



Method Consulting

Intelligent engineering,
sustainable buildings

TG – 37 Barfield Park

BREEAM Very Good for Energy and Water

The Community Stadium Ltd

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Document History

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Contents

1	Introduction	1
2	Energy	3
2.1	Ene 01 Reduction of Energy Use and Carbon Emissions – Energy Performance	3
2.2	Ene 02 Energy Monitoring: Sub-Metering of End-Use Categories.....	4
3	Water	5
3.1	Wat 01: Water Consumption	5
3.2	Wat 02: Water Monitoring.....	6
4	Conclusion	8
5	Appendix	9
5.1	Appendix A – BRUKL for Ene 01	9
5.2	Appendix B – Energy Metering Schematic	10
5.3	Water Services Schematic.....	11

1 Introduction

Method Consulting have been appointed as the Sustainability Consultant for the Medical Centre of 37 Barfield Park, Lancing. This report has been written to address section 4.19, policy 18 of Adur Local Plan (2017).

Following consultation between the Planning Consultant and the Planning Officer, it was agreed that due to the scale of the building, a full BREEAM V6.1 Assessment on the building would not be proportionate. Instead, it was determined that it should be evidenced how the building has been designed to meet water and energy targets to achieve a BREEAM 'Very Good' rating or higher.

BREEAM New Construction requires projects to achieve category specific minimum standards and a project cannot achieve a given rating unless these have been met. These minimum standards for 'Very Good' relate to Ene 02 Energy Monitoring credit (the first credit for sub-metering of end use categories must be achieved), the Wat 01 Water Consumption credits (a minimum of one credit must be achieved), and the Wat 02 Water Monitoring credit (a water meter must be specified on the mains water supply to the building). Further minimum standards are the applicable to BREEAM 'Excellent' and 'Outstanding' ratings for Ene 01 Reduction of energy use and carbon emissions as seen in figure 2.

Table 2.5 Minimum BREEAM standards by rating level

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03 Responsible construction practices	None	None	None	One credit (responsible construction management)	Two credits (responsible construction management)
Man 04 Commissioning and handover	None	None	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)	One credit (commissioning-test schedule and responsibilities)
Man 04 Commissioning and handover	None	None	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)	Criterion 11 (Building User Guide)
Man 05 Aftercare	None	None	None	One credit (commissioning-implementation)	One credit (commissioning-implementation)
Ene 01 Reduction of energy use and carbon emissions	None	None	None	Four credits (Energy performance or Prediction of operational energy consumption*)	Six credits (Energy performance) and Four credits (Prediction of operational energy consumption*)
Ene 02 Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat 01 Water consumption	None	One credit	One credit	One credit	Two credits
Wat 02 Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03 Responsible sourcing of construction products	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Wst 01 Construction waste management	None	None	None	None	One credit
Wst 03	None	None	None	One credit	One credit

Figure 2: Minimum Standards - Table 2.5 from the BREEAM V6.1 NC Manual, page 35 of 421.

2 Energy

2.1 Ene 01 Reduction of Energy Use and Carbon Emissions – Energy Performance

In line with table 2.5 of the BREEAM Manual, a minimum of four credits are required to be achieved, to satisfy the BREEAM 'Excellent' minimum standard. This is either through UK Building Regulations Part L modelling using the BRUKL output to calculate the number of credits achieved, or by undertaking CIBSE TM54 analysis. 37 Barfield Park has undertaken Part L modelling in order to demonstrate compliance.

A BRUKL and brukl.inp file has been provided for the building by PJR building services based on the as designed building. This brukl.inp file has been uploaded to the BREEAM Projects website, which confirms that seven out of nine credits are achieved, with an EPR_{NC} value of 0.757. A print screen from BREEAM Projects has been provided below to confirm this, and a copy of the BRUKL (PDF version) has been provided in Appendix A.

Energy performance - Building score	
Heating and cooling demand energy performance ratio (EPR_{dem})	0.317
Primary energy consumption performance ratio (EPR_{pe})	0.127
Overall building energy performance ratio (EPR_{nc})	0.757
CO ₂ -eq energy performance ratio (EPR_{co2-eq})	0.312
Total BREEAM credits achieved	7.0

Figure 3: Print Screen from BREEAM Projects showing Ene 01 Score.

The above seven credits achieved therefore meet the minimum standard for a BREEAM Excellent rating.

2.2 Ene 02 Energy Monitoring: Sub-Metering of End-Use Categories

The award of this credit is a mandatory requirement for BREEAM 'Very Good' and above. The BRE require that a building has energy metering system so that at least 90% of the estimated annual energy consumption of each fuel is assigned to the end-use categories. For buildings less than 1,000m², as is 37 Barfield Park, this can either be done by an energy monitoring and management system, or separate accessible energy sub-meters with pulsed or other open protocol communication outputs, for future connection to an energy monitoring and management system. Building users must be able to identify the energy consuming end uses, either through meter labelling, or data outputs.

An electrical services schematic received from PJR building services demonstrates the electrical loads metered and assigned to each end use category. The following end uses are metered:

- Mains incoming electrical meter
- MRI scanner
- MRI scanner Chiller
- Ancillary area VRF condenser
- Mechanical services control panel
- Lighting distribution board
- Small power distribution board
- Type 1&2 SPD

Please see Appendix B for the Electrical Services Schematic/specification.

The schematic shows there are no loads that are not metered and therefore confirms 100% of electricity is appropriately sub-metered.

A legend on the drawing confirms that 'M2' meters are electric meters with Pulsed outputs. The schematic confirms this is all sub-meters. This allows for appropriate monitoring.

The above credits achieved therefore meet the minimum standard for a BREEAM Outstanding rating.

3 Water

3.1 Wat 01: Water Consumption

The Wat 01 credit assesses consumption of potable water for sanitary use in the building under assessment. To achieve a BREEAM rating of 'Very Good', a minimum of one credit must be achieved out of five standard credits available.

The sanitaryware details for the Medical Centre have been provided by the Architect. In line with the BREEAM guidance, healthcare components in clinical areas are omitted from the calculations. These include clinical sinks and basins. In addition, water fittings for process related functions are also excluded from the calculations, this includes cleaners' sinks. The flow rates have been taken from the product data sheets. These details have been used to complete the BREEAM Wat 01 Calculator Tool. This tool is used to determine the number of credits achievable for this credit section.

