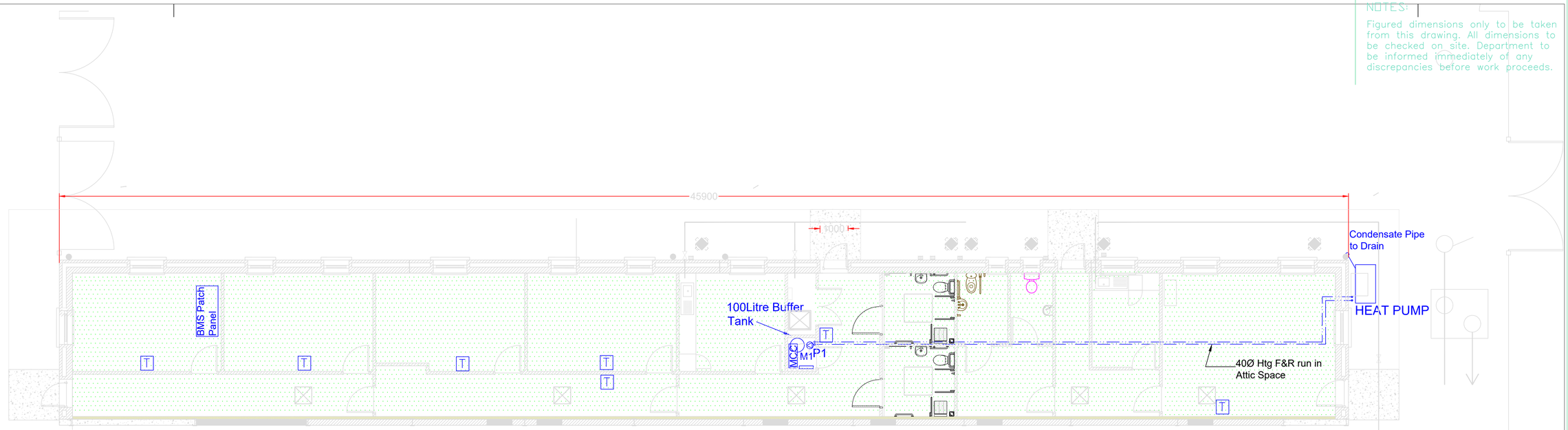
NOTES:

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site. Department to be informed immediately of any discrepancies before work proceeds.



1.0 Tube Hold Bar Underfloor Heating Specification

1.0.1 The Contractor shall include for the supply, installation and commissioning of the underfloor heating in the areas as indicated on the Underfloor Heating layout drawing and mechanical schematic.

1.0.2 The underfloor heating installation shall be supplied by Polytherm Heating Systems Ltd., Muirfield Drive, Naas Road, Dublin 12. Tel: 01 4191990 E-mail: info@polytherm.ie or
South Ring West Business Park, Tramore Road, Cork Tel: 021 432 1066

1.1 Underfloor Heating System Materials

1.1.1 The underfloor heating system shall comply in its entirety with all relevant local, national and international standards including but not limited to:
- BS EN 1264 2009 - Water based surface embedded heating and cooling systems 2008, parts 1-4 Inclusive (Underfloor Heating)
- Building Regulations Technical Guidance Document L - Conservation of Fuel and Energy - Dwellings Regulations 2011
- SEAI - Heating and Domestic Hot Water Systems for Dwellings - Achieving compliance with Part L 2008 - Section 7 Underfloor heating systems
- BSRIA application guide, pre-commissioning cleaning of pipework systems (2nd edition)

1.1.2 The underfloor heating pipe shall be Polytherm underfloor heating pipe 16mm x 2mm, made of high density crosslinked polyethlene (H.D. PEXc) pipe to DIN 16892/3, BS EN 1264-4:2009 with EVOH oxygen diffusion barrier to DIN standard 4726/9.
Or Polytherm multilayer underfloor heating pipe 16mm x 2mm, made of Pe-he/ Aluminium Pe-me/ (PE AL PE) EN ISO 21003 (parts -1, -2, -3 and -5)
There shall be no joints allowed under the floor.

