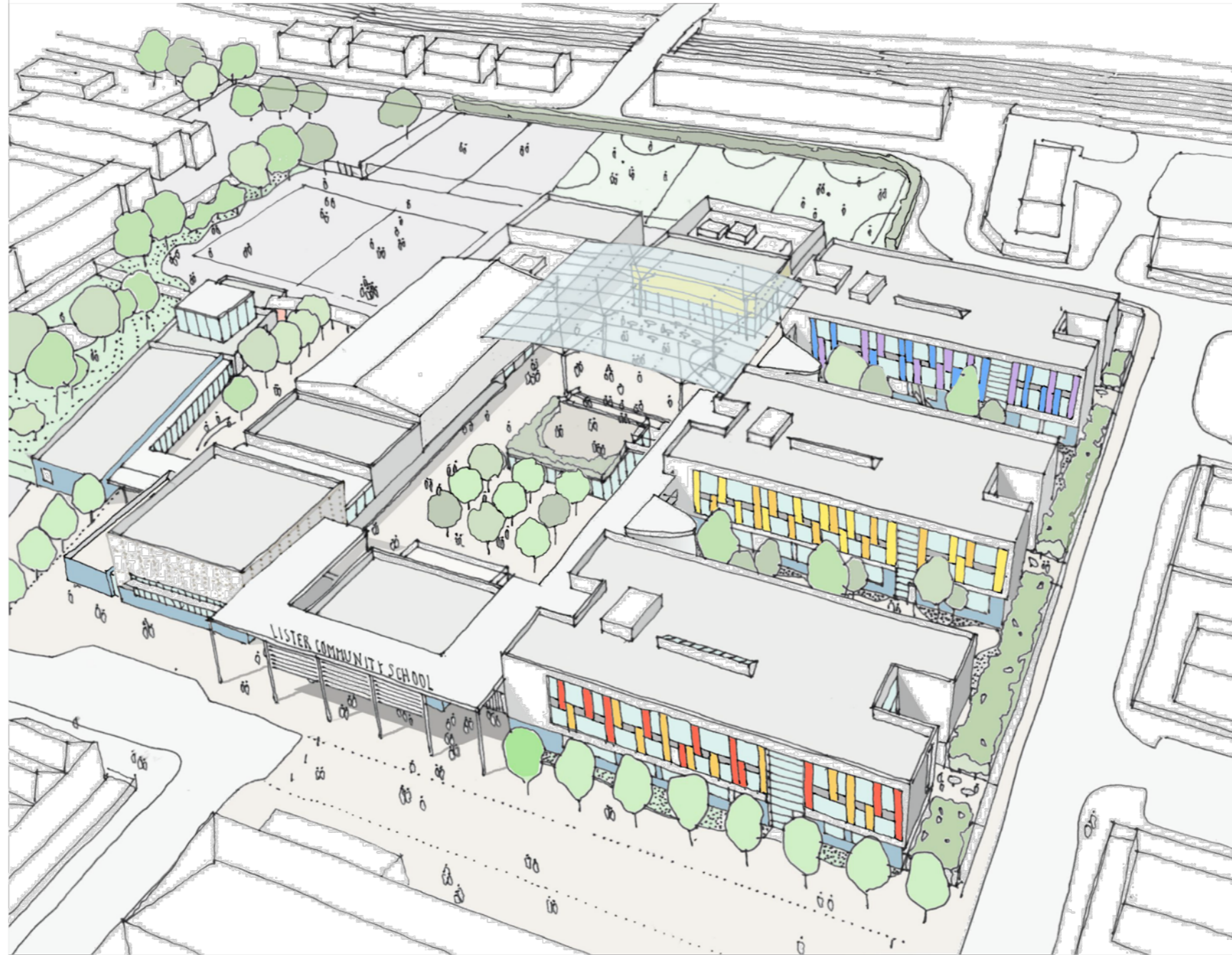


Part elevation



Sun path diagrams

This detailed technical section explains how the building will deliver a comfortable learning environment given the site acoustics. Sufficient thermal mass and floor-to-ceiling heights will enable natural ventilation as part of a mixed-mode strategy. The fenestration height and design will facilitate daylighting.



