Rhondda Cynon Taf
Llanilltud Faerdref Primary School

DRAFT

PLANNING DOCUMENT - DESIGN AND ACCESS STATEMENT

RH0301 -SRA-XX-XX-RP-A-00001

DECEMBER 2021

Status: S2 For Information / Rev P02 - Issued for Planning

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Client:
WEPCo (Welsh Educational Partnership Company)

WEPco

Precedent image: Covered play space

Contents

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 Rhonnda 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 Llanilltud Faerdref 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:

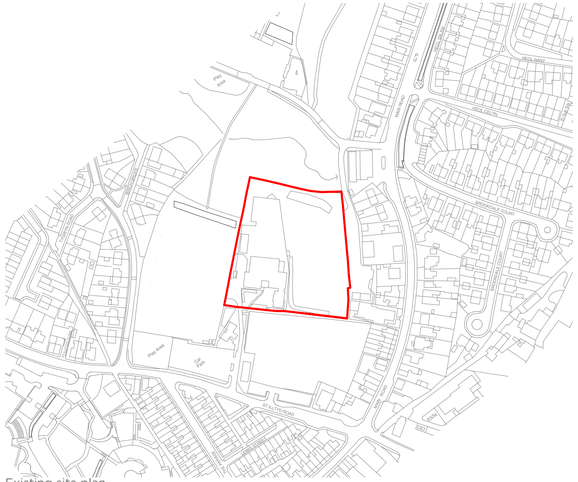
Participant	Rhondda Cynon Taf County Borough Council
Project name	RCT Primary School Batch
School Location	Llanilltud Faerdref. St. Illtyds Rd, Church Village, Pontypridd CF38 1DA
Age Range	3 - 11
Proposed Capacity	270 Pupils
Teaching Staff	18 (non-teaching staff 5)

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

The new Llanilltud Faerdref Primary School will accommodate 270 places in total, divided between: 1 x Nursery classroom, 1 x Reception classroom, 3 x Infant classrooms & 4 x Junior classrooms. Age ranges will sit between 3 - 11 years old, with 18 teaching staff & 5 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

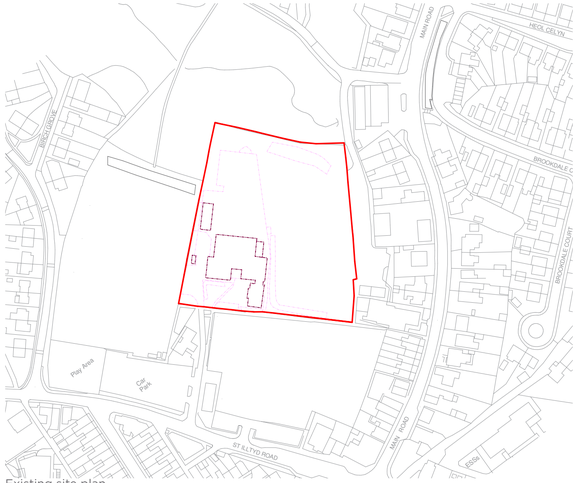
2.2 Location

Llanilltud Faerdref Primary School is located in a predominantly residential area, adjacent to Main Road & St Illtyd Road. The area to the north east is a combination of densely populated semi ancient natural woodland & sports grounds. The overall context is varied, with a mix of green spaces / vegetation, housing & small 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:	• 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:	• 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

- 1 x Nursery - 70m2
- 1 x Reception - 70m2
- 3 x Infant - 60m2
- 4 x Junior - 60m2
- Main Hall – 200m2
- Heart space – 62m2

