

RHONDDA CYNON TAF PENYGAWSI PRIMARY SCHOOL

DRAFT

PLANNING DOCUMENT - DESIGN AND ACCESS STATEMENT

RH0401-SRA-XX-XX-RP-A-00001

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SHEPPARD ROBSON
with



ARUP



Client:
WEPCo (Welsh Educational Partnership Company)





Precedent image: Covered play space

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1.0 Introduction

1.1 Overview

This Design and Access Statement (DAS) has been prepared by Sheppard Robson (SR) on behalf of the Welsh Education Partnership Company (WEPCo) and Rhondda Cynon Taf County Council (RCT) Education Department. Additional input has been provided by Ares Landscape Architects & Arup (planning consultants). It accompanies and supports the Planning Application for Penygawsi Primary School to the RCT Local Planning Authority (LPA). The statement explains how the proposed development is a suitable response to the educational brief, the site & its context.

This document is also intended to summarise the functional requirements of the brief, together with the architects interpretation of the site context & the response to it.

Section 42 of 2004 Town and Country Planning Act substituted the Section 62 of the 1990 Act so as to provide a statement covering design concepts, principle and access issues submitted with an application for planning permission. It states that one statement should cover both design and access, allowing applicants to demonstrate an integrated design approach that would deliver exclusive design and address a full range of access requirements throughout the design process.

A key purpose of the Design and Access Statement is to ensure responsive design, supporting the role in the delivery of sustainable development through the planning system. This is a fundamental objective of the Planning Policy and as such is reflected in the National Planning Policy Framework.

This DAS has been written with reference to the guidance document 'Design and Access Statements in Wales' (April 2017, prepared for the Welsh Government by the Design Commission for Wales). It is intended that this DAS will cover all of the required aspects set out in the guidance document.

This document has been developed in conjunction with feedback received from various pre-application meetings held with the relevant Stakeholders, the RCT Local Authority & various Consultants.



Precedent image: Covered external play / learn



Precedent image: Covered external play

2.0 Development Brief

2.1 Project Information

The below sets out the key project information, as follows:

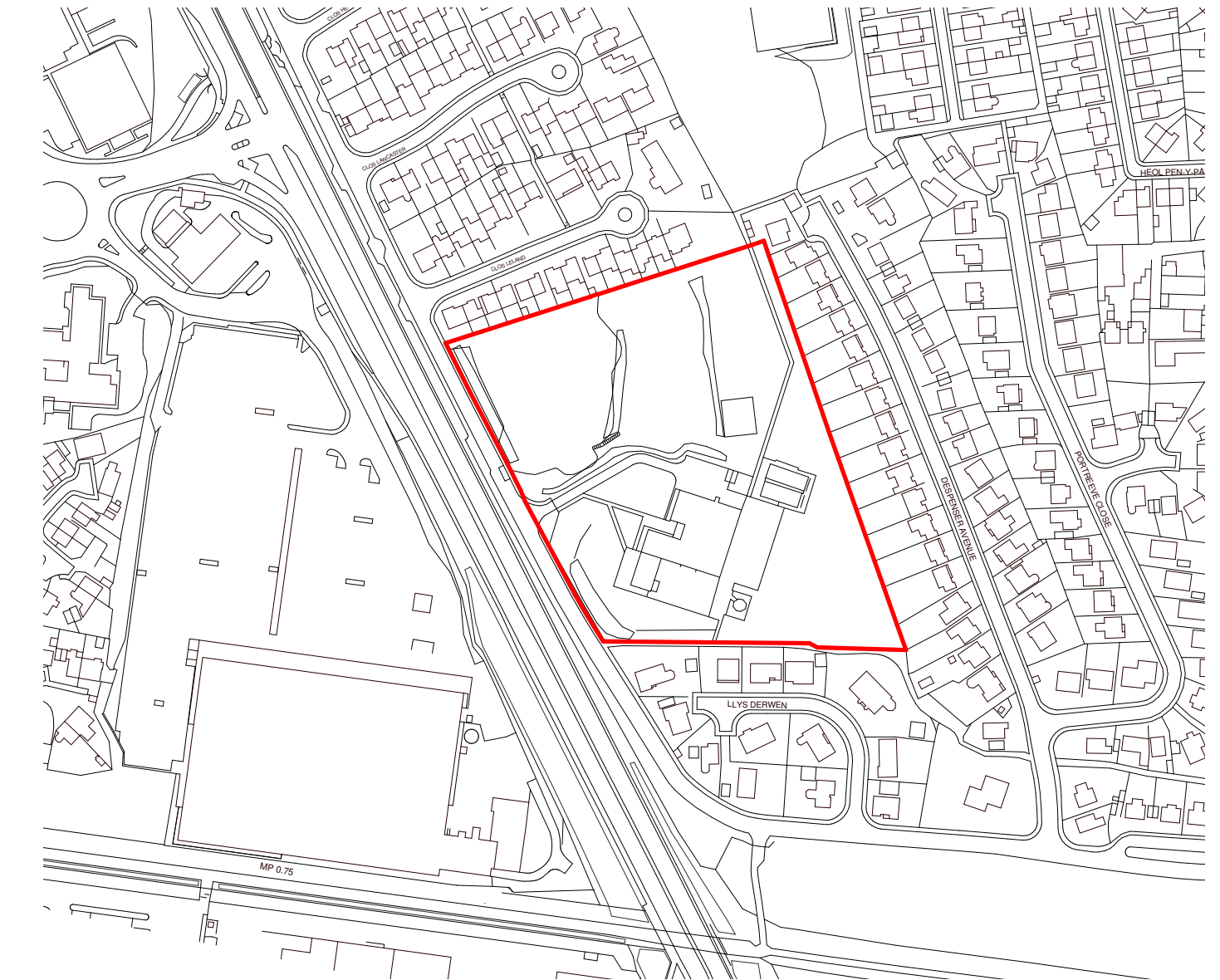
Participant	Rhondda Cynon Taf County Borough Council
Project name	RCT Primary School Batch
School Location	Penygawsi Primary Schools Llantrisant, Pontyclun CF72 8PZ
Age Range	3 - 11
Proposed Capacity	355 Pupils
Teaching Staff	36 (non-teaching staff 10)

The proposal for Penygawsi will provide a new-build Primary School for Nursery, Reception, Infants & Junior age ranges. The new building will replace the existing disparate school buildings & consolidate the play spaces to provide a stimulating & vibrant new school masterplan.

The new Penygawsi Primary School will accommodate 355 places in total, divided between: 2 x Nursery classrooms, 1 x Reception classrooms, 3 x Infant classrooms & 6 x Junior classrooms. Age ranges will sit between 3 - 11 years old, with 36 teaching staff & 10 non-teaching staff. The classes will be a combination of mixed ages & single age groups.

The proposed outdoor areas are intended to meet the needs of all age groups, as well as typical facilities needed for a secure & functioning school site. These broadly consist of a variety of external play spaces, Sports areas & drop-off / pick-up .

The Design Team have worked hard to ensure a clear separation between pedestrian / vehicular movement, as well as maintaining efficient service zones & car parking areas.



Existing site plan

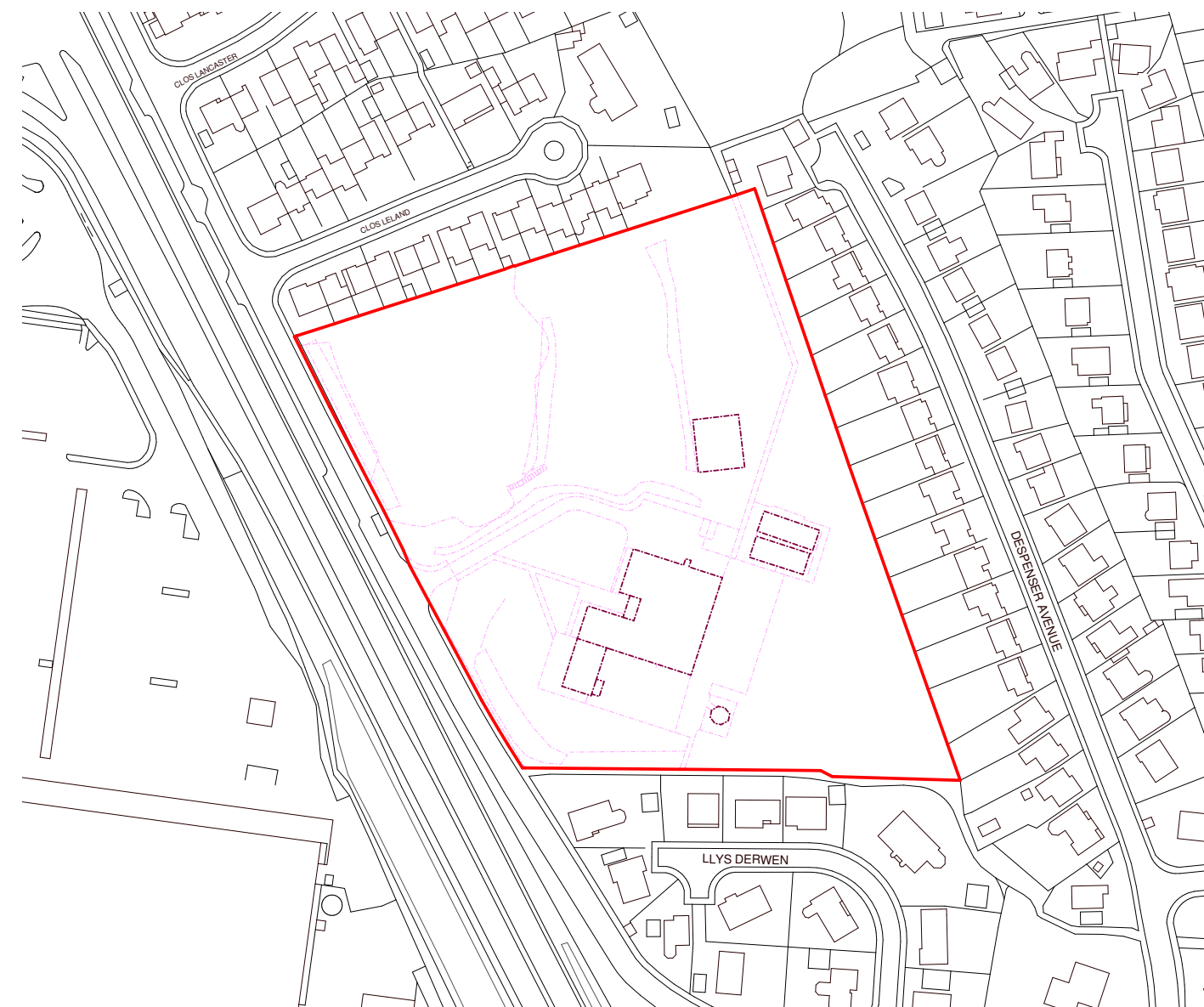
2.2 Location

Penygawsi Primary School is located in a predominantly residential area, adjacent to the A4119 road to the west & the A473 to the south. Opposite the site to the west are located large commercial units with associated parking. The overall context is varied, with a mix of green spaces / vegetation, housing & a variety of commercial buildings.

Immediately adjacent to the site, the residences are mostly 2 storey buildings with pitched rooves. The majority are relatively new build, with some period terraces along the sites boundary.

2.3 Project Requirements

Critical Success Factors:	<ul style="list-style-type: none"> Minimisation of disruption to students, staff, parents & other key building users during the construction of the project. A project that meets the requirements of the Participant as set out in the Authority's Construction Requirements and Service Level Specification. Enabling resources/facilities to be used by the local community. Creation of flexible facilities to support differing styles of teaching and learning to improve wellbeing and achieve better outcomes to deliver the new Curriculum for Wales Achieving Net Carbon Zero along with an Embodied Carbon target
Design Principles:	<ul style="list-style-type: none"> Quality buildings and spaces that support the new Welsh curriculum for schools and colleges. Energy efficient buildings that meet the targets set out in the Authority's Construction Requirements. Net Carbon Zero meaning a building that is highly energy efficient and powered from on-site and/or off-site renewable energy sources. Standardisation, a multi-faceted approach driving efficiencies across the programme.



Existing site plan

2.4 Educational Brief

2.4.1 Key Briefed Teaching Spaces

- 2 x Nursery - 70m2
- 1 x Reception - 70m2
- 3 x Infant - 60m2
- 6 x Junior - 60m2
- Main Hall - 223m2
- Heart space - 67m2

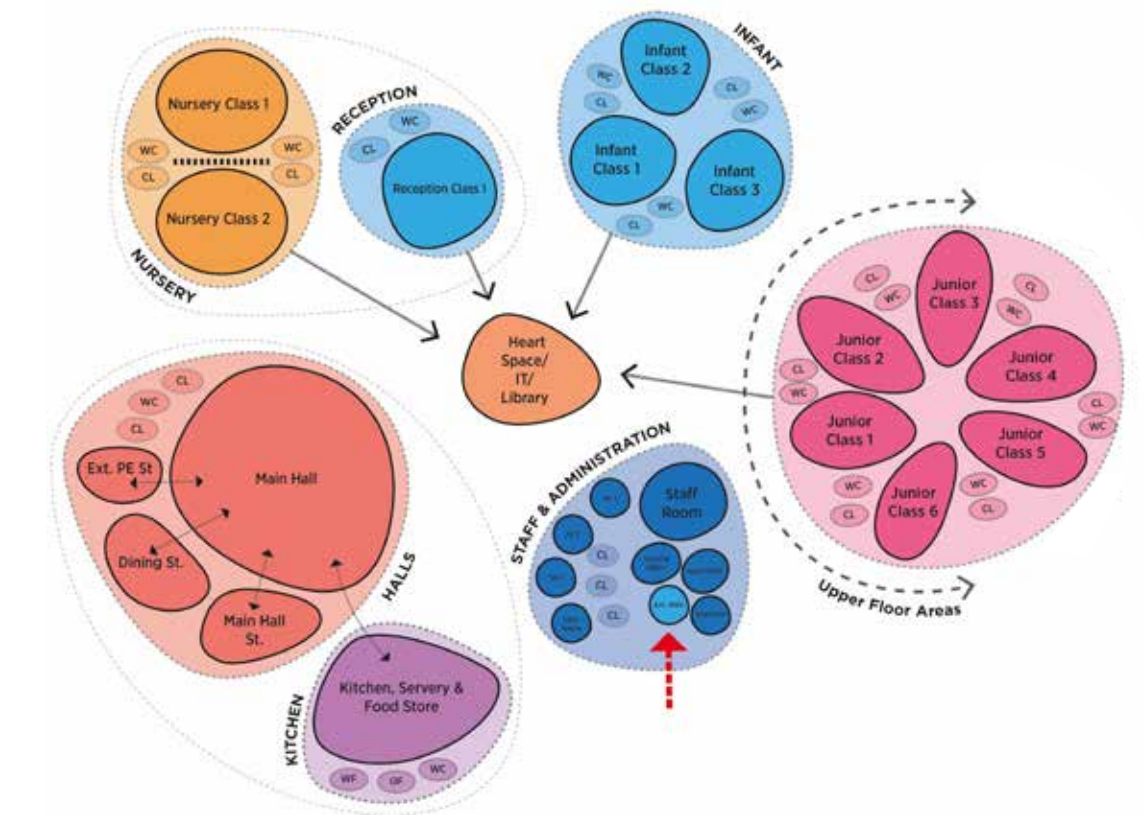
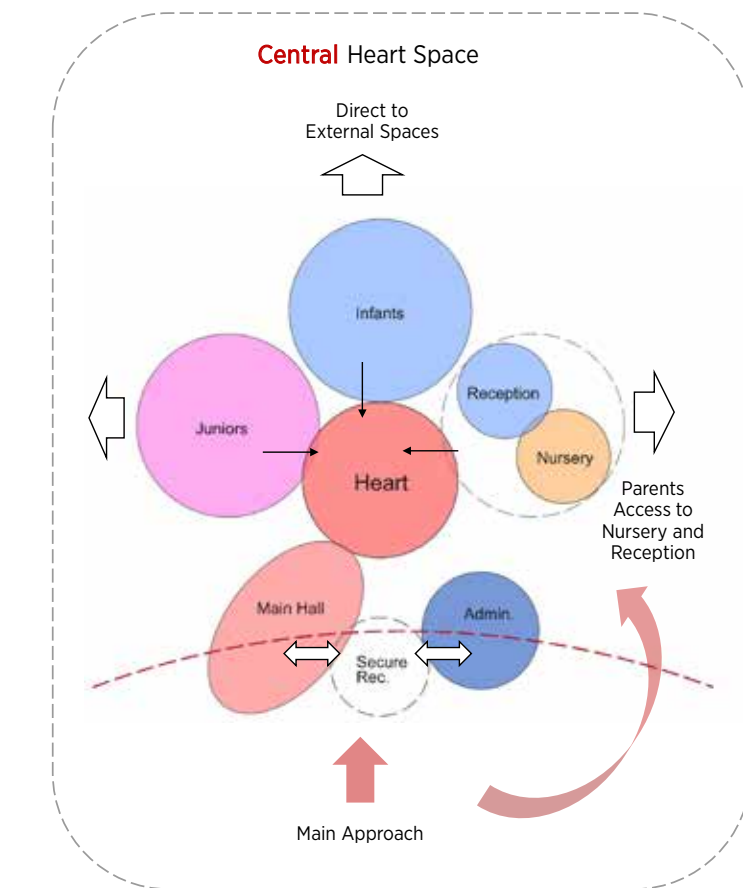
2.4.2 Brief Vision

- School should be a suitable space for intellectual, creative, physical, social and community activity.
- The school should be lively and welcoming, a place that building users will make their own with an atmosphere and sense of scale that is not overpowering, impersonal, or institutional. The internal spaces must be flexible and generate the pupils' interest, along with being secure and controllable.
- The learner will be at the heart of the school.
- The teaching and learning spaces, social areas, administration, management and specialist resources shall be considered from the point of view of the learner; their experience of learning, maximizing the benefit that they get from their time learning and making learning as interesting and as varied as possible.
- The design shall also support the changing role of the teacher enabling them to develop their role as facilitators of learning through access to flexible and adaptable learning spaces that will support a wide variety of different ways of learning and teaching.

