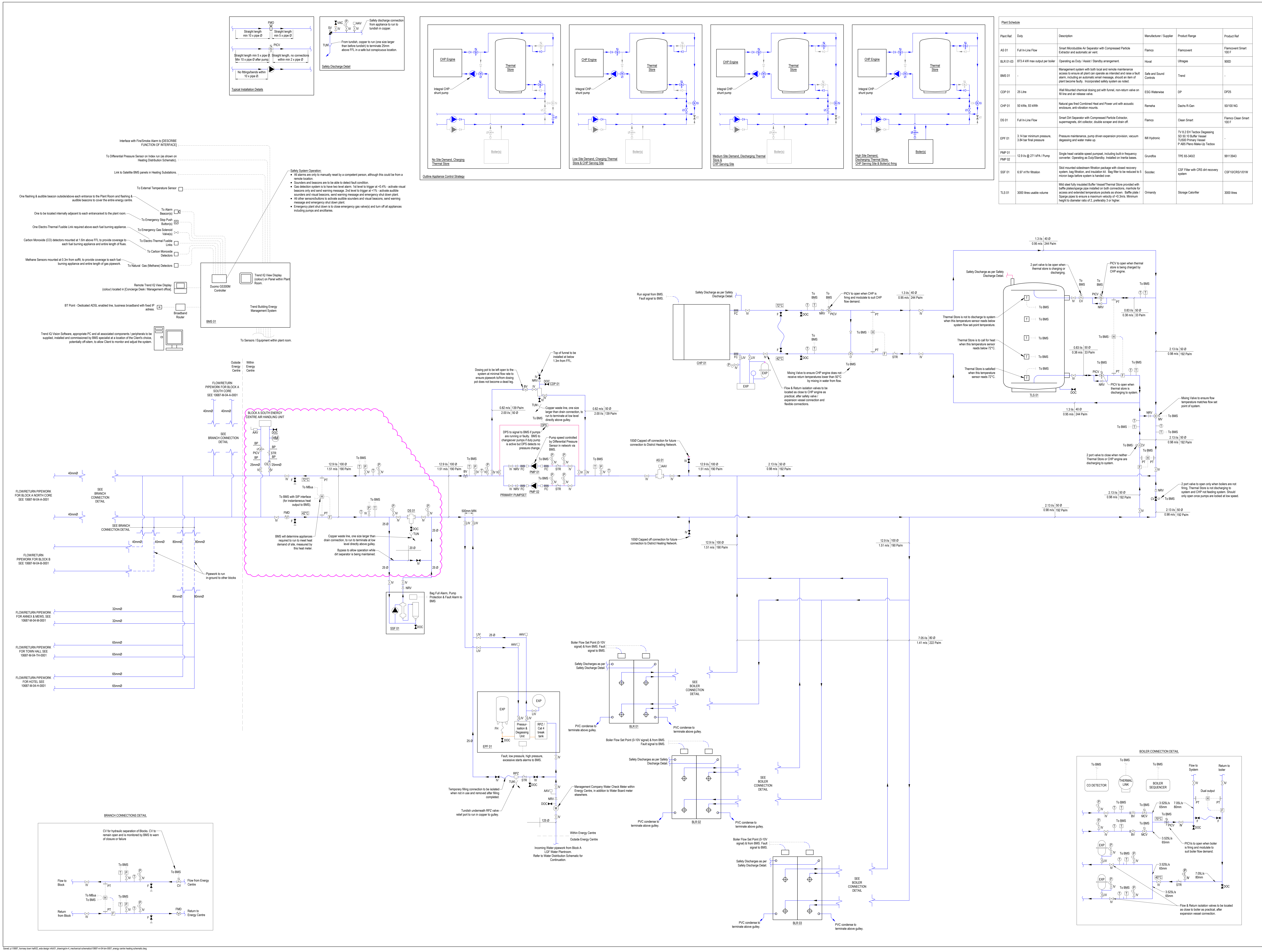
FMO
Straight length min 10 x pipe Ø
Straight length min 5 x pipe Ø
PICV
Straight length min 5 x pipe Ø
Straight length, no connections within min 2 x pipe Ø
No fittings/bends within 10 x pipe Ø
Typical Installation Details
VAC
AAV
SV
IV
TUN
Safety discharge connection from appliance to run to tundish in copper.
From tundish, copper to run (one size larger than before tundish) to terminate 25mm above FFL in a safe but conspicuous location.
Safety Discharge Detail
CHP Engine
Thermal Store
Integral CHP shunt pump
Boiler(s)
No Site Demand, Charging Thermal Store
Low Site Demand, Charging Thermal Store & CHP Serving Site
Medium Site Demand, Discharging Thermal Store & CHP Serving Site
High Site Demand, Discharging Thermal Store, CHP Serving Site & Boiler(s) firing
Outline Appliance Control Strategy
Interface with Fire/Smoke Alarm to [DESCRIBE FUNCTION OF INTERFACE]
To Differential Pressure Sensor on Index run (as shown on Heating Distribution Schematic).
Link to Satellite BMS panels in Heating Substations.
To External Temperature Sensor
One flashing & audible beacon outside/above each entrance to the Plant Room and flashing & audible beacons to cover the entire energy centre.
To Alarm Beacon(s)
One to be located internally adjacent to each entrance/exit to the plant room.
To Emergency Stop Push Button(s)
One Electro-Thermal Fusible Link required above each fuel burning appliance.
To Emergency Gas Solenoid Valve(s)
Carbon Monoxide (CO) detectors mounted at 1.6m above FFL to provide coverage to each fuel burning appliance and entire length of flues.
To Electro-Thermal Fusible Links
To Carbon Monoxide Detectors
Methane Sensors mounted at 0.3m from soffit, to provide coverage to each fuel burning appliance and entire length of gas pipework.
To Natural Gas (Methane) Detectors
Remote Trend IQ View Display (colour) located in [Concierge Desk / Management office].
BT Point - Dedicated ADSL enabled line, business broadband with fixed IP adress.
Broadband Router
Duomo GS300M Controller
Trend IQ View Display (colour) on Panel within Plant Room.
Trend Building Energy Management System
BMS 01
