



Soham Pavilion Phase II – Stage 2 Report

Soham Town Council

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Prepared by TCG/JNS

REVISIONS

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1.0 Project Summary

The existing Soham Town Council pavilion building adjoining the council chambers is to be demolished and replaced with a new multi-function building. The Client has expressed an interest in incorporating renewable technologies to reduce ongoing running costs of the site.

2.0 Infrastructure

2.1 Gas

An existing 50mm gas supply enters the building via an external U16 meter, reduces to 35mm copper internally, and serves a modern condensing gas-fired boiler in the Council Chambers, and the kitchen cooking appliances within the existing pavilion. The service to the kitchen will be isolated and the gas boiler retained. There is no intention to extend the gas service into the new Pavilion.

2.2 Water

An existing 1½" incoming mains cold water service rises within the existing pavilion adjacent to the kitchen, serving the existing pavilion kitchen, WC's and Council Chambers. The incoming mains cold water service enters the building via the adjacent fire station car park, and will need to be isolated within the car park and diverted to enter the retained section of the building to re-serve all existing retained appliances.

It is suggested that the existing below ground water main is re-routed externally to enter the retained section of the building within the Boiler cupboard (R-RR-34).

The existing water main shall rise into the new location complete with stop-cock, double-check valve, drain valve, and pressure gauge.

2.3 Drainage

For details on the below ground foul water drainage system refer to structural engineer's report.

2.4 Electricity

As part of the recent refurbishment of the Council Chambers building, a new 100A 3-phase incoming supply was brought into the building. This supply feeds the Council Chambers and the existing Pavilion.

Initial load calculations indicate this supply will be sufficient to serve an all-electric heating and cooling strategy within the new Pavilion.

2.5 Communication Services

The Council Chambers building has an overhead telephone service that runs over the top of the existing pavilion to an aerial on the Council Chamber roof. This service will need to be diverted to below ground prior to demolition of the existing Pavilion. An allowance for an independent service to the Pavilion should be made during the diversion works.

The Council Chambers have a directional wireless connection on the existing roof. This service should be protected during the works.

3.0 Building Regulations / Planning Requirements

The project will be seeking planning approval. The East Cambridgeshire Local Plan document Policy ENV4 Energy and water efficiency and renewable energy in construction states:

All proposals for new development should aim for reduced or zero carbon development in accordance with the zero carbon hierarchy: first maximising energy efficiency and then incorporating renewable or low carbon energy sources on-site as far as practicable. Applicants will be required to demonstrate how they have considered maximising all aspects of sustainable design and construction, as set out in the Code for Sustainable Homes (or its successor). Developments of 5 or more homes are required to achieve Code for Sustainable Homes Level 4 (or its replacement pending implementation of the zero carbon homes requirement). All non-domestic developments of 1000m² or more are required to meet BREEAM Very Good standard or equivalent.



In order to move closer to zero carbon buildings, and all electric solution is being considered for this project. An initial assessment has been carried out, and the most appropriate low carbon technologies for this development are:

- Air Source Heat Pumps
- Solar Photo-voltaic

The existing Council Chamber South Facing roof could accommodate a 32kWp photo-voltaic array.

The development is below 1000m² so will not be subject to BREEAM.

4.0 Mechanical Services

4.1 Design Environmental Conditions

4.1.1 External Conditions

| | | |
|--------|---|---------------------|
| Winter | - | -5°C saturated |
| Summer | - | 30°C / 20°C (db/wb) |

4.1.2 Heating

Internal Winter Temperatures:

| | | |
|-----------------------------------|---|------------------------|
| Reception Area | - | 20+/-2°C |
| Toilets | - | 18+/-2°C |
| Changing Rooms | - | 22+/-2°C |
| Lobbies/Circulation spaces | - | 16+/-2°C |
| Main Hall | - | 20+/-2°C |
| Offices / Police Room | - | 21+/-2°C |
| Kitchen | - | 16+/-2°C |
| Tractor Storage | - | Frost Protection |
| | | |
| LTHW Flow and return temperatures | - | 45/38°C (Heating mode) |

4.1.3 Mechanical Ventilation

Minimum Mechanical extract Ventilation Rates:

| | | |
|----------------|---|-------------------|
| WC's | - | 6l/s per WC |
| Changing Rooms | - | 10 air changes/hr |
| Kitchen | - | 60l/s |
| Main Hall | - | 10l/s per person |

4.2 Above Ground Drainage

All above ground drainage systems will be installed in a plastic uPVC system, connecting to new below ground drainage connections.

All stacks will be vented to atmosphere where possible, but as a minimum the head of run will be vented.

Rodding access will be provided within stacks at all floor levels at 1200mm above finished floor level.

4.3 Domestic Hot and Cold Water Services

As part of the enabling works the existing water service shall be isolated and existing distribution pipework between incoming location the General Store (R-RR-30) within the Council Chambers building removed. This capped service shall be retained for re-connection to the new service and re-feeding of the existing WC's.

The existing below ground Mains cold water service will be re-routed to enter the existing building within the boiler cupboard via stop-cock, double check valve, drain valve and pressure gauge, and installed with a WRAS approved in-line passive electrolytic water conditioner to provide scale protection to both buildings.

The mains water service will rise to ceiling level and route through the existing corridor to the general store where it will re-feed the existing capped service. A capped tee will be provided within the corridor ceiling void for extension of the water main through to the new extension.

All appliances will be fed directly from the mains under mains pressure.