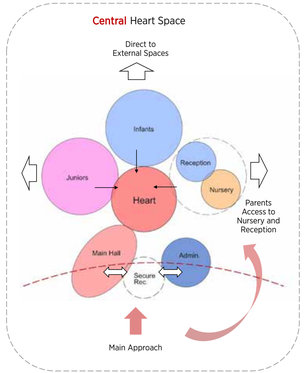
2.4.2 Brief Vision

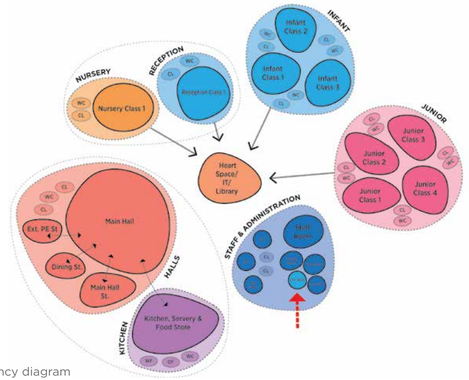
- School should be a suitable space for intellectual, creative, physical, social and community activity.
- The school should be lively and welcoming, a place that building users will make their own with an atmosphere and sense of scale that is not overpowering, impersonal, or institutional. The internal 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	•	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	•	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	•	The funding envelope includes provision for a new all-weather MUGA pitches
Site Investigation	•	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

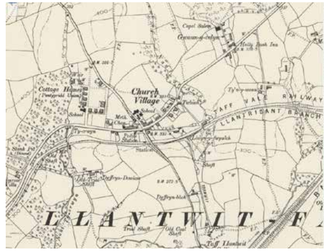
Llanilltud Faerdref is a large village and community situated on the A473 (Pontypridd to Bridgend) road near the Welsh towns of Pontypridd and Llantrisant. Llantwit Fardre is also the name of the old parish and the community area that takes in the villages of Llantwit Fardre, Tonteg and Church Village.

It is believed the name Llantwit Fardre is derived from an old Welsh Language name meaning The Church of St Illtud (Llantwit), on the Home Farm of the Prince (Faerdref) and relates to the land surrendered to the prince of the district by his subject to provide him with an income. Saint Illtud was a 5th-century Celtic priest who built his second church in the area where the present church stands. He was later famed as the Saint of the Five Keys of: youth, learning, chivalry, priesthood and knighthood.

The parish has a fairly well preserved 12th century motte castle with an intact moat called Tomen-Y-Clawdd, which is located in the parish village of Tonteg.

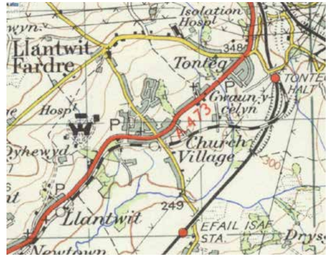
A station called Llantwit Fardre (and formerly Llantwit Dyffryn Red Ash Colliery) served the village on the Llantrisant and Taff Vale Junction Railway.

Industrialisation began in Llantwit Fardre in the late 17th century with the introduction of stone quarrying and coal mining. With the decline of coal mining the local demographic changed over a number of decades.



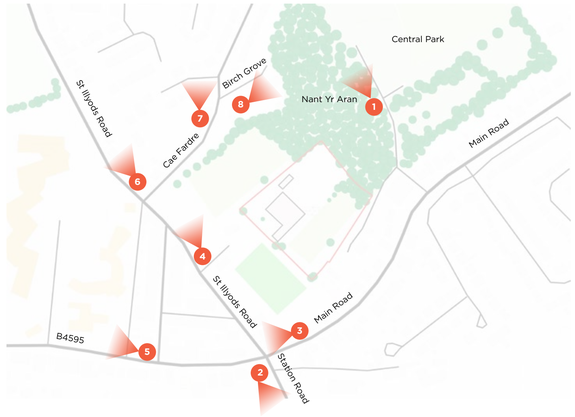
Llanilltud Faerdref 1888 - 1913

Llanilltud Faerdref 1937 - 1961



Llanilltud Faerdref 1955 - 1961

3.2 Surrounding Area



View along Main Road

View along St Illyods Road

View along B4595

View along St Illyods Road

View off Main Road

View along Station Road

View along Cae Fardre

View along Birch Grove

3.3 Immediate Area

Immediate Context trees and road pattern

Entrance

View across playing fields

Playgrounds

View from North

View towards current main entrance

View from South

View from East

View towards existing vegetation

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
- 15 meter buffer zone to adjacent semi ancient natural woodland
- Combined Sewer easement
- Areas with elevated risk of pluvial flooding

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

Building in this location of the site makes the most of the opportunity to create a positive relationship between the school grounds and the Semi Natural Ancient Woodland. It also allows the main approach to the school to continue to be on the western boundary with a strong link to the building entrance and re configured parking and service arrangement.

