



DEC Assessors – Large Public Buildings Technical Bulletin

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Contents:

- 1 Guidance relating to Non Metered Energy Use**
 - 1.1 Measurement Period for Non Metered Energy Use**
 - 1.2 Fuel Consumption for Non Metered Energy Use**
 - 1.3 Stock Levels in 2010**
 - 1.4 Stock Levels from 2011 onwards**

- 2 Guidance relating to Metered Energy Use**
 - 2.1 Measurement Period for Utility Bills**
 - 2.2 Sub Metered Data**

- 3. Guidance relating to District Heating Coefficients**
 - 3.1 District Heating Coefficients without CHP**
 - 3.2 District Heating Coefficients with CHP**

- 4. Guidance relating to Extending Hours of Occupancy**

- 5. Guidance relating to the Calculation of Floor Areas**

Additional Frequently Asked Questions relating to DEC are available under http://www.sei.ie/Your_Building/BER/Large_Public_Buildings/FAQ%20-%20Assessment%20Process%20and%20Training/

1 Guidance relating to Non Metered Energy Use

1.1 Measurement Period

During the initiation period for the implementation of the DEC system a measurement period of 365 +/- 90days was allowed for Non Metered fuels, this will be discontinued from the 1st March 2010.

Therefore any DEC assessment submitted from the 1st March 2010, the measurement period for all fuels, including non metered bulk delivery fuels is 365 days +/- 31 days.

1.2 Fuel Consumption for Non Metered Energy Use

If non metered fuels like oil, LPG (Liquefied Petroleum Gas), or biomass are used consumption is measured from delivery notes and stock levels at the start and end of the measurement period.

The energy assessor will need to obtain records of deliveries and a statement of the stock level at the start and end of the measurement period. The energy assessor will need to obtain a signed statement from a responsible person that the stock levels were measured and details of the method used.

The fuel consumption for the measurement period must include for fuel stock levels on the start date, fuel deliveries during the measurement period and then subtract any fuel stock levels on the end date.

Where fuel consumption is measured in terms of mass or volume (e.g. for solid or liquid fuels) rather than in energy terms (kWh), the energy content of the measured fuel consumption should be derived from using the Gross Calorific Value of the fuel under normal conditions. Gross Calorific Values for all main fuels are available from SEI.

1.3 Stock Levels in 2010

Up until January 1st 2011 only, if fuel stock measurements are not available for the start and/or end dates of the fuel measurement period the following method must be applied;

- If fuel stocks level measurements are not available for the start date, you must assume the fuel store is at its maximum capacity on the start date and you must include for this quantity in the consumption calculation.
- If fuel stocks level measurements are not available for the end date, you must assume that no fuel remains in the fuel store on the end date.

The energy assessor must have documentary evidence in the form of specifications, drawings or sketches which show dimensions and calculations demonstrating the maximum capacity of the fuel store.

1.4 Stock Levels from 2011 onwards

From the 1st January 2011 only measured stock levels will be accepted at the start and end dates of the fuel measurement period.

The DEC assessor must have copies of the measure stock levels and details of the measurement procedure.