The proposed sanitaryware specification for the unit is detailed below in the table:

Sanitaryware Item	Number of Fittings	Product	Flow rate (litres/minute) or Flush Volume (litres)
Doc M pack (WCs)	2	S0690(AC) Doc M Standard low level right hand corner pack, WC with spacer box low level cistern.	6 litre per flush.
Doc M pack (WHB)	2	S0690(AC) Doc M Standard low level right hand corner pack	4 litres per minute @ 3 bar pressure

Table 1: As installed Sanitaryware for the project (to BREEAM Scope).

For a healthcare unit, the BREEAM Wat 01 alternative calculation methodology is used. The completed Wat 01 Calculator Tool confirms that based on the above specification, one credit can be awarded (see extract from Wat 01 Tool below), which exceeds the minimum standard of one credit required for BREEAM 'Very Good'.

BREEAM 2018/Version 6.1 Wat 01 Water consumption: Other building type calculator


Please select the option that best defines the building type being assessed: Healthcare - GP surgery or health centre/clinic

Water consumption - building microcomponents

	WC	Urinal (2 or more urinals)	Urinal (1 urinal only)	Wash hand basin taps	Showers	Baths	Kitchen taps: kitchenette	Domestic sized washing machines	Domestic sized dishwashers	Kitchen taps: restaurant (pre-rinse nozzles only)	Waste disposal unit (commercial kitchens only)	Commercial sized dishwashers	Commercial or industrial sized washing machines
Component assessed for building type (if specified)	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No
Please confirm if this component type is specified in the building and will be installed	Specified	Not Specified	Not Specified	Specified	Not Specified		Not Specified		Not Specified	Not Specified	Not Specified	Not Specified	
Please select the number of different types of specification that you wish to enter for this	1			1									
Type 1	Water component performance - Type 1												
	Units												
	litres												
	6.00			4.00									
	litres/min												
	Please confirm the no. of type 1 components specified												
	2			2									

Greywater system specified and installed in compliance with BS8525-1:2010 Greywater Systems - Part 1 Code of Practice
No

Rainwater system specified and installed in compliance with BS EN 16943-1:2018 Rainwater Harvesting Systems - Code of practice
No

Other permissible source of non-potable recycled water
No

Please give a brief description of source/system
e.g. waste water from building process

Please select from the drop down list below how you would like to assess performance of the specified system(s) and then enter the relevant % opposite:

BREEAM component level achieved for water recycling
Baseline
Note: credits only available for achieving BREEAM component level 4 or 5 in the elemental method.

Wat 01 results

Total Wat 01 BREEAM credits achieved
1

Total Wat 01 BREEAM Exemplary credits achieved
0

Figure 6: Print Screen taken from BREEAM Wat 01 Calculator showing the number of credits achieved

The above credits achieved therefore meet the minimum standard for a BREEAM Excellent rating.

3.2 Wat 02: Water Monitoring

The minimum standard for the Wat 02 credit for a BREEAM ‘Good’ rating and above requires projects to comply with criterion 1, which notes that a water meter on the mains water supply to the building must be specified.

A water metering schematic drawing has been provided by PJA Building services. This confirms that there is a Sensus model 640MC volumetric water meter with electronic register and wireless communication at the site boundary on the main water supply to the main building. This has been highlighted below in yellow, with the complete drawing included in Appendix C.

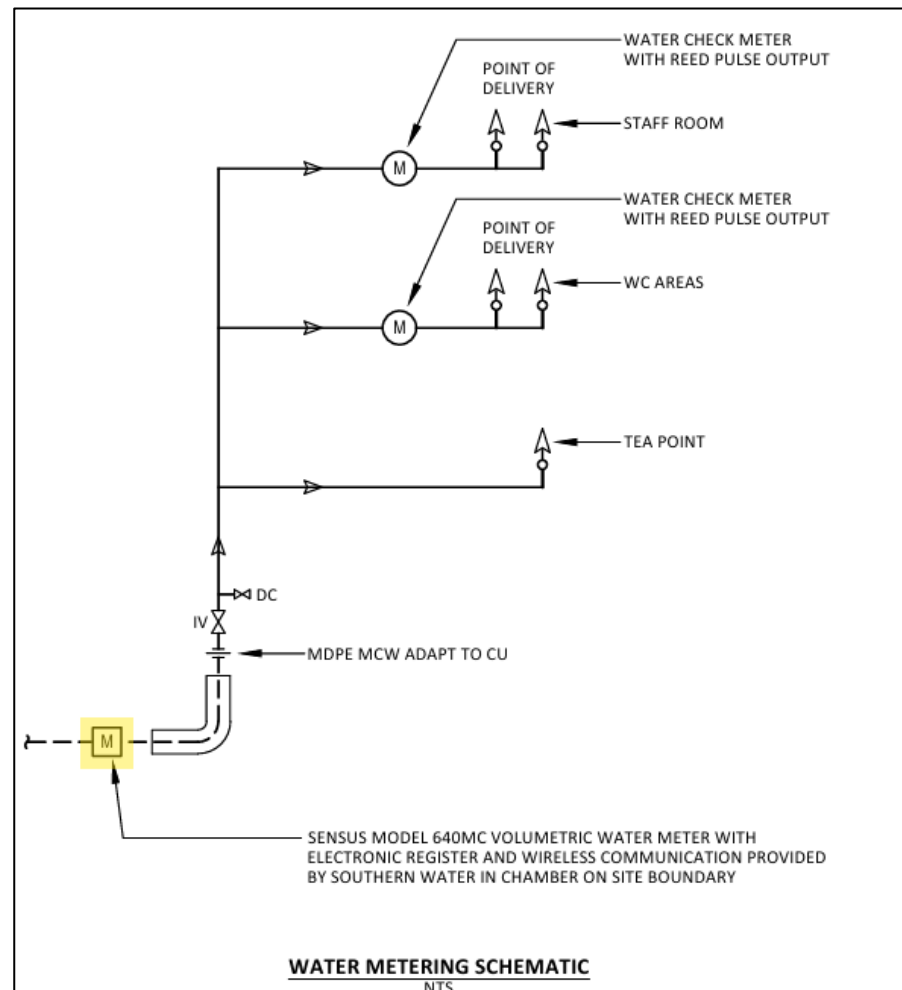


Figure 7: Print Screen taken from the water metering schematic.

The above credits achieved therefore meet the minimum standard for a BREEAM Outstanding rating.

