

ANNEXURE BU

MCC Part List

MCC Parts list							
Description	Part Number	Manufacturer	QTY				
MAINS INCOMING				DEWATERING PUMPS			
Main Isolator	1SDA054601R1	ABB	1	Motor Protection Breaker	1SDA054351R1	ABB	2
Handle	1SDA054929R1	ABB	1	Handle	1SDA054929R1	ABB	1
Barriers	1SDA054970R1	ABB	1	Barriers	1SDA054970R1	ABB	1
Power Meter	2CSG274681R4051	ABB	1	Auxiliaries	1SDA054913R1	ABB	2
Current Transformers	IBR1/08	ELECTRO	3	Shunt Trip 220vac	1SDA054873R1	ABB	2
Fuse Base 4/P	485107	ELECTRO	1	Variable speed Drive	ATV680C25Q4X10-EP	SCHNEIDER	2
Fuses	440002	ELECTRO	3	Running Hour Meters	BEHCA7	ELECTRO	2
Neutral	431000	ELECTRO	1	DRAINAGE PUMPS			
Lightning arrestors	PSC4-25/400 TT	ABB	1	MPB	1SAM350000R1015	ABB	2
Fuse Base T/P	485305	ELECTRO	1	Auxiliary Contact	1SAM201902R1001	ABB	2
Fuses S/P	485301	ELECTRO	1	Trip Alarm	1SAM201903R1001	ABB	2
Fuses	442015	ELECTRO	3	MPB Handle	1SAM201920R1001	ABB	2
Neutral	433000	ELECTRO	1	Driver	1SAM101923R0002	ABB	2
	480005	ELECTRO	1	Shaft alignment ring	1SAM201920R1000	ABB	2
	485356	ELECTRO	1	Shaft support	1SAM201909R1021	ABB	2
Relay Base	ES154NCNER	ABB	1	Shaft 330mm	1SCA101661R1001	ABB	2
24VDC Relay	553290240040	ABB	1	Shunt Trip 220vac	1SAM201910R1003	ABB	2
Contactors	1SBL137001R1310	ABB	1	Contactors	1SBL347001R1300	ABB	2
Red Pilot Light	1SFA619403R5021	ABB	1	Auxiliary Contact	1SBN010140R1022	ABB	2
VALVES FEED				Ammeter	BEA05AT7/50	ELECTRO	2
Circuit breaker 32A T/P	1SDA067392R1	ABB	1	Current transformer	IMN1/05	ELECTRO	2
Circuit breaker	2CDS253001R0101	ABB	8	Running Hour Meters	BEHCA7	ELECTRO	2
Auxiliary Contact	2CDS200912R0001	ABB	8	SEEPAGE PUMP			
VENT FEED				MPB	1SAM350000R1009	ABB	1
Circuit breaker	1SDA067395R1	ABB	1	Auxiliary Contact	1SAM201902R1001	ABB	1
Circuit breaker	2CDS253001R0161	ABB	1	Trip Alarm	1SAM201903R1001	ABB	1
Auxiliary Contact	2CDS253001R0201	ABB	2	MPB Handle	1SAM201920R1001	ABB	1
Fuses S/P	485301	ELECTRO	1	Driver	1SAM101923R0002	ABB	1
Neutral link	433000	ELECTRO	1	Shaft alignment ring	1SAM201920R1000	ABB	1
TRF FEED				Shaft support	1SAM201909R1021	ABB	1
Circuit breaker	2CCS891001R0104	ABB	1	Shaft 330mm	1SCA101661R1001	ABB	1
Circuit breaker DP	2CDS252001R0104	ABB	1	Shunt Trip 220vac	1SAM201910R1003	ABB	1
CONTROLS				Contactors	1SBL137001R1310	ABB	1
Control Breaker 6A DP	2CDS252001R0061	ABB	7	Auxiliary Contact	1SBN010140R1022	ELECTRO	1
Control Breaker 6A SP	2CDS251001R0061	ABB	1	Ammeter	BEA10A7	ELECTRO	1
Control Breaker 16A SP	2CDS251001R0161	ABB	1	Running hour meter	BEHCA7	ELECTRO	1
Pushbutton Black	1SFA611100R1006	ABB	6	CONTROLS			
Pushbutton Green	1SFA611100R1002	ABB	3	220VAC Relays	405290240000	FINDER	16
Pushbutton Red	1SFA611100R1001	ABB	3	Relay Bases	9505SPA	FINDER	16
3-pos Selector Switch	1sfa611210r1006	ABB	3	Transformer 230/230	681250042	ELECTRO	1
Green Pilot Light	1SFA619403R5232	ABB	3	Interface relays	393100240060	FINDER	16
Yellow Pilot Light	1SFA619403R5023	ABB	3	Cooling Fan	FU-9806C1 P2A23	ELECTRO	16
Red Pilot Light	1SFA619403R5021	ABB	3	Filter	FU-9806A P2	ELECTRO	16
Blue Pilot Light	1SFA619403R5024	ABB	1	Panel Light		ELECTRO	1
				Limit switch for Panel Light	KB C2 S11	ELECTRO	1
				Dedicated Plug	136 513-414	ELECTRO	1

