

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
ETE L10 FOH CIRCULATION 11	30	-
ETE L10 FOH CIRCULATION 12	50	-
ETE L10 FOH CIRCULATION 13	60	-
ETE L10 FOH CIRCULATION 14	40	-
ETE L10 FOH CIRCULATION 15	60	-
ETE L10 FOH CIRCULATION 16	20	-
ETE L10 FOH CIRCULATION 18	460	-
ETE L10 FOH CIRCULATION 19	0	-
ETE L10 FOH CIRCULATION 20	20	-
ETE L10 FOH CIRCULATION 23	70	-
ETE L10 FOH CIRCULATION 26	50	-
ETE L10 FOH CIRCULATION 27	140	-
ETE L10 FOH CIRCULATION (COOL)	300	-
ETE L10 GATE 01	390	-
ETE L10 KITCHEN 01	310	-
ETE L10 LOUNGE 01	370	-
ETE L10 LOUNGE 02	20	-
ETE L10 LOUNGE 03	210	-
ETE L10 LOUNGE 04	470	-
ETE L10 LOUNGE 05	510	-
ETE L10 LOUNGE 06	840	-
ETE L10 LOUNGE 07	140	-
ETE L10 OFFICE 08	190	-
ETE L10 OFFICE 09	460	-
ETE L10 OFFICE 09	4230	-
ETE L10 RETAIL 04	760	-
ETE L10 RETAIL 05	980	-
ETE L10 RETAIL 06	180	-
ETE L10 RETAIL 07	100	-
ETE L10 RETAIL 08	60	-
ETE L10 STORAGE 04	40	-
ETE L10 STORAGE 05	20	-
ETE L10 STORAGE 06	20	-
ETE L10 STORAGE 07	30	-
ETE L10 STORAGE 08	80	-
ETE L10 STORAGE 09	80	-
ETE L10 STORAGE 10	90	-
ETE L10 STORAGE 11	180	-
ETE L10 WC (ELEC DHW) 03	40	-
ETE L10 WC 02	600	-
ETE L10 WC 03	570	-
ETE L10 WC 04	110	-
ETE L10 WC 05	110	-
ETE L20 BOH CIRCULATION 30	30	-
ETE L20 BOH CIRCULATION 31	20	-
ETE L20 BOH CIRCULATION 32	20	-
ETE L20 BOH CIRCULATION 33	240	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
ETE L20 BOH CIRCULATION 34	100	-
ETE L20 BOH CIRCULATION 35	90	-
ETE L20 BOH CIRCULATION 36	80	-
ETE L20 BOH CIRCULATION 37	1000	-
ETE L20 CHANGING ROOM 04	360	-
ETE L20 COMM ROOM 10	50	-
ETE L20 COMM ROOM 11	310	-
ETE L20 KITCHEN 02	190	-
ETE L20 OFFICE 14	240	-
ETE L20 OFFICE 15	240	-
ETE L20 OFFICE 16	260	-
ETE L20 OFFICE 17	310	-
ETE L20 OFFICE 18	30	-
ETE L20 OFFICE 19	170	-
ETE L20 OFFICE 22	7620	-
ETE L20 RETAIL 09	1180	-
ETE L20 STORAGE 13	20	-
ETE L20 STORAGE 14	20	-
ETE L20 STORAGE 15	50	-
ETE L20 STORAGE 16	20	-
ETE L20 STORAGE 17	10	-
ETE L20 WC 07	540	-
ETE L20 WC 08	410	-
NEP L00 FOH CIRCULATION 28	2490	-
NEP L00 FOH CIRCULATION 28	340	-
NEP L00 FOH CIRCULATION 28	340	-
NEP L00 FOH CIRCULATION 28	200	-
NEP L00 FOH CIRCULATION 28	110	-
NEP L10 FOH CIRCULATION 21	300	-
NEP L10 FOH CIRCULATION 21	1780	-
NEP L10 FOH CIRCULATION 21	280	-
NEP L10 FOH CIRCULATION 29	20	-
NEP L10 FOH CIRCULATION 30	20	-
NEP L10 FOH CIRCULATION 31	20	-
NEP L10 FOH CIRCULATION 32	70	-
NEP L10 FOH CIRCULATION 33	20	-
NEP L10 FOH CIRCULATION 34	70	-
NEP L10 FOH CIRCULATION 35	20	-
NEP L10 FOH CIRCULATION 36	70	-
NEP L10 FOH CIRCULATION 37	20	-
NEP L10 FOH CIRCULATION 45	70	-
NEP L10 FOH CIRCULATION 46	20	-
NEP L10 FOH CIRCULATION 47	70	-
NEP L10 FOH CIRCULATION 48	20	-
NEP L10 FOH CIRCULATION 49	70	-
NEP L10 FOH CIRCULATION 50	20	-
NEP L10 FOH CIRCULATION 54	180	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
NEP L10 FOH CIRCULATION 60	70	-
NEP L10 FOH CIRCULATION 61	70	-
NEP L10 FOH CIRCULATION 62	70	-
NEP L10 FOH CIRCULATION (COOL)702		-
NEP L10 FOH CIRCULATION (COOL)703		-
NEP L10 FOH CIRCULATION (COOL)704		-
NEP L10 FOH CIRCULATION (COOL)705		-
NEP L10 FOH CIRCULATION (COOL)709		-
NEP L10 FOH CIRCULATION (COOL)702		-
NEP L10 FOH CIRCULATION (COOL)703		-
NEP L10 FOH CIRCULATION (COOL)704		-
NEP L10 FOH CIRCULATION (COOL)705		-
NEP L10 GATE 02	470	-
NEP L10 GATE 03	470	-
NEP L10 GATE 04	470	-
NEP L10 GATE 05	470	-
NEP L10 GATE 06	470	-
NEP L10 GATE 07	470	-
NEP L10 GATE 08	470	-
NEP L10 GATE 09	470	-
NEP L10 GATE 10	470	-
NEP L10 GATE 11	850	-
NEP L10 WC (ELEC DHW) 14	40	-
NEP L10 WC (ELEC DHW) 15	40	-
NEP L10 WC (ELEC DHW) 16	40	-
NEP L10 WC (ELEC DHW) 17	40	-
NEP L10 WC (ELEC DHW) 18	40	-
NEP L10 WC (ELEC DHW) 19	40	-
NEP L10 WC (ELEC DHW) 27	40	-
NEP L10 WC (ELEC DHW) 28	40	-
NEP L10 WC (ELEC DHW) 29	40	-
NEP L20 BOH CIRCULATION 38	50	-
NEP L20 BOH CIRCULATION 39	40	-
NEP L20 BOH CIRCULATION 40	60	-
NEP L20 BOH CIRCULATION 41	30	-
NEP L20 BOH CIRCULATION 42	30	-
NEP L20 BOH CIRCULATION 50	40	-
NEP L20 BOH CIRCULATION 51	30	-
NEP L20 BOH CIRCULATION 52	30	-
NEP L20 BOH CIRCULATION 53	40	-
NEP L20 BOH CIRCULATION 54	30	-
NEP L20 BOH CIRCULATION 55	30	-
NEP L20 BOH CIRCULATION 56	40	-
NEP L20 BOH CIRCULATION 57	30	-
NEP L20 BOH CIRCULATION 58	30	-
NEP L20 BOH CIRCULATION 59	40	-
NEP L20 BOH CIRCULATION 60	30	-