4 Conclusion

Method Consulting have been appointed as the Sustainability Consultant for 37 Barfield Park, Lancing. This technical note confirms that at the design stage, the mandatory energy and water requirements for a BREEAM 'Very Good' rating have been exceeded, with the minimum standards for 'Excellent' also met. This relates to Ene 01 Energy Performance, Ene 02 Energy Monitoring, Wat 01 Water Consumption and Wat 02 Water Monitoring credits. Based on the above, the agreed section 4.19, policy 18 of Adur Local Plan (2017) condition is deemed to have been satisfied.

5 Appendix

5.1 Appendix A – BRUKL for Ene 01

Project name

Medical Centre**As designed****Date:** Thu Feb 19 09:33:56 2026**Administrative information****Building Details****Address:** Medical Centre, 37 Barfield Park, Lancing, BN15 9DF**Certifier details****Name:** George Kent - LCEA 900175**Telephone number:****Address:** PJR Services, 6 The Offices, 10 Fleet St, Brighton, BN1 4ZE**Certification tool****Calculation engine:** SBEM**Calculation engine version:** v6.1.e.2**Interface to calculation engine:** Virtual Environment**Interface to calculation engine version:** v7.0.30**BRUKL compliance module version:** v6.1.e.1**Foundation area [m²]:** 230.47**The CO₂ emission and primary energy rates of the building must not exceed the targets**

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.65
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	2.45
Target primary energy rate (TPER), kWh _{PE} /m ² annum	27.26
Building primary energy rate (BPER), kWh _{PE} /m ² annum	24.47
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.18	0.18	0_000000_W1
Floors	0.18	0.15	0.15	0_000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.15	0.15	0_000004_C
Windows** and roof windows	1.6	1.4	1.4	0_000000_W1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	4

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	7.04	10.48	-	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

2- Electric panel heaters

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

1- SYST0002-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0.015
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
Staff Room	-	-	-	-	1	-	-	-	-	0.8	N/A	
Consulation	-	-	-	-	1	-	-	-	-	0.8	N/A	
Circulation	-	-	-	-	1	-	-	-	-	0.8	N/A	
Circulation	-	-	-	-	1	-	-	-	-	0.8	N/A	
Circulation	-	-	-	-	1	-	-	-	-	0.8	N/A	
Circulation	-	-	-	-	1	-	-	-	-	0.8	N/A	
Control Room	-	-	-	-	1	-	-	-	-	0.8	N/A	
Photo Imaging	-	-	-	-	1	-	-	-	-	0.8	N/A	

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Magnet Room	-	-	-	-	1	-	-	-	-	0.8	N/A
Equipment Room	-	-	-	-	1	-	-	-	-	0.8	N/A
Circulation	-	-	-	-	1	-	-	-	-	0.8	N/A
Waiting	-	-	-	-	1	-	-	-	-	0.8	N/A
WC	-	-	0.3	-	-	-	-	-	-	-	N/A
Assisted Change	-	-	0.3	-	-	-	-	-	-	-	N/A
Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A
WC	-	-	0.3	-	-	-	-	-	-	-	N/A
Change	-	-	0.3	-	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value		95	80	0.3
Staff Room		110	-	-
Consulation		110	-	-
Circulation		110	-	-
Circulation		110	-	-
Circulation		110	-	-
Circulation		110	-	-
Control Room		110	-	-
Photo Imaging		110	-	-
Magnet Room		110	-	-
Equipment Room		110	-	-
Circulation		110	-	-
Waiting		110	100	1.35
Store		110	-	-
Store		110	-	-
Store		110	-	-
WC		110	-	-
Assisted Change		110	-	-
Staff Change		110	-	-
WC		110	-	-
Change		110	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Staff Room	NO (-66.6%)	NO
Consulation	N/A	N/A
Circulation	NO (-32.9%)	NO
Circulation	N/A	N/A
Circulation	N/A	N/A
Circulation	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Control Room	N/A	N/A
Photo Imaging	NO (-65.3%)	NO
Magnet Room	N/A	N/A
Equipment Room	N/A	N/A
Circulation	N/A	N/A
Waiting	NO (-5%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	244.5	244.5
External area [m ²]	606.1	606.1
Weather	SOU	SOU
Infiltration [m ³ /hm ² @ 50Pa]	4	3
Average conductance [W/K]	128.6	176.95
Average U-value [W/m ² K]	0.21	0.29
Alpha value* [%]	29.18	21.17

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education

100 Non-residential Institutions: Primary Health Care Building

Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	11.34	12.01
Cooling	1.02	4.22
Auxiliary	2.95	3.38
Lighting	10.81	9.13
Hot water	2.85	1.42
Equipment*	18.72	18.72
TOTAL **	28.98	30.16

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	13.61	11.99
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>13.61</i>	<i>11.99</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	128.93	148.64
Primary energy [kWh _{PE} /m ²]	24.47	27.26
Total emissions [kg/m ²]	2.45	2.65

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	82.2	36	3.5	1.3	3	6.56	7.44	7.04	10.48
	Notional	97	53.9	10.2	5.5	2.7	2.64	2.7	----	----
[ST] No Heating or Cooling										
	Actual	153.9	10.8	0	0	0	0	0	0	0
	Notional	120.9	17	0	0	0	0	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	138.2	24.3	48	0	3.6	0.8	0	1	0
	Notional	113	29.7	23.4	0	7.3	1.34	0	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

5.2 Appendix B – Energy Metering Schematic

ELECTRICAL SERVICES SPECIFICATION NOTES

DISTRIBUTION SYSTEM

Consumer units

The consumer units shall consist of a metal clad surface mounted, insulated enclosure, fitted with an integral switch-disconnector and Type B rated devices, sized to the load of the circuit they serve. In addition the consumer units shall have a degree of protection of IP41. The consumer units are to allow for 25% spare ways (Minimum 2NPs).

Circuits required to be RCD protected in accordance with BS 7671: IEE Wiring Regulations, 18th Edition, shall be served via individual RCDs (Combined MCB/RCDs) having a tripping current of 30mA, split load boards shall not be used. These shall and be selected so that the individual ratings are as close as possible to the actual connected loads. As a minimum all circuits serving general purpose socket outlets, also those that could serve equipment used externally shall be RCD protected.

All busbars shall be in the same position on all poles relative to the bank of MCBs. Each outgoing circuit shall have available its own neutral and earth terminal provided with way numbering. Borrowed neutrals or earths will not be permitted.

When closed, the case is to be dust-proof and entirely free from external lugs or protrusions. Drillings in the case are only to be provided for immediate needs, unused holes will not be permitted.

