9.0 Structural Appraisal

As a result of a competitive fee bid process, T&G Ltd were appointed to carry out a structural appraisal of the of the building, with a particular focus on the condition of the existing building and its scope for extending/ altering. A copy of their report is included in Appendix B.

Structural Option of Partial New Build and Refurbishment on Existing School Site – Phased Redevelopment

The original structures are nearing 50 years old.
The buildings have been over clad with a non insulated system.
The proposals for the refurbishment include:

- Create a new two storey structure to extend into the current car park and in the area of the current library building.
- Create a two storey structure over the current single storey music room and reception/office buildings.
- Create a new single storey extension outside the current main entrance area.
- Create a three storey structure over the current open courtyard and single storey workshops/lab.
- Create a 2/3 storey structure over the current single storey computer/food tech areas.
- Create an additional storey over the current two storey H block rooms.
- Create a single storey glazed entrance core to the side of the current main hall area.

A review of the structural information issued as part of the feasibility package , identifies that there have been several alterations and extensions at the school. The information does not indicate any specific structural sizes but does indicate that the buildings have been constructed using some form of steel framing. The intermediate floors are indicated as composite, with the use of timber floors in localised areas..

The original structures are nearing 50 years old and with the major refurbishment works nearing 20 years old – the design life of the current building should be considered.

In the asbestos report carried out by Messrs Redhills as part of the June 2011 re-inspection, the cladding to the vertical columns and the cladding to the horizontal beams, where surveyed, scored in the region of 13. In accordance with their Hazard risk assessment this score represents a Medium Risk. The report relates to the material present and relates risk to the material as it currently stands in situ. A medium risk material may not require any treatment at this time – but represents a potentially high risk of contamination if disturbed – therefore no intrusive investigations can be undertaken internally to make any formal assessment of the current beams and beam column connections and floor construction make up without first miligating this risk.

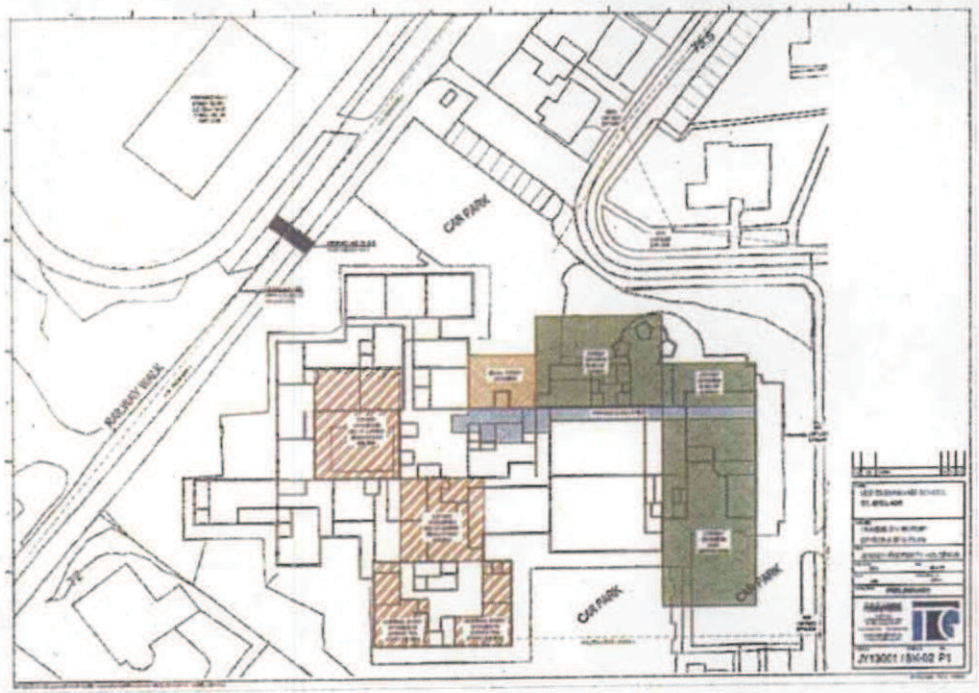
Framed structures are most commonly designed in both the horizontal and vertical plane to be economic. Unless specifically designed for future additional storeys they are rarely adequate to carry any form of an additional structure without some form of strengthening works. From the archive information available, where extensions have been carried out at Les Quennevais, new framed structures have been indicated. Therefore it would be logical to suggest at this time that any additional storey heights to the existing structures would require the current structures in that area to be demolished and a new structure built.