RIO Part List

RIO Parts List			
Description	Part Number	Manufacturer	QTY
Control Breaker 25A DP	2CDS252001R0254	ABB	2
Lightning arrestors	PSC2-25/230 TT	DEHNGUARD	1
Surge protection	920300	DEHNGUARD	16
Surge Protection	926244	DEHNGUARD	16
Safety Relay	3SK1121-1AB40	SIEMENS	1
Emergency Stop		ABB	1
Control Breaker 6A DP	2CDS252001R0061	ABB	2
Control Breaker 6ASP	2CDS251001R0061	ABB	4
Control Breaker 16ASP	2CDS251001R0161	ABB	1
220VAC Relays	405290240000	FINDER	33
Relay Bases	9505SPA	FINDER	33
Interface relays	393100240060	FINDER	33
Panel Light		ELECTRO	1
Limit switch for Panel Light	KB C2 S11	ELECTRO	1
Dedicated Plug	136.513-414	ELECTRO	1

Part Numbers

MCC PLC			
	Part Number		QTY
PLC Power Supply	6EP1336-3BA00	SIEMENS	1
UPS	6EP4136-3AC00-2AY0	SIEMENS	1
Battery	6EP4133-0GA00-0AY0	SIEMENS	1
CPU	6ES7513-1AL02-0AB0	SIEMENS	1
Profibus Module	6GK7542-5DX00-0XE0	SIEMENS	1
HMI - 15 INCH	6AV2124-0QC02-0AX1	SIEMENS	1
Digital Input	6ES7521-1BH00-0AB0	SIEMENS	2
Digital Output	6ES7522-1BH01-0AB0	SIEMENS	1
RIO PLC			
	Part Number		QTY
PLC Power Supply	6EP1336-3BA00	SIEMENS	1
UPS	6EP4136-3AC00-2AY0	SIEMENS	1
Battery	6EP4135-0GL00-0AY0	SIEMENS	1
Interface Module	6ES7155-5AA01-0AB0	SIEMENS	1
HMI - 15 INCH	6AV2124-0QC02-0AX1	SIEMENS	1
Digital Input	6ES7521-1BH00-0AB0	SIEMENS	5
Digital Output	6ES7522-1BH01-0AB0	SIEMENS	1
Analog Input	6ES7531-7PF00-0AB0	SIEMENS	5
Analog Output	6ES7532-5HD00-0AB0	SIEMENS	1