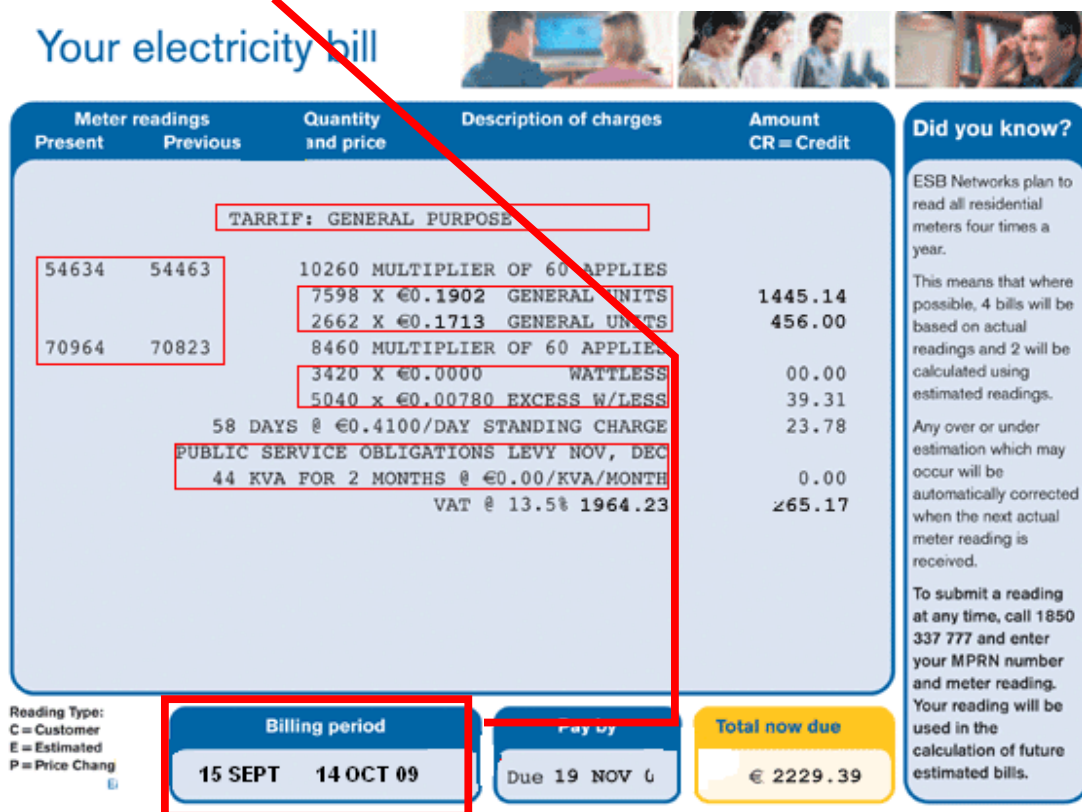
2 Guidance relating to Metered Energy Use

2.1 Measurement Periods for Utility Bills

Measurement Periods should be based on the actual dates on Utility Bills, for example based on the utility bill shown below the following would be the start and end dates:

Start Date of Measurement Period: 15 September 09

End Date of Measurement Period: 14 October 09



Your electricity bill

Meter readings	Quantity and price	Description of charges	Amount
Present	Previous		CR = Credit
TARRIF: GENERAL PURPOSE			
54634	54463	10260 MULTIPLIER OF 60 APPLIES	
		7598 X €0.1902 GENERAL UNITS	1445.14
		2662 X €0.1713 GENERAL UNITS	456.00
70964	70823	8460 MULTIPLIER OF 60 APPLIES	
		3420 X €0.0000 WATTESS	00.00
		5040 X €0.00780 EXCESS W/LESS	39.31
		58 DAYS @ €0.4100/DAY STANDING CHARGE	23.78
		PUBLIC SERVICE OBLIGATIONS LEVY NOV, DEC	
		44 KVA FOR 2 MONTHS @ €0.00/KVA/MONTH	0.00
		VAT @ 13.5% 1964.23	265.17