The proposal is to re-model the whole external envelope of the building. A material change such as this would require all of the building structure to be design checked under SER. Therefore intrusive investigations would have to be carried out to those areas of the building even if they are in principle to remain. An allowance in any budget would have to be made for upgrading the building structures that are to be left in their current form but subject to re-cladding.

Current drained roof areas will be increased in the new scheme. The disposal of surface water will be subject to TTS scrutiny and a strategy for the disposal of rainwater may be required at planning stage. Current information identified from Archive records provided by TTS suggest surface water discharges to soakaways.

In summary:

- The building has a potential high risk of asbestos contamination during refurbishment works.
- Intrusive investigations to prove any structures cannot be undertaken unless asbestos is made safe.
- Historically any alteration/extension at the School has resulted in a new framed building being constructed.



Structural Option of New Build on a Different Site – Les Quennevais Playing Fields

The proposals for this Option include:

- Create a new school building in the current playing fields.
- Demolish the existing building.

The new building would be a frame structure. This introduces flexibility to the internal circulation and learning areas. It allows clear open spans as well as offering the ability to provide large areas of glazing for natural light and ventilation. A steel or concrete frame would be considered.

Pre cast or in-situ concrete floors to be used to provide both sound density and thermal massing if required.

Foundations in this area would most likely be a raft.

Surface water disposal should consider some form of harvesting.

Access to the school will require consideration. Vehicle access would have to be contained within the confines of the current car parking area as the general public currently use the route between the proposed school and the car park to access the sports area. Keeping the school activities this side of the railway track mitigates the need for any bridging of the track.

Demolition of the existing school will require the removal of the asbestos. The material waste would not be suitable for any of the substructure work at the new school.

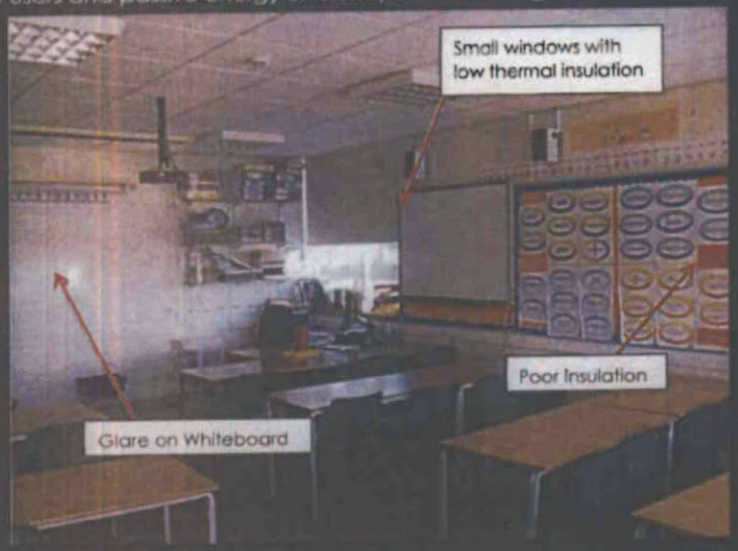
10.0 Services Appraisal

Existing Building MEP Overview

Construction and Form

A visual non-intrusive condition survey of the Mechanical, Electrical and Public Health (MEP) systems at the existing school was undertaken. The existing school was constructed in 1966 and since then extensions and modifications have been provided to expand accommodation provision to meet increasing pupil demand and changes to educational curriculum requirements.

The building's construction, insulation, orientation and windows were noted as not being best practice and to current standards in the majority of areas, these all impact on comfort of users and passive energy efficiency of the building.