ANNEXURE BV

INSTRUMENTATION PART LIST

Tag No	Description	Manufacturer	Part Description	Part Number
CTRR-PH-FS-01	Pump 01 Flow Switch	E&H	T150	6TABL5-1566#0
CTRR-PH-FS-02	Pump 02 Flow Switch	E&H	T150	6TABL5-1566#0
CTRR-PH-FS-03	Pump 03 Flow Switch	E&H	DTT31	DTT31
CTRR-PH-FS-04	Pump 04 Flow Switch	E&H	DTT31	DTT31
CTRR-PH-LIT-01	Dewatering Suction Chamber Level	E&H	FMX21	FMX21-3M5V8#0
CTRR-PH-LSH-03	Dewatering Suction Chamber Level Switch			
CTRR-PH-LSHH-02	Dewatering Suction Chamber Level Switch	E&H	Liquipoint T FTW32	FTW32-A1D5AA0A
CTRR-PH-LSL-04	Dewatering Suction Chamber Level Switch			
	Display Unit	E&H	Nivotester FTW325	FTW325-A2A1A
CTRR-PH-LSL-05	Seepage Sump Level Switch Low	E&H	Liquifloat T	FTS20 AC/DC PP/PVC
CTRR-PH-LSH-06	Seepage Sump Level Switch High	E&H	Liquifloat T	FTS20 AC/DC PP/PVC
CTRR-PH-LSHH-07	Seepage Sump Level Switch High High	E&H	Liquifloat T	FTS20 AC/DC PP/PVC
CTRR-PH-PIT-05	Pump 1 Delivery Pressure Transmitter	E&H	Cerabar PMC11	PMC11-4RV3#0
CTRR-PH-PIT-06	Pump 2 Delivery Pressure Transmitter	E&H	Cerabar PMC11	PMC11-4RV3#0
CTRR-PH-PIT-03	Pump 3 Delivery Pressure Transmitter	E&H	Cerabar PMC11	PMC11-4RV3#0
CTRR-PH-PIT-04	Pump 4 Delivery Pressure Transmitter	E&H	Cerabar PMC11	PMC11-4RV3#0
CTRR-PH-PIT-07	Pump 5 Delivery Pressure Transmitter	E&H	Cerabar PMC11	PMC11-4RV3#0
CTRR-PH-VE-01/03	Pump 1 Vibration - IFM1	IFM	Diagnostic Electronics	VSE150
			Inductive sensor	IGV201
			Vibration sensor	VSA001
CTRR-PH-VE-07/10	Pump 2 Vibration - IFM3	IFM	Diagnostic Electronics	VSE150
			Inductive sensor	IGV201
			Vibration sensor	VSA001
CTRR-PH-VE-07/10	Pump 3 Vibration - IFM2	IFM	Diagnostic Electronics	VSE150
			Inductive sensor	IGV201
			Vibration sensor	VSA001
CTRR-PH-VE-01	Pump 4 Vibration - IFM4	IFM	Diagnostic Electronics	VSE150
			Inductive sensor	IGV201
			Vibration sensor	VSA001

ANNEXURE BW

ELECTRICAL MAIN CABLES

Tag	Feeder description	Voltage (V)	Drive Type	Cable (SANS 1507-3)		Length - m	
				Type	Size (mm ²)	Est	Act
RDD-MCC	Motor Control Centre	400	N/A	Cu PVC/AWA/PVC	2x240	8	72
CTRR-DD-PP-01	Main dewatering pump 1	400	VSD	Cu PVC/SWA/PVC	3x95	64	192
CTRR-DD-PP-02	Main dewatering pump 2	400	VSD	Cu PVC/SWA/PVC	3x95	64	192
CTRR-DD-PP-03	Drainage pump 3	400	DOL	Cu PVC/SWA/PVC	16	64	64
CTRR-DD-PP-04	Drainage pump 4	400	DOL	Cu PVC/SWA/PVC	16	64	64
CTRR-DD-PP-05	Seepage pump 5	400	DOL	Cu PVC/SWA/PVC	10	64	64
CTRR-PH-DB-01	Pump house local DB	400	DOL	Cu PVC/SWA/PVC	16	70	70
CTRR-DD-VF-01	Filling penstock (West)	400	DOL	Cu PVC/SWA/PVC	10	40	40
CTRR-DD-VS-01	Drainage penstock	400	DOL	Cu PVC/SWA/PVC	10	40	40
CTRR-DD-VD-01	DN800 Butterfly Valve 1	400	DOL	Cu PVC/SWA/PVC	10	69	69
CTRR-DD-VD-02	DN800 Butterfly Valve 2	400	DOL	Cu PVC/SWA/PVC	10	69	69
CTRR-DD-VD-03	DN200 Butterfly valve 3	400	DOL	Cu PVC/SWA/PVC	10	72	72
CTRR-DD-VD-04	DN200 Butterfly valve 4	400	DOL	Cu PVC/SWA/PVC	10	72	72
CTRR-DD-FAN-01	Pump Room Ventilation	400	DOL	Cu PVC/SWA/PVC	10	0	0
CTRR-DD-FAN-02	MCC HVAC 1	400	S.D	Cu PVC/SWA/PVC	10	16	16
CTRR-DD-FAN-03	MCC HVAC 2	400	S.D	Cu PVC/SWA/PVC	10	16	16
	RTU	230	N/A	Cu PVC/SWA/PVC	2.5	45	45
CTRR-DD-VF-02	Filling penstock	400	DOL	Cu PVC/SWA/PVC	10	35	35

