Faifley Campus | West Dunbartonshire Council

Learning Estates Investment Programme | Feasibility Report

Appendix 3

May 2021

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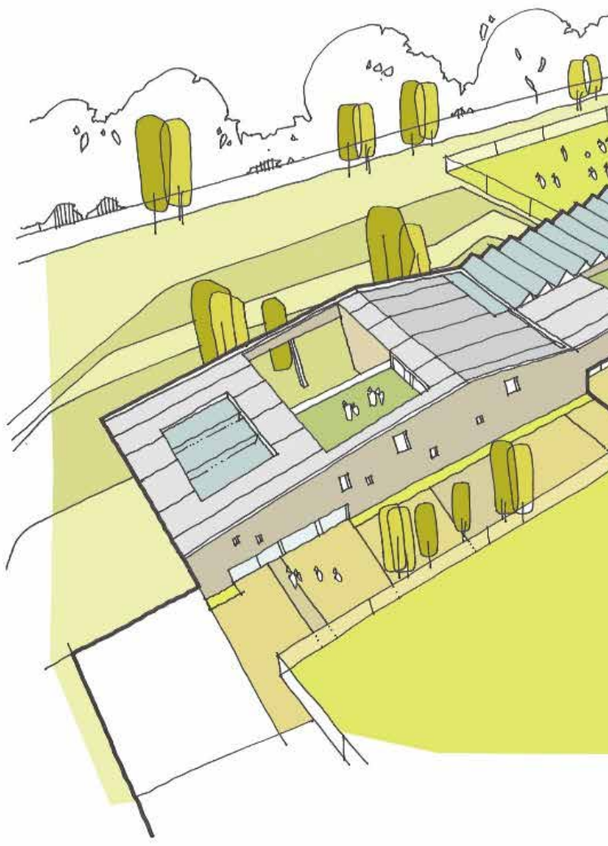
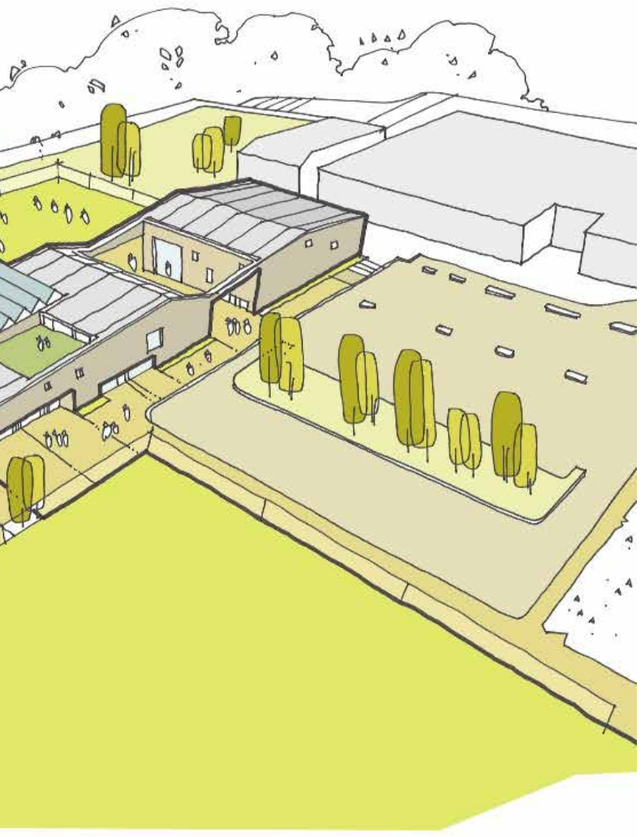
Contents

1 Executive Summary / Project Definition

An opportunity to create an optimised centre for learning, and a sustainable, and inclusive community asset





West Dunbartonshire Council has an aspiration to co-locate both local schools and community services in a new environmentally sustainable building in Faifley.

The current primary school buildings at St Josephs and Edinbarnet require to be renewed due to their condition and replaced with new accessible facilities that are designed to deliver the Curriculum for Excellence. The Skypoint Centre, which provides local community services, is under-utilised and has reached the end of its serviceable lifespan.

The new facility will be a significant investment by the Council in the area and improve services for local people by co-locating education and community facilities under one roof. It will significantly reduce on-going maintenance and running costs of the existing separate facilities and it will respond to the Scottish Governments Climate Change Bill to target net-zero carbon emissions by cutting greenhouse gas emissions by 2045.

This report analyses the potential site locations at Edinbarnet and St Joseph's Primary Schools and the Skypoint Centre Site. It considers the best location of the building to reduce impact on neighbouring housing whilst maximing the orientation and form factor that will be crucial in achieving the Passivhaus energy efficient design.

West Dunbartonshire Council will make an application for funding to the Scottish Governments Learning Estate Investment Programme (LEIP). The date for funding submissions has been delayed due to the pandemic and although still to be confirmed is anticipated by the end of 2020/ early 2021.

The report is designed to address the specific funding requirements set out in the LEIP funding 'Readiness Questionnaire Template'. It addresses the key funding criteria and the Councils approach to:

- Site options appraisal
- Scottish Futures Trust Funding Metrics & Budget
- Programme
- Future maintenance & whole lifecycle cost
- Low carbon construction approach
- Digital Strategy

The costs for all three options have been provided, which take into consideration the development and construction programme requirements to have the building operational by early 2025.

The Council will consider the report and make recommendations for the preferred site through a site options appraisal. The design team will be appointed in Summer/ Autumn 2021 and will develop the design to feasibility level for further consultation.

Faifley

Situated in the North West of Glasgow, Faifley is a small town which forms part of the wider settlement of Clydebank, with a population of around 4,000 residents.

With an elevated position within the Kilpatrick Hills, the town offers some commanding views across the West of the City towards Renfrewshire, and enjoys close proximity to surrounding woodland and local nature reserves.

A large percentage of social housing forming the built environment within the town, and owing to its elevated position and limited connectivity to surrounding area, community and social facilities are crucial to the town and the delivery of vital services to the area.

The town is currently served by two primary schools, both of which are linked to the three churches within the settlement. Edinbarnet Primary School is the Nondenominational education centre, linked with the White Church and Faifley Community Church, whilst the Denominational Primary School, St Josephs, is linked to the church of the same name.

West Dunbartonshire Council also operate the 'Skypoint' Centre within the town, which offers a range of community facilities, including learning support, social enterprise, support services, along with the offices of Faifley Housing Association. This building is located within the centre of the town, and links to the urban and social fabric of the area.

The main arterial route travelling through the town is Faifley Road, which offers frequent and efficient bus connections to West Dunbartonshire and Glasgow. This route also forms the commercial spine of the settlement, with small retail units, convenience shops and businesses located there.

Whilst the town is served by a number of community facilities as noted above, the condition of the buildings, and their suitability to offer an appropriate environment for living, learning and working is reaching the limit, with serviceable lifespan now uncertain.

This report explores, the current locations and site complexities of the existing facilities, the challenges of a tandem build and how these could be addressed through the provision of a joint campus. This opportunity to co-locate services, with the delivery of new state of the art primary schools, would allow the council to re-energise the 'heart' of Faifley and improve service delivery through the significant investment into the town. Aligned with the Scottish Governments plan for carbon zero the intent is to create a low-carbon energy efficient building which will reduce future running costs and demands on Council revenue budgets.

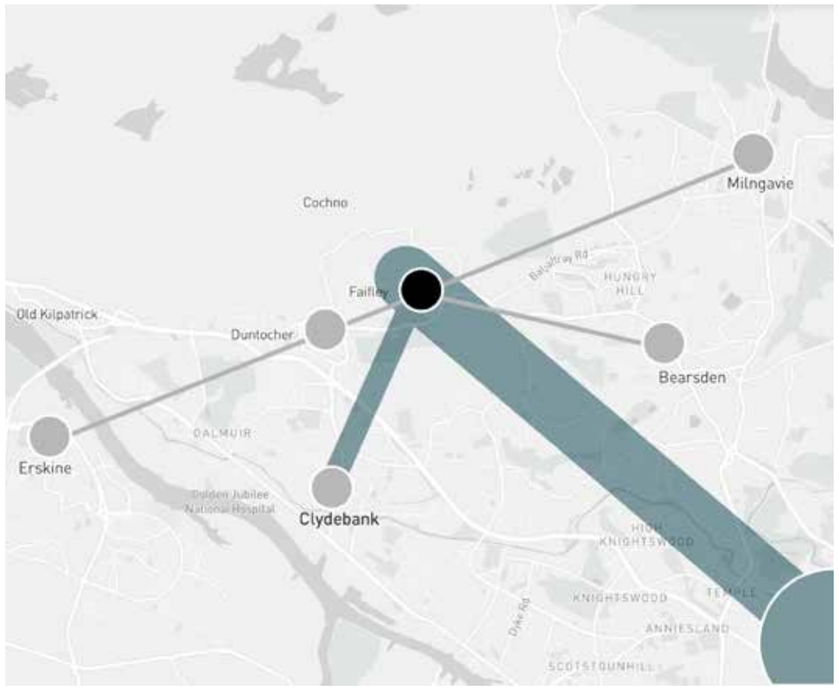
The ambition of this project would be the creation of an accessible and inclusive community hub, fully integrated as part of the local community, and drawing together key support services within a single location.

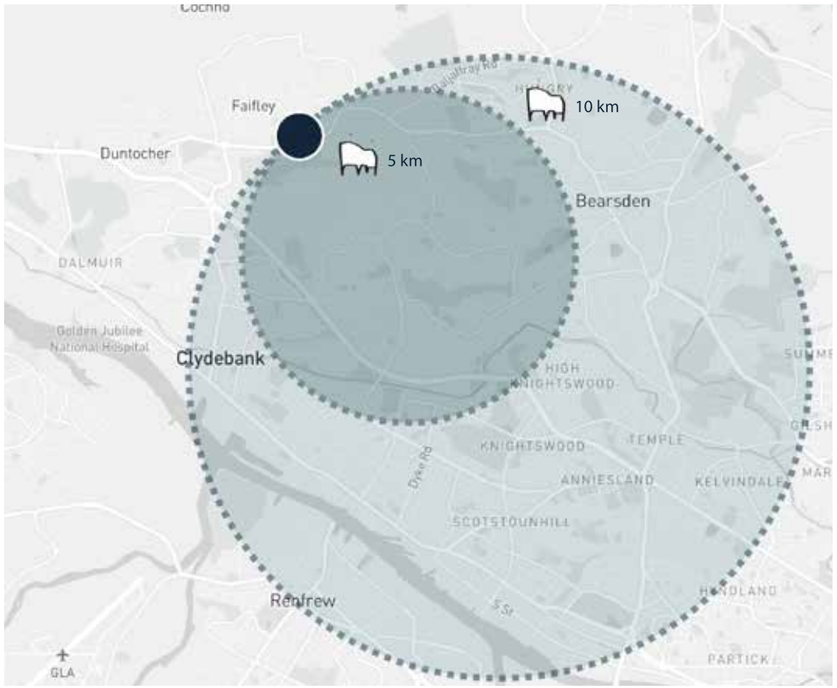
Faifley

The diagram highlights the key services within Faifley, with all uncoloured areas primarily residential. It is clear from the assessment of the town, that, with exception of a small group of shops and commercial units, shown in blue, along Faifley Road, the community facilities and religious centres, shown in red, form the key services within the town. The abundance of local recreation space and access to open natural landscape should not be ignored, with the woodland to the North and South offering an outstanding setting for both the town, and potential connectivity of any new community building.

The assessment of key services however, highlights both how dependant and vital the community services are within Faifley, along with the dependance that is currently placed on neighbouring settlements for core commercial and retail facilities. This assessment aligns with the data available from the most recent Cencus information, recognising key demographic trends within Faifley, against the National Scottish average.

With limited commercial functions in the town, availability and diversity of employment within the town is severly limited, with the expectation that the majority of working population would travel to neighbouring towns or the wider Glasgow conurbation for work. This highlights the likely demand for extended day provision within educational settings, to allow parents the opportunity to travel to/from their place of employment, whilst ensuring sufficient childcare. A new joint campus and community hub would serve to revitalise the town, bringing the opportunity for enhanced learning and support for parents and pupils, improve service delivery and offer the opportunity to bring highly valued employment, training and vocational opportunities to this area.


Cochno
Milngavie
Faifley
Duntocher
Old Kilpatrick
Bearsden
Erskine
Clydebank
DALMUIR
HUNGRY HILL
HIGH KNIGHTSWOOD
KNIGHTSWOOD
TEMPLE
ANNIESLAND
SCOTSTOUNHILL


Faifley
10 km
5 km
Duntocher
Bearsden
DALMUIR
Clydebank
HUNGRY
HIGH KNIGHTSWOOD
KNIGHTSWOOD
TEMPLE
ANNIESLAND
KELVINDALE
SCOTSTOUNHILL
Renfrew
PARTICK
GLA


Edinbarnet Primary School
1.
Faifley Rd
Ferchy St
Abbotslaw Rd
Faifley
0.5 km
1.0 km
1.5 km
2.
St Joseph's Primary School
Lomos Dr
3.
Abbotslands Rd

Faifley Family Sculpture, 'Mother and Daughter' by Andy Scott.

Site Options Appraisal

In considering the location for the new community campus, three sites have have been appraised, highlighting the constraints and opportunities presented by each, the viability of a tandem build, and studies examining how each site could integrate within the wider townscape and enhance the sense of place.

Similarly, studies addressing issues of connectivity, services suitability, infrastructure and ground conditions have been reviewed, to allow an informed decision around site suitability ensuring the right site is selected which optimises the investment.

The three sites being considered are as below;

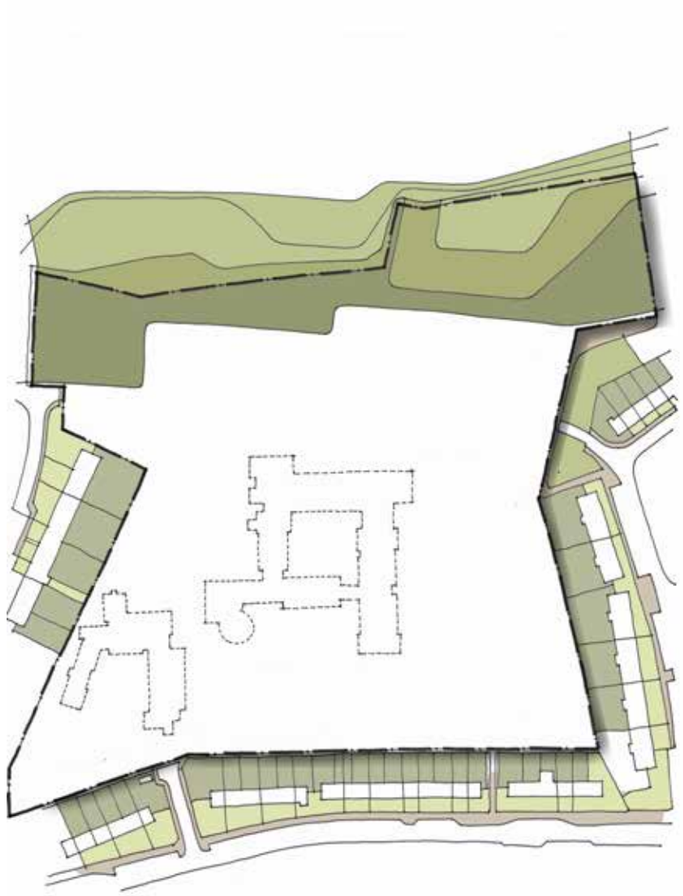
- Edinbarnet Primary School + Auchnacraig Early Learning Centre
- St Josephs PS
- Skypoint Community Centre

The sites have been explored with the ambition of developing a new joint campus facility through 'tandem build' construction, mitigating any associated decant and relocation costs.

The architectural assessment outlined is the result of site visits and context analysis, along with desktop studies, to propose a site layout, and offer guidance on the suitability of each site for development.

This site options appraisal is enhanced through assessment of existing utilities and infrastructure, site investigation, environmental analysis and early consultation with key Council stakeholders such as Planning, Roads and the Energy Compliance team. The study proposes the most suitable location for the development of the new campus and recognises the key metrics that must be met, to align with the Learning Estates Investment Programme ambitions and measurable project deliverables.

Site 1: Edinbarnet



Place + Community

Edinbarnet Primary School and Auchnacraig Early Learning Centre is located to the North of Faifley, elevated above Faifley Road, and with an outlook to the North towards the Cochno woodland and the Kilpatrick Hills.

This large site, of circa 43,000m2 has limited connectivity to the townscape and 'streetlife' of Faifley, as it is largely landlocked by housing to the West, South and East boundaries.

The current approach, via vehicular access and separate pedestrian footpath, from Faifley Road are discreet, with a view of the existing facilities only achieved at point of access to the site, making accessibility more challenging.

The site offers potential for creation of a new facility however, with the proximity to Faifley Road ensuring good links to public transport, within 100m of the site boundary and, on initial inspection, space available around the existing structures for redevelopment.

The connection to the woodland to the North would also enhance opportunities for outdoor learning, for both early years and primary school pupils, which would be exploited in the development of the new school.

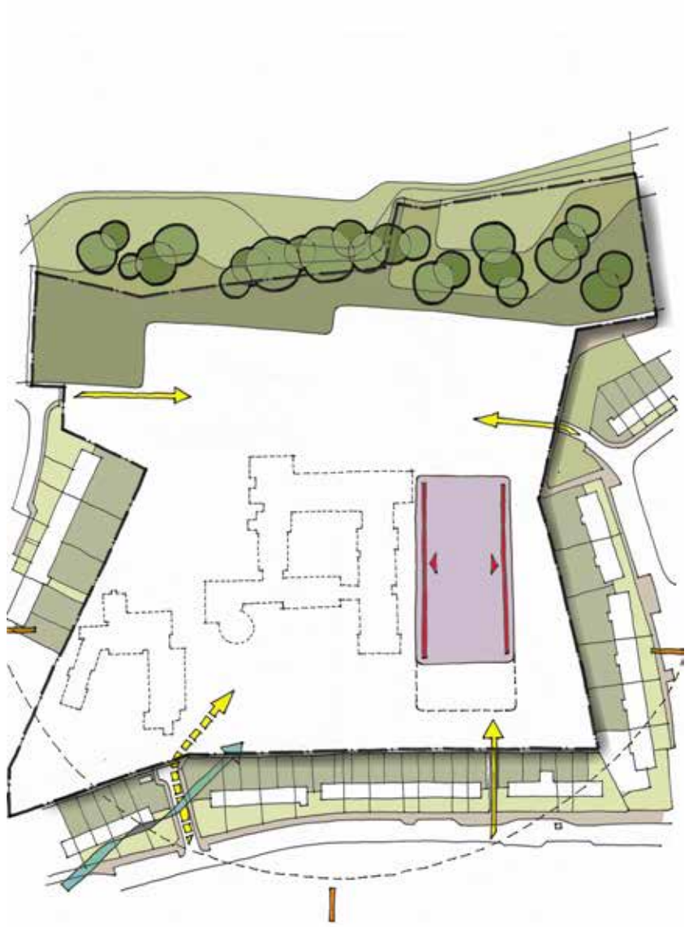
Constraints

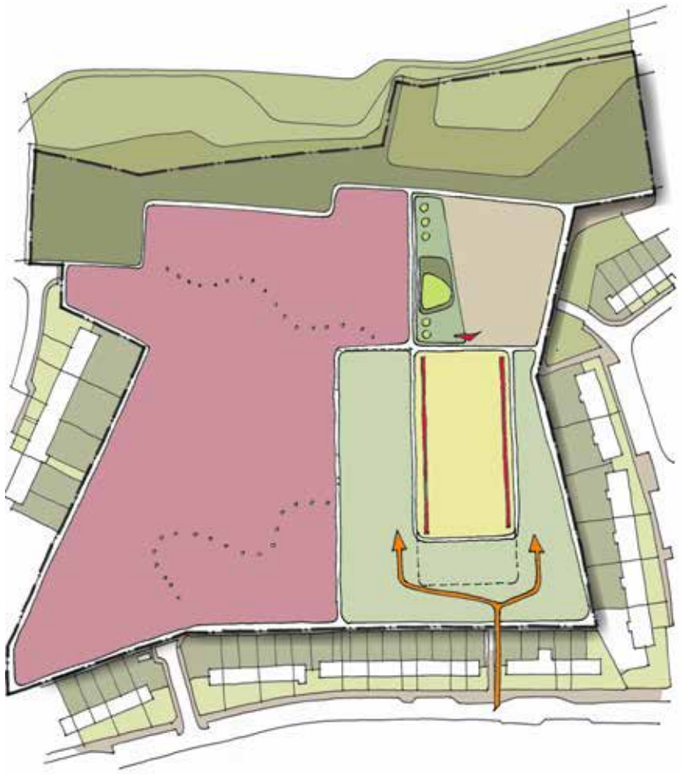
Whilst initial review of the site identified a large area for potential development, there are several constraints that limit the opportunity for new construction or have the potential to add significant costs to development in the location.

The northern portion of the site, beyond the current school building, is largely sterilised owing to the three high level overhead electrical cables that traverse the site from West to East. As discussed more fully within the Services section of this report, burying of these services would attract a significant cost, whilst retaining the current arrangement would severely limit the opportunity for development in this area, to car parking and service yards. A further challenge, explored more fully within the Services section, is the position of a major water trunk main pipework beneath the Northern portion of the site which, owing to wayleave agreements, will further restrict the opportunity to develop this area.

Whilst the topography of the site offers a largely flat area for construction, the elevation of the site, and incline from Faifley Road presents an area of steeply sloping ground to the South boundary. An incline of circa 3.5m would require a more complex civil design if developing this portion of the site, whilst privacy and overlooking issues would need to be addressed when building on the plateau at the centre of the site, to ensure surrounding housing is not adversely impacted.

Finally, to ensure a new campus in this location is fully integrated as part of the community, the approach and connectivity to Faifley Road would require to be addressed, to ensure an accessible and inclusive facility is created. Whilst the position of surrounding housing will make this challenging, the existing vehicular access could be enhanced, and the pedestrian footpath regraded to ensure full DDA access is offered.





Opportunities

The site offers multiple points of access, owing to its size and relationship to several primary and secondary road links to each boundary. This would clearly allow for the development of a tandem build development, with the logistics of construction access facilitated without disruption to the existing school. The multiple access points could then be developed as part of a final solution, to integrate the new building, and ensure options for a green travel plan are enhanced.

Recognising the constraints highlighted in the previous diagram, it remains possible to identify a development area, occupying the section of land to the East of the existing school. Principally forming a tarmac play area at present, this flat portion of land could be used for a new building, maintaining offsets from residential boundaries and preserving construction tolerances around existing structures.

Drainage

From levels taken on site and a site walkover, the ground falls generally from northeast to southwest, which would dictate the direction of surface water flows. There are existing surface water and foul sewers to the northwest in Auchnacraig Road and the northeast in Craigpark Street and also to the south in Faifley Road, via the existing school access. There is an existing foul sewer within the site, serving the existing primary school. Owing to the way the ground falls, the most practical option for sewer connections would be to the surface water sewer in the south and the foul sewer on site and these points are shown on Drg. No. J3075-C-02.[refer appendix]

Surface water treatment and attenuation is required in accordance with Sustainable Urban Drainage principles (SUDS). To this end, a pond is proposed to the south (Point 1 on Drg. No. J3075-C-02). This perhaps offers opportunity to create a footpath walk near the southern boundary and around the pond.

Any future drainage would be subject to Licenced Provider and Scottish Water approval. A Pre-Development Enquiry (PDE) has been prepared in relation to this and submitted to Scottish Water for comment.

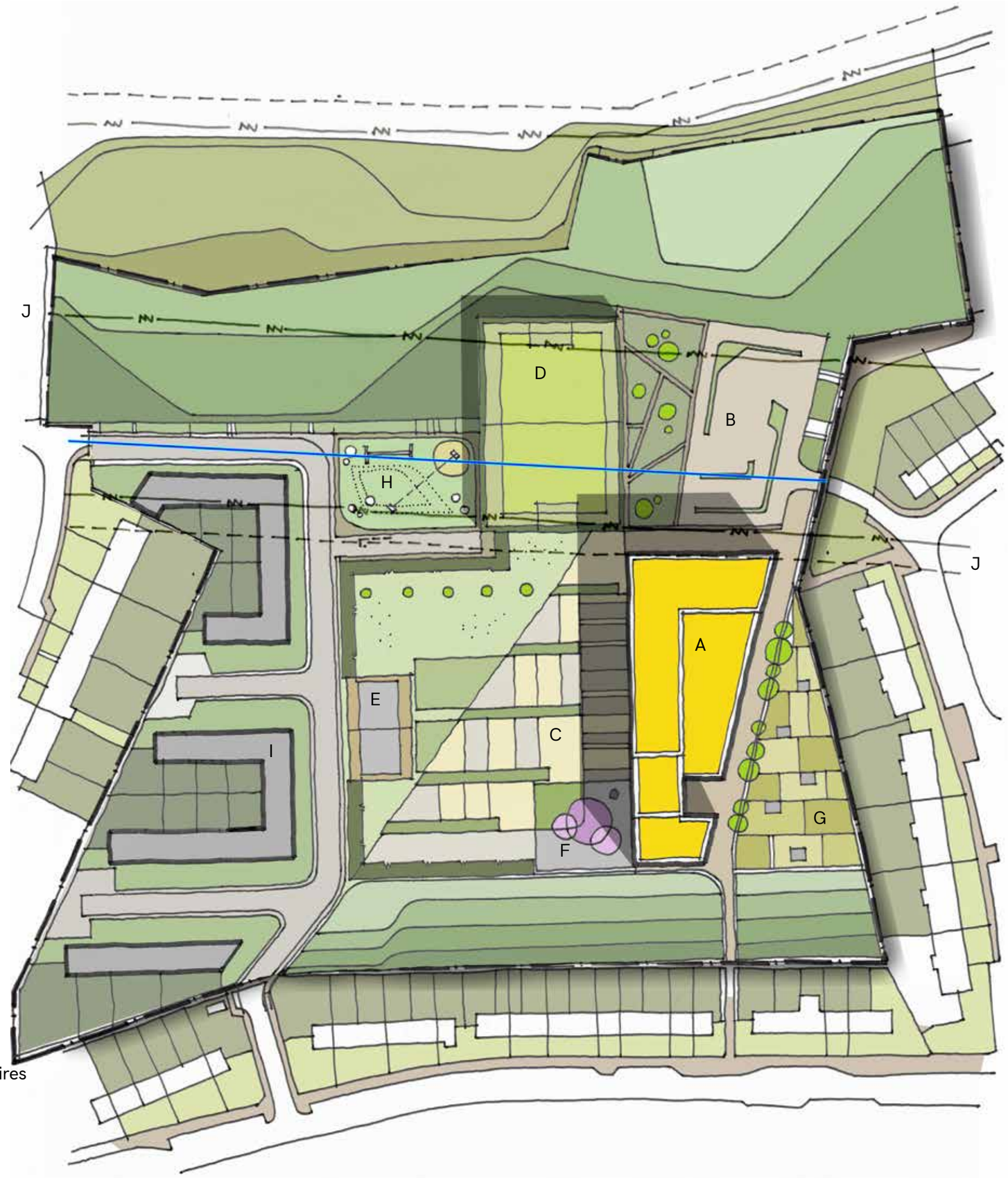
Initial comments recieved from Scottish Water indicate that the exisitng sewer and water treatment works have capacity. Scottish Water are planning a strategic assessment of their water network to include the school proposal. For any associated improvement works required, Scottish Water may seek to have these funded or part funded by West Dunbartonshire Council.

Development

A potential opportunity for development of the site could therefore align as outlined in the above diagram, with building footprint zone identified within the optimum portion of the site, avoiding significant site constraints, and making best use of site topography.