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Zone	General lighting [W]	Display lamps efficacy [lm/W]
NEP L20 BOH CIRCULATION 61	30	-
NEP L20 BOH CIRCULATION 62	40	-
NEP L20 BOH CIRCULATION 63	30	-
NEP L20 BOH CIRCULATION 64	30	-
NEP L20 BOH CIRCULATION 65	40	-
NEP L20 BOH CIRCULATION 66	30	-
NEP L20 BOH CIRCULATION 67	30	-
NEP L20 BOH CIRCULATION 68	40	-
NEP L20 BOH CIRCULATION 69	30	-
NEP L20 BOH CIRCULATION 70	30	-
NEP L20 BOH CIRCULATION 71	40	-
NEP L20 BOH CIRCULATION 72	30	-
NEP L20 BOH CIRCULATION 73	30	-
NEP L20 BOH CIRCULATION 74	40	-
NEP L20 BOH CIRCULATION 75	30	-
NEP L20 BOH CIRCULATION 76	30	-
NEP L20 CHANGING ROOM 05	150	-
NEP L20 CHANGING ROOM 06	120	-
NEP L20 CHANGING ROOM 07	160	-
NEP L20 CHANGING ROOM 08	110	-
NEP L20 COMM ROOM 12	100	-
NEP L20 COMM ROOM 13	80	-
NEP L20 COMM ROOM 14	80	-
NEP L20 COMM ROOM 15	80	-
NEP L20 COMM ROOM 19	430	-
NEP L20 COMM ROOM 20	430	-
NEP L20 COMM ROOM 21	430	-
NEP L20 COMM ROOM 22	430	-
NEP L20 COMM ROOM 23	160	-
NEP L20 COMM ROOM 24	80	-
NEP L20 COMM ROOM 25	110	-
NEP L20 COMM ROOM 26	80	-
NEP L20 COMM ROOM 27	430	-
NEP L20 COMM ROOM 28	430	-
NEP L20 FOH CIRCULATION 05	360	-
NEP L20 FOH CIRCULATION 22	20	-
NEP L20 FOH CIRCULATION 38	20	-
NEP L20 FOH CIRCULATION 39	20	-
NEP L20 FOH CIRCULATION 40	20	-
NEP L20 FOH CIRCULATION 41	20	-
NEP L20 FOH CIRCULATION 42	20	-
NEP L20 FOH CIRCULATION 43	20	-
NEP L20 FOH CIRCULATION 44	20	-
NEP L20 FOH CIRCULATION 51	20	-
NEP L20 FOH CIRCULATION 52	20	-
NEP L20 FOH CIRCULATION 53	210	-
NEP L20 FOH CIRCULATION 55	180	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
NEP L20 FOH CIRCULATION 57	290	-
NEP L20 FOH CIRCULATION 58	570	-
NEP L20 FOH CIRCULATION 59	300	-
NEP L20 FOH CIRCULATION 59	2300	-
NEP L20 FOH CIRCULATION 59	300	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	180	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 FOH CIRCULATION (COOL)	100	-
NEP L20 OFFICE 20	280	-
NEP L20 STORAGE 18	10	-
NEP L20 STORAGE 19	10	-
NEP L20 STORAGE 20	10	-
NEP L20 STORAGE 21	30	-
NEP L20 STORAGE 25	10	-
NEP L20 STORAGE 26	10	-
NEP L20 STORAGE 27	30	-
NEP L20 STORAGE 28	10	-
NEP L20 STORAGE 29	10	-
NEP L20 STORAGE 30	30	-
NEP L20 STORAGE 31	10	-
NEP L20 STORAGE 32	10	-
NEP L20 STORAGE 33	30	-
NEP L20 STORAGE 34	10	-
NEP L20 STORAGE 35	10	-
NEP L20 STORAGE 36	30	-
NEP L20 STORAGE 37	10	-
NEP L20 STORAGE 38	10	-
NEP L20 STORAGE 39	30	-
NEP L20 STORAGE 40	10	-
NEP L20 STORAGE 41	10	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
NEP L20 STORAGE 42	30	-
NEP L20 STORAGE 43	10	-
NEP L20 STORAGE 44	10	-
NEP L20 STORAGE 45	30	-
NEP L20 STORAGE 46	10	-
NEP L20 STORAGE 47	10	-
NEP L20 STORAGE 48	30	-
NEP L20 STORAGE 49	10	-
NEP L20 STORAGE 50	10	-
NEP L20 STORAGE 51	30	-
NEP L20 WC (ELEC DHW) 01	40	-
NEP L20 WC (ELEC DHW) 02	40	-
NEP L20 WC (ELEC DHW) 04	40	-
NEP L20 WC (ELEC DHW) 05	40	-
NEP L20 WC (ELEC DHW) 06	40	-
NEP L20 WC (ELEC DHW) 07	40	-
NEP L20 WC (ELEC DHW) 08	40	-
NEP L20 WC (ELEC DHW) 09	40	-
NEP L20 WC (ELEC DHW) 10	40	-
NEP L20 WC (ELEC DHW) 11	40	-
NEP L20 WC (ELEC DHW) 12	40	-
NEP L20 WC (ELEC DHW) 13	40	-
NEP L20 WC (ELEC DHW) 20	40	-
NEP L20 WC (ELEC DHW) 21	40	-
NEP L20 WC (ELEC DHW) 22	40	-
NEP L20 WC (ELEC DHW) 23	40	-
NEP L20 WC (ELEC DHW) 24	40	-
NEP L20 WC (ELEC DHW) 25	40	-
NEP L20 WC (ELEC DHW) 26	40	-
NEP L20 WC (ELEC DHW) 30	40	-
NEP L20 WC (ELEC DHW) 31	40	-
WTE L00 BAGGAGE	1760	-
WTE L00 BOH CIRCULATION 01	70	-
WTE L00 BOH CIRCULATION 02	50	-
WTE L00 BOH CIRCULATION 03	40	-
WTE L00 BOH CIRCULATION 04	40	-
WTE L00 BOH CIRCULATION 44	90	-
WTE L00 CIRCULATION (FCU)	540	-
WTE L00 COMM ROOM 01	80	-
WTE L00 COMM ROOM 02	80	-
WTE L00 COMM ROOM 16	100	-
WTE L00 COMM ROOM 17	310	-
WTE L00 FOH CIRCULATION 01	250	-
WTE L00 FOH CIRCULATION 24	30	-
WTE L00 FOH CIRCULATION 25	120	-
WTE L00 IMMIGRATION	460	-
WTE L00 OFFICE 01	130	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
WTE L00 OFFICE 02	260	-
WTE L00 STORAGE 22	10	-
WTE L00 STORAGE 23	10	-
WTE L00 WC 09	140	-
WTE L00 WC 10	570	-
WTE L10 BOH CIRCULATION 08	0	-
WTE L10 BOH CIRCULATION 09	0	-
WTE L10 BOH CIRCULATION 10	40	-
WTE L10 BOH CIRCULATION 43	50	-
WTE L10 BOH CIRCULATION 45	60	-
WTE L10 BOH CIRCULATION 47	180	-
WTE L10 COMM ROOM 06	310	-
WTE L10 F&b 02	100	-
WTE L10 OFFICE 07	820	-
WTE L10 RETAIL 03	180	-
WTE L10 SECURITY HALL	1890	-
WTE L10 SECURITY PREP AREA	800	-
WTE L10 SECURITY QUEUE AREA	550	-
WTE L10 STORAGE 03	20	-
WTE L10 STORAGE 24	20	-
WTE L20 BOH CIRCULATION 26	110	-
WTE L20 BOH CIRCULATION 26	180	-
WTE L20 BOH CIRCULATION 26	30	-
WTE L20 BOH CIRCULATION 26	40	-
WTE L20 BOH CIRCULATION 26	50	-
WTE L20 BOH CIRCULATION 27	110	-
WTE L20 BOH CIRCULATION 28	70	-
WTE L20 BOH CIRCULATION 29	90	-
WTE L20 BOH CIRCULATION 46	170	-
WTE L20 CHANGING ROOM 03	80	-
WTE L20 CHANGING ROOM 09	440	-
WTE L20 CHILLED STORE	140	-
WTE L20 COMM ROOM 18	300	-
WTE L20 OFFICE 10	160	-
WTE L20 OFFICE 11	1000	-
WTE L20 OFFICE 12	870	-
WTE L20 OFFICE 13	160	-
WTE L20 OFFICE 21	1840	-
WTE L20 STORAGE 12	10	-
WTE L20 WC 06	140	-
WTE L20 WC 11	190	-