Overview of site



Dining hall



View across North court



View from dining to LRC steps and garden terrace

Consortium logo

New build school with part refurbishment

The Whole 08

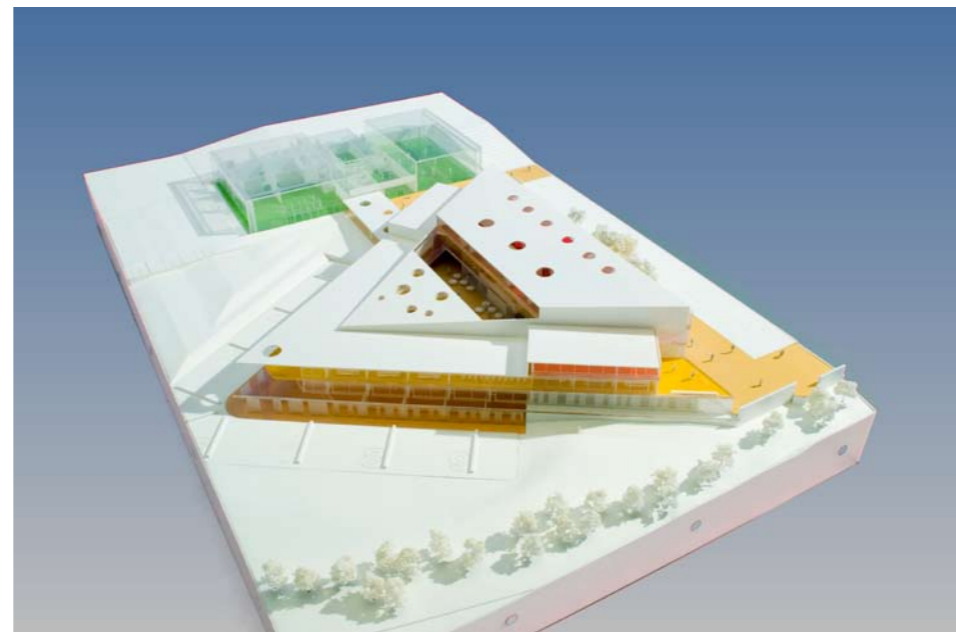
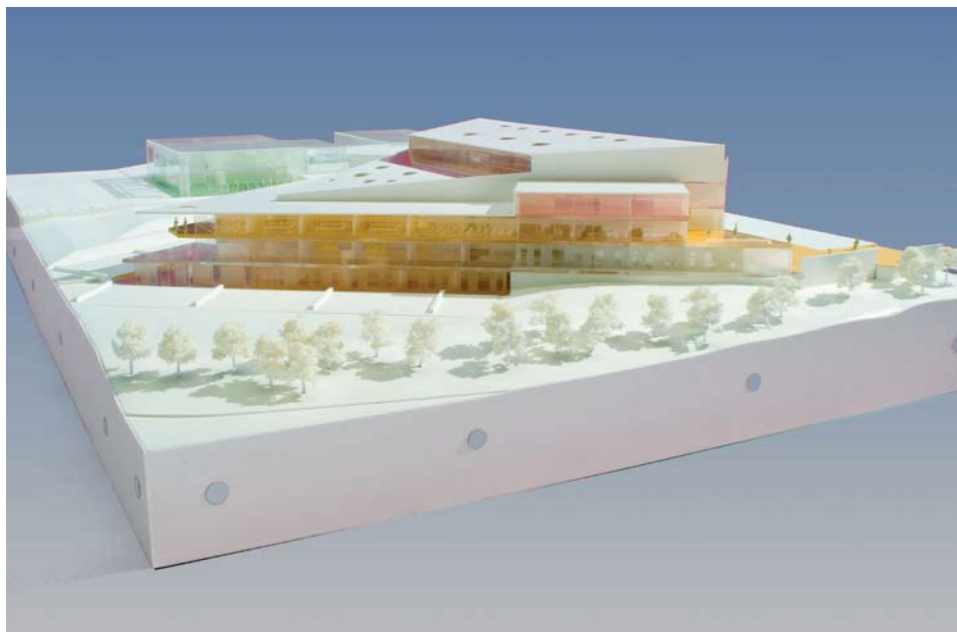
This drawing describes the overall school environment, highlighting key spaces such as dining and the learning resource centre as well as informal external spaces, including the covered courtyard.