Recognising the ongoing maintenance costs of the Council, once this new facility is established, it may be desirable to identify an area of the Edinbarnet / Auchnacraig site that could be released through land receipt, for complementary development, such as social housing. An assessment of the projected school roll against BB103 outlines a school site area of circa 20,000m2 [which also correlates with the Schools Premises Regulations 1967].

This would allow the Council to release some land, whilst ensure the required external play areas were provided for the new school, avoiding the need to maintain a larger area than was necessary, over the lifespan of the community campus.



Key

A: Proposed Building

B: Car Park

C: Main Playground

D: 60x40 3G Pitch

E: MUGA Pitch

F: Early Years Play Area

G: Community Allotments

H: Community Playarea

I: Potential Housing Land

J: Line of Electrical Overhead Wires

K: Line of water trunk main

Campus Masterplan

The analysis of the available site at Edinbarnet / Auchnacraig could result in an arrangement as outlined in the adjacent diagram, with a focus on optimising available land, mitigating the significant services constraints identified, and considering the new campus as part of a wider masterplan, that brings new social housing and public realm improvements, integrated as part of the new community campus.

This ambition would ensure that a 'public facing' development was created, rather than maintaining the current, concealed arrangement of the existing school.

A large, South facing playground offering a variety of outdoor learning opportunities could be created, linking directly to the learning spaces within the new building.

This provision, subject to discussions with Scottish Water surrounding the water trunk main, could extend to creation of a new 3G pitch to the North of the site, positioned to allow community access from the West.

A positive approach to travel and accessibility would be promoted, with pedestrian access from the South, and the 'heart' of Faifley maintained, and enhanced through new footpath infrastructure, whilst vehicles take a more circuitous route to the North, accessing from Craigpark Street.

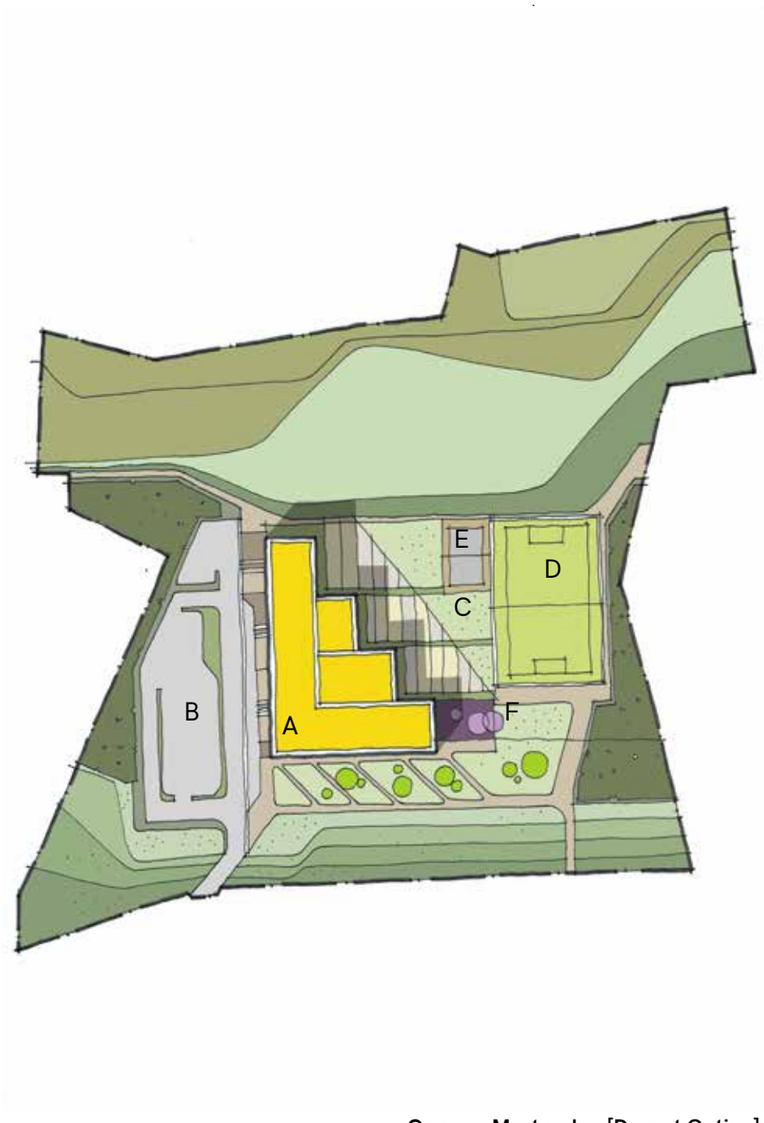
Recognising the distinct role this building will play in the community, a public facing façade could be created that allows community facilities to open directly to the public ream and building forecourt, offering an accessible and unintimidating approach. Features such as community allotments could address this public space, allowing elements of the landscaping to be influenced by the community, and horticulture and food production linked to the educational activity of the school.

Further developments, such as provision of play areas and recreation space could be developed as part of the wider masterplan proposal, linking into developer led initiatives, to create a community led site solution, fully releasing the potential of this northern site.

Campus Masterplan [Alternative Approach]

Recognising the limitations and programme challenges that could be presented through inteface with the water trunk main [and proximity to the electified cables], and alternative approach could relocate the 3G pitch to the South West of the site, and elongate the car park provision to the North. This approach would mitigate the need to consider costly services diversions as part of the school development.

The residual site would be developed as part of a natural landscape solution, allowing footpath connections to the periphery of the school, and allowing pupils and the community to walk towards the site from multiple directions.



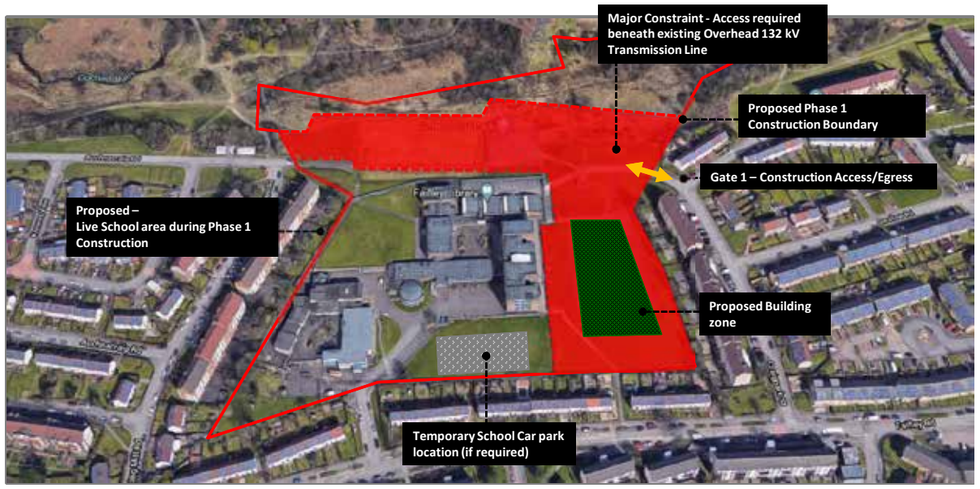
Campus Masterplan [Decant Option]

A further option for the site at Edinbarnet would be to decant the existing facility to a temporary location, allowing the wider site to be made available for school development. The arrangement shown above would permit the retention of Auchnacraig ELCC during the course of the construction of the new building, however phase 1 of the works would comprise the demolition of Edinbarnet school, and site levelling to facilitate the new campus.

This option allows the school to sit centrally within the site, the car park to stem directly from Faifley Road, and footpaths to connect to the periphery of the school. Importantly, this option would mitigate the need to interface with the services identified to the North of the site.

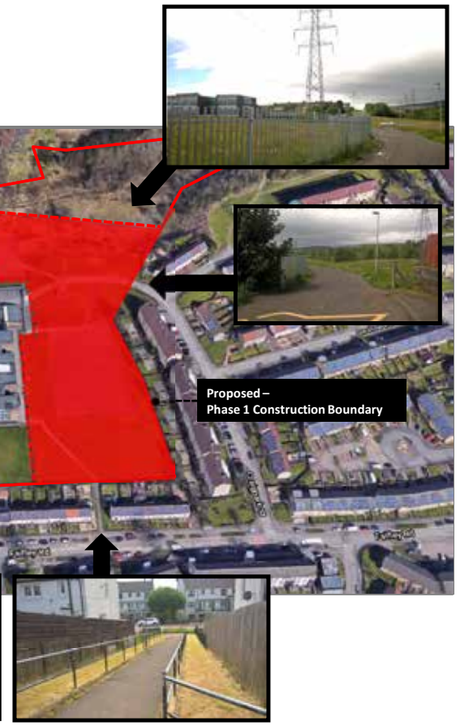

Main school car park
Proposed – Site Development Boundary
Staff & Visitor Entrance
Secondary pupil pedestrian Entrance
Main pupil pedestrian Entrance


Proposed Phase 1 Construction Boundary
Proposed Live School area during Phase 1 Construction


Major Constraint - Access required beneath existing Overhead 132 kV Transmission Line
Proposed Phase 1 Construction Boundary
Gate 1 – Construction Access/Egress
Proposed – Live School area during Phase 1 Construction
Proposed Building zone
Temporary School Car park location (if required)


Existing Overhead 132 kV Transmission Line
Major Constraint - Access required beneath existing Overhead 132 kV Transmission Line


Gate 2 – Construction Egress
Proposed Phase 2 Zone for Demolition , hard landscaping completions and Sports Pitch Formations
Gate 1 - Access for Phase 2 Demolition , Landscaping and Sports Pitch Provision



Construction Site Constraints

Although this site offers a large area for development, there are major constraints that will severely impact construction. The primary constraint is the 132Kv overhead transmission line to the north of the site. Our initial review suggested site construction access from Craigpark street with the existing school vehicular access off faifley road maintained during Phase 1 construction. However, this will require all construction traffic to pass under the transmission line. HSE Guidance on working around power lines first suggests avoid working under or near the line . In this case all construction traffic would pass back and forth under the line all day, every day. There are ways of managing the risk through the use of barriers and goal posts etc

Existing sewer main to the north of the site is also a major constraint; wayleave in place to allow access for Scottish Water access

The alternative would be to use the existing school access off faifley road for construction traffic; although this would severely impact the running of the existing school during the phase 1 Construction period

Site Logistics

As described above in site constraints; construction access proposed of Craigpark St. with the existing school vehicular access off faifley road maintained during Phase 1 construction. Pedestrian access into school also available from the north off Auchnacraig Road. Temporary car park may be required for staff and visitors during phase 1 construction.

The new campus development will be delivered in 2 phases.

Phase 1 construction of the new school campus whilst the existing Edinbarnet Primary school remains open, albeit within a smaller footprint. Phase 1 build period is estimated at 66 weeks (This duration includes a 10% / 6 week allowance for the rigorous quality control and collection of evidence required for Passivhaus accreditation).

Phase 2 is estimated at 40 weeks for demolition, landscaping and sports pitch provision.

The total development construction period is estimated at 106 weeks.

This period is the minimum allowance and could increase as a result of highlighted access constraints. RIBA Stage 2 design and site investigation surveys will be required in order to fully determine the impact of the site constraints on programme

Power Lines

As access is required beneath the live overhead power, due to Gate 1 location, barriers, goal posts and warning notices will be required to manage the construction health and safety risks. The following precautions may also be required:

- Clearance – the safe clearance required beneath the overhead lines should be found by contacting the Distribution Network Operator (DNO);
- Exclusion – vehicles, plant, machinery, equipment, or materials that could reach beyond the safe clearance distance should not be taken near the line;
- Modifications – Vehicles such as cranes, excavators and tele-handlers should be modified by the addition of suitable physical restraints so that they cannot reach beyond the safe clearance distances. Measures should be put in place to ensure these restraints are effective and cannot be altered or tampered with;
- Maintenance – operators of high machinery should be instructed not carry out any work on top of the machinery near overhead power lines;
- Supervision – access for plant and materials and the working of plant should be under the direct supervision of a suitable person appointed to ensure that safety precautions are observed.

Site 2: St. Joseph’s


AUTHORISED
VEHICLES
ONLY


AUTHORISED
VEHICLES
ONLY

Place + Community

St Josephs Primary School is situated to the East of Faifley, accessed directly from Faifley Road on approach from Glasgow Road when arriving into the town. The site can therefore take advantage of proximity to bus routes and public transport options, with bus stop locations situated within 50m of the site boundary.

The school site offers an area of circa 25,000m2, which would meet the requirements for alignment with Building Bulletin 103, allowing a variety of outdoor learning spaces to be achieved in this location.

The schools position, directly South of St Josephs RC Church, offers strong connection between the school and the religious centre, which could be strengthened with new public realm spaces and paths, should development proceed in this location. The school also benefits from connection to the footpath links that traverse Knowes Woods, connecting the peripheral school site with the centre of the town, and offering the opportunity for pupils and parents to walk to school through a woodland setting, separate from the bustle of the main street. A further link could integrate the recreation space to the South of Faifley, allowing Faifley Friendship Park and Knowes Football Pavillion to contribute and benefit from the investment of a community campus.

Constraints

In contrast to the challenges posed at Edinbarnet Primary School, the site surrounding St Josephs Primary presents very few constraints that would influence an architectural approach to site development. There are groupings of mature tress to the East and West boundaries, however these trees are located to the perimeter of the site, and would be seen to complement any final solution.

There is a modest change in level from Faifley Road down towards the existing football pitch, before rising again to meet the South boundary. This undulation of circa 1.5m could be readily addressed as part of a design solution, allowing balancing of site levels and working to mitigate any removal or importation of site material.

The housing development on Hart Street, to the South boundary sits relatively close to the school curtilage, prompting the requirement to consider a reasonable offset, mitigating overlooking or privacy issues. The school, would however be located to the North of the housing, avoiding any overshadowing issues.

The site would therefore present a viable development opportunity for a tandem build solution, with any proposed design solution crafted to allow sufficient offsets between the existing school and construction site to permit safe operation of site activities, and mitigate disruption to pupils and staff within the current facility.

Opportunities

The location and arrangement of the site, with a long frontage to the North facing Faifley Road, allows for independent site access to be created directly from the principal road, and maintains full segregation during construction from the activities of the school.

Access to the new development, on completion, should capatalise on all opportunities to connect the campus into the local footpath network. This will bring the furthest dwellings, to the West of Abbeylands road, within walking distance of the new campus, and ensure the green travel plan is the most convenient and enjoyable means of getting to the school.

From assessment, it is likely that the furthest dwelling would require to walk circa 1.5km to arrive at the new campus, with the walking routes largely through the woodland spaces.

A further opportunity is the connection to the church, which would allow celebration of religious holidays throughout the school calendar, and allow the church to actively participate in the services and support offered by the joint campus.

Drainage

From levels taken on site and a site walkover, the ground falls generally from northeast to southwest, which would dictate the direction of surface water flows. There are existing surface water and foul sewers to the north in Faifley Road, the east in Abercorn Street and to the south in Langfaulds Crescent and Hart Street. There is also an existing foul sewer in the northern half of the site, serving the existing school. Proposed foul drainage could be connected to the existing foul sewer on site and due to the ground falling to the south, the most practical option for a surface water sewer connection would be to the surface water sewer in Hart Street.

There is a small piece of ground at the north end of Hart Street, through which any proposed surface water sewer would have to pass, therefore, ownership of this ground would have to be investigated for wayleave purposes.

Surface water treatment and attenuation is required in accordance with Sustainable Urban Drainage principles (SUDS). To this end, a pond is proposed to the south (Point 1 on Drg. No. J3075-C-03). This perhaps offers opportunity to create a footpath walk near the southeast and southwest boundaries and around the pond.

Any future drainage would be subject to Licenced Provider and Scottish Water approval. A Pre-Development Enquiry (PDE) has been prepared in relation to this and submitted to Scottish Water for comment.

Initial comments recieved from Scottish Water indicate that the exisitng sewer and water treatment works have capacity. Scottish Water are planning a strategic assessment of their water network to include the school proposal. For any associated improvement works required, Scottish Water may seek to have these funded or part funded by West Dunbartonshire Council.

A Drainage Survey Report would be required for whichever site is selected for the new campus; this would identify all on site and off site drainage in relation to its condition, size and exact location.

Development

A potential opportunity for the development of the site could therefore align as outlined in the above diagram, with building footprint zone identified within the South portion site, to address the woodland setting.

To reinforce the pedestrianised nature of the development, creation of a public plaza, that connects the school entrance with both the woodland and a linear park that leads to the church could be explored.

This would aid in ensuring a positive and inclusive environment on arrival, and offers an open space, away from traffic, for parents to meet and socialise, community events to occur, and for the new building to face towards, and connect with the ‘heart’ of Faifley.

Campus Masterplan

The resultant campus masterplan could therefore build on the themes and design elements identified through the site analysis, to create a highly contextual community hub. An L-shaped building footprint arrangement could provide prominence when facing the park and the street, whilst reducing in scale when addressing surrounding housing.

The public realm linking the church, new campus and the woodland area, could be developed as an active community space, offering vibrancy on arrival, and incorporating key outdoor spaces, such as community allotments, school habitat spaces, open areas for community events and gathering areas for parents at the start and end of each school day.

Faifley Road would provide the access point for vehicles, utilising the existing St Joseph's PS entrance point, and locating the 3G pitch adjacent the roadside could allow this facility to become accessible to the community out with school hours, should West Dunbartonshire Council wish to do so, without need to provide full access to the entire school grounds.

Playground areas would be largely south facing, with ample provision to offer a variety of hard and soft recreation areas, learning spaces and sports facilities, linked to the internal building arrangement and the evolving school curriculum.

Key

A: Proposed Building

B: Car Park

C: Main Playground

D: 60x40 3G Pitch

E: MUGA Pitch

F: Early Years Play Area

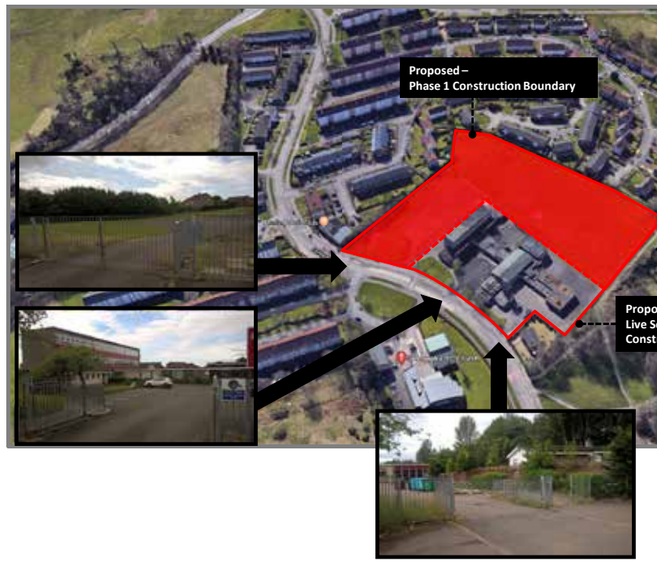
G: Community Allotments

H: Community Playarea

I: Link to church + amenity land


Main school
car park
Proposed –
Site Development Boundary
Main pupil
pedestrian
Entrance
Staff & Visitor
Entrance


Proposed –
Phase 1 Construction Boundary
Proposed –
Live School area during Phase 1
Construction


Proposed –
Phase 1 Construction Boundary


Proposed –
Phase 1 Construction Boundary
Building zone
Gate 1 –
Construction
Access/Egress
Proposed –
Live School area during Phase 1
Construction


Proposed – Completed Phase 1
(Live School area during Phase 2
Demolition, Hard Landscaping
and sports pitch Formations)
Access for Phase 2
Demolition , Landscaping
and Sports Pitch Provision
Proposed –
Phase 2 Construction
Boundary

Construction Site Constraints

There are no constraints on the St. Josephs site that would impact on construction delivery. Of the three site options this is the most straight forward in terms of existing site topography, site and school access arrangements and the impact of construction on the local community.

Site Logistics

The proposed construction access would be via the existing access into the main school car park off Faifley Road. All remaining access into the existing school for vehicular and pedestrian access from faifley road would remain available. Temporary car parking may be required for staff and visitors during phase 1 construction, depending on number of required car parking spacess.

Programme

The new campus development will be delivered in 2 phases.

Phase 1 construction of the new school campus whilst the existing St. Josephs Primary school remains open within a smaller footprint. This will include the existing playing fields and large car park being utilised for phase 1 of construction

The Phase 1 construction period is estimated at 66 weeks (This duration includes a 10% / 6 week allowance for the rigorous quality control and collection of evidence required for Passivhaus accreditation).

Phase 2 construction period is estimated at 40 weeks for demolition, landscaping and sports pitch provision.

Total development period is estimated at 106 weeks.

Site 3: Skypoint

Place + Community

The Skypoint site is the most central development option, located at the midpoint of Lennox Drive, and largely equidistant from all areas of the town. This location is a positive attribute in the creation of a new community hub, as it could truly become the 'heart' of Faifley, and fully integrate as part of the urban fabric of the settlement.

Whilst Lennox Drive is not served directly by public transport, the bus stops at Faifley Road are approximately 200m from the site, offering convenient access. Similarly, the footpath links at Knowes Woodlands are accessible from Abbeylands Road, which traverses the South of the site, would allow direct and safe access from the South of the town.

Skypont Centre currently offers a range of community facilities, and outreach services, and is currently also the business address for Faifley Housing Association. This mix of accommodation could supplement the wider development of education in this location, with residents already accustomed to visiting the site to access Council services. In addition to this, with links directly across the road to Lennox Early Education Centre, along with an area of established community allotments on site, the development at Skypoint could contribute considerably to the establishment of a highly valued and widely utilised community hub in the area.

Constraints

The key challenge of the site at Skypoint is the current access arrangements, as Lennox Drive is generally heavily congested with parked cars and traffic movement and is a tight residential street. Similarly, on direct approach to the site, the topography falls circa 6m to the South and towards the existing building, making both vehicular access along with compliant accessible pedestrian access challenging.

On arrival at the existing building however, the topography levels, with flat conditions extending to the South, and to the rear of the existing structures. This elevated site directly overlooks the rear gardens of the housing to Abbeylands Road, prompting consideration of overlooking and privacy issues. Furthermore, a change in level to the South West corner of the site, whilst modest at a fall of circa 1.5m, could be avoided during development, to reduce impact on civils design.

Opportunity

The key opportunity of this site is the prospect of creating a true sense of place, offering a community facing facility at the centre of the town. Whilst the topography of the site presents some challenges on arrival, as discussed previously, the South portion of the site offers elevated and unrivalled views accoss the Knowes Woodland, the River Clyde and further, to towards Renfrewshire and the Cathkin Braes. This location, despite being in the centre of the town, offers tranquillity and the opportunity to create an outstanding outdoor landscape for learning, living and recreation.

The site also offers a large parcel of land for development of a new building, allowing Southerly views to be exploited in the design and benefits from the passive environmental aspects in the building solution.

Drainage

From levels taken on site and a site walkover, the ground falls generally from northeast to southwest, which would dictate the direction of surface water flows. From Scottish Water records there are existing surface water and foul sewers in Lennox Drive to the north and Abbeylands Road to the south. Given the site falls, the sewers in Abbeylands Road would be best placed for proposed connection points, however, there is no route through for new site sewers due to the presence of existing housing.

There is a surface water sewer and a foul sewer running between Lennox Drive and Abbeylands Road through open ground to the west of the site and these sewers would offer a good location for connections (refer to Point 2 on Drg. No. J3075-C-01). The open ground lies out with the site boundary and land ownership would have to be identified for wayleave purposes.

Surface water treatment and attenuation is required in accordance with Sustainable Urban Drainage principles (SUDS). To this end, a pond is proposed to the south (Point 2 on Drg. No. J3075-C-01). This perhaps offers opportunity to create a footpath walk near the southern boundary and around the pond. Any future drainage would be subject to Licenced Provider and Scottish Water approval. A Pre-Development Enquiry (PDE) has been prepared in relation to this and submitted to Scottish Water for comment.

Initial comments recieved from Scottish Water indicate that the sewer and water treatment works have capacity. A Water Impact Assessment is required for the water mains network. There would be a cost and significant timescale associated with this and any associated improvements required may have to be funded or part funded by West Dunbartonshire Council.

Development

In considering a community campus in this location, a key design exercise would be the creation of a new access and arrival point into the site. By tempering gradients and utilising the full expanse of open space to the front of the existing building, vehicle movement, during both the construction phase, and on completion could be suitably managed. Aligned with this, careful public realm design would incorporate DDA accessible footpaths to the entrance of the campus along with a new community space on arrival at the facility.

This new public space would be highly visible from the street and surrounding housing, ensuring it is offered a good degree of passive supervision and, through linking and enhancing the current allotment area, could become an active stage for community life.

Campus Masterplan

The considered masterplan for Skypoint would look to harness all the positive attributes offered by the site, to create the community ‘heart’ of the town. The new access road would provide a route to an area of parking, which would be best positioned outwith view on arrival, to allow focus towards the building, and maximum space to be assigned to the community square in front of the campus.

Opportunity to make use of the topography could be identified, through integration of an external amphitheatre, offering the chance for public events and gathering at the forecourt of the centre.

The area of allotments could be enhanced and linked to wider food production and ecology studies on site, offering an established resource for the school upon completion.

Further amenities, such as playparks, 3G pitches or MUGA areas could also be positioned to remain accessible from the school forecourt, ensuring community access throughout the year.

The school playground, with South facing aspect could be designed with a range of spaces to support an outdoor learning curriculum, whilst taking advantage of aspect and orientation. Allied to this, a carefully designed landscape proposal, with treelines introduced, would aid in ensuring protection to pupils in the event of inclement weather, and exposure to the prevailing wind.

The development of Skypoint could offer a highly unique and contextual opportunity to create a vibrant, central community campus for Faifley.