1.1.3 The pipe shall be laid on Tube holding Bars with built in pipe holders, and fixed at the spacings indicated on the underfloor heating pipe layout drawing. Additional insulation shall be placed under this system panel to comply with the current building regulations.

1.1.4 A floor U-value of 0.15 W/m2K is required for ground floor as per Part L Section 7.1- Table 27, as Irish Building Regulations.

1.1.5 A floor U-value of 1.34 W/m2K is required for intermediate floors with heated rooms below, as per Part L Section 7.1 - Table 27, as Irish Building Regulations, should have a separating layer of system thermal insulation to comply with IS EN1264, Part 4.

1.1.6 Control shall be via an individual time and temperature digital thermostats one shall be provided per underfloor heating zone. A single stat per floor/controlling multiple rooms off one stat shall not be acceptable.

1.1.7 The underfloor heating pipe shall enter and exit the manifold into the slab protected by pipe bend formers. Pipe bend formers shall be provided per loop.

1.1.8 Polytherm edge insulation strip shall be used along all rising walls to provide for floorscreed insulation and expansion. It may only be cut off following the laying of the top floor covering, including any joints.

1.1.9 Polytherm slit corrugated pipe shall be used to allow movement at the rise to manifolds and at the crossing of the expansion joints and doorways.

1.1.10 Round polyethylene profile shall be used to create a seal between the underside edge insulation strip and the Polytherm top system panel at expansions and doorways.

1.1.11 Polytherm floor expansion joint shall be used to protect the screed against cracks in underfloor screeding area. In areas of more than 40 square metres, hallways longer than 8 metres or doorways, expansion joint/round profile shall be installed and pipes shall only cross via slit corrugated pipe.

1.1.12 The Polytherm floor screed additive 'Estrotherm' shall be used to air/ heat transmission and prevent the formation of air bubbles around the piping in underfloor heating areas.

1.1.13 The floor covering for each room shall be notified to the underfloor heating supplier and the consulting engineer. With each floor covering not exceeding a value of 1.5 TOG, as per BS EN 1264.

1.1.14 The manifold shall be located as indicated on the underfloor heating pipe layout drawing.
Each manifold shall consist of:
- Distribution flow and return manifolds in 1" stainless steel each comes with ¾" euro cone connections,
- Underfloor heating manifolds shall be capable of accommodating up to a maximum of 12 loops.
- Underfloor heating manifolds shall be capable of accommodating 10mm, 14mm, 16mm and 20mm pipe via same manifold.
- Support brackets with anti-noise support
- Air release valves
- Flow valves for regulating individual circuits each with individual sight glass (0-5 l/min)
- Anti tamper holders flow meters for calibration
- 16 x 2mm manifold pipe unions
- 1 pair of 1" locating ball valves c/w temperature gauges
- Drain and fill valve

1.1.15 Actuators (24v or 230v) 24v shall be controlled via a corresponding polytherm logic strip.
The valve is normally closed when no power, when heat is supplied wax melts and spring pushes up. The wax element cools down after the operating voltage is cut and after expiry of the hold time, the valve is closed evenly by the closing force of the compression spring.

1.1.16 Each underfloor manifold shall have a 3 port analog mixing valve mounted on the flow header, which shall control the outgoing temperature to the underfloor heating system. Alternatively a 3 port diverter valve can be mounted on the return header.
A maximum flow temperature of 50°C shall not be exceeded at anytime.

1.1.17 Each heating zone shall be individually controlled through a digital programmable room thermostat in each room. The thermostat in each area shall be a Danfoss TP5000 programmable digital thermostat which shall be wired via two core cable in to the Polytherm logic strip wiring centre complete with dual pump relay module, as detailed on the underfloor heating wiring schematic.
- The thermostat shall be a digital programmable room thermostat c/w;
- Chronostat self control
- Frost protection
- Suitable for wet rooms via remote sensor
- 5/2 day programmable room thermostat
- 6 sweeds per day with optional On/Off programming

1.1.18 The Polytherm Q8 Programmable Logic controller shall be used for multi zone / bespoke design applications. It shall receive inputs from the Polytherm Logic Strip, DHW cylinder stat and/or time clock and activate zone valves or pumps according to demand. The boiler output will be automatically activated if called by any zone.