2.4.3 Educational Pedagogy

The new school will support a range of learning and teaching methodologies including:

- Independent study
- Collaborative team work in small and mid-size groups
- One to One learning
- Peer Mentoring
- Large group presentation
- Performance and role play
- Seminar style
- Practical and art based learning, including experiential/hands on learning
- Pupil presentation



Adjacency diagram

2.4.4 Summary of Over-Arching Key Constraints

The below sets out the key constraints, as follows:

Category	Key constraints
Construction	<ul style="list-style-type: none"> Primary School to remain operational throughout the construction of the new facility. Minimal disruption to the delivery of education at each school Clear separation between construction activities and logistics and the operation of the school Construction traffic and deliveries need to be managed to avoid key drop off and pick up times All building trades delivering work to a high-quality
School organisation	<ul style="list-style-type: none"> Heart space requirement Out of hours use by the community and associated security considerations Specific arrangement of the classrooms/cloakroom/WC Specific requirement for adjacency of hygiene room with the nursery Flexibility of the nursery spaces provided Depth(m) and height(m) of key spaces Relationship between the internal arrangements and the outdoor learning and social space, Siting of parental drop-off points in relation to the main entrance Siting of the parking for deliveries of goods in / out
Funding envelope	<ul style="list-style-type: none"> The funding envelope includes provision for a new all-weather MUGA pitch
Site Investigation	<ul style="list-style-type: none"> Ecological value present

2.5 Stakeholder Engagement

The Design Team have engaged extensively with the Client team to meet the brief. Key representatives from WEPCo, RCT and the school have been consulted with throughout the early stages of design, by means of Client Engagement Meetings (CEMs), held approximately on a fortnightly basis, plus Technical Advisory (TA) reviews. These are summarised as follows:

- Client Engagement Meeting
- Head Teachers Workshops
- Board of Governors Presentation
- Workshops with Welsh Government Technical Advisors Team
- Initial Planning Meeting with RCT Planning Dept.
- Meeting with Highways & Transportation
- Meeting with the Design Out Crime Officer



Precedent image: Heart Space



Precedent image: External view of roof scapes

3.0 Site Analysis & Context Appraisal

3.1 Site History

There is evidence for settlements in and around Llantrisant stretching back over three millennia. Two Bronze Age burial mounds are on Mynydd Garthmaelwg, on the opposite side of the Ely Valley. A 1.05 metres tall, possibly Bronze Age, standing stone, was discovered in Miskin during excavations prior to the M4 motorway construction. An Iron Age hillfort stands on Rhiwsaeson Hill. The enclosure, now known as Caerau Hillfort, measures 230 metres by 180 metres.

A settlement has existed on this site from at least the beginning of the 6th century, when the poet Aneurin wrote of 'the white houses of Glamorgan' when referring to Llantrisant. It was seized around 1246 by Richard de Clare who built Llantrisant Castle. It is thought that de Clare established the borough of Llantrisant though the exact charter occurred in 1346.

Llantrisant was one of the eight boroughs constituting the Glamorgan borough following the Act of Union, a status it held until 1918

An ancient tradition called the Beating the Bounds, where local children are bounced by elders on to the boundary stones of the old borough, still occurs every seven years and has its roots set as far back as the 14th century. The rite was intended as a reminder to each generation of the importance of the borough boundaries. It is believed that the Beating of the Bounds started in 1346, when Llantrisant was awarded its Royal Charter. This allowed them the freedom to trade without paying tolls within the boundaries of the former borough.

At nearby Tarren Deusant is a spring with unusual petrosomatoglyph carvings of two faces, two saints (1696), but now six are present (Sharp 1979).



Penygawsi 1888 - 1913

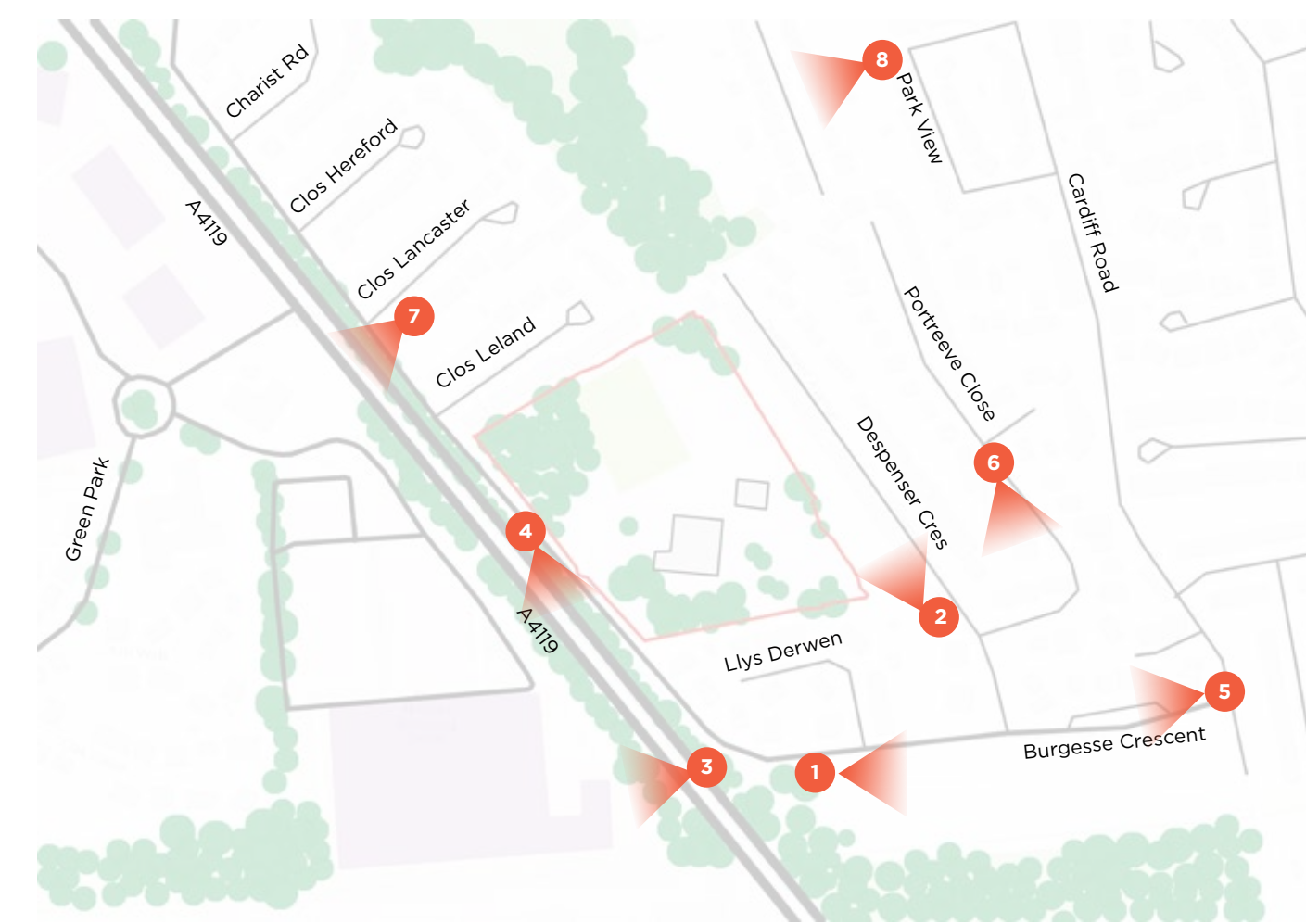


Penygawsi 1937 - 1961



Penygawsi 1949 - 1970

3.2 Surrounding Area



View off Burgess Crescent



View along Despenser Avenue



View along Clos Lancaster



View along Park View



View along Cros Leland



View along road adjacent Penygawsi School



View at junction of Cardiff Road and Burgess Crescent



View along Portreeve Close

3.3 Immediate Area



Immediate Context trees and road pattern



View towards current main entrance



View from West



View towards Despenser Avenue



Existing dense vegetation



School entrance



View West



View from East



Playgrounds

3.4 Site Constraints and Opportunities

There are number of site constraints which need to be taken into account in planning the design and layout of the proposals. These are:

- School continuing to operate as a school during construction.
- Topography
- Coal Seam Outcrops and Disused Mine Entry
- Gas and Sewer Easements

A review of these constraints suggests that existing playing field is the most suitable location for the new school buildings to be located.



Constraints



Buildable area

Building in this location of the site makes the most of the opportunity to use the available level ground to create useful level play areas around the building. It allows the building to be visible on the approach from the main entrance but utilises the existing retained woodland to screen the school building from the nearby busy road.

Topography

The site is gently sloping with several notable embankments. There is an overall level change of approximately 10m. The highest part of the site is at the north east corner of the site on the boundary with Despenser Avenue, the lowest part of the site is in the vicinity of the main entrance on Chartist Way. A level area has been created for the sports pitch

4.0 Design Statement - Masterplan

4.1 Site Plan & Layout

The site will comprise a Nursery and Primary school. The intention is to maximise the opportunity the site presents for outdoor learning, play and exercise.

Access to the site, and circulation within it will be carefully considered to make sure it is easy and legible for pupils, staff, and visitors to move around. A key part of this is ensuring clear separation between vehicle and pedestrian movements and creating a route for service deliveries and bins.

The footprint of the building provides opportunity to create external spaces for each of the schools and key stages, and the building façade itself will form part of a natural secure line within the site to separate publicly accessible areas of the site, such as the carpark from the external pupil sport and social spaces. There is a requirement in the brief for the site boundary to be entirely secure which will require the replacement of the existing boundary fence.

The nursery and early years classrooms have free flow to external play area from classrooms. All external play areas are entirely secure and during the school day can only be accessed from the school. The site layout allows for pick up outside classrooms at beginning and end of the day. The nursery and reception play, is to north west of the building, separated from each other and the Key Stage 1 play area by low fences and planting. The Key Stage 2 play area is on the east of the building where the existing topography has been utilised to create and outdoor amphitheatre seating area.

The play areas comprise hard surfaces finishes, grass areas, planting, and trees. Care has been taken in the design to place any grass and planting, so it responds to pupil movement and play.

Hard surfaces in play areas are generally macadam but with wet pour surfaces to some nursery and reception spaces.



Proposed Landscape Masterplan

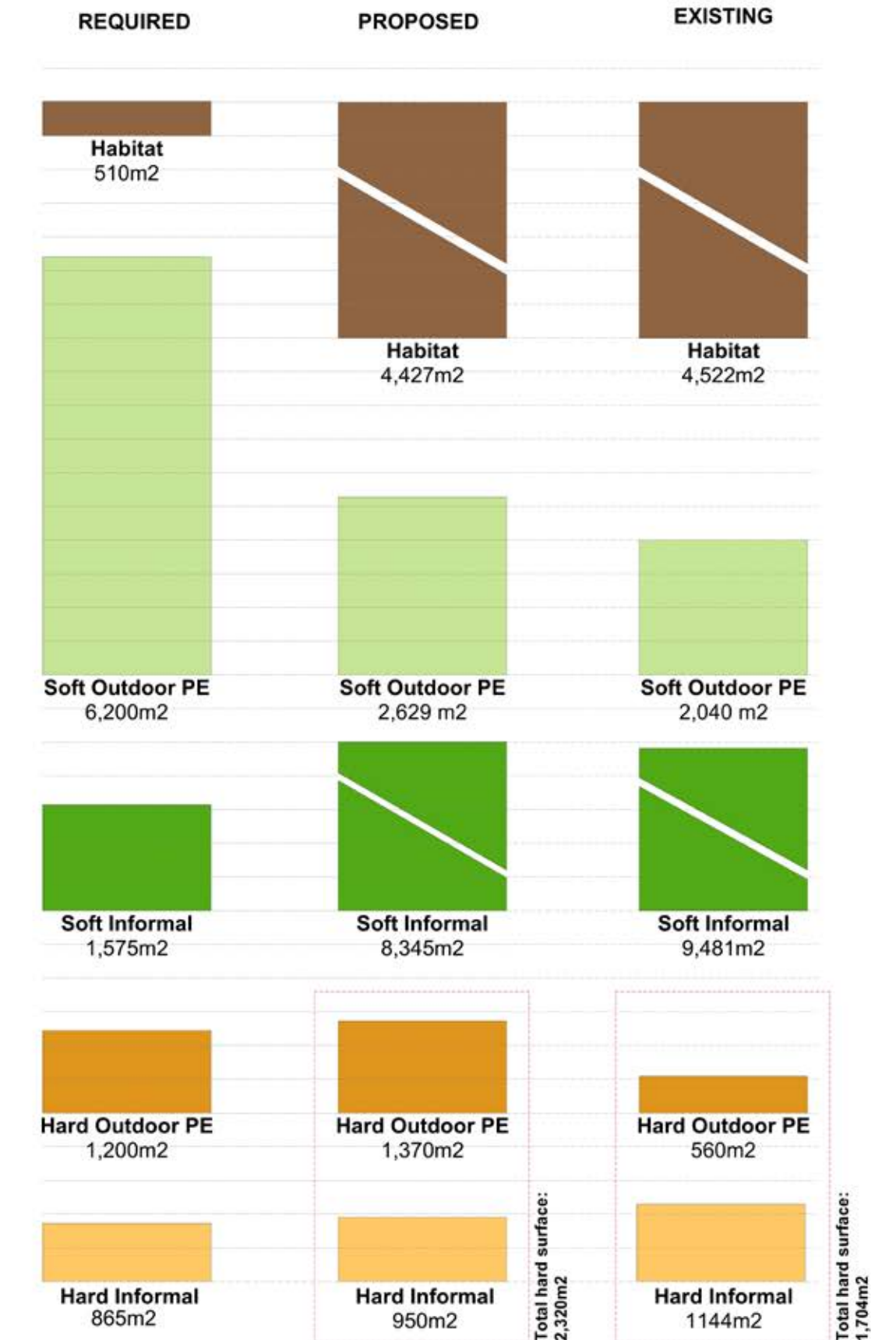
4.2 BB88 Analysis - External Areas

A new Multi Use Games Area (MUGA Macadam) is proposed. This will be a fully fenced 2 court macadam MUGA located centrally on the footprint of the old school building.