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
ETE L00 CHECK-IN	NO (-99.1%)	NO
ETE L00 COMM ROOM 03	N/A	N/A
ETE L00 COMM ROOM 04	N/A	N/A
ETE L00 COMM ROOM 05	N/A	N/A
ETE L00 COMM ROOM 29	N/A	N/A
ETE L00 COMM ROOM 30	N/A	N/A
ETE L00 F&b 01	NO (-94%)	NO
ETE L00 FOH CIRCULATION 02	NO (-3.6%)	NO
ETE L00 FOH CIRCULATION 03	NO (-86.9%)	NO
ETE L00 FOH CIRCULATION 03	NO (-42.4%)	NO
ETE L00 FOH CIRCULATION 04	NO (-1.7%)	NO
ETE L00 FOH CIRCULATION 17	N/A	N/A
ETE L00 FOH CIRCULATION 56	NO (-92.8%)	NO
ETE L00 FOH CIRCULATION 63	NO (-19%)	NO
ETE L00 FOH CIRCULATION (GLASS BOX)	NO (-194.1%)	NO
ETE L00 OFFICE 03	N/A	N/A
ETE L00 OFFICE 04	N/A	N/A
ETE L00 OFFICE 05	N/A	N/A
ETE L00 OFFICE 06	N/A	N/A
ETE L00 OFFICE 23	N/A	N/A
ETE L00 RETAIL 01	NO (-93.9%)	NO
ETE L00 RETAIL 02	NO (-94%)	NO
ETE L10 COMM ROOM 07	NO (-81.9%)	NO
ETE L10 COMM ROOM 08	N/A	N/A
ETE L10 COMM ROOM 09	N/A	N/A
ETE L10 F&b 03	NO (-98.5%)	NO
ETE L10 F&b 04	NO (-98.5%)	NO
ETE L10 F&b 05	NO (-88%)	NO
ETE L10 F&b 06	NO (-80.5%)	NO
ETE L10 F&b 07	NO (-9.6%)	NO
ETE L10 FOH CIRCULATION 06	NO (-99.5%)	NO
ETE L10 FOH CIRCULATION 07	NO (-99.3%)	NO
ETE L10 FOH CIRCULATION 08	NO (-96.5%)	NO
ETE L10 FOH CIRCULATION 09	NO (-85.1%)	NO
ETE L10 FOH CIRCULATION 10	NO (-87.3%)	NO
ETE L10 FOH CIRCULATION 11	NO (-81.1%)	NO
ETE L10 FOH CIRCULATION 12	NO (-93.9%)	NO
ETE L10 FOH CIRCULATION 13	NO (-91.2%)	NO
ETE L10 FOH CIRCULATION 14	NO (-93.5%)	NO
ETE L10 FOH CIRCULATION 15	NO (-88.2%)	NO
ETE L10 FOH CIRCULATION 16	NO (-81.9%)	NO
ETE L10 FOH CIRCULATION 18	NO (-6.3%)	NO
ETE L10 FOH CIRCULATION 19	NO (-65.4%)	NO
ETE L10 FOH CIRCULATION 20	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
ETE L10 FOH CIRCULATION 23	NO (-76.4%)	NO
ETE L10 FOH CIRCULATION 26	NO (-7.4%)	NO
ETE L10 FOH CIRCULATION 27	NO (-38.5%)	NO
ETE L10 FOH CIRCULATION (COO	NO (-84.4%)	NO
ETE L10 GATE 01	NO (-7.9%)	NO
ETE L10 LOUNGE 01	NO (-94.4%)	NO
ETE L10 LOUNGE 02	NO (-91.4%)	NO
ETE L10 LOUNGE 03	NO (-90.2%)	NO
ETE L10 LOUNGE 04	NO (-92.8%)	NO
ETE L10 LOUNGE 05	NO (-89.7%)	NO
ETE L10 LOUNGE 06	NO (-90%)	NO
ETE L10 LOUNGE 07	NO (-81.3%)	NO
ETE L10 OFFICE 08	N/A	N/A
ETE L10 OFFICE 09	NO (-37.6%)	NO
ETE L10 OFFICE 09	YES (+91.9%)	NO
ETE L10 RETAIL 04	NO (-97.8%)	NO
ETE L10 RETAIL 05	NO (-97.8%)	NO
ETE L10 RETAIL 06	N/A	N/A
ETE L10 RETAIL 07	NO (-91.1%)	NO
ETE L10 RETAIL 08	NO (-93.8%)	NO
ETE L20 COMM ROOM 10	N/A	N/A
ETE L20 COMM ROOM 11	N/A	N/A
ETE L20 OFFICE 14	N/A	N/A
ETE L20 OFFICE 15	NO (-25.6%)	NO
ETE L20 OFFICE 16	N/A	N/A
ETE L20 OFFICE 17	N/A	N/A
ETE L20 OFFICE 19	N/A	N/A
ETE L20 OFFICE 22	NO (-47.7%)	NO
ETE L20 RETAIL 09	NO (-36.2%)	NO
NEP L00 FOH CIRCULATION 28	NO (-30.1%)	NO
NEP L00 FOH CIRCULATION 28	NO (-30.5%)	NO
NEP L00 FOH CIRCULATION 28	NO (-98.8%)	NO
NEP L00 FOH CIRCULATION 28	N/A	N/A
NEP L00 FOH CIRCULATION 28	N/A	N/A
NEP L10 FOH CIRCULATION 21	NO (-75.6%)	NO
NEP L10 FOH CIRCULATION 21	NO (-82.3%)	NO
NEP L10 FOH CIRCULATION 21	NO (-80%)	NO
NEP L10 FOH CIRCULATION 29	N/A	N/A
NEP L10 FOH CIRCULATION 30	N/A	N/A
NEP L10 FOH CIRCULATION 31	N/A	N/A
NEP L10 FOH CIRCULATION 32	NO (-76.2%)	NO
NEP L10 FOH CIRCULATION 33	N/A	N/A
NEP L10 FOH CIRCULATION 34	NO (-76.2%)	NO
NEP L10 FOH CIRCULATION 35	N/A	N/A
NEP L10 FOH CIRCULATION 36	NO (-76.2%)	NO
NEP L10 FOH CIRCULATION 37	N/A	N/A
NEP L10 FOH CIRCULATION 45	NO (-76.2%)	NO
NEP L10 FOH CIRCULATION 46	N/A	N/A
NEP L10 FOH CIRCULATION 47	NO (-76.2%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
NEP L10 FOH CIRCULATION 48	N/A	N/A
NEP L10 FOH CIRCULATION 49	NO (-76.2%)	NO
NEP L10 FOH CIRCULATION 50	N/A	N/A
NEP L10 FOH CIRCULATION 54	NO (-95.7%)	NO
NEP L10 FOH CIRCULATION 60	NO (-76.2%)	NO
NEP L10 FOH CIRCULATION 61	NO (-76.3%)	NO
NEP L10 FOH CIRCULATION 62	NO (-76.4%)	NO
NEP L10 FOH CIRCULATION (COOLING) 63	NO (-84.4%)	NO
NEP L10 FOH CIRCULATION (COOLING) 64	NO (-84.2%)	NO
NEP L10 FOH CIRCULATION (COOLING) 65	NO (-84.2%)	NO
NEP L10 FOH CIRCULATION (COOLING) 66	NO (-84.2%)	NO
NEP L10 FOH CIRCULATION (COOLING) 67	NO (-84.2%)	NO
NEP L10 FOH CIRCULATION (COOLING) 68	NO (-84.3%)	NO
NEP L10 FOH CIRCULATION (COOLING) 69	NO (-84.2%)	NO
NEP L10 FOH CIRCULATION (COOLING) 70	NO (-84.2%)	NO
NEP L10 FOH CIRCULATION (COOLING) 71	NO (-84.2%)	NO
NEP L10 GATE 02	NO (-7.1%)	NO
NEP L10 GATE 03	NO (-7.1%)	NO
NEP L10 GATE 04	NO (-5.4%)	NO
NEP L10 GATE 05	NO (-5.4%)	NO
NEP L10 GATE 06	NO (-5.4%)	NO
NEP L10 GATE 07	NO (-5.4%)	NO
NEP L10 GATE 08	NO (-5.4%)	NO
NEP L10 GATE 09	NO (-5.4%)	NO
NEP L10 GATE 10	NO (-7.5%)	NO
NEP L10 GATE 11	NO (-84.7%)	NO
NEP L20 COMM ROOM 12	NO (-100%)	NO
NEP L20 COMM ROOM 13	N/A	N/A
NEP L20 COMM ROOM 14	N/A	N/A
NEP L20 COMM ROOM 15	N/A	N/A
NEP L20 COMM ROOM 19	N/A	N/A
NEP L20 COMM ROOM 20	N/A	N/A
NEP L20 COMM ROOM 21	N/A	N/A
NEP L20 COMM ROOM 22	N/A	N/A
NEP L20 COMM ROOM 23	N/A	N/A
NEP L20 COMM ROOM 24	N/A	N/A
NEP L20 COMM ROOM 25	N/A	N/A
NEP L20 COMM ROOM 26	N/A	N/A
NEP L20 COMM ROOM 27	N/A	N/A
NEP L20 COMM ROOM 28	N/A	N/A
NEP L20 FOH CIRCULATION 05	NO (-74.4%)	NO
NEP L20 FOH CIRCULATION 22	N/A	N/A
NEP L20 FOH CIRCULATION 38	N/A	N/A
NEP L20 FOH CIRCULATION 39	N/A	N/A
NEP L20 FOH CIRCULATION 40	N/A	N/A
NEP L20 FOH CIRCULATION 41	N/A	N/A
NEP L20 FOH CIRCULATION 42	N/A	N/A
NEP L20 FOH CIRCULATION 43	N/A	N/A
NEP L20 FOH CIRCULATION 44	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
NEP L20 FOH CIRCULATION 51	N/A	N/A
NEP L20 FOH CIRCULATION 52	N/A	N/A
NEP L20 FOH CIRCULATION 53	NO (-98.9%)	NO
NEP L20 FOH CIRCULATION 55	NO (-99.6%)	NO
NEP L20 FOH CIRCULATION 57	NO (-80.1%)	NO
NEP L20 FOH CIRCULATION 58	NO (-96%)	NO
NEP L20 FOH CIRCULATION 59	NO (-94.3%)	NO
NEP L20 FOH CIRCULATION 59	NO (-41.4%)	NO
NEP L20 FOH CIRCULATION 59	NO (-49.2%)	NO
NEP L20 FOH CIRCULATION (COOL)N01(-68.9%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N02(-69.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N04(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N05(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N06(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N07(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N08(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N09(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N10(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N11(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N12(-68.2%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N17(-68.2%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N18(-68.2%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N19(-68.2%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N21(-68.8%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N25(-68.2%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N27(-66.8%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N28(-68.2%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N29(-68.7%)	NO	NO
NEP L20 FOH CIRCULATION (COOL)N33(-69.7%)	NO	NO
NEP L20 OFFICE 20	N/A	N/A
WTE L00 BAGGAGE	N/A	N/A
WTE L00 CIRCULATION (FCU)	NO (-91.3%)	NO
WTE L00 COMM ROOM 01	N/A	N/A
WTE L00 COMM ROOM 02	N/A	N/A
WTE L00 COMM ROOM 16	N/A	N/A
WTE L00 COMM ROOM 17	N/A	N/A
WTE L00 FOH CIRCULATION 01	N/A	N/A
WTE L00 FOH CIRCULATION 24	N/A	N/A
WTE L00 FOH CIRCULATION 25	N/A	N/A
WTE L00 IMMIGRATION	N/A	N/A
WTE L00 OFFICE 01	N/A	N/A
WTE L00 OFFICE 02	NO (-90.8%)	NO
WTE L10 BOH CIRCULATION 47	NO (-43%)	NO
WTE L10 COMM ROOM 06	N/A	N/A
WTE L10 F&b 02	N/A	N/A
WTE L10 OFFICE 07	N/A	N/A
WTE L10 RETAIL 03	N/A	N/A
WTE L10 SECURITY HALL	NO (-96.7%)	NO
WTE L10 SECURITY PREP AREA	NO (-98.6%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
WTE L10 SECURITY QUEUE AREA	NO (-93%)	NO
WTE L20 CHILLED STORE	N/A	N/A
WTE L20 COMM ROOM 18	N/A	N/A
WTE L20 OFFICE 10	NO (-86.9%)	NO
WTE L20 OFFICE 11	NO (-54%)	NO
WTE L20 OFFICE 12	N/A	N/A
WTE L20 OFFICE 13	N/A	N/A
WTE L20 OFFICE 21	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

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

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters			Building Use	
	Actual	Notional	% Area	Building Type
Area [m²]	34380.4	34380.4		A1/A2 Retail/Financial and Professional services
External area [m²]	51360.7	51360.7		A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
Weather	LON	LON		B1 Offices and Workshop businesses
Infiltration [m³/hm²@ 50Pa]	5	5		B2 to B7 General Industrial and Special Industrial Groups
Average conductance [W/K]	15801.3	19176.6		B8 Storage or Distribution
Average U-value [W/m²K]	0.31	0.37		C1 Hotels
Alpha value* [%]	9.91	10		C2 Residential Inst.: Hospitals and Care Homes
				C2 Residential Inst.: Residential schools
				C2 Residential Inst.: Universities and colleges
				C2A Secure Residential Inst.
				Residential spaces
				D1 Non-residential Inst.: Community/Day Centre
				D1 Non-residential Inst.: Libraries, Museums, and Galleries
				D1 Non-residential Inst.: Education
				D1 Non-residential Inst.: Primary Health Care Building
				D1 Non-residential Inst.: Crown and County Courts
				D2 General Assembly and Leisure, Night Clubs and Theatres
			100	Others: Passenger terminals
				Others: Emergency services
				Others: Miscellaneous 24hr activities
				Others: Car Parks 24 hrs
				Others - Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	13.08	15.28
Cooling	6.7	7.7
Auxiliary	41.14	36.51
Lighting	13.92	24.55
Hot water	45.86	27.49
Equipment*	78.05	78.05
TOTAL**	103.43	111.64