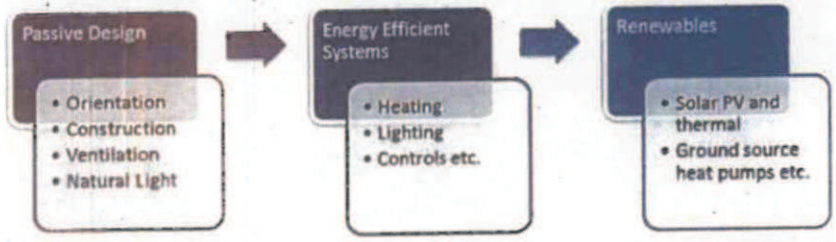
The above is a typical classroom which shows low light levels due to lack of windows and depth of classroom. Glare is apparent on the whiteboard due to room layout and orientation of the classroom. The room was cold at the time of the visit and this was due to poor levels of insulation in the external wall and window construction.
A full assessment of replacement and remodelling of facades and accommodation is recommended but in order to maximise efficiency in a cost effective manner, a new construction as opposed to refurbishment of existing is recommended.
MEP Systems

The existing MEP systems were found to be dated and the majority of the infrastructure is from the original installations of the main building and subsequent extensions. These date from 1966 to some 20 years ago. Some refurbishment of systems has been undertaken but these are now approaching 20 years in age and were partial refurbishment as opposed to full replacement.
All existing MEP systems are approaching end of design life and therefore should be replaced as part of any significant works at the site.

Existing heating, cooling and lighting systems were reported as being ineffective to a large number of areas and this is due to the age of the installation both in terms of performance and types of system used. It is recommended that these be replaced with new systems to latest industry standards which will meet building regulation requirements.

Sustainable Building Design Best Practice

Well thought out design strategies will encompass a holistic approach to a sustainable design solution which will provide the following benefits:
cost effective installation methods
carbon emissions and therefore energy bill reduction
Due consideration through the feasibility and design stages are therefore important in realising financial and environmental savings both during the construction stage and the whole life operating costs of a building.
The hierarchy of a sustainable building design approach is as below:



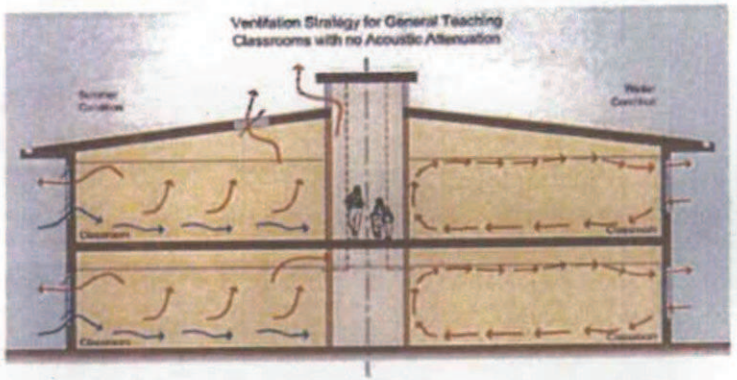
The initial focus when considering a truly sustainable building should on a passive building which is then served by energy efficient systems which keep energy consumption to a minimum. Renewable systems can then be considered to provide energy to serve these systems.

Passive Design

Passive design relates to the construction of the building to provide compliant comfort levels for lighting, temperature and ventilation naturally. The following are typically used to achieve this as far as is practicable:
Construction materials – Thermal mass can be used to control and moderate temperature in the building
Insulation – good levels of insulation can minimise heat loss in the winter and reduce heat gains in the summer
Air Permeability – an air tight building will lose less heat through infiltration
Building orientation – Building orientation can have a large impact on the energy use. It can affect the glazing / lighting and the viability of passive/ natural ventilation strategies
Natural Ventilation – if a building can be effectively naturally ventilated then it removes the requirement for mechanical ventilation systems and therefore saving energy
Glazing – a balance between daylight levels to minimise energy usage associated with artificial lighting and solar gains which can lead to overheating of spaces.

Natural Ventilation Strategy

The majority of spaces in a school can be naturally ventilated but due consideration to acoustic impact from external influences and room configurations is required to enable this.
The diagram below gives a typical solution to achieving a naturally ventilated solution.



Building Thermal Mass

The building thermal mass can be used to modulate the building temperature in both summer and winter conditions to reduce the maximum demand on the heating and natural ventilation systems.