Key

A: Proposed Building

B: Car Park

C: Main Playground

D: 60x40 3G Pitch

E: MUGA Pitch

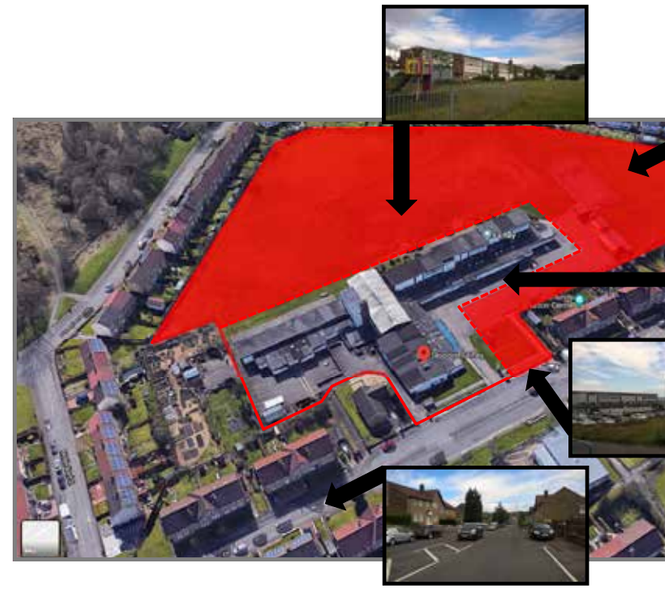
F: Early Years Play Area

G: Community Allotments

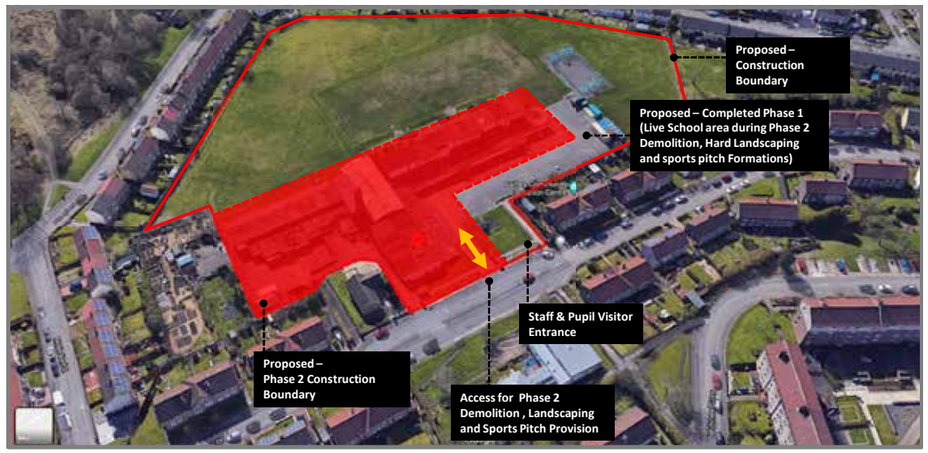
H: Community Playarea


Proposed –
Site Development Boundary


Proposed –
Construction
Boundary
Staff & Visitor
Entrance




Proposed Building
zone
Proposed –
Phase 1
Construction
Boundary
Gate 1 –
Construction
Access/Egress
Skypoint Staff &
Visitor Entrance


Proposed –
Construction
Boundary
Proposed – Completed Phase 1
(Live School area during Phase 2
Demolition, Hard Landscaping
and sports pitch Formations)
Staff & Pupil Visitor
Entrance
Proposed –
Phase 2 Construction
Boundary
Access for Phase 2
Demolition , Landscaping
and Sports Pitch Provision

Construction Site Constraints

The primary constraint with the Skypoint site is access; Lennox drive is generally heavily congested with car parking from the local residents and the Lennox early education and childcare centre (directly opposite the skypoint site). There are currently two access roads into the site; access on the left leads to a small carpark and the main entrance ad access on the right leads to the larger carpark and playing fields to the rear

The current construction access proposal (for a tandem build) is to create a haul road into the site in the grassed area to the right of the existing main entrance. In order to allow for sufficient turning space for construction deliveries (articulated lorries with steel for example) most of the existing carpark would be required for the haul road; This would likely increase road side parking on Lennox drive.

Following the completion of Phase 1, the temporary access route into the new campus would be shared between staff, pupils and visitors with car parking likely unavailable until the completion of phase 2. Access for the Demolition of the existing facility, following the completion of the new campus, should also be considered

Consideration could be given to closing the Skypoint facility and demolishing the existing building, as an alternative to the tandem-build solution. This would only be viable if the services could be temporarily relocated. The building is not currently operating at full capacity. With possession of the entire site from week 1, the construction could be delivered in one phase and would reduced potential conflict between school users and traffic on the site.

Site Logistics

As described above in site constraints there may be a requirement for some parking restrictions directly outside the site entrance to allow access for larger vehicles.

Programme

The new campus development will be delivered in 2 phases.

Phase 1 construction of the new school campus whilst the existing Skypoint Facility remains open. Phase 1 build period is estimated at 66 weeks (This duration includes a 10% / 6 week allowance for the rigorous quality control and collection of evidence required for Passivhaus accreditation).

Phase 2 is estimated at 40 weeks for demolition, landscaping and sports pitch provision.

Total development period is estimated at 106 weeks.

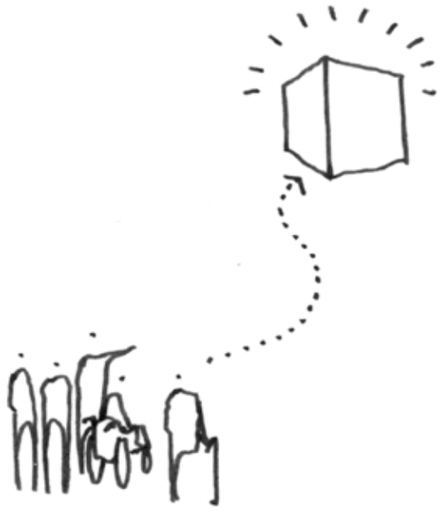
The estimated construction period is considered to be the minimum period required. This could increase as a result of highlighted access constraints. RIBA Stage 2 design, site investigation surveys, vehicle tracking and a detailed review of proposed hoarding lines will be required in order to fully determine the impact of the site constraints on the programme.

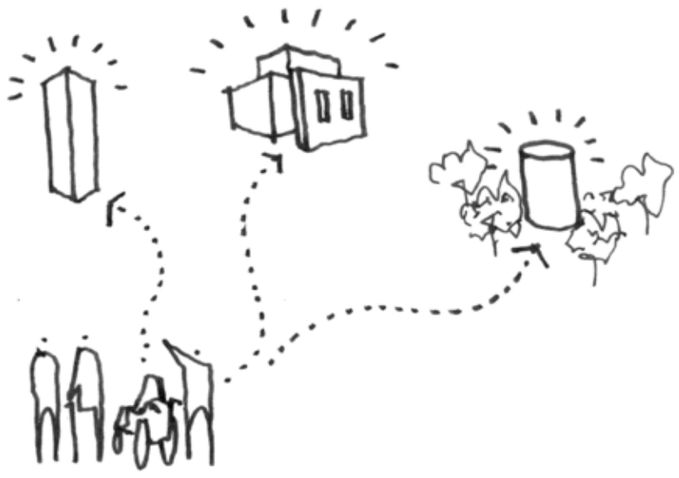
A partial demolition of Skypoint facility could also be considered, however a full review of the internal services would be required.

Form Factor

Whilst the detailed school design will require considerable input, consultation and direction from stakeholders and West Dunbartonshire Education team, it is important that the building form factor is a key consideration throughout the design process. The ability to create an efficienct envelope solution, that encloses the required floor space with a reduced wall and roof area, will lead to improved fabric and thermal efficiency, assiting in driving reduced energy demand, and mitigating heat loss.

There are a number of factors that will be considered when developing the building form, recognising the intangible elements, such as creating a nurturing and welcoming environment and ensuring the building does not appear overdominant and intimidating on approach for early years pupils. Similarly, the internal spaces require good quality daylighting, and the building depth should be considered in line with the optimum ventilation strategy. The overall form factor however, will govern output U-values for thermal performance, and constitute an integral element of the building environmental model, that will guide the design process towards the creation of a low carbon facility for the Council





Skypoint / St Josephs Primary Sites

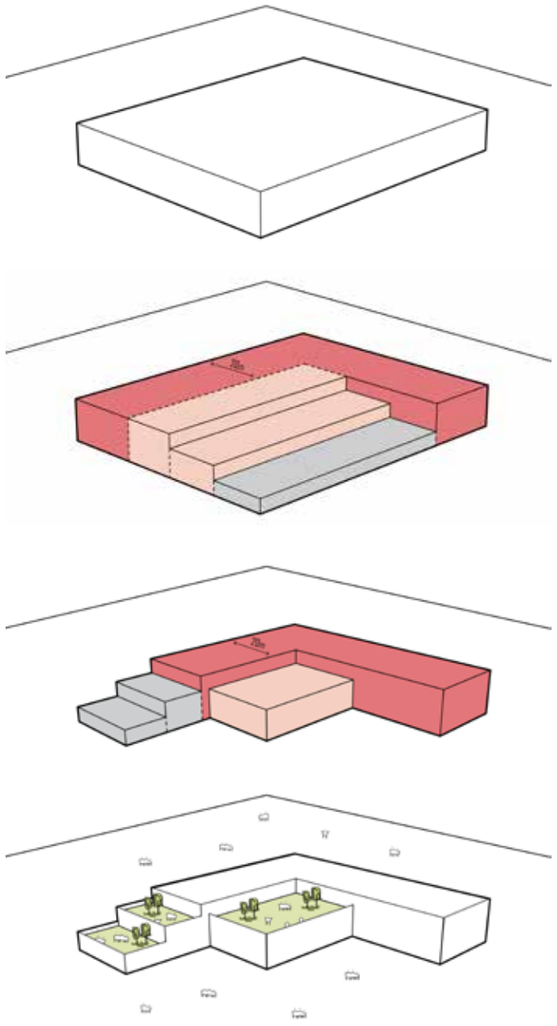


Diagram 01 : Block Form

- Efficient floor to wall ratio
- Optimised to provide efficient form factor
- Accommodation stacked over 3 storeys [reduced footprint]
- Deep plan building [M+E implications]

Diagram 02 : Learning Environment

- Recognise 20m maximum depth from window to window
- Consider scale to suit infants, juniors and seniors
- Zoning of building
- Alignment of principal facades to suit context / site arrangement

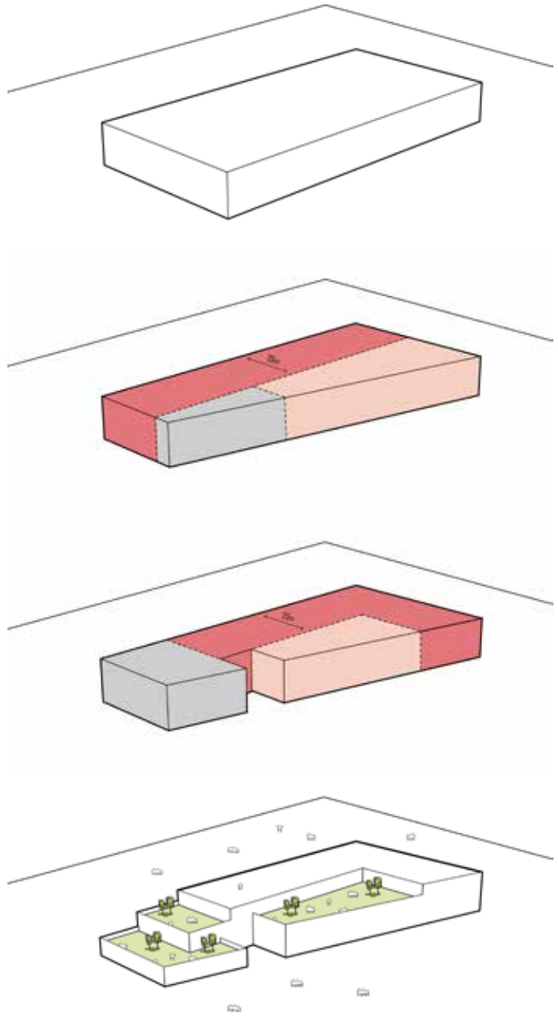
Diagram 03 : Building Form

- Connecting key building adjacencies
- Considering facade design to suit maximum window areas [daylighting analysis]
- Connecting building to outdoor learning opportunities

Diagram 04 : Concept Design

- **Outdoor learning for all year groups [per Renton]**
- **Learning Ladder concept developed for WDC**
- **Efficient form, crafted to suit client and context**
- **Recognisable, and navigable building solution**

Edinbarnet Primary School Site



2

Project Analysis

Resources Budget Programme

Resources

Work to Date

For the site options appraisal, and preparation of a detailed report that responds to the Scottish Futures Trust Readiness Questionnaire, West Dunbartonshire Council approached hub West Scotland to procure and manage a team with the required skillset to undertake the commission.

Hub West Scotland assembled a team who have a depth of experience in schools design, including expertise in a low-carbon and digital agendas. Working alongside the Scottish Futures Trust and with an in-depth knowledge of the funding criteria and metrics, Mark Ellison from Holmes Miller and Eoin O'Neill from Faithful & Gould, were a natural choice to support West Dunbartonshire Council's options appraisal and funding bid. They were supported by Mechanical and Electrical Engineer, David Cameron from Atelier Ten and Gus Munro, Civil and Structural Engineer from Cowal Design. With an early Council aspiration for Passivhaus design, Matt Bridgestock of John Gilbert Associates, reviewed the orientation and environmental aspects of each site. Support was also provided by Kier, a Tier 1 contractor on hub West Scotland's supply chain, with experience in building Passivhaus facilities. The report produced by the team will form part of the Councils submission for LEIP funding and also be used for internal and external consultation for selection of the preferred site.

Procurement

West Dunbartonshire Council will advertise the development opportunity on Public Contract Scotland to select the final procurement route, Project Manager and design team, who will be employed to deliver the facility.

It is anticipated that initial feasibility designs will commence in 2021, with the concept design stage starting in September 2021. Statutory consultation will commence September 2021.

Governance

The project will be led by the West Dunbartonshire Council's Capital Investment Team Project Manager, who will be the client representative and liaise with all internal Council departments. The Client Project Manager will be responsible for the brief and obtaining feedback and approvals for the development of the design.

The Project Manager will work in close liaison with Education representatives, and other internal stakeholders such as Roads and Planning Departments and reports directly to the Corporate Asset Manager.

The Schools Estate Board, who meet on a monthly basis, will be the client group who will provide feedback and direction on the brief and emerging design.

Gateways will be identified that require Education Committee approval and they will inform the development and construction programmes. The West Dunbartonshire Council Education Committee meets on a monthly basis.

There will be key stage reviews at concept design and financial close stages by the Scottish Futures Trust, if the project is successful in achieving LEIP funding.

Budget

The cost estimates developed are based on the associated Homes Miller area schedule. The areas have been developed to suit the needs of the users. The total Gross Internal Floor Area (GIFA) for the Faifley joint campus has been agreed at 6,017m2. The full facility will be contained within one building to maximise value for money and West Dunbartonshire Council's (WDC) bid to build this facility as an exemplary low carbon project. The Education element (Primary School, Nursery and ASN) is 5,372m2 and the community element will take up 690m2.There are currently three site options (Skypoint community centre, Edinbarnet PS+ELC and St Joseph's PS) for the Faifley joint campus they range in both size and complexity factor and have a site development area ranging from 20,250m2 to 48,400m2.

For this section we have identified the main elements which will influence cost only and estimated their impact. The project team have undertaken several types of site assessments to gain the maximum level of information possible relating to site conditions, suitability, and constructability. Going forward a further option appraisal should be developed to align with the Councils strategic business case.

The total facility cost ranges from £28.3M to £32.6M and has been developed in adherence with the budget advised by West Dunbartonshire Council (WDC) for the construction works and client costs, however, the decant costs and abnormal items in the final option push the price beyond this. With further specification and planning there is potential to reduce these

Site	Estimate Option Cost(£)
St Josephs	£28,328,083
Skypoint	£28,480,536
Edinbarnet	£29,963,627
Edinbarnet [Decant]	£32,585,776

The key areas of cost variance identified to date can be seen below. These are prime cost only.

Site Cost Differentials	Option 1. St Josephs	Option 2. Skypoint	Option 3. Edinbarnet
Demolition of existing school	£95,000	£108,000	£127,000
Demolition asbestos allowance	£50,000	£60,000	£70,000
Abnormal increased site area allowances (planting, maintain etc)	£0	£0	£708,000
Abnormal cut and fill levelling site requirement	£0	£0	£315,000
Abnormal access issues	£0	£80,000	£30,000
Decant Accommodation			£2,666,553 Decant Option Only

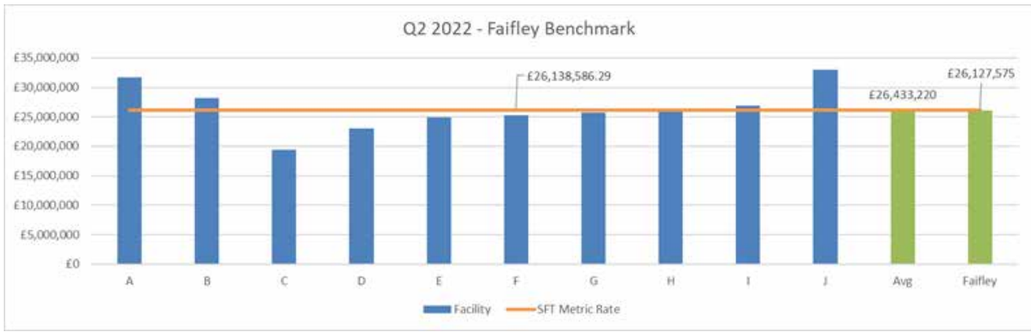
The total estimated prime cost for the Primary School, Nursery and ASN combined is approx £29M. We recognise that the ASN school element costs benchmark higher and the nursery lower than the primary school however due to the associated areas and currently given that all are contained within one facility it is understood we can deliver these under one benchmark average given. The estimate includes relevant levels of risk and a separately developed internal FF&E budget to cover additional pupil requirements that will be addressed in more detail as the design develops.

Faifley Joint Campus Breakdown	Area (m2)	Pupils (Number)
Primary	3,861	539
ASN	406	36
Nursery	1060	183
Community	690	-
Total	6,017	

Community Facility

The Total Estimated Prime cost for the community element of the work is £3.7M. This area will be made up of the rooms shown in Holmes Millers area schedule.

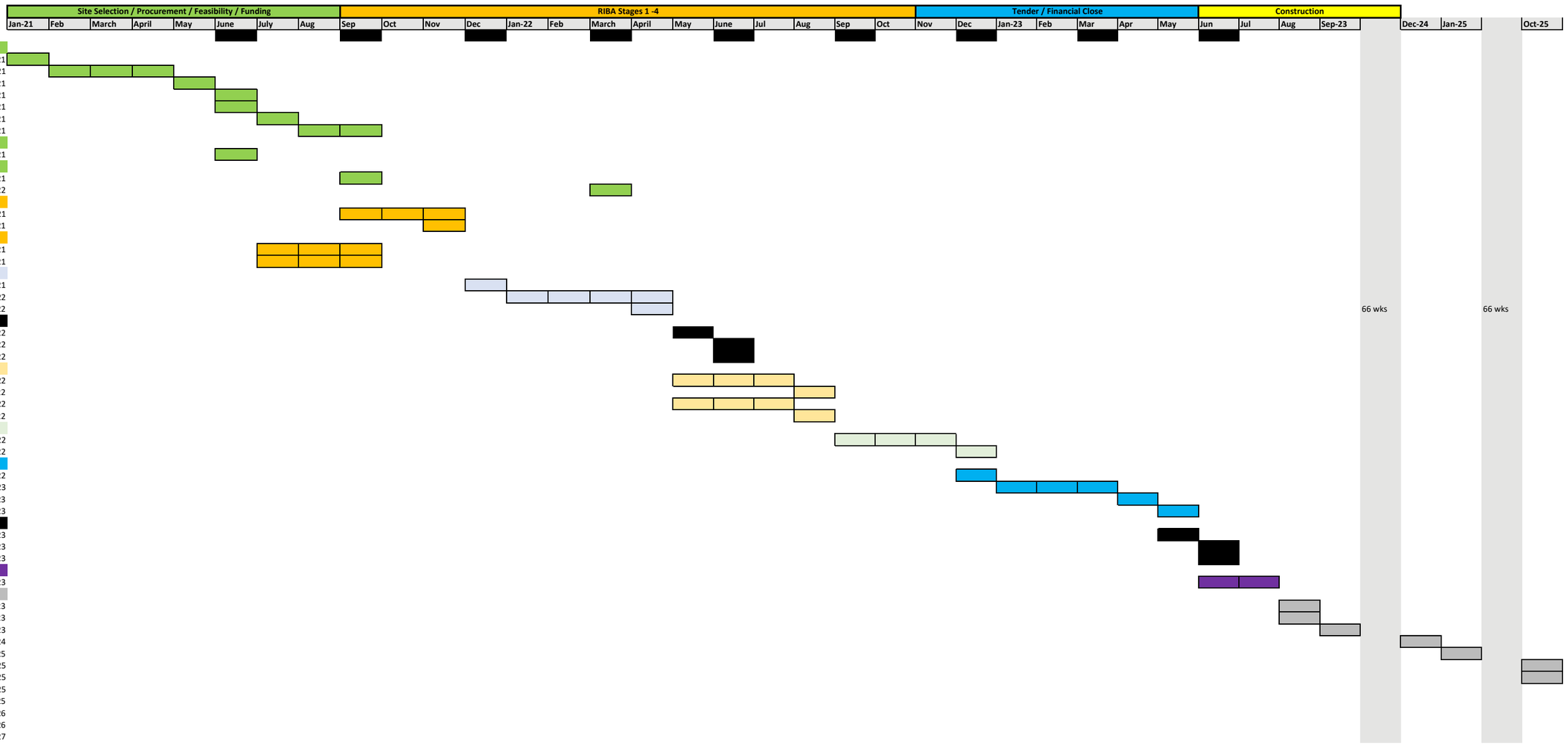
To benchmark this facility accurately we have checked our cost estimate against outturn costs of other educational and combined facilities based in Scotland, using the project teams combined data resources. Additionally, our design methodology aligns to that of a Passivhaus and we have therefore added a cost uplift to support this where applicable. The uplift is in line with the Scottish Futures Trust metric studies which takes account of all Passivhaus cost elements needed to deliver a project of this type. Adjustments have also been made so that we can evenly benchmark these facilities by removing any identifiable abnormal cost items (such as demolitions, decant, access issues etc) and adjusting the costs to when this project aims to start, using the BCIS all in tender price index (Appendix A) which tracks tender inflation rates. As can be seen below the Faifley joint facility benchmarks in the region of £26.1M once we adjust it and excluding abnormal site issues which aligns with the potential Scottish Futures Trust Metric which is project specific and will be further refined through the councils engagement with Scottish Futures Trust. The business case for the campus from a cost aspect, is strong due to the potential whole life cycle of the facility and its alignment to the Learning Estate Investment Programme (LEIP) will set it apart as an exemplary project for West Dunbartonshire.



Programme

Rev 4 April 21

SFT Quarterly PUF Reporting	
Procurement	
Delivery route notified	Jan-21
Agree commercial terms	Feb - Apr 21
LEPB sign off procurment route	May-21
Education Committee - June	Jun-21
Qualified Project to hWS	Jun-21
Tender Design Team	Jun-21
Tender Contractor	Aug-Sep 21
Funding (estimate)	
LEIP Funding Approval	Jun-21
Statutory Consultation Process	
Launch Statutory Consultation	Sep-21
Outcome of Statutory Consultation	Mar-22
RIBA Stage 1 - Feasibility	
RIBA Stage 1 Design	Sep - Nov 21
RIBA Stage 1 Costs	Nov-21
Site Surveys	
Site Investigation	July - Sep 21
Other Surveys TBC	July - Sep 21
RIBA Stage 2 - Concept	
NPR Submission	Dec-21
RIBA Stage 2 Design	Jan - Apr 22
RIBA Stage 2 Costs	Apr-22
Approval	
hub Stage 1 submission	May-22
WDC Approval	Jun-22
SFT Stage 1 Key Stage Review	Jun-22
RIBA Stage 3 - Spatial	
RIBA Stage 3 Design	May - Jul 22
RIBA Stage 3 Costs	Aug-22
PAN	May - Jul 22
Planning Application	Aug-22
RIBA Stage 4 - Detail	
RIBA Stage 4 Detail Design	Sep - Nov 22
RIBA Stage 4 Cost Check	Dec-22
Tender	
Billing Period	Dec-22
Tender	Jan - Mar 23
Tender Review	Apr-23
Final Price	May-23
Approval	
hub Stage 2 submission	May-23
WDC Approval	Jun-23
SFT Stage 2 Key Stage Review	Jun-23
Financial Close	
Financial Close	Jun - Jul 23
Construction	
Mobilisation	Aug-23
SOD Cutting Event	Aug-23
Phase 1 Start (66 weeks)	Sep-23
Phase 1 Completion	Dec-24
Phase 2 start (40 weeks)	Jan-25
Phase 2 completion	Oct-25
WDC 2 week Fit out period	Oct-25
School Opening	Oct-25
Official Opening	Nov-25
Passivhaus Post Completion	Jan-26
Post Project Review	Jan-26
SFT Post Occupancy Evaluation	Jun-27



3

Brief Development

Consultation
Quality
Inclusion
Low Carbon
Digital
Outdoor Learning
Disposal Strategy

Consultation

The development of this report has been progressed in conjunction with early stage dialogue with key West Dunbartonshire departments, to allow immediate understanding of the key issues, constraints, challenges and opportunities each site provides.

A summary of the discussions has been provided, with the intention of guiding site selection and offering a launch point for further discussions, to develop the preffered solution for the school and community.

Key feedback has been provided from the following departments;

- Roads and Transport
- Planning and Development
- Contaminated Land and Environment
- Greenspace Manager
- Education, Learning and Attainment [including Early Years team]
- Energy Managemrnt Team
- Assets Team

Roads and Transport

In principal, the roads department commented that the two existing school sites, of Edinbarnet / Auchnacraig, along with St Josephs Primary School, would be the most straight forward development sites, owing to their current use class. With pupils, staff and the community already used to travelling to these locations, and with local residents accustomed to the increased frequency of vehicle movements at peak hours, the department were content that a new campus in either of these locations could be accommodated from a roads and transport perspective.

The site at Skypoint was more challenging, principally owing to the restricted nature of Lennox Drive, which is a tight residential street, with considerable on street parking. It was noted that construction traffic utilising this residential road network is likely to be contencious, requiring significant parking restirctions to allow heavy vehicles to maneouver. Simiarly, the arrangement on completion, with increased traffic being brought towards the site would also need detailed review.

On all sites, the department was keen to ensure that existing crossing points and infrstructure were emplyed, to facilitate a green travel route to the chosen site, and highlighted that an upgrade to the footpath network [particularly in accessing towards the St Josephs site], should be considered.

At this stage, parking provision should align with the WDC parking standards document, with final numbers to be agreed once the detailed design has been progressed.

Planning and Development

St Joseph's site would be a suitable site for a new school campus adjacent to Faifley Road. It can be easily accessed with good walking and cycling routes being key in the integration of the school campus and associated community uses into the wider Faifley area. The size of the site should be maximised by keeping a fairly tight footprint of the building to ensure that outdoor spaces is maximised for the school users and local community. It would be expected that the building to be of 2-3 storeys in height with the use of height giving the necessary school space required with a strong design creating an interesting focal point on one of the main accesses in Faifley and sense of place in the local community. Care should be given to ensure the design and height does cause any amenity issues to adjacent residential properties.

The Skypoint site is in the heart of Faifley which is positive and is a good location in principle for a school campus and associated community uses. There are however issues with site levels and the access which is very steep. This would therefore need to be explored further to see what is achievable without significant degrees of retention and impact on the residential amenity of the surrounding area. On street parking is also an issue in the area and it is rather a difficult car or bus journey to get to the site from other parts of Faifley and outwith. Arrangements would need to be explored for getting some of the cars off the road as part of the redevelopment of the site as well as ways of increasing street width and capacity in the surrounding streets.

The Edinbarnet site is a good site and is within the heart of the Faifley community and is not as physically constrained as Skypoint or St Josephs. The access however is difficult and whilst it works at present from a technical perspective, it does mean the site is tucked behind housing rather than having a presence on the key route through Faifley. Levels are also a consideration on this site together with the neighbouring amenity. The relationship with the open space and woodland to the rear is a real opportunity to link into the new campus and provide outdoor education.

Contaminated Land and Environment

Edinbarnet PS & Auchnacraig ELCC 186 Faifley Rd, Clydebank G81 5BH.

Prior to been utilised as a School, it appears the land was formerly partially woodland and farmland. During the period of 1960-1970 large scale development occurred within the site and its surrounds. Various residential buildings were constructed surrounding the site, with a building similar to that of the current school was constructed onsite. Minor building and structural alterations occurring onsite and offsite as time progressed.

Our records indicate there was possibly various Quarrying and Landfilling activities occurring within 500m of the Site. Additionally, more of these activities were recorded up to 1000m of the Site.

Indication from our records would suggest that the site would be considered a MEDIUM preliminary risk for development for the purposes of a School. Due to these factors;
Extensive development occurring onsite and offsite.
Possible Quarrying and Landfilling located within 500m of the Site.

It is suggested that a Detailed Environmental Investigation Report (EIR) is prepared for the Site, to assess the risks of the development. This investigation should include risk assessment for the following factors, Human Health, Groundwater, Ground Gas, Native Flora/Fauna and Structural/amenities.