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

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

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	4.1	0
Wind turbines	0	0
CHP generators	17.28	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Indicative Target
Heating + cooling demand [MJ/m²]	101.81	151.45
Primary energy* [kWh/m²]	193.96	244.68
Total emissions [kg/m²]	32.1	43.4

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

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	31.1	161.6	2.2	13.5	31	0.85	3.34	0.92	4.19
Notional	55.8	152.4	18.6	11.2	38.9	0.83	3.79	---	---
[ST] Single-duct VAV, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	26.9	70.6	2	6.4	66.2	0.81	3.06	0.92	4.19
Notional	46.6	132.1	15.5	9.7	52.7	0.83	3.79	---	---
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	12.8	1.2	0.8	0.1	0	4.45	4.9	4.54	6.56
Notional	15.4	1.4	1.7	0.1	0	2.56	3.79	---	---
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	91.3	0	7	0	48.3	0.86	0	0.92	0
Notional	108.9	0	36.3	0	43.2	0.83	0	---	---
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	36.4	0	3.1	0	2.5	0.86	0	0.92	0
Notional	145.2	0	48.4	0	2.5	0.83	0	---	---
[ST] No Heating or Cooling									
Actual	0	0	0	0	0	0	0	0	0
Notional	0	0	0	0	0	0	0	---	---

Key to terms

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

Key Features

The BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	U _{typ}	U _{min}	Surface where the minimum value occurs*
Wall	0.23	0.2	RM000055:Surf[1]
Floor	0.2	0.18	RM000040:Surf[0]
Roof	0.15	0.15	TL000006:Surf[1]
Windows, roof windows, and rooflights	1.5	0.97	RM000004:Surf[0]
Personnel doors	1.5	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{typ} = Typical individual element U-values [W/(m ² K)] U _{min} = Minimum individual element U-values [W/(m ² K)] * There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
mW(hm ²) at 50 Pa	5	5

A.5. Emissions from the car hire and taxi feeder building

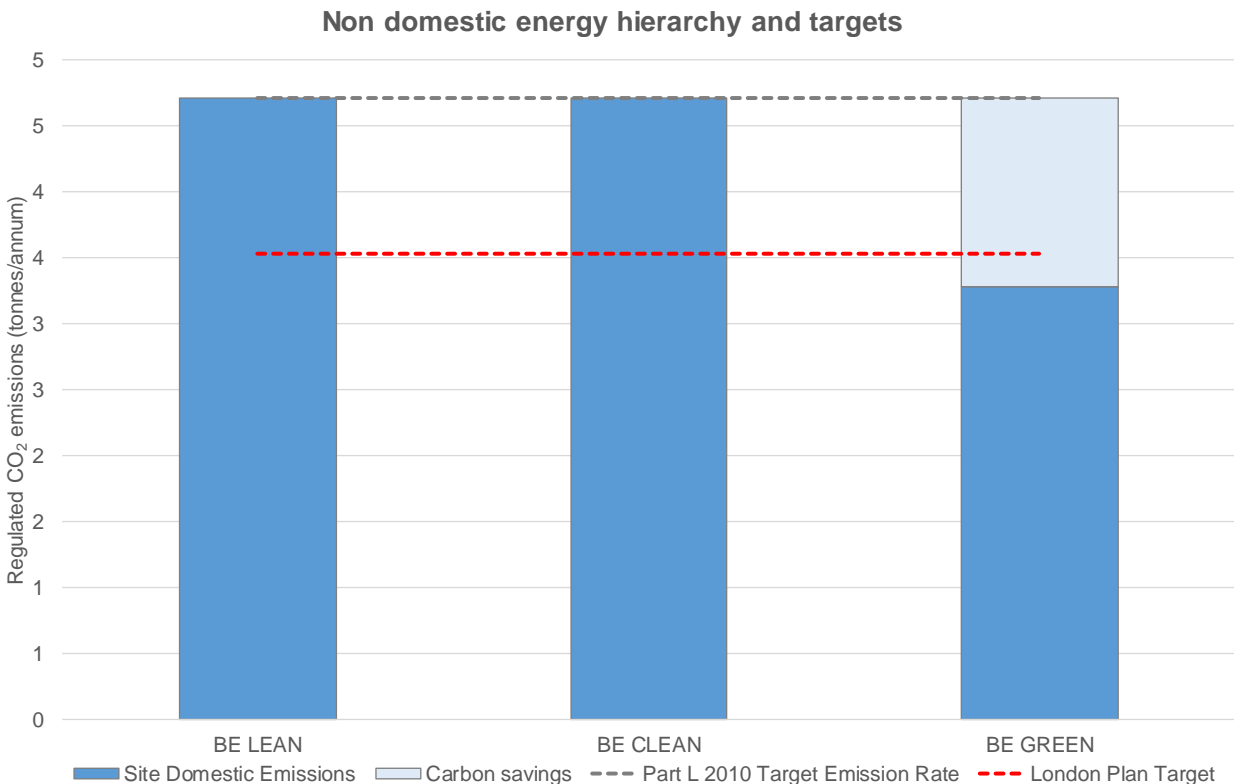
Carbon dioxide emissions for the car hire and taxi feeder building

	Carbon dioxide emissions for non-domestic buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2010 of the Building Regulations Compliant Development	5	4
After energy demand reduction	5	4
After heat network/ CCHP / CHP	5	4
After renewable energy	3	4

Carbon dioxide emissions savings for the car hire and taxi feeder building

	Regulated non-domestic carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Savings from energy demand reduction	0	0.0
Savings from heat network/ CCHP / CHP	0	0.0
Savings from renewable energy	1	30
Total Cumulative Savings	1	30

Energy hierarchy and GLA targets for the car hire and taxi feeder building



A.6. BRUKL extract “Be Lean” – Car hire and taxi feeder

BRUKL Output Document



HM Government

Compliance with England and Wales Building Regulations Part L 2010

Project name

LCY Taxi Hire Building

As designed

Date: Wed Jan 24 17:33:33 2018

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 6.4.0.15

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 6.4.0.15

BRUKL compliance check version: v4.1.g.0

Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Criterion 1: The calculated CO₂ emission rate for the building should not exceed the target

1.1	CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	23.1
1.2	Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	23.1
1.3	Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	23.1
1.4	Are emissions from the building less than or equal to the target?	BER ≤ TER
1.5	Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services should achieve reasonable overall standards of energy efficiency

2.a Building fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	Surface where the maximum value occurs*
Wall**	0.35	0.15	0.15	RS000000:Surf[5]
Floor	0.25	0.18	0.18	RS000000:Surf[0]
Roof	0.25	0.19	0.19	RS000000:Surf[2]
Windows***, roof windows, and rooflights	2.2	1.66	1.71	RS000000:Surf[3]
Personnel doors	2.2	0.68	2.2	RS000000:Surf[8]
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	No High usage entrance doors in building
U _{a-Limit} = Limiting area-weighted average U-values [W/(m ² K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m ² K)] U _{i-Calc} = Calculated maximum individual element U-values [W/(m ² K)] * There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	3

2.b Building services

The building services parameters listed below are expected to be checked by the BCO against guidance. No automatic checking is performed by the tool.

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

1- VRF system

Heating seasonal efficiency	Cooling nominal efficiency	SFP [W/(l/s)]	HR seasonal efficiency
0.91	2.5	0	0.73
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			NO

1- Instantaneous DHW

Heating seasonal efficiency	Hot water storage loss factor [kWh/litre per day]
0.91	-

Local mechanical ventilation and exhaust

Zone	Supply/extract SFP [W/(l/s)]	HR seasonal efficiency	Exhaust SFP [W/(l/s)]
Rest area	1.4	-	-
Toilet	1.4	-	-
Office	1.4	-	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
Rest area	610	-
Toilet	310	-
Office	610	-

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Rest area	NO (-53.7%)	NO
Toilet	NO (-87.2%)	NO
Office	NO (-34.4%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

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

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters			Building Use	
	Actual	Notional	% Area	Building Type
Area [m²]	204.1	204.1	100	A1/A2 Retail/Financial and Professional services
External area [m²]	671.5	671.5		A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
Weather	LON	LON		B1 Offices and Workshop businesses
Infiltration [m³/hm²@ 50Pa]	3	5		B2 to B7 General Industrial and Special Industrial Groups
Average conductance [W/K]	260.55	312.48		B8 Storage or Distribution
Average U-value [W/m²K]	0.39	0.47		C1 Hotels
Alpha value* [%]	10	10		C2 Residential Inst.: Hospitals and Care Homes
* Percentage of the building's average heat transfer coefficient which is due to thermal bridging				C2 Residential Inst.: Residential schools
				C2 Residential Inst.: Universities and colleges
				C2A Secure Residential Inst.
				Residential spaces
				D1 Non-residential Inst.: Community/Day Centre
				D1 Non-residential Inst.: Libraries, Museums, and Galleries
				D1 Non-residential Inst.: Education
				D1 Non-residential Inst.: Primary Health Care Building
				D1 Non-residential Inst.: Crown and County Courts
				D2 General Assembly and Leisure, Night Clubs and Theatres
				Others: Passenger terminals
				Others: Emergency services
				Others: Miscellaneous 24hr activities
				Others: Car Parks 24 hrs
				Others - Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	41.92	63.48
Cooling	2.81	1.82
Auxiliary	5.9	3.6
Lighting	18.99	14.7
Hot water	2.35	2.19
Equipment*	33.27	33.27
TOTAL**	71.87	86.78

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

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

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Indicative Target
Heating + cooling demand [MJ/m²]	177.25	215.34
Primary energy* [kWh/m²]	126.03	125.75
Total emissions [kg/m²]	23.1	23.1

* Primary energy is net of any electrical energy displaced by CHP generation, if applicable.