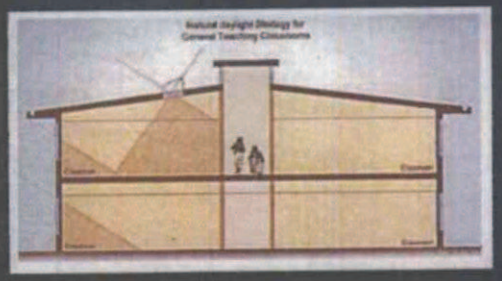
A heavy weight concrete building with exposed thermal mass can reduce the peak summer cooling load (and hence the amount of opening windows/roof lights) or the level of mechanical ventilation provided in each space. Similarly this will reduce the level of heating required in the winter, especially where underfloor heating is used.
Ultimately this will reduce the running costs of the building.

Concrete buildings also tend to have a flat slab which eases horizontal services distribution and hence reduces the building height as the clear service zone is not required under beams, it is required under slab.
If a steel framed building is used with concrete slabs, the soffit of the slabs should be exposed if possible as this will have a similar effect to that described above, albeit not to the same level.

Natural Daylight

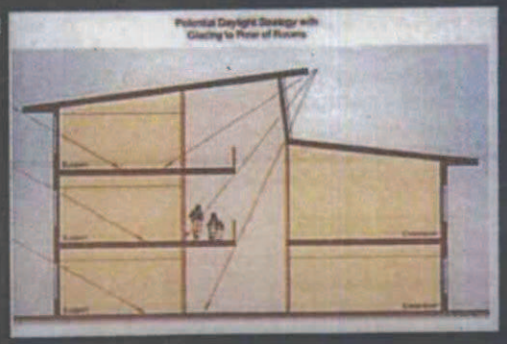
It is recognised that natural daylight can improve the learning environment and the ability for students to learn/concentrate. Therefore it is imperative to maximise the natural daylight where possible without excessively increasing the solar gains into the spaces. Modelling will be undertaken to interrogate and design this aspect.

In addition to the glazing on the façade consideration should also be given to the use of roof lights on the top floor of the building. In our experience these can generally be mounted at an angle on an up-stand to maximise the indirect light into the space so that glare and overheating do not become a problem. If the roof lights are openable this greatly helps the natural ventilation strategy.



If internal atria and/or naturally lit spaces are used adjacent to the classrooms consideration can also be given to providing glazing to the rear of the classroom to get natural light into this area. In our experience this glazing needs to be vertical as the best quality light is towards the floor as the corridor to the classrooms above shades the rear of the classroom at high level. On recent projects we have found this only works well for rooms within 2 storeys of the natural light source (i.e. the roof or north light).

Natural daylight should also be introduced into the main circulation areas where possible to improve the visual quality of the spaces.



Options Appraisal

Option 1 – New Build on New Site

Provision of MEP systems to a new site would be the most cost effective and straightforward of the three options under consideration as part of this study.
Appropriate building construction, form and orientation will be able to be incorporated into the design from the onset which will provide passive design solutions.
Appropriate space provision for new systems can be effectively allowed within the design. This will allow cost effective installation and safe access and maintenance for new systems allowing the introduction of latest industry standard, energy efficient solutions to serve the building.
The ability to incorporate these design solutions will reduce installation cost and energy consumption costs throughout the life of the building.

Option 2 – New Build on Existing Site

New Build on an existing site is believed to be the next most cost effective option of the three. As with option 1, a new building will allow incorporation of appropriate building construction, form and orientation to be incorporated into the design to facilitate passive design solutions and introduction of energy efficient systems.
Additional costs to the scheme are expected to be incurred in terms of provision of alternative accommodation for the school and delay to handover of the building due to the requirement to undertake demolition works prior to construction of the new building.

Option 3 – Refurbishment of Existing School and Partial New Build

Option 3 is seen as the least cost effective and most complex of the three options.
Health and Safety and continuity of services risks associated with this option are the most significant due to working on an existing live site. In order to appropriately mitigate these risks associated costs will be incurred that would be either non-existent or significantly reduced under Options 1 and 2.
The limitation of maintaining the existing form and orientation means that the ability to provide an optimum passive design solution is limited which will ultimately have an impact on whole life costs for the building.
The constraints of the existing building construction will limit the ability for services routing and accommodation for appropriate plant to deliver a cost effective and energy efficient installation.

