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INFRASTRUCTURE AFFAIRS DESIGN DEPARTMENT-ROADS

SPECIMEN DESIGN FOR TUNNEL MANAGEMENT SYSTEM EQUIPMENT LISTS EXAMPLE

THIS SPECIMEN IS PROVIDED FOR GUIDANCE ONLY

THIS PACKAGE CONTAINS SPECIMEN LISTS OF VARIOUS CRITICAL INFRASTRUCTURES FOR A TYPICAL TUNNEL MANAGEMENT SYSTEM. THE INDIVIDUAL LISTS MAY NOT CORRELATE TO OTHER LISTS AND THEIR PURPOSE IS TO PROVIDE PRESENTATIONAL GUIDANCE ONLY.



Document	Control Panel					
Project Name:	INSERT PROJECT NAME HERE					Ref. Number: INSERT DOCUMENT REFERENCE NUMBER
Document Nan	ne: PXXX Tunnel E Plant Control & Monitoring, Equipment List					
Version	Date	Status	Written by	Checked by	QA Approver	Notes
0	INSERT DATE	First Edition	INSERT NAME	INSERT NAME	INSERT NAME	Draft for Ashghal review
						(*) Not used for Tunnel management operations
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Signature	INSERT SIGNATURE	Name	INSERT NAME	Date	INSERT DATE	

EQUIPMENT: NUMBER	EQUIPMENT: DESCRIPTION	EQUIPMENT: EQUIPMENT: ID ALIAS	EQUIPMENT: REV.	LOCATION: ROAD/BUILDING	LOCATION: CH/ROOM	LOCATION: TRAFFIC DIRECTION	LOCATION: LANE / HS	EQUIPMENT: COMMS TYPE	EQUIPMENT: UNIT NO	ASSOCIATED CAMERA	CAMERA: DESCRIPTION	CAMERA: REV.	DRAWING NUMBER	DRAWING VERSION
LV GENERATOR														
0	1600kVA Generator IAT-01	GEN/001/ESC/E01	0	Tunnel E service compound	Generator Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
1	1600kVA Generator PG1	GEN/002/ESC/E01	0	Tunnel E service compound	Generator Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
2	1600kVA Generator room control panel IAT-01	CP-/001/ESC/E01	0	Tunnel E service compound	Generator Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
3	1600kVA Generator room control panel PG1	CP-/002/ESC/E01	0	Tunnel E service compound	Generator Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
4	30VDC battery + battery charger for LV panel- IAT-01	BAT/001/ESC/E01	0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
5	30VDC battery + battery charger for LV panel- PG-1	BAT/002/ESC/E01	0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
6	Level switch for diesel oil day Tank DT-00-01	LSW/001/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
7	Level switch for diesel oil day Tank DT-00-02	LSW/002/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
8	Level switch for diesel oil storage Tank	LSW/004/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
9	Level switch for diesel oil storage Tank	LSW/005/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
10	Pressure sensor for fuel line 1	PID/001/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Mod-bus TCP/IP	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
11	Pressure sensor for fuel line 2	PID/002/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Mod-bus TCP/IP	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
12	Flow sensor for day Tank DT-00-01	FLS/001/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Mod-bus TCP/IP	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
13	Flow sensor for day Tank DT-00-02	FLS/002/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Mod-bus TCP/IP	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
14	Flow sensor for fuel line 1	FLS/004/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Mod-bus TCP/IP	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
15	Flow sensor for fuel line 2	FLS/005/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Mod-bus TCP/IP	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
16	Fuel Pump 1	POT/001/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
17	Fuel Pump 2	POT/002/ESC/E21	0	Tunnel E service compound	Diesel oil storage Tank	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
18	Motorised valve for day Tank DT-00-01	VAL/001/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
19	Motorised valve for day Tank DT-00-02	VAL/002/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
20	Solenoid valve for day Tank DT-00-01	VAL/004/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
21	Solenoid valve for day Tank DT-00-02	VAL/005/ESC/E20	0	Tunnel E service compound	Diesel oil day Tank	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



