)m=	1	0.99	0.94	0.82	0.63	0.45	0.33	0.39	0.64	0.92	0.99	1		(86)
ean inte	ernal	emner	ature in	living ar	ea T1 (fe	allow ste	ns 3 to 7	in Table	90)					
	0.35	19.73	20.21	20.68	20.91	20.98	21	20.99	20.93	20.51	19.8	19.29		(87)
_	27.	67.64	1000000			110000000000000000000000000000000000000		Manager 1		25,57	1,4.0	10.00		
	_							ble 9, Ti		Essay.				inny
m= 19	9.7	19.7	19.7	19.71	19.72	19.73	19.73	19.73	19.72	19.72	19.71	19.71		(88)
tilisation	n facto	or for g	ains for	rest of d	welling,	h2,m (se	ee Table	9a)						
)m=	1	0.98	0.92	0.77	0.56	0.37	0.24	0.28	0.54	0.89	0.99	1		(89)
ean inte	ernal	temper	ature in	the rest	of dwell	ing T2 (f	ollow ste	eps 3 to 7	in Tab	le 9c)				
_	7.53	18.08	18.76	19.38	19.64	19,72	19.73	19.73	19.68	19.19	18.2	17.44		(90)
_							-		-	fLA = Livin	g area ÷ (4	4) =	0.09	(91)
on tak		i waa					. A T4	. 14 . 6						_
								+ (1 - fL			30.25	47.04		(02)
	7.7	18.23	18.9	19.5	19.76	19.83	19.84	19.84	19.79	19.31	18.35	17.61		(92)
	_			_	-			4e, whe		T	12.42			inas
)m= 17		18.23	18.9	19.5	19.76	19.83	19.84	19.84	19.79	19.31	18.35	17.61		(93)
			urement											
						ned at st	ep 11 of	Table 9t	o, so tha	it Ti,m=(76)m an	d re-calcu	late	
			or gains						1225.5	E. 58555		F =0.1		
	lan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
			ains, hm		T ATA C	I too and		TI SZS	D. Stanford	I	1 3 3 3 3 7			
1	.99	0.97	0.91	0.76	0,56	0.37	0.24	0.29	0.55	88.0	0.98	1		(94)
	_		W = (9		_									
)m= 328	36,57	5019.81	6491.31	7040.72	6013.07	4024.94	2514.77	2660.39	4242.54	4910.74	3671.01	2900.45		(95)
onthly a	avera	ge exte	rnal tem	perature	e from T	able 8								
)m= 4	.3	4.9	6.5	8.9	11.7	14.6	16.6	16.4	14.1	10.6	7.1	4.2		(96)
eat loss	s rate	for mea	an intern	al temp	erature,	Lm , W	=[(39)m	x [(93)m	– (96) m]				
)m= 108	82.1 1	0605.79	9841.59	8329.2	6321.04	4067.3	2519.9	2671.06	4439.48	6832.77	8855.87	10603.68		(97)
pace he	eating	require	ement fo	r each r	nonth, k	Wh/mon	th = 0.02	24 x [(97)	m – (95	i)m] x (4°	1)m			
m= 550	02:27	3753.78	2492.61	927.71	229.13	0	0	0	0	1429.99	3733.1	5731,21		
-								Tota	per year	(kWh/year) = Sum(9	8) _{1 58 12} =	23799.79	(98)
naco he	ating	roquire	ement in	LANh/m	2/voor							F	44.54	(99)
Dark Sarak		7.7	- 100-17- 01	WAY CAR	zyea:							L	44.34	(33)
: Spac	e 600	ing red	uitemen	it	_									
					See Ta					_				
J	lan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
	rate	Lm (ca	lculated	using 2	5°C inte	nal tem	perature	and exte	ernal ter	nperatur	e from T	able 10)		
eat loss		0	0	0	0	7305.01	5750.75	5896.18	0	0	0	0		(100
	0.		True Artista.											
		or for lo	iss hm									7-7-1		(101
0)m= tilisation		or for lo	oss hm	0	0	0.95	0.97	0.96	0	0	0	0		3
0)m= tilisatior 1)m=	n facto	0	0		0 ((101)m	1 2019/3 1	0.97	0.96	0	0	0	0		3,55
0)m= tilisation 1)m= seful los	n facto	0	0		-	0.95		0.96 5654.45	0	0	0	0		
0)m= tilisation 1)m= seful lo: 2)m=	n facto	o nLm (V o	0 Vatts) = (0	(100)m >	(101)m	6946.88	5600.67	5654.45	0					
0)m= tilisation 1)m= seful los 2)m= ains (so	n facto	o nLm (V o	0 Vatts) = (0	(100)m >	(101)m	6946.88 eather re	5600.67 egion, se		0					(102
0)m= tilisation 1)m= seful los 2)m= ains (so	n facto o ss, hn o olar ga	0 nLm (V 0 ains ca 0	0 /atts) = (0 lculated 0	(100)m o for appl	(101)m 0 icable w	6946.88 eather re 12283.97	5600.67 egion, se 11746.14	5654.45 ee Table 10483.82	0 10) 0	0	0	0	(41)m	(102
0)m= tilisatior 1)m= seful lor 2)m= ains (so 3)m= pace co	n factors, hn	0 nLm (V 0 ains ca 0	0 Vatts) = (0 Iculated 0 ement fo	(100)m o for appli o	(101)m 0 icable w 0	6946.88 eather re 12283.97	5600.67 egion, se 11746.14	5654.45 ee Table 10483.82	0 10) 0	0	0	0	(41)m	(102
0)m= tilisation 1)m= seful lo: 2)m= ains (sc 3)m= pace cc et (104)	n factors, hn	0 nLm (V 0 ains ca 0	0 /atts) = (0 lculated 0	(100)m o for appli o	(101)m 0 icable w 0	6946.88 eather re 12283.97	5600.67 egion, se 11746.14 continue	5654.45 ee Table 10483.82	0 10) 0	0	0	0	(41)m	(102)

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	fraction									fC=	cooled	area +	(4) =	0.75	(105)
(106)m=	ttency fa	actor (1	able 10)b)	0	0	0.25	0.25	0.25	0	1 0	Ι ο	1 0		
(100)111-	0	Ü	1 0	19	U	1 0	0.25	0.25	0.20		l = Sum		=	0	(106)
Space	cooling	require	ment fo	or m	nonth	= (104)r	n × (105)	× (106)	m			(1,000.0)			
(107)m=	0	0	0		0	0	715.86	851.76	669.35	0	0	0	0		
											I = Sum		=	2236.96	(107)
	cooling	10,100								(107) ÷ (4) =			4.17	(108)
7.7 7 7							g schem V		Maria la saci	and a feet					
									ting prov (Table 1			nunity s	cneme.	0	(301)
Fractio	n of spa	ce hea	t from o	com	muni	ty syster	n 1 – (30	1)=					Ť	1	(302)
The com	munity so	heme ma	ay obtain	hea	t from :	several so	urces. The	procedure	allows for	CHP and	up to four	other he	at sources; th	e latter	_
	<i>boilers, h</i> n of hea						from powe	r stations.	See Appe	endix C.			1	0.87	(303a)
						source	2						Ļ	0.13	(303b)
						munity (302) x (30	13at - [77.6%	(304a)
								2				302) x (30	L	0.87	(304b)
						-14.00	eat sour		umihu havi	ntless ou co		302) x (30)30) - [0.13	
			7.3	5					unity hea	ating sys	stem		Ļ	1	(305)
			(Table	9 12	(C) TOF	commu	nity heat	ing syste	em				L	1.05	(306)
70	heating space		require	eme	ent								Ī	kWh/yea 23799.79	<u> </u>
Space	heat fro	m Com	munity	СН	(P					(98) x (3	04a) x (30	5) x (306) = [21741.11	(307a)
Space	heat fro	m heat	source	2						(98) x (3	04b) x (30	5) x (306) =	3248.67	(307b)
Efficien	cy of se	econdar	y/supp	lem	entar	y heatin	g system	in % (fr	om Table	e 4a or A	Appendix	(E)	Ĩ	0	(308
Space	heating	require	ment fi	rom	seco	ndary/si	upplemer	ntary sys	stem	(98) x (3	01) x 100	÷ (308) =	į	0	(309)
Water	heating												- 1		3
	water h													2863.87	
	from coneat from									(64) x (3	03a) x (30	05) x (306)= [2616.14	(310a)
	neat fro									(64) x (3	03b) x (30	5) x (306)= [390.92	(310b)
Electric	ity used	for he	at distri	buti	ion				0.01	1 × [(307a)	(307e)	+ (310a).	(310e)] =	279.97	(313)
Cooling	Syster	n Energ	gy Effic	iend	y Ra	tio							Ī	4.32	(314)
Space	cooling	(if there	e is a fi	xed	cooli	ng syste	m, if not	enter 0)		= (107)	- (314) =		Ī	517.81	(315)
							(Table 4f		n outside				ī	0	(330a)
	ir heatii			70.00	1977			francisco.					ř	0	(330b)
	or solar												ř	0	(330g)
	lectricity				Vh/ve	ar				=(330a)	+ (330b) +	(330g) =	- [0	(331)

Energy for lighting (calculated in Ap	pendix L)			992.09	(332)
12b. CO2 Emissions – Community	heating scheme				
Electrical efficiency of CHP unit				27.2	(361)
Heat efficiency of CHP unit				66.8	(362)
		Energy kWh/year	Emission factor kg CO2/kWh	Emissions kg CO2/year	
Space heating from CHP)	(307a) × 100 ÷ (362) =	32546.57 X	0.22	7030,06	(363)
less credit emissions for electricity	-(307a) × (361) + (362) =	8852.67 X	0.52	-4594.53	(364)
Water heated by CHP	(310a) × 100 ÷ (362) =	3916.38 X	0.22	845.94	(365)
less credit emissions for electricity	-(310a) × (361) + (362) =	1065.26 X	0.52	-552.87	(366)
Efficiency of heat source 2 (%)	If there is CHP u	sing two fuels repeat (363) to	(366) for the second fu	el 90	(367b)
CO2 associated with heat source 2	[(307	b)+(310b)] x 100 + (367b) x	0.22	873.5	(368)
Electrical energy for heat distributio	n	[(313) x	0.52	= 145.3	(372)
Total CO2 associated with commun	nity systems	(363)(366) + (368)(37	72)	3747.4	(373)
CO2 associated with space heating	(secondary)	(309) x	0	= 0	(374)
CO2 associated with water from im	mersion heater or instanta	aneous heater (312) x	0.22	= 0	(375)
Total CO2 associated with space a	nd water heating	(373) + (374) + (375) =		3747.4	(376)
CO2 associated with space cooling		(315) x	0.52	= 268.75	(377)
CO2 associated with electricity for p	oumps and fans within dw	elling (331)) x	0.52	= 0	(378)
CO2 associated with electricity for I	ighting	(332))) x	0.52	= 514.9	(379)
Total CO2, kg/year	sum of (376)(382) =			4531.04	(383)
Dwelling CO2 Emission Rat	e (383) ÷ (4) =			8.44	(384)
El rating (section 14)				89.56	(385)

APPENDIX (iv)

SAP L1A 2010 REGULATIONS COMPLIANCE REPORT (SAP PROPOSED HOUSE CHECKLIST)

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.1.21 Printed on 29 May 2015 at 18:11:03

	ect					

Assessed By: Ondrej Gajdos (STRO006629) Building Type: Detached House

Dwelling Details

NEW DWELLING DESIGN STAGE Total Floor Area: 536.8m²

Site Reference: 17 Branch Hill Plot Reference: Proposed House

Address: 17, Branch Hill, LONDON, NW3 7NA

Client Details

Name: Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Mains gas (c), Mains gas (c)

Fuel factor: 1.00 (mains gas (c), mains gas (c))

Target Carbon Dioxide Emission Rate (TER) 13.58 kg/m²

Puvolling Carbon Dioxide Emission Rate (DER) 8.44 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 8.44 kg/m² OK

16 TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 62.2 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 52.7 kWh/m²

OK

2 Fabric U-values

Element	Average	Highest	
External wall	0.16 (max. 0.30)	0.16 (max. 0.70)	OK
Floor	0.13 (max. 0.25)	0.13 (max, 0.70)	OK
Roof	0.15 (max. 0.20)	0.15 (max. 0.35)	OK
Openings	1,30 (max. 2.00)	1,30 (max, 3,30)	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air nermeability

Air permeability at 50 pascals 5.00 (design value)

Maximum 10.0 OK

4 Heating efficiency

Main Heating system: Community heating schemes - CommCHP

Secondary heating system: None

5 Cylinder insulation

Hot water Storage: Nominal cylinder loss: 3.50 kWh/day

Permitted by DBSCG: 3.92 kWh/day

Primary pipework insulated: Yes OK

6 Controls

Space heating controls Charging system linked to use of community heating,

programmer and at least two room thermostats

Hot water controls: Cylinderstat OK

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OK

Regulations Compliance Report

Percentage of fixed lights with low-energy fittings	100.0%	
Minimum	75.0%	OK
lechanical ventilation		
Not applicable		
ummertime temperature		
Overheating risk (Thames valley):	Medium	OK
ed on:		
Overshading:	Average or unknown	
Windows facing: North East	4.67m²,	
Windows facing: North East	2.25m²,	
Windows facing: North East	3.36m².	
Windows facing: North West	1m²,	
Windows facing: South East	1m²,	
Windows facing: North West	0.4m².	
Windows facing: North West	13.33m²,	
Windows facing: North West	3.2m².	
Windows facing: South West	7,97m²,	
Windows facing: South West	7.56m²,	
Windows facing: South West	4.32m²,	
Windows facing: South West	20.66m²,	
Windows facing: South West	9.8m²,	
Windows facing: South West	9.87m²,	
Windows facing: South West	10.12m²,	
Windows facing: South East	30,15m²,	
Windows facing: North West	2.35m²,	
Windows facing: South East	6.63m²,	
Windows facing: South East	2.65m².	
Windows facing: South East	4.9m²,	
Windows facing: South East	2.24m²,	
Windows facing: South East	0.36m²,	
Windows facing: South East	1,92m²,	
Windows facing: South East	2.21m²,	
Windows facing: South East	0.32m²,	
Windows facing: South West	11.61m²,	
Windows facing: South West	12,37m²,	
Windows facing: South West	12.1m²,	
Windows facing: South West	4.51m²,	
Roof windows facing: Horizontal	24m²	
Roof windows facing: Horizontal	3.49m²	
Roof windows facing: Horizontal	5.22m²	
Roof windows facing: Horizontal	2.58m²	
Roof windows facing: Horizontal	1.4m²	
Ventilation rate:	4.00	
Blinds/curtains:	The state of the second of the	
	Closed 100% of daylight hours	
Key features		

Regulations Compliance Report

Community heating, heat from CHP

Fixed cooling system

APPENDIX (v)

SAP L1A 2010 REGULATIONS COMPLIANCE REPORT (PROPOSED HOUSE SAP WORKSHEETS)