ANNEXURE BX

CONTROL CABLE SCHEDULE

	Tag	Feeder description	Type	Size (mm ²)	Length
		RIO to JB1			
1	RIO-JB1-C1	JB1 term X1:1-38	24pr - Screened	1.5	19
2	RIO-JB1-C2	JB1 term X2:1-12	8pr - Screened	1.5	19
3	RIO-JB1-C3	JB1 term X3:1-8	4pr - Screened	1.5	19
4	RIO-JB1-C4	JB1 term XVD1:1-11	8pr - Screened	1.5	19
5	RIO-JB1-C5	JB1 term XVD1:12-13	2pr - Screened	1.5	19
6	RIO-JB1-C6	JB1 term XVD3:1-11	8pr - Screened	1.5	19
7	RIO-JB1-C7	JB1 term XVD3:12-13	2pr - Screened	1.5	19
8	RIO-JB1-C8	JB1 term XES1:1-8	4pr - Screened	1.5	19

	Tag	Feeder description	Type	Size (mm ²)	Length
		RIO to JB2			
1	RIO-JB2-C1	JB1 term X1:1-21	16pr - Screened	1.5	13
2	RIO-JB2-C2	JB1 term X2:1-12	8pr - Screened	1.5	13
3	RIO-JB2-C3	JB1 term X3:1-4	2pr - Screened	1.5	13
4	RIO-JB2-C4	JB1 term XVD2:1-11	8pr - Screened	1.5	13
5	RIO-JB2-C5	JB1 term XVD2:12-13	2pr - Screened	1.5	13
6	RIO-JB2-C6	JB1 term XVD4:1-11	8pr - Screened	1.5	13
7	RIO-JB2-C7	JB1 term XVD4:12-13	2pr - Screened	1.5	13
8	RIO-JB2-C8	JB1 term XES1:1-8	4pr - Screened	1.5	13

	Tag	Feeder description	Type	Size (mm ²)	Length
		JB2 to Field			
1	JB2-FS02-C1	Pump 2 Flow Switch FS-02	4 Core LAPP	1	6
	JB2-FS02-C2		4 Core LAPP	1	6
2	JB2-FS04-C1	Pump 4 Flow Switch FS-04	Cable Supplied	0.34	
3	JB2-P2S2S2-C1	Pump 2 remote start/stop	2pr - Screened	1.5	2
4	JB2-P4S2S2-C1	Pump 4 remote start/stop	2pr - Screened	1.5	2
5	JB2-AES03-C1	Pump 2 Oil Sensor AES-03	8pr - Screened	1.5	4
6	JB2-AES04-C1	Pump 2 Moist Sensor AES-04	2pr - Screened	1.5	4
7	JB2-ISO2-C1	Pump 2 Isolator	2pr - Screened	1.5	4
	JB2-ISO2-C2	Pump 2 Isolator	8pr - Screened	1.5	4
	JB2-ISO2-C3	Pump 2 Isolator	2pr - Screened	1.5	4
8	JB2-ISO4-C1	Pump 4 Isolator	2pr - Screened	1.5	3
9	JB2-TE15-18-C1	Pump 4 Motor Case Temp	8pr - Screened	1.5	4
10		Pump 4 Motor DE Bearing Temp			
11		Pump 4 Motor NDE Bearing Temp			
12		Pump 4 Motor DE Thrust Bearing Temp			
13	JB2-PIT06-C1	Pump 2 Delivery Press Sensor	4 Core LAPP	1	6
14	JB2-PIT04-C1	Pump 4 Delivery Press Sensor	4 Core LAPP	1	5
15	JB2-VD02-C1	Pump 2 Delivery Valve	8pr - Screened	1.5	7
16	JB2-VD02-C2	Pump 2 Delivery Valve 4-20mA	1pr - Screened	1.5	7
17	JB2-VD04-C1	Pump 4 Delivery Valve	8pr - Screened	1.5	6
18	JB2-VD04-C2	Pump 4 Delivery Valve 4-20mA	1pr - Screened	1.5	6
19	JB2-ES2-C1	Estop 2	4pr - Screened	1.5	6