All concealed domestic water pipework will be installed using a composite multi-layered plastic pipe system as Pegler "Henco", Geberit "Mepla", "Unipipe", or similar and approved. Exposed pipework will be installed in chrome-plated copper.

All outlets are to be connected via chromium plated WRC and WRAS approved quarter-turn isolating valves, complete with flow limiting cartridges.

Domestic hot water will be provided for the Pavilion via a new Air Source Heat Pump (ASHP) and hot water storage cylinder, utilising single-pipe secondary hot water distribution with electric trace heating to deliver hot water to within 500mm of all outlets.

Wash hand basins within accessible WCs shall also be fed via TMV3 blending valves.

4.4 Heating and Cooling Systems

A new Air Source Heat Pump (ASHP) shall be installed to provide space heating to the new pavilion, as detailed on accompanying drawings. Space heating shall be provided by underfloor heating with independent programmable room thermostats to each room. Room controllers shall be linked to a central control Hub providing Smart phone connectivity.

A combination buffer vessel and hot water cylinder will be provided within the plant room, with a fixed-speed pump providing the primary circulation between the ASHP and the buffer vessel. After the buffer vessel a variable speed pump will circulate LTHW to 2No. underfloor heating manifolds; one located within the Main Hall Storage (14), and the other within the H&T cupboard (55).

Heating pipework will be distributed around the building in ceiling voids using composite multi-layered plastic pipe system as Pegler "Henco", Uponor "Unipipe", or similar and approved, and shall be fully insulated.

Due to the extensive South-facing glazed façade in the Main Hall, mechanical cooling will be provided in the form of DX ducted fan coil units mounted at High level within the adjacent stores. Air distribution shall be facilitated by linear grilles mounted over the Storage doors, with one shared return air grille ducted to the rear of both fan coil units which will discharge to the Main Hall via dedicated supply grilles. The ducted fan coils will also be capable of operating in 'Heating' mode to provide a 'Rapid Heat-up'

function. An interlock shall be provided between the Main Hall underfloor heating and DX system to prevent simultaneous operation.

The first floor office will be provided with a wall-mounted DX split unit for space heating, and the same unit will be capable of providing cooling to combat the large South-facing roof lights.

All DX comfort cooling systems will utilise a low GWP (Global Warming Potential) refrigerant such as R32.

4.5 Ventilation

It is assumed that the kitchen will have limited use for cooking, and will not therefore require a 'commercial kitchen' style ventilation system. Mechanical extract to this area is therefore proposed by means of a wall mounted fan to deliver a minimum of 60l/s. Control of this fan will be manual via a switch/controller provided in the kitchen. It is suggested that a recirculating cooker hood is supplied over the cooker.

Mechanical extract ventilation will be provided to all toilet areas via local extract fans, controlled from PIR sensors with adjustable run-on timers. The Male and Female toilet extract fans shall be wall-mounted through-wall fans, and the disabled WC will require a ceiling mounted fan ducted to the outside wall via the ceiling void.

A heat recovery unit with counter-flow plate recuperator shall be installed within the void over the Changing Rooms and lobby to ventilate the Main Hall and Changing Rooms. An extract grille will be provided on the end wall and ceiling mounted exhaust valves within each Changing Room. Supply make-up air to all three spaces shall be supplied to the Main Hall on the end wall via Jet Nozzle diffusers to enable air to be thrown the full length of the Hall. A return airt path will be provided to the Changing Rooms via door transfer grilles.

The heat recovery unit shall be provided with packaged controls and a remote control panel to enable fan speed control, 7-day time schedules, and manual over-ride function.

All other occupied spaces such as the Reception and Offices are intended to be naturally ventilated via opening windows.

5.0 Electrical Services

5.1 Electrical Distribution and Small Power

A supply will be taken from the existing Council Chambers to serve the new Pavilion. A new MCB distribution board will be located within the plant room to serve all new final circuits with the Pavilion.

5.2 Lighting

Artificial lighting will consist of robust surface mounted lighting within the changing rooms, stores and plant room. The reception area will consist of downlights, wall lights and decorative pendant luminaires. Kitchen lighting will consist of IP65 luminaire, either recessed or surface mounted. The Offices will have suspended linear luminaires with glare limiting diffusers. The Main Hall will use a combination of wall mounted uplighting and decorative pendant luminaires. A facility will be provided in the Main Hall to allow stage / performance lighting to be setup for events.

All new lighting will use LED light sources and high efficiency optics.

Emergency lighting will be installed in accordance with BS5266.

External lighting will consist of wall and soffit mounted IP65 robust luminaires.

5.3 IT and communication systems

A CAT6 structured wiring installation will be adopted within the building, serving data outlets within the Office, Police Room, Reception and Main Hall. Structured cabling will be taken back to a dedicated data cabinet for the new Pavilion. A data link will be established between the new Pavilion and Council Chambers. The facility for a new incoming telephone line to the Pavilion will be made available.

The audio-visual requirements within the Main Hall are still to be agreed.

5.4 Fire Alarms

An new analogue addressable fire detection and alarm system will be installed throughout the new Pavilion in accordance with BS5839. The system will be linked to the Council Chambers to relay fire / fault signals between panels.

5.5 Security

An intruder alarm system will be provided, incorporating door contacts and PIR movement sensors. The Intruder alarm will be fitted with an auto-dialler to inform key holders of an alarm condition. CCTV coverage of external elevations and entrances will be provided. There may be an opportunity to tie into the existing security and CCTV systems with the Council Chambers.