Assessor Name: Software Name:	jdos SAP 201	2		Strom				1.7	0006629 on: 1.0.1.21			
		7		F	roperty	Address	Propo	sed Hol	íse			
Address :			Hill, LON	NDON, N	1W3 7N	A						
1. Overall dwelling dim	ension:	8				4 21						
Basement					Are	230	(1a) x	AV. H	eight(m	(2a) =	Volume(m	(3a
Ground floor					\vdash	E.10.		=	17.5	=		(3b
First floor					=	164.6	(1b) x	=	3.6	(2b) =	592.56	=
	4-5,741	V . /4 = V .	(4 =1) . (4 =	V (4)	_	142.2	(1c) x	_	3.1	(2c) =	440.82	(30
Total floor area TFA = (*	1a)+(1b)+(10)+	(1a)+(1e)+(1)	"	536.8	(4)	bas OB sales	2-11-72-11-1	1041		_
Dwelling volume							(38)+(31	b)+(3c)+(3	3d)+(3e)+	(3n) =	1654.38	(5)
2 Vertillation rate	-	nain	Si	econda	rv	other		total			m³ per hou	ır
Number of chimneys	1	eating		eating	, T + F	0	1 = [0	-1	x 40 =	0	(6a
Number of open flues	H	0	╡╻┝	3	╡╻╞	0] [3	_	x 20 =	60	(6b
Number of intermittent fa	ans L	0	<u> </u>	3		U	1 1	10	_	x 10 =	100	(78
Number of passive vent							ŀ	_		x 10 =		(7b
Number of flueless gas							ļ	0		x 40 =	0	(70
Infiltration due to chimne							continue i	160 from (9) to	-	Air c +(5) =	0.1	our (8)
Number of storeys in				а, ргосоо	a to (11)	ouror mos v	, communication	, 5.11 (5) 16	. (1.00		0	(9)
Additional infiltration									((9)-1]x0.1 =	0	(10
Structural infiltration: (ruction			0	(11
if both types of wall are p deducting areas of open				ponaing to	the grea	ter wall are	a (aner					
If suspended wooden				ed) or 0	1 (seal	ed), else	enter 0				0	(12
If no draught lobby, er											0	(13
Percentage of window	vs and o	doors d	raught st	ripped		0.05 10.5		4001			0	(14
Window infiltration						0.25 - [0.2 (8) + (10)			\ i /dE\ =		0	(15
Infiltration rate	-FO -										0	(16
Air permeability value If based on air permeab								netre of	eriveio	De alea	5	(17
Air permeability value appli								is being	used		0.35	(18
Number of sides shelter	ed										1	(19
Shelter factor						(20) = 1 -	(0.075 x (19)]=			0.92	(20
nfiltration rate incorporating shelter factor						(21) = (18) x (20) =				0.32	(21
Infiltration rate modified	for mor	nthly wi	nd speed	1							4	
Jan Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	v Dec		
Monthly average wind s	peed fr	om Tab	_								-	
(22)m= 5,1 5	4.9	4.4	4.3	3.8	3.8	3.7	4	4.3	4.5	4.7		

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Wind Factor (22a)m =	(22)111 =										-	
(22a)m= 1.27	1.25	1.23	1.1	1.08	0.95	0.95	0.92	1	1.08	1.12	1.18		
Adjusted infilt	ration rat	te (allow	ina for sl	helter an	nd wind s	speed) =	(21a) x	(22a)m					
0.41	0.4	0.39	0.35	0.34	0.3	0.3	0.3	0.32	0.34	0.36	0.38	1	
Calculate effe			rate for t	he appli	cable ca	se						_	-1
If mechanic			andiv N. /2	225) = (22)	a) v Emu (e	aquation (NEW other	nuica (23h	1 = (225)			0	
If exhaust air t) - (23a)			0	
a) If balance									2h\m + /	23h) × [1 /230) ÷ 1001	(230
(24a)m= 0	I o	0	0	0	0	0	0	0	0	0	0]	(24a
b) If balance	ed mech	anical ve	entilation	without	heat rec	covery (N	MV) (24)	o)m = (2)	2b)m + (23b)		1	
(24b)m= 0	0	0	0	0	0	0	0	0	0	0	0	1	(24b
c) If whole I	house ex	tract ver	ntilation o	or positiv	ve input	ventilatio	on from	outside				4	
	m < 0.5			- AC (C.1)					5 × (23h	0)			
(24c)m= 0	0	0	0	0	0	0	0	0	0	0	0		(240
d) If natural									33X				
	m = 1, th						1			1 000	H sto	7	(0.4)
(24d)m= 0.58	0.58	0.58	0,56	0.56	0.55	0.55	0.54	0,55	0.56	0.57	0.57	1	(24d
Effective au	FORDROOM	rata ar	nter (24a	or (24)	n) or (24)	n) nr (24	Al in ha	x (25)					
Effective air	1	1					T	1		1	1 222	1	ines
(25)m= 0.58 3. Heat losse	0.58 es and h	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar	0.55 rea	0.54 U-val	0.55 ue	0.56		0.57		(25)
(25)m= 0.58 3 Heat losse	0.58 es and h	0.58 eat loss	0.56	0.56 e/	0.55	0.55 rea	0.54	0.55 ue					
(25)m= 0.58 3 Heat losas ELEMENT	0.58 es and h	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar	0.55 rea	0.54 U-val	0.55 ue	AXU		k-valu		AXk
3. Heat losas ELEMENT Doors	0.58 es and h Gro area	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r	0.55	0.54 U-val W/m2	0.55 ue 2K	AXU (W/		k-valu		A X k kJ/K
3 Heat losse ELEMENT Doors Windows Typ	0.58 es and h Gro area	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r	0.55	0.54 U-val W/m2	0.55 ue 2K = -0.04] =	A X U (W/		k-valu		A X k kJ/K (26)
3 Heat losse ELEMENT Doors Windows Typ	0.58 Gro area e 1 e 2	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2	0.55	0.54 U-val W/m2 1 /[1/(1.3)+	0.55 ue 2K = -0.04] = -0.04] =	A X U (W/ 2 5.77		k-valu		A X k kJ/K (26) (27)
3 Heat losse ELEMENT Doors Windows Typ Windows Typ Windows Typ	0.58 es and h Gro area ee 1 ee 2 ee 3	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67	0.55	0.54 U-val W/m ² 1 /(1/(1.3)+	0.55 ue 2K = 0.04] = 0.04] = 0.04] =	A X U (W/ 2 5.77 2.78		k-valu		A X k kJ/K (26) (27)
3 Heat losse ELEMENT Doors Windows Typ Windows Typ Windows Typ Windows Typ	o.58 es and h Gro area e 1 e 2 e 3 e 4	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67 2.25	0.55 ea m² x1. x1. x1. x1. x1.	U-val W/m2 1 Λ1/(1.3)+	0.55	A X U (W/ 2 5.77 2.78 2.08		k-valu		A X k kJ/K (26) (27) (27)
3. Heat losse ELEMENT Doors Windows Typ Windows Typ Windows Typ Windows Typ Windows Typ	0.58 Gro area e 1 e 2 e 3 e 4 e 5	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67 2.25 1.68	0.55	0.54 U-val W/m2 1 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+	0.55 ue 2K = 0.04] =	A X U (W/ 2 5.77 2.78 2.08		k-valu		A X k kJ/K (26) (27) (27) (27) (27)
3 Heat losse ELEMENT Doors Windows Typ Windows Typ Windows Typ Windows Typ Windows Typ Windows Typ	o.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67 2.25 1.68	0.55 ea m² x1.	U-val W/m2 1 Λ1/(1.3)+ Λ1/(1.3)+ Λ1/(1.3)+	0.55 ue 2K = -0.04] = -0.04	A X U (W/ 2 5.77 2.78 2.08 1.24		k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27)
3 Heat losse ELEMENT Doors Windows Typ	0.58 Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67 2.25 1.68 1 0.4	0.55 ea m² x1.	0.54 U-val W/m2 1 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+	0.55 ue 2K = 0.04] =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24		k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27)
3 Heat losse ELEMENT Doors Windows Typ	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67 2.25 1.68 1 0.4 13.33	0.55 ea m² x1.	U-val W/m ² 1 Λ1/(1.3)+ Λ1/(1.3)+ Λ1/(1.3)+ Λ1/(1.3)+ Λ1/(1.3)+	0.55 ue 2K = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49		k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27) (27
3 Heat losse ELEMENT Doors Windows Typ	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8 e 9	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A , r 2 4.67 2.25 1.68 1 1 0.4 13.33	0.55 ea m² x1.	0.54 U-val W/m2 1 //1/(1.3)+ //1/(1.3)+ //1/(1.3)+ //1/(1.3)+ //1/(1.3)+ //1/(1.3)+ //1/(1.3)+	0.55 UE 2K = -0.04 =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49 16.47		k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27) (27
3 Heat losse ELEMENT Doors Windows Typ	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8 e 9 e 10	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A , r 2 4.67 2.25 1.68 1 1 0.4 13.33 0.64 7.97	0.55 ea m²	0.54 U-val W/m2 1 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+	0.55 ue 2K = 0.04] =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49 16.47 0.79		k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27) (27
3 Heat losse ELEMENT Doors Windows Typ	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8 e 9 e 10 e 11	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A ,r 2 4.67 2.25 1.68 1 1 0.4 13.33 0.64 7.97 7.56	ea m² x 1. x1. x1. x1. x1. x1. x1. x1. x1. x1	U-val W/m2 1 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+ 1/1/(1.3)+	0.55 ue 2K = 0.04] = 0.04]	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49 16.47 0.79 9.85	k)	k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27) (27
3 Heat losse ELEMENT Doors Windows Typ	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8 e 9 e 10 e 11 e 12	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A , r 2 4.67 2.25 1.68 1 0.4 13.33 0.64 7.97 7.56 4.32	0.55 ea m² x1.	0.54 U-val W/m2 1 \(1.3 \) + \(1.3 \) + \(1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) +	0.55 ue 2K = 0.04] =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49 16.47 0.79 9.85 9.34	k)	k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27) (27
A Heat losse ELEMENT Doors Windows Typ Windows Typ	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8 e 9 e 10 e 11 e 12 e 13	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A, r 2 4.67 2.25 1.68 1 1 0.4 13.33 0.64 7.97 7.56 4.32	ea m² x 1. x1. x1. x1. x1. x1. x1. x1. x1. x1	0.54 U-val W/m2 1 \(\bar{1}\lambda(1.3) + \\ \)	0.55 ue 2K = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] = -0.04] =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49 16.47 0.79 9.85 9.34 5.34	k)	k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27)
(25)m= 0.58	0.58 es and h Gro area e 1 e 2 e 3 e 4 e 5 e 6 e 7 e 8 e 9 e 10 e 11 e 12 e 13 e 14	0.58 eat loss ss	0.56 oaramet Openin	0.56 e/	0.55 Net Ar A , r 2 4.67 2.25 1.68 1 1 0.4 13.33 0.64 7.97 7.56 4.32 10.33	0.55 ea m²	0.54 U-val W/m2 1 \(1.3 \) + \(1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) + \(1.4 \) 1.3 \) +	0.55 ue 2K = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] = 0.04] =	A X U (W/ 2 5.77 2.78 2.08 1.24 1.24 0.49 16.47 0.79 9.85 9.34 5.34 12.77	k)	k-valu		A X k kJ/K (26) (27) (27) (27) (27) (27) (27) (27) (27

(39)m= 797.43	795.66	793,92	785,76	784.24	777.13	777.13	775.81	779.87	784.24	787.32	790.55		
Heat transfer	1		705 70	70101	777 40	777 40	775.04		= (37) + (L	700 55		
(38)m= 318.61		315.1	306.95	305.42	298.31	298.31	297	301.05	305.42	308.51	311.74		(30
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov 309.51	Dec 211.74		(38
Ventilation he							A			(25)m x (5	1		
Total fabric h									(36) =		1	478.82	(37
f details of thern	nal bridging	24-27-29											
Thermal bridg				using Ap	pendix I	<						68.37	(36
For design asse: can be used inst				constructi	ion are no	known pr	ecisely the	indicative	values of	TMP in T	able 1f		
Thermal mas	- 1								tive Value		- I	250	(35
Heat capacity	/ Cm = S(Axk)						((28)	.(30) + (3	2) + (32a).	(32e) =	0	(34
Fabric heat lo	ss, W/K	S (A x	U)				(26)(30)	+ (32) =				410.45	(33
* for windows an ** include the are						atea using	rormula 1	η(1/U-Vall	ie)+0.04] 8	as given in	paragraph	3.2	
Total area of			# and the and	and the second	1060.0		famorit.	Tes II to a t				2.0	(31
Roof Type3	142	_	27.9	3	114.2		0.15	=	17.13	_			(30
Roof Type2	21.9		0		21.9	X	0.15	=	3.29	_ !		4 📙	(30
Roof Type1	61,		8.71		52.39	x	0.15		7.86	_			(30
Walls Type2	503.	39	193.8	3	309.5	6 X	0.16		49.53				(29
Walls Type1	100.	34	2		98.34	X	0.16	=	15.73	_ [(29
Floor Type 2					1.1	X.	0.13	=	0.143				(2
loor Type 1					230	х	0.13	=	29.9				(28
Rooflights Ty	pe 5				0.7	x1	(1/(1.3) +	0.04] =	0.91				(27
Rooflights Ty					2.58	x1	(1/(1.3) +	0.04] =	3.354				(27
Rooflights Ty	pe 3				5.22	x1	1/(1.3) +	0.04] =	6.78599	9			(2)
Rooflights Ty	pe 2				3.49	x1	(1/(1.3) +	0.04] =	4.537				(27
Rooflights Ty	pe 1				24	x1	(1/(1_3) +	0.04] =	31.2				(27
Windows Typ	e 29				4.51	x1	(1/(1.3)+	0.04] =	5.57				(27
Windows Typ	e 28				12.1	х1	/[1/(1.3)+	0.04] =	14.95	41년			(27
Windows Typ	e 27				12.37	x1.	(1/(1.3)+	0.04] =	15.29				(27
Windows Typ	e 26				11.61	x1	/[1/(1.3)+	0.04] =	14.35				(27
Windows Typ	e 25				0.32	x1	(1/(1.3)+	0.04] =	0.4				(27
Windows Typ	e 24				2.21	x1	/[1/(1.3)+	0.041 =	2.73				(27
Windows Typ	e 23				0.64	x1	(1/(1.3)+	0.04] =	0.79				(27
Windows Typ	e 22				0.36	x1	/[1/(1.3)+	0.04] =	0.44				(27
Windows Typ	e 21				2.24	×1.	(1/(1.3)+	0.04] =	2.77				(27
Windows Typ	e 20				4.9	x1	/[1/(1.3)+	0.04] =	6.06				(27
Windows Typ	e 19				2.65	x1.	(1/(1.3)+	0.04] =	3.27				(27
Windows Typ	e 18				6.63	x1	(1/(1.3)+	0.04] =	8.19				(27
Windows Typ	e 17				2.35	χ1	(1/(1.3)+	0.04] =	2.9				(2)
						- 5		ALC: N		-0			