CONTROL CABLE SCHEDULE

	Tag	Feeder description			Length
			Type	Size (mm ²)	
		JB1 to Field			
1	JB1-FS01-C1	Pump 1 Flow Switch FS-01	4 Core LAPP	1	6
2	JB1-FS01-C2	Pump 1 Flow Switch FS-01	4 Core LAPP	1	6
3	JB1-FS03-C1	Pump 3 Flow Switch FS-03	Cable Supplied	0.34	
4	JB1-P1S2S2-C1	Pump 1 remote start/stop	2pr - Screened	1.5	4
5	JB1-P3S2S2-C1	Pump 3 remote start/stop	2pr - Screened	1.5	3
6	JB1-P5S2S2-C1	Pump 5 remote start/stop	2pr - Screened	1.5	2
7	JB1-LSH06-C1	Seepage Sump High LSH-06	Cable Supplied		
8	JB1-LSH07-C1	Seepage Sump High LSH-07	Cable Supplied		
9	JB1-LSH05-C1	Seepage Sump High LSL-05	Cable Supplied		
10	JB1-TS01-C1	Seepage Sump Thermal SW TS-01	Cable Supplied		
10	JB1-AES05-C1	Seepage Sump Moist Sensor AES-05	Cable Supplied		
11	JB1-AES01-C1	Pump 1 Oil Sensor AES-01	8pr - Screened	1.5	4
12	JB1-AES02-C1	Pump 1 Moist Sensor AES-02	2pr - Screened	1.5	4
13	JB1-ISO1-C1	Pump 1 Isolator	2pr - Screened	1.5	4
	JB1-ISO1-C2	Pump 1 Isolator	8pr - Screened	1.5	4
	JB1-ISO1-C3	Pump 1 Isolator	2pr - Screened	1.5	4
14	JB1-ISO3-C1	Pump 3 Isolator	2pr - Screened	1.5	3
15	JB1-ISO5-C1	Pump 5 Isolator	2pr - Screened	1.5	2
16	JB1-TE11-14-C1	Pump 3 Motor Case Temp	8pr - Screened	1.5	5
17		Pump 3 Motor DE Bearing Temp			
18		Pump 3 Motor NDE Bearing Temp			
19		Pump 3 Motor DE Thrust Bearing Temp			
20	JB1-LIT01-C1	Suction Chamber Level Transmitter	7 Core LAPP	0.5	
21	JB1-PIT05-C1	Pump 1 Delivery Press Sensor	4 Core LAPP	1	6
22	JB1-PIT03-C1	Pump 3 Delivery Press Sensor	4 Core LAPP	1	5
23	JB1-PIT07-C1	Pump 5 Delivery Press Sensor	4 Core LAPP	1	4
24	JB1-VD01-C1	Pump 1 Delivery Valve	8pr - Screened	1.5	6
25	JB1-VD01-C2	Pump 1 Delivery Valve 4-20mA	1pr - Screened	1.5	6
26	JB1-VD03-C1	Pump 3 Delivery Valve	8pr - Screened	1.5	5
27	JB1-VD03-C2	Pump 3 Delivery Valve 4-20mA	1pr - Screened	1.5	5
28	JB1-ES1-C1	Estop 1	4pr - Screened	1.5	6