Reading Type:
C = Customer
E = Estimated
P = Price Change

Billing period
15 SEPT 14 OCT 09

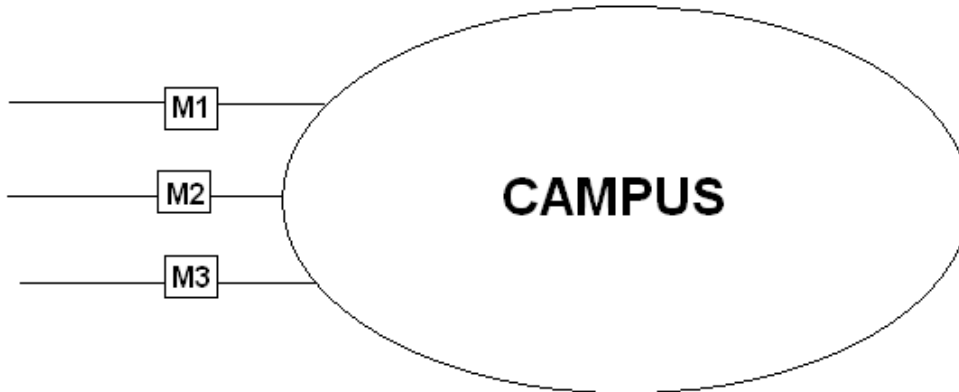
Pay by
Due 19 NOV 09

Total now due
€ 2229.39

Did you know?
ESB Networks plan to read all residential meters four times a year. This means that where possible, 4 bills will be based on actual readings and 2 will be calculated using estimated readings. Any over or under estimation which may occur will be automatically corrected when the next actual meter reading is received. To submit a reading at any time, call 1850 337 777 and enter your MPRN number and meter reading. Your reading will be used in the calculation of future estimated bills.

In a campus style building where there is more than one utility bill for a fuel with different measurement periods, a fuel type should be entered for each utility bill.

For example, the following campus has 3no electrical supplies.



The following are the measurement periods based on the utility bills

Meter 1: 1st January 09 to 31st December 09
Meter 2: 16th January 09 to 10th January 10
Meter 3: 20th December 08 to 31st December 09

These are entered into the tool as follows:

ENERGY CONSUMPTION DATA					
Fuel type	Consumption kWh	Start data	End data	Source	
Heating oil	0	01/08/2008	31/07/2009	Metered	
Electricity	1000	01/01/2009	31/12/2009	Metered	
Electricity	2000	16/01/2009	10/01/2010	Metered	
Electricity	3000	20/12/2008	31/12/2009	Metered	

2.2 Data from Sub Meters

Where energy consumption figures have been taken from sub meters, SEI may ask for evidence to demonstrate that the sub meters have been calibrated correctly.

Documentary evidence must be provided demonstrating that the sub meter is within +/- 5% of actual energy use.

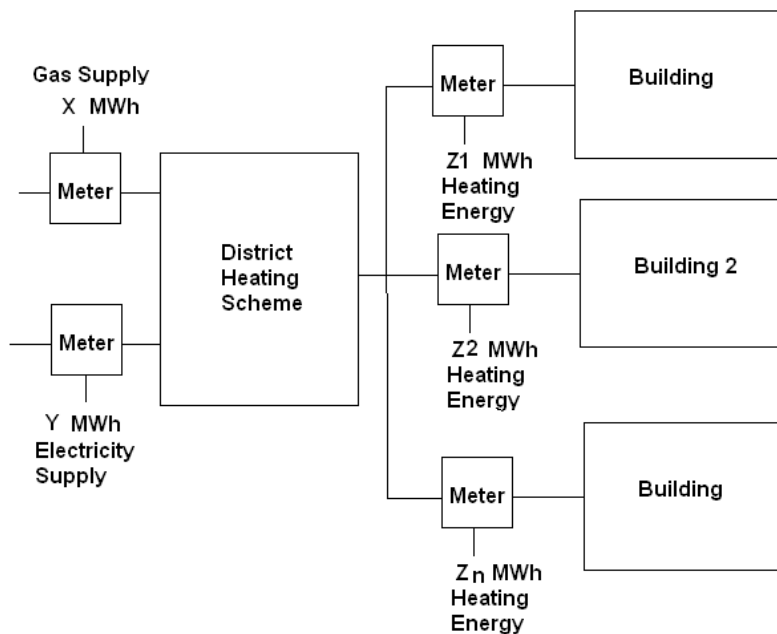
An example of documentary evidence includes sub meters verified against utility bills or temporary sub meters.