A mini soccer (U9/U10) football grass pitch is proposed to the East of the proposed MUGA courts. This will be of a size and quality to compensate for the existing playing field lost due to the new school build



BB88 Analysis Diagram



4.3 Secure Line

The objective is to provide a safe and secure site for the pupils and staff whilst also recognising the importance of the school to the local community and ensuring that the site is still welcoming to visitors.

As required by the Welsh Government brief for 21st Century Schools a 2.4m high fence will be provided at the boundary to the site.

The facade of the building together with 1.8m high internal fences are proposed to create a secondary secure line that allows controlled access for the public and deliveries during the school day whilst ensuring that the schools and playgrounds remain secure.



Secure Line Diagram

KEY

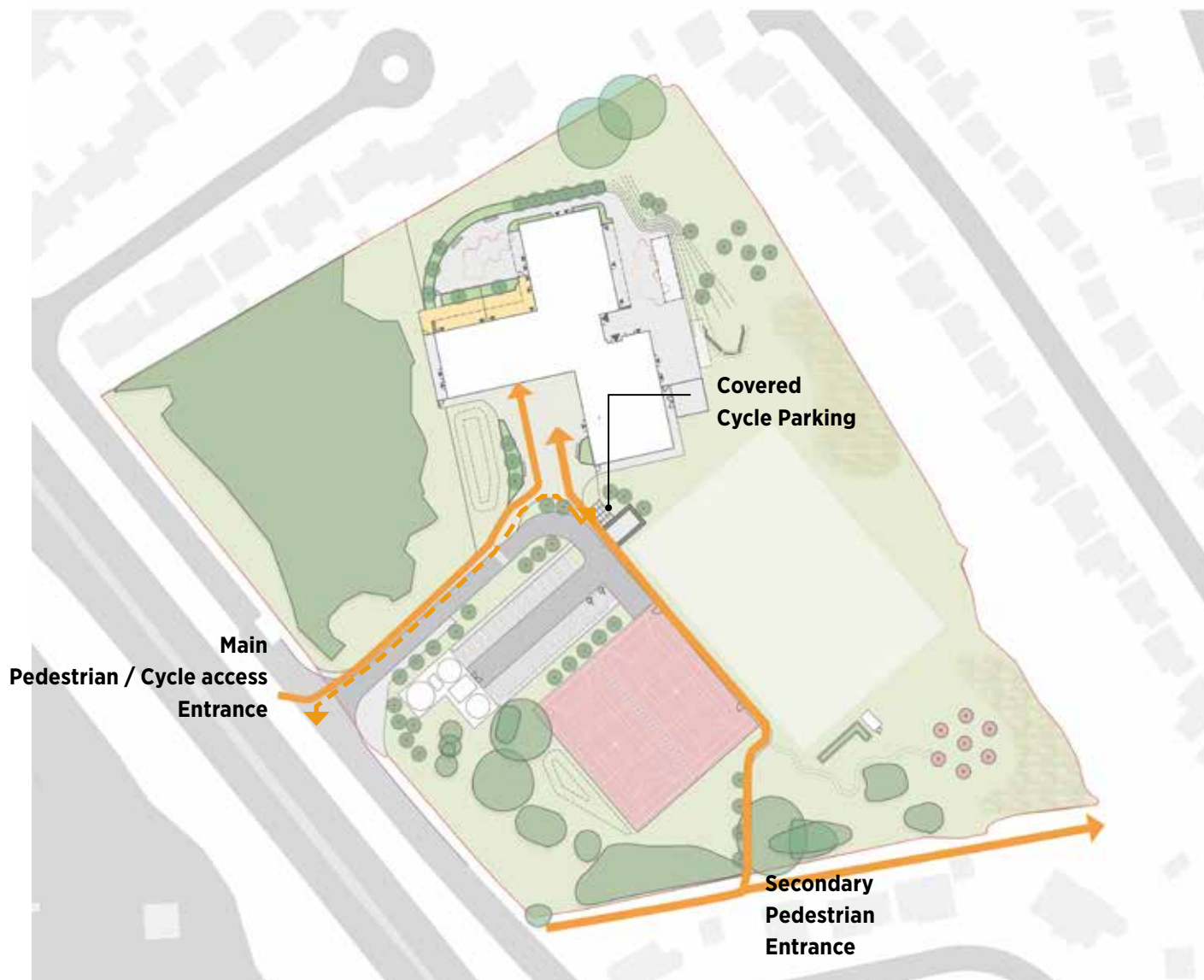
- - - - Perimeter Security Fence: 2.4m high Weld Mesh
- - - - Internal Security Fence: 1.8m high Weld Mesh
- - - - MUGA Sports Fence: 3m high Weld Mesh
- - - - Sprinkler Tank Enclosure: 3m high Close Board Timber
- - - - Bin Store Enclosure: Brick to match building
- - - - Metal Hoop Top Fence: 1.1m high
- Gate Location

4.4 Movement Routes - Pedestrian and Vehicle

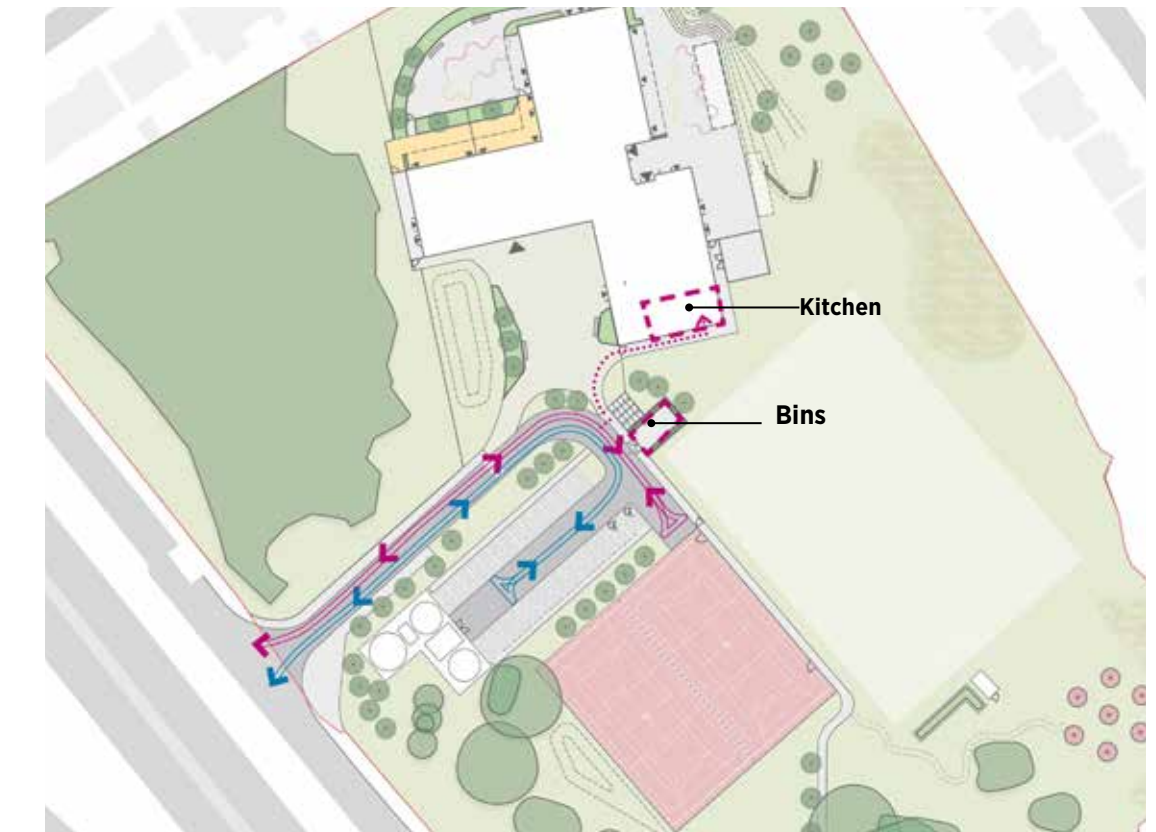
The site access for all vehicles will be via the existing entrance on Chartist Road, the current pedestrian route from the footpath to the south will also be retained. 28 parking spaces and 20 number covered cycle spaces. The carpark is organised to provide 2no. accessible parking bays and visitor parking in close proximity for the main entrance. The carpark also gives access to kitchen deliveries, bins and maintenance access to air source heat pumps and sprinkler tanks.

The site layout will place an emphasis on pedestrians and cycles and ensure the approach to the building from the site access points is not dominated by vehicles and a pedestrian plaza space is created at the main entrance.

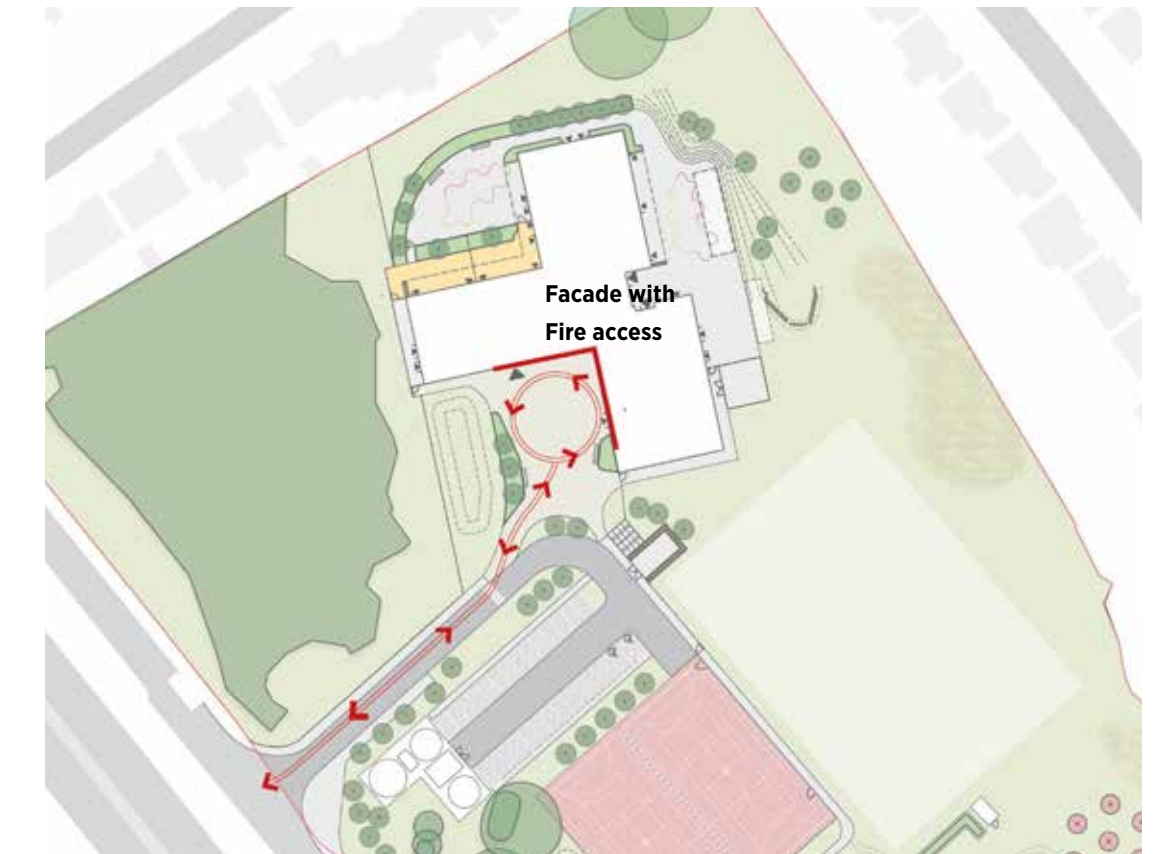
There is dedicated external route to the Nursey from the plaza at the front of site so it is convenient for parent pick/up drop off during the main school day.



Pedestrian and Cyclist Access



Vehicle Access



Fire Tender Access

4.5 Planting Strategy

The plan opposite shows the proposed planting strategy for the school. The planting design has been designed to meet the brief as set out in the Welsh Government Authority Construction Requirements (ACR's) and also through Consultation with the school and RCT.

The intention is that the proposed planting is appropriate for its intended use in a school environment taking into account:

- Year round interest
- Educational value
- Integration with SUDS
- Maintenance
- Bio diversity
- Safety & Security

The SUDS strategy has been developed with ARUP and planted elements of the landscape are integral to drainage strategy.



Planting Strategy Diagram

KEY:

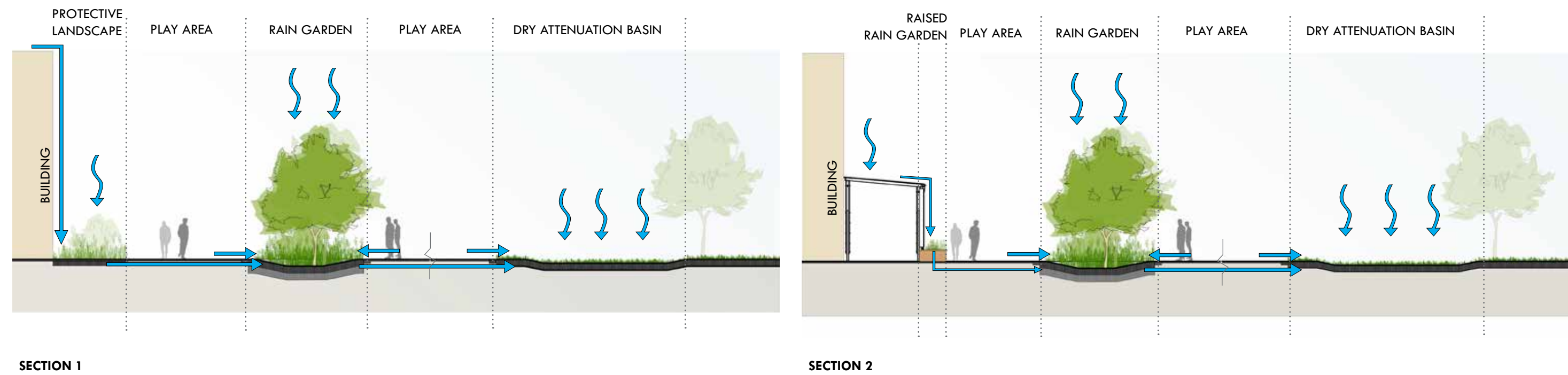
- Existing Tree
To be retained
- Tree Planting
To include native species as RCT tree policy
Single species not to exceed 10% as climate change resilience measure.
Trees in rain gardens to have tolerance of drought and waterlogging periods.
- Amenity Grass
Mowed regularly to allow activities and play opportunities
- Biodiverse Grass
Grass areas to include bulbs, to be sown at less rate to allow natural regeneration of native seedbank, to be mowed less regularly
- Rain Gardens
Planting species capable to tolerate drought + waterlogging periods. Species selection as RCT policies and feedback.
- Hedge Planting
To include native and more than one species

4.6 SUDS Strategy

The SuDS network for the site comprises the following strategies:

1. The collection runoff as close as possible from its source to slow and treat the rainfall. The protective planting areas adjacent to the building (Section 1) and rain gardens taking runoff from the roofs or canopies downpipes (Section 2) have this function.
2. Rainfall continues to be treated through rain gardens, then some runoff will infiltrates to the ground.
3. The remaining runoff is conveyed to dry attenuation basins.

The overarching principal is that the SuDS are integral to the landscape design and offer the opportunity to the school to use their grounds as a learning resource for teaching about climate change adaptation



4.7 External Visuals



Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.

View Looking North East



View Looking North West

Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.



View Looking South West

5.0 Design Statement - Building Design

5.1 Developable Area on Site, Scale & Massing

Early on in the project, the site constraints were overlaid, to gain an understanding of where it would be possible to construct the new primary school. The key constraints for Penygawsi were the existing underground services, topography, coal seam outcrops, a disused mine entry & the school requiring to stay operational during the construction phase. This led to a zone being identified as the 'developable area'.