A means of identification shall be provided inside the case to cross-reference the outgoing ways with the circuit schedule to be provided adjacent to each consumer unit. Where combined MCBs and RCDs are installed, requiring two "Way" spaces, this must be reflected in the notations within the consumer unit and on the circuit schedules.

The main switch of each consumer unit shall be so selected that the ratings are suitable for the actual connected load.

SUB-CIRCUIT WIRING SYSTEM

The sub-circuit wiring shall be carried out using twin & earth LSF flat cables with a bare circuit protective conductor. All wiring shall be concealed within the fabric of the building to provide a flush installation. The sub-circuit wiring shall be located within the ceiling voids dropping to serve wiring devices.

All wiring device boxes shall be steel and provided with an earth terminal and fly-lead by the same manufacturer as the wiring device they enclose.

Lighting circuits shall be wired on the LOOP IN principle with no conductors having a cross sectional area of less than 1.5mm². The circuit wiring and protective device shall be sized in accordance with the total connected load of the items served by the circuit, NO diversity shall be applied. All wiring shall be carried out using the three-plate ceiling rose system and all connections being made at the ceiling rose or lighting switch.

Unless otherwise specified all socket outlets and fused connection units shall be wired on the RING MAIN principle, with no conductor having a cross-sectional area of less than 2.5mm². The protective device shall be rated at 32Amps and NO further diversity shall be applied.

Where RADIAL circuits are used to serve fixed equipment or appliances they shall be wired with no conductor having a cross-sectional area of less than 2.5mm². The circuit wiring and protective device shall be sized in accordance with the total connected load of the items served by the circuit, NO diversity shall be applied.

The positions and mounting heights of equipment shall be co-ordinated with all other trades and there final locations agreed before work is carried out. Particularly the location of the low level items for the connection of the appliances, etc., with any waste or water service pipework, or gas connections.

All accessories shall be installed level, where accessories are shown together, they shall be installed vertically or horizontally in line, as appropriate.

Where two accessories are shown together, they shall where possible be installed within dual gang boxes or where possible "grid" devices shall be used.

The switches shall in all cases be installed, 150mm from the closing still of the door unless otherwise specified.

In accordance with BS 7671 : IEE Wiring Regulations, 18th Edition, Regulation 522-06-05, where a cable is installed under a floor or above a ceiling it shall run in such a position that it is not liable to be damaged by contact with the floor or the ceiling or their fixings. Where a cable passes through a timber joist within a floor or ceiling construction or through a ceiling support, the cable shall be at least 50mm measured vertically or horizontally from the top or bottom as appropriate of a joist or batten.

Mechanical protection shall be provided and installed, sufficient to prevent penetration of the cable by nails, screws and the like, if the above cannot be achieved due to the type of floor or ceiling construction.

All cables or wiring installed within walls or wall voids, shall be vertically from, or vertically to, the point being served. Horizontal or diagonal runs of cables and wiring will not be permitted.

EARTHING & BONDING SYSTEM

The whole of the installation covered by this specification shall be effectively earthed and bonded.

Circuit Protective Conductors (CPCs) shall be sized in accordance with BS 7671: Requirements for Electrical Installations: The IEE Wiring Regulations, 18th Edition.

A separate CPC shall be installed for each armoured multi-core sub-main cable. In the case of a single phase sub-main, a three core armoured cable shall be used, the 3rd core used as the CPC. In the case of a three phase sub-main, a four core armoured cable shall be used with a single core PVC insulated copper cable, tie wrapped to the sub-main cable to serve as the CPC in cases where the cable armouring is of insufficient capacity to serve as the CPC. The insulation of the single core cable shall be coloured green/yellow.

A separate CPC shall be installed for each final sub-circuit. These shall be taken to the distribution board or consumer unit from where the final sub-circuit is derived.

Within the distribution boards and consumer units, the CPCs shall terminate into a termination bar, which shall be suitably bonded to the incoming sub-main cable. One terminal shall be connected in sequence with the MCB ways.

No part of the conduit, trunking or cable tray system shall be used as the CPC.

Main Equipotential Bonding Conductors (MEBCs) shall be installed. These shall be single core PVC Insulated copper cable. The insulation shall be coloured green/yellow.

MEBCs shall be provided to bond the main incoming service pipes and exposed metallic structural parts of the building, lightning protection etc. These shall be sized in accordance with BS 7671: Requirements for Electrical Installations: The IEE Wiring Regulations, 18th Edition.

Supplementary Bonding Conductors (SBCs) shall be installed. These shall be single core PVC insulated copper cable. The insulation shall be coloured green/yellow.

SBCs shall be provided to cross bond the water service pipework, sinks and taps. These shall be sized in accordance with BS7671: Requirements for Electrical Installations: The IEE Wiring Regulations, 18th Edition.

All non-current carrying metal of the electrical system, including the distribution panels, distribution boards, steel conduit, cable tray, steel trunking, cable armouring and metal sheathing, etc., shall be bonded and earthed to the earthing system.

All cable tray and steel trunking shall be fitted with a copper strap link at each joint.

All cables shall be concealed except in service rooms or at the point of connection. Where cables connect to equipment, they shall terminate behind the unit, with the connections concealed as far as possible.

INSPECTION, COMMISSIONING & TESTING

The whole of the installation shall be inspected and tested during, and at the end of the works. A Completion and Inspection Certificate shall be provided for all sections of the installations.

On completion each specialist system shall be tested and commissioned by the manufacturer or specialist.

After the system has been commissioned it shall be fully demonstrated to the Engineer, with an allowance also made for carrying out an operational test, in the presents of the Statutory Authorities where required. A Commissioning Certificate shall be provided for each specialist system.

INSTALLATION IDENTIFICATION

The whole of the installation covered by this specification shall be effectively identified.

All wiring devices controlling items of equipment shall be labelled. Where possible the manufactures pre-labelled switches shall be used, where this is not possible wiring devices shall be engraved. The exact size and wording of the engraving is to be agreed with the Engineer before ordering. In addition a sample of the engraving shall be provided for approval before ordering. Self adhesive labels shall not be used.

All outgoing circuits within the consumer units are to be labelled. The labels shall be typed and provide details of the equipment supplied by each sub-circuit. Hand written labels shall not be accepted.

Adjacent to the fire alarm control panel, a zone diagram shall be provided fixed in a glazed frame. This shall consist of a suitably sized diagram showing the layout of the building, shaded to indicate the zones and of an appropriate size to locate the room given in the alarm address display. The diagram shall be approved by the Engineer before fixing.