HVAC Systems Performance									
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	130.5	46.7	41.9	2.8	5.9	0.87	4.62	0.91	6.5
Notional	190.5	24.8	63.5	1.8	3.6	0.83	3.79	—	—
[ST] No Heating or Cooling									
Actual	0	0	0	0	0	0	0	0	0
Notional	0	0	0	0	0	0	0	—	—

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

Key Features

The BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	U _{typ}	U _{min}	Surface where the minimum value occurs*
Wall	0.23	0.15	R8000000:Surf[5]
Floor	0.2	0.18	R8000000:Surf[0]
Roof	0.15	0.19	R8000000:Surf[2]
Windows, roof windows, and rooflights	1.5	1.21	R8000000:Surf[1]
Personnel doors	1.5	0.35	R8000000:Surf[4]
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{typ} = Typical individual element U-values [W/m ² K]		U _{min} = Minimum individual element U-values [W/m ² K]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m ³ /(h.m ²) at 50 Pa	5	3

A.7. BRUKL extract “Be Green” – Car hire and taxi feeder

BRUKL Output Document



Compliance with England and Wales Building Regulations Part L 2010

Project name

LCY Taxi Hire Building

As designed

Date: Wed Jan 24 17:45:33 2018

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 6.4.0.15

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 6.4.0.15

BRUKL compliance check version: v4.1.g.0

Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Criterion 1: The calculated CO₂ emission rate for the building should not exceed the target

1.1	CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	21.2
1.2	Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	21.2
1.3	Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	16.1
1.4	Are emissions from the building less than or equal to the target?	BER ≤ TER
1.5	Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services should achieve reasonable overall standards of energy efficiency

2.a Building fabric

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	Surface where the maximum value occurs*
Wall**	0.35	0.15	0.15	RS000000:Surf[5]
Floor	0.25	0.18	0.18	RS000000:Surf[0]
Roof	0.25	0.19	0.19	RS000000:Surf[2]
Windows***, roof windows, and rooflights	2.2	1.66	1.71	RS000000:Surf[3]
Personnel doors	2.2	0.68	2.2	RS000000:Surf[8]
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	No High usage entrance doors in building
U _{a-Limit} = Limiting area-weighted average U-values [W/(m ² K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m ² K)] U _{i-Calc} = Calculated maximum individual element U-values [W/(m ² K)] * There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	3

2.b Building services

The building services parameters listed below are expected to be checked by the BCO against guidance. No automatic checking is performed by the tool.

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

1- VRF system

Heating seasonal efficiency	Cooling nominal efficiency	SFP [W/(l/s)]	HR seasonal efficiency
3.9	2.5	0	0.73
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			NO

1- Instantaneous DHW

Heating seasonal efficiency	Hot water storage loss factor [kWh/litre per day]
1	-

Local mechanical ventilation and exhaust

Zone	Supply/extract SFP [W/(l/s)]	HR seasonal efficiency	Exhaust SFP [W/(l/s)]
Rest area	1.4	-	-
Toilet	1.4	-	-
Office	1.4	-	-

General lighting and display lighting

Zone	General lighting [W]	Display lamps efficacy [lm/W]
Rest area	610	-
Toilet	310	-
Office	610	-

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Rest area	NO (-53.7%)	NO
Toilet	NO (-87.2%)	NO
Office	NO (-34.4%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

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

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters			Building Use	
	Actual	Notional	% Area	Building Type
Area [m²]	204.1	204.1	100	A1/A2 Retail/Financial and Professional services
External area [m²]	671.5	671.5		A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
Weather	LON	LON		B1 Offices and Workshop businesses
Infiltration [m³/hm²@ 50Pa]	3	5		B2 to B7 General Industrial and Special Industrial Groups
Average conductance [W/K]	260.55	312.48		B8 Storage or Distribution
Average U-value [W/m²K]	0.39	0.47		C1 Hotels
Alpha value* [%]	10	10		C2 Residential Inst.: Hospitals and Care Homes
				C2 Residential Inst.: Residential schools
				C2 Residential Inst.: Universities and colleges
				C2A Secure Residential Inst.
				Residential spaces
				D1 Non-residential Inst.: Community/Day Centre
				D1 Non-residential Inst.: Libraries, Museums, and Galleries
				D1 Non-residential Inst.: Education
				D1 Non-residential Inst.: Primary Health Care Building
				D1 Non-residential Inst.: Crown and County Courts
				D2 General Assembly and Leisure, Night Clubs and Theatres
				Others: Passenger terminals
				Others: Emergency services
				Others: Miscellaneous 24-hr activities
				Others: Car Parks 24 hrs
				Others - Stand alone utility block

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	9.77	20.69
Cooling	2.81	1.82
Auxiliary	5.9	3.6
Lighting	18.99	14.7
Hot water	2.14	2.19
Equipment*	33.27	33.27
TOTAL**	38.81	43

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

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

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	8.24	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Indicative Target
Heating + cooling demand [MJ/m²]	177.25	215.34
Primary energy* [kWh/m²]	115.65	121.51
Total emissions [kg/m²]	16.1	21.2

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

HVAC Systems Performance

System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	130.5	46.7	9.8	2.8	5.9	3.71	4.62	3.9	6.5
	Notional	190.5	24.8	20.7	1.8	3.6	2.58	3.79	---	---
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	0	---	---

Key to terms

Heat dem [MJ/m ²]	▪ Heating energy demand
Cool dem [MJ/m ²]	▪ Cooling energy demand
Heat con [kWh/m ²]	▪ Heating energy consumption
Cool con [kWh/m ²]	▪ Cooling energy consumption
Aux con [kWh/m ²]	▪ Auxiliary energy consumption
Heat SSEF	▪ Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	▪ Cooling system seasonal energy efficiency ratio
Heat gen SEFF	▪ Heating generator seasonal efficiency
Cool gen SSEER	▪ Cooling generator seasonal energy efficiency ratio
ST	▪ System type
HS	▪ Heat source
HFT	▪ Heating fuel type
CFT	▪ Cooling fuel type

Key Features

The BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	U _{typ}	U _{min}	Surface where the minimum value occurs*
Wall	0.23	0.19	RS000000:Surf[5]
Floor	0.2	0.19	RS000000:Surf[0]
Roof	0.15	0.19	RS000000:Surf[2]
Windows, roof windows, and rooflights	1.5	1.21	RS000000:Surf[1]
Personnel doors	1.5	0.35	RS000000:Surf[4]
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{typ} = Typical individual element U-values [W/m ² K] U _{min} = Minimum individual element U-values [W/m ² K] * There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
mW(hum) at 50 Pa	5	3

Appendix B. Heat Networks

B.1. Evidence of investigation in heating infrastructure



ENGIE
Kings Yard,
1, Waterden Road,
Queen Elizabeth Park,
London
E15 2GP

Mr H. Patel
London City Airport

October 14th 2016

Dear Harsh,

District Heating to supply City Airport Expansion

Thank you for contacting us about a supply of district heating to the City Airport development.

As you know we have an Energy Centre at the ExCel Exhibition Centre which we are using as a heat source to supply the local area.

We have reviewed the location of the City Airport in relation to our current plans for extending our heat network from the ExCel Energy Centre and concluded that the distances would not justify this investment as the heat price would be too high. We are currently in negotiation with a number of customers that are much closer to the Energy Centre.

If you would like to take discussions further then please contact Richard Long our Head of Business Development who is copied in.