Post the establishment of 'developable areas' - massing was tested on the site. This was initially tested via 'block massing' to understand the extent of foot print. Both single storey and two storeys were tested to ensure the footprint sat as close to the 'buildable area' as possible - allowing for context and surrounding parameters,

Due to the site constraints, two storeys was concluded early on in the process. The proximity to operational school buildings and the density of the existing site, did not allow for flexibility in the 'buildable area'. However, a two storey building sat well on the site.

Penygawsi Primary School - One Storey Massing Testing



Penygawsi Primary School - Two Storey Massing Testing



5.2 Early Concept Testing

The team tested building forms in a logical and methodical way. This included understanding (from the outset) the educational drivers in the form components (i.e. cluster / courtyard / finger approaches) and which of the configurations best suited the educational requirements.

The building forms were discussed with the team educationalist to understand the opportunities and constraints these would offer, whilst maintaining an overview to keep the building form simple and legible.

Spatial adjacencies, functionality and the positioning of the heart space were reviewed against each typology. Main circulation routes, access / egress and relationships with the external spaces - were also all considered when carrying out the analysis.

The following forms / typology were tested:

- Cluster approach: teaching spaces clustered around mini-heart areas.

- Horseshoe approach: teaching spaces forming blocks of classrooms, with a more centralised heart space and external area between blocks.

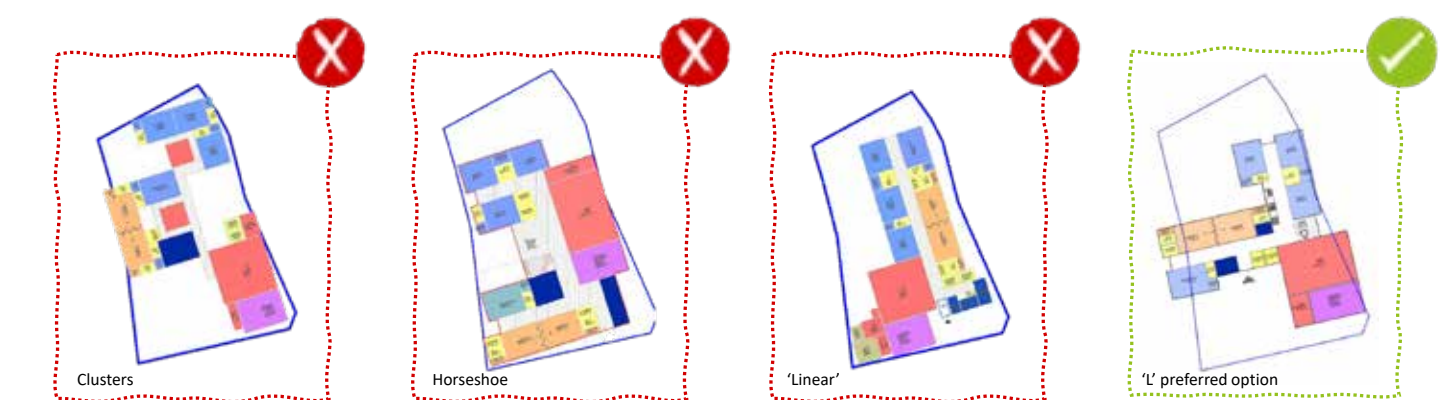
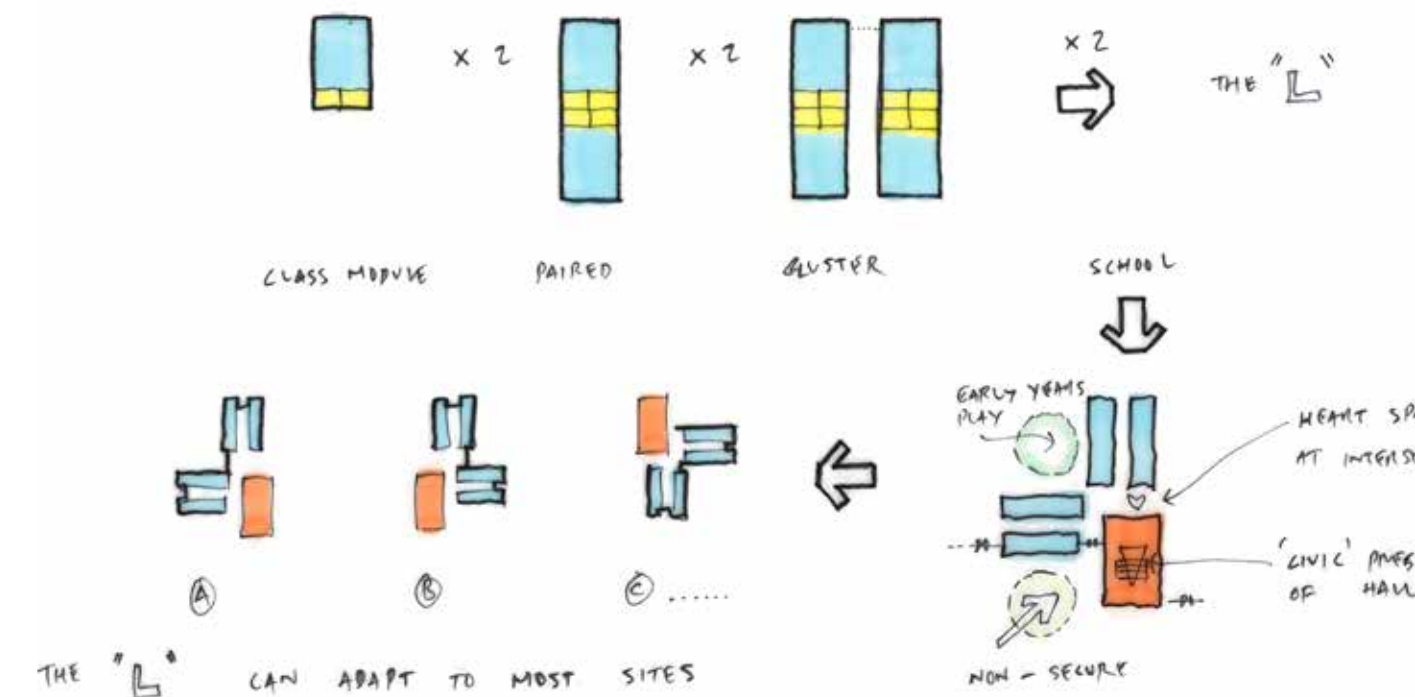
- Linear approach: linear classroom arrangements with main hall block adjacent.

The preferred option (as below) provided a number of benefits and merits. The 'L' was able to provide an efficient and standardised form - whilst being flexible and adaptable to the requirements of the site.

The heart space (key to the design) was able to be located centrally, allowing for good access and visibility across the building - as described below:

- L approach: two wings of classrooms, with centralised heart space at the 'elbow' of the two wings. Smaller heart spaces adjacent and above, creating double height volumes and connecting via an accommodation stair.

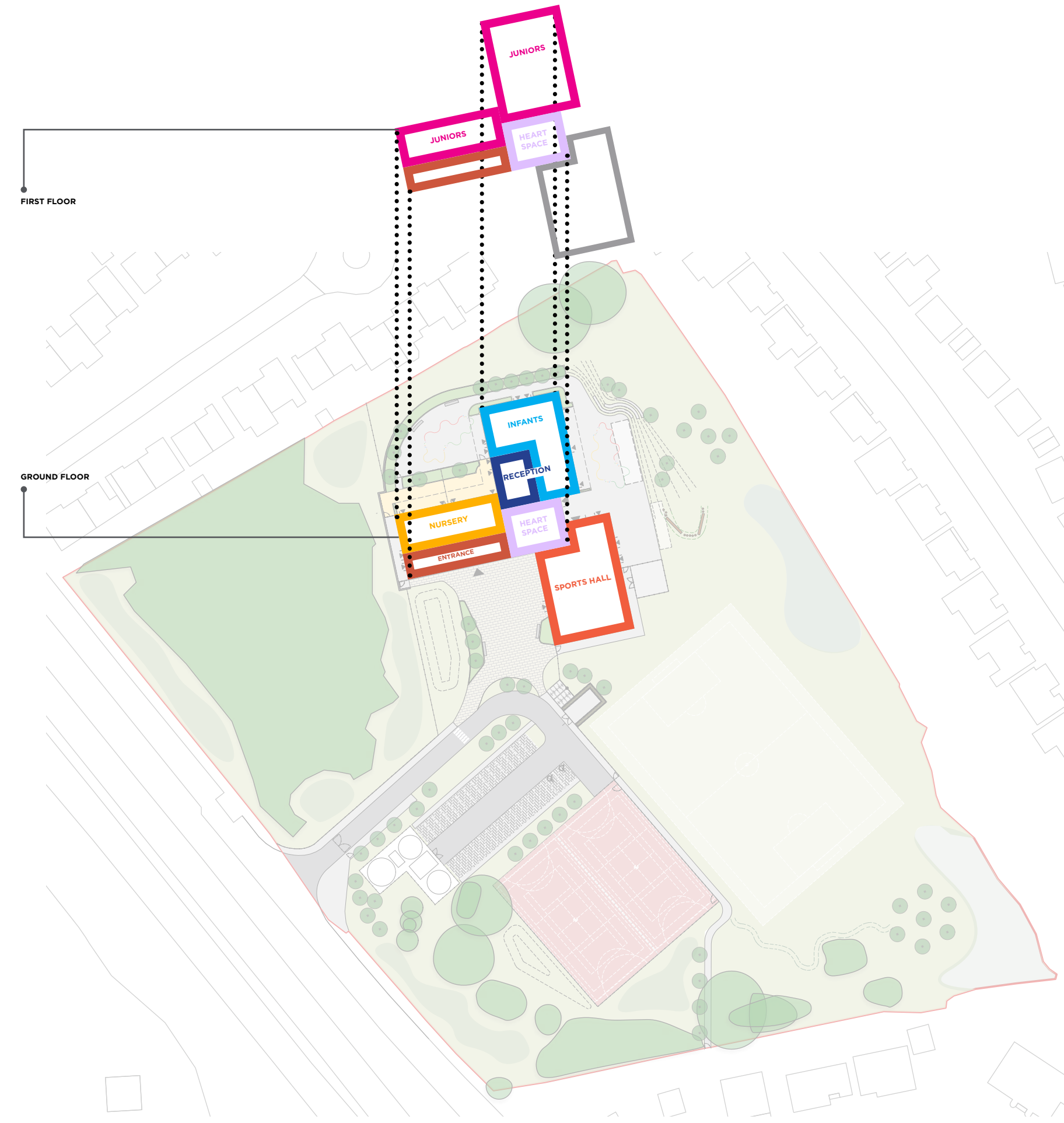
Penygawsi Primary School CEM 1 SUMMARY - Buildable Area



5.3 Design Principles & Concept

A number of key design aspects were set by the Project Brief:

- That the new Penygawsi Primary School building would be low rise. The school would be efficient & compact in form to maximise external play space.
- The entrance to the site & Main Reception would be visible & welcoming. Good views across the entrance 'Plaza' would be provided for the General Office, to ensure passive supervision.
- Sight lines & security zoning would be a focus for the landscaping proposals.
- The Ground Floor classrooms would have direct access to outdoor (dedicated) play areas. Drop off / pick up would be adjacent to these.
- A 'Heart' space would be at the building designs core.
- That the new building would be of robust construction (particularly at Ground Floor).
- That the new building would have pitched roofs.
- That the shape and form of the building, would be reflective of the educational adjacencies required.



5.4 General Arrangement Plans

5.4.1 Vertical Stacking

The General Arrangement (GA) proposal for Pontyclun Primary School, has been in response to the educational brief, the required adjacencies & site context. Having tested the buildable area & massing, it was quickly established that the new build would need to progress as a two storey building - to allow the school to remain operational during the construction phase.

The premise of the buildings stacking model, has required the younger years (Nursery, Reception & Infants) to remain at ground floor level for accessibility whilst the Juniors have been located on first floor.

5.4.2 Adjacencies

The main entrance and pedestrian plaza area have been located opposite the entrance to the site. This allows for good visibility. It also enables pupils, parents & visitors to clearly identify the entrance to the school.

Entrances into the Nursery and Reception drop-off areas, have been well positioned for passive supervision from the main entrance and general office.

The 'Heart' space has been positioned at the 'elbow' and adjacent to the main access route to the play spaces. This centralised location (on both levels) would allow natural light to penetrate whilst providing views out. The accommodation stair was introduced to link the heart spaces and provide central vertical circulation.

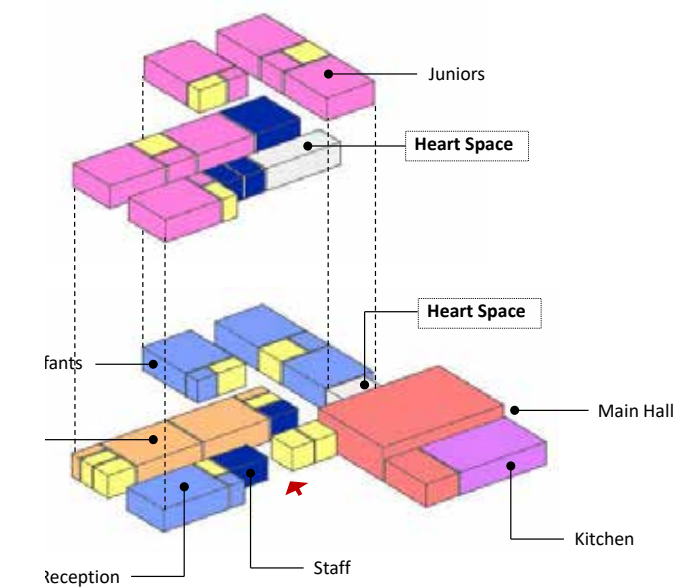
The teaching 'wings' have been located perpendicular and open at the ends for access, natural light and views out. The 'wings' are organised to allow for a graduation of age groups, as pupils 'snake' around the building and gradually progress to the first floor. This arrangement was carefully developed to enhance a 'whole school' culture but equally provide smaller areas of age group clusters.

The main hall and kitchen spaces are located adjacent to main entrance and parking zone. This predominantly allows for good access but also enables a clear zoning of out-of-hours community use.

The locations for the different parts of the school building have been carefully considered - in line with their dedicated external learn/play spaces. These were developed in parallel with the site security strategy.