St Joseph's PS, Faifley Road. Faifley, Clydebank, G81 5EY.

Due to the proximity to the No/ 1 Site above – approximately 400m west. Similar timelines were observed.

Historically, the Site appears to be solely farmland unlike (1). During 1960-1970 the site was developed pertaining buildings similar to the current standing structures.

Our records indicate there was possibly various Quarrying and Landfilling activities occurring directly to the west of the site, and within 100m to the east.

Indication from our records would suggest that the site would be considered a MEDIUM preliminary risk for development for the purposes of a School. Due to these factors;
Extensive development occurring onsite and offsite.
Possible Quarrying and Landfilling located within 500m of the Site.

It is suggested that a Detailed Environmental Investigation Report (EIR) is prepared for the Site, to assess the risks of the development. This investigation should include risk assessment for the following factors, Human Health, Groundwater, Ground Gas, Native Flora/Fauna and Structural/amenities.

Skypoint, Lennox Drive, Clydebank G815JY.

Due to the proximity to the No/ 1 and 2 Sites above – approximately 200m North and 200m East, respectively. Similar timelines were observed.

Historically, the Site appears to be solely farmland. During 1960-1970 the site was developed pertaining the buildings similar to the current standing structures, Minor additions were noted occurring through the years.

Our records indicate there was possibly various Quarrying and Landfilling activities occurring directly to the east of the site, and additionally within 250m to the east.

Indication from our records would suggest that the site would be considered a MEDIUM preliminary risk for development for the purposes of a School. Due to these factors;
Extensive development occurring onsite and offsite.
Possible Quarrying and Landfilling located within 500m of the Site.

It is suggested that a Detailed Environmental Investigation Report (EIR) is prepared for the Site, to assess the risks of the development. This investigation should include risk assessment for the following factors, Human Health, Groundwater, Ground Gas, Native Flora/Fauna and Structural/amenities.

Energy Management Team

The low carbon strategy for the new facility has been developed in tandem with the Council's Energy Management Team, with the sustainability targets and aspirations of West Dunbartonshire encompassed within the overall approach for Faifley Campus. The full low carbon strategy is detailed within the later sections of this report.

Consultation

Greenspace Officer

There are several school grounds improvements that many schools approach the Council looking for help with that ,if they could be addressed at the design stage could be really helpful. The below features would be useful to consider during the detailed design stage;

- Suitable storage space for outdoor learning resources such as shelters and tools.(portacabin/ hobbit house etc)
- Outdoor seating areas for taking classes outdoors for outdoor learning
- Hand washing facilities outdoors
- Mixture of habitats to facilitate lessons, e.g hedgerows, long grassland areas, mixed woodland with suitable tree mix
- Growing spaces such as raised beds/ allotment
- Nesting spaces such as bird boxes
- Minibeast hunting area including dead wood logs, bug hotel
- Bird feed areas

It is also worthwhile considering having improved routes into the wider greenspace behind the campus which all of the Faifley schools use for outdoor learning and forest schools.

St Josephs PS, Rainbow room, Edinbarnet, Goldenhill, Auchnacraig EELC, St Mary's Duntocher, Linnvale, Cunard are all the establishments that use Auchnacraig woods behind the campus or have done in the last 2 years.

Education, Learning and Attainment [including Early Years Team]

The key ouput from the initial discussions with the education team, is the compilation of the consolidated accommodation schedule as noted on the opposite page.

The schedule draws on the developed proposals at Bellsmyre PS, Balloch Campus and the recently designed Renton Campus, to create an accommodation schedule that reflects the contemporary and developed thinking, and aligns the new Faifley Campus with the wider WDC estate.

Faifley campus will be a multi faith facility, so an element of duality is provided within the schedule, to allow individual identities of the Denominational and Non-Denomination schools to continue to be highlighted.

Learning spaces are grouped into larger, flexible learning zones, split into key year groups, which is the direct model that has been applied at both Balloch and Renton Campuses. These learning zones are supported by further flexible workings areas, quiet rooms and resource spaces.

A similar approach has been taken for the Early Years and LCU facilities proposed as part of the campus, with area allocation that both aligns with the expected area metric, whilst reflecting the specific spatial arrangements preffered by the WDC education team and working practitioners.

The schedule also acknowledges the integration of community facilities as part of the campus, proposing in the first instance, that school core functions are reviewed for potential use outwith the school day, to facilitate community events, group

meetings, evening classes, and support services. Therefater, additional and complementary accommodation has been added to the schedule, to allow Faifley Campus to operate as an integrated and valued centre for the community, at the heart of the town.

	SFT Metric Area - 539 pupil @ 6.5m2/pupil				3503
RDS	Room Name	No. of Rooms	area per room m^2	Total m^2	
	Administration				
	Lobby / Rec (D)	1	12	12	
	Lobby / Rec (ND)	1	12	12	
	School Office	1	25	25	
	Reprographics Room	1	10	10	
	SLT Office	2	40	80	
	Conference / Multipurpose Office	1	30	30	
	Department Total Area				169
	Teaching				
	Primary 1 Learning Zone [D]	1	65	65	
	Primary 1 Learning Zone [ND]	1	65	65	
	Primary 2-4 Learning Zone [D]	1	180	180	
	Primary 2-4 Learning Zone [ND]	1	180	180	
	Primary 5-7 Learning Zone [D]	1	215	215	
	Primary 5-7 Learning Zone [ND]	1	215	215	
	Flexible Teaching Space [D]	1	160	160	
	Flexible Teaching Space [ND]	1	160	160	
	Flexible Resource Stores	4	15	60	
	Music Room	1	26	26	
	Department Total Area				1326
	Storage				
	General Resource Stores	4	12	48	
	Stationary Store	2	15	30	
	Play Store (External Equipment)	2	24	48	
	Assembly Store	1	24	24	
	Dining Furniture Store (roller shutter)	1	12	12	
	PE Store	1	24	24	
	Department Total Area				186
	Staff				
	Staff Room	2	35	70	
	Staff Kitchen	1	18	18	
	Staff Workbase	2	18	35	
	Staff Toilets	1	18	18	
	ERS Training Suite	2	95	190	
	ERS Staff work area / resources	1	150	150	
	Staff DWC	1	4	4	
	Department Total Area				485
	Other				
	Medical Room / Sick Bay	1	10	10	
	Visiting Services Room	1	14	14	
	Full service toilet [Changing Places compliant]	1	12	12	
	DWC (Visitor's WC)	1	5	5	
	School / Community Library	1	120	120	
	Assembly Hall/Gymnasium	1	220	220	
	Dining / Secondary PE Space	1	220	220	
	PE Change	2	11	22	
	PE Change	2	11	22	
	Kitchen/Servery/Stores/Offices	1	140	140	
	Pupil WCs	1	90	100	
	Pupil Cloaks	1	60	60	
	Pupil Acc. Change	1	7	7	
	Cleaner's Store	4	6	24	
	ICT Hub Room	2	9	18	
	FM Office & Store	1	24	24	
	Department Total Area				1018
	Balance [Circulation / Partitions]				525
	Switch Room				12
	Plant				140
	Total Primary School area				3861

	Nursery [183 place facility]				
	SFT Metric Area - 183 pupil @ 5.8m2/pupil				1061.4
	Reception	1	10	10	
	Lobby	1	10	10	
	Staff Room	1	20	20	
	Head of Centre Office	1	12	12	
	Office	1	12	12	
	Parent's Room	1	18	18	
	DWC (Staff WC)	1	5	5	
	DWC (Visitor's WC)	1	5	5	
	Food Prep / Kitchen	1	24	24	
	Bottle prep room	1	8	8	
	Laundry/ Utility Room	1	10	10	
	Boot Room / Overall storage	2	15	30	
	Handwash area [adjacent playroom entrances]	1	6	6	
	3-5 years playroom [64 children per room]	2	160	320	
	3-5yrs. Toilets	2	22	44	
	3-5yrs Toilets [linked to outdoor space]	2	9	18	
	3-5yrs cloak space	2	15	30	
	2-3yrs playroom	1	130	130	
	2-3yrs Baby Changing / WC	4	5	20	
	2-3yrs cloak space	1	24	24	
	0-2yrs playroom	1	70	70	
	0-2yrs Baby Changing	1	12	12	
	0-2yrs cloak space	1	14	14	
	Dining Area	1	40	40	
	Nursery Secure Store	1	12	12	
	External Store	2	10	20	
	Cleaners Store	2	3	6	
	Department Total Area				
	Nursery Net Area				930
	Balance [Circulation / Partitions]				130
	Plant [shared with Primary School]				#
	Total Nursery area				1060
	LCU Teaching Unit [36 pupil facility]				
	LCU Teaching Space	6	30	180	
	Low stimulation rooms	3	9	27	
	Sensory Room	1	20	20	
	Social spaces	1	30	30	
	Dining Space	1	15	15	
	Kichenette	1	10	10	
	Meeting Room	1	18	18	
	Cloaks	1	5	5	
	LCU Resource Store	1	24	24	
	WC's / Shower Spaces	1	24	24	
	Department Total Area				353
	ASN Net Area				
	Balance [Circulation / Partitions]				53
	Plant [shared with Primary School]				#
	Total ASN area				406
	Community Facilities				
	WDC Target Area				
	Community Facilities	1	600	600	
	Department Total Area				600
	Community Net Area				600
	Balance [Circulation / Partitions]				90
	Plant [shared with Primary School]				#
	Total Community area				690
	Total Area				6017

Quality

The drive to increase quality in our built environment is long overdue and projects such as Faifley Joint Campus are ideal vehicles to deliver these aspirations. Through the adoption of the best practice arising out of the Scottish Futures Trust's (SFT) Construction Quality Assurance Initiative (CQAI) and the incorporation of a Passivhaus solution in delivering post occupancy energy targets will only reinforce a quality solution. The improvement in quality in our built environment requires a behavioural change. A culture of quality needs to be developed through ;

- sharing best practice,
- learning from previous experiences,
- sharing knowledge,
- ensuring appropriate budgets and timescales are there to deliver the project,
- use of technology to capture information and
- promoting 'quality' as an ethos as 'health and safety' is in today's construction industry.

This part of the report is broken down into four sections and demonstrates how West Dunbartonshire Council will deliver this culture of quality to construct an exemplar school and community building for the residents of Faifley.

Design

Quality starts with design. This is not just 'aesthetic' design, but a holistic approach to design where an eye is kept on how quality can be built into and delivered during the construction process. Specialist design audits will be carried out for particularly complex or sensitive design solutions to ensure quality is being achieved at this stage. Subsequent checks on site will ensure the ethic is being carried through to completion of the build. There are various tools that can be utilised during the design stage to help deliver a quality product.

One of these is the use of a building information model (BIM). Through designing in 3-D and with regular reviews and collation of the various professional team's models, BIM is a very powerful tool for proving designs. Its use for clash detection is particularly important in saving expensive and time-consuming re-work especially around building services and FF&E. By cascading the model through the supply chain, specialist contractor design can be easily captured and developed in conjunction with the overall building. Using VR goggles or large screen presentation the building users will be taken on a virtual, 3-D, tour of the building so they can review the spatial layout of the building, amend the location/quantum of loose and fixed furniture and comment on the location of services outlets, Comments can be made to the drawings immediately, on screen, so any knock on impacts can be assessed. Experience indicates that this process leads to less downstream change which in turn leads to cost savings and better-quality product. This is emphasised again later in this report. Another tool is the Passive House Planning Package (PHPP). This is a robust spreadsheet that analyses all aspects of the proposed design, including orientation, massing and latitude of the building, materials and utilities to determine an optimum build solution that is site specific to deliver the low energy usage targets typical of a Passivhaus accredited building.

Simplification in presentation of design information will also assist in quality management. Through the avoidance of cross-referencing and removal of irrelevant information from drawings with layouts, details and material specifications shown on a single drawing, the drawn information becomes much easier to use and mange at the workface. Another aspect of raising the ethos of design in a team setting is to implement regular quality meetings. These would be in addition to regular progress or design development meetings and would concentrate on delivering a quality in the design and the route to design. Consideration should also be given to the design team carrying out design inspections and audits during the construction stage. A further set of eyes ensuring a quality solution is always welcomed and this should be reflected in the design team's scope of service and fee. The cost estimate included with this report makes allowance for this service.

The final matter we would expect in this qualitative behavioural environment is 'no change' once Financial Close is achieved. Due to the complexity and interdependencies of achieving a Passivhaus accredited building solution, any change can have far reaching implications in energy usage, or more traditionally, lead to unexpected consequences of changing a specification or detail leading to future defects or latent defects.

People and Culture

Over the last decade or so, there has been a behavioural change in the construction industry in the approach to health & safety. Be it the first item on a meeting agenda, to all personnel on a site having a responsibility to watch out for safety, safety is now the number one priority on construction projects. There is a similar change in mindset happening in the industry today in relation to quality. There are various ways that this behavioural change can be promoted. Passivhaus is an excellent example. There is anecdotal evidence that tradesmen take great pride in doing a task properly, rather than rushing on to the next task. Taking ownership of practical installation solutions, posting details of workmanship on social media and self-policing of quality to ensure this is not compromised is very much common practice on sites that have adopted a Passivhaus approach. Holding regular quality workshops with supply chain members and specialist suppliers, including tool-box-talks with operatives and supervisors all raises awareness of and lifts the bar for quality. The workshops are a continuation of the workshops instigated during the design process. Early engagement of the supply chain to get the quality message across is essential.

In a Passivhaus situation, this demystifies the processes required. In a more traditional situation, this emphasises that a quality solution is required and that the cheapest price will not necessarily win the day if value and quality cannot be demonstrated. There are also several aspects in quality management that have been highlighted where quality has been deficient in the recent past. These include brickwork and blockwork, fire stopping, air tightness (particularly relevant in a Passivhaus environment) and floor screeds. Training for managers and supervisors on quality management in these fields is a strong message arising from the CQAI with these courses also being available to tradesmen and the wider supply chain. Benchmarking is another tool that is recommended to raise the quality threshold. These will be developed for key elements such as fire protection, brickwork, ceilings etc and will involve sample panels that will establish the standards to be achieved. A collaborative approach will be adopted with the specialist trade contractor, designers, clerks of works and Tier 1 contractor.

Soft landings will also improve the quality of the completed product. This involves early engagement of the user of the building with the design and construction teams. Solutions can be orientated to the way in which they will operate the building. Training in systems and O&M manuals will be ongoing so facilities managers are fully up to speed on the installations when they start to operate the building. In addition, contractor's Aftercare Managers will ensure any outstanding defects are attended to in a timeous manner. The Aftercare Manager will also feedback on issues that could be designed out on the next project or a product/material that should not be used again and thus continually learning from experience/knowledge.

Achieving Zero Defects

In a study conducted by CITB and Industry entitled 'Get it Right Initiative – A Strategy for Change', they state that "Studies suggest direct costs of avoidable errors are in the order of 5% of project value. Our research has revealed that the true figure is closer to 21%". Irrespective of which figure is correct, this is still a substantial sum and lends weight to a cultural change in approach to quality to drive out cost and deliver construction works with zero defects. The ethos of 'zero defects' has five main strands;

- Prevent - Prevention is better than cure and so by implementing items such as robust designs, procurement of correct sub-contractors and delivery of quality assurance procedures as set out in this paper at the appropriate stages in the project's evolution will assist in achieving this.
- Define and align – it is important for all parties to understand the ultimate West Dunbartonshire Council client's requirements. One way of achieving this will, at an early stage in the construction process, produce several sample rooms/sample areas that will benchmark the expected quality and address equipment adjacencies etc in 'real life' rather than virtually which will then allow this benchmark to be replicated throughout.
- See and act – this requires the site team to identify and rectify defective work immediately. The project teams will ensure that the necessary checks and inspections are carried out and detailed quality records maintained. We

will look to procure Clerks of Works to assist in this as well as making sure the designers' scope of service also allows for site and quality inspections. The cost of both of these aspects are included in the cost plan for the project. In addition, contractors are obligated to also carry out these inspections on a daily basis.

- Snagging focus – Sets out best practice to ensure that the rectification of snags is a focused and proactive process which starts early and is appropriately resourced. The use of information technology will greatly assist the visibility of snagging and their signing off once rectified.
- Programme – the industry has had issues with quality control in the past on programmes that are too tight. A robust programme will be developed that will deliver the project to an end date that reflects the ultimate client's requirements whilst maintaining appropriate times to deliver a quality product. This will ensure minimal interventions by contractors post-handover to rectify defects thereby mitigating nuisance and inconvenience to pupils, teachers and other users of the buildings.

It is also recommended that a Commissioning Manager is employed on the project, whether through the contractor or as an independent appointment. Costs are allowed for this in the cost estimate. The Commissioning Manager will work with the client's facilities maintenance representative, the contractor and the building services specialists to develop a testing and commissioning programme across the life of the programme. In the past, this has generally been a 'poor relation' and is squeezed in at the end of the process. By facilitating this, adequate time will be provided for proving the systems and training the janitorial staff, particularly if Passivhaus or similar low carbon technologies are adopted in the final design.

Technology

In several places, this paper references 'technology'. Through the SFT's CQAI, contractors have developed various collaborative systems to manage on-site quality. There are three main aspects where this occurs:

- mobile access to the BIM environment,
- supporting progress and quality records and
- recording inspections of the work.

In all instances, these are always supported on a cloud environment and allow real time access by all appropriate stakeholders to the project. Consequently, West Dunbartonshire Council Officers, clerks of works, building standards officers, design team members, supply chain members and other appropriate stakeholders can all access the information ensuring they are fully aware of the progress of the project and the quality levels being achieved at any time. This technology also supports Passivhaus or the like accreditation as all these systems help to provide the necessary evidence that works are being carried out in accordance with the PHPP.

'Dalux' is an example of the mobile access to the BIM environment. This allows 2-D layouts to be produced from the federated 3-D model and allows the BIM environment to be interrogated or navigated around on a device via an app. User access is 'friendly' and can be used on mobile devices as well as laptops and desktops. Access on site to check details etc saves time in returning to the site office and allows interaction with various trades at the point of concern.

'Holobuilder' and 'Matterport' are examples of supporting progress and quality records. Both use 360-degree cameras that date stamp and cross reference images back to locations . The output also provides 'Street View' type capability. This technology assists in record keeping, examining progress and dimensional information capture for future reference post completion. They also assist in recording services hidden in walls to prevent future damage through changes to walls or fitting fixed to the walls.'Holobuilder' is used on a weekly / day to day basis for recording progress in 360 degree or normal photographs, with the attempt to maintain all photographs of the project in one platform. 'Matterport' is a higher resolution image that creates the 'street-view' ability and is normally used at key times in the project and at handover.

'Snagmaster' and 'FieldView' are examples of electronic systems that aid in recording inspections of the work. Through using an app on a mobile device, progress and inspection photographs can be recorded and retained, snags can be highlighted to appropriate supply chain members and progress in rectifying recorded in real time, issues can be raised by stakeholders off site and attended to on-site. Our Tier 1 contractors are also using these tools to remove paper forms from their site management processes. For instance, their Permit to Work system can be done on these platforms in a virtual environment with all sign-offs etc being accommodated on the cloud. The objective in the use of technology to help raise the quality bar is to;

- Improve the efficiency of site supervision.
- Increase the time spent on site by supervisors, rather than in the office filling in paperwork.
- Improve the interaction between designers and site supervisors.
- Improve collaboration across all stakeholders through easy, real-time access to information.
- Visibility of progress and quality management to all project stakeholders.
- Increased and improved record keeping, that also particularly supports Passivhaus accreditation.
- Improve the quality of the product delivered to the client.

Inclusion

Education Inclusion

Plans for the Faifley project should include the integration of a specialist support setting, integral to St Joseph's school. The unit should provide space for 5 classes which are able to accommodate 6 children and 3 members of staff. Space should also include some areas in which to "break out" and address sensory challenges children face.

It is expected our children and staff will be able to plan , learn and play with their mainstream peers whilst supported by the enhanced setting of their classrooms. Classrooms should be configured in a way which enables flexibility and response to needs and challenges of children. It is preferred that furniture is not fixed other than storage. The classrooms should also allow for staff to plan learning experiences which are flexible and varied in opportunity whilst fully accessible i.e. should include free space for play, space to sit together to learn and access to wet play areas. To support the sensory needs of the children it is essential natural light is available in all rooms and that classes are as spacious as possible even given small numbers. It is preferred each area has safe access to outdoor learning opportunities in a secure setting; with a safe management system for this, given the specific needs of the children.

Community Services Inclusion

The Equality Outcomes and Mainstreaming Report offers the Council an opportunity to present a detailed overview of its work on equality, focusing on reducing significant inequalities, compliance and accountability.

The Outcomes and Report are based on consultation and involvement, and relevant local and national evidence and research. The report also contains information on employment equalities, gender pay gap and an equal pay statement. The Council is committed to fulfilling the three key elements of the general equality duty as defined in the Equality Act 2010:

- Eliminating discrimination, harassment and victimisation
- Advancing equality of opportunity between people who share a protected characteristic and those who do not
- Fostering good relations between people who share a protected characteristic and those who do not

Equality Impact Assessments worthy of note are:

- Renton Campus
- Connecting Clydebank

Community engagement and participation refers to how WDC communicate and work with our community. It ensure that we as a Council understand the needs and aspirations of our residents and community organisations.

The Council is committed to working with the residents and community organisations of West Dunbartonshire to improve outcomes for all in an inclusive way. Effective community engagement provides a range of benefits for services and for the community. At its strongest it empowers residents to plan and influence the future of their own community, encourage people to get involved and assist services and public bodies to identify what needs to be improved.

Community Wealth

Community wealth building is a people-centred approach to local economic development. It reorganises local economies to be fairer. It stops wealth flowing out of our communities, towns and cities. Instead, it places control and benefits into the hands of local people, communities, businesses and organisations.

West Dunbartonshire Council will, through this significant investment in Faifley, deliver social, economic and environmental benefits to local residents in the Faifley community and wider West Dunbartonshire area.
They will work with the organisations, employed to deliver the project, to create a strategy that will maximise education and employment for priority groups in the area. The full development phase and construction phase, which spans three years from 2021 – 2024, will be used to design education programmes, work-placements which will be geared towards apprentiships opportunities during construction stage.
Emphasis will be placed on supporting small local businesses, local supply chains, Social Enterprises and Third Sector Organisations to become part of the construction of the new campus. This will be done through investment in communication and training during the design development phase to ensure that they are in a position to tender when the opportunities become available.

Low Carbon // Introduction

We recognise there is a significant low-carbon movement occurring across the construction industry. But before we considered ways of achieving this and discussing the technical approaches in detail, it makes sense to understand the definition and context of this low-carbon movement. In December 2018, the Intergovernmental Panel for Climate Change (IPCC) published their report on the impacts of a Global Warming rise of 1.5°C above pre-industrial levels. The content of this report has spurned action from several Governments, including the Scottish Government, which has since set the 'Net Zero Emissions Target' by 2045. This has been done via the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, which received Royal Assent on 31 October 2019. This new school is expected to be completed in 2023 and will be occupied as a minimum for 50 years. The UK and Scottish Government have committed to a zero-carbon economy by 2045, this building will outlast that commitment. West Dumbartonshire Council are currently preparing a Climate Change Strategy to demonstrate and guide the Councils approach to meeting the 2045 zero carbon challenge. The notes below demonstrate how this development can meet current and future standards.

Learning Estate Investment Programme

Projects funded through the Learning Estate Investment Programme must have an in-use energy use of 67 kwh/m2/annum. Whilst details of the calculation model for this are emerging, this in-use target means that funding is dependant on this target being met after completion. These energy targets are onerous and require a change in approach to how buildings are designed and constructed. As a means to bring about the required change, we propose use of the Passivaus Standard for the Faifley Campus development

Passivhaus Design Standard

The Passivhaus standard looks to drive energy efficiency and thermal comfort deep into the core of design strategies and solutions. This primary focus on energy and comfort makes it a very useful approach to developing any building type, but particularly school buildings, which need to be efficient, comfortable and inspiring for all the people who use them.

The energy performance of existing schools is variable, many with sizeable performance gaps between the intended design target and the actual energy use in practice. The graph below outlines results from a post-occupancy evaluation (POE) study carried out for schools within England. This POE study compares the performance of a variety of school types and building performance. The results of this study reveal that schools designed towards the Passivhaus standard perform best, with in-use energy consumption per m2 being consistently close to 67 kWh/m2/year. Our research has shown that the Passivhaus methodology provides far greater certainty on the performance of a building design and that through certification, West Dunbartonshire Council can achieve independent oversight and checking of the matters relevant to energy performance.

The core areas that Passivhaus certification influences are:

- shape, form factor and orientation
- fabric u-values
- airtightness and thermal bridging
- lighting power
- Mechanical system efficiency
- Minimise overheating risk and shading

More detail on the standard is set out later in this document.

Future Standards

In our move to zero-carbon economy there are a number of critical changes that will need to happen, in the built environment over the next 25 years. We have used independent Committee on Climate Change proposals and respected industry research to provide this list of potential key issues. We expect that movement on all of these issues to progress during the design and construction phase of this project and we suggest that key targets are set now to minimise the risk of future retrofit and upgrade.

Embodied Carbon & Circular Economy

As buildings reduce their operational carbon, the embodied carbon of the materials becomes a much more critical issue. Previous studies have indicated that embodied carbon represents just a few years of operational carbon emissions, more recent studies show that embodied carbon can be up to 50% of a buildings lifetime carbon emissions. There are strong arguments for measuring embodied energy, we expect it to form part of future building standards and we propose that this project aims to reduce embodied carbon by 40% from current practice to less than 600 kgCO2/m2. The building should make use of sustainably sourced materials where possible. These should have low environmental impacts, little to no harmful chemicals and carbon emissions. They should be locally sourced where feasible, looking for construction materials, etc. from the UK where we can.

Fossil Fuel

The independent Committee on Climate Change has recommended phasing our gas for new homes from 2024 and 2025. Whilst this plan has not yet been formalised nor is specific to non-domestic buildings it is an indicator to the direction of travel for the Scottish and UK Governments. As part of this work we have explored the implications of an all electric Passivhaus school. This approach puts the building on a trajectory of ever improving carbon performance as the national grid becomes decarbonized over the next 25 years. West Dunbartonshire Council has no specific policy on this issue but we envisage that guidance will be developed as government advice changes.

Daylight Design – Design Bulletin 90

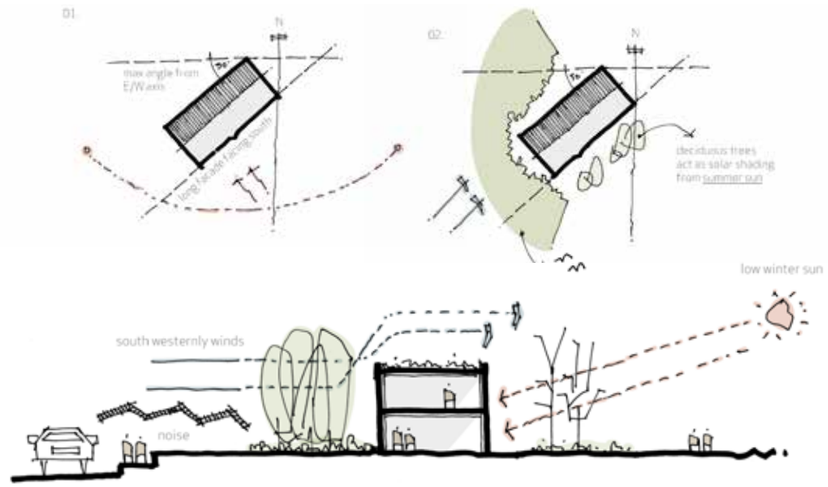
In line with Design Bulletin 90 and with the Passivhaus methodology, lighting design needs to be optimised. This means we need to balance the light (and orientation) of windows with artificial light to achieve a minimum of 300lux accross the working plane, however recognise that closer to 1000Lux levels offers the best environment for pupil concentration.This needs to be achieved within the lowest energy cost envelope.