Trend IQ Vision Software, appropriate PC and all associated components / peripherals to be supplied, installed and commissioned by BMS specialist at a location of the Client's choice, potentially off-sitem, to allow Client to monitor and adjust the system.
To Sensors / Equipment within plant room.
Outside Energy Centre
Within Energy Centre
FLOW/RETURN PIPEWORK FOR BLOCK A SOUTH CORE SEE 10687-M-04-A-0001
BLOCK A SOUTH ENERGY CENTRE AIR HANDLING UNIT
SEE BRANCH CONNECTION DETAIL
FLOW/RETURN PIPEWORK FOR BLOCK A NORTH CORE SEE 10687-M-04-A-0001
SEE BRANCH CONNECTION DETAIL
FLOW/RETURN PIPEWORK FOR BLOCK B SEE 10687-M-04-B-0001
Pipework to run in-ground to other blocks
FLOW/RETURN PIPEWORK FOR ANNEX & MEWS, SEE 10687-M-04-M-0001
FLOW/RETURN PIPEWORK FOR TOWN HALL SEE 10687-M-04-TH-0001
FLOW/RETURN PIPEWORK FOR HOTEL SEE 10687-M-04-H-0001
Dosing pot to be left open to the system at minimal flow rate to ensure pipework to/from dosing pot does not become a dead leg.
Top of funnel to be installed at below 1.3m from FFL.
CDP 01
Copper waste line, one size larger than drain connection, to run to terminate at low level directly above gulley.
DPS to signal to BMS if pumps are running or faulty. BMS to changeover pumps if duty pump is active but DPS detects no pressure change.
Pump speed controlled by Differential Pressure Sensor in network via BMS.
PMP 01
PMP 02
PRIMARY PUMPSET
To BMS with SIP interface (for instantaneous heat output to BMS).
BMS will determine appliances required to run to meet heat demand of site, measured by this heat meter.
Copper waste line, one size larger than drain connection, to run to terminate at low level directly above gulley.
Bypass to allow operation while dirt separator is being maintained.
DS 01
Bag Full Alarm, Pump Protection & Fault Alarm to BMS
SSF 01
500mm MIN
100Ø Capped off connection for future connection to District Heating Network.
AS 01
Run signal from BMS. Fault signal to BMS.
Safety Discharge as per Safety Discharge Detail.
CHP 01
PICV to open when CHP is firing and modulate to suit CHP flow demand.
Mixing Valve to ensure CHP engine does not receive return temperatures lower than 50°C by mixing in water from flow.