MATERIALS, MANUFACTURERS & SPECIALISTS

Each system shall be designed using the materials and equipment manufacturers listed within this specification and shown on the design intent layouts.

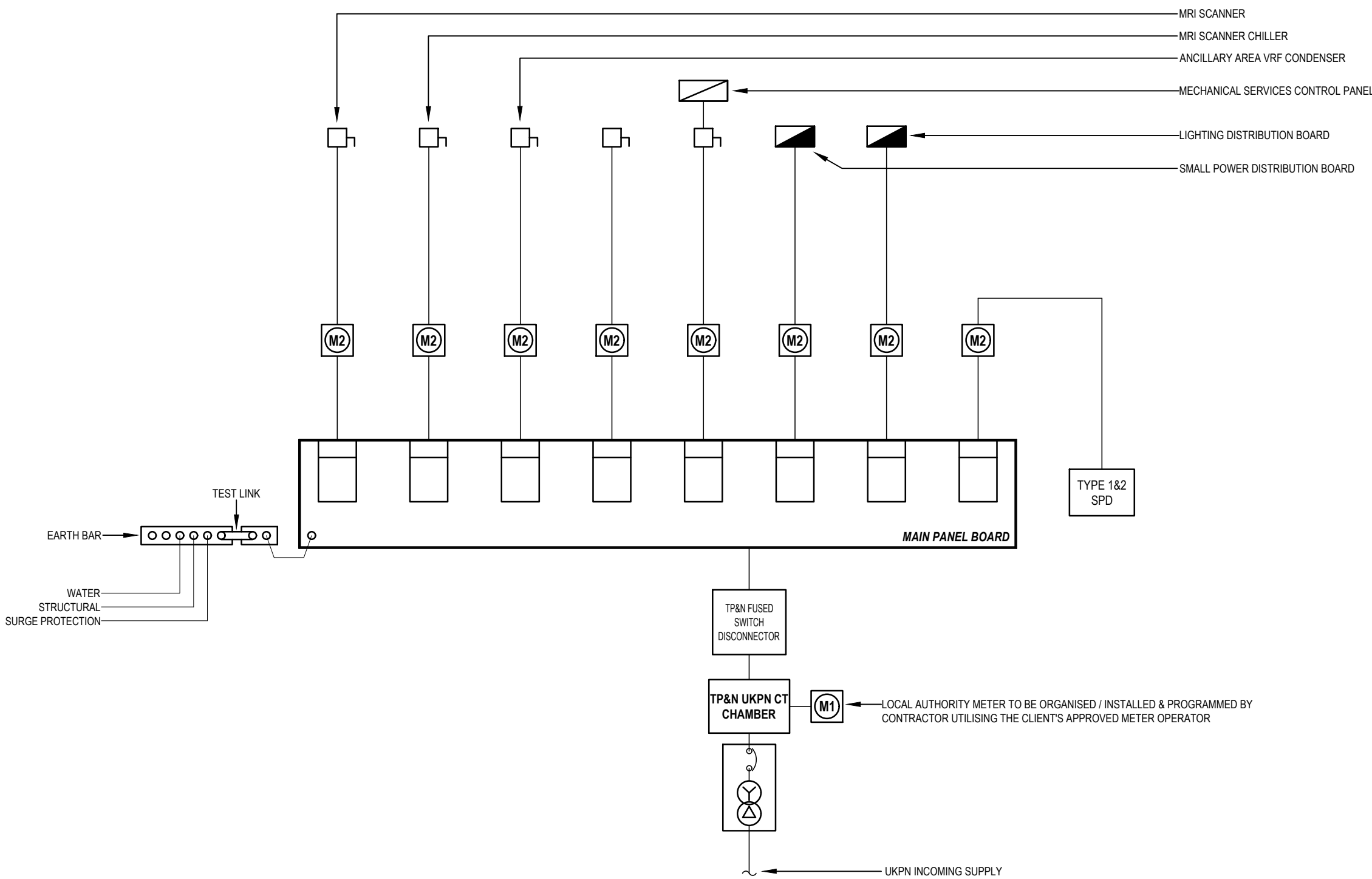
Where the equipment and/or manufacturer are not specifically stated, then those items may be at the Contractor's discretion. Samples of the materials proposed shall be submitted by the Contractor for approval by the Architect or Engineer without incurring additional costs.

All works to specialist systems shall be carried out by the specialist installer and/or manufacturer listed within this specification and shown on the design intent layouts.

Where the specialist of a particular system is not specifically stated, then they may be at the Contractor's discretion. Details of the proposed specialist and equipment shall be submitted by the Contractor for approval by the Architect or Engineer without incurring additional costs.

DESIGNERS RISK ASSESSMENT (HAZARD LOG IDENTIFYING RESIDUAL HAZARDS) - ELECTRICAL SERVICES

HAZARD CRITERIA	LOCATION	WHO IS AT RISK	RISK RATING			ACTION TAKEN AT DESIGN STAGE	RISK FOR CONTRACTOR	ONGOING RISK
			HIGH	MEDIUM	LOW			
General Containment and power supplies working at heights	All areas	1. Contractors 2. Maintenance Engineers				Due to location this activity will require working at heights	Working at heights. Slip/trips Falls. Falling Objects.	Working at heights. Slip/trips Falls. Falling Objects.
Material storage	All areas	1. Contractors 2. Occupiers				Due to the working area of the project there is limited available space for storage.	Slip/trips Falls. Falling Objects. Injury from materials	Slip/trips Falls. Falling Objects. Injury from materials
Loss of Power Services to areas outside of contract.	Adjacent properties	1. Occupiers				Existing Record information required from client including As Installed drawings, test certificates and general building record.	Loss of power supporting systems & installations	None
Drilling for supports	All areas	1. Contractors				Provide adequate ventilation & protection against inhalation	Inhalation of dust	None
Large plant items to be moved on site by hand	All areas	1. Contractors				Employ fully qualified plant movement staff	Handling of materials	Handling of materials for future removal
Drilling & cutting	All areas	1. Contractors				Provide ear protection	Damage to hearing	None



MOUNTING HEIGHTS

Item	Mounting Height
Switches	Between 750mm above FFL to the bottom of the plate and 1200mm above FFL to the top.
Sockets	Between 400mm above FFL to the bottom of the plate and 1000mm above FFL to the top of the plate.
Sockets above worktops	150mm above worktops to the bottom of the plate.
Consumer Units	1200mm above FFL to the top.
Fire Alarm Sounders/Xenon Beacons	2100mm above FFL to the top.
Fire alarm control panel	Between 1200mm above FFL to the bottom and 1400mm above FFL to the top.
Fire alarm contacts	1200mm above FFL to the top of the plate.
Thermostats	1400mm above FFL to the top of the plate.
Telephone Point	Between 400mm above FFL to the bottom of the plate and 1000mm above FFL to the top of the plate.
Television Point	Between 400mm above FFL to the bottom of the plate and 1000mm above FFL to the top of the plate.
Dado Trunking	900mm above FFL to the top.
Shaver Sockets	1000mm above FFL to the top of the plate.
Combined Shaver Sockets/Lights	1600mm
Spurs	Between 400mm above FFL to the bottom of the plate and 1200mm above FFL to the top.