Topography

The site is gently sloping with some steeper embankments in places. There is an overall level change of approximately 6m. The highest part of the site is around +106.6 m AOD on the western boundary near the main entrance and the lowest part of the site is around 101m AOD at the eastern boundary of the site where the land falls away toward the Semi Ancient Natural Woodland.

Constraints diagram

Buildable area

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.

Shelter structures for external spaces are integrated within the building façade, in addition there is a free-standing shelter in the Key Stage 1 play area.

The nursey 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 the west of the building. The Key Stage 1 and 2 play areas are to the north and east whilst an external area with a strong relationship to the heart space is provided on the south of the building.

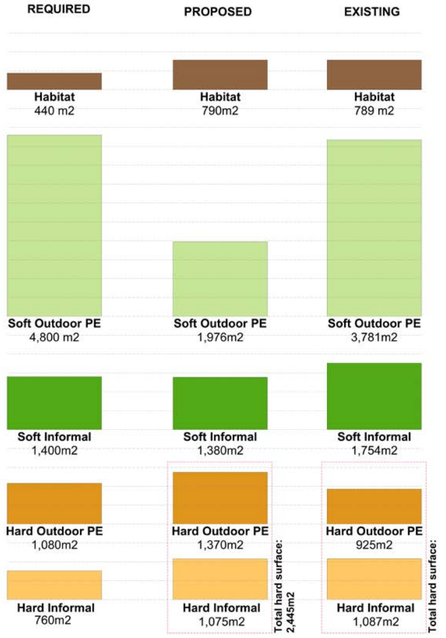
The play areas comprise hard surfaces finishes, grass areas, planting and trees. Care has been taken in the design to place any grass and planting, so it responds to pupil movement and play.

Proposed Landscape Masterplan

4.2 BB88 Analysis - External Areas

An analysis of externals areas has been undertaken in relation to Building Bulletin 99. This gives us confidence that the site can accommodate all the hard and soft social spaces, and hard courts for a site with this number of pupils. The new playing field will be of equal size and quality to the existing.

A new Multi Use Games Area (MUGA Macadam) is proposed. This will be a fully fenced 2 court macadam MUGA located in the north east corner of the site but with direct access to the hard play.



BB99 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 pubic and deliveries during the school day whilst ensuring that the schools and playgrounds remain secure.

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

Secure Line Diagram

4.4 Movement Routes - Pedestrian and Vehicle

The site access for all vehicles will be via the existing entrance from Llityds Road, the current pedestrian route from the Main Road to the south will also be retained. The proposals is for 23 parking spaces,with 20 number covered cycle spaces. The carpark is organised to provide accessible parking bays and visitor parking in proximity for the main entrance. The carpark also gives access to kitchen deliveries, bins. Maintenance access to sprinkler tanks would be via the gate at the eastern corner of the site

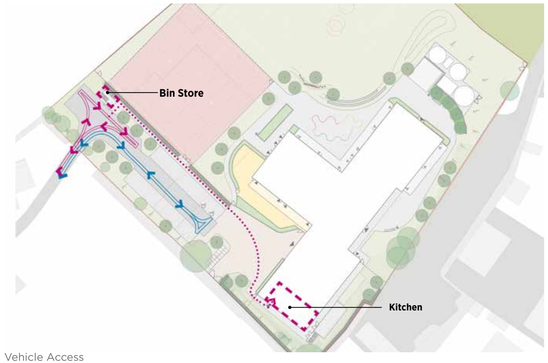
The bin store will be located at the north of the carpark for ease of access by bin lorries, and additional external bins store will be provided near the kitchens. Waste can be ported from this location to the carpark bin store.

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.