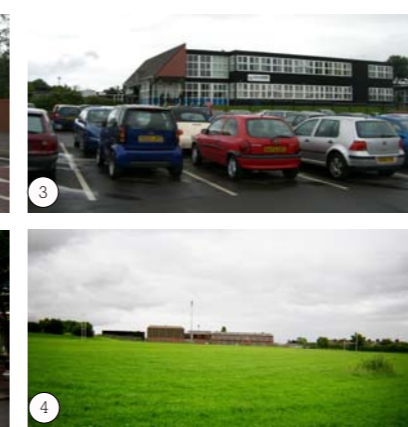
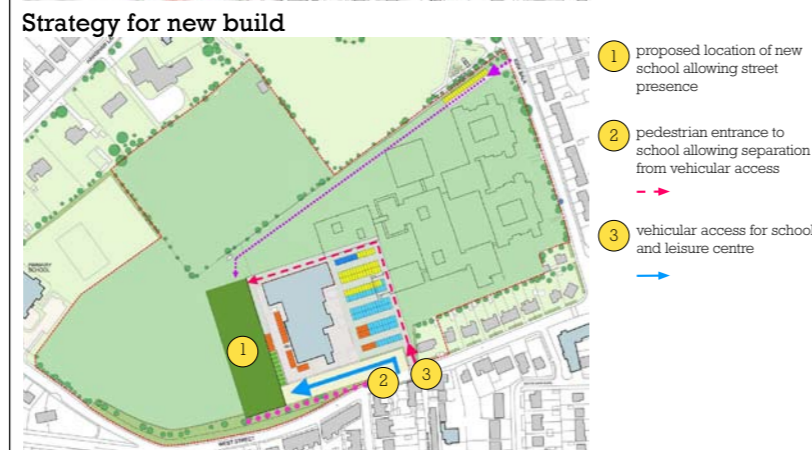
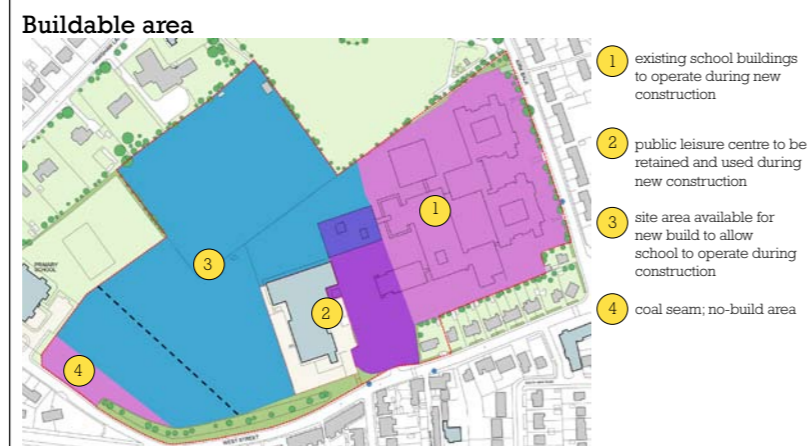
Presentation 4: new build in rural village

This school is located in a rural village. The new-build school will replace existing poor-quality building stock on the same site. Phasing and location of the new build are therefore central to enabling occupation of the site during construction.

The education vision aspires to a learning environment that raises expectations of all learners, including within the wider local community, and can adapt to changing approaches to teaching and the curriculum as well as ICT. Key objectives were to create a welcoming, stimulating and sustainable environment with a strong school identity, and support a school specialism of technology.

The school will provide full service provision through co-location of support services to pupils and their families. The school will also incorporate an adult learning centre for use by the community during the school day. A new youth centre will be integrated into the new school but also accessible from its own entrance.





Key to site photographs:

- 1. main entrance to existing school and leisure centre creating conflict of pedestrian and vehicle routes.
- 2. existing 1960s school buildings.
- 3. existing Victorian school buildings.
- 4. view of site from street showing fall of land towards road.

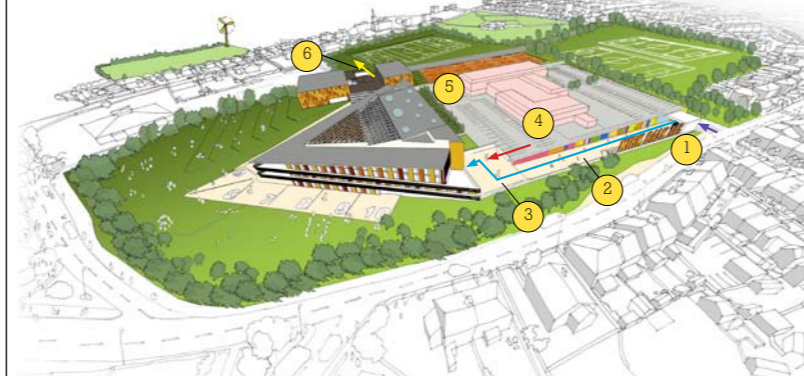
Key to site plan:

- 1. site boundary of existing school
- 2. existing school buildings (to be replaced)
- 3. public leisure centre to remain
- 4. main entrance to school (pedestrian and vehicle)
- 5. secondary staff entrance into school
- 6. main entrance to leisure centre (pedestrian and vehicle)
- 7. existing school playing fields
- 8. existing remote school playing fields
- bus stops

Materials

These drawings describe the development constraints and opportunities through existing context, site and building analysis.