SYMBOLS LEGEND

SYMBOL	DESCRIPTION
(M1)	LOCAL AUTHORITY ELECTRICITY METER
(M2)	ELECTRIC CHECK METER WITH PULSED OUTPUT IN ACCORDANCE WITH BREEAM CRITERIA ENE 02

HAZARD NOTES:

Based on record information only. Other services may exist. Confirm all buried services by detection and silt trench.

Contaminated ground conditions. Risk of ingestion of toxic materials. Refer desk study report and any subsequent physical surveys. Further site investigations may identify contamination or hotspots. Provide suitable welfare facilities based on assessment of risks.

Buried high voltage and low voltage electric cables. Risk of explosion, electrocution and fire. Carry out surveys in accordance with HSG 47 (Avoiding Danger From Underground Services). Employ safe system of work including using hand, rather than power tools or machine implements, provide full scanning of the area to detect services using a cable detector, effectively mark the location of cables and ensure the work is properly supervised.

Buried gas supplies. Risk of explosion, uncontrolled pressure release and fire. Carry out surveys in accordance with HSG 47 (Avoiding Danger From Underground Services). Employ safe system of work including using hand, rather than power tools or machine implements, provide full scanning of the area to detect buried services where materials are suitable, effectively mark the location of pipework and ensure the work is properly supervised.

Buried water supplies. Risk of contamination of water supplies if pipework damaged. Risk of uncontrolled pressure release and collapse of trenches if ruptured. Carry out surveys in accordance with HSG 47 (Avoiding Danger From Underground Services). Employ safe system of work including using hand, rather than power tools or machine implements, provide full scanning of the area to detect buried services where materials are suitable, effectively mark the location of pipework and ensure the work is properly supervised.

Buried communications cables. Risk of interrupting emergency communications. Carry out surveys in accordance with HSG 47 (Avoiding Danger From Underground Services). Employ safe system of work including using hand, rather than power tools or machine implements, provide full scanning of the area to detect buried services where materials are suitable, effectively mark the location of cables and pipework and ensure the work is properly supervised.

ADVICE TO CONTRACTORS ON AVOIDING DANGER FROM BURIED ELECTRICITY CABLES

- Do have cable drawings with you on site and check them before you start the excavation.
- Do have a cable locator tool on site and use it to help you.
- Mark out the location of electricity cables.
- Do not use a mechanical excavator within 0.5m of electricity cables.
- Use spades and shovels in preference to other tools.
- Never disturb electricity cables and joints or their protective covers.

REPORTING DAMAGED CABLES: EDF Energy 0800 780078

These basic safety precautions are explained in detail in the HSE booklet HS(G)47 - Avoiding Danger from Underground Services, a copy of which may be obtained from your supervisor or HMO.



BUILDING SERVICES DESIGN ENGINEERS

6 The Offices
10 Fleet Street
Brighton, BN1 4ZE

Tel: 01273 626247

Email: mail@pjrservices.co.uk

Client: THE COMMUNITY STADIUM LTD

Project: 37 BARFIED PARK
LANCING
WEST SUSSEX

Title: BREEAM CREDIT
ENE 02 FOR UK
NC VERSION 6.1

Scale: 1:100 @ A1

Date: MARCH 2026

Drawn: JC | Checked: JF

Drawing Number: C31/08/602 | Rev: A

Amendments:

A: 16.06.26 SYMBOLS LEGEND ADDED.

Notes:

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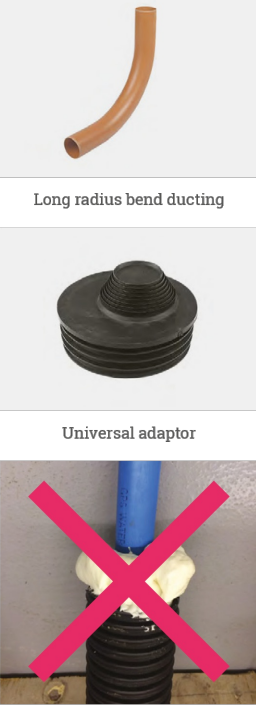
5.3 Appendix C – Water Services Schematic

BUILDING ENTRY

Where a water pipe enters a building or runs beneath a building etc, it must be located in a suitable duct. The correct size ducting is ideally a minimum of 100mm (4") diameter pipe, to allow the pipe to be removed in the future if required. The ducting pipe is usually plastic but can be other materials if available. There must not be any markings for other utility services like gas, electricity, telecom etc.

Pipes entering a building at the approved depth should be passed through a duct with each end sealed with a suitable material to prevent against entry of fluids, vermin and insects. A removable universal adaptor could be used. The duct should comprise of a continuous slow leached duct of sufficient size to permit the pipe and insulation to be withdrawn and replaced if necessary. Refer to diagrams 1, 2 and 3 overleaf.

A suitable stop tap (BS1010) and drain off valve (BS2879) must be fitted as soon as the pipe enters the building. Ideally this must be as close to the point where the pipe enters the building as it is possible. The pipe needs to be insulated as per diagrams 2 and 3.

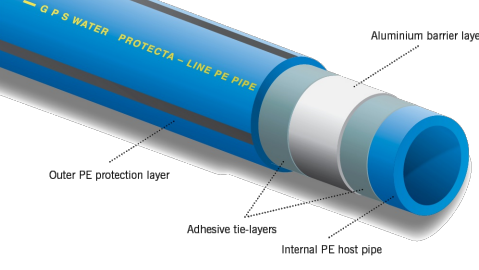


DETAIL OF WATER PIPE ENTRY TO BUILDING

Design

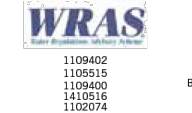
Introduced to the UK market in 1996, Protecta-Line won the IWEX Innovation Award for its design, which prevents any chemicals left in the land from damaging the pipe wall, ensuring preservation of long-term strength, many years of usage and whole-life cost savings.