40)m= 1.49	1.48	1.48	1.46	1.46	1.45	1.45	1.45	1.45	= (39)m +	1.47	1.47		
_	1.40	1.40	1.46	1,40	1.45	1.45	1.45	ALACE SEA		Sum(40)	4708.0	1.46	(4
lumber of da	ys in mor	nth (Tab	le 1a)								_		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
41)m= 31	28	31	30	31	30	31	31	30	31	30	31		(4
4 Water has	ting ener	gy requ	rement								k v /n/yea	ar:	
Assumed occ	upancy I	N								7	44		(4
if TFA > 13.	9, N = 1		[1 - exp	(-0.0003	49 x (TF	A -13.9)2)]+0.0	013 x (TFA -13.				1.
if TFA £ 13.		ator upor	ao io litro	o por do	w Vd av	orogo =	/0E v NIV	1 26		17.			
Annual averag	ge not wa al average	hot water	ge in nire usage by a	s per da 5% if the d	welling is	erage = designed ((25 X N) to achieve	+ 30 a water us	se target o	111	5.89		(4
ot more that 125	itres per p	person per	rday (all w	ater use, l	not and co	ld)							
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
lot water usage	in litres per	day for ea	ach month	Vd,m = fa	ctor from 1	Table 1c x	(43)						
14)m= 127.48	122.85	118.21	113.58	108.94	104.31	104.31	108,94	113.58	118.21	122,85	127.48		_
nergy content o	f hot water	used - cal	culated mo	onthly = 4	190 x Vd r	n x nm x f	Tm / 3600			m(44), 4 =	The second second	1390.73	(4
	165,35	170.63	148.76	142.73	123.17	114.13	130.97	132.53	154.46	168.6	183.09		
(5)m= 189,06	163,33	170.03	140.70	142.73	123.17	114.13	130.97	2000		m(45), 12 =	10,50,67	1823.47	
instantaneous	water heatii	ng at point	of use (no	hot water	storage),	enter 0 in	boxes (46)		rotal - Su	11(45)1 12-		1023.47	
and the second second		Albert Street											
46)m= 28.36	24.8	25.59	22.31	21.41	18.48	17.12	19.65	19.88	23.17	25.29	27.46		(4
STATE AND STATE OF THE STATE OF	20 9 000	25.59	22.31	21.41	18.48	17.12	19.65	19.88	23.17	25.29	27_46		(4
46)m= 28.36 Vater storage Storage volun	loss		1 - 17		11	. 7			1.52-65-74		27 ₋ 46 500		
Vater storage Storage volun f community	e loss; ne (litres) heating a	includir	ng any so ank in dw	olar or W	WHRS	storage litres in	within sa	ime ves	sel				
Vater storage Storage volun f community in Otherwise if n	loss: ne (litres) neating a o stored	includir	ng any so ank in dw	olar or W	WHRS	storage litres in	within sa	ime ves	sel				
Vater storage Storage volun f community in Otherwise if n Vater storage	e loss: ne (litres) heating a o stored e loss:	includir Ind no ta hot wate	ng any so ank in dw er (this in	olar or W velling, e icludes i	WHRS nter 110 nstantar	storage litres in neous co	within sa	ime ves	sel	47)	500		(4
Vater storage Storage volun f community in Otherwise if n Vater storage a) If manufac	e loss; ne (litres) heating a o stored e loss; turer's de	includir ind no ta hot wate	ng any so ank in dw er (this in	olar or W velling, e icludes i	WHRS nter 110 nstantar	storage litres in neous co	within sa	ime ves	sel	47)	.5		(4
Vater storage Storage volun f community Otherwise if n Vater storage a) If manufac emperature	loss; ne (litres) heating a o stored loss; turer's de factor fro	includir and no ta hot wate eclared I m Table	ng any so ank in dw er (this in oss facto	plar or W velling, e icludes i	WHRS nter 110 nstantar	storage litres in neous co	within sa (47) ambi boil	ime vesi	sel	47)	.5		(2
Vater storage Storage volun f community of Otherwise if n Vater storage a) If manufac emperature	e loss; ne (litres) heating a o stored e loss; turer's de factor fro om water	includir and no ta hot wate eclared I m Table storage	ng any so ank in dw er (this in oss facto 2b	plar or W velling, e icludes i or is kno	WHRS nter 110 nstantar wn (kWh	storage litres in neous co	within sa	ime vesi	sel	47)	.5		(2
Vater storage Storage volun f community Otherwise if n Vater storage a) If manufac emperature	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de	includir and no ta hot wate eclared l m Table storage eclared (ng any so ank in dw er (this in oss facto 2b kWh/ye	plar or W velling, e icludes i or is kno ear oss fact	WHRS nter 110 nstantar wn (kWh	storage) litres in neous co n/day): known:	within sa (47) ambi boil	ime vesi	sel	47) 3 0	.5		(4
Vater storage Storage volunt from the Community of Community of Community of Community of Community of Community	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s	includir and no ta hot wate eclared I m Table storage eclared of factor fr ee section	ng any so ank in dw er (this in oss facto 2b y kWh/ye cylinder I rom Tabl	plar or W velling, e icludes i or is kno ear oss fact	WHRS nter 110 nstantar wn (kWh	storage) litres in neous co n/day): known:	within sa (47) ambi boil	ime vesi	sel	47) 3 0	500		(4)
Vater storage storage volund from the community of the co	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s	includir and no ta hot wate eclared I m Table storage eclared of factor fr ee secti ble 2a	ng any so ink in dw er (this in oss facto 2b k kWh/ye cylinder I rom Tabl on 4.3	plar or W velling, e icludes i or is kno ear oss fact	WHRS nter 110 nstantar wn (kWh	storage) litres in neous co n/day): known:	within sa (47) ambi boil	ime vesi	sel	47)	500		(4)
Vater storage storage volund from munity of the restorage a) If manufaction if manufaction if manufaction water storage water storage water storage water storage in the restorage is a storage water storage in the restorage is a storage water storage in the restorage is a storage in the restorage is a storage in the restorage in the restorage is a storage in the restorage in the restorage in the restorage is a storage in the restorage in the res	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s from Ta factor fro	includir and no ta hot wate eclared I m Table storage eclared of factor from ee sections ble 2a m Table	ng any so ank in dw er (this in oss facto 2b e, kWh/ye cylinder I rom Tabl on 4.3	olar or W relling, e relling, e r	WHRS nter 110 nstantar wn (kWh	storage I litres in neous co n/day): known:	within sa (47) embi boil (48) x (49)	ers) ente	sel er '0' in (47) 3 0 2	500		(4)
Vater storage volund from the community of the community	e loss: ne (litres) heating a o stored e loss; turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water	includir and no ta hot wate eclared I m Table storage eclared of factor friee section ble 2a m Table	ng any so ank in dw er (this in oss facto 2b e, kWh/ye cylinder I rom Tabl on 4.3	olar or W relling, e relling, e r	WHRS nter 110 nstantar wn (kWh	storage I litres in neous co n/day): known:	within sa (47) ambi boil	ers) ente	sel er '0' in (47) 3 0 2	500		
Vater storage storage volund community of the wise if no vater storage a) If manufaction if manufaction if manufaction water storage is community of the water storage is commun	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water (54) in (5	includir and no ta hot water eclared I m Table storage eclared of factor fractor fract	ng any so ink in dw er (this in oss facto 2b k kWh/ye cylinder I rom Tabl on 4.3	olar or W velling, e icludes i or is kno ear oss fact e 2 (kW	WHRS nter 110 nstantar wn (kWh	storage I litres in neous co n/day): known:	within sa (47) ombi boil (48) x (49) (47) x (51)	ers) ente	sel er '0' in (47) 3 0 2	500		
Vater storage Storage Volund Community Otherwise if in Vater storage a) If manufact Emergy lost fro Otherwise if in Vater storage community Column factor Emperature Emperature Energy lost fro Emperature Community Volumn factor Emperature Energy lost fro Enter (50) or Vater storage	e loss: ne (litres) heating a o stored e loss; turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water (54) in (5	includir and no ta hot wate eclared I m Table storage eclared of factor friee section ble 2a m Table storage 55) culated f	ng any so ank in dw er (this in oss facto 2b e, kWh/ye cylinder I rom Tabl on 4.3 2b e, kWh/ye for each	polar or W relling, e relling, e	WHRS nter 110 nstantar wn (kWh or is not h/litre/da	storage Iltres in neous co n/day): known:	within sa (47) embi boil (48) x (49) (47) x (51) ((56)m = (ers) ente	sel er '0' in (53) =	47) 3 0 2	500		
Vater storage Storage volun f community Otherwise if n Vater storage a) If manufac emperature emperature f community f volume factor emperature emperature f community f volume factor emperature emperature f community Volume factor f community Volume factor f community Volume factor f community f volume	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water (54) in (5	includir and no ta hot wate eclared I m Table storage eclared of factor friee section ble 2a m Table storage 55) culated I	ng any so ank in dw er (this in oss facto 2b e, kWh/ye cylinder I rom Tabl on 4.3 2b kWh/ye for each	polar or Welling, e relling, e relling, e relling, e relling, e ear oss fact e 2 (kW) ear month	WHRS nter 110 nstantar wn (kWh or is not h/litre/da	storage Iltres in neous co n/day): known: ny)	(47) x (49) (47) x (51) ((56)m = (x (52) x (41) (63	sel er '0' in (53) = m 65.1	47)	500 .5 .6 .1 .0 .0 .0 .1	н.	(4)
vater storage torage voluncemmunity of therwise if no vater storage a) If manufaction manufaction water storage to the vater storage community of the vater storage in the vater storage water storage (50) or vater storage (6) m = 65.1 cylinder contain	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water (54) in (5 e loss cal-	includir and no ta hot wate eclared I m Table storage eclared of factor fr ee section ble 2a m Table storage (55) culated I 65.1 d solar sto	ng any so ank in dw er (this in oss facto 2b kWh/ye cylinder I om Tabl on 4.3 2b kWh/ye for each 63 rage, (57)	polar or Welling, e relling, e re	WHRS nter 110 nstantar wn (kWh or is not h/litre/da	storage I litres in neous con/day): known: ay) 65.1 H11)]+(5	(47) x (49) (47) x (51) ((56)m = (5.1) 0), else (5.1)	= × (52) × (55) × (41)(63) (7)m = (56)	sel er '0' in (53) = m 65.1 m where (47) 3 0 2 2 63 H11) is fro	500 .5 .6 .1 0 0 0 0 .1 65.1 m Appendix	н	
vater storage volunt community of therwise if no vater storage a) If manufaction in the community of the vater storage for the vater	e loss: ne (litres) heating a o stored loss: turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water (54) in (5 loss cal- 58.8	includir and no ta hot wate eclared I m Table storage eclared of factor fr ee secti- ble 2a m Table storage (55) culated I 65.1	ng any so ank in dw er (this in oss facto 2b ; kWh/ye cylinder I rom Tabl on 4.3 2b kWh/ye for each 63 rage, (57)r	polar or Worelling, e polar or is known	WHRS nter 110 nstantar wn (kWh or is not h/litre/da	storage Iltres in neous co n/day): known: ny)	(47) x (49) (47) x (51) ((56)m = (x (52) x (41) (63	sel er '0' in (53) = m 65.1	47) 3 0 2 63 H11) is fro	500 .5 .6 .1 0 0 0 0 1 65.1 m Appendix	н	
vater storage voluni community in otherwise if in vater storage a) If manufaction is manufaction in manufaction is manufaction in manufaction in manufaction in manufaction is manufaction in manufaction	e loss: ne (litres) heating a o stored loss: turer's de factor fro om water turer's de rage loss heating s from Ta factor fro om water (54) in (5 loss cal- 158.8 s dedicate- 58.8 t loss (an	includirand no ta hot water eclared I m Table estared I factor free sectible 2a m Table estorage (55) culated I d solar sto 65.1	ng any so ank in dwer (this in oss factor 2b ; kWh/ye cylinder I rom Tablo 63 rage, (57)r 63	polar or Worelling, e polar or working, e polar or working in the control of the	WHRS nter 110 nstantar wn (kWh or is not h/litre/da 63 x [(50) - (storage litres in neous con/day): known: hy) 65.1 H11)]+(5	(47) x (49) (47) x (51) ((56)m = (= × (52) × (41)(63) (7)m = (56)	sel er '0' in (53) = m 65.1 m where (47) 3 0 2 63 H11) is fro	500 .5 .6 .1 0 0 0 0 .1 65.1 m Appendix	н	
vater storage volunt community of therwise if no vater storage a) If manufaction in the community of the vater storage for the vater	e loss: ne (litres) heating a o stored e loss: turer's de factor fro om water turer's de rage loss heating s r from Ta factor fro om water (54) in (5 e loss cal- 58.8 s dedicate t loss (an	includirand no ta hot water eclared I m Table storage eclared of factor free section ble 2a m Table storage (55) culated in 65.1 d solar storage (65.1	ng any so ank in dw er (this in oss factor 2b c, kWh/ye om Tablo for each 63 rage, (57) 63	polar or Welling, e polar or welling, e polar or welling, e polar or is known as factor oss factor e 2 (kW) ear month 65.1 65.1 m = (56)m 65.1 m month (65.1)	WHRS nter 110 nstantar wn (kWh or is not h/litre/da 63 × ((50) - (63	storage of litres in neous con/day): known: 8y) 65.1 H11)]+(5 65.1	(47) x (49) (47) x (51) ((56)m = (5,1) (0), else (5,1) (55.1)	= × (52) × (55) × (41) (63) (63) (63)	53) = m 65.1 m where (47) 3 0 2 2 63 H11) is fro	500 .5 .6 .1 0 0 0 0 1 65.1 m Appendix	Н	