11.0 Branch Library Requirements

A consideration that must be taken into account is the current provision of a community Branch Library on the school site. Although the school may be able to temporarily relocate their book provision elsewhere in the school, the branch library will be somewhat harder.

The options available are:

Relocate the library temporarily— a suitable site would have to be found by ESC and with agreement from the Library Service. With the proposed redevelopment of the school, it would allow for reinstating a branch library within its accommodation schedule.

Relocate the library permanently— once again, ESC would have to find a suitable site within an acceptable distance from the current site, and with agreement from the Library Service. The School library accommodation schedule size could then reduce accordingly.

Close the library for the duration of the development.— this will seriously affect the neighbouring community who do use this facility. The library may also find it difficult to regain sufficient user numbers following its closure.

Extend the mobile library service.— this may prove to be a reasonable compromise. Whether it be temporarily or a permanent facility would still have to be determined.

For the purposes of costing, provision has been made to provide a branch library within the school development.


48
playing field
45
Car Park
Golf Course
50
Pond
82
Pavilion
Car Park
Golf Course
73
84
playing field
72
orchard
80
77
36A
Reservoir
94
89
football pitch
67
cemetery
93
66
65
90
91A
Pavilion
Car Park
Le Clos du Puits
Le Clos St Sampson
La Route des Quennevais
Les Quennevais
OPTION 10 - Field Sizes
Field 45 - (Airport Pitch) 23,736m²
Fields 77, 80 and 84 - Total 35,304m²
Field 85 - 1,350m²
Field 86 - 9,441m²
Field 86A - 4,408m²
Field 87 - TTS retained 1,865m² (for cycle track)
Field 87 - 7,704m²
Fields 88 and 88A Total 9,667m²
Field 89 - (6i finalade Pitch) inc pavilion - 12,466m²
Field 97 - 6164m²
OPTION 10 - Combined field sizes
Proposed Site - 58,657m²
6i finalades Pitch - 12,071m²
Total: 71,729m²
Distance from centre of site to centre of Les Quennevais Playing field: 1.0km
N
Les Quennevais Secondary School - Proposed New School
Site Plan
Treasury and Resources Department
Jersey Property Holdings
Design & Building Services
States of Jersey

12.0 Review of Options

Although funding is currently only available in 2016, it was considered imperative that the options be considered in the context of the overall Master Plan. Some of the proposals are interchangeable between options and the first step is therefore to consider which options best suit the short and long term needs of the school. This will then reduce the number of options available for consideration.

Development of the initial options have evolved as a result of discussions with the various parties and the concept brief.

Client concept brief options.

Option 1 - New Build on a different Site (Airport Fields)

Option 2 - New Build on a different Site (Les Quennevais Sports Complex — South-West corner)

Option 2(a) - New Build on a different Site (Les Quennevais Sports Complex — South-East corner)

Option 3 - New Build on Existing School Site

Option 4 - Partial New Build and Refurbishment on Existing School Site - Phased Redevelopment

Option 5 - Extending Existing Site into Les Quennevais Sports Complex- Phased Redevelopment

Option 6 - Extending Existing Site into the 'Blanches Blanques' area - Phased Redevelopment

Option 7 - Relocate Mont Nicolle School and Construct New Secondary School.

Option 8 - New School on Les Quennevais Precinct

Option 9 - Extension/Refurbishment of Existing School (with £7.5m budget)

Option 10 - New Build on a different Site (Fields 77, 80, 84, 85, 86, 86A, 87, 87A, 88, 88A and 94)

Option 1: New Build on a Different Site. - Airport fields (24, 25, 26, 27 and 45)

Option 1 - New Build on a Different Site. Airport fields (24, 25, 26, 27 and 45)

New Site:

As part of the Les Quennevais concept brief, Option 1 was to explore the use of the Airport football pitch (field 45) and adjacent Fields 24, 25, 26 and 27.

