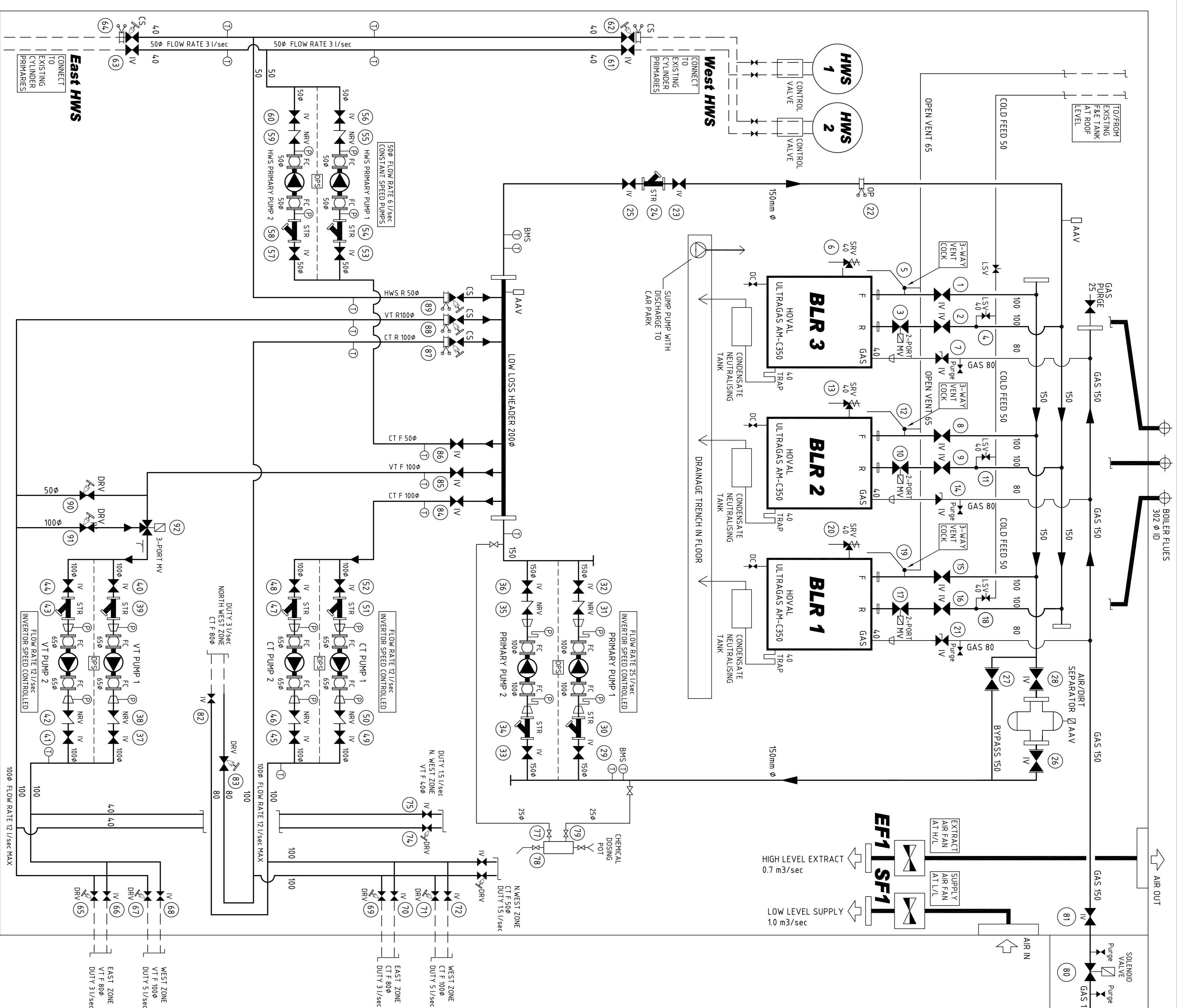


# FORMER OIL TANK ROOM with VENTILATION TO CAR PARK

## BASEMENT CAR PARK



### DESIGN INFORMATION

DESIGN ASSUMPTIONS FROM CLIENT CONSULTANT ADVICE  
FLOORS 1, TO 6  
HEATING AND COOLING PROVIDED BY DX HEAT PUMP SYSTEMS  
NO BOILER PLANT LOAD FOR THESE FLOORS