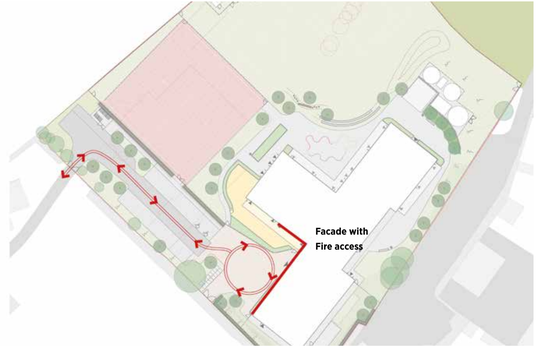
The Nursey is at the front of site, so it is convenient for parent pick/up drop off during the main school day.

There is a separate route for pedestrian access to the play areas for older pupils allowing for classroom pick up / drop off at end and start of school day that does not cross the play space for nursery or reception. As discussed with the school during the CEM process there is the ability to create a one-way pedestrian loop around the school at pick up and drop off time.

Pedestrian and Cyclist



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 Goverment Authority Construction Requirments (ACR's) and also through Consultation with the school and RCT.

The intention is that the proposed planting is appropriate for it's 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.

KEY:

Existing tree retained

Existing tree removed

Proposed tree
To include native species as RCT tree policy indicates. Single species not to exceed 10% as a climate change resilience measure. Trees on rain gardens to have tolerant of drought and water-logging

Proposed amenity grass
Mowed regularly to allow activities and play opportunities

Proposed Bio-diverse grass area
To inviude bulbs; grass seeds to be sown at less rate to allow natural regeneration of native seedbank. Moved less ragularly.

Rain Gardens
Proposed planting species in line with RCT biodiversity policies and feedback. Species capable of tolerating drought and water-logging periods

Woodland Enhancement Planting
In line with RCT biodiversity policies and feedback

Proposed hedge
Comprised of more than one native species

Planting Strategy Diagram

4.6 SUDS Strategy

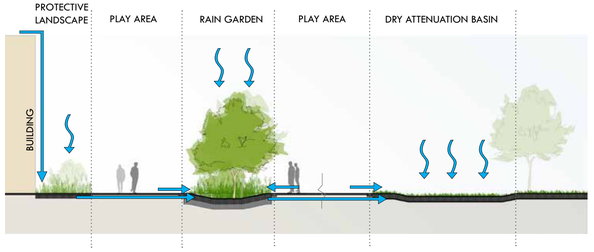
The SuDS network for the site comprises the following strategies:

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 (Section2) have this function.

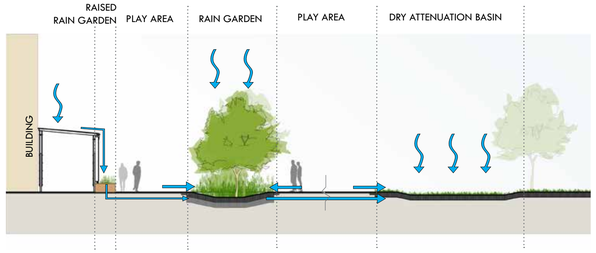
2. Rainfall continues to be treated through rain gardens, then some runoff will infiltrates to the ground.

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



SECTION 1



SECTION 2

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 South

View Looking South

View Looking West

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

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 three key constraints were: the surface water sewers, maintaining a buffer to the ancient semi-natural woodland & the school requiring to stay operational during the construction phase. This led to a single 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 comfortably within the 'buildable area' - allowing for context and surrounding parameters,

Due to the size of the school, a single storey building was concluded early on in the process, as being the most appropriate.

Llanilltud Faerdref Primary School CEM 1 SUMMARY – Buildable Area

Llanilltud Faerdref Primary School – (South) One Storey Massing Testing

Proposed Capacity
270 (3-11)

GIFA
1,555 m2

Llanilltud Faerdref Primary School – (South) Two Storey Massing Testing

Proposed Capacity
270 (3-11)

GIFA
1,555 m2

Approx. GF
1000 m2

Approx. FF
555 m2

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:

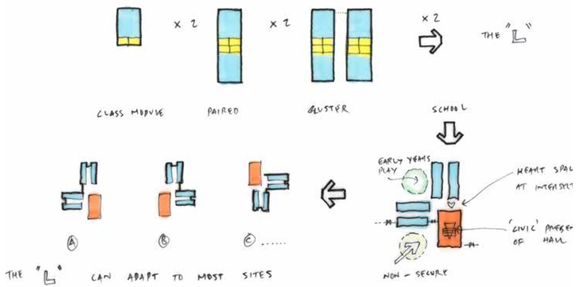
- Cluster approach: teaching spaces clustered around mini-heart areas.