Flow & Return isolation valves to be located as close to CHP engine as practical, after safety valve / expansion vessel connection and flexible connections.
2 port valve to be open when thermal store is charging or discharging
PICV to open when thermal store is being charged by CHP engine.
Thermal Store is not to discharge to system when this temperature sensor reads below system flow set-point temperature.
Thermal Store is to call for heat when this temperature sensor reads below 72°C.
Thermal Store is satisfied when this temperature sensor reads 72°C.
TLS 01
PICV to open when thermal store is discharging to system.
Mixing Valve to ensure flow temperature matches flow set point of system.
2 port valve to close when neither Thermal Store or CHP engine are discharging to system.
2 port valve to open only when boilers are not firing, Thermal Store is not discharging to system and CHP not feeding system. Should only open once pumps are locked at low speed.
Boiler Flow Set Point (0-10V signal) & from BMS. Fault signal to BMS.
Safety Discharges as per Safety Discharge Detail.
SEE BOILER CONNECTION DETAIL
BLR 01
BLR 02
BLR 03
PVC condense to terminate above gulley.
EXP
FH
Pressurisation & Degassing Unit
RPZ Cat 4 break tank
EPF 01
Fault, low pressure, high pressure, excessive starts alarm to BMS.
Temporary filling connection to be isolated when not in use and removed after filling completed.
Tundish underneath RPZ valve - relief port to run in copper to gulley.
Management Company Water Check Meter within Energy Centre, in addition to Water Board meter elsewhere.
Within Energy Centre
Outside Energy Centre
Incoming Water pipework from Block A LGF Water Plantroom. Refer to Water Distribution Schematic for Continuation.
BOILER CONNECTION DETAIL
CO DETECTOR
THERMAL LINK
BOILER SEQUENCER
Flow to System
Return to boiler
Dual output
Flow & Return isolation valves to be located as close to boiler as practical, after expansion vessel connection.
PICVs to open when boiler is firing and modulate to suit boiler flow demand.
BRANCH CONNECTIONS DETAIL
CV for hydraulic separation of Blocks. CV to remain open and is monitored by BMS to warn of closure or failure
Flow to Block
Flow from Energy Centre
Return from Block
Return to Energy Centre
To MBus
To BMS