Pedestrian access



- 1. pedestrian entrance to school from street.
- 2. boulevard approach to main entrance with prominent street presence.
- 3. main public entrance to school from square
- 4. staff/ visitor access from carpark onto square.
- 5. second entrance to building from school grounds allowing access to both sides of external landscape.
- 6. Access at grade from upper level of sports building to all weather pitch.

Vehicle access and car parking



- 1. vehicular access to school car park (staff/ visitors/ servicing).
- 2. vehicular access to public leisure centre car park.

External amenity



- 1. hard landscape boulevard and square leading to main entrance.
- 2. hard landscape area allowing external teaching space adjacent to lower ground classrooms.
- 3. soft landscape incorporating a variety of social and habitat environments.
- 4. MUGA courts adjacent to sports building.
- 5. All weather pitch accessed at grade from first floor of sports building.
- 6. Grassed sports pitches.
- 7. Remote grassed sports pitches.

Proposed Site Layout



Key to proposed site layout

- 1. main pedestrian entrance along generous boulevard, route separated from vehicle entrance.
- 2. vehicle access to school and leisure centre carparks.
- 3. secondary entrance (use managed by school).
- 4. emergency vehicle access to site.
- 5. main public entrance to school building.
- 6. second entrance to school building, internal to site.
- 7. Triangular building containing 4 learning zones.
- 8. Rectangular building containing sports facilities.
- 9. MUGA
- 10. Grassed playing fields.
- 11. All weather sports pitch.
- 12. Remote grassed playing fields.
- 13. School bus drop off.
- 14. Carparking to leisure centre.
- 15. Carparking for school staff/ visitors.
- 16. Access route to remote playing fields



main approach to school along boulevard which incorporates an 'art/ landscape' wall to define boundary and provide street presence.

The proposed site plan shows pedestrian and vehicular access as well as the arrangement of buildings and external amenities. Carparking and service routes are also shown.

03. Educational Vision

New Build School

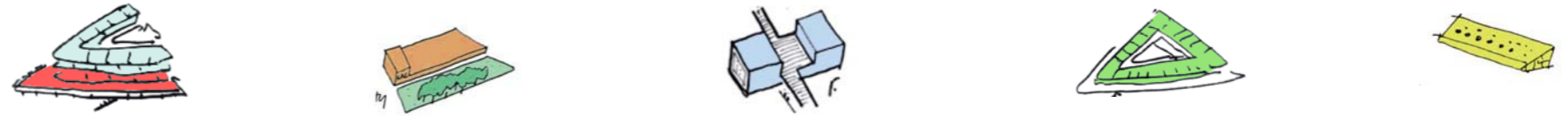
Learning Zones

The school educational strategy is divided into faculties called learning zones. The school specialism is Design Technology and Vocational Studies.

01 Design Technology and Vocational studies	- Construction centre - Resistant Materials - Electronics - Graphics - Textiles	02 Community	- Learning Resource Centre - Learning support - SEN Base - PRU Base - Adult Learning - Youth Centre	03 Expressives	- Sports and Activity Hall - Performance + Drama Hall - Music recital - Art	04 Communication and humanities	- Learning Bases - Faculty Resource Base - External terraces - Internal break-out spaces	05 Science and maths	- Learning Bases - Faculty Resource Base - External terraces - Internal break-out spaces
---	---	------------------------	--	--------------------------	--	---	---	--------------------------------	---

Identity of learning zones

It has been important for the school that each Learning Zone expresses its individual identity but is strongly connected by social spaces.



Spatial relationships

The Learning Zones are located both horizontally and vertically by the central atrium space and the street. Each zone has a close link to these primary spaces but is also located to maximise connections with the external context as appropriate to the individual learning zone programmes.

Each Learning Zone incorporates specific teaching facilities. All Learning Zones have a central "social space" and a series of break out spaces.