Yours sincerely,

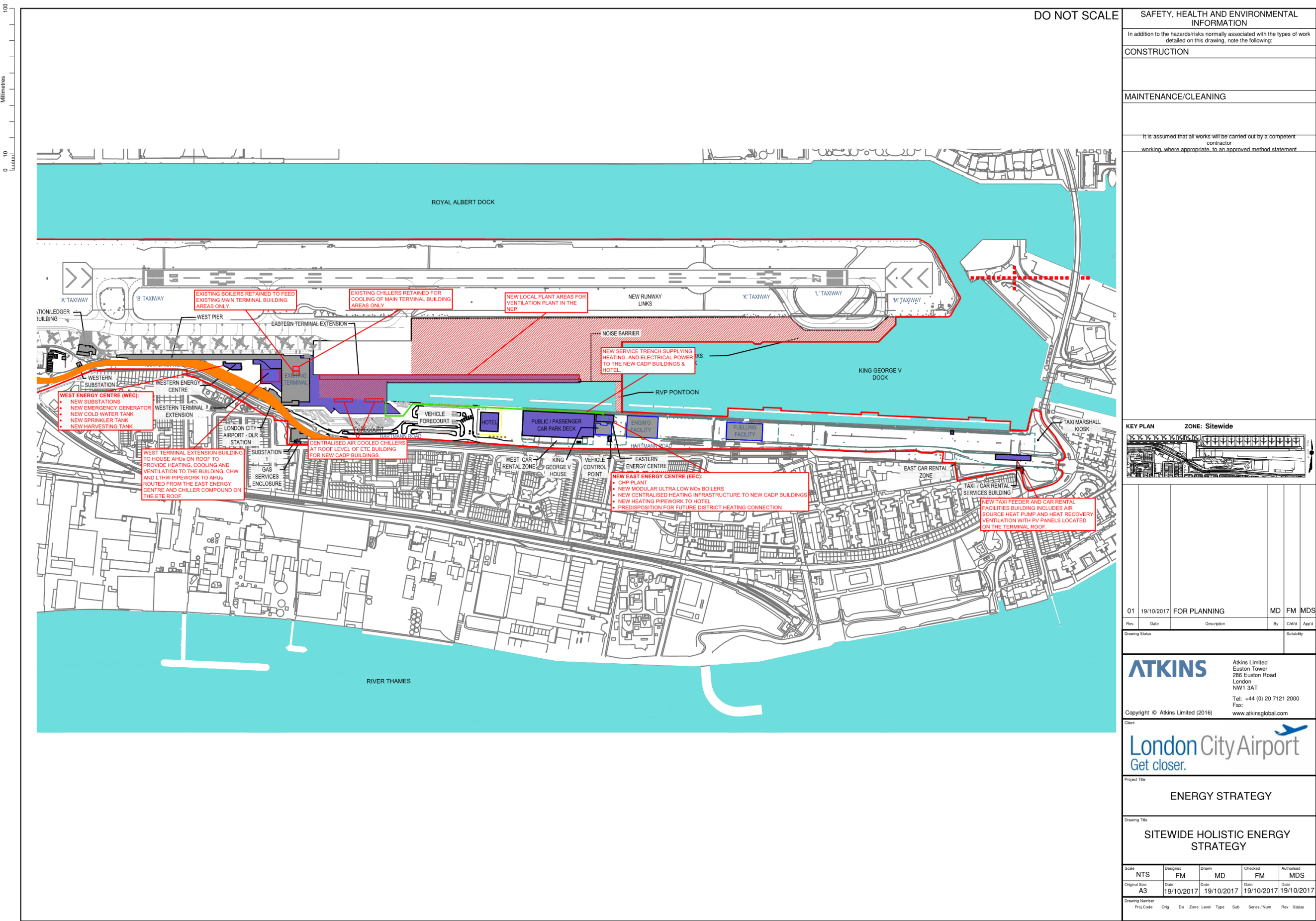
A handwritten signature in black ink that reads "Paul S. Woods".

Paul Woods
Head of Energy Partnerships (East London)
Urban Energy
Energy Solutions
UK & Ireland
paul.woods@engie.com
Tel. +44 (0) 20 8221 6530
Mob. +44 (0) 7580 704 455

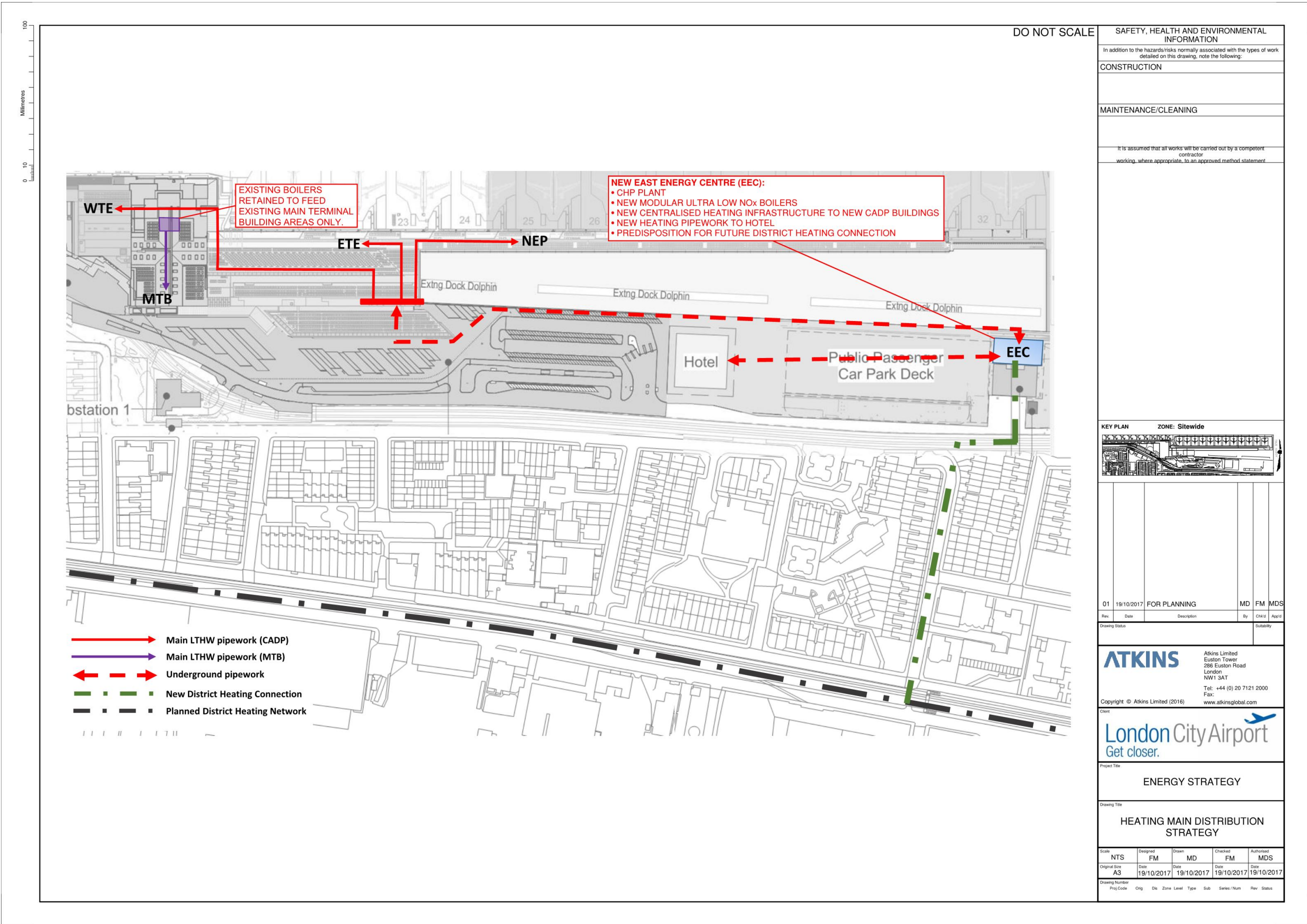
Appendix C. Supporting drawings

Originator	Drawing title	Drawing Number	Status
Atkins	Proposed site wide holistic energy strategy	-	For Information
Atkins	Schematics of the heat network - heating	-	For Information
Atkins	Schematics of the heat network - cooling	-	For Information
Atkins	East Energy Centre layout	-	For Information
Atkins	West Energy Centre layout	-	For Information