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61)m= 0	1 0	for each	0	0	0	0	0	0	0	0	0		(61
1		200						2.1				(59)m + (61)m	
62)m= 277,42	_	258.99	234.27	231.1	208.68	202.5	the manufacture of	218.05	242.82	254.11	271.45	(39)111 + (01)111	(62
Solar DHW input					Contract Con		219.33	III TANKS TO SEL		- C. C. C.			Jun
add addition									CONTRIBUT	ion to wate	or meaning)		
63)m= 0	0	0	0	0	0	0	0	0	0	0	0		(63
								-		-	-		
Output from v 64)m= 277.42		258.99	234.27	231.1	208.68	202.5	219.33	218.05	242.82	254.11	271.45		
277.42	240.10	200.00	204.21	231.1	200.00	202.0	1-2-371 A	HEREKO XI	1 12 -	r (annual)	27.7.00	2863.87	(64
last spins from	in mater	bontina	Ld Alla Issa	anth O O	E 1 10 0E	(45)	40.00						7
leat gains fro	1	127.42		118.15		108.64	114.24	112.48	122.05	124.47		J	(65
1				1.00	17.4.4.		- N.Y.T. A. I		1.7702		- 7AV-24		loc
include (57			- 1	-	ylinderis	s in the o	dwelling	or hot w	ater is tr	om com	munity h	eating	
Internal g	sins (sec	able 5	and 5a)									
Metabolic gai	ns (Table	5), Wat	ts										
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
66)m= 206,39	206.39	206.39	206.39	206.39	206.39	206.39	206.39	206.39	206.39	206.39	206.39		(6)
ighting gains	s (calcula	ted in Ap	pendix	L, equat	ion L9 or	r L9a), a	lso see	Table 5					
67)m= 140.44	124.74	101.44	76.8	57.41	48.47	52.37	68.07	91.37	116.01	135.4	144.34		(6
ppliances ga	ains (calc	ulated in	Append	dix L, eq	uation L	13 or L1	3a), also	see Ta	ble 5				
68)m= 940.49	950.25	925.66	873.3	807.21	745.09	703.6	693.84	718.43	770.79	836.88	898.99		(6
cooking gain	s (calcula	ited in A	ppendix	L, equat	ion L15	or L15a)	, also se	e Table	5				
59.08	59.08	59.08	59.08	59.08	59.08	59,08	59.08	59.08	59.08	59.08	59.08		(6
umps and fa	ans gains	(Table 5	ia)										
70)m= 0	0	0	0	0	0	0	0	0	0	0	0		(7)
osses e.g. e	vaporatio	n (negat	ive valu	es) (Tab	le 5)								
1	-137.59	-137.59	-137.59	-137.59	-137.59	-137.59	-137.59	-137.59	-137.59	-137.59	-137.59		(7
Vater heating	n gains (1	able 5)	1 1 1 1 1 1 1 1 1	7. 2. 4.0.							-		
72)m= 179.5		171.27	163.71	158.8	151.89	146.02	153.55	156.22	164.04	172.87	176.84		(7:
otal interna			1980.0	0.54			+ (68)m +						
73)m= 1388.3°			1241.68	1151.29	1073.33	1029.86	1043.33	1093.89	1178.71	1273.03	-		(73
	1010,00	1320,25	1241.00	1101,20	107 0.00	1023,00	1045,55	1023.03	117.00.2	127 3.03	1340.03		4,1

Northeast 0.9x	0.77	х	1.68	×	22.97	х	0.63	×	0.7] = [23.58	(75)
Northeast 0.9x	0.54	х	4.67	х	41.38	х	0.63	×	0.7	1 = 7	41.42	(75)
Northeast 0.9x	0.54	×	2.25	×	41.38	×	0.63	×	0.7	=	19.95	(75)
Northeast 0.9x	0.77	х	1.68	×	41.38	x	0.63	×	0.7		42.49	(75)
Northeast 0.9x	0.54	x	4.67	х	67.96	х	0.63	×	0.7] = [68.02	(75)
Northeast 0.9x	0.54	x	2.25	×	67.96	x	0.63	×	0.7	7 - [32.77	(75)
Northeast 0.9x	0.77	X.	1.68	×	67.96	x	0.63	×	0.7] = [69.78	(75)
Northeast 0.9x	0.54	х	4.67	×	91.35	х	0.63	×	0.7] = [91.43	(75)
Northeast 0.9x	0.54	x	2.25	x	91.35	х	0.63	х	0.7	=	44.05	(75)
Northeast 0.9x	0.77	х	1.68	×	91.35	x	0.63	x	0.7	= [93.8	(75)
Northeast 0.9x	0.54	х	4.67	x	97.38	х	0.63	x	0.7] = [97.47	(75)
Northeast 0.9x	0.54	X	2.25	×	97.38	х	0.63	×	0.7	7	46.96	(75)
Northeast 0.9x	0.77	×	1.68	×	97.38	х	0.63] × [0.7] = [100	(75)
Northeast 0.9x	0.54	х	4.67	×	91.1	х	0.63	x	0.7	=	91.18	(75)
Northeast 0.9x	0.54	х	2.25	х	91.1	х	0.63	x	0.7	= [43.93	(75)
Northeast 0.9x	0.77	x	1.68	×	91.1	х	0.63	×	0.7	= [93.55	(75)
Northeast 0.9x	0.54	х	4.67	х	72.63	х	0.63	x	0.7	= 1	72.69	(75)
Northeast 0.9x	0.54	х	2.25	×	72.63	х	0.63	x	0.7] = [35.02	(75)
Northeast 0.9x	0.77	×	1.68	×	72,63	×	0.63	×	0.7] = [74.58	(75)
Northeast 0.9x	0.54	х	4.67	х	50.42	х	0.63	x	0.7] = [50.47	(75)
Northeast 0.9x	0.54	Х	2.25	х	50.42	х	0.63	х	0.7	=	24.31	(75)
Northeast 0.9x	0.77	х	1.68	X	50.42	х	0.63	х	0.7	=	51.77	(75)
Northeast 0.9x	0.54	х	4.67	х	28.07	х	0.63	X	0.7	=	28.09	(75)
Northeast 0.9x	0.54	X	2.25	X	28.07	х	0.63	x	0.7	=	13.53	(75)
Northeast 0.9x	0.77	X	1.68	х	28,07	х	0.63	x	0.7	=	28.82	(75)
Northeast 0.9x	0.54	х	4.67	x	14.2	x	0.63	x	0.7	=	14.21	(75)
Northeast 0.9x	0.54	х	2.25	x	14.2	х	0.63	×	0.7	=	6.85	(75)
Northeast 0.9x	0.77	X.	1.68	×	14.2	х	0.63] x [0.7	(E)	14.58	(75)
Northeast 0.9x	0,54	x	4.67	х	9.21	х	0.63	х	0.7		9.22	(75)
Northeast 0.9x	0.54	×	2.25	×	9.21	х	0.63	×	0.7] = [4.44	(75)
Northeast 0.9x	0.77	X	1.68	X	9.21	x	0.63	×	0.7	*	9.46	(75)
Southeast 0.9x	0.77	х	1	х	36.79	х	0.63	×	0.7	3	11.24	(77)
Southeast 0.9x	0.77	X	30.15	х	36.79	х	0.63	×	0.7] = [339.03	(77)
Southeast 0.9x	0.77	х	6.63	х	36.79	х	0.63	х	0.7	=	74.55	(77)
Southeast 0.9x	0.77	х	2.65	х	36.79	Х	0.63	х	0.7	=	29.8	(77)
Southeast 0.9x	0.77	×	4.9	×	36.79	Х	0.63	×	0.7	=	55.1	(77)
Southeast 0.9x	0.77	X	2.24	×	36.79	×	0.63	x	0.7	=	25.19	(77)
Southeast 0,9x	0.77	х	0.36	x	36.79	x	0,63	×	0.7	=	4.05	(77)
Southeast 0.9x	0.77	х	0.64	×	36.79	х	0.63	x	0.7	= [21.59	(77)
Southeast 0.9x	0.77	X	2.21	_ x [36.79	Х	0.63	x	0.7	=	24.85	(77)
Southeast 0,9x	0.77	x	0.32	_ x [36.79	x	0.63	×	0.7	=	3.6	(77)

Southeast 0.9x	0.77	х	1] x [62.67	x	0,63	x	0.7	=	19.15	(77)
Southeast 0.9x	0.77	X	30.15	x [62.67	х	0.63	×	0.7	=	577.49	(77)
Southeast 0.9x	0.77	х	6.63	x	62.67	х	0.63	x	0.7	=	126.99	(77)
Southeast 0.9x	0.77	x	2.65	×	62.67	x	0,63	×	0.7	×	50.76	(77)
Southeast 0.9x	0.77	x	4.9	X	62.67	x	0.63	×	0.7	=	93.85	(77)
Southeast 0.9x	0.77	x.	2.24	×	62,67	x	0.63	x	0.7	- T	42.9	(77)
Southeast 0.9x	0.77	х	0.36	×	62,67	x	0.63	x	0.7	=	6.9	(77)
Southeast 0.9x	0.77	X.	0.64	х	62.67	х	0.63	x	0.7	. =	36.78	(77)
Southeast 0.9x	0.77	X.	2.21	х	62.67	х	0.63	х	0.7	= [42.33	(77)
Southeast 0.9x	0.77	x	0.32	_ x [62,67	х	0.63	x	0.7	3	6.13	(77)
Southeast 0.9x	0.77	х	1	x	85.75	x	0.63	x	0.7	=	26.21	(77)
Southeast 0.9x	0.77	,X:	30.15	х	85.75	х	0.63	х	0.7	= [790.14	(77)
Southeast 0.9x	0.77	х	6.63	x	85.75	x	0.63	x	0.7		173.75	(77)
Southeast 0.9x	0.77	x	2,65	×	85.75] x [0.63	×	0.7	= [69.45	(77)
Southeast 0.9x	0.77	х	4.9	X	85.75	x	0.63	x	0.7	= [128.41	(77)
Southeast 0.9x	0.77	Х	2.24	х	85.75	х	0.63	x	0.7	= [58.7	(77)
Southeast 0.9x	0.77	х	0.36	x	85.75	_ × [0.63	×	0.7	= [9,43	(77)
Southeast 0.9x	0.77	x	0.64	×	85.75	x	0.63	×	0.7	= [50.32	(77)
Southeast 0.9x	0.77	х	2.21	х	85.75	х	0.63	x	0.7	=	57.92	(77)
Southeast 0.9x	0.77	×	0.32	x	85.75	х	0.63	x	0.7	=	8.39	(77)
Southeast 0.9x	0.77	X.	1	х	106.25	х	0.63	×	0.7	=	32.47	(77)
Southeast 0.9x	0.77	х	30.15	_ x [106.25	х	0.63	x	0.7	=	979.03	(77)
Southeast 0.9x	0.77	х	6.63	x	106,25	х	0.63] x [0.7	=	215.29	(77)
Southeast 0.9x	0.77	X	2.65	x	106.25	X	0.63	x	0.7	=	86.05	(77)
Southeast 0.9x	0.77	х	4.9	х	106.25	х	0.63	x	0.7	= [159.11	(77)
Southeast 0.9x	0,77	х	2.24	х	106.25	х	0.63	×	0.7	=	72.74	(77)
Southeast 0.9x	0.77	х	0.36	x	106.25	х	0.63	×	0.7	=	11.69	(77)
Southeast 0.9x	0.77	х	0.64	х	106.25	х	0.63	х	0.7	=	62.35	(77)
Southeast 0.9x	0,77	X	2.21	х	106.25	х	0.63	×	0.7	=	71.76	(77)
Southeast 0.9x	0.77	X	0.32	X	106.25	х	0.63	х	0.7	=	10.39	(77)
Southeast 0.9x	0.77	х	1	х	119.01	х	0.63	х	0.7	=	36.37	(77)
Southeast 0.9x	0.77	Х	30.15	×	119.01	х	0.63	X	0.7	=	1096.59	(77)
Southeast 0.9x	0.77	х	6.63	х	119.01	х	0.63	×	0.7	=	241.14	(77)
Southeast 0.9x	0.77	Х	2.65	х	119.01	х	0.63	×	0.7	=	96.38	(77)
Southeast 0.9x	0,77	X	4.9	×	119.01	х	0.63	×	0.7	=	178.22	(77)
Southeast 0.9x	0.77	×	2.24	х	119.01	x	0.63	×	0.7	=	81.47	(77)
Southeast 0.9x	0.77	Х	0.36	х	119.01	х	0.63	х	0.7	=	13.09	(77)
Southeast 0.9x	0.77	×	0.64	×	119.01	х	0.63	Х	0.7	=	69.83	(77)
Southeast 0.9x	0.77	х	2.21	х	119.01	х	0.63	х	0.7	=	80.38	(77)
Southeast 0.9x	0.77	X	0.32	X	119.01	х	0.63	х	0.7	=	11.64	(77)
Southeast 0.9x	0.77	×	1	×	118.15	×	0.63	×	0.7	=	36.11	(77)

Southeast 0.9x	0.77	x	30.15	х	118.15	х	0,63	х	0.7	=	1088.66	(77
Southeast 0.9x	0.77	х	6.63	х	118.15	x	0.63	х	0.7	ä	239.4	(77
Southeast 0.9x	0.77	x	2.65	×	118,15	x	0.63	x	0.7	= [95.69	(77
Southeast 0.9x	0,77	х	4.9	х	118.15	×	0.63	x	0.7	-	176.93	(77
Southeast 0.9x	0.77	x	2.24	х	118.15	x	0.63	x	0.7		80.88	(77
Southeast 0.9x	0.77	×	0.36	×	118.15	x	0.63	х	0.7	= [13	(77
Southeast 0.9x	0.77	x	0.64	x	118.15	х	0.63	x	0.7] = [69.33	(77
Southeast 0.9x	0.77	x	2.21	.x	118.15	x	0.63	x	0.7		79.8	(77
Southeast 0.9x	0.77	х	0.32	X	118.15	X	0,63	х	0.7	= [11.55	(77
Southeast 0.9x	0.77	x	1	x	113.91	x	0,63	x	0.7	7 = [34.81	(77
Southeast 0.9x	0.77	х	30.15	х	113.91	х	0.63	x	0.7	#	1049.59	(77
Southeast 0.9x	0.77	Х	6.63	x	113.91	x	0.63	х	0.7	= [230.8	(77
Southeast 0.9x	0.77	Х	2,65	×	113.91	x	0.63	×	0.7] = [92.25	(77
Southeast 0.9x	0.77	x	4.9	х	113.91	×	0.63	x	0.7	=	170.58	(77
Southeast 0.9x	0.77	x	2,24	x	113.91	x	0.63	x	0.7	= [77.98	(77
Southeast 0.9x	0.77	x	0.36	х	113.91	×	0.63	×	0.7] = [12.53	(77
Southeast 0.9x	0.77	х	0.64	X	113.91	х	0.63	х	0.7	= [66.84	(77
Southeast 0.9x	0.77	×	2.21	х	113.91	х	0.63	_ x [0.7] = [76.93	(77
Southeast 0.9x	0.77	x	0,32	×	113,91	x	0.63	×	0.7] = [11.14	(77
Southeast 0.9x	0.77	х	1	х	104.39	x	0.63	х	0.7	=	31.9	(77
Southeast 0,9x	0.77	х	30.15	x	104.39	х	0.63	x	0.7	= [961.88	(7.7
Southeast 0.9x	0.77	x	6.63	х	104.39	x	0.63	x	0.7		211.52	(77
Southeast 0.9x	0.77	х	2.65	X	104.39	х	0,63	x	0.7] = [84.54	(77
Southeast 0.9x	0.77	х	4.9	х	104.39	x	0.63	×	0.7	= [156.33	(77
Southeast 0.9x	0.77	X	2.24	X	104.39	х	0.63	x	0.7	#	71.46	(77
Southeast 0.9x	0.77	Х	0.36	×	104.39	X	0.63	x	0.7	=	11,49	(77
Southeast 0.9x	0.77	X	0.64	X	104.39	х	0.63	x	0.7	=	61.25	(77
Southeast 0.9x	0.77	x	2.21	х	104.39	х	0.63	x	0.7	#	70.51	(77
Southeast 0.9x	0.77	Х	0.32	х	104.39	X	0.63	х	0.7	= [10.21	(77
Southeast 0.9x	0.77	X	1	X	92.85	х	0.63	x	0.7	=	28.38	(77
Southeast 0.9x	0.77	X	30.15	X	92.85	х	0.63	x	0.7		855.56	(77
Southeast 0.9x	0.77	х	6.63	X	92.85	Х	0.63	х	0.7	=	188.14	(77
Southeast 0.9x	0.77	Х	2.65	X	92.85	X	0.63	х	0.7	=	75.2	(7.7
Southeast 0.9x	0.77	х	4.9	х	92.85	x	0.63	x	0.7	9	139.05	(77
Southeast 0.9x	0.77	х	2.24	Х	92.85	Х	0.63	х	0.7		63.56	(77
Southeast 0,9x	0.77	х	0.36	x	92.85	х	0.63	x	0.7] = [10.22	(77
Southeast 0.9x	0.77	X	0.64	×	92.85	x	0.63	x [0.7	=	54.48	(77
Southeast 0.9x	0.77	×	2.21	×	92.85	x	0,63	×	0.7	=	62,71	(77
Southeast 0,9x	0.77	х	0.32	x	92.85	х	0.63	х	0.7	#	9.08	(77
Southeast 0.9x	0.77	x	1.	х	69.27	х	0.63	х	0.7	÷	21.17	(77
Southeast 0.9x	0.77	x	30.15	x	69.27	x	0.63	x	0.7	=	638.25	(77