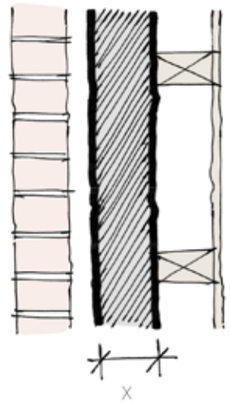
Ventilation – Design Bulletin 101:2018

Ventilation is key part of Passivhaus design and a key criteria for effective school environment. By introducing highly efficient mechanical ventilation with heat recovery the indoor air quality can be substantially improved. Evidence from other schools shows that the carbon dioxide levels can remain generally below 1000ppm as required by Design Bulletin 101:2018.

Electric Vehicles

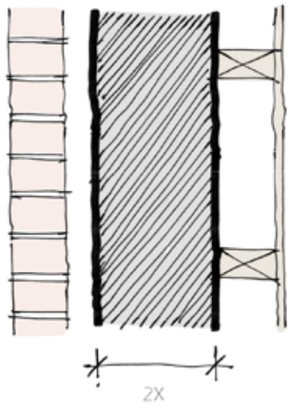
The Scottish and UK Governments are phasing out the sale of petrol and diesel cars in 2035. As part of this development West Dunbartonshire Council aims to put in place infrastructure to allow electric vehicle charging.

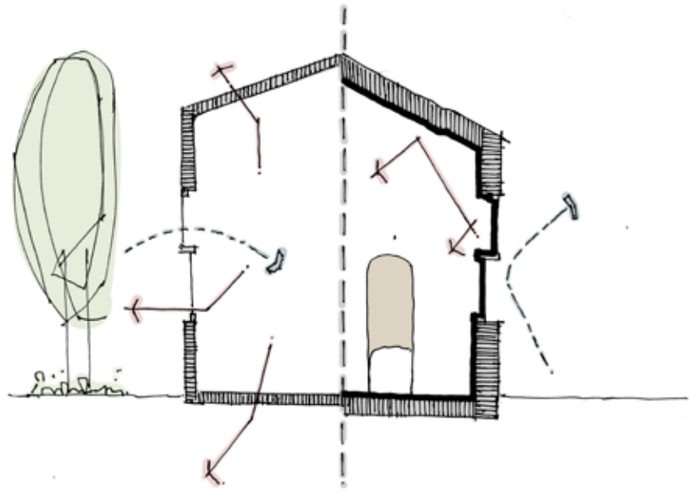




Low Carbon // Passivhaus

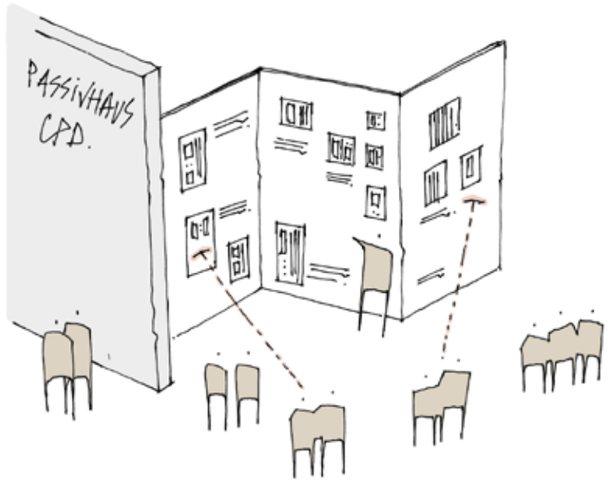
The Passivhaus standard for schools is based on the strategic choices, noted below, along with a long list of technical criteria, each has a degree of wriggle room but overall they must combine to meet the specified performance criteria. The items below are key strategic decisions which need to be embodied in the early design stage.

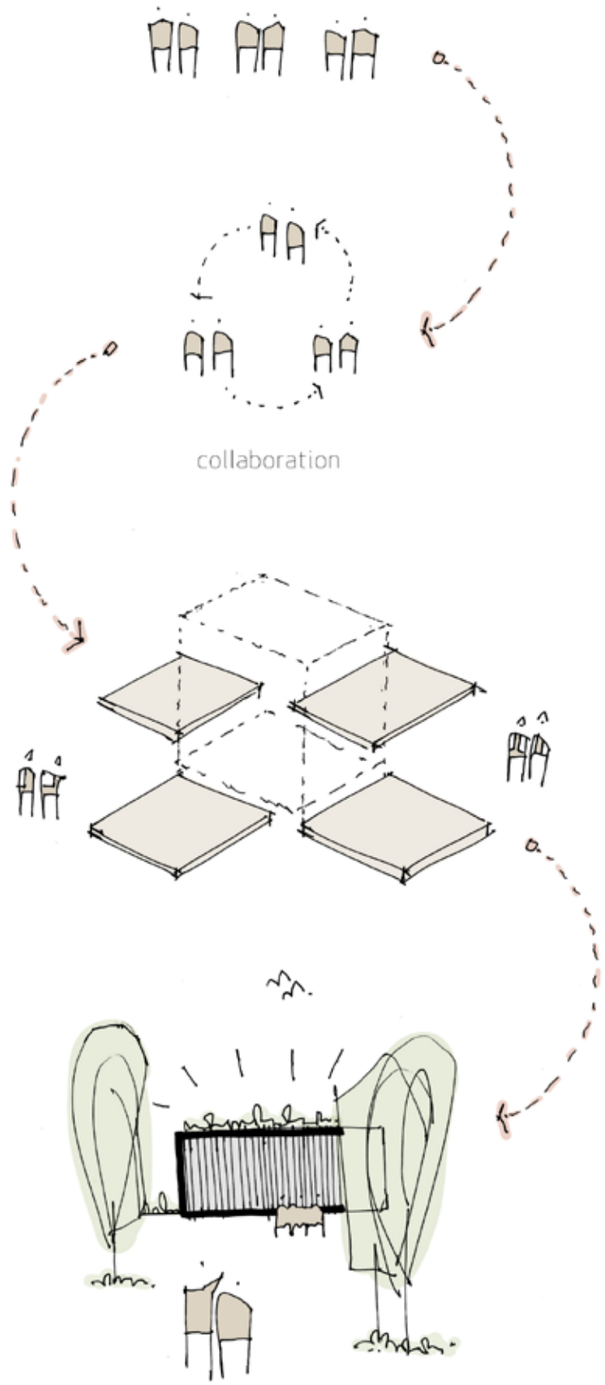




Poor Air Tightness

Good Air Tightness





A favourable form factor
School buildings are often relatively large buildings. Form factor measures the efficiency of the building shape, comparing the external surfaces and the floor area. The more compact the more energy and cost efficient the project will be. The schematic designs illustrate reasonable form factors, during the feasibility stage, more design work will allow us to formally assess and optimise this criteria.

Excellent insulation
Thermal insulation should be of the Passivehaus standard (u-values of the opaque building components of about 0.1 to 0.15 W/(m^2K)). Depending on the building, one can apply improved roof insulation cost-efficiently and then for, example, use less insulation for the external walls. Individual u-values of very small opaque partial areas should not exceed 0.35 W/(m^2K). We propose that the u-values of floors, walls and roof should (at this stage) be estimated at 0.13W/(m^2K). This will develop further through the design stage.

Absence of thermal bridges
Thermal bridge free construction should be used throughout this project, key areas to consider in the construction strategy are structural loading points (Horizontal and vertical), load bearing walls and at foundations. A thermal bridge-free construction means minimum internal surface temperatures should be above 13°C everywhere. This contributes significantly to lower maintenance costs and building longevity.

Airtightness
An airtight school building means that there are no draughts in the winter and significantly reduces heating requirements. The standard is to achieve 0.6h-1 but we will aim to beat this and achieve close to 0.3 h-1 (n50). Numerous built examples show that for larger buildings, such values can be achieved. We will develop a testing strategy at feasibility stage, for the emerging design, to minimise risk of failure at completion.
Airtightness goes hand in hand with a robust ventilation strategy.

Passive House windows
The use of triple-glazed Passivhaus windows with u-value less than 0.8 W/(m^2K) is required throughout. This will include any curtain walling. Roof lights and atria may required higher levels of performance for the glazing and frames.

Ventilation systems
The installation of ventilation systems with sufficient fresh air flow rates is essential for good air quality in classrooms. The designed air quantities should be 15 to 20 m^3 per person / per hour during the period of use. Most importantly, the system must satisfy the criteria for hygiene. Note particularly the necessary filter qualities (at least F7 for external air) and to keep this filter dry. Highly-efficient heat recovery from exhaust air is essential for Passivhaus schools (heat recovery rate of about 80%). Working with the airtightness, this keeps the heat in the school and, in winter, allows the activities within the school to provide the heating. In summer, a bypass system allows the ventilation system to bring cool air in from outside and exhaust hot air, this is not air conditioning, just good quality ventilation systems.

Summer Overheating
Particular attention must be paid to thermal protection in schools in the summer. We will undertake thermal modelling and bring the risk of overheating down to below 10%. Generally, in schools there is a high proportion of glazing surfaces in the facade. Shading is usually necessary due to the high solar loads in summer (the only exception being for windows facing north). Temporary sun shades will usually be necessary. Adequate night-time ventilation (at least 2 h-1) during hot spells is equally important for school buildings. This is also possible by operating the ventilation system(s) in the bypass mode.

High internal heat capacity
Due to the intermittent and periodically increased internal loads, a high internal heat capacity is recommended for school buildings. The capacities that can be achieved with solid interior building components (internal walls, ceilings, floors) are sufficient. If the available internal heat capacities are insufficient, this must be compensated for by other high-performance systems for summer cooling (night-time ventilation and shading alone will not be sufficient for this, because these components are required anyway and cannot work effectively in a purely lightweight construction).

Low Carbon // Daylight + Ventilation

In order to achieve the Passivhaus criteria the design needs to balance the design and size of windows in the building fabric with the daylight, heat gain (particularly in summer) and heat loss (particularly in winter).

Whilst Building Bulletin 90 generally recommends 300lux accross the working plane, it is recognised that closer to 1000lux offers a better environment for learning and concentration. We will consider these competing issues to formulate room layouts and daylighting strategies to incorporate into the design development.

Meeting Low-Carbon Performance – Façade Proportions
The amount of glass to wall to be used is a fundamental aspect of achieving the thermal-lighting balance required for the energy performance. Recent history has saw far too much glass being used on facades in all building, but particularly schools. At present we suggest a glass to wall percentage of 30%:70% on all elevations as a maximum. The extent of glazing requires to be developed through iterative modelling during detailed thermal modelling work.

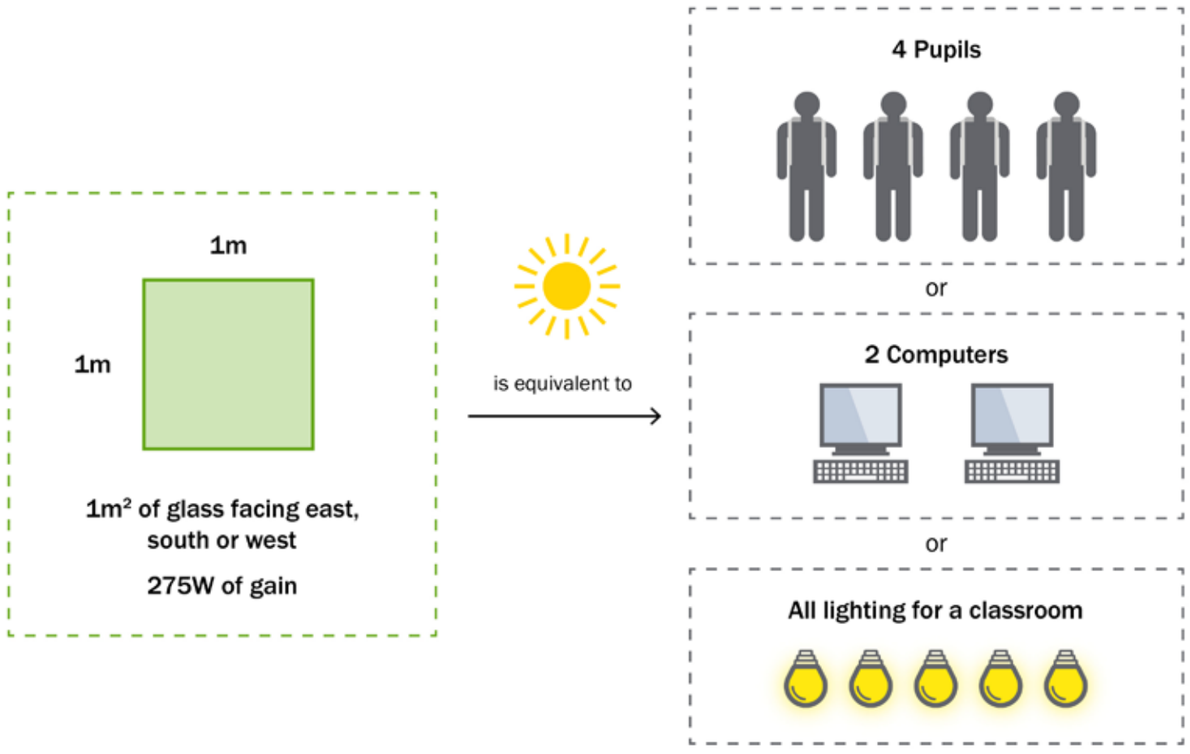
For roof lights, we currently recommend an upper limit of 10% roof area as roof lighting. There is a balance to be achieved with getting daylight into the deeper plan spaces and losing too much heat or gaining too much heat.

We recommend consideration of south-facing roof lights in strategic locations in order to obtain a bit more passive solar gain into some spaces. The size and distribution of these would be determined during detailed modelling.

Meeting Low-Carbon Performance – Solar Protection
All east, south and western elevations should have solar protection. There are a number of ways to achieve this are either through g-value, window recesses and brise soleil. We recognise some local authorities think brise soleil to be a maintenance burden, but it can be an effective means of reducing solar gain whilst allowing a degree of passive solar heat in winter.

Inherent g-values of glazing types attempting to achieve low u-values will typically be in the range of 0.5 – 0.4, there will therefore be a portion of static solar protection within the windows. If this is coupled with modest window recesses further protection can be achieved.

Meeting Low-Carbon Performance – Room Depth
Obtaining good daylight within the occupied spaces is as much about room geometry as it is about façade design. We therefore recommend the occupied rooms benefiting from windows are kept to a depth which allows good natural light penetration. Daylight performance will be dependent upon window configuration, internal reflectance, and room height, but a good rule of thumb is a depth of 6m - 6.5m maximum.



Ventilation is key part of Passivhaus design and a key criteria for effective school environment. By introducing highly efficient mechanical ventilation with heat recovery the indoor air quality can be substantially improved. Evidence from other schools shows that the carbon dioxide levels can remain generally below 1000ppm whilst aligning with the wider requirements of Building Bulletin 101:2018.

We envisage that the simplest ventilation solution is a simple cascade concept of supplying air to classrooms and extracting from the WCs and open plan learning spaces The open plan areas would be used for teaching and ventilated by overflow air from classrooms via low pressure-loss acoustic vents that also serve for passive night purge air transfer. All air handling units will need to be certified components by the Passivhaus Institute, with rigid ducting.

The key Passivhaus technical criteria for ventilation, are set out adjacent;

- Minimum installed Heat Recovery Rate ≥ 75%.
- The ventilation volume flow rate must be adjustable for the actual demand. In schools this is modulated by a CO2 sensor to ensure that the ventilations responds to increases/decreases in demand.
- All rooms within the thermal building envelope must be directly or indirectly (transferred air) ventilated with a sufficient volume flow rate. This also applies for rooms which are not continuously used by persons provided that the mechanical ventilation of these rooms does not involve disproportionately high expenditure.
- The ventilation system must not generate noise in rooms with prolonged occupancy. Recommended values for the sound level are (a) ≤ 25 db(A): supply air rooms recreational rooms in non-residential buildings (b) ≤ 30 db(A): rooms in non-residential buildings (except for bedrooms and relaxation rooms) and extract air rooms in residential buildings
- The average ventilation volumetric flow must be determined for the specific project based on a fresh air demand of 15-30 m3/h per person (higher volumetric flows are permitted in the case of use for sports etc. and if required by the applicable mandatory requirements relating to labour laws). The different operation settings and times of the ventilation system must be considered. Operating times for pre-ventilation and post-ventilation should be taken into account when switching off the ventilation system.

Low Carbon // Energy Use

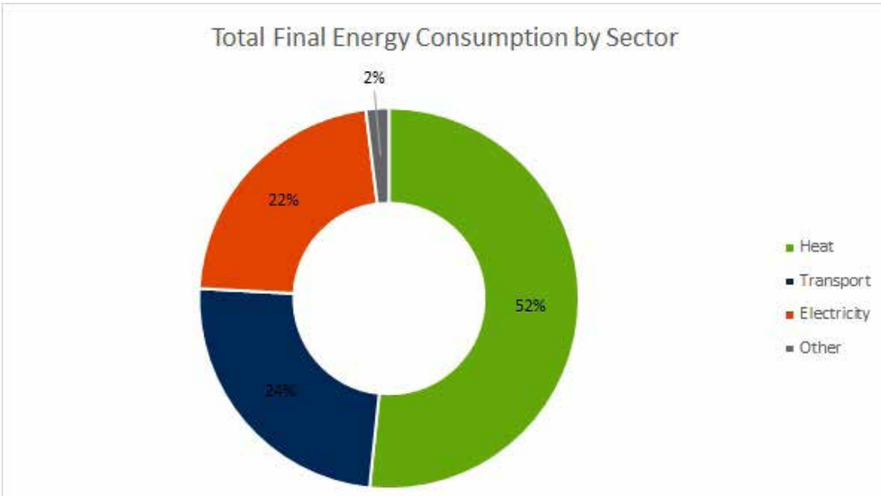
Although we talk about carbon dioxide, its important to recognize that the demand for energy drives the quantity of carbon dioxide emitted. Our nationwide demand for energy tends to be split into four main categories, these being heat, transport, electricity and other. The most recent data published by the Scottish Government outlines the following split for each of these demands.

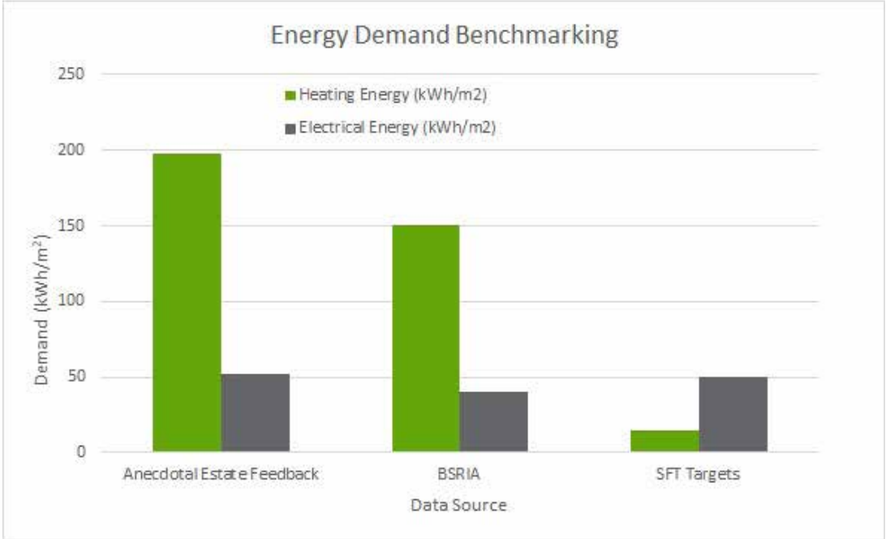
Heat and electricity are the two components relative to building use and design. This makes the bulk of the national consumption, amounting to approximately 74%.

Energy demand in schools has mostly been heat driven. We have considered sector feedback as well as industry guidance on good practice demands, these are presented in the following graphs.

The chart reveals a relatively consistent trend for electricity, but a very visible downward trend for heating energy demands.

The focus on defining Low-Carbon for school buildings is therefore very much focused on thermal performance. Although this is the case, we cannot lose sight of electrical demands and must make effort to reduce those as well.





Defining Low-Carbon – Fuel Sources

The identification of demands helps identify the relevant fuel sources available to meet those demands. Traditionally fuel sources throughout estates in Scotland has been from electricity, natural gas and oil.

The carbon intensity of these fuel sources changes depending on process to produce them and where they are sourced from. Typically, the figures for natural gas and oil do not change much. The greatest change is often seen in electricity.

The national carbon intensity of electricity tends to be a blended UK wide figure. At present the official figure used to represent one kWh of electricity use (as per the Scottish technical standards) is 0.519kgCO2/kWh. This is an exceptionally high value and would represent a very dirty and environmentally unfriendly source of energy.

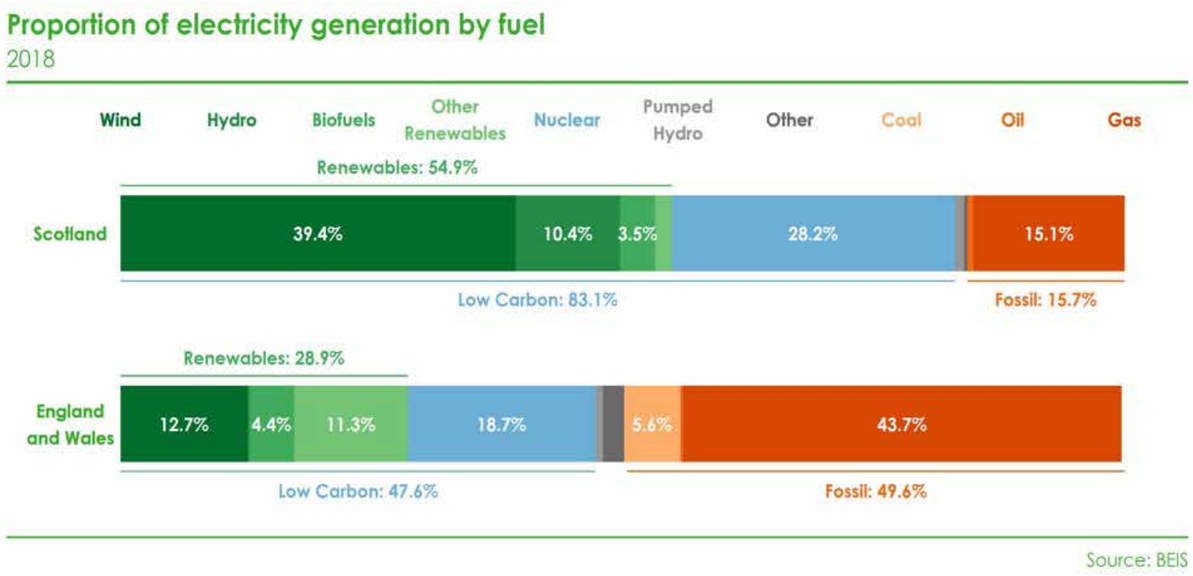
The figure of 0.519kgCO2/kWh is far out of date though and no longer represents the national grid. Improvements made to the national grid includes significant additions of wind energy. Scotland no longer has coal-fired power stations generating electricity on our national grid – Longannet a 2,400 mega watt station being the last surviving of its kind was decommissioned in March 2016. Our nationwide transition from fossil fuels is best demonstrated through the number of new wind farms constructed. All but 4 of the 99 Scottish UK Grid connected wind farms have been commissioned since the year 2000 with 43 of these being commissioned in the past ten years. We now have 8,423 mega watts of power generated by wind turbines – translating into three-and-a-half Longannets – all delivering clean energy.

The Building Research Establishment (BRE) has recently announced revised figures representing the carbon dioxide content of the National Grid – the new figure being 0.233, a 45% reduction in emissions. This suddenly makes the use of electricity much more environmentally friendly than it has ever been since the drive to reduce national CO2 emissions began.

As mentioned, the carbon intensity of the national grid is a blended UK wide figure. As a side-by-side comparison, the chart below outlines sources of electrical energy generation in Scotland and England & Wales. The fossil fuel content of electricity in Scotland is only 15.1% – and falling. The UK-wide figure is higher at 49.6%.

Over the next 25 years, the carbon content of the national grid will reduce, with the remaining fossil fuel content diminished. Therefore, buildings utilising electricity become environmentally cleaner as the years pass.

Fuel sources such as natural gas and oil will typically retain their current carbon dioxide intensities (0.216kgCO2/kWh for natural gas and 0.319kgCO2/kWh) and as such investing and implementing these technologies will literally leave the building static to future development and cleaning of the national grid.



Low Carbon // Energy Use

Defining Low-Carbon – Uses of Energy within a School

Although we recognise thermal and electrical demands are the two main routes of energy consumption within a school building, its important to understand the variety of end uses these two routes represent. The adjacent list provides a typical example of where energy is used in schools.

There is much to be said about 'performance gaps' within school buildings. These performance gaps tend to exist through design elements not being seen through to site and completion as well as fundamental uses of energy not being reportable as 'regulated' under Scottish technical standards.

Regulated and unregulated energy are definitions to elements of energy use which are considered as part of the overall Section 6 compliance modelling and energy performance certificate (EPC) production. Design professionals cannot report on unregulated elements due to the way compliance modelling has been set-up. In order to track all these uses and to define and deliver a low carbon building, a 'design for performance' approach should be taken rather than the traditional 'design for compliance' approach. This ultimately requires more detailed modelling of the building, its processes and usage patterns. This detailed modelling will require input from the local authority, but it will eventually represent a much more detailed and informed design, reducing the traditional performance gap. This alternative approach to traditional compliance-based energy tracking puts a firm focus on all energy consumptions within the building at a very early stage of design development. Tracking this through from RIBA Stage 1 to RIBA Stage 7 will provide a valuable feedback loop to refine and evolve the process.

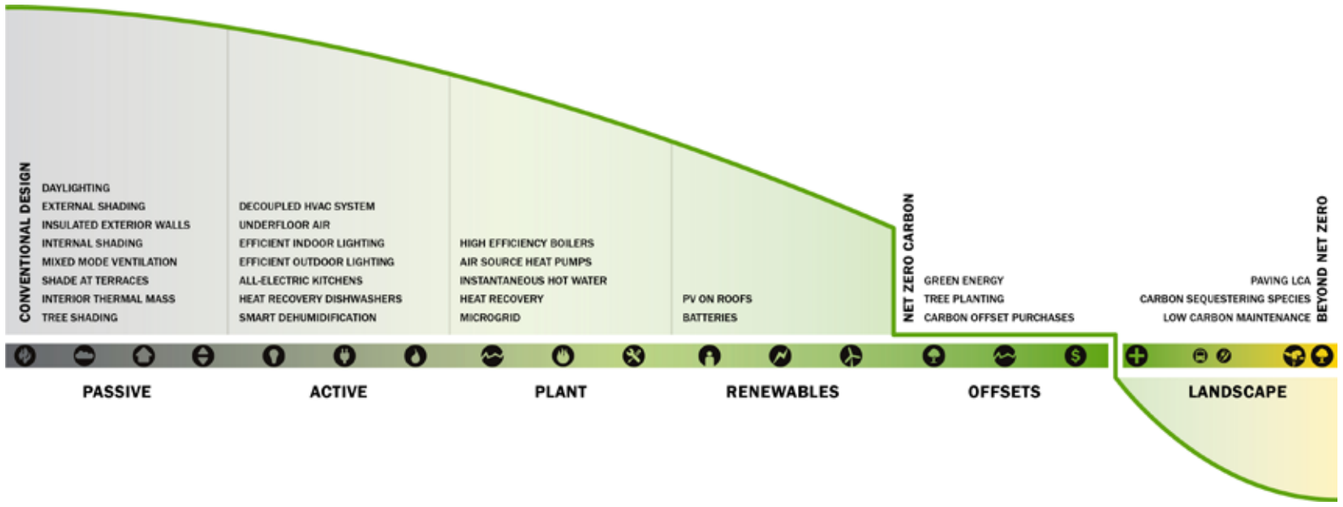
End Use	Regulated or Unregulated (as per Section 6)	Regulated or Unregulated (under Passivhaus Methogology)
Space Heating	Regulated	Regulated
Ventilation Air heating	Not Applicable – not measured in Section 6	Regulated
Domestic Hot Water	Regulated	Regulated
Artificial Lighting	Regulated	Regulated
LTHW Pump Sets	Regulated	Regulated
Ventilation & AU Fans	Regulated	Regulated
Space Cooling	Regulated	Regulated
IT Power	Unregulated	Regulated
General Small Power	Unregulated	Regulated
Kitchen Gas / Power	Unregulated	Regulated
Kiln Power	Unregulated	Regulated
Laboratory Fume Cupboard	Unregulated	Regulated
Home Economics Hob	Unregulated	Regulated

Meeting Low-Carbon Performance – The Basics & The Process

For decades, the abundance of energy availability has created generation after generation of buildings which have been developed with little recognition of climate. Delivering a low-carbon building should look to consider the local climate as part of the design. Basic considerations such as orientation and fabric proportionalities need to be considered in detail. The below flow diagram illustrates an outline process that should be followed as part of the low-carbon performance delivery.