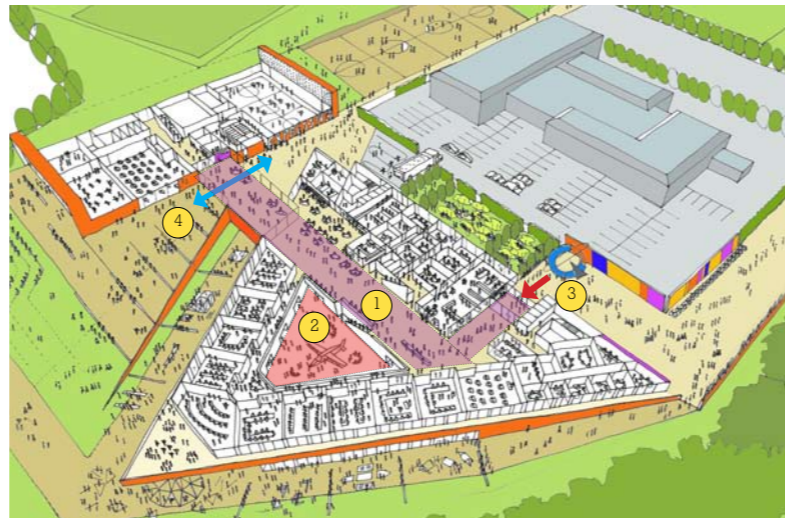
01 Design Technology and Vocational studies	02 Community	03 Expressives	04 Communication and humanities	05 Science and maths
- located at lower and upper ground levels to provide prominent position. - allows access to external areas for large scale construction activities.	- located adjacent to the main entrance and reception. - central location to encourage communal school and community use.	- form of building allows large span spaces for the sports facilities. - location allows access to the external sports amenities and social/ habitat landscapes.	- located at first floor and wraps around the atrium space allowing close connectivity. - incorporates variety of break out space, flexible classrooms and external teaching decks.	- located on 2nd and 3rd floors. - incorporates flexible classrooms and labs with breakout spaces and external teaching spaces.

Transformational/ Adaptable spaces

The ability to transform and adapt the learning environment is key to the educational vision.

The layout and structure of the building allows adaptability for use, including zoned access to the school to enable community and extended learning.

The building, structure and servicing allows transformational spaces which can change over time as teaching pedagogy develops.



- 1 The Street: This links the entire school at general level from the main entrance.
- 2 The Atrium: This links the triangular building horizontally. It forms a dynamic heart to the school which encourages social connectivity.
- 3 Main Entrance
- 4 Connecting entrances through Link

