

SAP Design Stage Assumptions V2

HWM

02nd December 2020

By: C.D

Reviewed:

Notes

Text in **RED** to be completed by the project team. All information needs to be completed to allow the final Building Regulations SAP models to be run. Text in red will be used in lieu of design information where data is not provided to SCS. Text in red based on previous project experience but should be checked by project team to verify its applicability to this project.

Build Elements	Proposed Input	Evidence References (for SCS use)
Walls with heat loss		
External Wall (W/m ₂ .K)	0.23	SCS Assumption - following Norcot Specification
External Wall - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, partially filled cavity (75mm PIR), 50mm cavity, facing brickwork	SCS Assumption - following Norcot Specification
Corridor Walls to Apartments (e.g. unheated corridors) (W/m ₂ .K)	0.25	As per E-WM-21 party wall construction - SCS assumption - as per Norcot
Corridor Walls to Apartments - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, filled cavity ($\lambda = 0.036$)	
Stairwell Walls to Apartments (e.g. unheated stairwells) (W/m ₂ .K)	0.25	
Stairwell Walls to Apartments - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, filled cavity ($\lambda = 0.036$)	
Walls to Non-Domestic UNHEATED Areas (e.g. bin stores) (W/m ₂ .K)	0.25	
Walls to Non-Domestic UNHEATED Areas - Build-Up	Cavity Wall: 13mm wet plaster, medium dense block, filled cavity ($\lambda = 0.036$)	
Dormer Walls (W/m ₂ .K)	e.g. 0.25	SCS Assumption
Dormer Walls - Build-Up	e.g. Timber Framed Wall (2 Layers of Plasterboard), insulation and build up to achieve U-value above as a maximum.	SCS Assumption
Party Walls - Between Apartments		
Party Wall Type and Build-Up	Fully filled cavity with effective sealing at all exposed edges and in line with insulation layers in abutting elements.	SCS Assumption - following Norcot Specification
Party Wall Type and Build-Up	e.g. Plasterboard on dabs, dense block - E-WM-21	
Party Wall (W/m ₂ .K)	Based on above so SAP model assumes zero heat loss between two equally heated domestic spaces.	SAP default
Internal Walls within Apartments		
Internal Walls within Apartments - Build-Up	Plasterboard on traditional solid blockwork	SCS Assumption - following Norcot Specification

Build Elements	Proposed Input	Evidence References (for SCS use)
Roofs		
Ceiling to UNHEATED Communal Areas (e.g. corridors) (W/m ₂ .K)	e.g. 0.20	Maximum value possible for SAP compliance with backstop values.
Ceiling to UNHEATED Communal Areas - Build-Up	Precast concrete plank floor (screed laid on isorubber), carpeted. - E-FC-14 with insulation below to achieve U-value	Based on E-FC-14 Floor structure as per Norcot.
Dormer Roof (W/m ₂ .K)	e.g. 0.25	SCS Assumption
Dormer Roof - Build-Up	e.g. Flat roof, insulated timber stud with cladding. Insulation/ build up to achieve the U-value above as a maximum	Build up assumed/ TBC.
Balcony Terrace Roof (W/m ₂ .K)	e.g. 0.15	SCS Assumption - following Norcot Specificaiton
Balcony / Terrace Roof - Build-Up	e.g. Flat roof, concrete plank, plasterboard, insulated at ceiling level	
Slope Roof (W/m ₂ .K)	e.g. 0.15	SCS Assumption
Slope Roof - Build-Up	e.g. Insulated slope roof. Insulation between rafters, plasterboard below.	
Floors		
Ground Floor (W/m ₂ .K)	0.13-0.14	SCS Assumption/ rough calculation from build ups - to be targeted - Based on Norcot
Ground Floor - Build-Up	Slab on ground solid floor. 75mm Ecotherm, 75mm EPS.	As per drawings
Floor above UNHEATED Communal Areas (e.g. corridors) (W/m ₂ .K)	0.25	SCS Assumption - following Norcot Specificaiton
Floor above UNHEATED Communal Areas - Build-Up	Precast concrete plank floor (screed laid on isorubber), carpeted. - E-FC-14 with insulation below to achieve U-value	As per Norcot Specification
Party Floors		
Party Floors - Build-Up	Precast concrete plank floor (screed laid on isorubber), carpeted. - E-FC-14	SCS Assumption - following Norcot Specificaiton
Windows, Doors and Rooflights		
Window, whole pane (W/m ₂ .K)	0.80	SCS Assumption - following Norcot Specificaiton
Window - Build-Up	e.g. Argon filled, triple glazed, air gap 16mm, low E coating on both sides	SCS Assumption - following Norcot Specificaiton
Window - Frame Factor	0.39	SCS Assumption - following Norcot Specificaiton
Window - Thermal Transmission	0.70	SAP Default based on BFRC Data
Window - Material	PVC	
Rooflight, whole pane (W/m ₂ .K)	1.20	SCS Assumption
Rooflight - Build-Up	e.g. Argon filled, triple glazed, air gap 16mm, low E coating on both sides	SCS Assumption
Rooflight - Frame Factor	0.39	SCS Assumption
Rooflight - Thermal Transmission	0.70	SAP Default based on BFRC Data