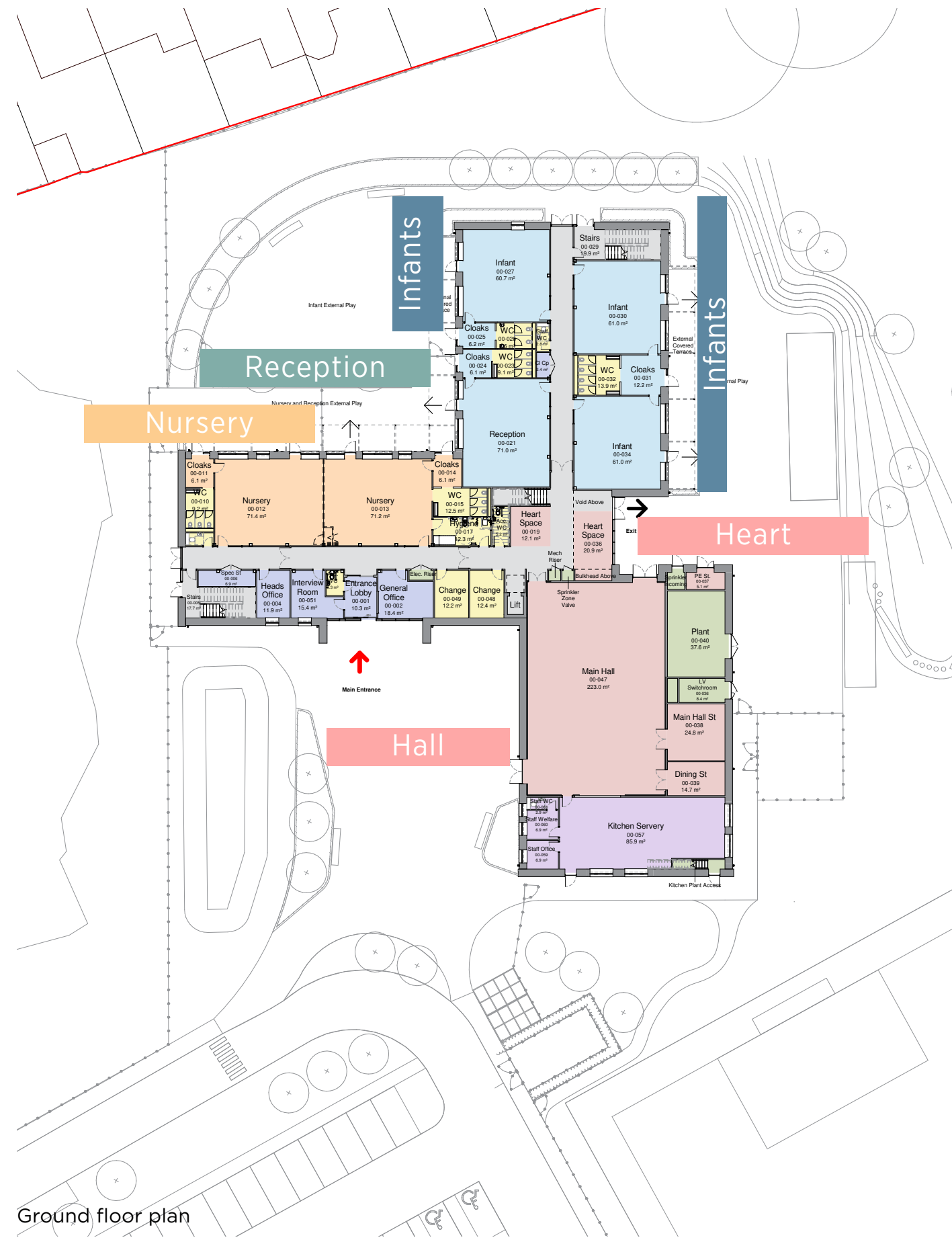


Adjacencies diagram



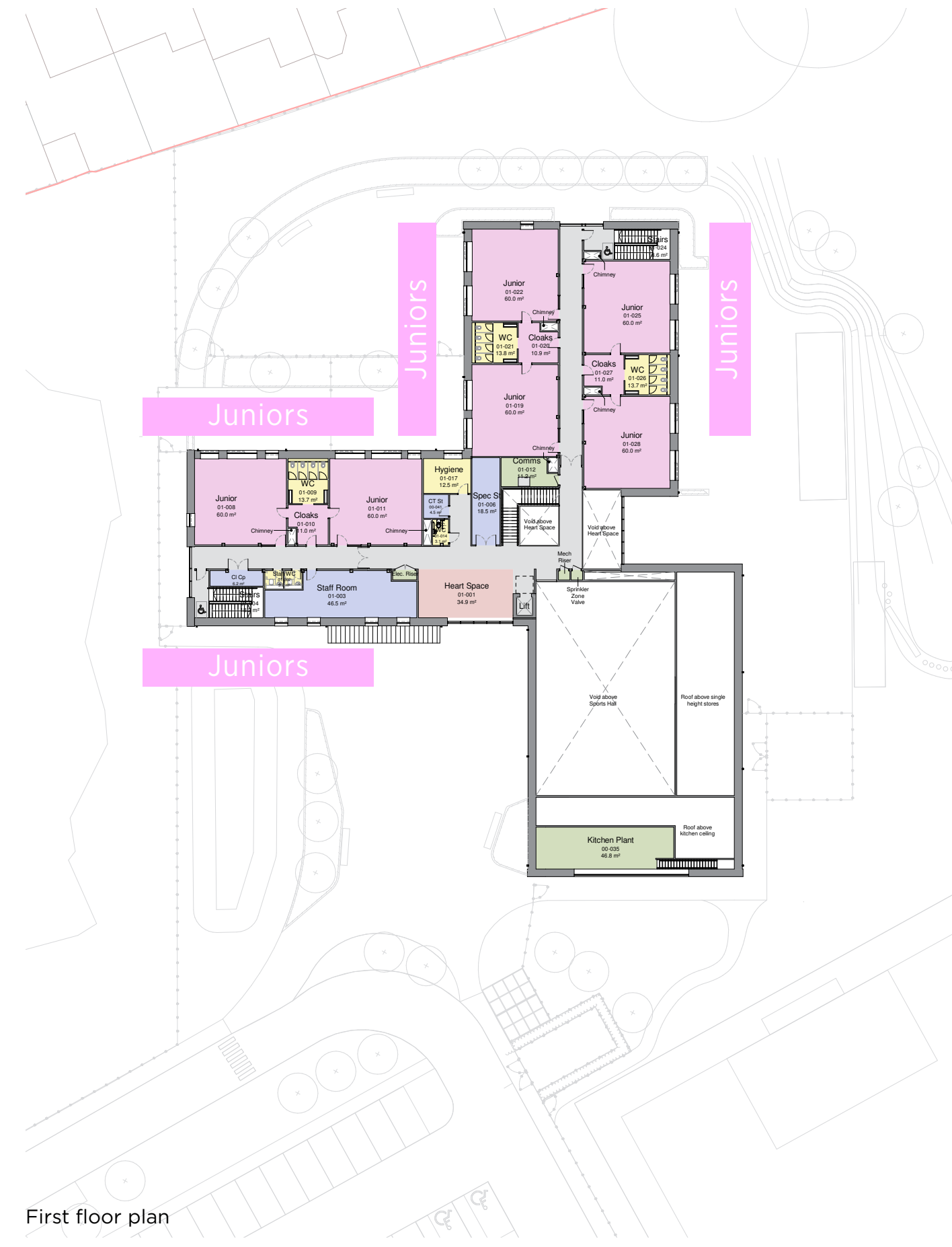
Vertical stacking

5.5 General Arrangement



Ground floor plan

5.6 Internal Views



First floor plan



Heart space

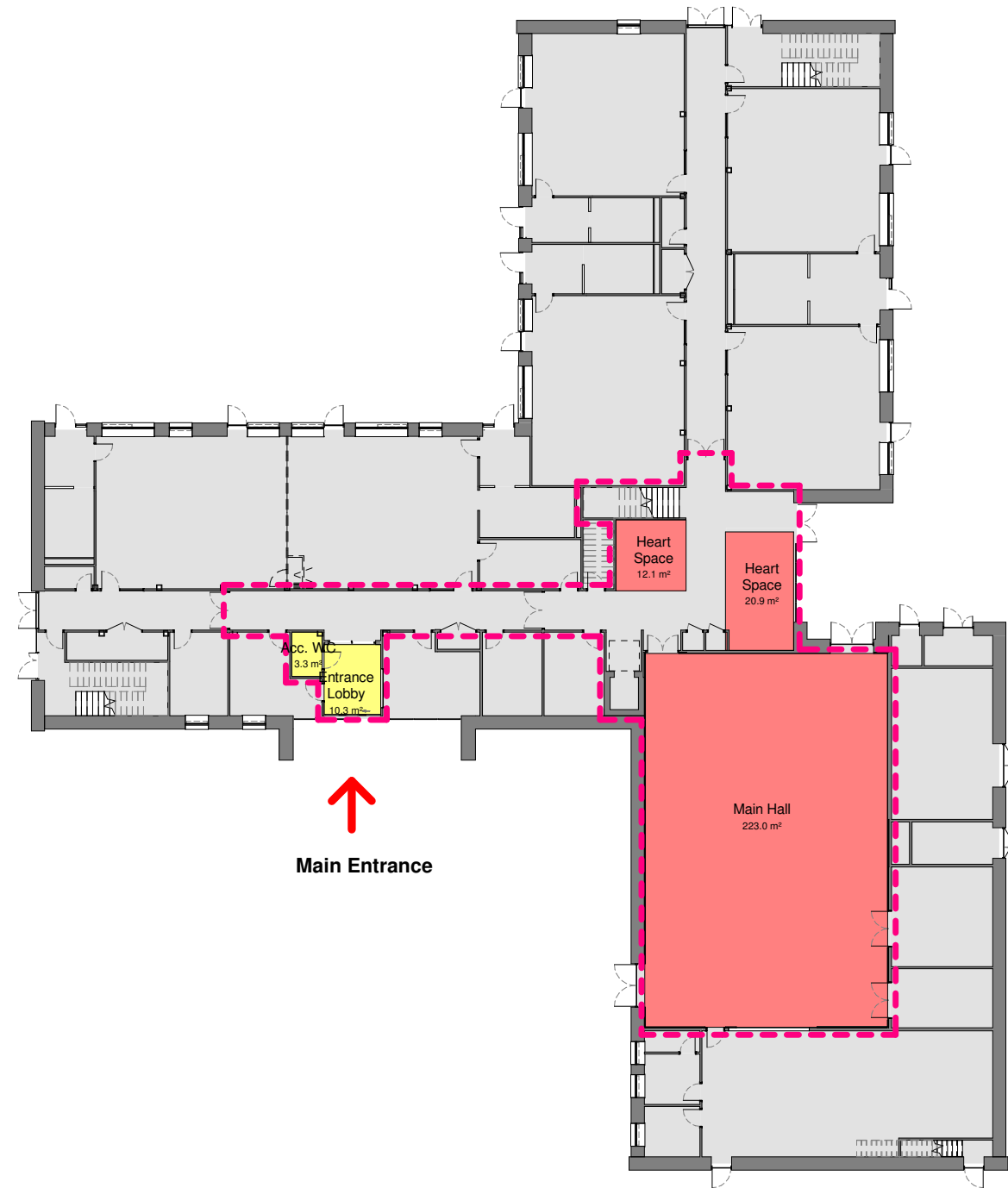


Entrance to heart space from play area

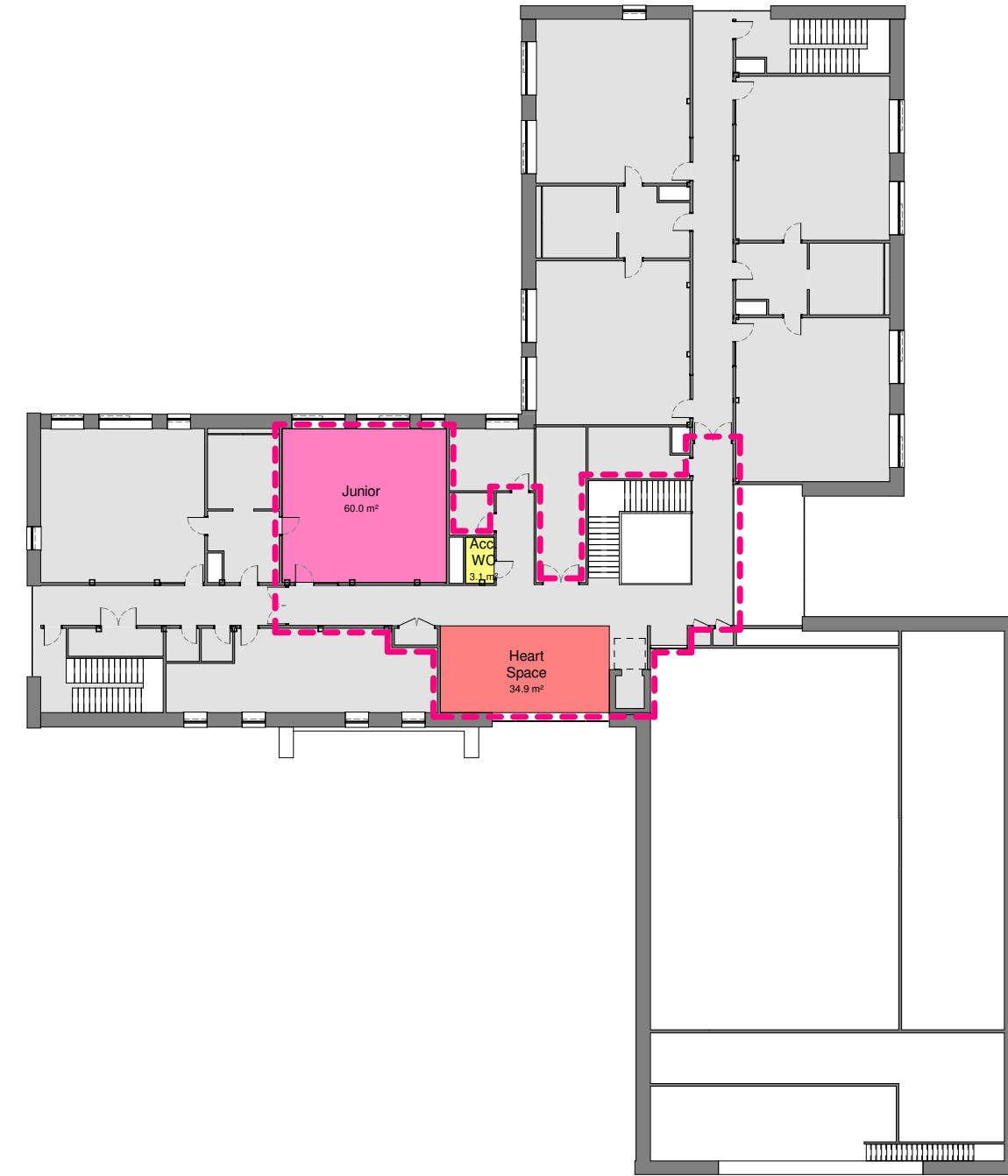
5.7 Out-of-Hours Strategy

5.7.1 Design Approach

The following strategy drawings were presented during RIBA Stage 2 & discussed during the CEM's. The below have been updated with the current General Arrangement plans.



Out of hours - Ground floor plan



Out of hours - First floor plan

5.8 Day Lighting Strategy



Day lighting strategy - Ground floor plan



Day lighting strategy - First floor plan

KEY

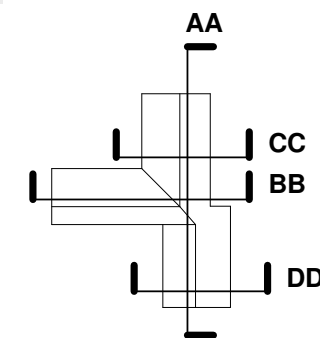
- Rooms with access to natural daylight and views
- Rooms with access to natural daylight
- Rooms with no access to natural daylight or views
- Circulation route with no access to natural daylight or views
- Circulation route with access to natural daylight

5.9 Building Sections

Section A-A



Section B-B



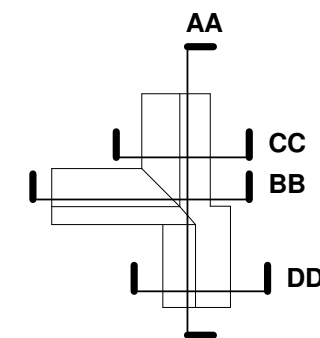
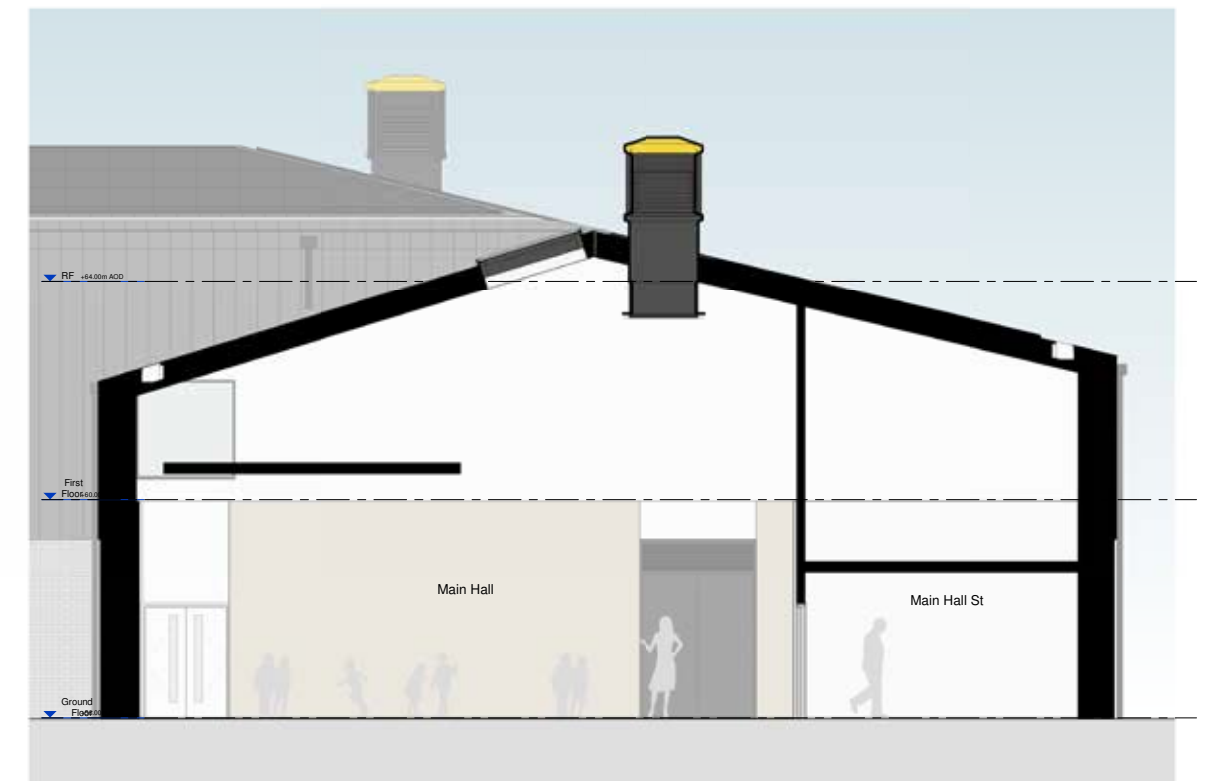
Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.