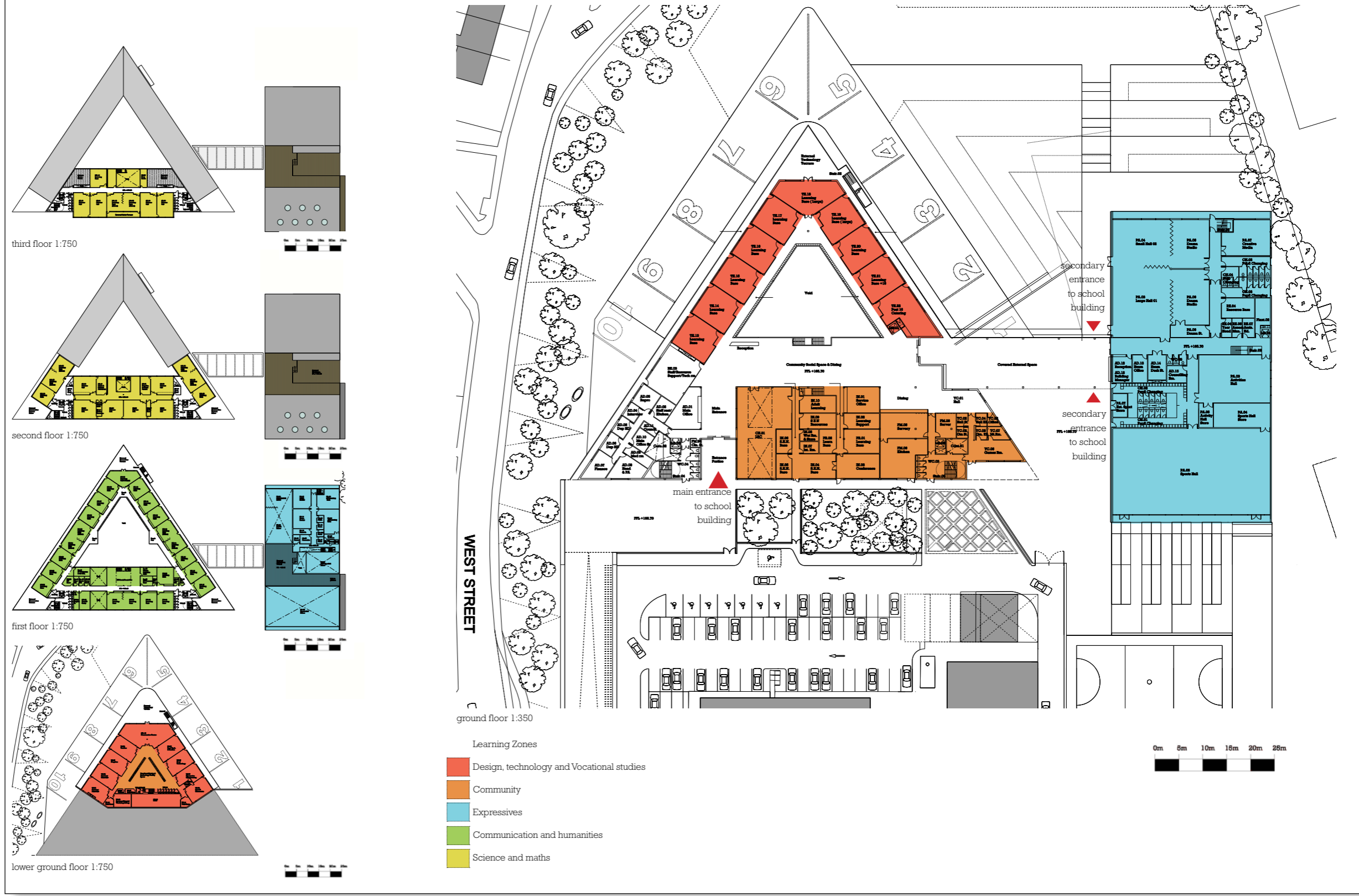
2009		2009	
2015		2015	

Diagrams show ability of floor plates to allow teaching transformations over time

The educational vision highlights the key learning components in terms of identity, space, adjacencies, access, and future adaptability. Diagrams are always useful to highlight key points.

04. Plans

New Build School

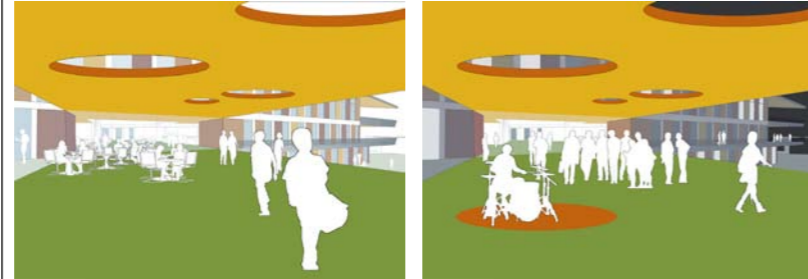


The plans explain the organisation of the buildings, and main points of access.



1- Perspective of Entrance to Link to Expressives Block

1- Perspective of link to Expressives- Dining

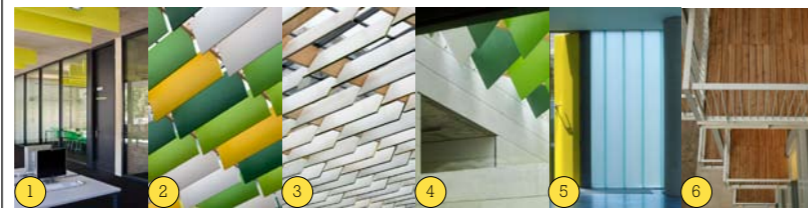


2- Perspective through link to Main Building Dining

2- Perspective through link to Main Building Activities



3- Sectional Perspective of Central Atrium Space



Materials

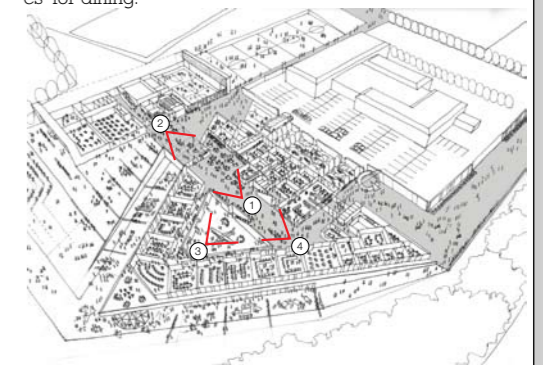


4- Perspective of Central Atrium and Dining

Proposed materials:

- 1. internal soffits and glazing
- 2. baffels to atrium- colour scheme
- 3. baffels to atrium
- 4. internal accoustic cladding
- 5. glazing and access to cores
- 6. external walkways

The Atrium and street form a dynamic heart to the school, allowing connectivity throughout the school as well as a space for changing uses including dining and social spaces for dining.



key perspective

Interior drawings show how the atrium will be articulated. The material finish is annotated to demonstrate how this space will be functional, feel comfortable and versatile. Graphics are introduced to create a vibrant atmosphere and promote way-finding throughout the school.