FLOORS: FIRST TO 3  
FAN COIL LOAD  
AHU OUTSIDE AIR LOAD  
134 people/floor x 12 l/sec/person = 17 m3/floor  
7 floors x 17 m3/floor = 119 m3/sec  
119 m3/s x 121 x 20 del/ha = 287 kW

HWS LOAD  
PRIMARY HWS LOAD  
3400 litres x (65-10) / 60 min x 14.3 = 218 kW  
TOTAL BOILER LOAD  
1 + 2 + 3  
322 + 287 + 218 = **827 kW**

CLIENT SPECIFIED BOILER CAPACITY  
ACTUAL BOILER CAPACITY  
3 x HOVAL ULTRAGAS AM-350 (3 x 318) = **954 kW**  
BOILER OUTPUT WITH 2 BOILERS (2 x 318) = 636 kW - 75% OF TOTAL CAPACITY

### PUMP DETAILS (AS CONSULTANT SPEC)

NO.	DESCRIPTION	UNIT	FLOW RATE	HEAD	POWER
1	CT PUMPS	2 No.	12 l/sec @ 160 mPa	11.9 m	1.1 kW
2	VT PUMPS	2 No.	12 l/sec @ 160 mPa	11.9 m	1.1 kW
3	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
4	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
5	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
6	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
7	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
8	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
9	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
10	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
11	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
12	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
13	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
14	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
15	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
16	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
17	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
18	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
19	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
20	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
21	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
22	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
23	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
24	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
25	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
26	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
27	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
28	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
29	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
30	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
31	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
32	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
33	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
34	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
35	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
36	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
37	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
38	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
39	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
40	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
41	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
42	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
43	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW
44	HWS PRIMARY PUMPS	2 No.	6.1 l/sec @ 50 kPa	5.0 m	0.22 kW