Build Elements	Proposed Input	Evidence References (for SCS use)
Rooflight - Material	PVC	
Doors		
Glass Door, whole pane (W/m ² .K)	e.g. As per window	SCS Assumption - following Norcot Specificaiton
Glass Door - Build-Up	e.g. As per window	
Glass Door - Frame Factor	e.g. As per window	
Glass Door - Thermal Transmission	e.g. As per window	
Glass Door - Material	e.g. As per window	
External Door (W/m ² .K)	e.g. 1.40	SCS Assumption
External Door - Frame Factor	e.g. 0.70 (default)	SAP Default
External Door - Glass Thermal	e.g. zero (if door is solid)	N/A
External Door - Material	Solid PVC door	
Unit Corridor Door (W/m ² .K)	e.g. 1.00	SCS Assumption - following Norcot Specificaiton
Unit Corridor Door - Frame Factor	e.g. 0.70 (default)	SAP Default
Unit Corridor Door - Glass Thermal	e.g. zero (if door is solid)	N/A
Unit Corridor Door - Material	Solid PVC door	
Other Fabric Elements		
Thermal Bridging	ACDs where applicable	SCS Assumption - following Norcot Specificaiton
Thermal Bridging - External Ψ Values Accredited values	Accredited E2 Other lintels (including other steel lintels) Ψ=0.30 W/m.K E3 Sill Ψ=0.04 W/m.K E4 Jamb Ψ=0.05 W/m.K E5 Ground floor Ψ=0.16 W/m.K E5 Ground floor Ψ=0.16 W/m.K (To Corridor) E7 Party floor between dwellings (Flats) Ψ=0.07 W/m.K E7 Party floor between dwellings (Flats) Ψ=0.07 W/m.K (to Corridor) E10 Eaves (insulation at ceiling level) Ψ= 0.06 W/m.K E10 Eaves (insulation at ceiling level) Ψ= 0.06 W/m.K (to Corridor) E11 Eaves (insulation at rafter level) Ψ=0.04 W/m.K E12 Gable (insulation at ceiling level) Ψ=0.24 W/m.K E12 Gable (insulation at ceiling level) Ψ=0.24 W/m.K (to Corridor) E13 Gable (insulation at rafter level) Ψ=0.04 W/m.K E16 Corner (normal) Ψ=0.09 W/m.K E16 Corner (normal) Ψ=0.09 W/m.K (to Corridor) E17 Corner (inverted) Ψ= -0.09 W/m.K E17 Corner (inverted) Ψ= -0.09 W/m.K (to Corridor) E18 Party Wall between dwelling Ψ=0.06 W/m.K	Accredited junctions have only been applied at homogenous junctions - i.e. where more than one construction type is involved default values have been used. <i>(Balcony junctions have been assumed to penetrate the external wall insulation (E23) - if this is not the case, and at As Built stage details will be provided showing the detail matches the requirements of an E9 Balcony junction (external wall insulation continuous), this would result in a SAP performance benefit due to the lower Psi value associated with this junction.)</i>