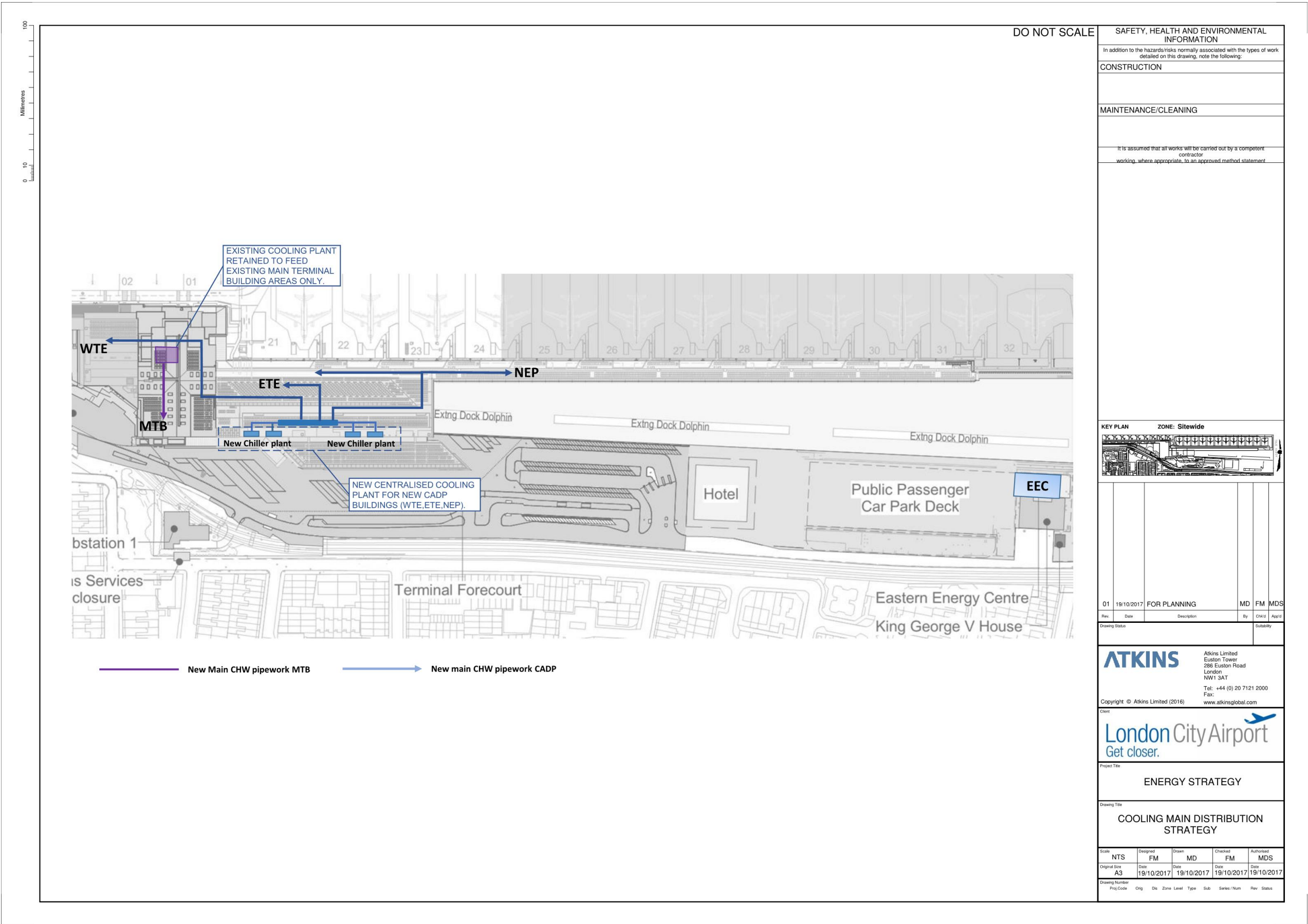
C.1. Site Wide Holistic Energy Strategy



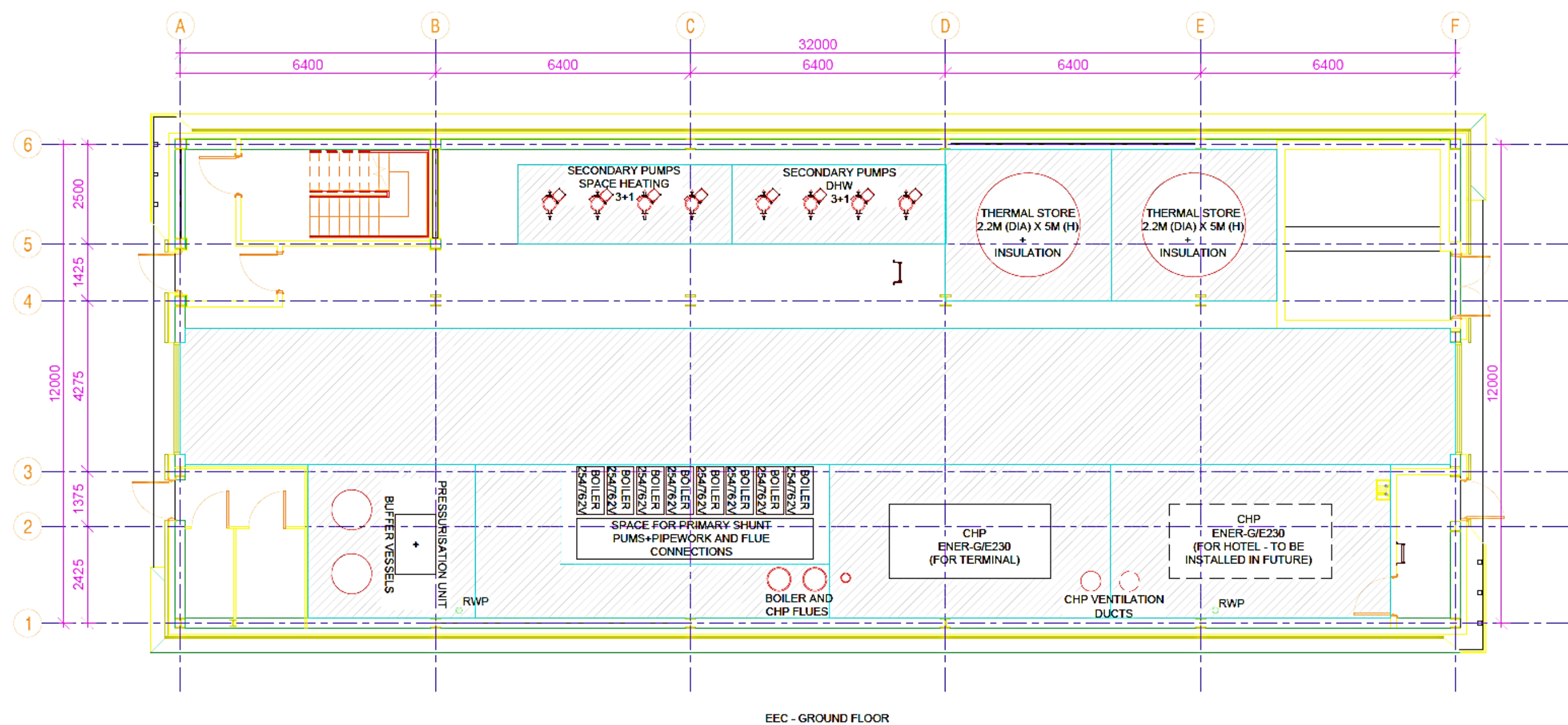
C.2. Schematics of the heat network - Heating