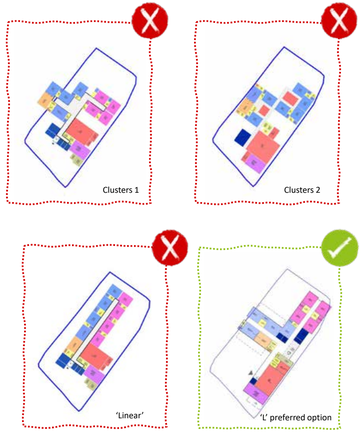
- Linear approach: linear classroom arrangement with main hall block adjacent.

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.





5.3 Design Principles & Concept

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

- That the new Llanilltud Faerdref 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 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.
- 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 Layouts

The General Arrangement (GA) proposal for Llanilltud Faerdref 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 progress as a single storey building. The existing school would also remain operational during the construction phase.

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.

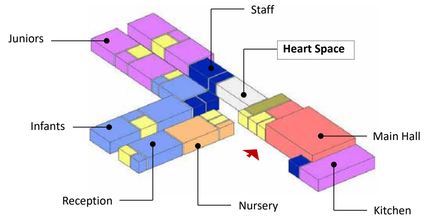
The 'Heart' space has been positioned at the 'elbow' and adjacent to the main access route to the play spaces. This centralised location would allow natural light to penetrate whilst providing views out.

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 Juniors year group. 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.

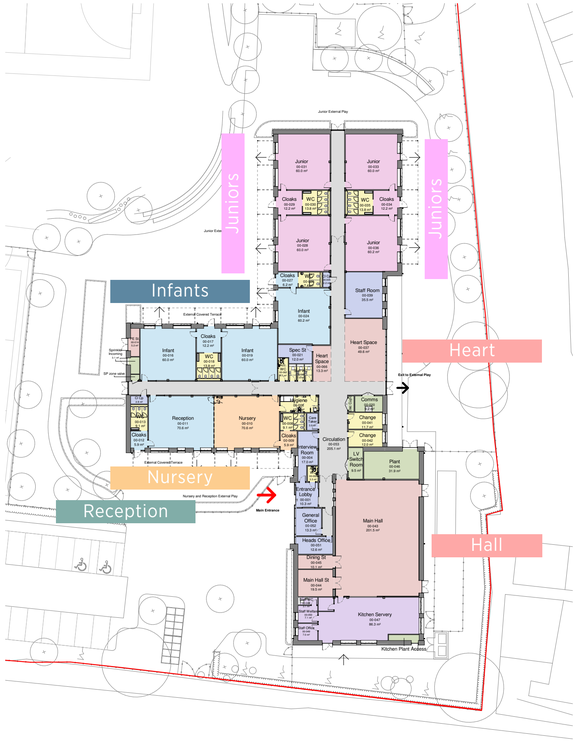
The locations for the different parts of the school building have been carefully considered - in line with their dedicated external learn/play spaces. These were developed in parallel with the site security strategy.

Proposed site plan



3D layout

5.5 General Arrangement



Ground floor plan

5.6 Internal Views

Heart space

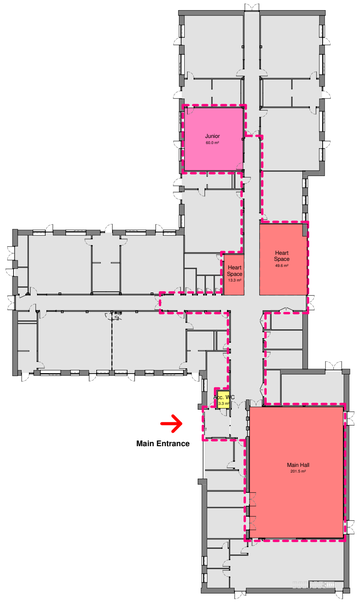
Heart space

Heart space

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 strategy - ground floor plan