Build Elements	Proposed Input	Evidence References (for SCS use)
Thermal Bridging - External Ψ Values Default values	<u>Default</u> E20 Exposed floor $\Psi=0.32$ W/m.K E20 Exposed floor $\Psi=0.32$ W/m.K (to Corridor) E21 Exposed floor (inverted) $\Psi=0.32$ W/m.K E21 Exposed floor (inverted) $\Psi=0.32$ W/m.K (to Corridor/ other unheated space) E14 Flat roof $\Psi=0.08$ W/m.K (to Corridor) E13 Gable (insulation at rafter level) $\Psi=0.08$ W/m.K (to Corridor) E23 Balcony, penetrates insulation $\Psi=1.00$ W/m.K (*0.50 to each apartment) E24 Eaves (insulation at ceiling level, inverted) $\Psi=0.24$ W/m.K E16 Corner (normal) $\Psi=0.18$ W/m.K (External to Corridor/ other unheated space) E25 Staggered party wall $\Psi=0.12$ W/m.K	SAP Default values
Thermal Bridging - Party Walls to Dwellings Ψ Values	<u>Default</u> P1 Ground Floor $\Psi=0.16$ W/m.K P3 Intermediate floor between dwellings $\Psi=0.00$ W/m.K P5 Roof junction (insulation at rafter level) $\Psi=0.08$ W/m.K P7 Exposed floor $\Psi=0.16$ W/m.K P8 Exposed floor inverted $\Psi=0.24$ W/m.K	SAP Default values
Thermal Bridging - Roof and roof in a room Ψ Values	<u>Default</u> R1 Head $\Psi=0.08$ W/m.K R2 Sill $\Psi=0.06$ W/m.K R3 Jamb $\Psi=0.08$ W/m.K R4 Ridge $\Psi=0.08$ W/m.K R7 Flat ceiling (inverted) $\Psi=0.04$ W/m.K R9 Roof wall (flat ceiling) $\Psi=0.04$ W/m.K	SAP Default values
Air Pressure Target@50Pa ($\text{m}^3/\text{hr}/\text{m}_2$)	E11 Eaves (insulation at rafter level) $\Psi=0.04$ W/m.K	As per email 18/08/2020
Thermal Mass	Indicative Value - High - based on Build-Ups noted above	as noted
Building Services		
Water Fittings	e.g. Water fittings to current Building Regulations (i.e. less than 125 litres per day)	SAP default requirement
Lighting	e.g. 100% Low Energy 12 no. fittings per unit	SAP default - number of fittings SCS assumption
Primary Heating Type	Gas Combi Boiler: Worcester Bosch Greenstar 1 Bed: 25i ErP 2 Bed/ 3 Bed: 30i ErP	SCS Assumption - following Norcot Specification
Primary Heating Type Efficiency	e.g. 88-89%	
Primary Heating Controls	TRVs, programmer and thermostat	SCS Assumption - following Norcot Specification
Primary Heating Fuel	Natural gas	SCS Assumption - following Norcot Specification
Electricity Tariff	Standard	SAP Default
Hot Water Heating	From main heating system, no cylinders within dwellings	
Ventilation	balanced, heat recovery	SCS Assumption - following Norcot Specification
Mech Vent from Approved Installation Scheme?	yes	
Mech Vent Equipment Details	e.g. Nuaire MRXBOX95 (wall mounted)	SCS Assumption - following Norcot Specification
Number of Local Extract Fans	One cooker hood, one in each bathroom	

Build Elements	Proposed Input	Evidence References (for SCS use)
Ducting type	e.g. Rigid, insulated	SCS Assumption - following Norcot Specification
Solar PV	28.84	Calculated from results to achieve 35% CO ₂ reduction in line with Reading Council requirements
Other Renewable Technology	None	
Building Measurements		
Drawings Data	191211_all drawings_WSP	Received 10/11/2020
Storey Height	No suspended ceiling drawn into drawings. Height assumed to be 2.7m - Floor to ceiling/slab as per drawings. Top Floor assumed to be insulated at rafter line to ridge, following profile as per drawings.	SCS Assumptions from the drawings as per 10/11/2020
Block Compliance		
Block Performance	Averaged performance across all apartments when formal submission of all units made to Building Control	Part L1A Building Regulations 2013 (2016)

General Notes

Where unknown, overshadowing assumed to be average or unknown

Latitude assumed to be 55 degrees

Only use U-values that are not default where both the U-value and Km values are provided. These must either be provided to us either via calculations by a suitably qualified and accredited person\organisation or provided in an as built architectural / building specification document. Suitable qualification\accreditation is through membership of a recognised U-value calculation competency scheme (BBA/TIMSA [UK]), OCDEA membership (England & Wales, Northern Ireland) or any other scheme formally agreed between Accreditation Schemes/Approved Organisations and Government.

Signed by:	Signature:
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