Section C-C

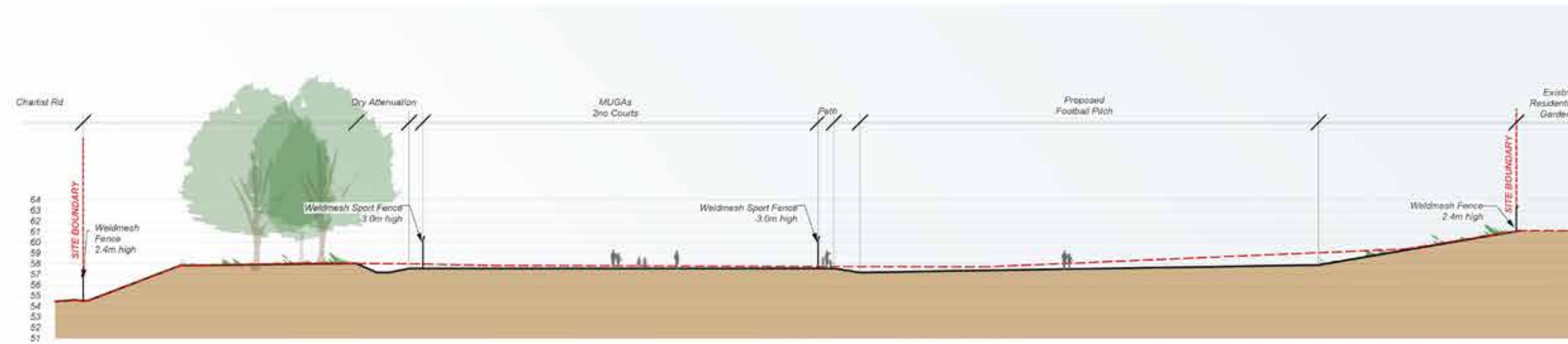


Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.

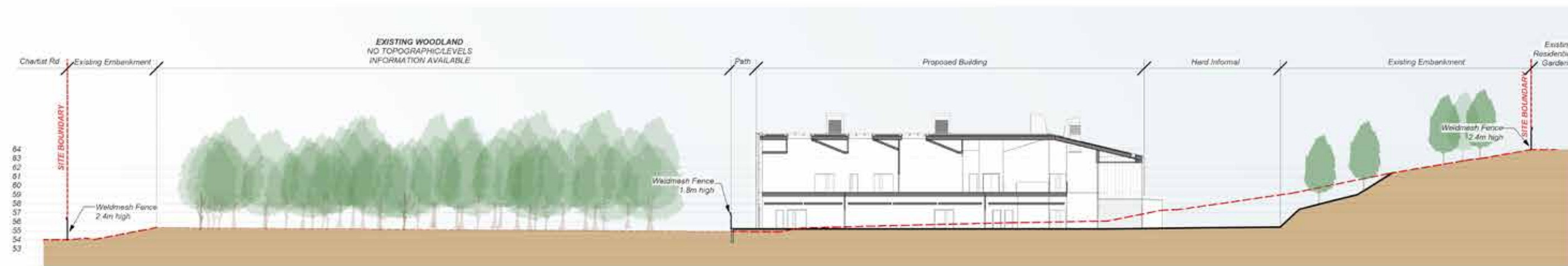
Section D-D



5.10 Site Sections

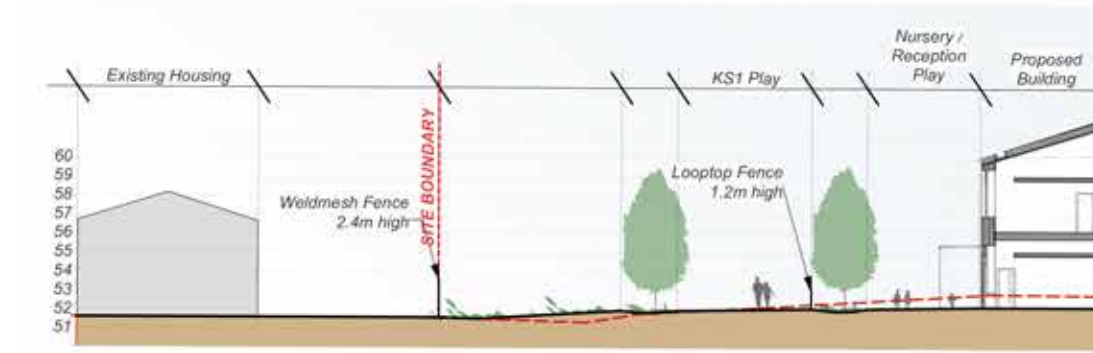
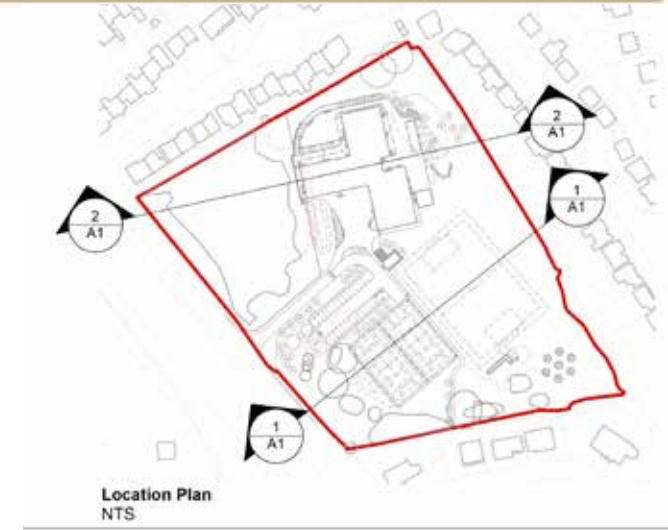


1 Section 1-1
Scale: 1:250

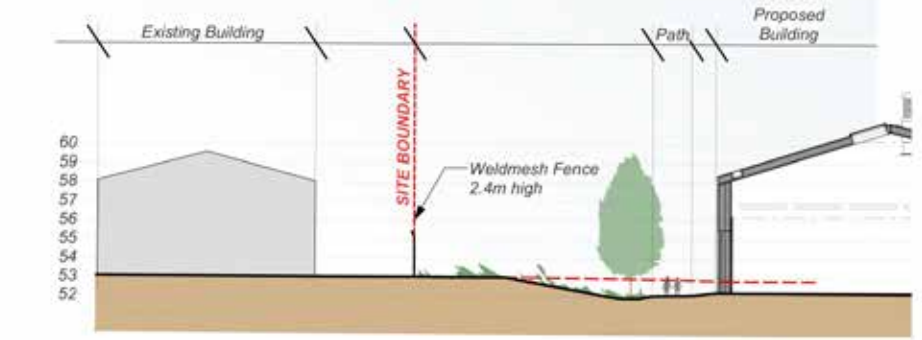


2 Section 2-2
Scale: 1:250

--- Existing Ground Line
— Proposed Ground Line



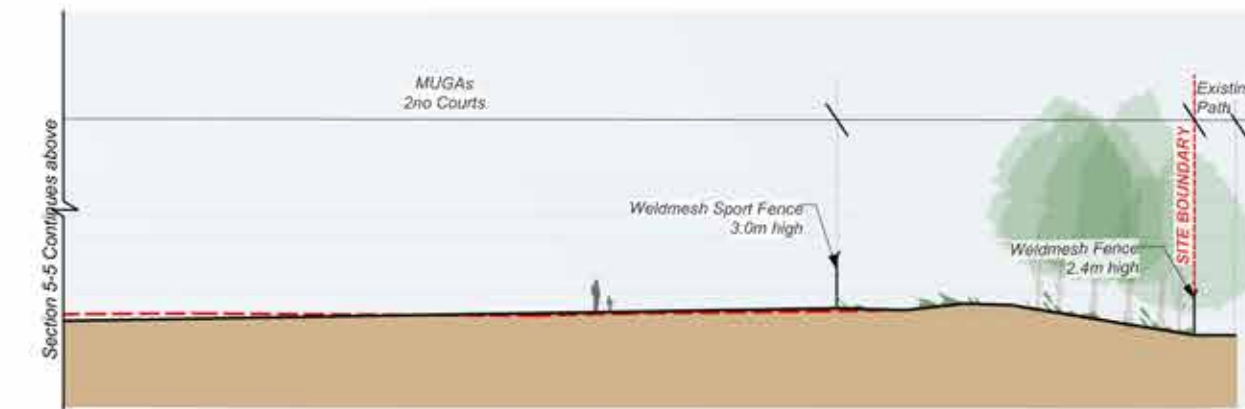
1 Section 3-3
Scale: 1:100



2 Section 4-4
Scale: 1:200

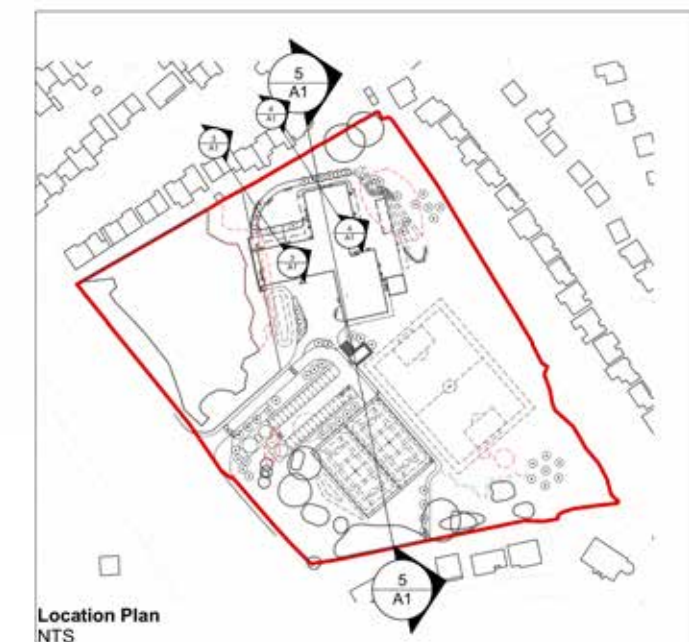


3 Section 5-5
Scale: 1:200



4 Section 5-5
Scale: 1:200

--- Existing Ground Line
— Proposed Ground Line



Location Plan
NTS

5.11 External Appearance within Site Context



Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.



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5.12 Context Precedents



5.13 Building & Materials Precedents



5.14 Elevations



Elevation - north



Elevation - south

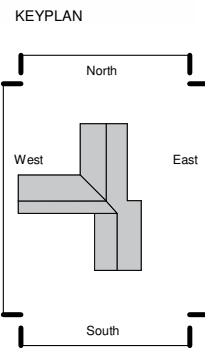


Elevation - east

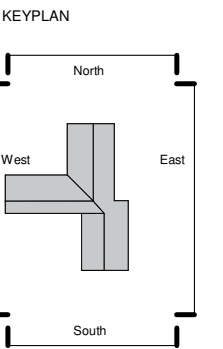


Elevation - west

Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.



Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.



5.15 Bay Studies

5.15.1 Design Approach

Building on the concept established during the previous stages, the envelope design for Penygawsi has been explored & tested. Technical requirements of the project including the requirements for natural light and ventilation, have been at the forefront. These have been co-ordinated with the buildings structure & services zone to define internal and external height parameters.

5.15.2 Materials

A brick ground floor has been agreed, primarily for robustness. The brick ground floor facade wraps around the building in its entirety & is also expressed at the gable ends of the wings.

On the upper level, an aluminium standing seam roof has been proposed. This continues down the face of the first floor level & defines the building as two storey. Punched openings for windows have been celebrated via the use of colour.

During the Stakeholder engagement process, members expressed a preference for the building to maintain a muted / subtle brick & aluminium facade - whilst allowing for 'pops' of colour to be incorporated within defined areas.

5.15.3 Fenestration

The overall scale & massing of the forms are reflected in the fenestration & window types. Classrooms have maintained a consistent datum for the cill & window heights across the facades. The louvres within the windows & doors have been twined or paired where possible, to provide symmetry to the facades. The Heart spaces are expressed with large areas of curtain walling allowing a greater connection with the external play spaces.

With the majority of spaces naturally ventilated during the summer months there is a requirement for opening windows across the building. These need to be balanced with security & safety concerns by incorporating restrictors on most openings.

The requirements for the mechanical ventilation systems (used during the winter months) have also been incorporated via the use of louvred panels within the window system. The louvres allow for local intake & extract, minimising ductwork runs through the building.

5.15.4 Rooves

As the ventilation strategy for Pontyclun requires chimneys to obtain a 'stack effect', there is an opportunity to express the chimneys at roof level & include a colour. Similarly, the wind catchers could also include a colour.

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5.16 Materials

5.16.1 Materials Palette

The material palette for the school have been carefully considered & reviewed. Having explored a range of different cladding materials, timber was rejected due to the level of maintenance required & eventual weathering of the material.

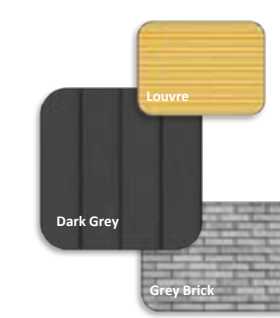
Via the CEM process, it was agreed that brick at ground floor level would be appropriate & would provide the level of robustness required. We have proceeded along this basis.

As per the briefing information, the rooves are pitched. An aluminium standing seam has been proposed for all the rooves, with incorporated gutter details where required. The aluminium standing seam continues down the face of the first floor, defining the two storey levels for Penygawsi,

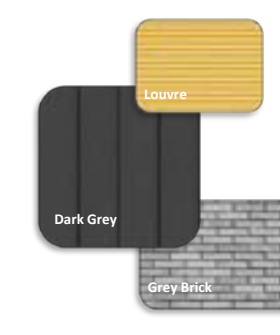
Canopy's, offering weather protection above the classroom doors, have been incorporated. These have been currently designed as a metal structure with sloped glazed rooves. The metal also offers robustness, whilst the glazed components allow natural light to penetrate in to the classrooms.

Chimneys & wind catchers at roof level, are also constructed of metal & sit well on the aluminium standing seam rooves. Opportunity for colour via the chimney & wind catchers, has been explored & forms part of the strategy for introducing 'pops' of colour.