Much work should be done in this respect. Reducing heat related energy consumption is entirely based on orientation, form, façade proportionality and fabric u-values.

Getting these elements correct will therefore lead into streamlining other uses such as artificial lighting and ventilation. The façade work will also significantly influence overheating risk reduction and space cooling energy use.



Meeting Low-Carbon Performance – Orientation

Building orientation decisions must take into account numerous factors and there is often a compromise to be had between a number of competing and sometimes contradictory needs.

The main environmental variables to be considered when selecting orientation are as follows:

- solar gain (for overheating)
- solar gain (for passive solar heating)
- wind (for façade pressures)
- daylight provision (particularly if measuring on a climate-based performance)

With these points taken into account, it becomes clear that 3 of the 4 are related to the sun and therefore how the building interacts with the sun. As such, understanding the suns dynamics and specific solar properties occurring on the site is important.

Taking this by façade, the following outline performance impacts can be deduced from the current design option.

Façade	Solar Gain (for overheating)	Solar Gain (for passive solar heating)	Wind (for façade pressures)	Daylight Provision	Notes
North	Only limited diffuse radiation – therefore no adverse impact.	Only limited diffuse radiation – therefore no positive thermal impact.	Entirely protected from the south-westerly prevailing condition but can be a strong leeward pressure therefore attention to detail required on air permeability.	Consistent quality of light due the sun never providing direct light, all light will be diffuse.	Thermal quality of façade installation is important on north façade as it can be a strong leeward façade and it is in the shade consistently therefore will experience greater radiant losses if workmanship is poor.
East	Can experience high solar gains in the morning (up to 650W/m2).	Can experience high solar gains early in the morning and can therefore be a useful pre-heat.	Limited pressure with respect to pre-vailing wind.	Daylight can be high in the morning if using a climate-based analysis.	This façade can experience high solar gains and therefore if there is a lot of glass facing into occupied spaces it should be treated for solar protection.
South	Can experience high early to mid-afternoon solar gains (up to 550W/m2)	Can experience high solar gains early to mid-afternoon and can therefore provide some passive heat.	Can be a strong windward façade for the south-westerly prevailing wind conditions. Attention to detail required on air permeability.	Daylight can be high in the afternoon if using a climate-based analysis.	This façade can experience high solar gains and therefore requires solar protection in order to balance off overheating with passive solar gain.
West	Can experience high solar gains in the late afternoon (up to 650W/m2).	Can experience high solar gains early in the later afternoon and can therefore be a useful post-heat.	Can be a windward elevation.	Daylight can be high in the afternoon and early evenings if using a climate-based analysis.	This façade can experience high solar gains and therefore if there is a lot of glass facing into occupied spaces it should be treated for solar protection.

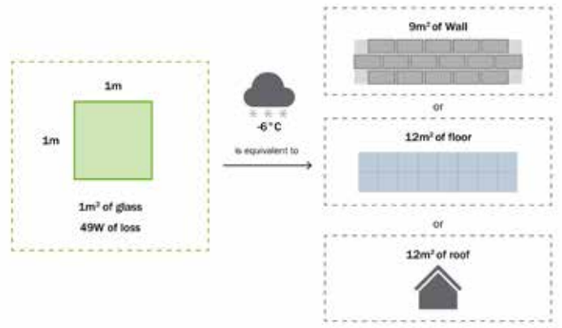
Meeting Low-Carbon Performance – Fabric Thermal Performance

Achieving the low-energy and low-carbon performance will require a high-performance façade. This is an area which cannot be compromised upon. The fabric performance strongly dictates the amount of heating required to maintain comfort conditions. The architectural solution forming the façade determines the amount of heat to be put into the building. We therefore recommend the following thermal performance is achieved as a minimum.

We recognise these values are lower than traditional schools, but traditional schools deliver traditional energy performance results. The next generation of schools need to be over 70% better than the traditional school estate performance.

Beyond the actual fabric u-values and the air permeability, thermal bridging must be dealt with. In order to provide a performance metric to include thermal bridging, we suggest an overall fabric u-value (area weighted) of less than 0.4W/m2K is achieved.

Element	U-Value (W/m²K)	G-Value	Leakage Rate (m³/m²h)
Wall	0.1	-	
Roof	0.1	-	
Floor	0.1	-	
Window	0.8	0.45 ≤	
Air Permeability	-	-	1 ≤
Thermal Bridging (Area Weighted Performance)	0.4		



Electrification of Heat – Future of Energy in Scotland

In December 2017, the Scottish Government released a document titled 'Scottish Energy Strategy: The Future of Energy in Scotland'. This document principally outlines two desired future scenarios, these are:

- Scenario One – An All Electric Future
- Scenario Two – A Hydrogen Future

The document does not explicitly state which scenario is more likely, both are supposed to be indicative and fluid. However we would suggest the more likely future scenario is an all-electric scenario. There are two main reasons for this; the first is the uptake in electric vehicles. Electric vehicle use is driving the need for smart networks that use power in a much more managed arrangement; electric vehicles are also helping to inspire investment in electric technologies such as wind turbines, photovoltaic panels and battery storage systems. A second driver for the all-electric future is the pressure on local authorities to improve air quality within their boundaries. Improving air quality requires a mass movement away from combustion technologies, including transport and heat generation.

Another aspect which makes the all-electric arrangement more favourable is that it is much simpler than generating and distributing hydrogen. Although these are two scenarios presented by the Scottish Government, it is not to say systems such as combined heat and power (CHP) or biomass boilers are being eradicated, it is however important for us to take on board potential future scenarios due to the long lead team of the masterplan.

Increased Power Demand

Due to increased grid de-carbonisation obligations, increase in population and technology change we see a future with an increase in electrical demand. The national grid have stated that any additional demand will be dealt with through an increase in renewables. There are several incentives to support both private and public schemes for this.

Shift in the Location of Power Production

Society has embraced the fact the due to dwindling global resources we have to power and heat our homes and businesses in a sustainable way. This has led to an increase in the use of renewable technologies. This is the correct approach, but our electrical networks have been designed for large scale power delivery at centralised power stations from networks which are decades old and not designed to easily facilitate distributed power networks.

The All-Electric Future

Now there are very few ways to deliver renewable heat to buildings and as such we see an increase in power requirements associated with the delivery of heating and hot water which begs the question is our future all-electric? National Grid this year carried out a presentation which discusses this.

Electrical Vehicle Revolution

The only practical way at present to drastically reduce the air pollution within our cities is to increase the use of electric vehicles, again this puts pressure on our already aging power infrastructure.

Currently the market share of electric vehicles (EVs) is low, but growth is strong due to government and manufacturing investments. Transportation trends today and recent developments in EV technology make it apparent that electric vehicles will ultimately dominate the transport sector, with EVs firmly positioned to become a growing part of the transport mix in the coming decades.

As has been alluded to earlier within this report, we would look to move the new school building onto an all-electric future, both for thermal purposes as well as general electric purposes.

Low Carbon // Electrification of Heat

Electrification of Heat – Available Solutions

Once all of the orientation, form and fabric interventions are made to reduce the thermal demand of the building a low energy and demand driven HVAC system can be detailed and designed in order to respond to this passive and low demand building.

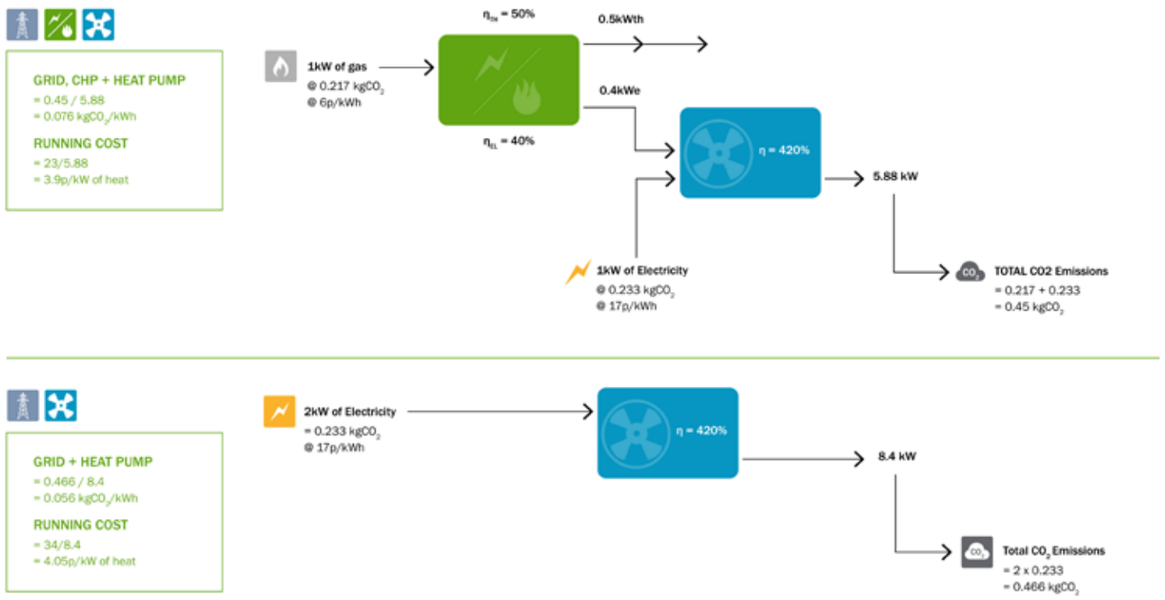
Generating heat must be via efficient means. The generation of heat must also include consideration of the future energy strategies discussed above. An efficient all-electric heat generator will be a heat pump solution. Heat pumps could be either ground, air or water sourced. All of these systems could be viable but will come at varying costs against marginal benefits. For example, a water source system using a river will include extra costs for trenching and pipework routing. This extra cost would have to be balanced against the improvement in co-efficient of performance (COP) of the water course. The availability of water courses and space also impacts the selection of heat pump technology. There are no immediate water courses around any of the sites considered and as such water source technology is ruled out. Ground heat exchange loop areas would be determined at a later stage – all sites would appear to have adequate ground area if ground source heat pumps were to be used.

A simpler and potentially more cost-effective solution could be an air source solution. This approach wouldn't require any boreholes or trenching needs, but it will be less efficient than ground and water solutions. Ultimately the benefits of heat pump type need to be considered as a cost / efficiency balance as infrastructure costs may never see a payback.

Electrification of Heat – Costs and Efficiency

We recognise there is a significant cost difference between electricity and gas at present and by heading towards the all-electric future an increase in running costs associated with heating may be see. We also recognise the procurement route local authorities of through to obtain their utilities can make this difference even greater. We have liaised with a number of local authorities on this matter and would typically hear of approximate gas and electricity prices of 2.3p/kWh and 11.5p/kWh respectively. Gas therefore tends to come out around five times cheaper than electricity. By using heat pump technology as primary heat generators, the carbon performance of electricity can be improved. Heat pumps tend to work at efficiencies in the region of 300%. Put simply, the creation of three units of heat would require one unit of electrical input energy. This in effect reduces the CO2 emissions by a factor of three where heat pumps are used. The CO2 emitted per kilowatt-hour unit of heat would therefore be 0.077kilograms of CO2

(NOTE: This is based on the upcoming revised carbon dioxide content of electricity). This is over three times better than the performance of a natural gas fired system. The following graphic outlines the environmental and capital balance of utilising a heat pump as well as a heat-pump + CHP approach. This outlines the carbon dioxide benefits of using heat pumps with a national grid reducing its carbon dioxide content. It also shows the limited impact CHP will have moving forward because of the improving national grid. The adjacent comparative scenarios outline the carbon benefits of heat pump technology with an ever-diminishing national grid carbon content



Embodied Energy + Circularity

The term embodied energy, in this context, describes the energy already invested in the building at the point of completion. These carbon emissions are rarely measured but when they are, they often account for 30 to 50% of the buildings whole life carbon emissions. Thus to reduce lifetime carbon emissions, careful attention should be paid to the embodied carbon of the materials we use.

To assist in ensuring this is delivered we propose a target of 600kgCO2e per m2 for the project. This should be assessed at key stages and reported, with the cost report.

We propose to use a hierarchy approach for key structure and super structure components, this will enable minimising of high embodied energy materials such as steel and concrete, with the optimisation of using materials such as timber.

Minimising material usage where possible should also be a key strategy, particularly with pipework and ducting networks. The design of the systems should look to consider the extent of the network. Centralising most water consuming devices (e.g. changing villages) would be a simple way to achieve this, therefore limiting pipework infrastructure through the building.

Local economy

Reinvesting pounds spent on this project into the local economy is a key aim. At this stage the principles we will use to guide decision-making will be according to this hierarchy:

- Can a suitable product or service be sourced within the West Dunbartonshire area?
- Can a product or service from West Dunbartonshire be adapted or trained to enable it to perform as required?
- Can a suitable product or service be sourced within Scotland?
- If a suitable product (such as specialist Passivhaus items) can not be sourced in Scotland, can the product be imported and installed by local contractor team? Especially if this means training for those local contractor teams
- Passivhaus training and understanding to be given to all contractors on this project, to enable ups killing of local workforce

Digital // Connected Learning

The Digital Agenda – The Scottish Strategy

The Scottish Government have produced a digital strategy for Scotland which looks to develop Scotland's potential in the digital world. This strategy includes encouraging innovation within digital infrastructure, introduction of shared technology platforms, ensuring access to set broadband speeds and launching a new digital schools programme.

This strategy recognises that our schools have to education jobs that do not exist yet and digital connectivity is vital to enable young people to learn in the digital world.

We understand the Scottish Future Trust require all school buildings to achieve a data speed of 1GBps. This goal aligns with the Scottish Technical Standards recommendation on fibre only technology which also looks connect buildings to exchanges capable of delivering speeds of up to 1 Gbps.

BT and Virgin Media have infrastructure surrounding the site, but beyond that ensuring incoming lines are non-contested will help achieve the data speeds required.

The Digital Agenda – West Dunbartonshire Vision & Delivery

The West Dunbartonshire Council vision is for all learners and educators to have access to a range of ICT opportunities that allow them to make the most of their talents and achievements in a manner conducive to a 21st Century approach to education and learning.

This includes the need to take advantage of modern ICT solutions, and associated infrastructure that enables learners and learning to take place in a safe but encouraging environment without undue barriers.

Delivering upon this overarching vision requires the following strategic steps:

- Good and expanding bandwidth in schools and libraries, linking with the Council ICT HQ and Scottish Government hubs.
- Wireless enabled schools and libraries which give access to a range of ICT opportunities.
- Links to national data storage centres and 24x7 access to safe virtual learning environments for all WDC learners and educators.
- Opportunities for user connectivity in school, home, or from any access point regardless of the connection used, to encourage learners and educators to make flexible use of national and local resources.
- A mix of devices in schools and libraries including handheld and Bring Your Own Device (BYOD), as well as council owned wireless devices and hardwired networked machines where necessary.
- A presumption of access policy to all learning opportunities within a safe but not restricted environment.

Just as access to a pencil, paper, textbooks, chalk, and a blackboard were prerequisites for education in the 20th Century, there are standard requirements for our 21st century curriculum and ICT provision. These are fast, flexible and safe and include the following:

- Access to a range of online learning environments such as Glow and GSuite for Education.
- Access to an e-mail account and calendar.
- Access to a range of groups with whom learners and educators have interests in common.
- Access for parents, carers and supporters of young learners within a controlled environment.
- Access to a wide range of educational sites including nationally supported media such as The Virtual Campus and various commercial products, within a safe environment.

The youngest learners are digital natives and have grown up in an age of rapidly expanding digital technology. The barriers they have to learning through technology tend either to be socio-economic, or lack of facilities in their schools or local libraries. Given the vision of the Council to address disadvantage and to raise attainment and opportunity, the WDC ICT strategy is a key component to achieving these goals. This therefore requires the development of a culture leading to:

- Innovation in the use of learning through technology, building on some excellent practice already in use in WDC.
- Educators embracing technologies as part of their pedagogic toolkit and accessing Professional Learning Opportunities to increase their skills and confidence.
- Universal access by learners to ICT in all learning environments as an entitlement.
- Leaders in schools and across the Council demonstrating a commitment to learning through technology in their behaviours and in their policy decision.
- Access to a range of technologies for learning being part of our approach to addressing disadvantage and increasing the life chances of our young people.

The West Dunbartonshire Council IT Modernisation project has significantly improved the authorities position in terms of network infrastructure. However, with the recent influx of new wireless devices, such as Chromebooks and the roll out of BYOD, device:pupil ratios are quickly progressing to the 1:1 ratio objective. Therefore, it is important to continue to build on this base standard to ensure the estate remains fit for purpose.

Indications suggest bandwidth requirements for large Primary Schools should be ~100Mb and ~1Gb for a Secondary Schools.

Bandwidth itself is not enough, and key decisions have to be taken on issues such as:

- Continued investment in learning devices to maintain a fit for purpose estate and to achieve our objective for ratios of 1:1 across all schools.
- Potential shared and partnered services to make the most efficient use of our resources.
- More liberal but safe applications of Internet access than at present
- The use of technology as a core component of accessing and delivering the curriculum.
- The entitlement of learners to a range of ICT based opportunities that best suit their needs.

The design of the school therefore must respond to the digital vision in order to help develop this overall strategy and culture of digital learning.

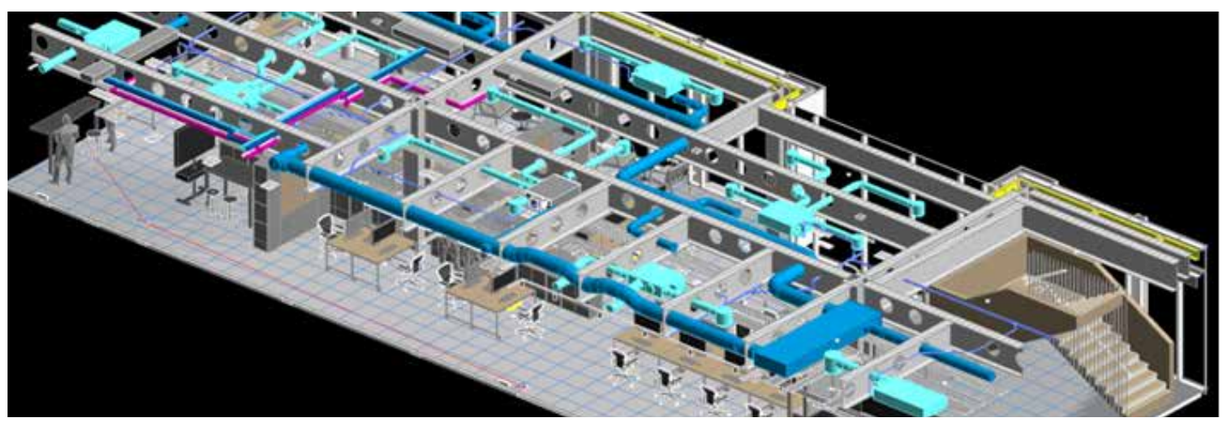
Digital // Smart Technology

Building Design, Development & Construction – Digital Engineering

Digital Engineering is a modern element of construction projects. Digital Engineering encompasses the use of design software and technology on site to ensure the quality and accuracy of construction projects. Building Information Management (BIM) tends to be the term most used to describe the approach to digital engineering in construction.

Building Design – BIM

During the design stages we propose to use BIM in order to deliver the project. This will be done according to the various RIBA Stages, with Level of Detail (LOD) and Level of Information (LOI) being 2, 3 and 4 for RIBA Stage 2, 3 and 4 respectively.

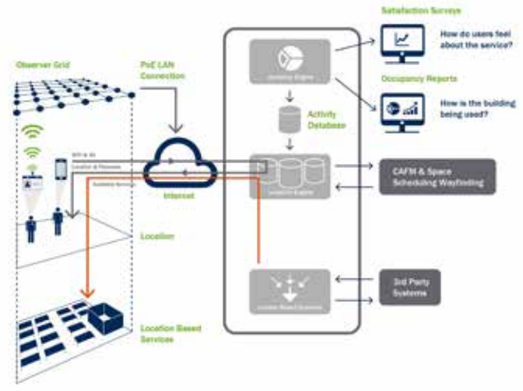


Implementation of SMART Technologies

We believe there is great opportunity to improve our schools through the use of smart technology.

We have experience in making the concept a reality and we would first establish the desire and need to integrate such technologies as part of the project.

We conduct a presentation to help define the brief and also to establish if the FM team have the necessary skill set to use the information.



Digital Touchpoints

In all buildings today we have various points at which we interface with the building which includes elements such as access control, lifts and occupancy detection. We have illustrated below some of the systems which we traditionally interface with. The above systems are however limited on there own and do not allow us to analyse each space as a cohesive strategy which is why we need to establish a network of sensors which we can an observer grid.

The Observer Grid

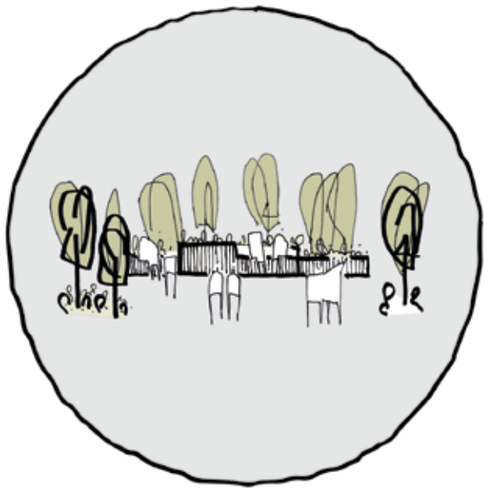
The observer net is a network of sensors which are located throughout the building. The sensors can be integrated into luminaires which allows them to derive power and also the ability to network together and allows the system to communicate.

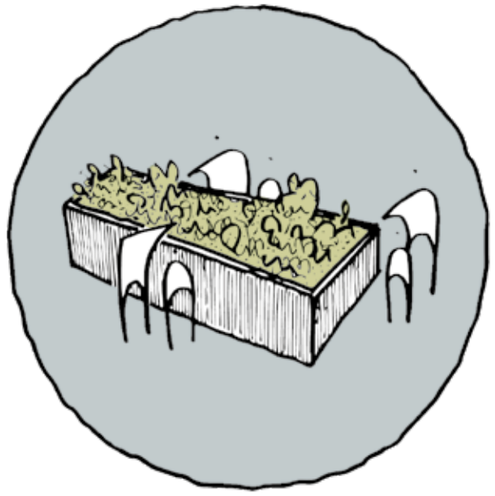
These sensors not only contain standard lighting functionality such as light and presence sensing, but also Bluetooth transmitters and receivers, temperature sensors, CO2 sensing capabilities. This allows as a basic principle for us to identify energy use, occupant utilisation and the ability to connect to 3rd party software.

There are main observer grid solutions availability however we at Atelier Ten have experience of two observer grids POE and also Enlighted. Both of the solutions have similar capabilities, but there are different Pros and Cons of each of the systems which need to be discussed as part of the briefing stage for Smart Buildings.

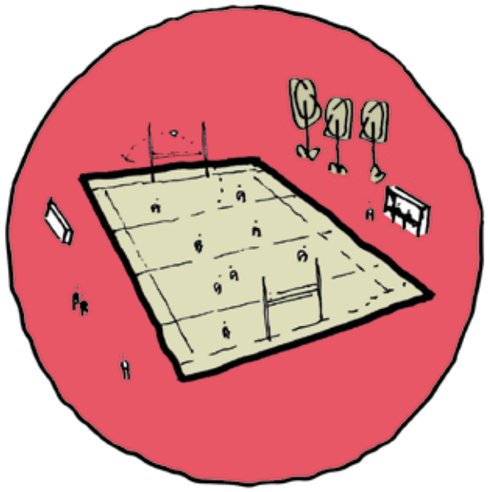
The Potential Applications of Smart Technology

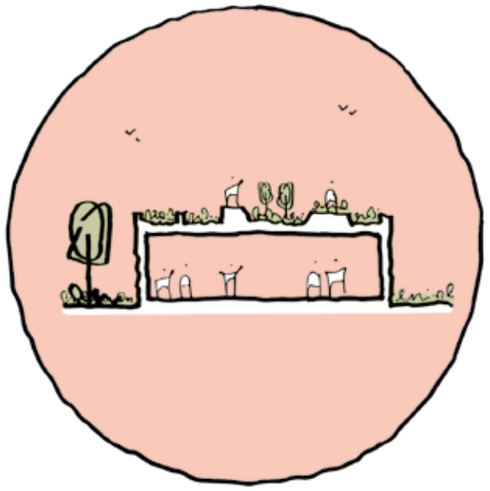
Lighting Management	Monitor and manage your lighting across multiple floors or buildings – locally or globally Reduce your operational costs by remotely optimizing your lighting through overrides, commissioning and re-commissioning Access the Lighting management software dashboard to see how your lighting is being used in real-time
Lighting asset management	Enable remote diagnostics that help you plan your maintenance more efficiently: The dashboard alerts us to any detected faults or outages, so immediate action can be taken. It informs us when your lighting is likely to need replacing based on real-time performance data, allowing predictive maintenance to be carried out
Energy Optimization	Get an in-depth understanding of how lighting energy is being consumed over time across one or multiple sites. Use comparative Data to benchmark and create opportunities for CO2 emission reductions and cost savings. Use space usage insight to enables further energy optimization by closing down unused areas or floors
Scene management	Set light schedules or dimming programs to create a better office environment without wasting energy. Enhance employee well-being by supporting individually personalized lighting via a smart phone app. Provide employees with different light recipes, where appropriate, e.g. for concentration or brainstorming
Space Management (This is Optional)	Capture and analyse building occupancy Data to learn how office space is occupied and used over time Lower real-estate costs without compromising workplace efficiency and employee engagement
Indoor Navigation (This is Optional and requires a specific design approach)	Uses the lighting infrastructure and real-time occupancy Data to guide your employees wherever they need to go. Hyper-accurate indoor navigation opens up a host of additional applications and improves employee performance and experience
Bio-adaptive lighting	Use different levels of light intensity and colour temperatures to get the best out of your biggest investment: your people. Support well-being, help to energise staff and enhance performance by aligning lighting with the body's circadian rhythm.
Environmental monitoring	Collect Data on temperature and humidity levels in the school via sensors embedded in the connected lighting system. Ensure the optimal office environment to keep employees healthy, comfortable and productive





Outdoor Learning // Key Design Factors





Outdoor Learning

The landscape design objective should be to provide a welcoming, safe and inviting external environment that is both integral to and complements the building. It should aim to provide imaginative, well designed, usable spaces that have a strong relationship with the built form and which recognises the value of the school grounds as an educational resource.