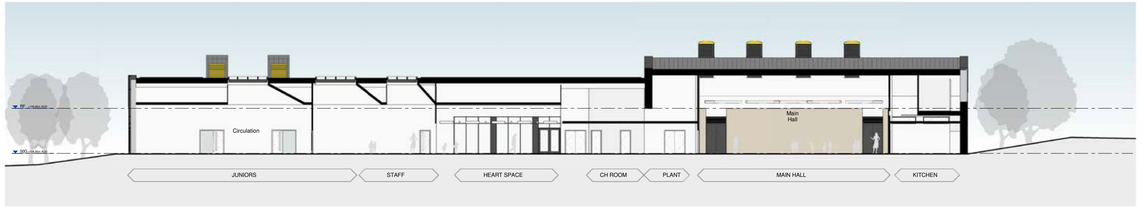
5.8 Day Lighting Strategy

KEY

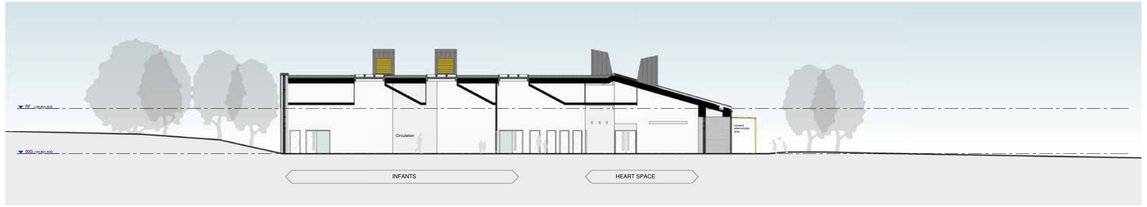
- Rooms with access to natural daylight and views
- Rooms with access to natural daylight
- Rooms with no access to natural daylight or views
- Circulation route with no access to natural daylight or views
- Circulation route with access to natural daylight

Day lighting strategy - ground floor plan

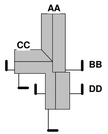
5.9 Building Sections



Section A-A.



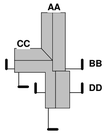
Section B-B.



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

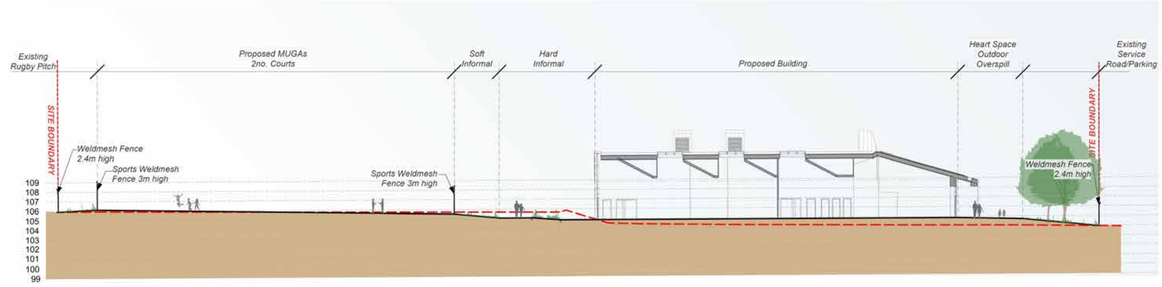
Section D-D - Typical Section Through Wing.

Section C-C - Entrance and Main Hall.