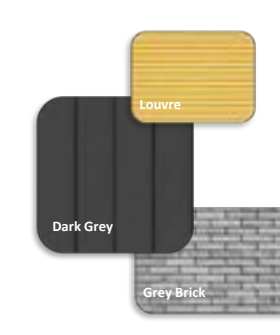
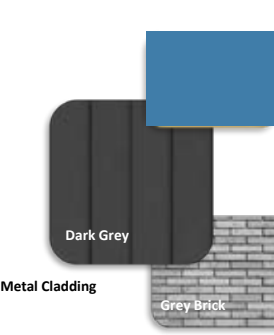
Please note: Colour of metal shown on the elevations & sections (gold / yellow), is indicative only & may change following the Consultation / Planning process.



The ground floor & gable ends to the school have been proposed in a grey / buff brick. The exact brick is yet to be selected.



The standing seam roof & first floor facade is proposed in a dark grey aluminium.



The colour for the window frames, louvres, chimneys etc - is yet to be concluded. They have currently been shown in a gold / yellow, however, the opposite colour palettes test a range of potential options.

5.17 External Building Views



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6.0 Sustainability Statement

6.1 Approach

This school has been designed as part of a batch of three similar schools for RCTCBC under the MIM WEP framework. The approach to sustainability in the design of the RCT schools is largely common and the ambitions of the project are challenging across a wide range of areas.

Each building has been assessed against BREEAM criteria with the goal of achieving an Excellent rating, this in turn assists in the specification of low carbon materials and many aspects of the design.

Furthermore there is target of Net Zero Carbon (NZC), both in operation and for embodied carbon and extensive modelling and assessment has been conducted to date to assess these areas.

6.2 Specification of Materials

To align with the agreed BREEAM targets, specification of materials will consider a number of sustainability aspects, including:

- Timber – all timber and timber-based products used during construction must be legal and sustainable timber (following the UK Government’s definition as outlined in the Central Point of Timber (CPET) 5th Edition of the UK Government Timber Procurement Policy (TPP))
- Volatile Organic Compounds (VOCs) – at least three out of the five product types listed in BREEAM Hea O2 shall meet the emission limits, testing requirements and any additional requirements listed in the Hea O2 criteria in order to achieve one credit for Hea O2 Emissions from Construction Products
- Responsible sourcing certifications – specifications will require that more than 20% of available BREEAM Mat O3 points will be achieved through procurement of materials from manufacturers with a BREEAM Mat O3-recognised responsible sourcing certifications for their products (e.g. BES 6001, ISO 14001 certification).

The Sustainable Procurement Plan and associated procedures will assist in driving the above and wider sustainability considerations associated with procurement of materials. The BREEAM Mat O1 Life Cycle Assessment (LCA) options appraisal and RICS-scope study will also investigate the embodied carbon impact associated with key building elements. Where possible, alternative material specifications will be modelled for materials which are found to have a substantial impact, in order to allow for the environmental impacts of different specifications to be considered in decision-making, alongside other factors.

6.3 BREEAM

The RCT Primaries Batch aspire to achieve BREEAM Excellent ratings which reflect the commitment to a holistic sustainability approach for the project from inception through construction and in-use energy consumption. The buildings have been registered with the BRE and are being assessed against BREEAM 2018 UK New Construction.

The target scoring required to achieve the Excellent rating for each school was agreed at a BREEAM pre-assessment workshop, and these targets continue to be adjusted and refined in line with design development. Scoring is being tracked via a live tracker, TrackerPlus.

At the time of writing, the target scoring is as follows:

Target	Potential
75.51%	92.92%
Excellent	Outstanding

All minimum standards required for the Excellent rating are targeted, and the targets exceed the required 70% threshold with a scoring margin.

Environmental Engineering

In order to minimise the buildings overall energy usage and CO2 emissions a three-stage approach has been adopted to the design of the school and the associated systems. The three stages are:

- [1] Passive design – reduce the need for energy
- [2] Active Design - supply energy efficiently and recover energy wherever practical
- [3] Use of renewable technologies

The passive design stage is crucial in helping to achieve a low energy building as it looks to reduce the need for energy to be generated in the first instance. Following the early stages of design development, close attention was paid to co-ordinating and integrating the structure and the occupied areas to:

- Minimise internal areas requiring mechanical ventilation to enable natural ventilation in summer months.
- Minimise direct solar gain to reduce unwanted overheating, but balance to maximise daylight factors in all areas.
- Maximise utilisation of plant and systems.
- Maximise control and flexibility of the installations.
- Improve the performance of the building thermal envelope (reducing fabric u-values and optimising glazing g-values).
- Reduce air permeability.

In terms of active design these are systems that allow the generation and delivery of energy in an efficient way have been incorporated, including:

- High efficiency lighting systems.

- Use of LED lighting.
- Lighting controls with perimeter areas switched separately from internal areas possibly with daylight linking.
- Absence detection for lighting control rather than presence detection.
- Low velocity pipework and ductwork where possible to reduce fan and pump power consumption.
- High efficiency motors with variable speed drives.
- Specification of high-performance MEP plant.
- Local control of heating systems to prevent overheating.
- Separate metering on power and lighting systems.
- Central Building Management control System (BMS) and Energy Management System (EMS) with monitoring of key system parameters. This allows the facilities/building managers to gain insights into the collected data as well as highlight any inefficient practices, aiding them in making better informed decisions affecting energy usage.

In terms of renewable technologies, air source heat pumps (ASHPs) and a photovoltaic (PV) array were found to be the most beneficial systems for the project and have therefore been incorporated into the design. The photovoltaic arrays required to achieve net zero carbon (NZC) are likely to be substantial in size for this project and will likely occupy a large percentage of the roof space.

There is an environmental and carbon footprint associated with potable water consumption, this is attributed to the energy and resources that are required to extract, treat, and pump this water from its source to where it is needed.

The first priority is to reduce the demand for water through the use of water economic fittings and fixtures, the second is to match demand to use. Not all uses require water to drinking standards and some demands can be met using rainwater or greywater, depending on its quality.

To meet the BREEAM requirements, the following demand management and water efficiency measures have been considered to develop a water conservation strategy that is sustainable and reduces the economic, environmental and social impacts of developing water sources and waste stream discharges:

- Match non-potable supply to non-potable demand
- Consider supply of water from local sources
- Conservation measures e.g. WCs with low water volume dual flush cisterns, low water use appliances and fittings, flow restrictors, automated supply shut-off where practical
- Management of water consumption through metering & monitoring via the BMS – such as leak identification

A hierarchical approach has been used to define the storm water drainage strategy for the proposed development’s runoff in compliance with ‘Statutory standards for sustainable drainage systems - designing, constructing, operating and maintaining surface water drainage systems 2018’.

One of the key aspirations to the project is to be net zero carbon in operation and in addition the team recognises the importance of embodied carbon, and thus a target of 800kgCO2/m2 has been agreed.

6.4 Building Ventilation Strategy

Covered above – suggest deleting this subheading.

6.5 Heating & Cooling Strategy

The schools space heating requirements will be fulfilled by a series of air source heat pumps (ASHP’s) located adjacent to the plantrooms. A thermal storage buffer vessel will be included on the primary return side to meet the minimum system water content required by the ASHP’s. This water content is required to limit the on/off cycling of the units and to aid with the defrost cycles during cold weather.

The mechanical cooling within the school will be limited wherever possible. There are some areas within the building such as the IT server rooms which will experience high heat gains and it is proposed to provide some mechanical cooling services. Cooling shall be provided through a VRF split system.

6.6 Energy Usage

Each of the RCT schools have been designed to meet a strict operational net zero carbon target, whereby all operational energy consumed on site (both regulated and unregulated) shall be generated by an extensive roof mounted solar photovoltaic (PV) array.

This array shall offset 100% of the carbon emissions annually for the energy usage of the buildings, thus being ‘net zero carbon’ in operation in line with the UKGBC definition. In addition, the school has been designed to minimise energy demands through extensive modelling and assessment of the building (in line with contract requirements, the BREEAM assessment and a detailed energy prediction study).

The current proposals outline generation of 100% of the annual energy consumption via roof mounted photovoltaic arrays at each of the schools. However, discussions are ongoing with the local grid operator as the electrical infrastructure at each of the school sites has limited capacity to accept surplus energy generation. Mitigation steps are being developed such as upgrading said infrastructure where possible as the preference would be on-site generation. However in the event that this is not possible as part of the construction process or in the near future, then the design will look to install appropriately sized on-site PV arrays and then offset and shortfall in carbon emissions (using a recognised local offsetting scheme) to remain true to the definition of NZC

7.0 Access Statement

7.1 Access and Inclusion

The proposals have been designed to meet the requirements of current Building Regulations, The Equality Act and other relevant regulations and standards, including those accessibility standards specific to Welsh policy.

Access & inclusion have been integral to the design from inception, through to the current level of detail. Starting with the masterplan & external spaces, through to access points, circulation & internal spaces - all aspects have been monitored.

7.2 Access to Site

The primary school is situated within convenient walking distance of the nearest bus stop, which is generally facilitated by a bus shelter and timetable information. The stop is served by local bus services and offer a commuting option to school staff members.

There is no viable railway station within proximity of Penygawsi Primary School, and it is therefore not expected than any school pupils/staff would travel to site by rail.

7.3 Parking & Cycle Provision

The site access for all vehicles will be via the existing entrance on Chartist Road, the current pedestrian route from the footpath to the south will also be retained. 28 parking spaces and 20 number covered cycle spaces. The carpark is organised to provide 2no. Accessible parking bays and visitor parking in close proximity for the main entrance. The carpark also gives access to kitchen deliveries, bins and maintenance access to air source heat pumps and sprinkler tanks.

7.4 Public Transport

Whilst no specific public transport improvements are proposed as part of the redevelopment of the primary school, measures introduced as part of the Travel Plan to encourage more parents, pupils and staff to travel to/ from the school by public transport could include:

- Season ticket discounts with the bus operator for staff, or exploring free bus travel;
- Advertising the benefits of public transport to staff, such as not needing to own a car/second car; and
- Displaying a map of key bus routes, stops, journey durations and frequency of services on noticeboards for pupils, parents and staff.

7.5 Internal Accessibility

The building layout and finishes will be designed to be fully usable by occupants with a range of accessibility needs. The buildings elements and components will be designed to be appropriate dimensions, heights, weights, to be suitable for a primary school. These will include:

-Windows will be at the correct heights to offer views out for small children.

-Long extents of solid balustrading could have glazed sections to offer views for small children.

-The weight of doorsets will be suitable for primary school occupants.

-Openable windows will be detailed without creating finger traps etc.

-In addition to specifying finishes which are of a suitable robustness for a school, the Design Team will also specify to the correct level of slip resistance for floors

-Teaching spaces will have desks suitable for wheelchair users and teaching rooms will have space for wheelchairs to turn. The Reception desk will have a dropped height section for wheelchair users.

-Hearing loops etc. will be identified on the services engineers information.

Main thoroughfare corridor widths have been stipulated by the brief, and are generous to allow for peak flow at busy times of the day. Corridors will, as a minimum meet, the widths required in Approved Doc. Part M.

7.6 Emergency Escape

The corridors will form the principal horizontal means of escape around the building and as such will be designed to meet fire regulations. There will be regular cross-corridor doors as required by the regulations. These could be held-open by détente devices - subject to detailed design at the next stage.

The Fire Strategy Report will be submitted by the Fire Consultant as part of the Building Regulations application.



Precedent image: Heart Space



Precedent image: Heart Space

7.7 Horizontal Circulation

The school footprint occupies a substantial portion of the site. At ground floor level, key access points have been strategically located for Staff / Parents / Visitors, as well as for direct access in to Classrooms for pupils. All access points will be detailed to provide level access from the adjacent ground.

In summary, these are as follows:

- Main Entrance in to the school is via the external 'Plaza'.
- Secondary entrance in to the school, predominantly for the Juniors, from the external play areas in to the Heart space.
- Entrances in to each of the Classrooms (for drop-off / pick-up) via the Cloak room & WC provision.
- Direct access in to the Classrooms from the adjacent external play spaces.
- Access at the ends of the circulation routes.
- Secondary access points in to the Main Hall & Kitchen.
- Access doors leading out from stair cores.

The Main Entrance in to the school is broadly in the centre of the building & will be accessed via the adjacent hard landscaped 'Plaza'. An entrance canopy & extended portal will be provided above, to protect against weather.

Upon entry, the lobby is located adjacent to the administration 'suite of space' & the 'Heart', which forms a double height space. It is anticipated that the Main Entrance will be predominantly used by Staff, Parents & Visitors during the day.

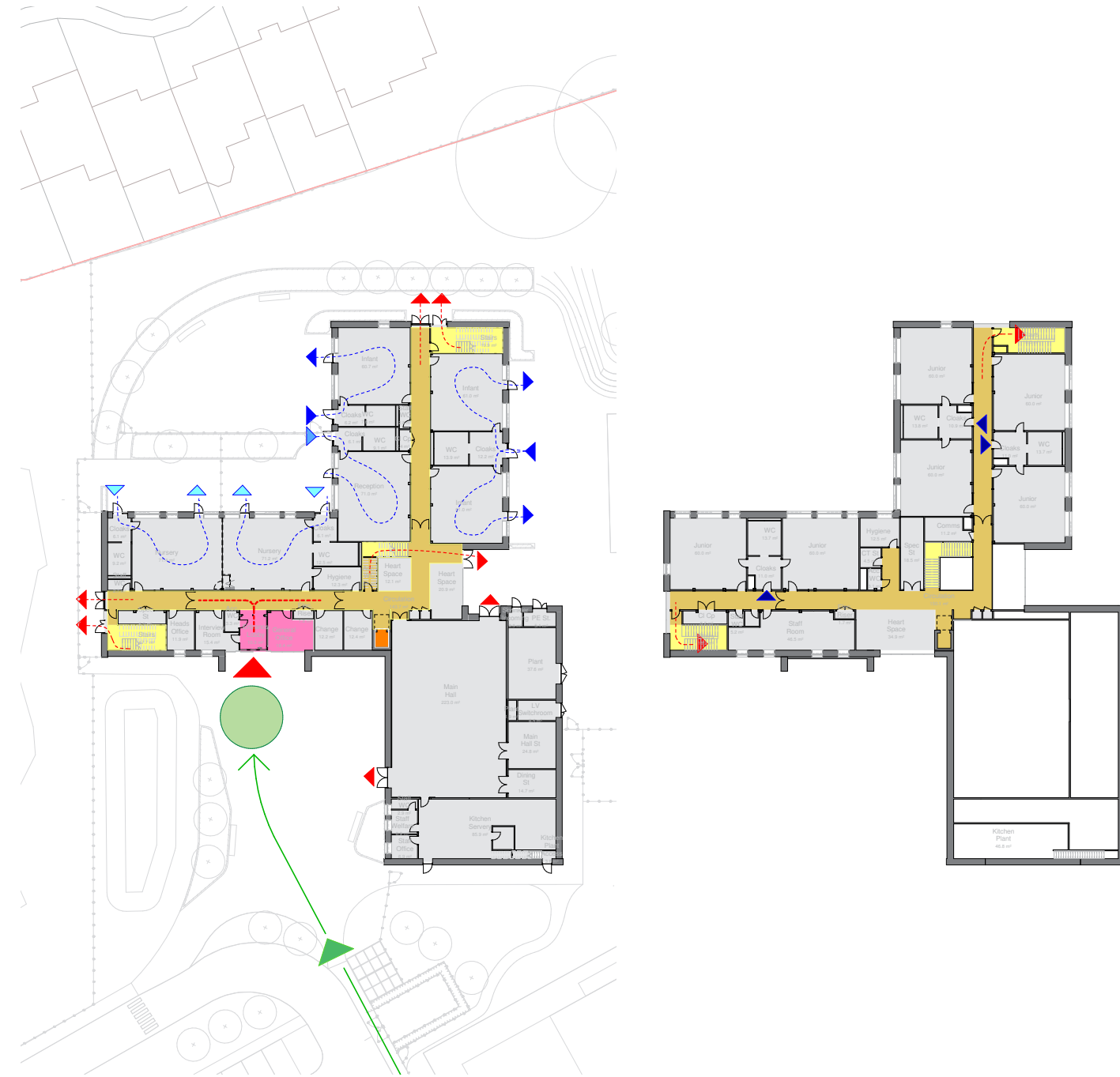
A secondary entrance in to the school, is via the external play areas in to the 'Heart'. As the Junior Classrooms are located on the first floor, this secondary entrance will be used by the older (Key Stage 2) pupils upon arrival, during the day for access to the play spaces & at the end of the day.