The double bonded five-layer construction comprises of an internal standard PE host pipe (PE80 or PE100 conforming to BS EN 12201) for carrying water, an impermeable aluminium barrier layer to stop the ingress of contaminants, an outer polyethylene protection layer and two adhesive tie-layers.



Second-to-none Approval Status

- Regulation 31/27/30 approved (England & Wales/Scotland/NI)
- WRAS approved (complete system)
- Protecta-Line system is Kitemarked to WIS 4-32:19, the only industry standard for pipe systems for potable water in contaminated land
- BS EN 12201 (25mm - 630mm - core pipes)
- System permeation tests independently verified.



No Expensive Soil Sampling

According to UKWIR Guidance (10/MW/03/21), PE barrier pipes provide sufficient protection from all recognised brownfield site conditions where there is no expectation of toxic substances.

This means that choosing Protecta-Line can help developers avoid the cost of expensive soil sampling. Conversely, wrapped metal pipes can corrode under certain soil conditions, so if metallic pipes are selected, soil sampling is required to establish how corrosive the site could be.

System Notice

Protecta-Line is an approved system. Only Protecta-Line fittings shall be used with Protecta-Line pipes. The use of alternative fittings will have the following effects on your Protecta-Line system:

- Invalidation of WRAS approval and manufacturer's system performance warranty.
- Compromised permeation resistance (causing non-compliance with WIS 4-32:19 and possible risks to health).
- Danger of pipe-layer delamination, compromising system performance integrity and risking pipe bursts. It would be illegal to install non-WRAS approved fittings.



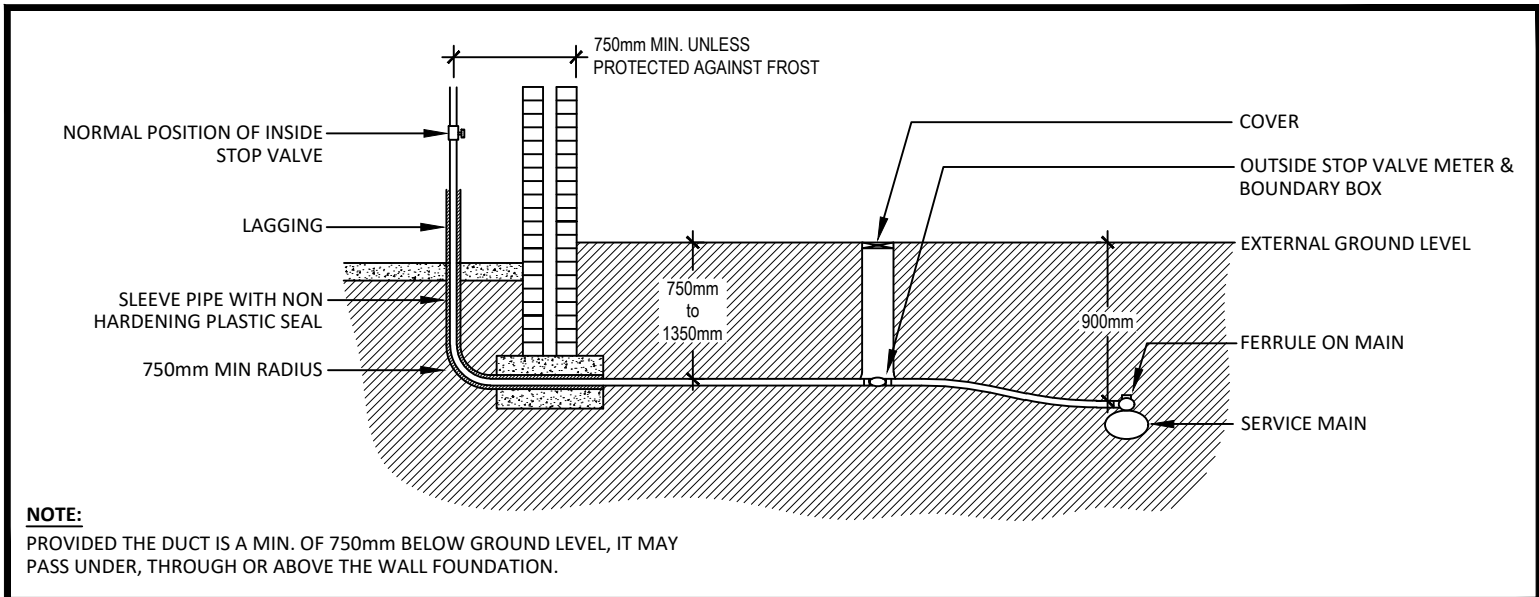
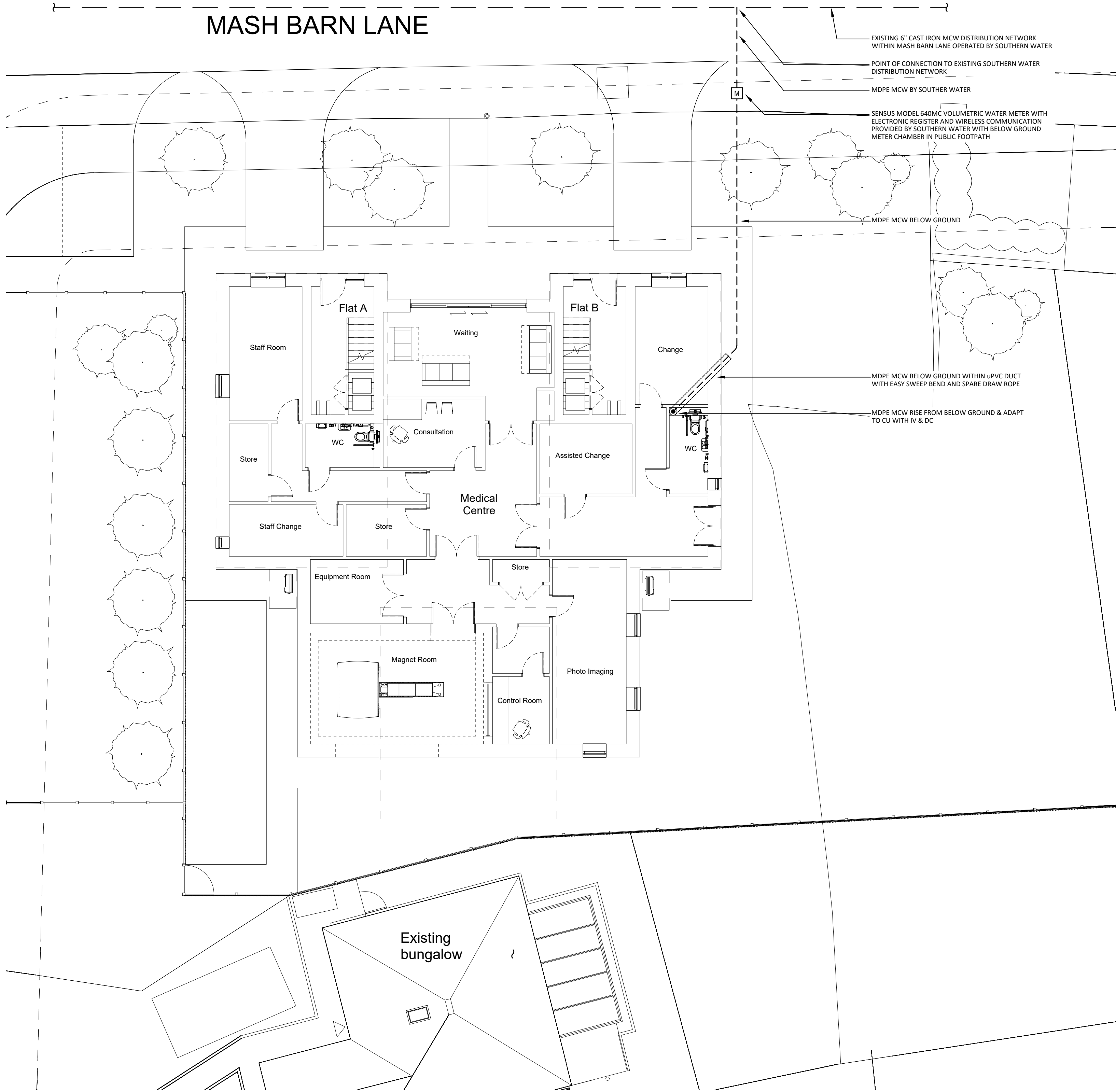
Lower Installation Costs