1- Perspective of Main Building towards nose



2- Perspective of nose



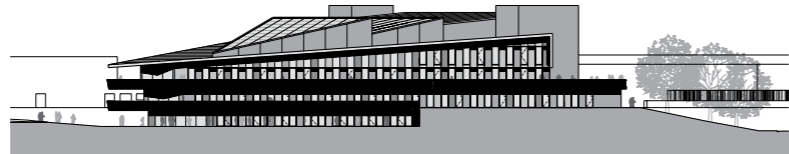
3- Perspective of Expressives Block and link



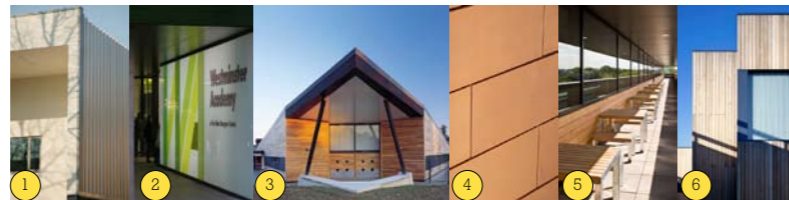
4- Perspective of Main Entrance to school



elevation east Main Building, nts



elevation south- west Main Building, nts



Materials



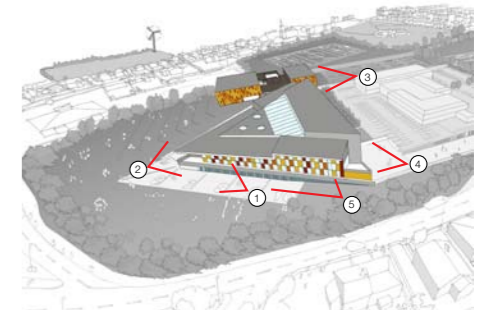
5- Perspective of Main Building

Proposed materials:

- 1. metal standing seam roof
- 2. light box to entrance
- 3. feature corner
- 4. PVDF coated metal rain screen cladding
- 5. fibre cement board soffit
- 6. weatherboard cladding

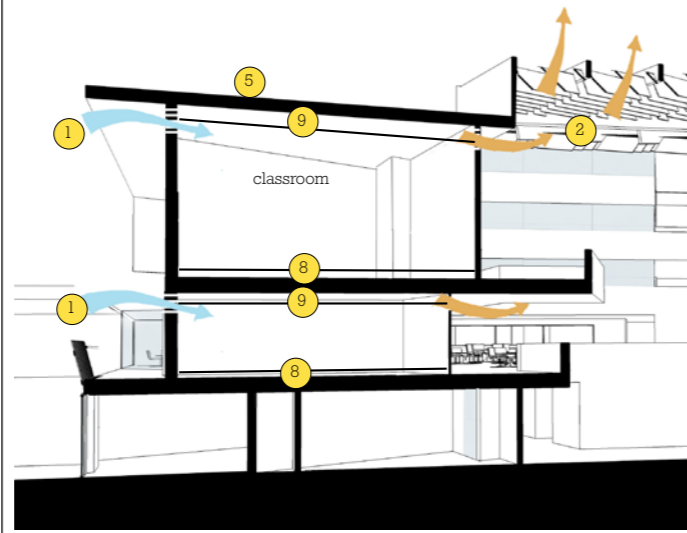
The entrances into the school have strong clarity and the traffic/ pedestrian accesses have been clearly separated.

The primary pedestrian entrance has a dynamic boulevard approach, incorporating an 'art wall' and leading to the building which incorporates a strong branding identity of the ALC.