The intention should be that school grounds become a learning resource which provides the appropriate context for external classrooms and physical education spaces.

The landscape proposals should therefore provide the opportunity for the grounds to be used in three main ways:

- Teach (formal and hidden curriculum) – outdoor classroom, reading circles.
- Learn (formal curriculum) - gardening, environmental and nature gardens.
- Play (informal curriculum) - break and lunchtime experiences.

The landscape should be developed as a series of flexible and adaptable external spaces of varying scales and uses which provide a framework for learning, interaction, identity and a sense of ownership for pupils and staff alike. The landscape proposals should not be intended to finalise the detail of specific areas but rather set out the framework and structure for learning through the landscape.

This will enhance the individual identity of the school as well as build a sense of stewardship. In these ways the grounds will be a flexible resource, tailored for use as part of the school curriculum. Spaces should be defined by furniture and raised beds, landform and planting creating an environment which is safe, has outdoor teaching capacity and is accessible to all.

Nature/ Environmental Garden Areas
Open grass areas provide external teaching spaces, interaction with the environment and production of plants for consumption. Incorporating wildflowers, native species and fruit trees to increase biodiversity as well as attract birds and insects. Insect hotels, bird boxes and log piles can be incorporated and added to teach the pupils valuable lessons about wildlife and ecology.

Outdoor Classrooms and Teaching Areas
When the weather allows, grass reading circles could be created to bring classrooms outside, possibly within the wildflower meadow areas. Pupils can set up their own work given areas of seating, or in other locations where external teaching is desired and catered for. This is a positive teaching environment and could use the landscape not just at limited lunch breaks but throughout the day.

Installations
Playground markings, raised planting beds, timber story huts, willow domes and tunnels, as well as benches, bins and picnic tables, positioned to suit outdoor play and teaching activities.

Planting
New planting should provide diversity, scale and definition to the school frontage/ parking/ servicing areas. Hedges to define the school frontage and boundaries. Hedge and tree planting should comprise native plant species selected to be robust and encourage wildlife. Wildflowers add ecology interest and seasonal colour to grass areas.

Profiled grass mounds add variety and play interest as well as defining outdoor seating and classroom spaces within the playground.

Materials:
Hard landscape materials should be selected from a limited, co-ordinated palette that is a simple but elegant.

Higher quality paving materials could be used at key entrances and access routes and along the classroom facade to define outdoor classroom spaces. This aesthetic creates a consistent circulation base around the new building. Trees in planters and bench seating could be introduced as details within the plaza entrance spaces for further enhancement. Man-made material such as bounded gravel surfacing and block paving, could add variety and interest to the parking areas and playing field paths as well as defining muster spaces and transitional routes.

Overall Aims:
- A high-quality design that inspires users to learn and socialise.
- Good use of the site, balancing the uses, access and circulation needs with the existing site conditions.
- Well-designed sequence of external spaces offering a variety of different settings for recreation and learning - easily legible and comfortable to be in.
- A simple and structured palette of attractive materials, detailed carefully to be durable and easily maintained.

Disposal Strategy

Site Disposals

It is envisaged that all three sites will be developed as housing sites, either private or social residential.

St Joseph's Primary School (5.287 acres): is a large flat site which could accommodate 100 housing units. It will be attractive to social developers; however, it may attract a private developer sale. The valuation, depending on the developer, is estimated between £2.850m - £6.500m.

Edinbarnet Primary School and Auchnacraig Early Learning Centre (11,759 acres): this site could achieve in excess of 150 housing units and will be of interest to Housing Associations, however, depending on market conditions a private developer may be interested. The sale value is estimated between £1m - £4m.

Skypoint (6.305 acres): this site could accommodate 100 units. Its estimated sale value is between £600k - £3m.

Appendix // Supporting Investigation

Executive Summary	
Proposed Development	It is understood that the client Hub West are accessing three different location for a proposed new-build primary school develop with associated road, parking, yard and green space adjacent to the new buildings.
Recommendations	It is recommended an intrusive site investigation is undertaken at the chosen site, including: • Trial pits on a 25m grid across the site • Cable percussion boreholes on a 25m grid across the site to rockhead • Gas and water monitoring wells installed • Ground gas monitoring and water sampling • Soil and water sampling for laboratory analysis including but not limited to a full UKWIR suite • Detailed UXO Threat & Risk Assessment • Potential Magnetometer Survey

Site 1 – Edinbarnet Primary School		
Site Address	Edinbarnet Primary School, Faifley Road, Clydebank, G81 5BQ	
Grid Reference	NS 504 734	
Site Area	5.20 hectares	
Current Site Use	Former primary school known as Edinbarnet Primary School	
Adjacent Site Uses	The site is bounded on the north by undeveloped agricultural land, the east, south and west by residential properties.	
Site History	Playing fields to the north of site (1957-1963) Edinbarnet Primary School on site (1963-1964)	
Local Geology	Superficial deposits of Denensian Till of Diamicton Lawmuir Formation, of the Strathclyde Group Type	
Landfill Site & Ground Gases	No landfill and waste sites have been identified within 250m of the site.	
Radon	The property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the action level). No radon protective measures are necessary in the construction of new dwellings or extensions to existing buildings.	
Coal Mining/ Land Stability	The site has ***known or potential coal mining risks.***	
Unexploded Ordnance (UXO) Threat Assessment	It is considered that further action is warranted to address the potential for UXO encounter, and that this site requires a further Detailed UXO Threat & Risk Assessment.	
Tier 1 Contaminated Land Risk Assessment	**Human Health**	Low to moderate risk.
	Controlled Water	Low to moderate risk.
	Ground Gas	Moderate risk.

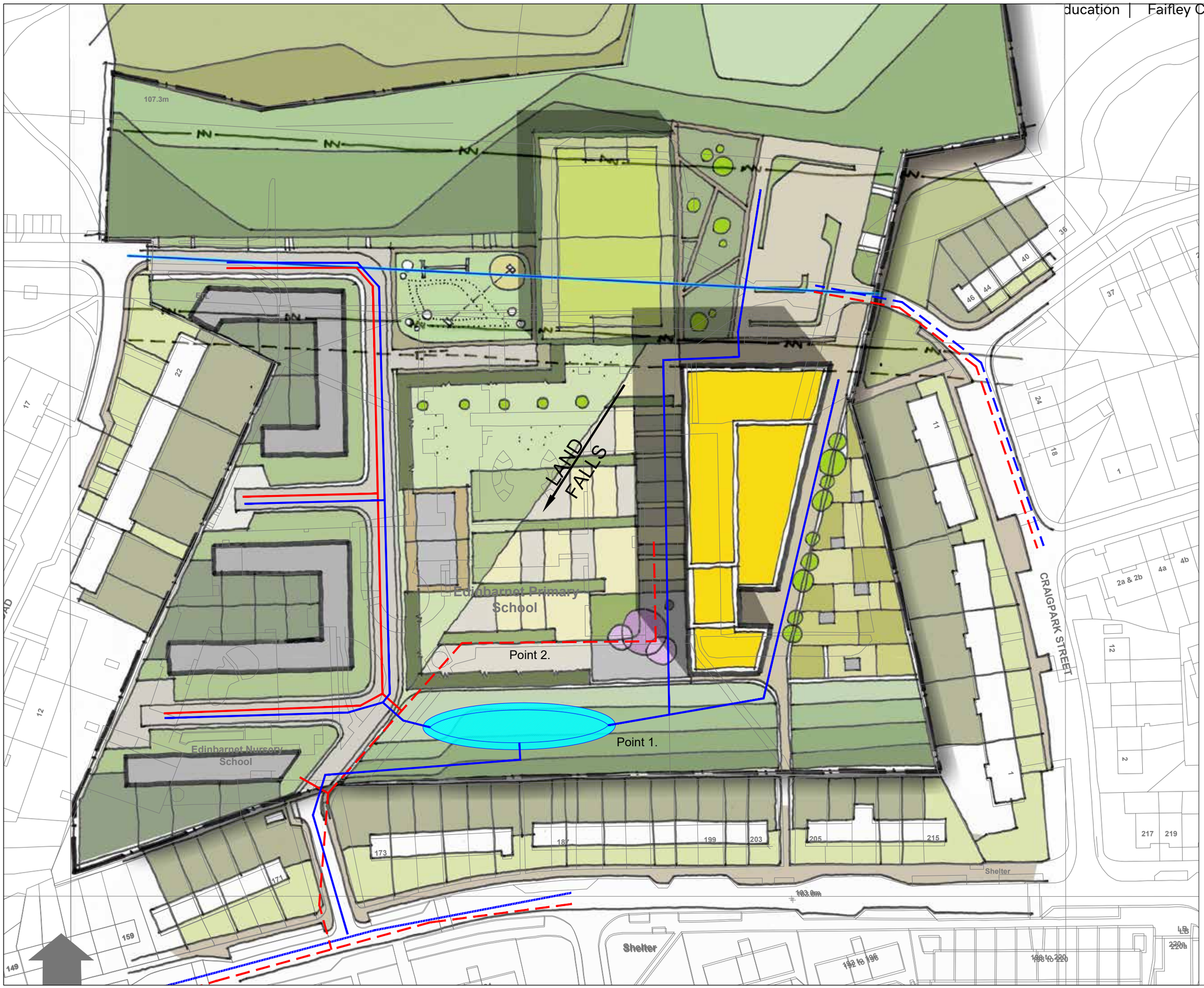
Site 2 – Skypoint School	
Site Address	Skypoint School, Lennox Drive, Clydebank, G81 5JY
Grid Reference	NS 505 730
Site Area	2.47 hectares
Current Site Use	Primary School
Adjacent Site Uses	The site is bounded on the north by Lennox Road and residential properties, the east, south and west by residential properties. The site slopes from north to south.
Site History	Primary School development on site (1948)

Phase 1 Desk Study
Primary School Development

Local Geology	Superficial deposits of Denensian Till of Diamicton Lawmuir Formation, of the Strathclyde Group Type	
Landfill Site & Ground Gases	No landfill and waste sites have been identified within 250m of the site.	
Radon	The property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the action level). No radon protective measures are necessary in the construction of new dwellings or extensions to existing buildings.	
Coal Mining/ Land Stability	The site has ***known or potential coal mining risks.***	
Unexploded Ordnance (UXO) Threat Assessment	As there was no bombing or bomb damage recorded in the Study Site's vicinity during WWII, there is no evidence to suggest that further investigation into UXO is warranted.	
Tier 1 Contaminated Land Risk Assessment	**Human Health**	Low to moderate risk.
	Controlled Water	Low to moderate risk.
	Ground Gas	Low to moderate risk.

Site 3 – St Joseph's Primary School		
Site Address	St Joseph's Primary School, Faifley Road, Clydebank, G81 5EY	
Grid Reference	NS 509 732	
Site Area	2.10 hectares	
Current Site Use	Primary School	
Adjacent Site Uses	The site is bounded on the north by Faifley Road, the east and south by residential properties and west by undeveloped agricultural land.	
Site History	St Joseph's R C Primary School built on site (1969)	
Local Geology	**BGS Geology**	Superficial deposits of Denensian Till of Diamicton Lawmuir Formation, of the Strathclyde Group Type
	Historical Borehole Records (ref. table 2)	**Topsoil –** Natural topsoil was encountered in two borehole locations. **Made Ground –** Seven borehole locations encountered localised made ground of ash and slag fill from the surface. **Subsoil –** Nine borehole locations encountered a subsoil of silty sandy clay with gravel. **Boulder Clay –** A boulder clay was encountered in all locations, described as a very sandy boulder clay. **Sand –** All boreholes encountered a sand strata under the boulder clay strata, consisting of a silty clayey sand with gravel or as a silty sand.
Landfill Site & Ground Gases	Landfill and waste sites have been identified within 250m of the site. One Local Authority Recorded Landfill Site identified at 107m from site.	
Radon	The property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the action level). No radon protective measures are necessary in the construction of new dwellings or extensions to existing buildings.	
Coal Mining/ Land Stability	The site has ***known or potential coal mining risks.***	
Unexploded Ordnance (UXO) Threat Assessment	As there was no bombing or bomb damage recorded in the site's immediate vicinity, there is no evidence to suggest that further investigation into UXO is warranted.	
Tier 1 Contaminated Land Risk Assessment	**Human Health**	Low to moderate risk
	Controlled Water	Low to moderate risk
	Ground Gas	Moderate Risk

June 2020
Issue 1



LEGEND

- PROPOSED FOUL DRAIN & MANHOLE
- PROPOSED SURFACE DRAIN AND MANHOLE
- EXISTING FOUL SEWER
- EXISTING SW SEWER

Notes:

1. ECOLOGICALLY FRIENDLY DETENTION POND TO STORE AND TREAT SURFACE WATER RUN-OFF AND TO PROVIDE NATURAL FEATURES TO ENCOURAGE WILDLIFE.
2. THERE IS EVIDENCE OF AN EXISTING SEWER THAT WE PROPOSED TO PROTECT AND USE AS OUR MAIN FOUL LINE.
3. EXISTING LAND FALLS AWAY FROM NE TO SW.

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Rev.		By	Appr'd	Date
-				

Client: West Dunbartonshire Council

Development: EDINBARNET PS / AUCHNACRAIG ELCC
FAIFLEY ROAD
CLYDEBANK, G81 5BH

Drawing Title: PROPOSED DRAINAGE STRATEGY

Scale at A1	Date	Drawn	Approved
1:500	02/06/20	SF	NF

Cowal Design Consultants
Civil & Structural Engineering ● Development Services
Dunoon– 01369 707 692 Glasgow– 0141 406 1688
London– 020 3856 8144 Oban– 01631 571 280
WEB–www.cowaldesign.co.uk
Email–info@cowaldesign.co.uk

Status: INFORMATION

Drawing No. J3075-C-02 Rev. /

LEGEND

- PROPOSED FOUL DRAIN & MANHOLE
- PROPOSED SURFACE DRAIN AND MANHOLE
- EXISTING FOUL SEWER
- EXISTING SW SEWER

Notes:

1. ECOLOGICALLY FRIENDLY DETENTION POND TO STORE AND TREAT SURFACE WATER RUN-OFF AND TO PROVIDE NATURAL FEATURES TO ENCOURAGE WILDLIFE.
2. THERE IS EVIDENCE OF AN EXISTING SEWER THAT WE PROPOSED TO PROTECT AND USE AS OUR MAIN FOUL LINE.
3. EXISTING LAND FALLS AWAY FROM AWAY FROM FAIFLEY AVE SO WE HAVE POSITIONED THE OUTFALL AND POND AT THE BOTTOM OF THE SITE AND CONNECT THE OUTFALL PIPE TO PUBLIC SEWER IN HART STREET.

.

Rev.		By	Appr'd	Date
–				

Client
West Dunbartonshire Council

Development:
ST JOSEPHS
FAIFLEY ROAD
CLYDEBANK, G81 5EY

Drawing Title:
PROPOSED DRAINAGE STRATEGY

Scale at A1	Date	Drawn	Approved
1:500	02/06/20	SF	NF

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Civil & Structural Engineering ● Development Services
Dunoon– 01369 707 692 Glasgow– 0141 406 1688
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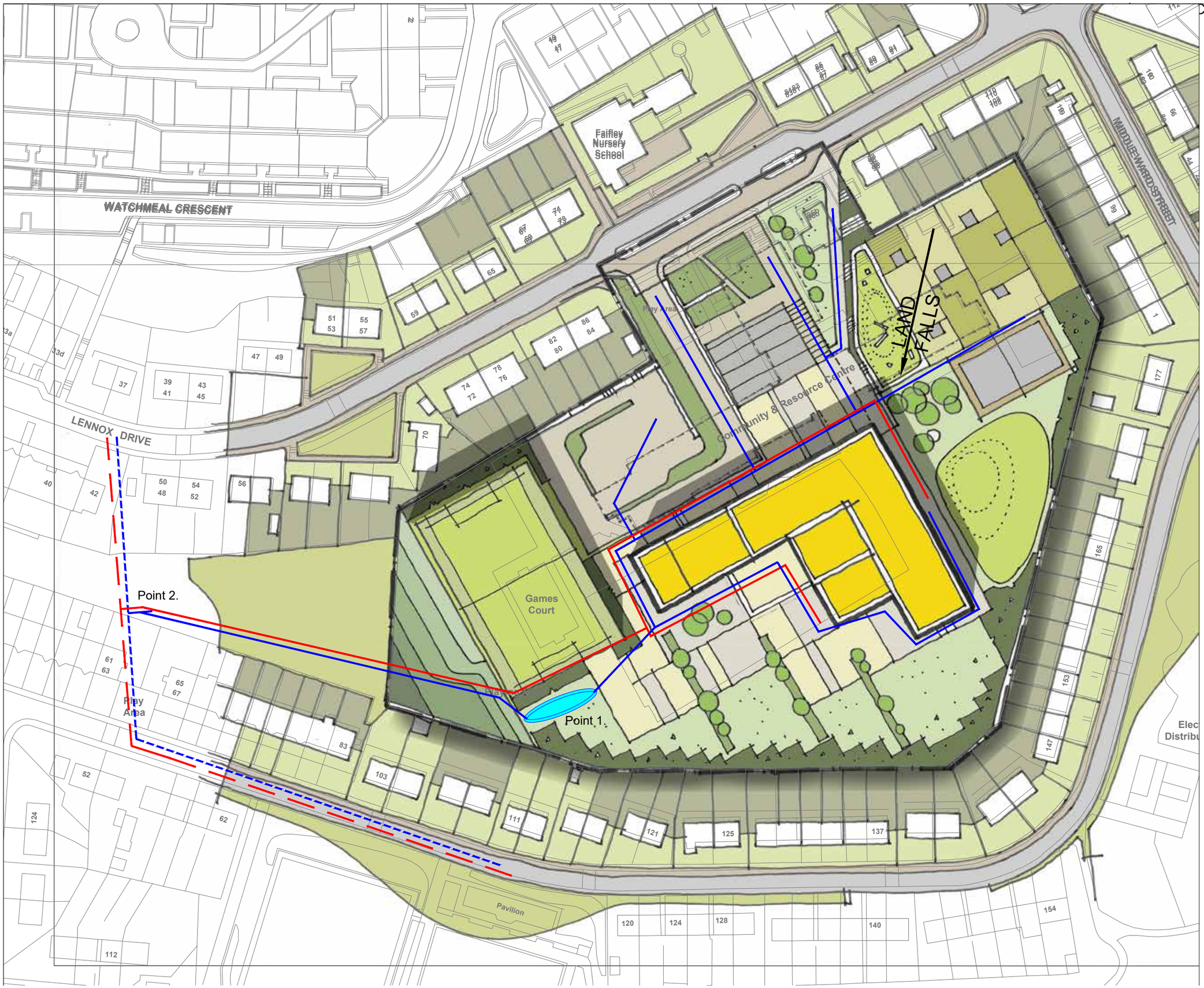
Email–info@cowaldesign.co.uk

Status
INFORMATION

Drawing No.	Rev.
J3075-C-03	/

FB0

Campus, West Dunbartonshire



LEGEND

- PROPOSED FOUL DRAIN & MANHOLE
- PROPOSED SURFACE DRAIN AND MANHOLE
- EXISTING FOUL SEWER
- EXISTING SW SEWER

Notes:

1. ECOLOGICALLY FRIENDLY DETENTION POND TO STORE AND TREAT SURFACE WATER RUN-OFF AND TO PROVIDE NATURAL FEATURES TO ENCOURAGE WILDLIFE.
2. PROPOSED FOUL AND SURFACE WATER DISCHARGES TO CONNECT TO EXISTING PUBLIC SEWER TO THE WEST OF THE DEVELOPMENT.
3. EXISTING LAND FALLS AWAY FROM LENNOX DRIVE WITH A 2m DROP AT THE ENTRANCE.

Rev.		By	Appr'd	Date
–				

Client
West Dunbartonshire Council

Development:
SKYPOINT
LENNOX DRIVE
CLYDEBANK, G81 5JY

Drawing Title:
PROPOSED DRAINAGE STRATEGY

Scale at A1	Date	Drawn	Approved
1:500	02/06/20	SF	NF

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London– 020 3856 8144 Oban– 01631 571 280
WEB–www.cowaldesign.co.uk
Email–info@cowaldesign.co.uk

Status
INFORMATION

Drawing No. J3075-C-01 Rev. /

DESIGN NOTE 01

PROJECT: FAIFLEY CAMPUS
TITLE: UTILITY DRAWING REVIEW

DN01

CREATED BY:	JONATHAN MCVEY	**DATE:**	05.05.2020
CHECKED BY:	ANDREW MCNAIR	**DATE:**	05.05.2020
APPROVED BY:	DAVID CAMERON	**DATE:**	11.05.2020

INTRODUCTION

The following design note has been produced by Atelier Ten to outline the key information with regards to the existing utilities throughout and surrounding the various development sites relevant to the new Faifley Campus. The data received is titled as follows:

- Auchnacraig Early Learning& Childcare Centre
- Edinbarnet
- Faifley Library
- Skypoint
- St. Josephs Primary

The data within this report is based on a desk top study of existing utility information. Record drawings have been provided to us by West Dunbartonshire Council. No guarantee can be given to the accuracy of the information indicated on the drawings received. The accuracy of any record information obtained from utility authorities cannot be verified by Atelier Ten.

We recommend a Ground Penetrating Radar (GPR) survey is carried out to ascertain the proximity of services around the site to help inform of any diversions or demolition requirements.

The sites under consideration are, St. Josephs Primary School, Edinbarnet Primary School and the Skypoint Centre sites, as shown via the Google map images below.

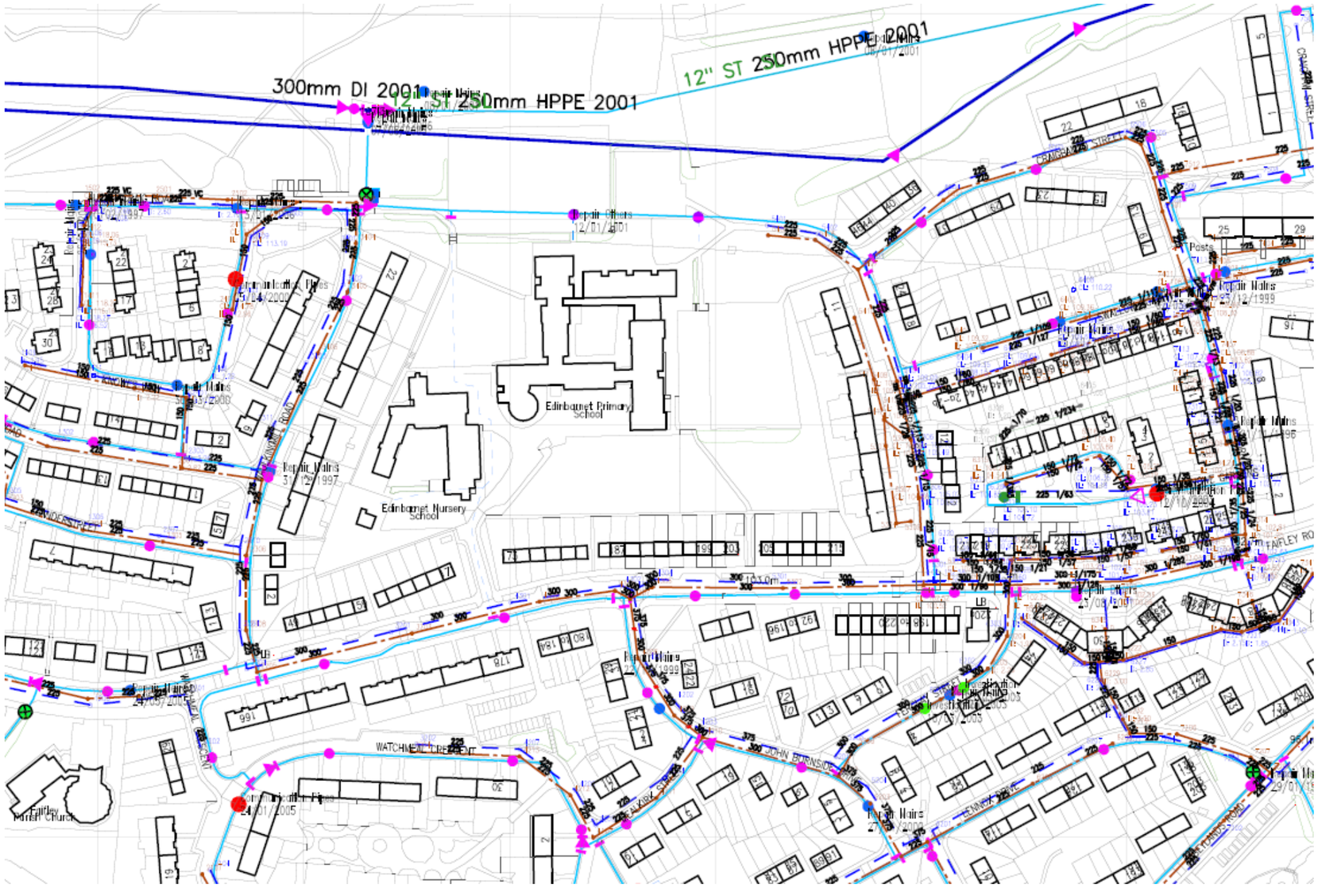
SCOTTISH WATER

FRESH WATER SERVICE

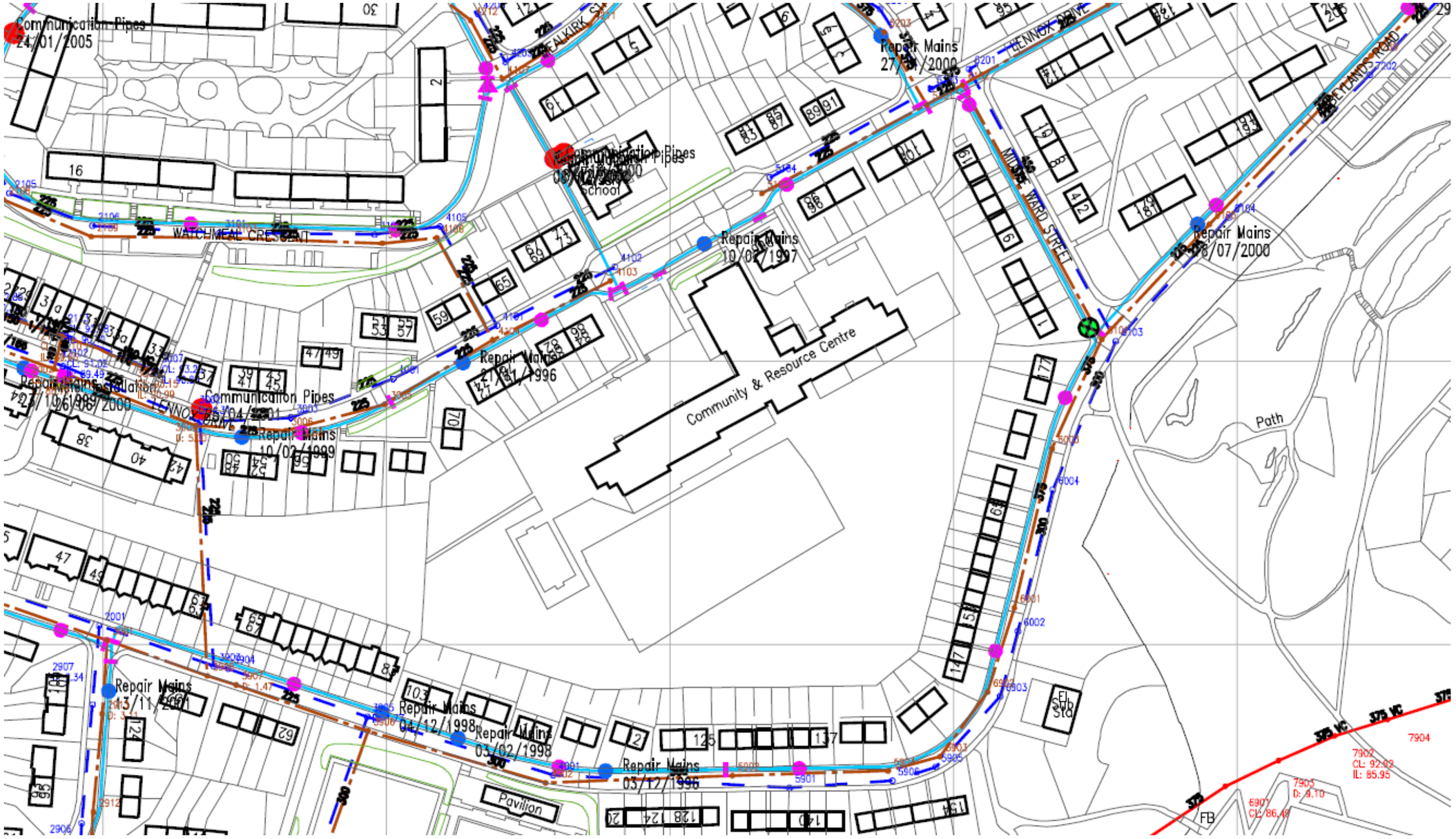
The Scottish Water Network (fresh water) information surrounding the sites are discussed below.