This site backs onto the Airport boundary on the North and includes the Airport Fuel Farm adjacent. To the east is Avenue de la Commune, to the south La Rue Carree. There are privately owned developments and fields to the west of the proposed site.

Vehicular access to the site would be directly from Avenue de la Commune, and would therefore provide good access for the school bus service and for staff and visitor parking. Consideration should be given to widening La Rue Carree to alleviate congestion at the junction, this could also be used as an alternative means of access/ egress of the proposed site. Students from Les Quennevais / Red Houses would be able to utilise the western cycle track.

Whilst this site would provide a brand new facility that will meet the needs of the Education Brief and BB98; the overall area would not provide enough space to include full sports facilities. In order to achieve this, Fields 47 and 48 (west of the proposed site) which are currently in private ownership, would have to be purchased. It is worth noting that this would still not achieve the total site area of 64,275m² as determined from the BB98 guidelines.

Fields 45, 24, 25, 26 and 27 are currently in States ownership and from a practical point of view would be easier to access and develop. However these are currently designated as Green Zone with Field 45 also a 'protected open space'. Re-zoning of this land would have to be sought from the Planning Department.

Advantages:

- The Scheme would fully comply with BB98 and Educations concept brief requirements for a constrained site.
- No temporary accommodation would be required during construction.
- No need for phased building.
- No disruption to the existing School.
- Land in States ownership.
- Traffic and access issues could be resolved easier

Disadvantages:

- Cost of a new School is currently outside allocated budget
- Building on the Airport field has its own safety issues, as this is set within the Airport zone
- Due to the building being within the Airport Zone, additional costs would be incurred in the overall building design (eg: a fully mechanically ventilated building and triple glazing)
- Using this site will restrict future expansion and development of the Airport.
- If the existing sports facilities at Les Quennevais are to be used, the School will need to timetable in travel time and transportation.
- The purchase of Fields 47 and 48 (and potentially adjacent field 86 to the South) would be required to provide and new sports hall and associated facilities on site, thus allowing the School to fully benefit from the new location.
- A Wildlife Study and Environmental Impact assessment would have to be carried out, which will have an effect on timescale

Option 2: New Build on a Different Site - Les Quennevais Sports Complex (South-West Corner)

Option 2: New Build on a Different Site.
Les Quennevais Sports Complex - South West Corner

New Site:

Option 2 was to explore the use of the existing Les Quennevais Sports Centre Complex. A new purpose built facility could be provided to the south-west corner of the site, adjacent to the current School and utilise the existing sports facilities.

Access to the site would still be through the existing estates and to the current School site, which will still have a major impact on traffic flow this is already a serious problem, and would only get worse due to the increased school pupil numbers. Vehicular access directly onto the site would be severely restricted due to TTS's stabnce on vehicular access over the Railway Walk. It is expected that this would be strongly opposed.

Consideration could be given to access via La Route Des Quennevais / Don Farm, but because the proposed site, this may be unworkable.

Vehicular access to the site would be severely restricted due to TTS's policy on access over the Railway Walk.

Whilst there is a saving in not having to provide a separate sports and associated facilities, some of these facilities provided by the Sports Centre would be impacted by this proposal. The floodlit football pitch (which includes a running track and softball pitch), petanque pitches and the 'artificial pitch' would all be affected and would need to be relocated in some form (ie on the site or an alternative location). Demolishing the existing School may provide an area for sports facilities, but would have to be looked at in the context of the whole sports complex.

A preliminary estimate has been included for the demolition of the existing School and is included in Section 13.0.

Advantages:

- Would fully comply with BB98 and Education concept brief requirements
- No temporary accommodation would be required
- No need for phased building works
- No disruption to the current School
- No land purchase cost needed
- Continues to use current sporting facilities (no need to build a separate sports hall, etc)

Disadvantages:

- Cost of a new School is currently outside allocated budget
- Potential cost of demolishing existing School to form overspill for sports facilities
- Cost of sports facilities.
- Wildlife Study required, which will have an effect on timescale
- Loss of current amenities, whether temporarily or permanently.
- Displacement and relocation issues, with its costs, relating to the current sports facilities (as mentioned)
- Does not address the issue of car and bus traffic congestion through the estates.
- No vehicle access permitted over the railway walk