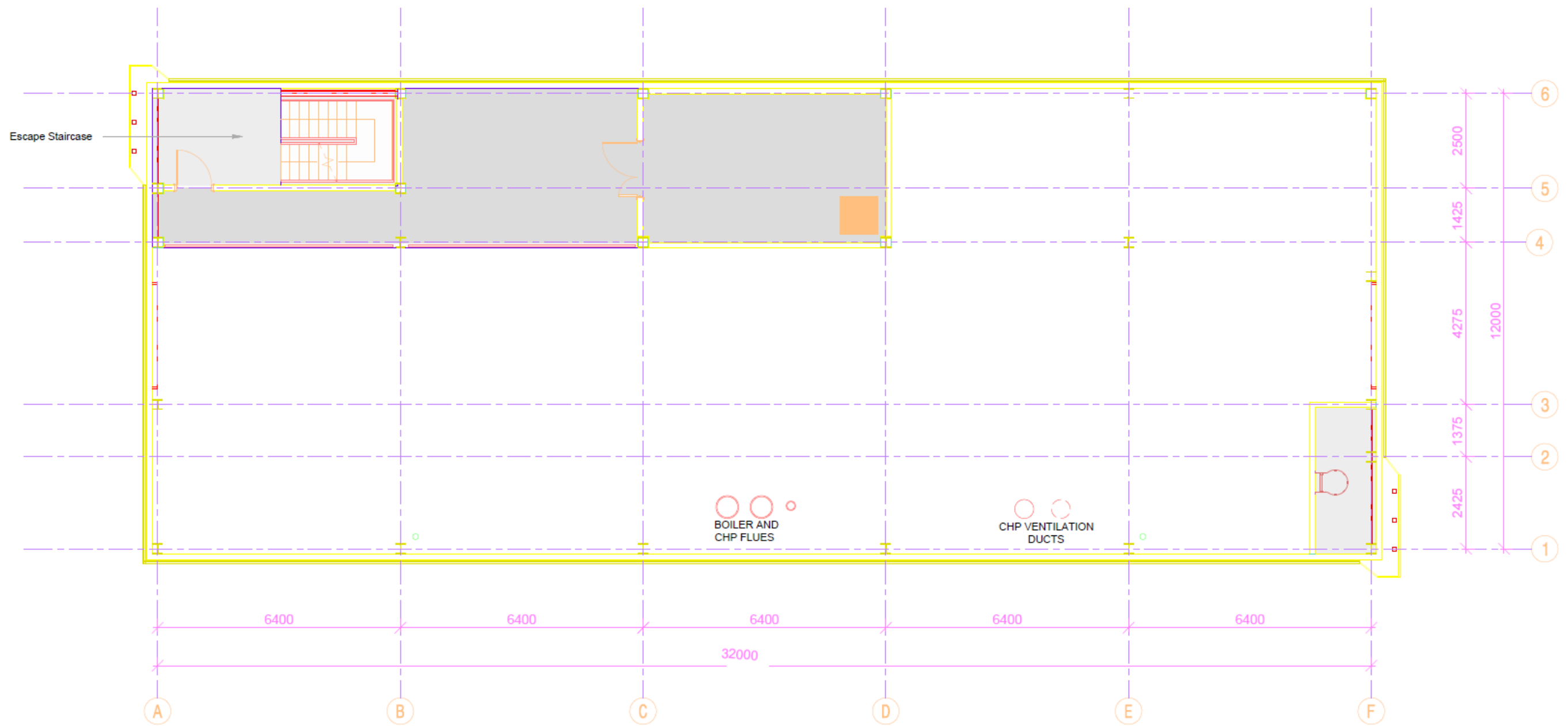


C.3. Schematics of the heat network - Cooling

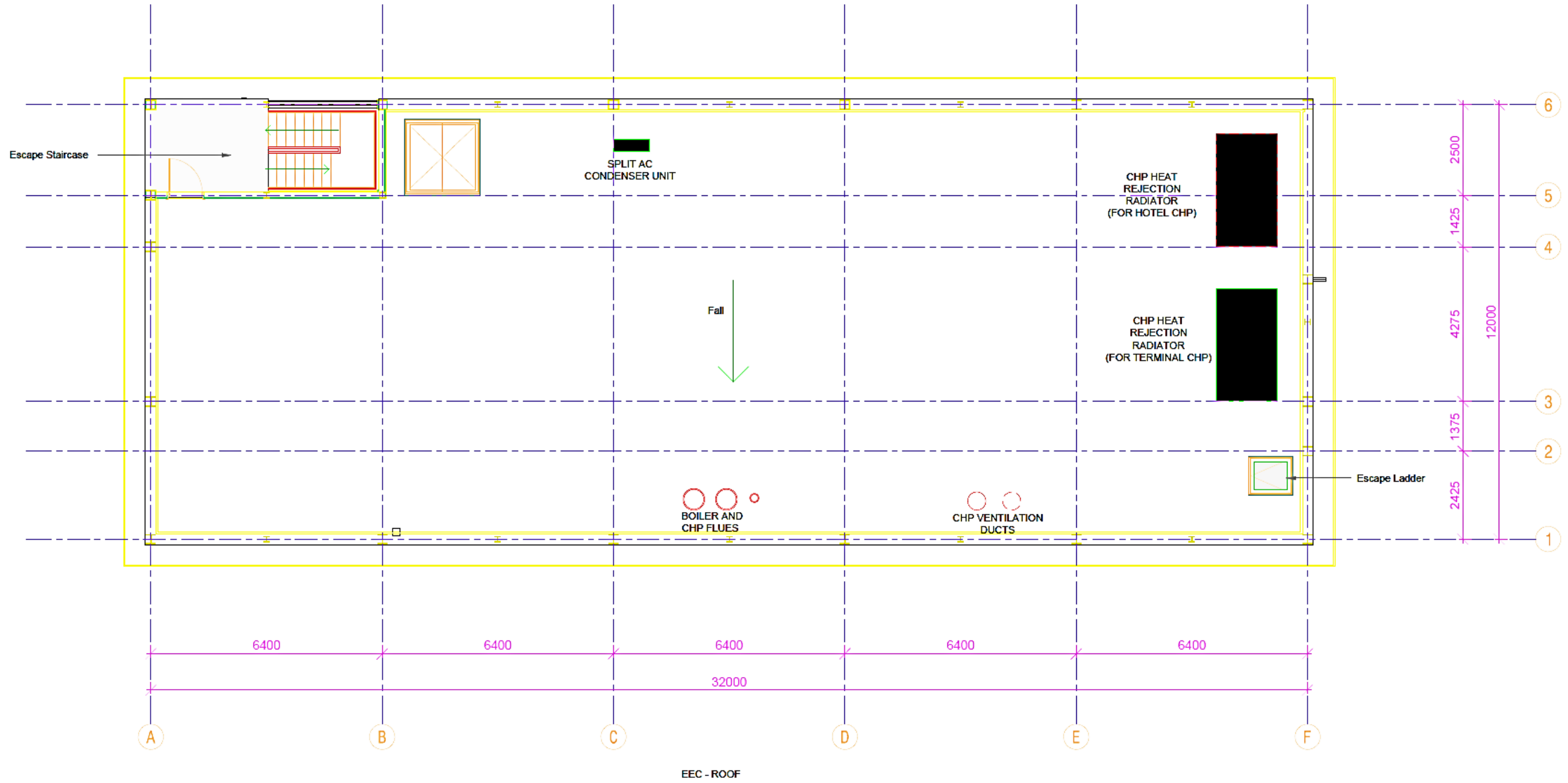


C.4. East Energy Centre layout (For Information Only)

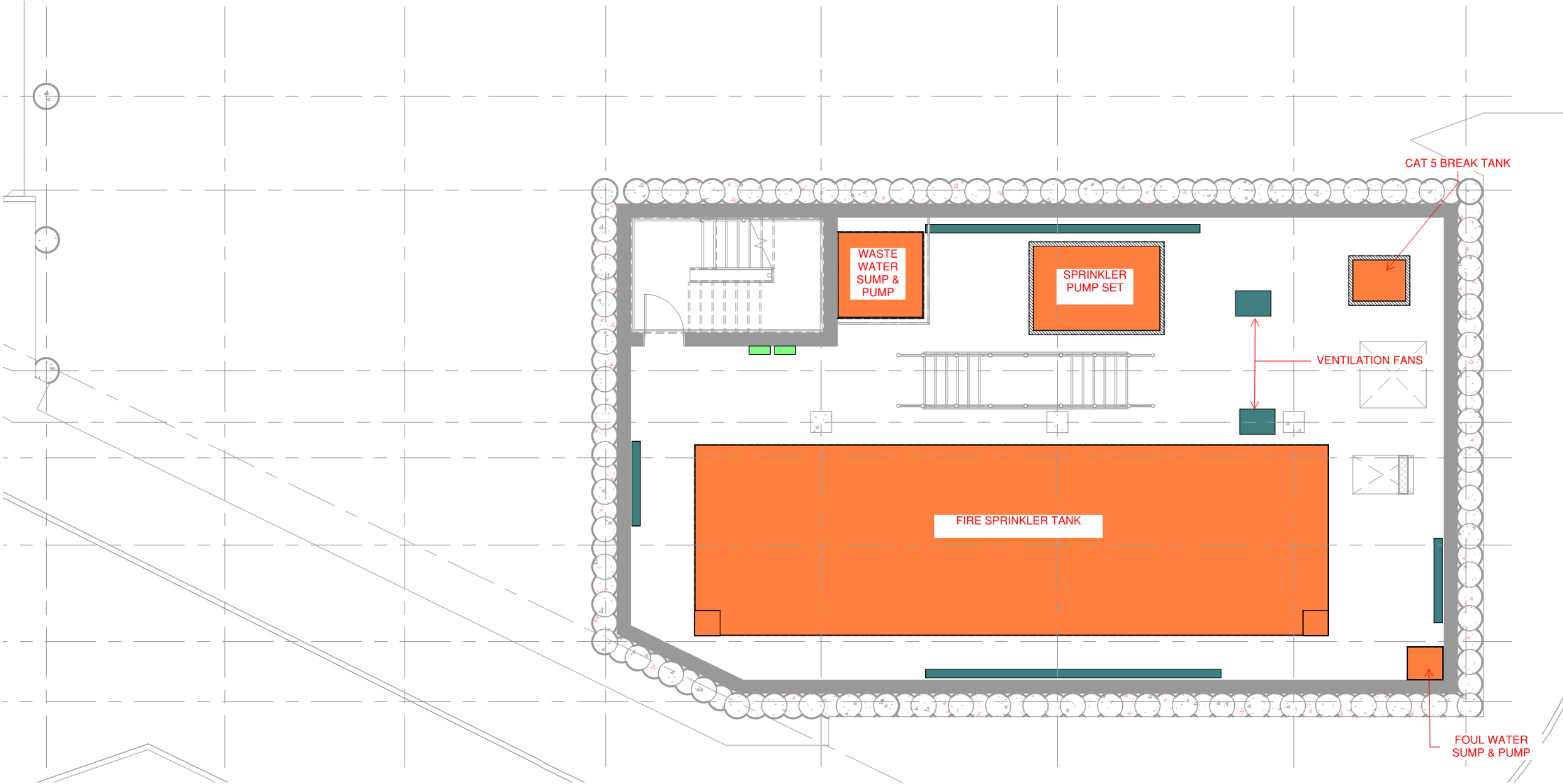


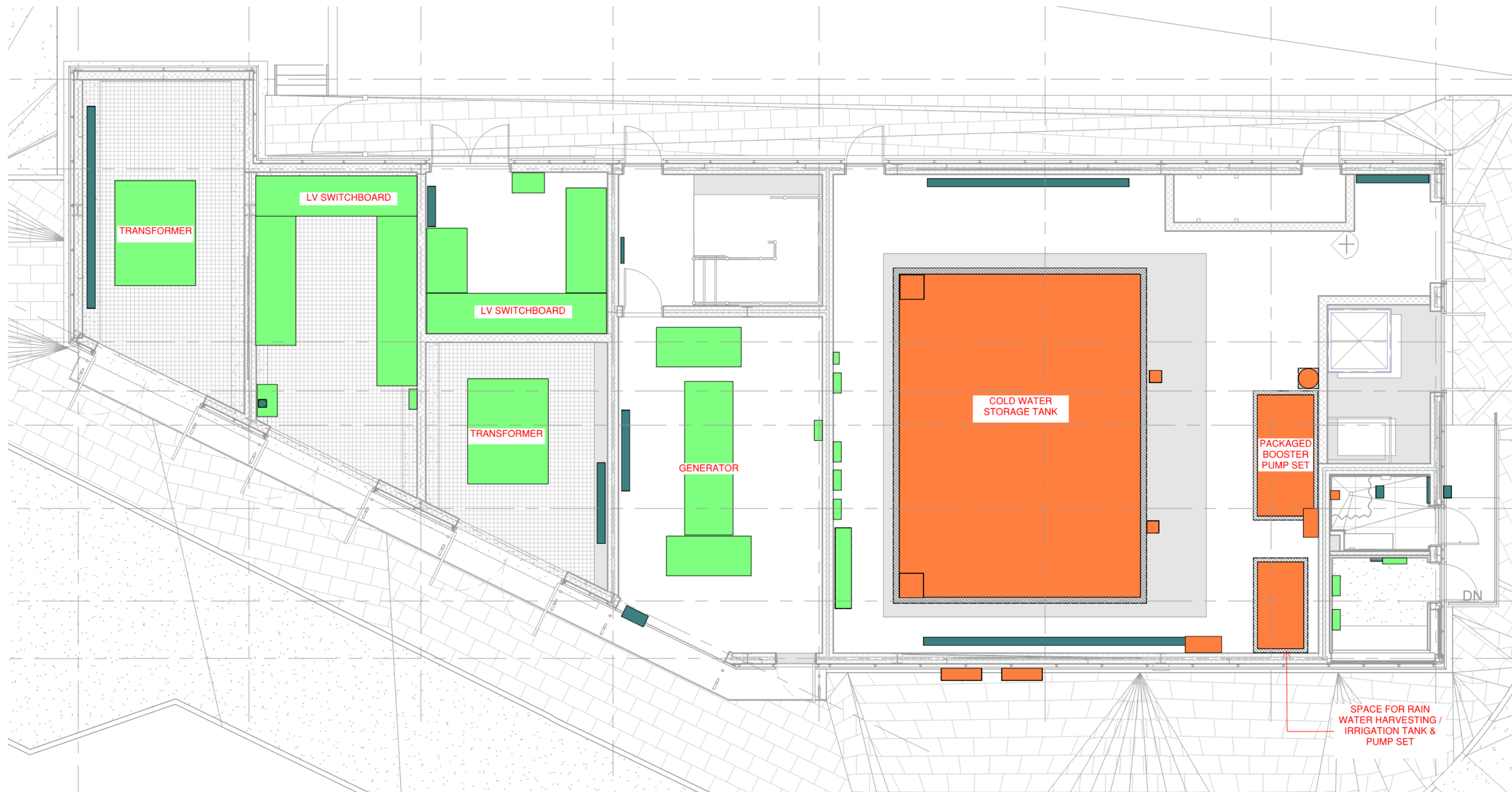


EEC - MEZZANINE FLOOR



C.5. West Energy Centre layout (For Information Only)







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