3 Guidance relating to District Heating Coefficients

3.1 District Heating without CHP

The District Heating Coefficients should be provided by the District Heating Scheme operator and signed off by a qualified person.

For the following example the Display Energy Certificate is being carried out on Building 2:



The District Heating Conversion Factors are calculated as follows:

$$\text{District Heating Primary Conversion Factor} = \frac{X \times \text{Primary Energy Factor for Gas} + Y \times \text{Primary Energy Factor for Electricity}}{\text{Sum of Z}}$$

$$\text{District Heating CO2 Conversion Factor} = \frac{X \times \text{Carbon Factor for Gas} + Y \times \text{Carbon Factor for Electricity}}{\text{Sum of Z}}$$

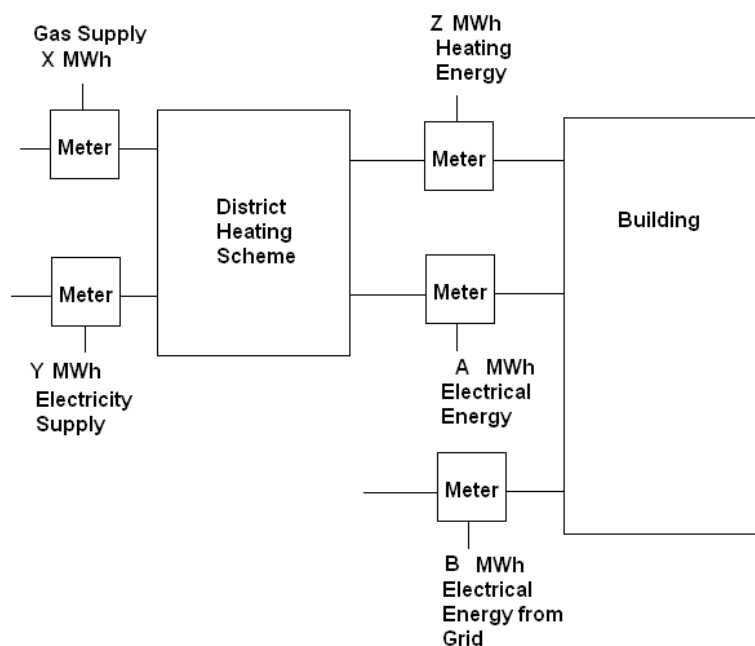
The primary energy factor and carbon factor for fuels (gas and electricity) should be taken from SEI User Guide for the Calculation Tool for Display Energy Certificate. It is inputted into the tool as follows:

ENERGY CONSUMPTION DATA					
Fuel type	Consumption kWh	Start data	End data	Source	
District Heating	Z2 Meter Read	01/08/2008	31/07/2009	Metered	
Electricity	0	01/01/2009	31/12/2009	Metered	
	0	16/01/2009	10/01/2010	Metered	
	0	20/12/2008	31/12/2009	Metered	
Please Complete the Following Primary Conversion and CO2 Factors					
District Heating Primary Conversion Factor	As Calculated	kwh/kWh			
District Heating CO2 Conversion Factor	As Calculated	kgCO2/kWh			
District Cooling Primary Conversion Factor	0	kwh/kWh			
District Cooling CO2 Conversion Factor	0	kgCO2/kWh			

3.2 District Heating with CHP

The District Heating Coefficients should be provided by the District Heating Scheme operator and signed off by a qualified person.

For the following example the Display Energy Certificate is being carried out on the Building there are two options for incorporating the CHP.