Southeast 0.9x	0.77	x	6.63	x	69.27	x	0,63	x	0.7	=	140.35	(77)
Southeast 0.9x	0.77	x	2.65	х	69.27	x	0.63	x	0.7	= [56.1	(77)
Southeast 0.9x	0.77	x	4.9	x	69.27	x	0.63	x	0.7		103.73	(77)
Southeast 0,9x	0.77	x	2.24	×	69.27	x	0,63	×	0.7	-	47.42	(77)
Southeast 0.9x	0.77	х	0.36	×	69.27	x	0.63	x	0.7	=	7.62	(77)
Southeast 0.9x	0.77	x	0.64	х	69.27	×	0.63	×	0.7	1 =	40.64	(77)
Southeast 0.9x	0.77	х	2.21	×	69.27	х	0,63	x	0.7	=	46.78	(77)
Southeast 0.9x	0.77	х	0.32	х	69.27	х	0.63	x	0.7	=	6.77	(77)
Southeast 0.9x	0.77	х	1	х	44.07	x	0.63	x	0.7		13.47	(77)
Southeast 0,9x	0.77	х	30.15	×	44.07	x	0.63	x	0.7] = [406.08	(77)
Southeast 0.9x	0.77	x	6.63	х	44.07	×	0.63	x	0.7	=	89.3	(77)
Southeast 0.9x	0.77	X	2.65	х	44.07	x	0.63	x	0.7	Ŧ	35.69	(77)
Southeast 0.9x	0.77	х	4.9	х	44.07	х	0,63	х	0.7] = [66	(77)
Southeast 0.9x	0.77	x	2.24	×	44.07	x	0.63] x	0.7		30.17	(77)
Southeast 0.9x	0.77	X	0.36	×	44.07	x	0.63	x	0.7	=	4.85	(77)
Southeast 0.9x	0.77	х	0.64	х	44.07	x	0.63	х	0.7	-	25.86	(77)
Southeast 0.9x	0.77	X	2,21	x	44.07	X	0.63	×	0.7	=	29.77	(77)
Southeast 0.9x	0.77	X	0.32	×	44.07	X	0,63	x	0.7		4.31	(77)
Southeast 0.9x	0.77	Х	1	х	31.49	х	0.63	x	0.7	# 1	9.62	(77)
Southeast 0.9x	0.77	х	30.15	×	31.49	x	0.63	×	0.7	=	290.14	(77)
Southeast 0,9x	0.77	X	6.63	X	31.49	х	0.63	х	0.7	#	63.8	(77)
Southeast 0.9x	0.77	х	2.65	X	31.49	x	0.63	x	0.7		25.5	(77)
Southeast 0.9x	0.77	X	4.9	x	31.49	x	0.63	x	0.7	=	47.15	(77)
Southeast 0.9x	0.77	X	2.24	x	31.49	x	0.63	×	0.7	=	21.56	(77)
Southeast 0.9x	0.77	х	0.36	х	31.49	х	0.63	x	0.7	#	3.46	(77)
Southeast 0.9x	0.77	X	0.64	x	31.49	x	0.63	×	0.7	= [18.48	(77)
Southeast 0.9x	0.77	x	2.21	×	31.49	x	0.63	x	0.7] = [21.27	(77)
Southeast 0.9x	0.77	×	0.32	×	31.49	x	0.63	х	0.7		3.08	(77)
Southwesto,9x	0.77	х	7.97	×	36.79] [0.63	х	0.7	=	89.62	(79)
Southwest _{0.9x}	0.77	x	7.56	х	36.79] [0.63	x	0.7] + [85.01	(79)
Southwest _{0.9x}	0.77	х	4.32	х	36.79] [0.63	×	0.7		48.58	(79)
Southwesto.9x	0.77	x	10.33	×	36.79		0.63	×	0.7	#	232.31	(79)
Southwesto.9x	0.77	х	9.8	х	36.79] [0.63	×	0.7	=	110.2	(79)
Southwest _{0.9x}	0.77	Х	9.87	X	36.79] [0.63	x	0.7	(#)	110.98	(79)
Southwesto,9x	0.77	X	10.12	×	36.79	1 E	0.63	х	0.7	=	113.8	(79)
Southwesto.9x	0.77	х	11.61	х	36.79	[0.63	х	0.7	=	130.55	(79)
Southwesto,9x	0.77	х	12.37	x	36.79] [0.63	х	0.7	=	139.1	(79)
Southwesto,9x	0.77	x	12.1	X	36.79] [0.63	×	0.7	=	136.06	(79)
Southwesto.9x	1	Х	4.51	х	36.79] [0.63	×	0.7	= [65.86	(79)
Southwesto,9x	0.77	х	7.97	х	62.67] [0.63	х	0.7	#	152.66	(79)
Southwesto.9x	0.77	×	7,56	×	62.67		0.63	×	0.7	=	144.8	(79)

Southwesto.9x	0.77	X	4.32	х	62.67	0.63	×	0.7] = [82.74	(79)
Southwesto.9x	0.77	х	10.33	х	62.67	0.63	x	0.7	1 = [395.72	(79)
Southwesto.9x	0.77	×	9,8	×	62.67	0.63	×	0.7	5	187.71	(79)
Southwesto.9x	0.77	x	9.87	x	62.67	0.63	×	0.7	1 = [189.05	(79)
Southwesto,9x	0.77	х	10.12	x	62.67	0.63	×	0.7	= [193,84	(79)
Southwesto.9x	0.77	x	11.61	×	62.67	0.63	7 x	0.7		222.38	(79)
Southwesto.9x	0.77	x	12.37] × [62.67	0.63] × [0.7] = [236.93	(79)
Southwesto.9x	0.77	x	12.1	×	62,67	0.63	×	0.7	=	231.76	(79)
Southwesto.9x	1.	X	4.51	x	62.67	0,63	×	0.7	=	112.19	(79)
Southwesto.9x	0.77	х	7.97] x	85.75	0.63	x	0.7	=	208.87	(79)
Southwesto.9x	0.77	x	7.56	×	85.75	0.63	x	0.7	=	198.13	(79)
Southwesto.9x	0.77	X	4.32	x	85.75	0.63	x	0.7	9	113.21	(79)
Southwesto.9x	0.77	×	10.33	×	85.75	0,63	×	0.7	=	541.44	(79)
Southwesto.9x	0.77	х	9.8	×	85.75	0.63	x	0.7	=	256.83	(79)
Southwesto,9x	0.77	x	9.87	х	85.75	0.63	x	0.7	=	258.66	(79)
Southwesto.9x	0.77	×	10.12	×	85.75	0.63	×	0.7	= [265.22	(79)
Southwesto.9x	0.77	х	11.61	х	85.75	0.63	x	0.7] = [304.26	(79
Southwesto.9x	0.77	х	12.37	×	85.75	0.63	х	0.7	Ī - [324.18	(79
Southwesto.9x	0.77	×	12.1	×	85.75	0.63	×	0.7] = [317.11	(79
Southwesto.9x	1	х	4.51] x	85.75	0.63	x	0.7	=	153.5	(79
Southwesto.9x	0.77	х	7.97	x	106.25	0.63	×	0.7	=	258.8	(79
Southwesto.9x	0.77	х	7,56	X	106.25	0.63	x	0.7	=	245.49	(79
Southwesto.9x	0.77	х	4.32	x	106.25	0,63	×	0.7	= [140.28	(79
Southwesto.9x	0.77	х	10.33	x	106.25	0.63	x	0.7	=	670.87	(79)
Southwest _{0.9x}	0.77	х	9.8	х	106.25	0.63	x	0.7] = [318.22	(79
Southwesto.9x	0.77	x	9.87	x	106.25	0.63	x	0.7	= [320.5	(79)
Southwesto.9x	0.77	х	10.12	×	106.25	0.63	×	0.7	=	328.62	(79)
Southwesto.9x	0.77	x	11.61	x	106.25	0.63	x	0.7	=	377	(79)
Southwesto.9x	0.77	х	12.37	_ x [106.25	0.63	х	0.7		401.68	(79)
Southwesto.9x	0.77	×	12,1	x	106.25	0.63	×	0.7] = [392.91	(79)
Southwesto.9x	1	х	4.51	х	106.25	0.63	×	0.7	= [190.19	(79)
Southwesto,9x	0.77	Х	7.97	x	119.01	0.63	х	0.7	3	289.88	(79)
Southwesto.9x	0.77	X	7.56	х	119,01	0.63	×	0.7	=	274.97	(79)
Southwest _{0.9x}	0.77	x	4.32	x	119.01	0.63	x	0.7	= [157.12	(79)
Southwest _{0.9x}	0.77	Х.	10.33	х	119.01	0.63	x	0.7	=	751.43	(79)
Southwesto,9x	0.77	×	9.8	×	119.01	0.63	×	0.7] = [356.44	(79)
Southwesto,9x	0.77	x	9.87	x	119.01	0.63	x	0.7] = [358.98	(79)
Southwesto,9x	0.77	×	10.12	ı x	119.01	0.63	×	0.7	= [368.08	(79)
Southwesto.9x	0.77	х	11.61	×	119.01	0.63	x	0.7	= [422.27	(79)
Southwesto.9x	0.77	x	12.37	×	119.01	0.63	x	0.7	= [449.91	(79)
Southwest _{0.9x}	0.77	x	12.1	i x i	119.01	0.63	ī x Ī	0.7	i = i	440.09	(79)

Southwesto.9x	1	×	4.51	x_[119.01	0.63	x	0.7] = [213.03	(79)
Southwesto,9x	0.77	х	7.97	×	118.15	0.63	x	0.7	100	287.78	(79)
Southwesto,9x	0.77	x	7.56	x	118.15	0.63	×	0.7] - [272.98	(79)
Southwesto.9x	0.77	x	4.32	×	118.15	0.63	×	0.7	= [155,99	(79)
Southwesto.9x	0.77	X	10.33	x	118.15	0.63	x	0.7		746	(79)
Southwesto.9x	0.77	x	9.8	x	118.15	0.63	x	0.7		353.86	(79)
Southwesto.9x	0.77	x	9.87	x	118.15	0.63	x	0.7	=	356,39	(79)
Southwesto.9x	0.77	х	10.12	x	118.15	0.63	x	0.7	=	365.41	(79)
Southwest _{0.9x}	0.77	x	11.61	×	118.15	0.63	x	0.7		419.22	(79)
Southwesto.9x	0.77	х	12.37	х	118.15	0.63	x	0.7	3	446.66	(79)
Southwest _{0.9x}	0.77	x	12,1] x [118.15	0.63	x	0.7	=	436,91	(79)
Southwesto.9x	1	x	4.51	x	118.15	0.63	×	0.7	=	211.49	(79)
Southwest _{0.9x}	0.77	X	7.97	×	113,91	0.63	x	0.7] = [277,45	(79)
Southwesto.9x	0.77	х	7.56	х	113.91	0.63	×	0.7	=	263.18	(79)
Southwesto,9x	0.77	x	4.32	×	113.91	0.63	×	0.7	=	150.39	(79)
Southwesto.9x	0.77	x	10.33	х	113.91	0.63	x	0.7	= [719.22	(79)
Southwesto.9x	0.77	x	9.8	х	113.91	0.63	x	0.7] = [341.16	(79)
Southwesto.9x	0.77	х	9.87	_ x [113,91	0,63	x	0.7		343.6	(79)
Southwesto,9x	0.77	x	10.12	_ x [113.91	0.63	x	0.7] = [352.3	(79
Southwesto.9x	0.77	x	11.61	x	113,91	0.63	x	0.7	=	404,17	(79
Southwesto.9x	0.77	х	12.37	x	113.91	0.63	x	0.7	=	430.63	(79)
Southwesto_9x	0.77	x	12.1	х	113.91	0.63	x	0.7] = [421.23	(79)
Southwesto,9x	1	х	4.51	x	113,91	0.63	x	0.7		203.9	(79)
Southwesto.9x	0.77	х	7.97	x	104.39	0.63	x	0.7	= [254.27	(79)
Southwesto.9x	0.77	×	7.56	х	104.39	0.63	×	0.7] = [241.19	(79
Southwesto,9x	0.77	X	4.32	х	104.39	0.63	×	0.7		137.82	(79)
Southwesto.9x	0.77	x	10.33	x	104.39	0.63	x	0.7	= [659.12	(79)
Southwesto.9x	0.77	x	9.8	x	104.39	0.63	×	0.7] = [312.65	(79)
Southwesto,9x	0.77	х	9.87	x	104.39	0,63	×	0.7	-	314.88	(79)
Southwesto.9x	0.77	х	10.12	х	104.39	0,63] x [0.7		322.86	(79)
Southwesto.9x	0.77	Х	11.61	x	104.39	0,63	×	0.7	= [370.39	(79)
Southwesto.9x	0.77	х	12.37	x	104.39	0.63	x	0.7	= [394.64	(79)
Southwesto.9x	0.77	x	12.1	x	104.39	0.63	×	0.7] = [386,03	(79)
Southwesto,9x	1	x	4.51	x	104.39	0.63	x	0.7] = [186,86	(79)
Southwesto.9x	0.77	×	7.97	x	92.85	0.63	x	0.7		226.16	(79
Southwesto,9x	0.77	×	7.56] × [92.85	0.63	×	0.7] = [214.53	(79
Southwesto.9x	0.77	x	4.32	x [92.85	0.63	x	0.7	=	122.59	(79)
Southwesto.9x	0.77	×	10.33	x	92.85	0.63	_ x [0.7	= [586.26	(79)
Southwesto.9x	0.77	X	9.8	X.	92.85	0.63	х	0.7	(a)	278.09	(79)
Southwest _{0,9x}	0.77	x	9.87	_ × [92.85	0.63	×	0.7] = [280.08	(79)
Southwesto.9x	0.77	×	10,12	x	92.85	0.63	×	0.7	=	287.17	(79)