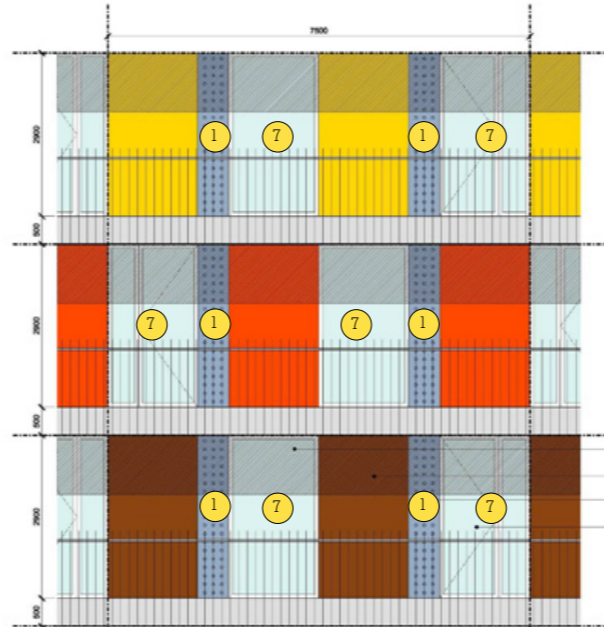


key perspective

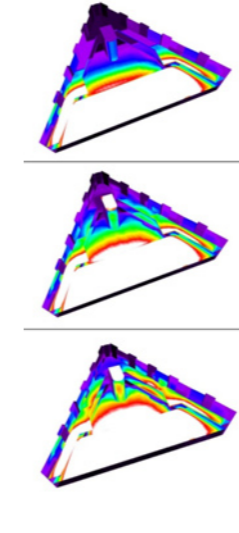
The elevations show how the fenestration has been treated at different orientations to deliver a low-energy school building.



1- part section main building- ventilation strategy



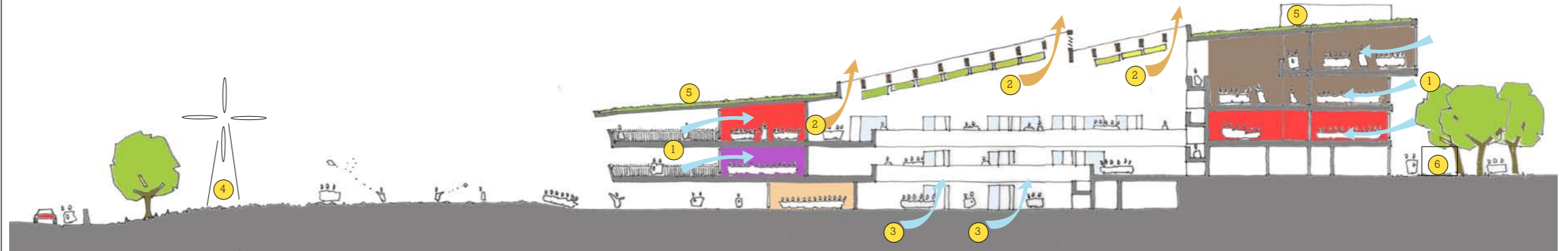
2- part elevation main building- ventilation strategy/ daylighting



daylighting studies undertaken

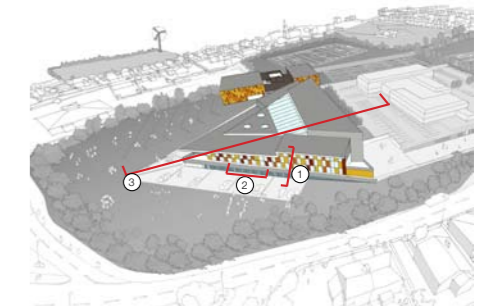


orientation



3- section through site

- | | |
|--------------------------------------|-----------------------------|
| 1. air supply via attenuated louvres | 6. biomass boiler |
| 2. extract via atrium | 7. solar controlled glazing |
| 3. air supply via earthtubes | 8. underfloor heating |
| 4. wind turbine | 9. suspended ceiling |
| 5. sedum roof | |



key perspective

The environmental strategy is considered both at the level of the whole site and also in the building detail. The drawings illustrate the strategy for delivering a comfortable school environment, including ventilation, acoustics, and daylighting, that relates to its site.

Successful school design: effective graphic approaches has been produced to help the bidders and designers whose BSF school projects are being reviewed by CABE, to prepare their visual presentation. It features effective graphic examples of the eight sheets required for review by the panel. Each graphic shows how the proposals relate to the 10 assessment criteria. The document is part of a suite of publishing by CABE called *Successful school design*, downloadable from www.cabe.org.uk/design-review/schools.

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Commission for Architecture and
the Built Environment

CABE is the government's advisor on architecture, urban design and public space. As a public body, we encourage policymakers to create places that work for people. We help local planners apply national design policy and advise developers and architects, persuading them to put people's needs first. We show public sector clients how to commission projects that meet the needs of their users. And we seek to inspire the public to demand more from their buildings and spaces. Advising, influencing and inspiring, we work to create well-designed, welcoming places.

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