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22	Fuel fill point valve with lock	VAL/007/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	7	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
MCC ROOMS															
23	Motor control center, MCC-IAT-SP-01	MCC/001/ESC/E19		0	Tunnel E service compound	Tunnel E Storm Water Pump Room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
24	Motor control center, MCC-JWI-03	MCC/003/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
25	Motor control center, MCC-IAT-01	MCC/004/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
26	Motor control center, MCC-IAT-02	MCC/005/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
27	Motor control center, MCC-V-1	MCC/006/EI-/E19		0	Tunnel E	Tunnel E Storm Water Pump Room	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
28	Motor control center, MCC-V-2	MCC/007/EI-/E19		0	Tunnel E	Tunnel E Storm Water Pump Room	N/A	N/A	Contact Relay	6	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
LIGHT CONTROL PA	NELS														
29	Light control panel, IAT-EL-LCP1	CP-/004/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
30	Light control panel, IAT-EL-LCP2	CP-/005/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
31	Light control panel, IAT-EL-LCP3	CP-/006/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	6	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
32	Light control panel, IAT-EL-LCP4	CP-/007/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	7	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CONTROL PANELS															
33	Programmable logic control panel, IAT-EL-LCP-PLC	PLC/001/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
34	Instrumentation control panel-01	CP-/008/EI-/E19		0	Tunnel E	Tunnel E Storm Water Pump Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	8	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
35	Control panel for heat detection cable	CP-/009/ESC/E02		0	Tunnel E service compound	Control Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	9	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
36	Central battery system panel for emergency lighting	CP-/010/ESC/E02		0	Tunnel E service compound	Control Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	10	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
37	Central battery system control cabinet	CP-/011/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	11	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
38	Control panel for sump pump room supply fan	VCP/001/EI-/E19		0	Tunnel E	Tunnel E Storm Water Pump Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
39	Mechanical Control Panel MSB-00-01	CP-/012/ESC/E01		0	Tunnel E service compound	Generator Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	12	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
DISTRIBUTION BOA	ARDS														
40	LV main distribution board , LV PANEL-IAT-01	DB-/001/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
41	Sub-main distribution board, SMDB-IAT-EL1	DB-/002/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
42	Sub-main distribution board, SMDB-IAT-EL2	DB-/003/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



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43	Emergency sub-main distribution board, ESMDB-IAT-EL1	DB-/004/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
44	Sub-main distribution board, SMDB-IAT-FP	DB-/005/ESC/E06		0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
45	LV main distribution board , LV PANEL-PG-2	DB-/006/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	6	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
46	Sub-main distribution board, SMDB-M-2	DB-/007/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	7	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
47	Sub-main distribution board, SMDB-EL-2	DB-/008/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	8	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
48	Sub-main distribution board, SMDB-EL-2	DB-/09/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	9	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
49	Sub-main distribution board, SMDB-M-3	DB-/010/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	10	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
50	LV main distribution board , LV PANEL-PG-1	DB-/011/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	11	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
51	Sub-main distribution board, SMDB-L&S	DB-/012/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	12	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
52	Sub-main distribution board, SMDB-M-1	DB-/013/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	13	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
53	Sub-main distribution board, SMDB-EL-1	DB-/014/ESC/Exx		0	Tunnel E service compound		N/A	N/A	Contact Relay	14	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
54	Distribution board, DB-HV	DB-/015/ESC/E05		0	Tunnel E service compound	HV Room	N/A	N/A	Contact Relay	15	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
55	Distribution board, DB-MV	DB-/016/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	16	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
56	Distribution board, DB-IAT-EL	DB-/017/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	17	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
57	Distribution Board, DB-IAT-01	DB-/018/EI-/0565		0	Tunnel E	0+565	North	Hard Shoulder	Contact Relay	18	PTZ/007/EIW/570	0+570	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
58	Distribution Board, DB-IAT-02	DB-/019/EI-/0565		0	Tunnel E	0+565	South	Hard Shoulder	Contact Relay	19	PTZ/006/EIE/570	0+570	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
59	Distribution board, DB-CBS	DB-/020/ESC/E02		0	Tunnel E service compound	Control Room	N/A	N/A	Contact Relay	20	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
60	Sub-main distribution board, SMDB-UPS	DB-/021/ESC/E02		0	Tunnel E service compound	Control Room	N/A	N/A	Contact Relay	21	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
61	Distribution Board, DB-ITS	DB-/022/ESC/E13		0	Tunnel E service compound	Passage Lower Level	N/A	N/A	Contact Relay	22	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
62	Distribution Board, DB-FC	DB-/023/ESC/E01		0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	23	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
63	Distribution board, DB-UPS	DB-/024/EI-/E19		0	Tunnel E	Tunnel E Storm Water Pump Room	N/A	N/A	Contact Relay	24	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
64	Distribution Board, CBS-IAT-DB1	DB-/025/ESC/E18		0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	25	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