Southwesto.9x	0.77	x	11.61	х	92.85] [0.63	x	0.7] = [329.45	(79)
Southwest _{0.9x}	0.77	х	12.37	х	92,85] [0.63	x	0.7	1 # [351.02	(79)
Southwest _{0.9x}	0.77	х	12.1	x	92.85] [0.63	x	0.7	=	343.36	(79)
Southwest _{0.9x}	1	x	4.51	x	92.85] [0.63	x	0.7	=	166.21	(79)
Southwesto.9x	0.77	Х	7.97	х	69.27] [0.63	x	0.7	=	168.72	(79)
Southwesto.9x	0.77	х	7.56	×	69.27] [0.63	x	0.7	=	160.04	(79)
Southwesto.9x	0.77	×	4.32	x	69.27] [0.63	x	0.7] = [91.45	(79)
Southwesto,9x	0.77	х	10.33	х	69.27] [0.63	х	0.7	=	437.35	(79)
Southwesto,9x	0.77	x	9,8] x [69.27] [0.63	x	0.7	=	207.46	(79)
Southwesto.9x	0.77	×	9.87	x	69.27] [0.63	X	0.7	= [208.94	(79)
Southwest _{0.9x}	0.77	X	10.12	х	69.27] [0.63] x [0.7	= [214.23	(79)
Southwesto.9x	0.77	x	11.61	х	69.27] [0.63	x	0.7	-	245.77	(79)
Southwest _{0.9x}	0.77	×	12.37	×	69.27] [0.63	X	0.7] = [261,86	(79)
Southwesto.9x	0.77	х	12.1	х	69.27		0.63	X	0.7] = [256.15	(79)
Southwesto.9x	1	х	4.51	х	69.27		0.63	x	0.7	=	123.99	(79)
Southwesto,9x	0.77	×	7.97	×	44.07] [0.63	X	0.7	= [107.34	(79)
Southwesto.9x	0.77	×	7.56	×	44.07] [0.63	×	0.7	= [101.82	(79)
Southwesto.9x	0.77	х	4.32	х	44.07] [0.63	х	0.7	=	58.18	(79)
Southwesto.9x	0.77	X	10.33	х	44.07] [0.63	X	0.7] = [278.26	(79)
Southwesto_9x	0.77	X	9.8	×	44.07] [0.63	X.	0.7	=	131.99	(79
Southwesto_9x	0.77	x	9.87	x	44.07] [0.63	x	0.7	= [132.93	(79)
Southwesto.9x	0.77	x	10.12	X	44.07] [0.63	х	0.7	=	136.3	(79)
Southwest _{0.9x}	0.77	х	11.61	X	44.07		0.63	X	0.7	=	156,37	(79)
Southwesto.9x	0.77	Х	12.37	X	44.07] [0.63	х	0.7	=	166.61	(79
Southwest _{0.9x}	0.77	x	12.1	×	44.07] [0.63	x	0.7	=	162.97	(79
Southwesto.9x	-1	X	4.51	×	44.07		0.63	×	0.7] = [78.89	(79)
Southwesto.9x	0.77	x	7.97	х	31.49] [0.63	x	0.7	=	76.7	(79)
Southwesto.9x	0.77	X	7.56	х	31.49		0.63	x	0.7		72.75	(79)
Southwest _{0.9x}	0.77	×	4.32	×	31.49] [0.63	X	0.7	=	41.57	(79)
Southwest _{0.9x}	0.77	×	10.33	×	31.49] [0.63	X	0.7] = [198.81	(79)
Southwesto.9x	0.77	X	9.8	х	31.49] [0.63	х	0.7	-	94,31	(79)
Southwesto.9x	0.77	X	9.87	×	31.49] [0.63	X	0.7	=	94.98	(79)
Southwesto.9x	0.77	×	10.12	×	31.49		0.63	×	0.7	=	97.39	(79
Southwesto.9x	0.77	Х	11.61	Х	31.49] [0.63	x	0.7	2	111.72	(79
Southwesto.9x	0.77	Х	12.37	х	31.49] [0.63	X	0.7	=	119.04	(79)
Southwesto.9x	0.77	х	12.1	х	31,49] [0.63	x	0.7] = [116,44	(79
Southwesto.9x	1	х	4.51	х	31.49] [0.63	x	0.7	= [56.36	(79
Northwest 0.9x	0.77	x	1	X.	11.28	х	0.63	x	0.7	_ = [3.45	(81)
Northwest 0.9x	0.77	X	0.4	х	11.28	х	0.63	X	0.7	(a)	1.38	(81)
Northwest 0.9x	0.77	X	13.33	х	11.28	Х	0.63	х	0.7	=	45.96	(81)
Northwest 0.9x	0.77	X	0.64	X.	11.28	x	0.63	х	0.7	=	11.03	(81)

Northwest 0.9x	0.54	х	2.35	×	11.28	х	0.63	х	0.7	=	5,68	(81)
Northwest 0.9x	0.77	x	1	х	22.97	x	0.63	x	0,7	=	7.02	(81)
Northwest 0.9x	0.77	×	0.4	x	22.97	×	0.63	×	0.7	=	2.81	(81)
Northwest 0.9x	0.77	x	13.33	x	22.97	х	0.63	x	0.7	=	93,56	(81)
Northwest 0.9x	0.77	X	0.64	х	22.97	х	0.63	x	0.7	9	22,46	(81)
Northwest 0.9x	0.54	x	2.35	×	22.97	×	0.63	x	0.7	- [11,57	(81)
Northwest 0.9x	0.77	X	1	x	41.38	x	0.63	x	0.7	=	12.65	(81)
Northwest 0.9x	0.77	х	0.4	_ x [41.38	х	0.63	х	0.7	=	5.06	(81)
Northwest 0.9x	0.77	X	13.33	×	41.38	x	0.63	x	0.7	=	168,57	(81)
Northwest 0.9x	0.77	x	0.64	x	41.38	х	0.63	х	0.7] = [40.47	(81)
Northwest 0.9x	0.54	X	2.35	х	41.38	X.	0.63	x	0.7	=	20.84	(81)
Northwest 0.9x	0.77	X	1	x	67.96	X	0.63	x	0.7	-	20.77	(81)
Northwest 0.9x	0.77	x	0.4	x	67.96	×	0.63	x	0.7	=	8.31	(81)
Northwest 0.9x	0.77	х	13.33	х	67.96	х	0.63	x	0.7	= [276,84	(81)
Northwest 0.9x	0.77	x	0.64	х	67.96	x	0.63	х	0.7	= [66.46	(81)
Northwest 0.9x	0.54	×	2.35	×	67.96	×	0.63	×	0.7	= [34.23	(81)
Northwest 0.9x	0.77	x	1	x	91.35	х	0.63	х	0.7	=	27.92	(81)
Northwest 0.9x	0.77	x	0.4	×	91.35	х	0.63	x	0.7] = [11.17	(81)
Northwest 0.9x	0.77	х	13.33	x	91.35	×	0.63	×	0.7	(3)	372,13	(81
Northwest 0.9x	0.77	х	0.64	_ x [91.35	x	0.63	х	0.7	=	89.33	(81)
Northwest 0.9x	0.54	х	2.35	х	91.35	Х	0.63	х	0.7	=	46.01	(81)
Northwest 0.9x	0.77	X	1	x	97.38	X	0.63	х	0.7	=	29.76	(81)
Northwest 0.9x	0.77	x	0.4	_ x [97.38	x	0.63	x	0.7] = [11.9	(81)
Northwest 0.9x	0.77	x	13,33	х	97.38	X	0.63	х	0.7	=	396.73	(81)
Northwest 0.9x	0.77	х	0.64	x	97.38	Х	0.63	x	0.7		95,24	(81)
Northwest 0.9x	0.54	x	2.35	x	97.38	×	0.63	x	0.7] = [49.05	(81)
Northwest 0.9x	0.77	×	1	×	91.1	х	0.63	х	0.7	=	27.84	(81)
Northwest 0.9x	0.77	X	0.4	x	91.1	X	0.63	X	0.7	=	11.14	(81)
Northwest 0.9x	0.77	X	13.33	X	91.1	х	0.63	Х	0.7	(=)	371.13	(81)
Northwest 0.9x	0.77	x	0.64	×	91.1	×	0,63	X	0.7	=	89.09	(81
Northwest 0.9x	0.54	×	2.35	х	91.1	Х	0.63	х	0.7	=	45.88	(81)
Northwest 0.9x	0.77	X	1	х	72.63	x	0.63	Х	0.7	=	22.2	(81
Northwest 0.9x	0.77	х	0.4	x	72.63	X	0.63	Х	0.7	= [8.88	(81
Northwest 0.9x	0.77	X	13.33	х	72.63	x	0.63	Х	0.7	.∋	295.87	(81
Northwest 0.9x	0.77	X	0.64	х	72.63	Х	0.63	Х	0.7	=	71.03	(81
Northwest 0.9x	0.54	x	2.35	×	72.63	×	0.63	x	0.7	= [36.58	(81
Northwest 0.9x	0.77	X	4	х	50.42	x	0.63	х	0.7	= 1	15.41	(81)
Northwest 0,9x	0.77	х	0.4	x	50.42	x	0.63	x	0.7	= [6.16	(81)
Northwest 0.9x	0.77	х	13.33	_ x [50.42	х	0.63	x	0.7	=	205.4	(81)
Northwest 0.9x	0.77	х	0.64	x	50.42	х	0.63	х	0.7	=	49.31	(81)
Northwest 0.9x	0.54	х	2.35] x [50.42	x	0.63	x	0.7	- [25.4	(81)

Northwest 0.9x	0.77	х	1	x	28.07	x	0.63	x	0.7	=	8.58	(81)
Northwest 0.9x	0.77	x	0.4	x	28.07	x	0.63	x	0.7	=	3.43	(81)
Northwest 0.9x	0.77	x	13.33	х	28.07	х	0.63	x	0.7		114.34	(81)
Northwest 0,9x	0.77	x	0.64	х	28.07	x	0,63	x	0.7	#	27.45	(81)
Northwest 0.9x	0.54	х	2.35	×	28.07	X	0.63	x	0.7	=	14.14	(81)
Northwest 0.9x	0.77	X	1	х	14.2	x	0.63	x	0.7		4.34	(81)
Northwest 0.9x	0.77	х	0.4	×	14.2	х	0.63	x	0.7] = [1.74	(81)
Northwest 0.9x	0.77	х	13.33	х	14.2	х	0.63	×	0.7		57.84	(81)
Northwest 0.9x	0.77	X	0.64	х	14.2	x	0.63	_ x [0.7] ≠ [13.88	(81)
Northwest 0,9x	0.54	х	2.35	х	14.2	x	0.63	х	0.7] = [7.15	(81)
Northwest 0.9x	0.77	×	1	х	9.21	×	0.63	_ x [0.7	=	2.82	(81)
Northwest 0.9x	0.77	x	0,4	х	9.21	_ x [0.63	х	0.7] = [1,13	(81)
Northwest 0.9x	0.77	х	13.33	х	9.21	х	0.63	x	0.7	= [37.54	(81)
Northwest 0.9x	0.77	х	0.64	х	9.21	×	0.63	_ x [0.7] = [9.01	(81)
Northwest 0.9x	0.54	x	2.35	×	9.21	x	0.63	x	0.7	=	4.64	(81)
Rooflights 0.9x	1	х	24	X	26	х	0.63	х	0.8	#	283.05	(82)
Rooflights 0.9x	_1_	×	3.49	x	26	x	0.63] * [0.8	=	41.16	(82)
Rooflights 0.9x	1	X	5.22	×	26	x	0.63	x	0.8		61.56	(82)
Rooflights 0.9x	1	X	2.58	х	26	x	0.63	x	0.8	#	30.43	(82)
Rooflights 0.9x	_1_	Х	0.7	×	26	_ x [0.63	_ x [0.8	=	16.51	(82)
Rooflights 0,9x	- 1	x	24	x	54	x	0.63	x [0.8	=	587.87	(82)
Rooflights 0.9x	1	х	3.49	x	54	х	0.63	х [0.8		85.49	(82)
Rooflights 0.9x	1	х	5,22	×	54	x [0.63	х [8.0	= [127.86	(82)
Rooflights 0.9x	4	X	2.58	×	54	x	0.63	×	0.8	=	63.2	(82)
Rooflights 0.9x	1	х	0.7	х	54	х	0.63	х	0.8	=	34.29	(82)
Rooflights 0.9x	1	×	24	×	96	x	0.63	x	8.0	= [1045.09	(82)
Rooflights 0.9x	1	×	3.49	х	96	x	0.63	x	0.8] = [151.97	(82)
Rooflights 0.9x	1	×	5.22	х	96	x	0.63	х	0.8	=	227.31	(82)
Rooflights 0,9x	1	x	2,58	×	96	X	0.63	X	0.8] = [112.35	(82)
Rooflights 0.9x	1	x	0.7	х	96	×	0.63	x	0.8] = [60.96	(82)
Rooflights 0.9x	1	х	24	х	150	X	0.63	×	0.8	=	1632.96	(82)
Rooflights 0.9x	1	х	3.49	×	150	x	0.63	x	0.8	=	237.46	(82)
Rooflights 0.9x	- 1	х	5.22	х	150	х	0.63	×	0.8	=	355.17	(82)
Rooflights 0.9x	1	х	2.58	X	150	×	0.63	x	0.8		175.54	(82)
Rooflights 0.9x	1	X	0.7	×	150	x	0.63	х	0.8	=	95.26	(82)
Rooflights 0.9x	1	x	24	х	192	x	0.63	x	0.8	=	2090.19	(82)
Rooflights 0,9x	1	Х	3.49	x	192	х	0.63	х	0.8	#	303.95	(82)
Rooflights 0.9x	1	×	5.22	x	192	x	0.63	×	8.0	#	454.62	(82)
Rooflights 0.9x	4	х	2.58	x	192	×	0.63	×	0.8] = [224.7	(82)
Rooflights 0.9x	1	х	0.7	х	192	x	0.63	х	0.8		121.93	(82)
Rooflights 0.9x	1.	×	24	×	200	x	0.63	×	0.8	-	2177.28	(82)