Entrances in to Cloak rooms & Classrooms, will also be accessed via the external landscape. A canopy will be provided above entry points to protect against weather. These will be predominantly used by Parents dropping-off / picking-up & by pupils during the day for direct access to their play space. The entrances in to the Nursery Classrooms will have good sight lines & visibility from the Main Entrance for security & passive supervision.

At the ends of the circulation routes, doors have been provided for direct external access. Similarly, doors leading out from stair cores at ground floor level have also been provided.

As part of the Fire Strategy & for additional access, the Main Hall has a set of double doors leading to the external. These have been discussed with the Fire Engineer for occupancy levels clear door widths.

The spine corridors, flow in between Classrooms within both wings. The corridors meet in the centre of the building to where the Heart spaces are located. The circulation has been kept as simple, direct & efficient as possible to provide clear views & passive supervision.



Circulation - ground floor

Circulation - first floor

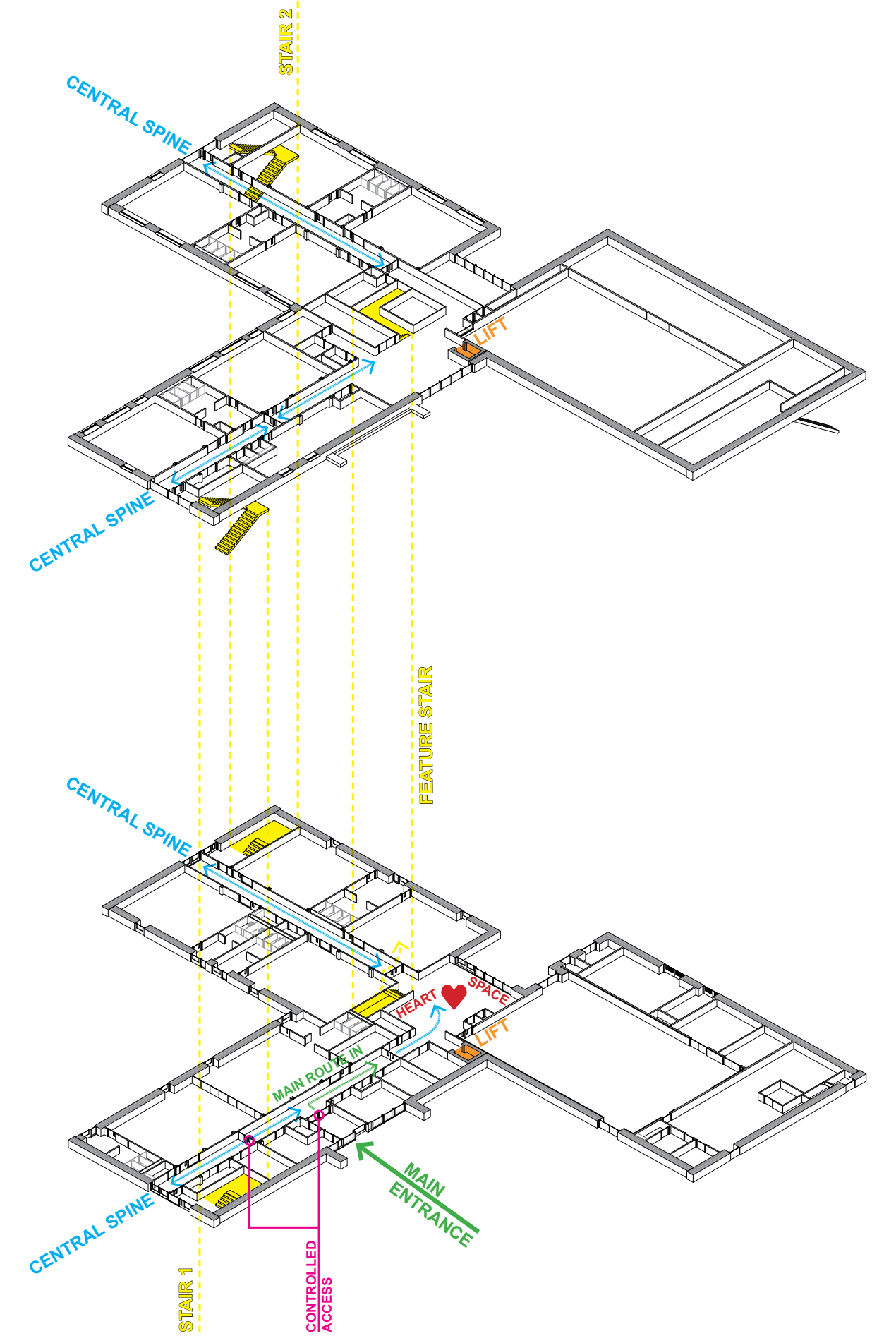


7.8 Vertical Circulation

The school design has incorporated stair cores at the ends of the classroom wings. The stair cores connect the ground to the first floor (primarily for Junior & staff access) although it is anticipated that the central accommodation will be used by the pupils in the first instance. The cores will also be used as escape routes, in the case of an emergency. Both cores have refuge areas & a door at ground floor level, directly leading to the external.

In addition, the central 'open' accommodation stair sits adjacent to the Heart spaces & is centrally located within the building. It is anticipated that this will be the main communication stair between the floors.

A lift has been located adjacent to the open accommodation stair, with a clear lobby provided in addition to the circulation route.



Vertical circulation diagram

7.9 WC Accommodation

The briefed ACR, SSB & Schedule of Accommodation noted the areas (sqm) to be provided for the pupil WC's, per age group.

The following is the provision shown at RIBA Stage 3 which has been discussed and agreed as the base strategy with the RCT Team.

Accessible Toilets/ Hygiene Facilities: Accessible toilets & Hygiene Facilities have been provided on both levels of the Pontyclun School.

Staff Toilets / Facilities: There is provision for staff-only toilets on both floors. The majority of the staff toilets are located near to the Staff Room at first floor.

Visitors / Community Toilet: There will be an Accessible toilet suite within the Main Entrance secure line – available for visitors & located adjacent to the Main Reception.

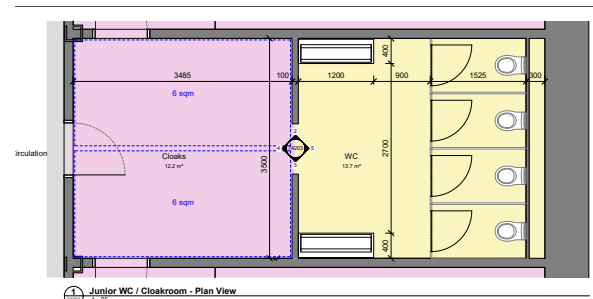
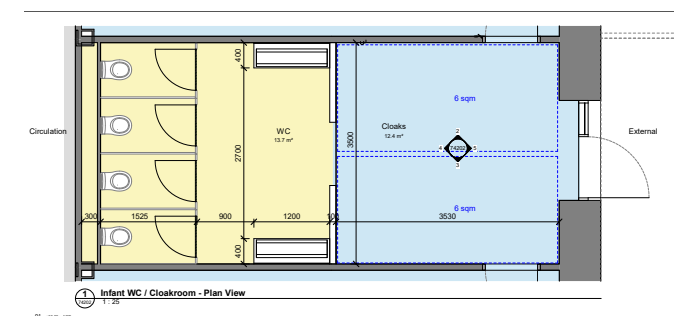
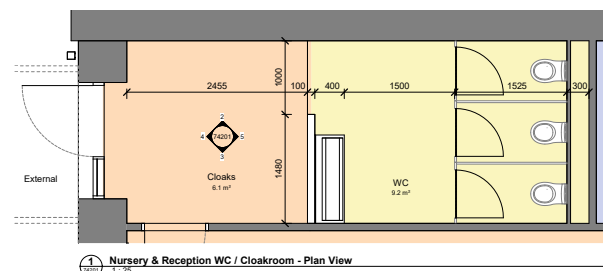
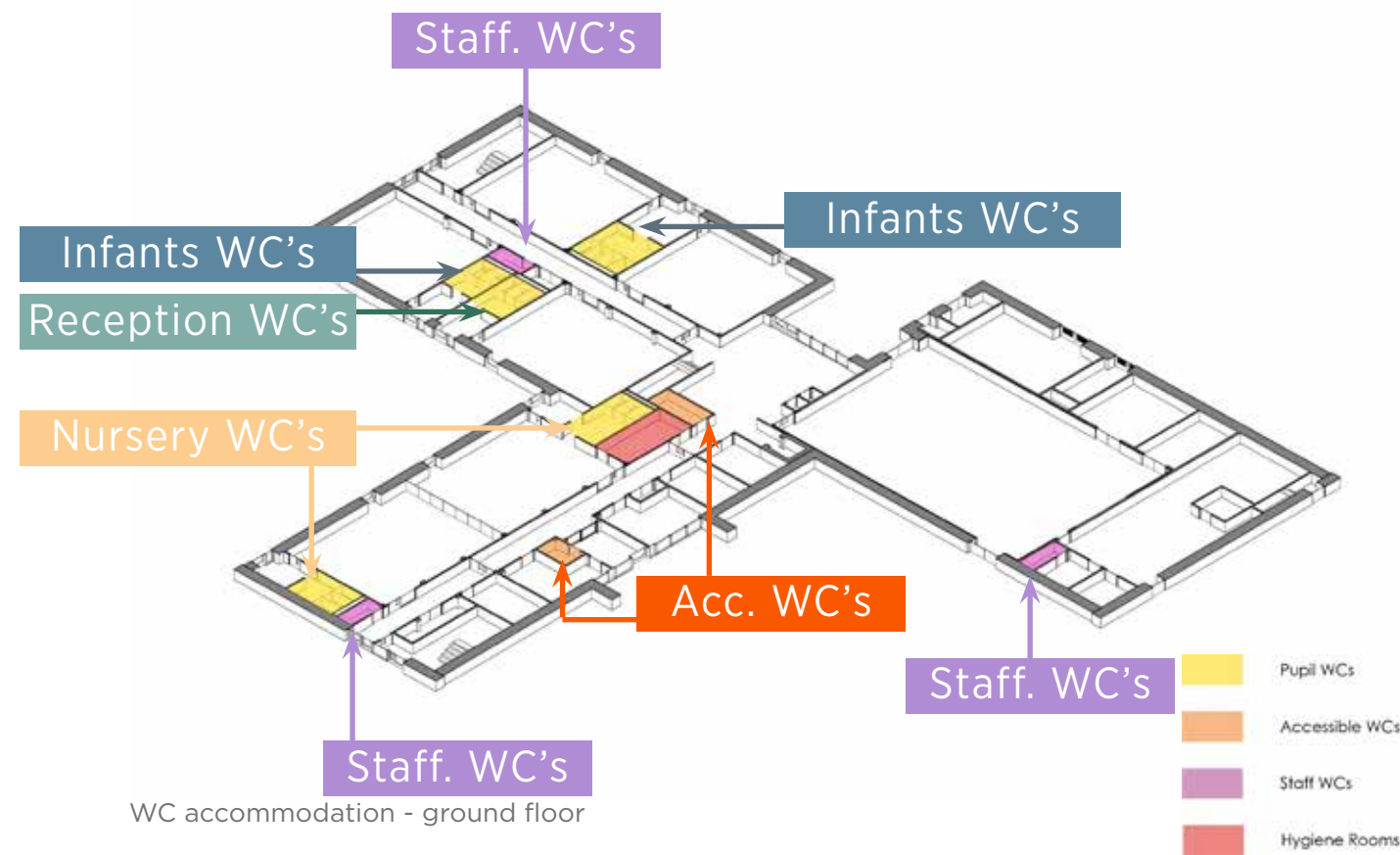
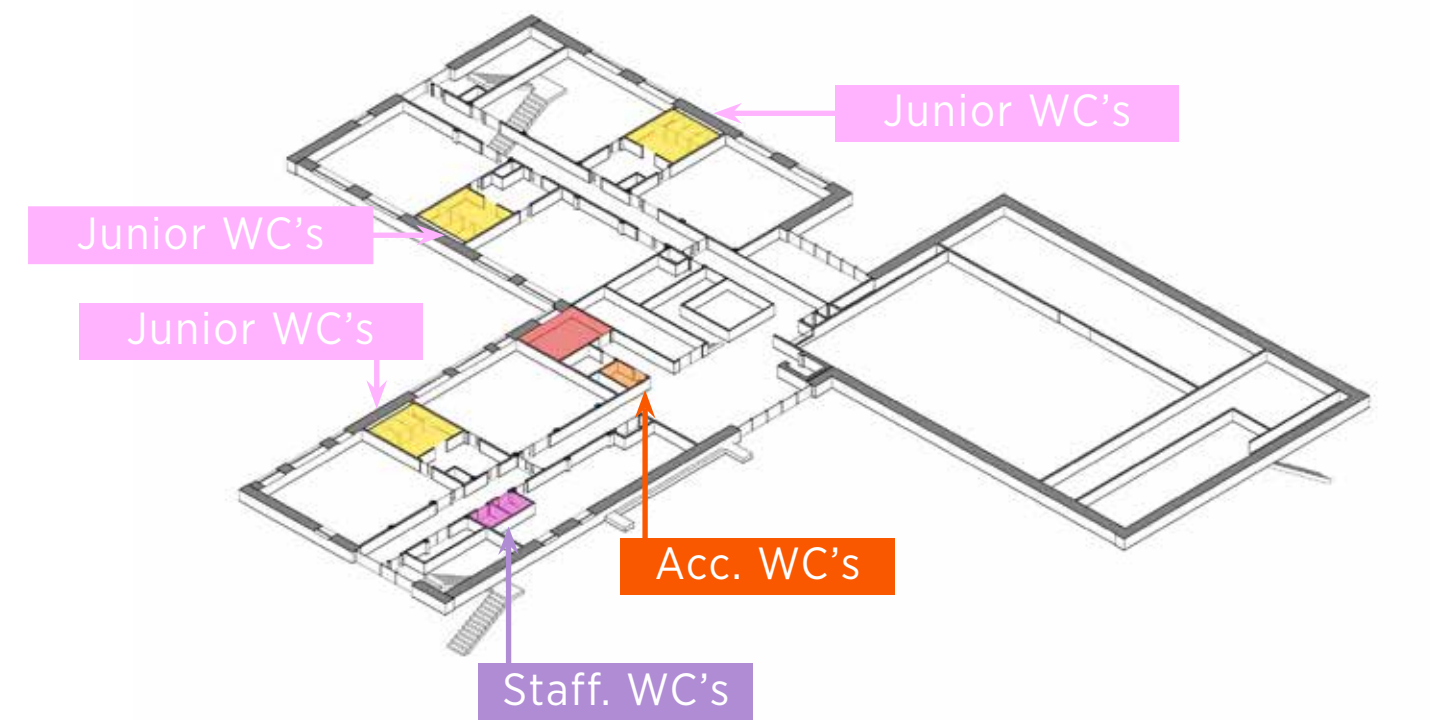
Pupil Toilets

Nursery: Non-gendered toilets with half height cubicle partition system, as appropriate. Toilets and Cloaks are arranged in a central block, accessed from external play & via each Classroom.

Reception: Non-gendered toilets with half height cubicle partition system, as appropriate. Toilets and Cloaks are arranged in a central block, accessed from external play & via each Classroom.

Infants: Non-gendered toilets with half height cubicle partition system, as appropriate. Toilets and Cloaks are arranged in a central block, accessed from external play & via each Classroom.

Juniors: Non-gendered toilets with full height cubicle partition system for privacy. Toilets & Cloaks are arranged in a central block, accessed from the corridor & Classroom.



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