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

5.10 Site Sections

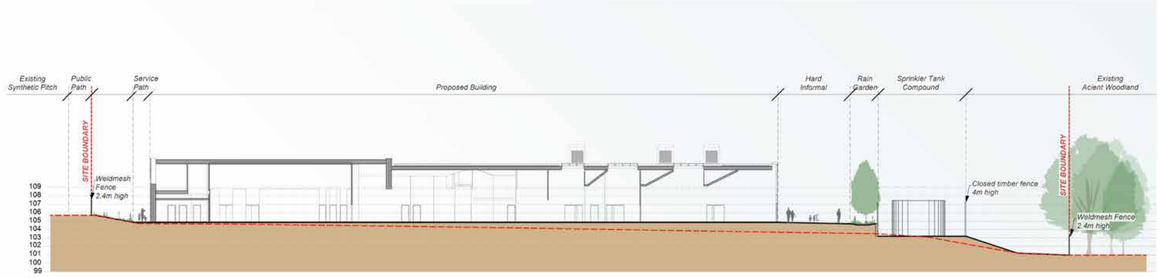


1 Section 1-1
Scale: 1:200

Location Plan
NTS

Existing Ground Line

Proposed Ground Line



2 Section 2-2
Scale: 1:200

Location Plan
NTS

Existing Ground Line

Proposed Ground Line

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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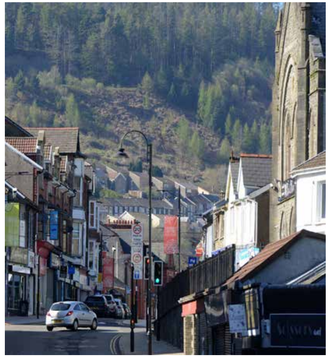
5.12 Context Precedents



5.13 Building & Materials Precedents





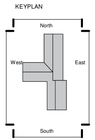





5.14 Elevations

Elevation - west

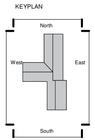
Elevation - north



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

Elevation - east

Elevation - south



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 Llanilltud Faerdref 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 base 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.

A standing seam roof has been proposed. This continues down the face of the facade. 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 - whist 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 the school 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.

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

5.16 Materials

5.16.1 Materials Palette

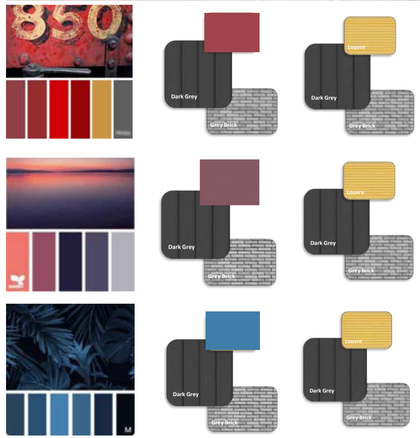
The material palette for the school have been carefully considered & reviewed. Having explored a range of different cladding materials, timber was rejected due to the level of maintenance required & eventual weathering of the material.

Via the CEM process, it was agreed that a brick base 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 building.

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.



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 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.

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5.17 External Building Views

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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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 02 shall meet the emission limits, testing requirements and any additional requirements listed in the Hea 02 criteria in order to achieve one credit for Hea 02 Emissions from Construction Products
- Responsible sourcing certifications – specifications will require that more than 20% of available BREEAM Mat 03 points will be achieved through procurement of materials from manufacturers with a BREEAM Mat 03-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 01 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
75.98%	93.52%
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.
- Equipment will be zoned in such a way as to allow plant to be turned off or enable out of hours setback in appropriate unoccupied spaces.
- 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 Llanilltud Faerdref School, and it is therefore not expected that 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 from Llityds Road, the current pedestrian route from the Main Road to the south will also be retained. The proposals is for 23 parking spaces,with 20 number covered cycle spaces. The carpark is organised to provide accessible parking bays and visitor parking in proximity for the main entrance. The carpark also gives access to kitchen deliveries, bins. Maintenance access to sprinkler tanks would be via the gate at the eastern corner of the site

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.

-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 schools footprint occupies a good portion of the site. 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 from the external play area, is via 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.

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 spaces' & the 'Heart'. It is anticipated that the Main Entrance will be predominantly used by Staff, Parents & Visitors during the day.