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65	Distribution Board, CBS-IAT-DB2	DB-/026/ESC/E18	0	Tunnel E service compound	Electrical Room	N/A	N/A	Contact Relay	26	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
FIRE ALARM PAN	NEL T													
66	Main Fire alarm control panel, MFACP	FCP/001/ESC/E02	0	Tunnel E service compound	Control Room	N/A	N/A	Contact Relay - Serial comm	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
ISOLATORS														
67	1000A TP ISOL incomer CB for APFC-2 from LV PANEL- IAT-1	ISO/001/ESC/E03	0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
68	800A TP ISOL incomer CB for APFC-2 from LV PANEL- PG-1	ISO/002/ESC/E03	0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
69	1000A TP ISOL incomer CB for APFC-2 from LV PANEL- PG-2	ISO/003/ESC/E03	0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
70	100A TPN isolator for fire pump fed from SMDB-IAT-FP	ISO/004/ESC/E06	0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
71	32A TPN isolator for jockey pump fed from SMDB-IAT-FP	ISO/005/ESC/E06	0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
72	32A TPN isolator for foam water pump fed from SMDB-IAT-FP	ISO/006/ESC/E06	0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	6	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
73	32A TPN isolator for crane fed from SMDB-IAT-FP	ISO/007/ESC/E06	0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	7	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
74	20A,SP ISOL isolator for SUPPLY FAN 1 fed from SMDB-IAT-FP	ISO/008/ESC/E06	0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	8	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
75	20A,SP ISOL isolator for SUPPLY FAN 2 fed from SMDB-IAT-FP	ISO/009/ESC/E06	0	Tunnel E service compound	Fire Pump Room	N/A	N/A	Contact Relay	9	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
76	20A TPN Isolator for OU-HV-001	ISO/010/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	10	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
77	20A TPN Isolator for OU-HV-002	ISO/011/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	11	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
78	20A TPN Isolator for OU-HV-003	ISO/012/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	12	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
79	20A TPN Isolator for OU-HV-004	ISO/013/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	13	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
80	20A DP Isolator for OU-LV-001	ISO/014/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	14	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
81	20A DP Isolator for OU-LV-002	ISO/015/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	15	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
82	20A DP Isolator for OU-LV-003	ISO/016/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	16	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
83	20A DP Isolator for OU-LV-004	ISO/017/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	17	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
84	20A TPN Isolator for OU-EL-001	ISO/018/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	18	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
85	20A TPN Isolator for OU-EL-002	ISO/019/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	19	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
86	20A TPN Isolator for OU-CR-001	ISO/020/ESC/E22	0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	20	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



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Signature	INSERT SIGNATURE	Name	INSERT NAME	Date	INSERT DATE	

EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	LOCATION:	LOCATION:	LOCATION:	LOCATION:	EQUIPMENT:	EQUIPMENT:	ASSOCIATED	CAMERA:	CAMERA:		DRAWING
NUMBER	DESCRIPTION	ID	ALIAS	REV.	ROAD/BUILDING	CH/ROOM	TRAFFIC DIRECTION	LANE / HS	COMMS TYPE	UNIT NO	CAMERA	DESCRIPTION	REV.	DRAWING NUMBER	VERSION
	DESCRIPTION	10	ALIAS	REV.	ROAD/BOILDING	CHARGON	TRAFFIC DIRECTION	LANE / 113	COMMISTIFE	ONIT NO	CAMILIA	DESCRIPTION	ILV.	DRAWING NOWIDER	VERSION
87	20A TPN Isolator for OU-CR-002	ISO/021/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	21	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
88	25A TPN Isolator for VF-TR-002-1	ISO/022/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	22	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
89	25A TPN Isolator for VF-TR-002-2	ISO/023/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	23	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
90	25A TPN Isolator for VF-TR-001-1	ISO/024/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	24	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
91	25A TPN Isolator for VF-TR-001-2	ISO/025/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	25	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
92	63A TPN Isolator for VF-GE-001	ISO/026/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	26	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
93	63A TPN Isolator for VF-GE-002	ISO/027/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	27	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
94	63A TPN Isolator for VF-GE-003	ISO/028/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	28	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
95	Isolator for Fuel Transfer Pump	ISO/029/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	29	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
96	20A DP Isolator for OU-ER-001	ISO/030/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	30	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
97	20A DP Isolator for OU-ITS-001	ISO/031/ESC/E22		0	Tunnel E service compound	Substation Compound Roof	N/A	N/A	Contact Relay	31	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
98	16A TPN Isolator for battery charger - 01 fed from DB-FC	ISO/032/ESC/E01		0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	32	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
99	16A TPN Isolator for battery charger - 02 fed from DB-FC	ISO/033/ESC/E01		0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	33	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
100	16A TPN Isolator for battery charger - 03 fed from DB-FC	ISO/034/ESC/E01		0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	34	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
101	16A TPN Isolator for battery charger - 01 fed from DB-MV	ISO/035/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	35	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
102	16A TPN Isolator for battery charger - 02 fed from DB-MV	ISO/036/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	36	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
103	20A DP Isolator for OU-OF-001	ISO/037/ESC/E01		0	Tunnel E service compound	Generator Room	N/A	N/A	Contact Relay	37	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
104	40A Isolator for Central Battery system	ISO/038/ESC/E02		0	Tunnel E service compound	Control Room	N/A	N/A	Contact Relay	37	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CIRCUIT BREAKER															
105	2500A TP ACB incomer from transformer for LV PANEL-IAT-1	CBR/001/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	001	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
106	2500A TP ACB from emergency Generator Main Auto C/O for LV PANEL-IAT-1	CBR/002/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	002	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
107	630A TP MCCB in LV PANEL- IAT-1 for incomer at SMDB-IAT-EL1	CBR/003/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	003	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
108	630A TP MCCB in LV PANEL- IAT-1 for incomer at SMDB-IAT-EL2	CBR/004/ESC/E03		0	Tunnel E service compound	LV Room	N/A	N/A	Contact Relay	004	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



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MCC ROOM														
0	Motor Control Center, MCC-KP-SP	MCC/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CONTROL PANEL	LS													
1	Control panel for supply fan for K Underpass pump room	VCP/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
2	Instrumentation control panel-01	CP-/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Mod-bus TCP/IP	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
DISTRIBUTION B	OARDS													
3	6 Ways TPN Distribution Board, DB-KP	DB-/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
4	Distribution Board, DB-UPS	DB-/002/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
UPS														
5 CIRCUIT BREAKE	Uninterrupted Power Supply, UPS-01	UPS/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay - Mod-bus TCP/IP	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CIRCUII BREAKE	iks .												:	insert reference
6	100A TP MCCB for MCC-KP-SP incomer CB fed from MV panel	CBR/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	drawing edition
7	20A SPN MCCB for UPS incomer CB fed from MCC-KP-SP	CBR/002/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
8	40A TP MCCB for DB-KP incomer CB fed from MCC-KP-SP	CBR/003/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
													insert reference drawing number from MEP and ITS designs	insert reference drawing edition
9	40A TP MCCB for Underpass sump pump incomer CB fed from MCC-KP-SP	CBR/004/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number	
10	40A TP MCCB for Underpass sump pump incomer CB fed from MCC-KP-SP	CBR/005/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
11	40A TP MCCB for Underpass sump pump incomer CB fed from MCC-KP-SP	CBR/006/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	6	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
12	16A SPN fixed MCCB incomer CB in MCC-KP-SP for socket outlet	CBR/007/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	7	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
13	16A SPN fixed MCCB incomer CB in MCC-KP-SP for socket outlet	CBR/008/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	8	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
												,	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
14	40A TP MCCB for DB-KP field equipment CB fed from MCC-KP-SP	CBR/009/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	9	N/A	N/A	N/A	insert reference drawing number	insert reference
15	20A SPN MCCB for DB-UPS field equipment CB fed from UPS	CBR/010/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	7	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
ISOLATORS													incart reference drawing	incort reference
16	16A,SP ISOL incomer isolator for UPS fed from MCC-KP-SP	ISO/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
17	16A,SP ISOL incomer isolator for DB-UPS fed from UPS	ISO/002/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
K Underpass STC	DRM WATER PUMPS			·										
18	Pump-01	PSW/001/KU-/K01	0			N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
19	Pump-02	PSW/002/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