Safety System Operation:
- All alarms are only to manually reset by a competent person, although this could be from a remote location.
- Sounders and beacons are to be able to detect fault condition.
- Gas detection system is to have two level alarm. 1st level to trigger at <0.4% - activate visual beacons only and send warning message. 2nd level to trigger at <1% - activate audible sounders and visual beacons, send warning message and emergency shut down plant.
- All other sensors/buttons to activate audible sounders and visual beacons, send warning message and emergency shut down plant.
- Emergency plant shut down is to close emergency gas valve(s) and turn off all appliances including pumps and ancilliaries.

Plant Schedule

Plant Ref.	Duty	Description	Manufacturer / Supplier	Product Range	Product Ref
AS 01	Full In-Line Flow	Smart Microbubble Air Separator with Compressed Particle Extractor and automatic air vent.	Flamco	Flamcovent	Flamcovent Smart 100 F
BLR 01-03	873.4 kW max output per boiler	Operating as Duty / Assist / Standby arrangement.	Hoval	Ultragas	900D
BMS 01	-	Management system with both local and remote maintenance access to ensure all plant can operate as intended and raise a fault alarm, including an automatic email message, should an item of plant become faulty. Incorporated safety system as noted.	Safe and Sound Controls	Trend	-
CDP 01	25 Litre	Wall Mounted chemical dosing pot with funnel, non-return valve on fill line and air release valve.	ESG Waterwise	DP	DP25
CHP 01	50 kWe, 93 kWth	Natural gas fired Combined Heat and Power unit with acoustic enclosure, anti-vibration mounts.	Remeha	Dachs R-Gen	50/100 NG
DS 01	Full In-Line Flow	Smart Dirt Separator with Compressed Particle Extractor, supermagnets, dirt collector, double scraper and drain off.	Flamco	Clean Smart	Flamco Clean Smart 100 F
EPF 01	3.14 bar minimum pressure, 3.84 bar final pressure	Pressure maintenance, pump driven expansion provision, vacuum degassing and water make up.	IMI Hydronic	TV 8.2 EH Tecbox Degassing SD 50.10 Buffer Vessel TU500 Primary Vessel P AB5 Pleno Make-Up Tecbox	-
PMP 01 PMP 02	12.9 l/s @ 271 kPA / Pump	Single head variable speed pumpset, including built-in frequency converter. Operating as Duty/Standby. Installed on Inertia bases.	Grundfos	TPE 65-340/2	99113943
SSF 01	6.97 m³/hr filtration	Skid mounted sidestream filtration package with closed recovery system, bag filtration, and insulation kit. Bag filter to be reduced to 5 micron bags before system is handed over.	Socotec	CSF Filter with CRS dirt recovery system	CSF10/CRS/1/01W
TLS 01	3000 litres usable volume	Mild steel fully insulated Buffer Vessel/Thermal Store provided with baffle plates/sparge pipe installed on both connections, manhole for access and extended temperature pockets as shown. Baffle plate / Sparge pipes to ensure a maximum velocity of <0.3m/s. Minimum height to diameter ratio of 2, preferably 3 or higher.	Ormandy	Storage Calorifier	3000 litres

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General Notes
- Before commencing work on site, please read Design Risk Management Information.
- All manufacturer's instructions to be reviewed prior to installation.
- This drawing is to be read in conjunction with all schematics, details and specification documents.
- Dimensioned setting out details to be confirmed by architect.
- All discrepancies are to be queried with WDA at Tender stage and before works commence.
- Any information believed to be missing is to be queried with WDA at Tender stage and before works commence.
- All items are to be installed in a way that they can be used and maintained correctly in line with manufacturer's instructions, including local mechanical and electrical isolation for removal of individual items without draining down other portions of the system.
- All items are to be installed in locations that can be safely accessed and maintained without the need for temporary scaffolding, steps or ladders.
- All controls (both as part of BMS and individual appliances) are to incorporate the appropriate time delays and/or proven signals to ensure safe and intended operation of the system and to avoid sporadic operation, "cycling" or "hunting".

Pipework / Valves Notes
- All dead legs (where flow does not occur under normal circumstances) must be no longer than 3x pipe diameter.
- Heating pipe work high points are to be vented with automatic air vents (AAV's), or shall be manually vented where not possible.
- Where pipes and ducts need to drop/rise, each individual high point must be fitted with an AAV.
- All moving items of equipment are to be installed on Anti-vibration mounts and have flexible connections.
- All sensors & gauges to be installed in steady flow conditions.
- Padlocks for lockable isolation valves to be provided by installing Contractor with suited keys and the padlock/valve labelled as "Do not isolate".

Insulation Notes
- All heating and water pipework as well as associated valves within then energy centre are to be fully insulated throughout.
- Pipe clips are to be installed around a section of load bearing insulation such as Rockwool Duraflex / ProRox, to prevent heat transmission through the pipe fixing.
- All heating and water valves within the energy centre are to be fully insulated throughout in a valve box, overlapping the pipe insulation either side of the valve. Extended valve handles are to be fitted to allow use of the valve without removal of the insulation box.
- All equipment that can be insulated in line with Manufacturer requirements is to be insulated.
- All drains and vent points (including those on pieces of equipment) are to be extended to be clear of insulation, to ensure correct operation without removal of insulation.
- All insulation within the energy centre is to be mineral wool and clad in dimpled aluminium.

Firestopping & Fire Safety Notes
- Where any items larger than 40mm penetrate a fire compartment element the item is to be fitted with a fire collar with a rating to match the compartment being penetrated. The fire collar must be installed in line with manufacturer's requirements.

Electrical Notes
- All wiring connections are to be completed in a manner that does not restrict the operation or maintenance of all components of all equipment.
- All individual items of equipment are to have individual electrical isolation.
- Any item that is required to be removed for maintenance or servicing shall be wired with a removable electrical connection in a readily accessible location.
- All electrical items within the plant room or gas meter room are to be suitable for Hazardous Zone 2.
- All electrical items within the plant room or gas meter room are to be at least IP54 rated.