Rooflights 0.9x	1	x	3.49	x	200	х	0.63	x	0.8	=	316.61	(82)
Rooflights 0.9x	-1	×	5.22	x	200	x	0.63	×	0.8	Ī - [473.56	(82)
Rooflights 0.9x	1	x	2.58	x	200	x	0.63	х	8.0	-	234.06	(82)
Rooflights 0.9x	1	x	0.7	x	200	x	0.63	×	0.8		127.01	(82)
Rooflights 0.9x	1	x	24	x	189	x	0.63	×	0.8	- [2057.53	(82)
Rooflights 0.9x	1	x	3.49	x.	189	x	0.63	×	0.8	7 + 7	299.2	(82)
Rooflights 0.9x	1	x	5.22	X	189	x	0.63	×	0.8	=	447.51	(82
Rooflights 0.9x	1	х	2.58	х	189	x	0.63	x	0.8		221.18	(82)
Rooflights 0.9x	1	х	0.7	x	189	х	0.63	×	0.8		120.02	(82
Rooflights 0.9x	1	×	24	x	157	x	0.63	×	0.8	=	1709.16	(82
Rooflights 0.9x	-1	x	3.49	х	157	х	0.63	x	0.8		248.54	(82
Rooflights 0.9x	1.	x	5.22	x	157	x	0.63	X	0.8	=	371.74	(82)
Rooflights 0.9x	1	x	2.58	x	157] x	0.63	×	0.8	- [183.74	(82
Rooflights 0.9x	1	x	0.7	х	157	x	0.63	X.	8.0	T = [99.7	(82)
Rooflights 0.9x	1	×	24	×	115	x	0.63	x	0.8	-	1251.94	(82
Rooflights 0.9x	1	х	3.49	x	115	x	0.63	x	0.8	-	182.05	(82
Rooflights 0.9x	1	x	5.22	х	115	x	0.63	x	8.0		272,3	(82)
Rooflights 0.9x	1	×	2.58	x	115	×	0.63	X.	0.8	-	134.58	(82
looflights 0.9x	1	x	0.7	x	115	x	0.63	x	0.8		73.03	(82
ooflights 0.9x	-1-	x	24	x	66	x	0.63	×	0.8	-	718.5	(82
ooflights 0.9x	-1-	×	3.49	x	66	x	0.63	X	0.8		104.48	(82
ooflights 0.9x	1	x	5.22	х	66	х	0.63	x	0.8		156.27	(82
ooflights 0.9x	1	×	2.58	T x	66	x	0.63	x	8.0	=	77.24	(82
ooflights 0.9x	- 1	×	0.7	×	66	x	0.63	×	0.8	=	41.91	(82
tooflights 0.9x	1	x	24	х	33	x	0.63	x	0.8	=	359.25	(82
Rooflights 0.9x	1	x	3.49	х	33	x	0.63	x	8.0		52.24	(82
tooflights 0.9x	1	×	5.22	×	33	x	0.63	×	0.8	- [78.14	(82
tooflights 0.9x	1	x	2.58	×	33	x	0.63	x	0.8	-	38.62	(82
looflights 0.9x	1	×	0.7	×	33	×	0.63	×	0.8	=	20.96	(82
Rooflights 0.9x	1	×	24	x	21	×	0.63	X	0.8	- [228.61	(82
Rooflights 0.9x	1	x	3.49	x	21	х	0.63	×	0.8	#	33.24	(82
tooflights 0.9x	1	×	5.22	x	21	×	0.63	(X)	0.8	(±)	49.72	(82
tooflights 0.9x	- 1	x	2.58	x	21	x	0,63	×	0.8	T - [24.58	(82
Rooflights 0.9x	1	x	0.7	x	21	x	0.63	×	0.8		13.34	(82

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36)m=	1 0,	.98	0.93	8.0	0.61	0.44	0.32	0.37	0.62	0.91	0.99	- 10		(86)
Mean inte	ernal ter	mperati	ure in	living ar	ea T1 (fo	ollow ste	os 3 to 7	in Table	e 9c)					
		-	20.27	20.71	20.92	20.98	21	20.99	20.94	20.55	19.87	19.36		(87)
Temnera	ture dur	ing hes	ating n	eriods i	n rest of	dwelling	from Ta	ble 9, Ti	h2 (°C)					
		_	19.7	19.71	19.72	19.73	19.73	19.73	19.72	19.72	19.71	19.71		(88)
-		F			o ca literar	-0 /	- Table	0-1	1	2000		1 365		
			0:91	0.75	welling, 0.54	0.35	0.23	9a) 0.27	0.52	0.87	0.98	1		(89)
3)111-	.33 0.	31	0,51	0.73	0,54	0,55	0.23	0.21	0.32	0.07	0.56	1		(00)
	_	_						eps 3 to 7						
0)m= 17	7.64 18	3.18	18.84	19.41	19.65	19.72	19.73	19.73	19.68	19,25	18.3	17.55		(90
										LA = Livin	g area ÷ (4	1) =	0.09	(91
Mean int	ernal ter	nperati	ure (fo	r the wh	iole dwe	lling) = fl	$A \times T1$	+ (1 - fL	A) × T2					
2)m= 1	7.8 18	3.33	18.97	19.53	19.77	19.83	19.84	19.84	19.8	19.37	18.44	17.72		(92
Apply ad	justment	t to the	mean	interna	temper	ature fro	m Table	4e, whe	re appro	priate		-		
3)m= 1	7.8 18	3.33	18.97	19.53	19.77	19.83	19.84	19.84	19.8	19.37	18.44	17.72		(93
3 Space	heating	requir	ement											
Set Ti to	the mea	in interi	nal ter	nperatu	re obtain	ed at ste	ep 11 of	Table 9h	o, so tha	t Ti,m=(76)m an	d re-calcu	ulate	
he utilisa	ation fac	tor for	gains	using Ta	ble 9a					14	22			
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Utilisation	n factor	for gair	s, hm	Č.										
4)m= 0.	.99 0.	.97	0.9	0.74	0.54	0.36	0.24	0.28	0.53	0.86	0.98	0.99		(94
Jseful ga			_		_									
5)m= 373	35.25 542	9.92 6	795.5	7185.36	6051.79	4030.8	2515.54	2662.14	4275,1	5143.76	4065.29	3340.81		(95
Monthly a	average	extern	al tem	perature	e from Ta	able 8								
6)m= 4	4.3 4	.9	6.5	8.9	11.7	14.6	16.6	16.4	14.1	10.6	7.1	4.2		(96
leat loss	_		_		1	Lm, W=	=[(39)m ;	x [(93)m	– (96) m	1				
7)m= 107	24-63	200	722	Recipies NA	A DESCRIPTION AND ADDRESS OF THE PARTY OF TH	4068.22	ger hand or	2671.34			9,70,1978	10686.14		(97
Space he				r each n	nonth, kl	Wh/mont	h = 0.02	4 x [(97)	m - (95))m] x (4°	1)m			
8)m= 523	31.59 353	1.25 23	309.95	842.21	205.04	0	0	0	0	1289.3	3503.04	5464.93	100	
								Total	I man have been	(k\A/hA/ear	V - 0000/0	A	22377.3	(98
								1 Old	per year	(Assiny Car) - Sums	8) ₁ sa 12 =	22311.3	(50
Space he	eating re	quirem	ent in	kWh/m²	²/year			100	per year	(Mariny Car) - Suma	8), 52 12 =	41.69	
		3-1-1			²/year			1010	l per year	(KWIII) SCA) = Sunta	8): 58 12 =	- 11	
dc. Spac	e cooim	g requi	remen	it		ale 10b		100	l per year	(Arviny Cal) = Suma	8); 58 12 =	- 11	
lc Spac	e cooilii ed for Ju	g regul ne, Jul	y and	t August.	See Tal		Jul						- 11	
Calculate	ed for Ju Jan F	negul ne, July Feb	y and Mar	August. Apr	See Tat	Jun	Jul	Aug	Sep	Oct	Nov	Dec	- 11	
Calculate J	e cooming ed for Ju Jan F s rate Ln	negul ne, July Feb	y and Mar	August. Apr	See Tat	Jun	perature	Aug	Sep	Oct	Nov	Dec	- 11	(99
Calculate U Heat loss	e cooring ed for Ju Jan F s rate Ln	ne, July Feb n (calcu	y and Mar ulated	August. Apr using 25	See Tat May 5°C inter	Jun nai temp	perature	Aug and exte	Sep ernal ten	Oct nperatur	Nov e from T	Dec able 10)	- 11	(99
Calculate J Heat loss 00)m=	e cooring ed for Ju Jan F s rate Ln 0 n factor	ne, July Feb n (calcu	y and Mar ulated	August. Apr using 25	See Tat May 5°C inter	Jun nai temp	perature	Aug and exte	Sep ernal ten	Oct nperatur	Nov e from T	Dec able 10)	- 11	(10
Calculate Under the control of the	e cooring ed for Ju Jan F s rate Ln 0 n factor t	ne, July Feb n (calcu	y and Mar ulated 0 s hm	August. Apr using 25	See Tat May 5°C inter 0	Jun nal temp 7305.01	perature 5750.75	Aug and exte 5896.18	Sep ernal ten o	Oct nperature 0	Nov e from T o	Dec able 10)	- 11	(10
Calculate Description Calculate Jeat loss O0)m= Utilisation O1)m= Useful lo	ed for Ju Jan F s rate Ln 0 n factor 0	ne, July Feb n (calcu	y and Mar ulated 0 s hm	August. Apr using 25	See Tat May 5°C inter 0	Jun nal temp 7305.01	perature 5750.75 0.97	Aug and exte 5896.18	Sep ernal ten o	Oct nperature 0	Nov e from T 0	Dec able 10)	- 11	(10)
Calculate DHeat loss 00)m= Utilisation 01)m= Useful lo: 02)m=	ed for Ju Jan F s rate Ln 0 n factor 1 0 sss, hmL	ne, July Feb n (calculo o for loss o m (Wat	y and Mar ulated 0 s hm 0	August. Apr using 25 0 0 (100)m >	See Tat May 5°C inter 0 0 (101)m	Jun nai temp 7305.01 0.95	5750.75 0.97 5601.55	Aug and exte 5896.18 0.96	Sep ernal ten 0	Oct nperature 0	Nov e from T o	Dec able 10)	- 11	(10)
Calculate DHeat loss 00)m= Utilisation 01)m= Useful los 02)m= Gains (so	ed for Ju Jan F s rate Ln 0 n factor i 0 ss, hmL 0 olar gain	ne, July eb n (calculo for loss o m (Wat	y and Mar ulated 0 s hm 0	August. Apr using 25 0 0 (100)m >	See Tat May 5°C inter 0 (101)m	Jun nal temp 7305.01 0.95 6948.79 eather re	0.97 5601.55 egion, se	Aug and exte 5896.18 0.96	Sep ernal ten 0 0 0 0 0 10)	Oct nperature 0	Nov e from T 0	Dec able 10) 0 0	- 11	(10 (10 (10
Calculate UHeat loss (00)m= Utilisation (01)m= Useful lo: (02)m= Gains (so (03)m=	ed for Ju Jan F s rate Ln o n factor f o sss, hmL o lolar gain	ne, Juli Feb n (calculo o for losss o m (Wat o las calculo	y and Mar ulated 0 s hm 0 tts) = (0	August. Apr using 25 0 0 (100)m > 0 for appli	See Tat May 5°C inter 0 0 (101)m 0 ccable we	Jun nal temp 7305.01 0.95 6948.79 eather re 12305.12	0.97 5601.55 egion, se	Aug and exte 5896.18 0.96 5655.82 e Table 10502.5	Sep ernal ten o o o o o o o o o o o o o o o o o o o	Oct nperature 0 0 0 0	Nov e from T 0 0 0	Dec able 10) 0 0	41.69	(10 (10 (10
Calculate Utilisation Useful lo: (00)m= Useful lo: (00)m= Gains (so (00)m= Space co	ed for July Jan Fis rate Ln 0 In factor 1 0 In ss, hmL 0 In loan gain 0 In soling re	ne, Juline, Ju	y and Mar ulated 0 s hm 0 tts) = (0 ulated 0	August. Apr using 25 0 100)m x 0 for appli 0 r month,	See Tat May 5°C inter 0 (101)m 0 cable we 0 whole of	Jun nal temp 7305.01 0.95 6948.79 eather re 12305.12	0.97 5601.55 egion, se	Aug and exte 5896.18 0.96 5655.82 e Table 10502.5	Sep ernal ten o o o o o o o o o o o o o o o o o o o	Oct nperature 0 0 0 0	Nov e from T 0 0 0	Dec able 10) 0 0	41.69	(10) (10) (10)
Heat loss 100)m= Utilisation 101)m= Useful location 102)m= Gains (so 103)m= Space coset (104)	ed for Julian Fis rate Lin o Infactor in siss, hmL o Infactor gain o Infactor in o Inf	ne, Juline, Ju	y and Mar ulated 0 s hm 0 tts) = (0 ulated 0	August. Apr using 25 0 100)m x 0 for appli 0 r month,	See Tat May 5°C inter 0 (101)m 0 cable we 0 whole of	Jun 7305.01 0.95 6948.79 eather re 12305.12 Iwelling,	0.97 5601.55 egion, se	Aug and exte 5896.18 0.96 5655.82 the Table 10502.5 ous (kW	Sep ernal ten o o o o o o o o o o o o o o o o o o o	Oct nperature 0 0 0 0	Nov e from T 0 0 0	Dec able 10) 0 0	41.69	(100 (100 (100 (100)

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Cooled fraction	f C = cooled area ÷ (4) =	0.75	(105)
Intermittency factor (Table 10b)		il.	_
(106)m= 0 0 0 0 0 0.25 0.25	0.25 0 0 0 0		1.000
Space cooling requirement for month = (104)m × (105) × (106)m	Total = Sum(1,04) =	0	(106)
	671.75 0 0 0 0		
	Total = Sum(107) =	2244.64	(107)
Space cooling requirement in kWh/m²/year	(107) ÷ (4) =	4.18	(108)
9b, Energy requirements – Community heating scheme			1
This part is used for space heating, space cooling or water heating Fraction of space heat from secondary/supplementary heating (Ta		0	(301)
	able 11) o il florie		(302)
Fraction of space heat from community system 1 – (301) =	to CUC and up to favorables had accome	1	(302)
The community scheme may obtain heat from several sources. The procedure allo includes boilers, heat pumps, geothermal and waste heat from power stations. See	이 없었다. 이 그렇게 하는 사람이 있어요? 그런 그리고 아이들은 모양을 하는 것이 없어요?	ne latter	
Fraction of heat from Community CHP		0.87	(303a)
Fraction of community heat from heat source 2		0.13	(303b
Fraction of total space heat from Community CHP	(302) x (303a) =	0.87	(304a
Fraction of total space heat from community heat source 2	(302) x (303b) =	0.13	(304b
Factor for control and charging method (Table 4c(3)) for communi	ity heating system	1	(305)
Distribution loss factor (Table 12c) for community heating system		1.05	(306)
Space heating		kWh/yea	r
Annual space heating requirement		22377.3	
Space heat from Community CHP	(98) x (304a) x (305) x (306) =	20441.66	(307a
Space heat from heat source 2	(98) x (304b) x (305) x (306) =	3054.5	(307ь
Efficiency of secondary/supplementary heating system in % (from	Table 4a or Appendix E)	0	(308
Space heating requirement from secondary/supplementary system	m (98) x (301) x 100 + (308) =	0	(309)
Water heating Annual water heating requirement		2863.87	1
If DHW from community scheme:			_
Water heat from Community CHP	(64) x (303a) x (305) x (306) =	2616.14	(310a
Water heat from heat source 2	(64) x (303b) x (305) x (306) =	390.92	(310b
Electricity used for heat distribution	0.01 × [(307a)(307e) + (310a)(310e)] =	265,03	(313)
Cooling System Energy Efficiency Ratio		4.32	(314)
Space cooling (if there is a fixed cooling system, if not enter 0)	= (107) + (314) =	519.59	(315)
Electricity for pumps and fans within dwelling (Table 4f): mechanical ventilation - balanced, extract or positive input from our	utside	0	(330a
		0	(330b
warm air heating system fans		Q	4
warm air heating system fans pump for solar water heating		0	(330g