Option 1: Electricity from CHP "Free" to Building

The District Heating Conversion Factors are calculated as follows:

District Heating = $X \times \text{Primary Energy Factor for Gas} + Y \times \text{Primary Energy Factor for Electricity}$

Primary Conversion Factor

Sum of Z

District Heating C02 Conversion Factor = $\frac{X \times \text{Carbon Factor for Gas} + Y \times \text{Carbon Factor for Electricity}}{\text{Sum of Z}}$

The primary energy factor and carbon factor for fuels (gas and electricity) should be taken from SEI User Guide for the Calculation Tool for Display Energy Certificate. It is inputted into the tool as follows:

ENERGY CONSUMPTION DATA					
Fuel type	Consumption kWh	Start data	End data	Source	
District Heating	Z Meter Reading	01/08/2008	31/07/2009	Metered	
Electricity	B Meter Reading	01/01/2009	31/12/2009	Metered	
0	0	16/01/2009	10/01/2010	Metered	
0	0	20/12/2008	31/12/2009	Metered	
Please Complete the Following Primary Conversion and C02 Factors					
District Heating Primary Conversion Factor	As Calculated	kwh/kWh			
District Heating C02 Conversion Factor	As Calculated	kgCO2/kWh			
District Cooling Primary Conversion Factor	0	kwh/kWh			
District Cooling C02 Conversion Factor	0	kgCO2/kWh			

Option 2: Electricity from CHP "Charged" to Building

The District Heating Conversion Factors are calculated as follows:

District Heating Primary Conversion Factor

= $\frac{X \times \text{Primary Energy Factor for Gas} + Y \times \text{Primary Energy Factor for Elec} - A \times \text{Primary Energy Factor for Elec}}{\text{Sum of Z}}$

District Heating C02 Conversion Factor

= $\frac{X \times \text{Carbon Factor for Gas} + Y \times \text{Carbon Factor for Elec} - A \times \text{Carbon Factor for Elec}}{\text{Sum of Z}}$

The primary energy factor and carbon factor for fuels (gas and electricity) should be taken from SEI User Guide for the Calculation Tool for Display Energy Certificate. It is inputted into the tool as follows:

ENERGY CONSUMPTION DATA					
Fuel type	Consumption kWh	Start data	End data	Source	
District Heating	Z Meter Reading	01/08/2008	31/07/2009	Metered	
Electricity	B Meter Reading	01/01/2009	31/12/2009	Metered	
Electricity	A Meter Reading	16/01/2009	10/01/2010	Metered	
0	0	20/12/2008	31/12/2009	Metered	
Please Complete the Following Primary Conversion and C02 Factors					
District Heating Primary Conversion Factor	As Calculated	kwh/kWh			
District Heating C02 Conversion Factor	As Calculated	kgCO2/kWh			
District Cooling Primary Conversion Factor	0	kwh/kWh			
District Cooling C02 Conversion Factor	0	kgCO2/kWh			



4 Guidance relating to Extended Hours of Occupancy

Extended hours of occupancy should only be used where the following can be demonstrated:

- The number of hours per year that the number of recorded occupants exceeds 25 per cent of the nominal maximum occupancy
- The number of hours per year that the premises are fully open according to published opening hours.

The following demonstrates how extended hours should be treated:

Case 1: Office with 24 hour Call Centre

The following diagram represents an office building occupied by a public body. Level 1 and 2 operate normal occupancy hours, where as Level 3 operates 24 hours a day 7 days a week.

Level 3: Maximum Occupancy: 30 Floor Area: 600m ²
Level 2: Maximum Occupancy: 60 Floor Area: 600m ²
Level 1: Maximum Occupancy: 60 Floor Area: 600m ²

The occupancy of Level 3 only accounts for 20% of the Maximum Occupancy therefore extended hours can not be applied to the whole building.