Lightweight and flexible for ease of handling and efficient logistics; supplied in longer lengths for fewer joints and with no requirement for thrust blocks, Protecta-Line is easier and faster to install than its metallic alternatives.

The system provides cost and ease of installation advantages with a comprehensive range of fittings and, thanks to PE's corrosion resistance, maintenance is minimised too, making it cost effective at the installation level and throughout its lifespan.



DETAILS OF PROTECTA-LINE MDPE BARRIER PIPE

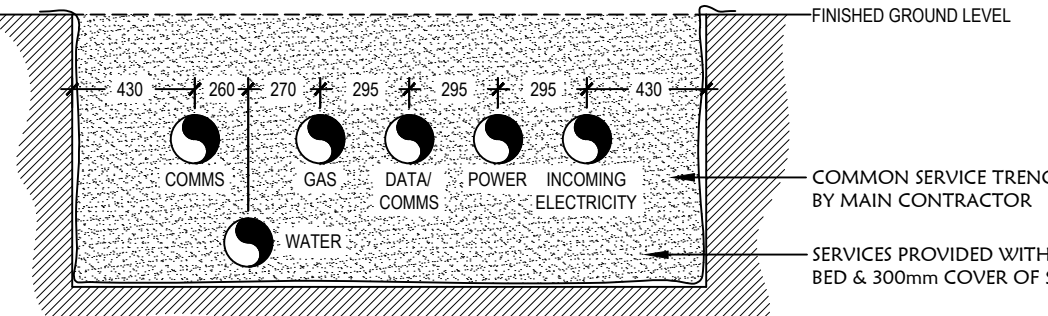


MAINS COLD WATER ENTRY DETAIL (nts)

DEPTH OF SERVICES FROM SURFACE LEVEL TO CROWN OF APPARATUS

SERVICE	FOOTPATH / VERGE	CARRIAGEWAY
HV ELECTRICITY	450mm / 1200mm	750mm / 1200mm
LV ELECTRICITY	450mm	600mm
GAS	600mm FOOTPATH / 750mm VERGE	750mm
WATER	750mm	750mm
COMMUNICATIONS	250mm / 350mm	450mm / 600mm

EACH SERVICE PROVIDED WITH PVC IDENTIFICATION TAPE INCORPORATING METALIC STRIP 200mm ABOVE SERVICE



NOTE:
TO BE READ IN CONJUNCTION WITH NSUG GUIDELINES ON THE POSITIONING AND COLOUR CODING OF UNDERGROUND UTILITIES APPARATUS.

BELOW GROUND MINIMUM SPACING OF SERVICES

- HAZARD NOTES:**
- Based on record information only. Other services may exist. Confirm all buried services by detection and silt trench.
 - Contaminated ground conditions. Risk of ingestion of toxic materials. Refer desk study report and any subsequent physical surveys. Further site investigations may identify contamination or hotspots. Provide suitable welfare facilities based on assessment of risks.
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 - Never disturb electricity cables and joints or their protective covers.
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- These basic safety precautions are explained in detail in the HSE booklet HS(G)47 - Avoiding Danger from Underground Services, a copy of which may be obtained from your supervisor or HMO.



**BUILDING SERVICES
DESIGN ENGINEERS**

6 The Offices
10 Fleet Street
Brighton, BN1 4ZE
Tel: 01273 626247
Email: mail@pjrservices.co.uk

Client: **THE COMMUNITY STADIUM LTD**

Project: **37 BARFIED PARK
LANCING
WEST SUSSEX**

Title: **BREEAM CREDIT
WAT 02 FOR UK
NC VERSION 6.1**

Scale: **1:100 @ A1**

Date: **MARCH 2026**

Drawn: **JC** | Checked: **JF**

Drawing Number: **C31/08/601** | Rev:

- Amendments:**
- Notes:**
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London
3 Waterhouse Square
London
EC1N 2SW

Oxford
One St Aldate's
Oxford
OX1 1DE

Swindon
3 Newbridge Square
Swindon
SN1 1BY

Bristol
22-24 Queen Square
Bristol
BS1 4ND

Cardiff
Brunel House, Clockwise
2 Fitzalan Road, Cardiff
CF24 0EB

Exeter
Winslade House, Winslade Park
Manor Drive, Clyst St Mary
Exeter, EX5 1FY

Cornwall
Deck 2, Pentire House
5-9 Beach Road, Newquay
TR9 1ES