	pendix L)						992	.09	(332
10b. Fuel costs – Community heati	ing scheme						_		
		Fuel kWh/year			el Price ble 12)		Fuel (£/yea	21272	
Space heating from CHP		(307a) X			2.97	x 0.01 =	607	12	(340
Space heating from heat source 2		(307b) x			4.24	x 0.01 =	129.	.51	(34
Water heating from CHP		(310a) x			2.97	x 0.01 =	77.	7	(34
Water heating from heat source 2		(310b) x			4.24	x 0.01 =	16.	57	(34
Space cooling (community cooling s	system)	(315)		Fue	13.19	x 0.01 =	68.3	53	(34
Pumps and fans		(331)			13.19	x 0.01 =	0		(34
Energy for lighting		(332)			13.19	x 0.01 =	130.	86	(35)
Additional standing charges (Table	12)						12	0	(35
Total energy cost	= (340a)(342e) + (345)((354) =				1150	.29	(35
11b. SAP rating - Community heati	ing scheme								
Energy cost deflator (Table 12)							0.4	2	(35
Energy cost factor (ECF)	[(355) x (35)	6)] + [(4) + 45.0]	=				0.8	3	(35
									=
SAP rating (section12)							88.	42	(35
	heating scheme	e					88.	42	(35
12b CO2 Emissions - Community h	heating scheme	e					27.		
SAP rating (section12) 12b CO2 Emissions – Community be Electrical efficiency of CHP unit Heat efficiency of CHP unit	heating schem	e						2	(36
12b CO2 Emissions – Community h Electrical efficiency of CHP unit	heating schem	e e	Energy			ion factor	27. 66. Emissio	2 8 ens	(36
12b CO2 Emissions – Community be Electrical efficiency of CHP unit Heat efficiency of CHP unit	Was a south		kWh/yea	-	kg CO	2/kWh	27. 66. Emissio kg CO2/	2 8 ons year](36](36
12b CO2 Emissions - Community be Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP)	(307a) × 100 + (3	62) =	30601.29	×	kg CO	2/kWh	27. 66. Emissio kg CO2/	2 8 9ns (year](36](36
12b GO2 Emissions – Community It Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity	(307a) × 100 + (3 -(307a) × (361) +	62) = - (362) =	30601.29 8323.55	×	0.0	2/kWh 22 52	27. 66. Emissiokg CO2/ 660 -43	2 8 9ns (year 99.88](36](36](36
Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3	62) = - (362) = - 62) =	30601.29 8323.55 3916.38	x x	0.:	2/kWh 22 52	27. 66. Emissiokg CO2/ 660 -43	2 8 9ns 1year 19.88](36](36](36](36
12b CO2 Emissions - Community In Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity	(307a) × 100 + (3 -(307a) × (361) ÷ (310a) × 100 + (3 -(310a) × (361) ÷	62) = - (362) = - (262) = - (362) =	30601.29 8323.55	x x x x x	0.0 0.0 0.0 0.0	2/kWh 22 52 22 52	27. 66. Emissio kg CO2/ 660 -43* 84	2 8 99.88 19.92 5.94	(36 (36 (36 (36 (36 (36
Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity Efficiency of heat source 2 (%)	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3 -(310a) × (361) + If the	62) = - (362) = - (362) = - (362) = here is CHP usin	30601.29 8323.55 3916.38 1065.26	x x x x x x tt (363) to	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2/kWh 22 52 52 22 552 he second fur	27. 66. Emissiokg CO2/ 660 -43* 84 -55	2 8 9.ns 19.88 19.92 5.94 2.87	(36 (36 (36 (36 (36 (36 (36)
Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity Efficiency of heat source 2 (%) CO2 associated with heat source 2	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3 -(310a) × (361) +	62) = - (362) = - 62) = - (362) = here is CHP usin [(307b)+	8323.55 3916.38 1065.26 10 two fuels repeated (310b)] x 100 + (x x x x x x tt (363) to	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2/kWh 22 52 52 22 the second fue	27. 66. Emissio kg CO2/ 660 -43* 84 -55	2 8 99.88 19.92 5.94 2.87	(366) (366) (366) (366) (366) (366
Electrical efficiency of CHP unit Heat efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity Efficiency of heat source 2 (%) CO2 associated with heat source 2 Electrical energy for heat distribution	(307a) × 100 + (3 -(307a) × (361) ÷ (310a) × 100 + (3 -(310a) × (361) ÷ If th	62) = - (362) = - 62) = - (362) = here is CHP usin [(307b)+	8323.55 3916.38 1065.26 1065.26 1065.26 1065.26 1065.26 1065.26 1065.26	x x x x x x x x x x x x x x x x x x x	0 0 0 0 0 0 0 0	2/kWh 22 52 52 62 652 652 652 652 652 652 652	27. 66. Emissio kg CO2/ 660 -43* 84 -55	2 8 99.88 19.92 5.94 2.87 90	(36 (36 (36 (36 (36 (36 (36 (36 (36 (36
Electrical efficiency of CHP unit Heat efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity Efficiency of heat source 2 (%) CO2 associated with heat source 2 Electrical energy for heat distribution Total CO2 associated with communi	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3 -(310a) × (361) + If the	62) = - (362) = - (262) = - (362) = here is CHP usin [(307b)+	8323.55 3916.38 1065.26 1065.26 1065.26 (310b)] x 100 + ([(313) x (363)(366) + (3	x x x x x x x x x x x x x x x x x x x	0 0 0 0 0 0 0 2)	2/kWh 22 52 52 22 552 the second full 22 552	27. 66. Emissio kg CO2/ 660 -43. 84 -55	2 8 99.88 19.92 5.94 2.87 90 26.9 7.55	(36 (36 (36 (36 (36 (36 (36 (37 (37
Electrical efficiency of CHP unit Heat efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity Efficiency of heat source 2 (%) CO2 associated with heat source 2 Electrical energy for heat distribution Total CO2 associated with space heating	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3 -(310a) × (361) + If the	62) = -(362) = -(362) = -(362) = here is CHP usin [(307b)+	8323.55 3916.38 1065.26 1065.26 1065.26 (310b)] x 100 + ([(313) x (363)(366) + (309) x	x x x x x x x x x x x x x x x x x x x	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2/kWh 22 52 52 22 52 the second full 52	27. 66. Emissio kg CO2/ 660 -43. 84 -55 -13 -13 -13 -14	2 8 99.88 19.92 5.94 2.87 90 26.9 7.55	(366 (366 (366 (366 (366 (367 (377 (377
Electrical efficiency of CHP unit Heat efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP less credit emissions for electricity Efficiency of heat source 2 (%) CO2 associated with heat source 2 Electrical energy for heat distribution Total CO2 associated with space heating CO2 associated with space heating	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3 -(310a) × (361) + If the	62) = - (362) = 62) = - (362) = here is CHP usin [(307b)+	8323.55 3916.38 1065.26 1065.26 1065.26 1065.26 (310b)] x 100 + ([(313) x (363)(366) + (3 (309) x eous heater	x x x x x x (363) to 367b) x (312) x	0 0 0 0 0 0 0 2)	2/kWh 22 52 52 22 52 the second full 52	27. 66. Emissio kg CO2/ 660 -43* 84 -55 = 82 = 13 = 354	2 8 9.88 19.92 5.94 2.87 90 26.9 7.55 47.48	(36 (36 (36 (36 (36 (36 (37 (37 (37 (37
12b CO2 Emissions – Community be Electrical efficiency of CHP unit Heat efficiency of CHP unit Space heating from CHP) less credit emissions for electricity Water heated by CHP	(307a) × 100 + (3 -(307a) × (361) + (310a) × 100 + (3 -(310a) × (361) + If the	62) = (362) = 62) = (362) = here is CHP usin [(307b)+	8323.55 3916.38 1065.26 1065.26 1065.26 (310b)] x 100 + ([(313) x (363)(366) + (309) x	x x x x x x (363) to 367b) x (312) x	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2/kWh 22 52 52 52 64 second full 22 65 second full 22 65 second full 22 65 second full	27. 66. Emissio kg CO2/ 660 -43. 84 -55 81 354	2 8 99.88 19.92 5.94 2.87 90 26.9 7.55	(36) (36) (36) (36) (36) (36) (36) (37) (37) (37) (37) (37) (37)

CO2 associated with electricity for lighting		(332))) x		0.52	=	514.9	(379)
Total CO2, kg/year	sum of (376)(382) =					4332.04	(383)
Dwelling CO2 Emission Rat	e (383) + (4) =					8.07	(384)
El rating (section 14)					90.02	(385)	
13b. Primary Energy - Community	neating scheme						
Electrical efficiency of CHP unit					27.2	(361)	
Heat efficiency of CHP unit						66.8	(362)
		Energy kWh/year		Primary factor		Energy Vh/year	
Space heating from CHP)	$(307a) \times 100 \div (362) =$	30601.29	X	1.22]	37333.58	(363)
less credit emissions for electricity	-(307a) × (361) + (362) =	8323.55	x	3.07]	-25553.3	(364)
Water heated by CHP	(310a) × 100 + (362) =	3916.38	x	1,22] [4777.99	(365)
less credit emissions for electricity	-(310a) × (361) + (362) =	1065.26	×	3.07		-3270.34	(366)
Efficiency of heat source 2 (%)	If there is CHP u	sing two fuels repeat (36	63) to	(366) for the secon	nd fuel	90	(367b
Energy associated with heat source 2 ((307)		b)+(310b)] x 100 + (367b) x 1.22		1.22	-	4670.46	(368)
Electrical energy for heat distribution		[(313) x	[(313) x		=	813.65	(372)
Total Energy associated with community systems		(363)(366) + (368)(372)			=	18772.03	(373)
if it is negative set (373) to zero (e, see C7 in Append	dix C)		18772.03	(373)	
Energy associated with space heating (secondary)		(309) x		0	=	0	(374)
Energy associated with water from immersion heater or instantar		ntaneous heater(31:	2) x	1.22	=	0	(375)
Total Energy associated with space and water heating		(373) + (374) + (375) =				18772.03	(376)
Energy associated with space cooling		(315) x		3.07	4	1595.15	(377)
Energy associated with electricity for pumps and fans within dwelling			1)) x	3.07	=	0	(378)
Energy associated with electricity for lighting		(332))) x		3.07	<u>:</u>	3045.73	(379)
Total Primary Energy, kWh/year sum of (376)(382) =				23412.91	(383)		

APPENDIX (vi)

PEA – PREDICTED ENERGY ASSESSMENT (PRE-EPC)

Predicted Energy Assessment

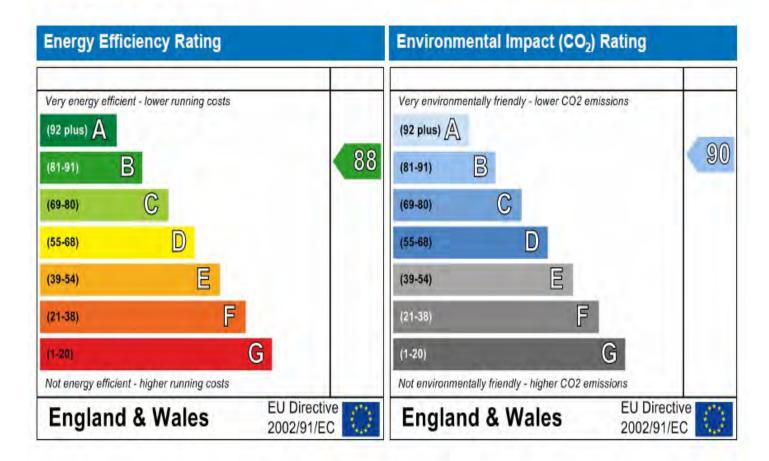


17, Branch Hill LONDON NW3 7NA

Dwelling type: Date of assessment: Produced by: Total floor area: Detached House 28 May 2015 Ondrej Gajdos 536.8 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO2) emissions.

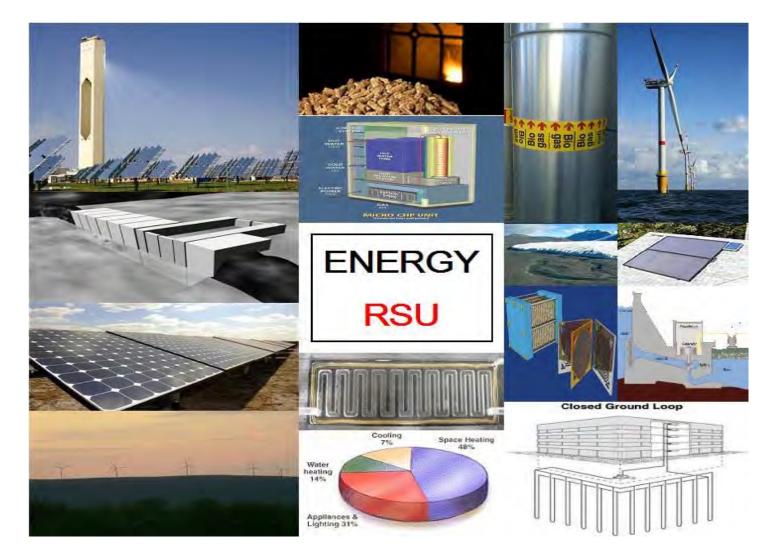


The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

The environmental impact rating is a measure of a home's impact on the environment in terms of carbonn dioxide (CO2) emissions. The higher the rating the less impact it has on the environment.

APPENDIX (vii)

ENERGY RSU – RENEWABLES & SUSTAINABILITY UNIT



ENERGY RSU is an integrated energy sustainability unit able to provide the following:

- SAP Calculations & Certificates L1A&B New/Existing Buildings (NHER certified)
- SBEM Calculations & Certificates L2A&B New/Existing Buildings (BRE certified)
- EPC & DEC Certificates New Build (CIBSE certified)
- Rd SAP Survey EPC Certificates Existing Buildings (NHER certified)
- Commercial EPC Survey certificates Existing Buildings (BRE certified) Level 3, 4 & 5
- Energy Statements & Renewable Reports for Planning
- LEED/BREEAM assessments (USGBC/BRE certified)
- Low/Zero Carbon (LZC) and Sustainability Appraisals/designs (CIBSE Low Carbon Consultant)
- Renewable Energy Appraisals and Designs
- Carbon Rating assessments
- 2D/3D CFD and Dynamic Thermal Simulations
- EPBD Air Conditioning Inspections (Article 20) and EPBD Asset Ratings & Certificates
- Energy Usage (Running Costs)
- Utility/Bill Analysis and Recommendations
- Advice on Green and Environmental Issues Relating to M&E Building Services
- Code for Sustainable Homes New Build and Refurbishment (BRE certified)
- Solar Shading/Sun Studies













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M&E Consultants

Energy Consultants



Section 5.0

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ME7 June 2015