Certification / Qualification Notes
- The BMS must be supplied, installed and commissioned by a Trend TTC Registered company such as Safe and Sound Control Systems Ltd.

LEGEND

VALVES

⧖ ⧗	Valve normally open / Valve normally closed respectively.
AAV	Air Admittance Valve, minimum 25mm within energy centre.
ABV	Automatic Bypass Valve, to open when pressure increases.
BV	Balancing Valve - with measuring points & hand wheel for positive shut off from IMI Hydronics STAF range.
BV	Balancing Valve, with self-sealing measuring points and positive shut-off, from IMI Hydronics STAF range.
CV	2-port butterfly-type control valve.
DOC	Drain Off Cock - Bronze Gland Pattern valve by Hattersley.
DV	3-Port Diverter Valve.
FMD	Flow Measuring Device, as per BV/IV but solely for the purpose of Flow measurement and isolation only. Valve to be left fully open.
F	Isolation Valve for Flushing Equipment Connection - as per IV, capped off. Line size or 54mm, whichever is smaller.
IV	Isolation Valve - Full bore ball valve with quarter turn lever (below 50mm) or Butterfly valve with lever operator (50mm and above) by Hattersley.
LIV	Lockable Isolation Valve - as per IV, with provision for padlock.
MCV	2-port seat-type modulating control valve.
MV	3-Port seat-type mixing valve.
NRV	Non-Return Valve.
PICV	Pressure Independent Control Valve - with measuring points and modulating control from IMI Hydronics FUSION range.
RPZ	Reduced Pressure Zone valve.
SV	Safety Valve, high lift type, fixed relief setting (not adjustable).
VAC	Automatic Anti-Vacuum Valve.

FITTINGS

▭	Change in Pipe Size.
EXP	Expansion Vessel.
FC	Flexible Connection, Untied rubber bellow from Page Pipeline Supplies UTB range.
FH	Flexible Hose, metal braided.
FMO	Flow Measuring Orifice from IMI Hydronics MDFO range.
◀	Single Head Pump.
STR	Strainer - Y-type strainer, stainless steel screen, ≤DN25 with ≤0.75mm mesh. ≥DN32 with ≤1.5mm mesh, from Hattersley.
TUN	Tundish.

SENSORS/GAUGES

DPS	Differential Pressure Sensor.
F	Flow Sensor, as supplied with heat meter.
H	Heat Meter, ultrasonic with communication options as labelled, from Danfoss Sonometer 1100 range.
P IV	Analogue Pressure Gauge, Boudon tube type, 150mm gauge diameter, 3/8" connection, with syphon loop and isolation valve.
P	Digitial Pressure Sensor.
PT	Temperature Probe Pocket.
T	Analogue Temperature Gauge, Bi-metal type, 100mm gauge diameter, either in pocket or with isolation valve from Brannon Thermometers.
T	Digital Temperature Sensor, in 1/2" pocket or with isolation valve, accurate to at least 0.25K.
T HLS	High-limit temperature sensor

FLOW RATE	PIPE SIZE
VELOCITY	PRESSURE DROP

Pipe Flow Characteristics

Rev	Date	Description	Drwn	Chkd
C5	03.02.2022	ABV removed. Energy centre AHU added	DALS	EJ
C4	26.07.2021	Boiler valves amended. Pump relocated. C4 and C5 revisions collated to issue to 4P	EJ	AH
C3	24.03.2021	Updated to include Mews & Annex addition	EJ	AH
C2	17.02.2020	Construction Issue	JC	NE
C1	13.12.2019	Construction Issue	MDJ	JC
P1	15.11.2019	Preliminary Issue	MDJ	JC

Current purpose: CONSTRUCTION Scale: NTS Size: A0
Original Issue Date: 15.11.2019 Drwn: MDJ Chkd: JC

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Title:
ENERGY CENTRE
SCHEMATIC

Project:
HORNSEY
TOWN HALL

Client: ARDMORE

Dwg Number: 10687-M-04-BM-0007

Rev: C5

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