### VALVE CHART

REF	TYPE	CIRCUIT / SIZE	REF	TYPE	CIRCUIT / SIZE
1	IV	Boiler No. 3 FLOW	45	IV	CT PUMPS
2	IV	Boiler No. 3 RETURN	46	STR	CT PUMPS
3	IV	Boiler No. 3 COLD FEED	47	NRV	CT PUMPS
4	IV	Boiler No. 3 VENT	48	IV	CT PUMPS
5	IV	Boiler No. 3 BOILER SRV	49	STR	CT PUMPS
6	IV	Boiler No. 3 FLOW	50	IV	CT PUMPS
7	IV	Boiler No. 2 RETURN	51	NRV	CT PUMPS
8	IV	Boiler No. 2 RETURN	52	IV	CT PUMPS
9	IV	Boiler No. 2 COLD FEED	53	STR	HWS PRIMARY PUMPS
10	IV	Boiler No. 2 VENT	54	NRV	HWS PRIMARY PUMPS
11	IV	Boiler No. 2 BOILER SRV	55	IV	HWS PRIMARY PUMPS
12	IV	Boiler No. 2 FLOW	56	IV	HWS PRIMARY PUMPS
13	IV	Boiler No. 2 RETURN	57	IV	HWS PRIMARY PUMPS
14	IV	Boiler No. 2 COLD FEED	58	STR	HWS PRIMARY PUMPS
15	IV	Boiler No. 2 VENT	59	NRV	HWS PRIMARY PUMPS
16	IV	Boiler No. 2 BOILER SRV	60	IV	HWS PRIMARY PUMPS
17	IV	Boiler No. 1 FLOW	61	IV	HWS PRIMARY PUMPS
18	IV	Boiler No. 1 RETURN	62	CS	HWS PRIMARY PUMPS
19	IV	Boiler No. 1 COLD FEED	63	IV	HWS PRIMARY PUMPS
20	IV	Boiler No. 1 VENT	64	IV	HWS PRIMARY PUMPS
21	IV	Boiler No. 1 BOILER SRV	65	CS	HWS PRIMARY PUMPS
22	IV	Boiler No. 1 FLOW	66	IV	HWS PRIMARY PUMPS
23	IV	Boiler No. 1 RETURN	67	DRV	HWS PRIMARY PUMPS
24	IV	Boiler No. 1 COLD FEED	68	IV	HWS PRIMARY PUMPS
25	IV	Boiler No. 1 VENT	69	DRV	HWS PRIMARY PUMPS
26	IV	Boiler No. 1 BOILER SRV	70	IV	HWS PRIMARY PUMPS
27	IV	Boiler No. 1 FLOW	71	DRV	HWS PRIMARY PUMPS
28	IV	Boiler No. 1 RETURN	72	IV	HWS PRIMARY PUMPS
29	IV	Boiler No. 1 COLD FEED	73	IV	HWS PRIMARY PUMPS
30	IV	Boiler No. 1 VENT	74	DRV	HWS PRIMARY PUMPS
31	IV	Boiler No. 1 BOILER SRV	75	IV	HWS PRIMARY PUMPS
32	IV	Boiler No. 1 FLOW	76	DRV	HWS PRIMARY PUMPS
33	IV	Boiler No. 1 RETURN	77	IV	HWS PRIMARY PUMPS
34	IV	Boiler No. 1 COLD FEED	78	IV	HWS PRIMARY PUMPS
35	IV	Boiler No. 1 VENT	79	IV	HWS PRIMARY PUMPS
36	IV	Boiler No. 1 BOILER SRV	80	IV	HWS PRIMARY PUMPS
37	IV	Boiler No. 1 FLOW	81	IV	HWS PRIMARY PUMPS
38	IV	Boiler No. 1 RETURN	82	IV	HWS PRIMARY PUMPS
39	IV	Boiler No. 1 COLD FEED	83	CS	HWS PRIMARY PUMPS
40	IV	Boiler No. 1 VENT	84	IV	HWS PRIMARY PUMPS
41	IV	Boiler No. 1 BOILER SRV	85	IV	HWS PRIMARY PUMPS
42	IV	Boiler No. 1 FLOW	86	IV	HWS PRIMARY PUMPS
43	IV	Boiler No. 1 RETURN	87	CS	HWS PRIMARY PUMPS
44	IV	Boiler No. 1 COLD FEED	88	CS	HWS PRIMARY PUMPS
			89	CS	HWS PRIMARY PUMPS
			90	DRV	HWS PRIMARY PUMPS
			91	DRV	HWS PRIMARY PUMPS
			92	3-PORT	HWS PRIMARY PUMPS

### LEGEND

STANDARD LIST OF ABBREVIATIONS:

- F FLOW PIPE
- R RETURN PIPE
- IV ISOLATING VALVE
- LSV LOCKSHIELD VALVE
- SC STOP COCK
- GC GAS COCK
- DC DRAIN COCK
- AAV AIR VENT
- AAV AUTOMATIC AIR VENT
- CS COMMISSIONING STATION
- OP DOUBLE REG. VALVE
- OP ORifice PLATE
- MV MOTORISED CONTROL VALVE
- SOL IV SOLENOID VALVE
- DCV DOUBLE CHECK VALVE
- STR PIPELINE STRAINER
- MV MOTORIZED VALVE
- NRV NON RETURN VALVE
- PRV PRESSURE RED. VALVE
- TEMPERATURE GAUGE
- P PRESSURE GAUGE
- PIPELINE REDUCER

### NOTES

- 10 DRAIN COCKS AND AIR VENTS ON PUMPS

Rev	Description	Date
R	AS INSTALLED RECORD DRAWING	OCT 08

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**drawing title**  
ENGINEERING SERVICES  
BASEMENT BOILER PLANT ROOM  
SYSTEM SCHEMATIC

Scale	Drawn	RF/CHK
NTS @ A1		
Date	Checked	RF
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