1.1.19 Polytherm Logic strip (24v or 230v)
- Maximum number of zone outputs for thermal accustors is 10 for 24v logic strip and 8 for 230v logic strip.
- Two relays to be used for pump and boiler.
- Night set-back requires separate time control, temperature reduces by about 1-5 degrees.
- Hold off facility - The boiler or pump(s) will not engage if the hold off facility receives any signal

1.1.20 The polytherm manifold and logic strip should be mounted in a Polytherm manifold cabinet.

1.1.21 Boiler control (wet systems only) Warm-water floor-heating system controls should be interlocked with the boiler and stored hot water temperature control to ensure that the boiler does not fire when there is no demand for heat for either space or water heating, as SEAI - Heating and Domestic Hot Water Systems for dwellings - Achieving compliance with Part L 2008.

1.2 Installation and Commissioning of the Underfloor Heating System

1.2.1 The mechanical contractor shall verify that the walls are plastered down as far as the concrete sub floor level; that the sub floor has an even finish or that any unevenness in height is filled with an approximate 5:1 sand/cement mortar. The floor surface must be swept clean. The main contractor shall confirm the zones required are ready for installation of the underfloor heating.

1.2.2 The Polytherm systems panels, edge insulation strip, round polyethylene profile, expansion joint, pipe work and pipe sleeving shall be installed prior to the pouring of the screed.

1.2.3 After the pipe work is laid pressure tests are to be carried out on the underfloor heating heating circuits at 1.5 times the working pressure of the system but must not exceed 4 bar in total.
Prior to the laying of the screed, all underfloor heating connections are to be tightened after the 24 hour test. The pipes are to remain under pressure while the slab is being laid so that any damage/leaks can be detected immediately and rectified. No heavy traffic shall come into contact with the underfloor heating pipes in position.
Consultant shall be given one week prior notice of commissioning in order to have a site representative present.

1.2.4 The slab must be laid within 48 hours of the pipes being laid to prevent damage from ultraviolet radiation.

1.2.5 The floor screed must be left for 21 days after laying before any heating is applied or as recommended by the main contractor. When the heating is applied the inlet water temperature must be set at a maximum temperature of 25°C for a minimum period of three days. Then the inlet water temperature should be raised slowly, to bring it up to the maximum operating temperature of 45° after 13 days.
Floor screed drying schedule (if heat pump present)

- 25°C x 72hrs
- 30°C x 24 hrs
- 34°C x 24 hrs
- 37°C x 24 hrs
- 40°C x 24hrs
- 43°C x 24hrs
- 45°C x 24hrs
- 40°C x 24hrs
- 35°C x 24hrs
- 30°C x 24hrs
- 25°C x 24hrs

1.2.8 The max floor surface temperature shall not exceed 29°C in an occupied zone as per BS EN 1264-2:2008 (E).
The max floor surface temperature shall not exceed 33°C in an unoccupied zone as per BS EN 1264-2:2008 (E).

1.2.7 The mechanical contractor shall be solely responsible for the design, installation and commissioning of the entire under floor system.

1.2.8 The cost of relocation, retu/ducting or replacing the floor and pipe work if not installed correctly shall be solely borne by the mechanical contractor.

1.2.9 The mechanical contractor shall prior to installation provide the commissioning schedule along with individual flow rates for each loop in the underfloor heating system for approval by the consulting engineer.

1.2.10 The mechanical contractor shall supply samples of each of the components in the underfloor heating system prior to installation.