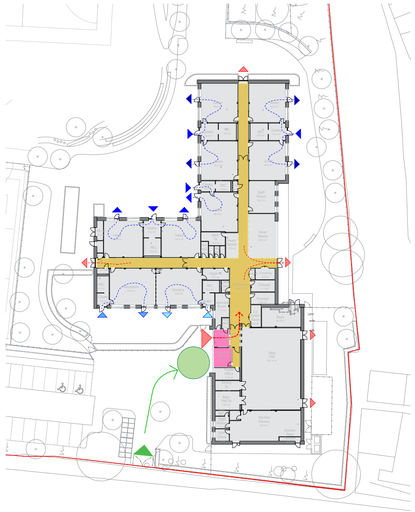
A secondary entrance in to the school, is via the external play areas in to the 'Heart'.

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 & visability from the Main Entrance for security & passive supervision.

At the ends of the circulation routes, doors have been provided for direct external access.

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.

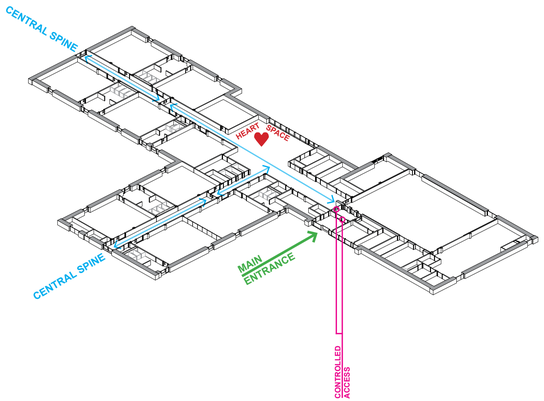
The spine corridors flow in between Classrooms within both wings. The corridors meet in the centre of the building to where the Heart spaces are located. The circulation has been kept as simple, direct & efficient as possible to provide clear views & passive supervision.



Circulation - ground floor

7.8 Vertical Circulation

As Llanilltud Faerdref is a single storey building, there is no need for vertical circulation. However, opposite shows the 'central spine'.



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.

Staff Toilets / Facilities: There is provision for staff-only toilets. The majority of the staff toilets are located near to the Staff Room.

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.

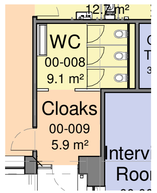
Pupil Toilets

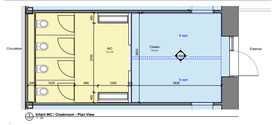
Nursery: Non-gendered toilets with half height cubicle partition system, as appropriate. Toilets and Cloaks are arranged in a central block, accessed from external play & via each Classroom.

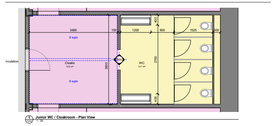
Reception: Non-gendered toilets with half height cubicle partition system, as appropriate. Toilets and Cloaks are arranged in a central block, accessed from external play & via each Classroom.

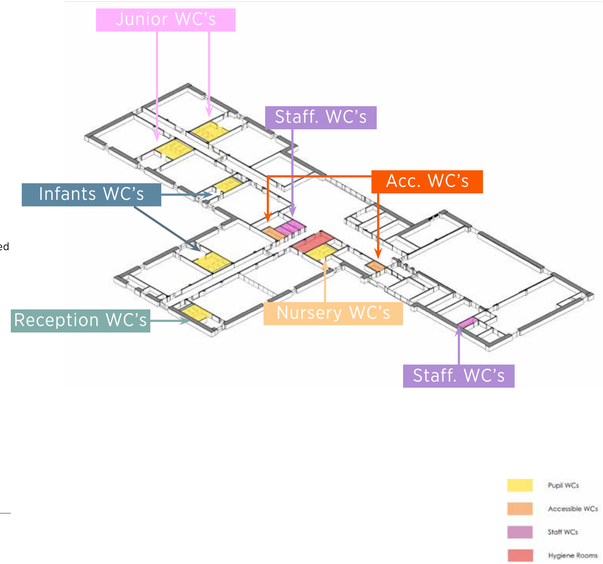
Infants: Non-gendered toilets with half height cubicle partition system, as appropriate. Toilets and Cloaks are arranged in a central block, accessed from external play & via each Classroom.

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.









Precedent image: Heart Spaces

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