Edinbarnet Primary School: The light blue services represent standard Scottish Water mains service fresh water pipes that building connections would be made to. The drawing also shows some dashed brown and dashed dark-blue services. Scottish Water haven't provided a key, however typically the dashed brown outlines foul waste drainage and dark-blue often represents surface water drainage. The solid dark-blue lines represent trunk mains, these are major pipes, connecting towns to water reservoirs.

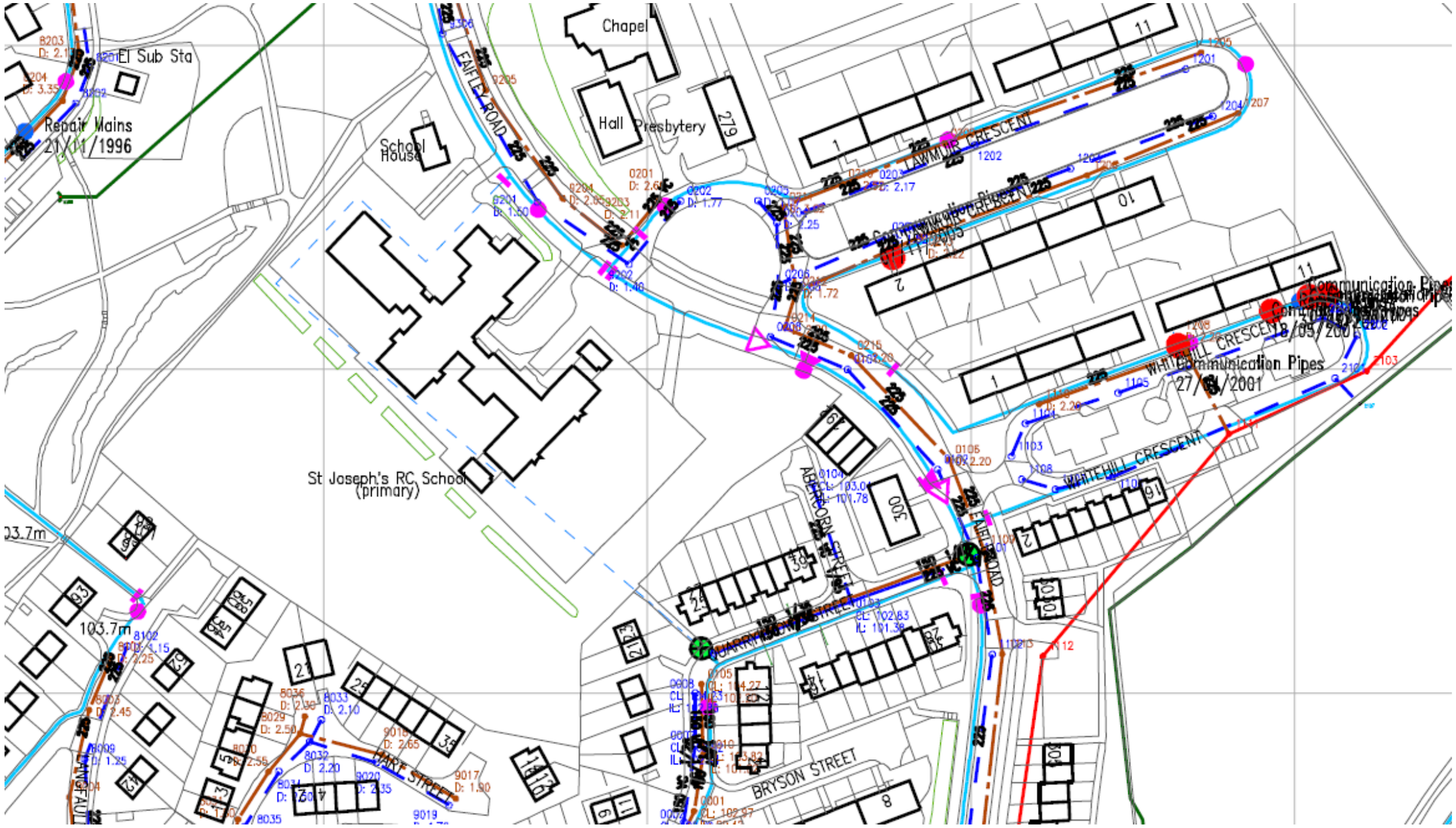
The site of Edinbarnet Primary School has a few oddities with regards to water services. There is a very faint dashed blue link that links Faifley Road and Auchnacraig Road, this also seems to pass below the Edinbarnet Nursery. This would typically indicate a private main, a large feeder pipe owned by a third party, not Scottish Water. It can be seen that it does connect into both Scottish Water mains to the north and south of the Edinbarnet site. There is major Scottish Water infrastructure to the north of the site, including a water main and a trunk main. The route to the north of Edinbarnet Primary School appears to be a strip of land which is heavily serviced (see Scottish Power Energy Networks section). For water we expect tis carries potable water westwards, with the service originating at the Mugdock Reservoir (a major supply point for the area as well as Glasgow).



Skypoint Faifley: The Skypoint site is provided with good access to the Scottish Water network on all sides of the site. There are no noted services passing through the site. We would expect connections to be made from Lennox Drive.



St. Josephs Primary School: The Scottish Water network for St. Josephs is shown below. All is relatively normal around the site within the public streets, but there is a major breach of service running straight through the middle of the site. This service again appears to be a private main (dashed in blue), linking up adopted mains within Faifley Road and Quarryknowe Street. This private service seems to be a strategically placed flushing or flow reversal pipe. The position and purpose of this pipe could be a problem for development on this site, more information would be required from Scottish Water on the use of this service, but given it is dashed blue, they may claim it is a private service.

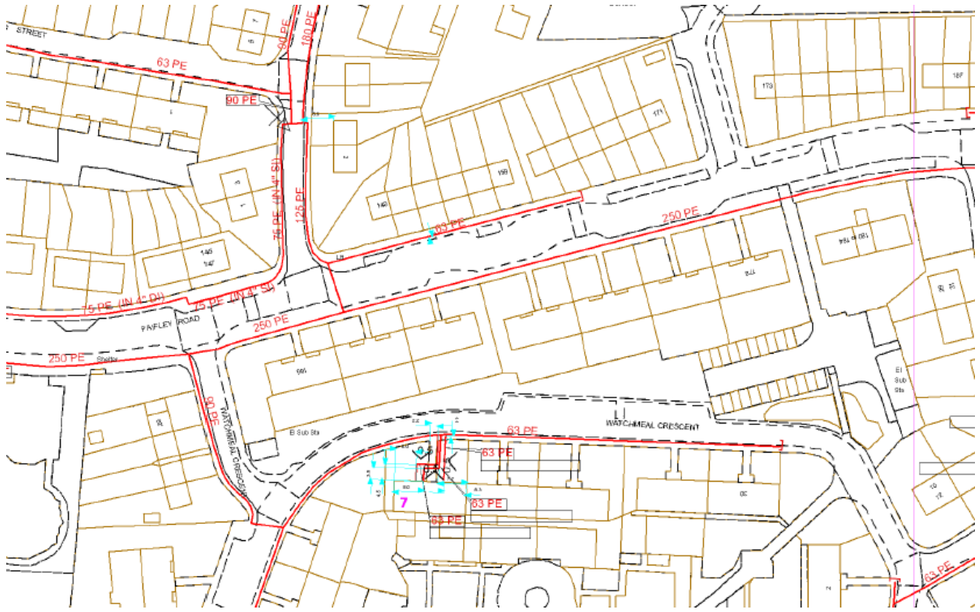


GAS SUPPLY

SCOTTISH GAS NETWORKS (SGN)

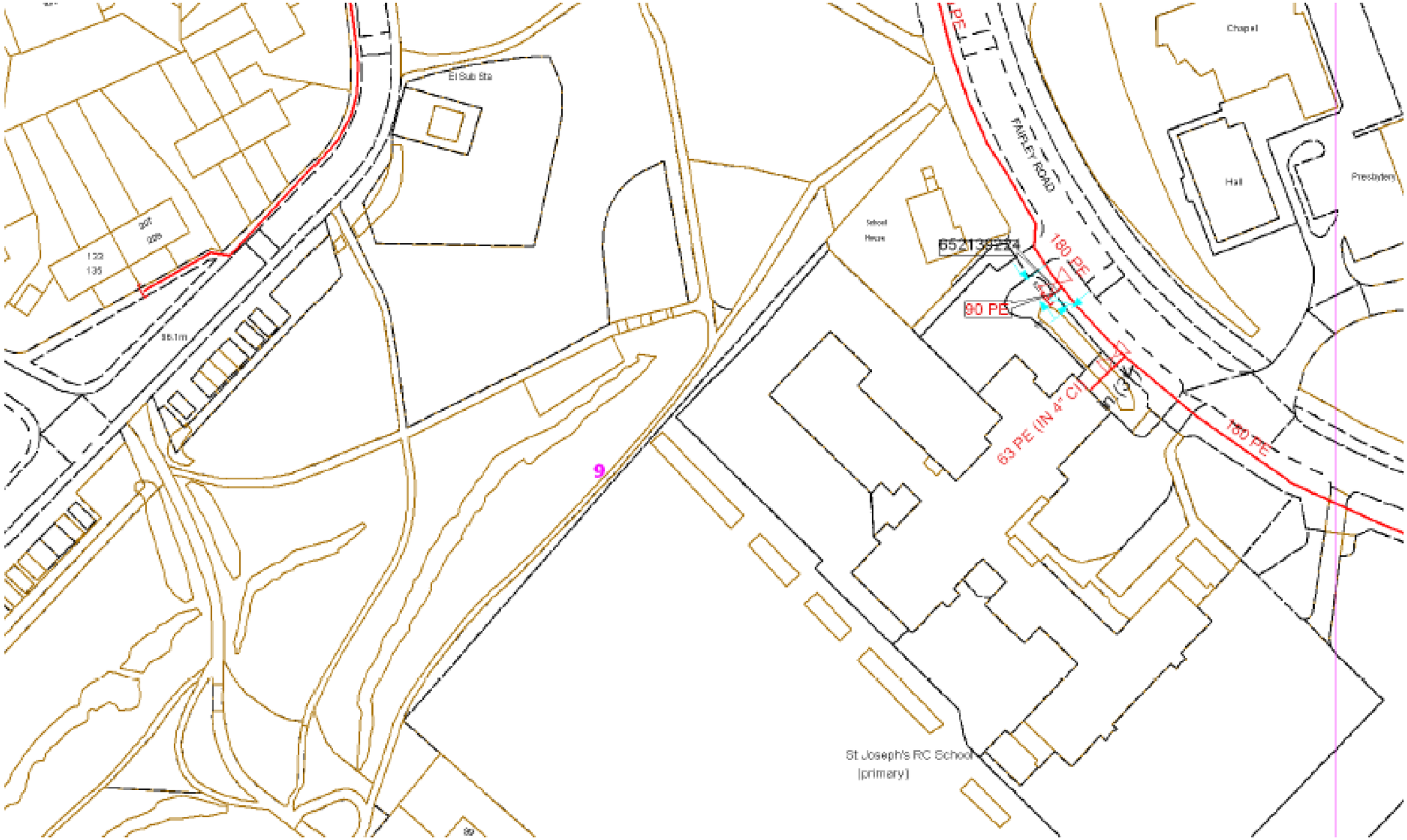
The Scottish Gas Network (SGN) surrounding the sites are shown below.

Edinbarnet Primary School: The Scottish Gas Network indicates that the primary school has access to a Low Pressure (LP) as services via Craigpark Street and Faifley Road however the SGN drawings do not show any specific gas service entering the site. The pipe within Craigpark Street is a 63mm diameter PE service and the pipe within Faifley Road is a 250mm diameter PE service. Based on the current layouts and images from Google, it may be the case that the existing school site does not utilise natural gas. The Scottish Government are looking to phase out the use of natural gas and therefore it may be the case that any future new-build school remains un-serviced from a natural gas network. Regardless the site has good access to both the 63mm and 250mm service mains.



Skypoint Faifley: The Skypoint Community & Resource Centre currently has a 90mm diameter PE service routed to it via Lenox Drive. The gas meter house is immediately visible as a small white structure to the north of the site. This arrangement provides good and immediate access to a connection point if natural gas is to be used for any new-build development. If gas is not to be used, the connection would simply be cut off and the meter removed by the existing shipper. No service is shown through the site.

St. Josephs Primary School: The existing SGN layout indicates a 63mm diameter connection to the existing St. Josephs Primary School. The service enters the site via the main entrance to the north-east. A second service is shown entering the site to the far north, this is a 90mm diameter PE connection.

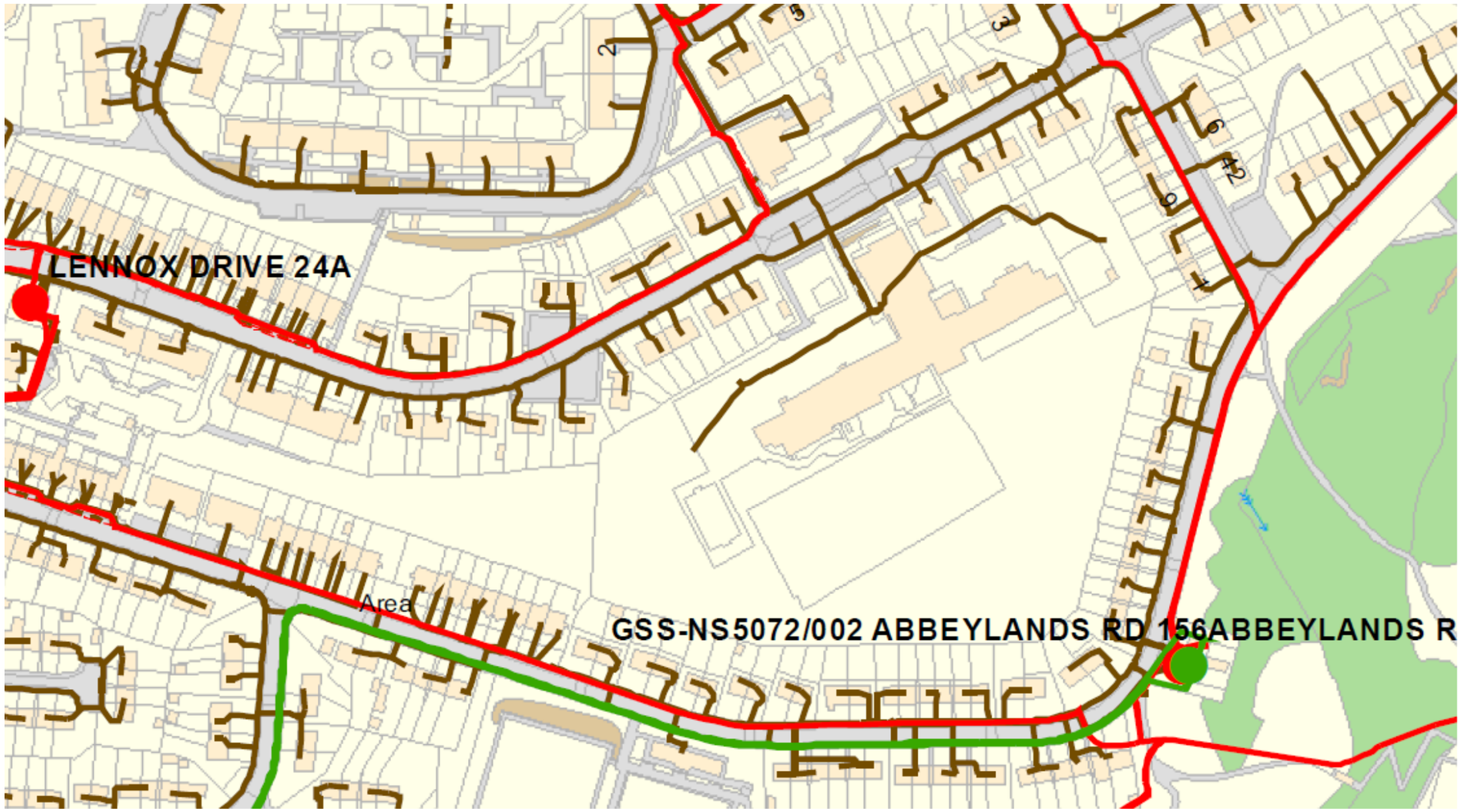


The service which enters the main building is visible externally – the image below shows the incoming gas pipe rising from below ground and entering the building. The 4Nr brick vents indicate a gas meter appliance or gas meter room while the white conduit indicates a BMS temperature sensor – this may therefore be the boiler room. This connection would likely be the older of the two connections as such a connecting service would no longer be approved by SGN unless in exceptional circumstances.

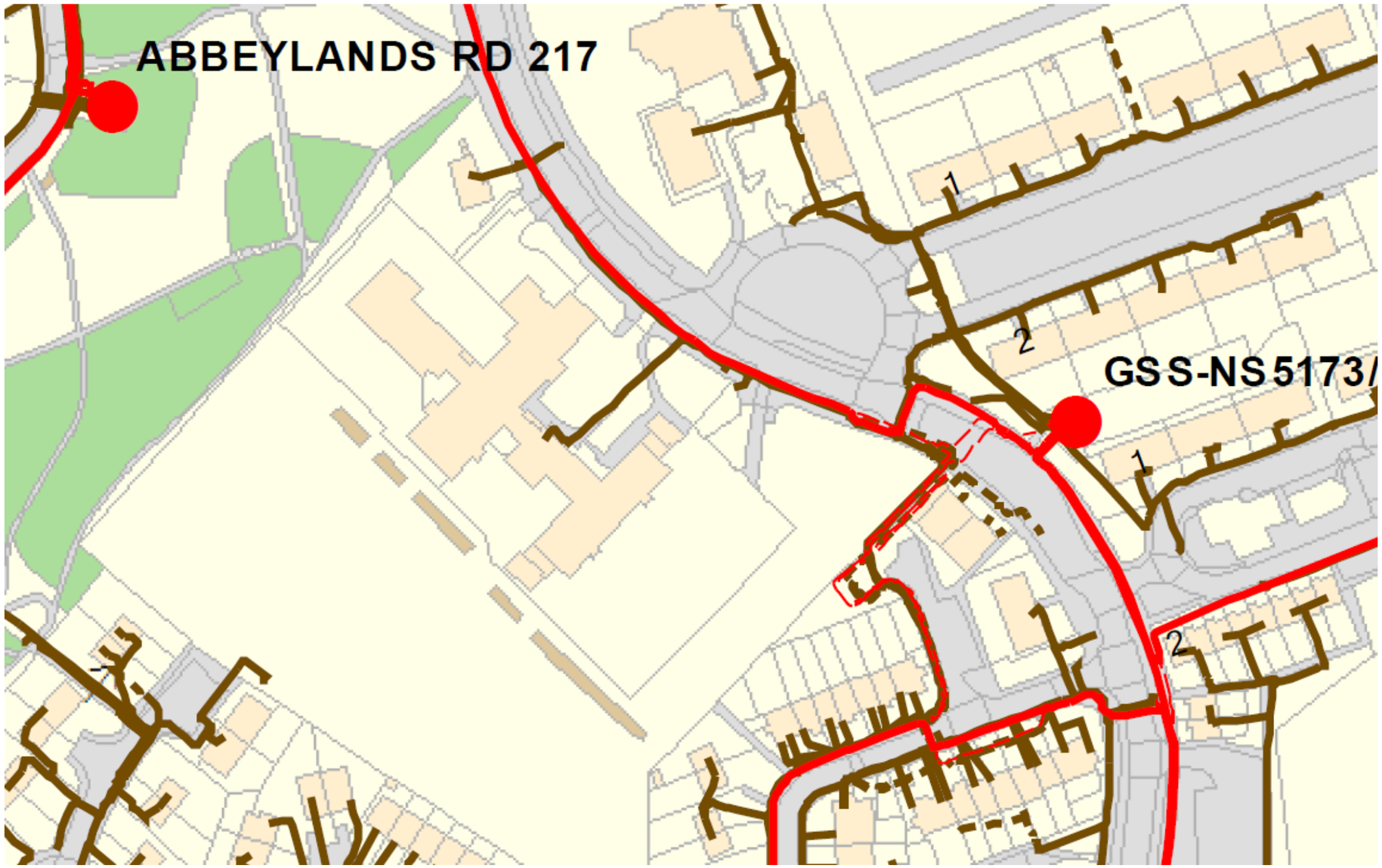
The service to the north of the school enters a green GRP kiosk, which is a more modern and current SGN method of terminating a gas connection to a customer. This is also shown below (taken from Google).

Ultimately both connections would require to be disconnected and cut back to Faifley Road to allow new demolition and new development of the site. If a gas connection was needed for the new-build, good access to the 180mm diameter PE main in Faifley Road is available.

Skypoint Faifley: The Skypoint Community & Resource Centre is currently served by an LV connection from Lennox Drive, as indicated by the brown route shown below. The service does distribute around the site in an unusual manner, heading to the main building, but also east and west. This indicates several metered supplies. At this point we expect this to be a metered supply to the allotment areas to the east and potentially an external lighting / power service to the west. These elements would need to be separated out to demolish the building and to establish a new electrical supply. The closest sub-station is the Lennox Drive 24A sub-station.



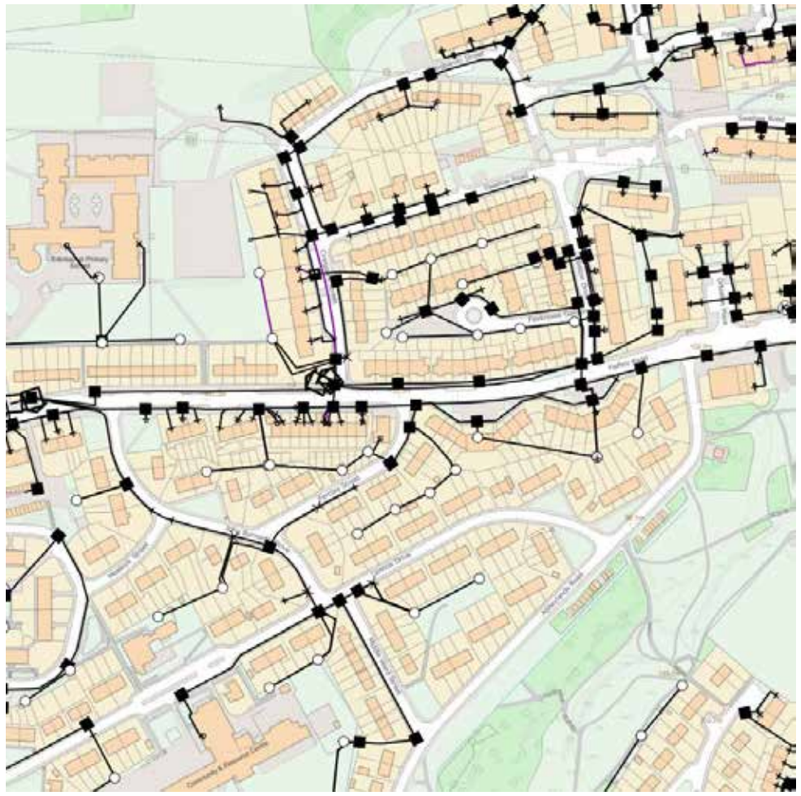
St. Josephs Primary School: The existing SPEN layout shows an LV service enter the site to provide power to the building. There are two small stub services which may serve road crossing apparatus or street lighting feeder pillars. An HV service runs adjacent to the LV service within Faifley Road. Any works to the levels would need to take this into account.



TELECOMUNICATIONS

OPENREACH

The BT Openreach drawing shows the connectivity to the three sites. There are multiple connections into Edinbarnet Primary School. There is also a route to the rear of the domestic properties shown, which is unusual. The service is routed up a narrow path that separates the houses from the school site boundary. There is also a random BT service routed to the north of the site terminating in open grass space. This section of BT service may need diverted.



The Skypoint development is also covered by BT Openreach infrastructure. Again, there are some unusual surrounding routes with services seemingly moving through gardens on pole mounts. The delineation of site boundaries relative to the Skypoint facility and adjacent community uses will require clarification.

The St. Josephs layout (shown below) has no major abnormal elements present, although there a re a few boundary BT poles to the south of the site and a BT cabinet on Faifley Road, but these both seem to be beyond the general site boundary.

VIRGIN MEDIA

The Virgin Media drawing within the package does not cover the range of sites and – like the BT information – needs to be recast to provide full coverage. The existing package does show a reasonably dense Virgin Media infrastructure in the general area, which is positive. An existing Virgin Media connection can be seen moving into both the Skypoint facility and Edinbarnet Primary School. This provides future diversity for these sites (along with the BT service already discussed).

CONCLUSION

All sites for the most part have direct access to all main utilities. The search needs to be recast for Virgin Media to provide further coverage, with St. Josephs being cropped off some of the existing drawings.

The infrastructure around and within the Edinbarnet Primary School site is the most extensive and dense. This is good and bad. The extent of overhead power lines around this site could present either construction health and safety issues, programme issues or diversion cost issues. The other side of the coin is the potential electrical capacity the school has via what could be a dedicated sub-station, no other site has a dedicated sub-station. There are also major water pipes routed to the north of the school. It would seem there is a major wayleave arrangement through the north of the school site, allowing for some major utility connections heading west towards Clydebank and Dalmuir.

All sites are well covered for a natural gas connection, albeit this may not be provided in a new-build school.

BT and Virgin Media both have relatively dense infrastructures in the area. This is a positive, particularly with the impending 1GBps service requirements forming part of the LEIP programme.

All sites have access to Scottish Water infrastructure, including what seems to be a separate foul and surface network infrastructure (this will need to be confirmed by the recast water service drawing provision). Edinbarnet and St. Josephs Primary School sites seem to have strategic private mains services connecting Scottish Water infrastructure. This can often be present where resilience of supply is required and variable direction flow has been designed by Scottish Water.

Low cover services seem to be present within Faifley Road, in front of Edinbarnet primary School. If levels and landscaping works are being undertaken in these areas, this needs to be considered as services are likely to require lowering.

No major diversions are apparent at this time, although statutory public utility layouts tend only to show adopted infrastructure. Non-adopted infrastructure can only be picked up by a GPR survey. We recommend this is carried out for the site selected as being most suitable.

This design note will be updated as new utility information becomes available.