The solution is to create two building types, one with normal operating hours and one with extended operating hours as follows:

Main Building Type			
BENCHMARK CATEGORIES			
Please Select Main Building type		General office	
Main Building Type - Type of Area		Gross Internal Area	OK
Area of Main Building Type		1200	m ²
Total Usable Floor Area		1200	m ²
OCCUPANCY CRITERIA			
Main Building Type		General office	
Number of Hours of Occupancy		Standard Occupancy	
If extended, then input total equivalent hours per year		0	hrs
<i>*Supporting documentation is required if extended hours are claimed</i>			
Total Equivalent Hours for Main Building Type		2040	OK

Building Type 2			
BENCHMARK CATEGORIES			
Please Select Building type 2		General office	
Building Type 2 - Type of Area		Gross Internal Area	OK
Area of Building Type 2		600	m ²
Total Usable Floor Area		0	m ²
OCCUPANCY CRITERIA			
Building Type 2		General office	
Number of Hours of Occupancy		Extended Hours	
If extended, then input total equivalent hours per year		8760	hrs
<i>*Supporting documentation is required if extended hours are claimed</i>			
Total Equivalent Hours for Building Type 2		8760	OK

Case 2: Office with Flexi Time Working Hours

The following shows the daily breakdown of staff numbers based on time sheets in an office operating flexi-time. The office operates Monday to Friday only and the maximum number of occupants is 500 people

- 7 – 8: 50 people
- 8 – 9: 100 people
- 9 – 10: 150 people
- 10 – 18: 500 people
- 18 – 19: 100 people
- 19 – 20: 50 people

As the occupancy between the hours of 7 to 9 and 18 to 20 are below 25% of the maximum occupancy, these hours can not be included within the total equivalent hours per year. Between the hours of 9 to 18, the building contains more than 25% of the maximum occupancy therefore these hours are included. The total equivalent hours in this case is:

No of Days per year: (52 (weeks) x 5 (days/week)) – 10 (bank holidays)
250 days per year

Total Equivalent hours: 250 x 9 (hrs per day)
2250

5 Guidance relating to Calculation of Floor Areas

SEI may ask for evidence to demonstrate the floor area calculations to ensure that they are correctly calculated.

The following is a sample of the details required to demonstrate floor areas;

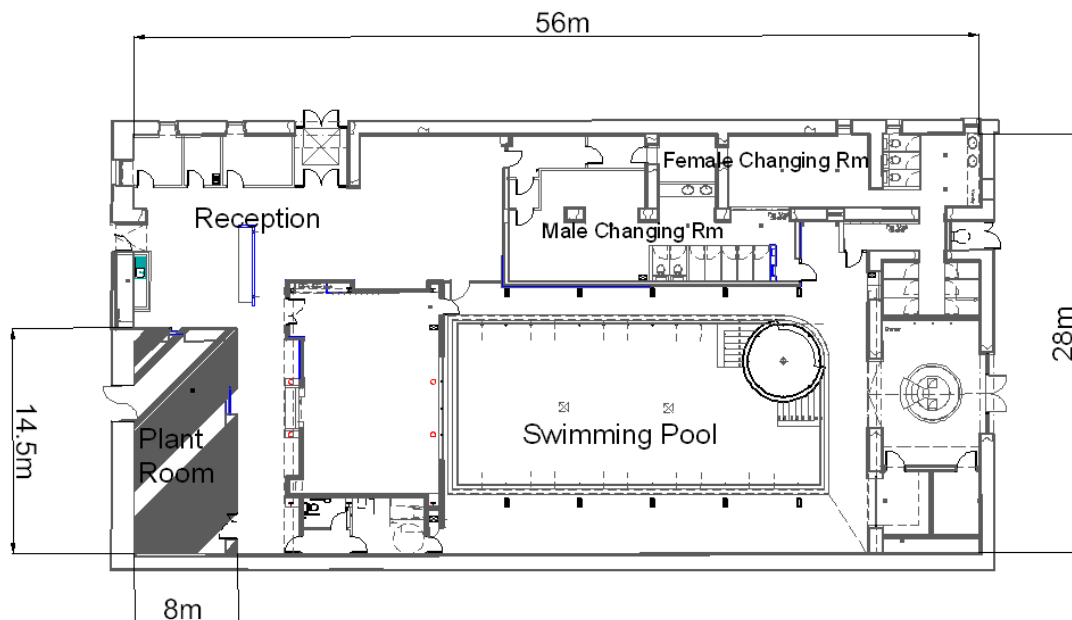
1) Hard Copy of Drawing

- The Dimensions should be clearly shown on the drawings
- Each Building Type should be identified on the drawings
- Any Accessible Unconditioned Floor Areas should be clearly marked on the drawing
- Details of the calculations should be provided:

Total Useful Floor Area: $56\text{m} \times 28\text{m} = 1568\text{m}^2$

Unconditioned Floor Area: $14.5\text{m} \times 8\text{m} = 116\text{m}^2$

Main Building Type Floor Area: $1568 - 116 = 1452\text{m}^2$

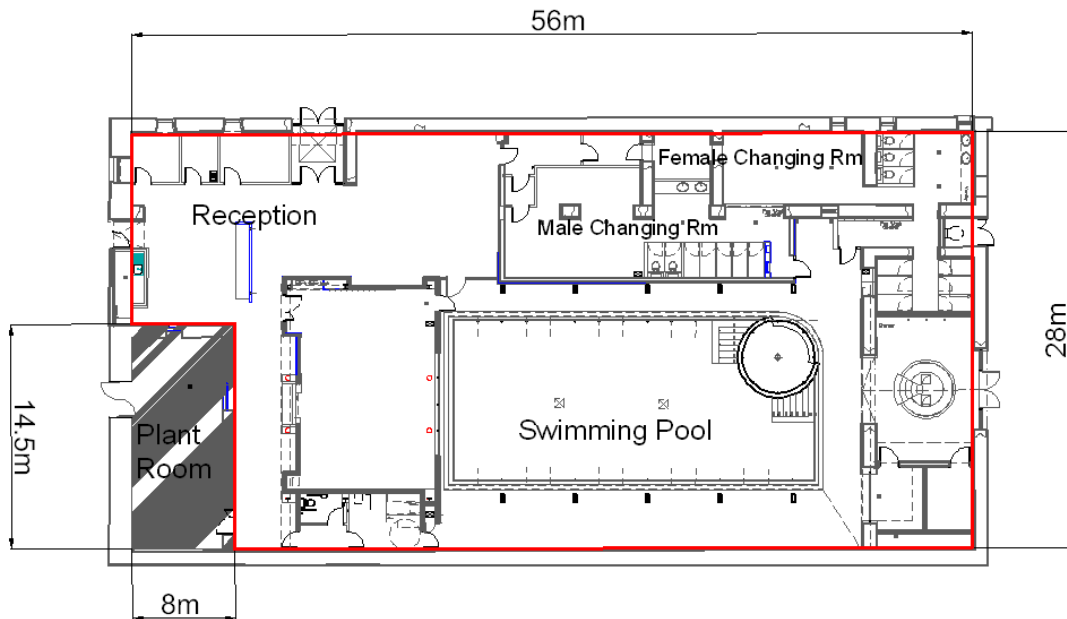


2) Soft Copy of Drawing

- The Polylines calculating the Area should be clearly identifiable on the drawings
- Each Building Type should be identified on the drawings

- Any Accessible Unconditioned Floor Areas should be clearly marked on the drawing
- Details of the calculations should be provided:

Polyline Area for Main Building Type is 1452m²



3) Hard Copy of Sketch

If no drawings are available, a sketch should be produced showing the following details

- The Dimensions should be clearly shown on the sketch
- Each Building Type should be identified on the sketch
- Any Accessible Unconditioned Floor Areas should be clearly marked on the sketch
- Details of the calculations should be provided:

Total Useful Floor Area: 56m x 28m = 1568m²

Unconditioned Floor Area: 14.5m x 8m = 116m²

Main Building Type Floor Area: 1568 – 116 = 1452m²