1.2.11 The system shall be flushed, cleaned and inhibited in accordance with the BESA application guide, pre-commissioning cleaning of pipework systems (2nd edition)

LEGEND

- Area Covered by Underfloor Heating
- Pipework run at high level
- Pipework run at low level
- Pipework run below ground
- Htg F&R — Heating Flow and Return
- TA — to Above
- TB — to Below
- FA — From Above
- TA — to Above
- LL — Low Level
- Temperature Gauge
- 3–Port Motorised Valve
- Circulating Pump
- Isolating Valve
- Temperature Control Sensor

NOTES:

Heating Pipework to be Steel with Screwed Fittings

All Pipework to be sleeved where passing through openings

Pipe Brackets Type 238R to be used throughout.

Pipework to be flushed through before final connection to system.

Pipework system to be pressure Tested before connection to emitters. 7 Bar for 24 Hours.

All openings to be core drilled.

Existing Pipework to be removed from site

All runs of pipework to be agreed with Engineer before installation commences.

All Pipework to be primed and Painted. External Pipework to have 2No. Coats of Red Oxide Primer before Insulation.

System to be fully commissioned and Balanced on Completion of installation Works.

Install Automatic Air Vents at High Level in Pipework System.

Contractor to provide for all Necessary Builderswork and Removal of waste materials.

Contractor to visit site to ascertain any relevant technical issues

All Items of plant to be provided with Isolating Valves

Obsolete Equipment and associated electrical services to be disconnected and removed from site.

All Pipework to be insulated with Rigid fibreglass Sections Class'o' Foil Finish.

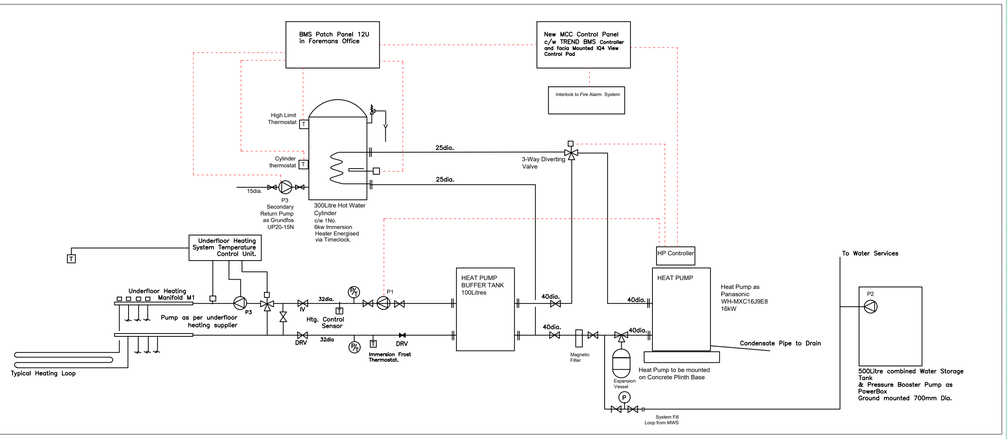
Contractor to provide and make good all builderswork openings.

Pipework to be supported at 2m intervals max. Supports to be fabricated from unistrut sections with pipe rollers as required.

Steel Pipework to be used throughout for heating system.
Polytherm Pipework for Underfloor Heating.

Pipework to be identified using self adhesive bands at regular intervals.

Notes:
Underfloor Heating System & Pipework Circuiting Arrangement is indicative.
Contractor to engage Specialist Supplier to provide detailed
Heating Scheme design to include all pipework and equipment.
Proposed Scheme drawings,details and design data to be submitted to Engineer for approval



REV	DESCRIPTION	BY	DATE

job title
NEW BFW OFFICES
AT GORMANSTON CAMP
Co. MEATH

drg.title
PROPOSED SERVICES
HEATING SERVICES LAYOUT

scale
1:50

drawn	checked	date
DDD	C.Carey	May.2026

PDC PLANNING & DESIGN OFFICE
Infrastructure & Utilities,2 Engr. Group, Cathal Brugha Bks., Dublin 6.

drg.no.
PDE-B14-85- 301

rev