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0	INSERT DATE	First Edition	INSERT NAME	INSERT NAME	INSERT NAME	Draft for Ashghal review
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EQUIPMENT: NUMBER	EQUIPMENT: DESCRIPTION	EQUIPMENT: E	EQUIPMENT: EQUIPMENT REV.		LOCATION: CH/ROOM	LOCATION: TRAFFIC DIRECTION	LOCATION: LANE / HS	EQUIPMENT: COMMS TYPE	EQUIPMENT: UNIT NO	ASSOCIATED CAMERA	CAMERA: DESCRIPTION	CAMERA: REV.	DRAWING NUMBER	DRAWING VERSION
													insert reference drawing number	er insert reference
20	Pump-03	PSW/003/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
21	Pressure transmitter PIT-01	PIT/001/KU-/K01	0	K Underpass	V Hadornossterm water nume room	N/A	N/A	Analog 4-20mA	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
21	Pressure transmitter PIT-01	P11/001/K0-/K01	0	k underpass	K Underpassstorm water pump room	N/A	N/A	Analog 4-20mA	1	N/A	N/A	N/A	insert reference drawing number	
22	Pressure transmitter PIT-02	PIT/002/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Analog 4-20mA	2	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
23	Pressure transmitter PIT-03	PIT/003/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Analog 4-20mA	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	er insert reference drawing edition
24	Storm water tank level element	LEL/001/KU-/K01	0	K Underpass	V Undernosssterm water nump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
24	Storm water tank lever element	LEL/001/NO-/NO1	0	k Offuerpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	NyA	N/A	N/A	insert reference drawing number	
25	Curb mounted Ventilation & Staircase Pressurization Fan-SF1	PFN/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
26	Gas detector	GD-/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	er insert reference drawing edition
27	Gate valve	VAL/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
27	Gate valve	VAL/001/KO-/K01	0	k Offuerpass	k onderpassstorm water pump room	N/A	N/A	Contact Relay	1	NyA	N/A	N/A	insert reference drawing number	
28	Gate valve	VAL/002/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
	Gate valve	VAL/003/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	drawing edition
SPOT DETECTION D	EVICES												insert reference drawing number	er insert reference
30	Smoke detector, 1/2/S1 WP	SDR/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	N/A	1	N/A	N/A	N/A	from MEP and ITS designs	drawing edition
31	Break glass type Manual call point, 1/2/BG1 WP	MBG/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	N/A	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	er insert reference drawing edition
				·								·	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
32 FIRE ALARM PANEI	Fire alarm sounder, 1/2/B3	ESU/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	N/A	1	N/A	N/A	N/A	J. G. M. E. G.	arawing canton
	Main Fire alarm control panel, MFACP	FCP/001/KU-/K01	0	K Underpass	K Underpassstorm water pump room	N/A	N/A	N/A	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
ITS EQUIPMENT													insert reference drawina number	er insert reference
34	Ground Mounted Enclosure, ENC-73	GME/001/KUN/5079	0	K Underpass North Bound Carriageway	5+079	To East Industrial	Road side	Contact Relay - TCP/IP	1	N/A	N/A	0	from MEP and ITS designs	drawing edition
35	Ground Mounted Enclosure, ENC-66	GME/002/KUS/7238	0	K Underpass South Bound Carriageway	7+238	To Woqod	Road side	Contact Relay - TCP/IP	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert reference drawing edition
33	ordand mounted enclosing time of	GME/GGE/NGS/7250		Nonderpass sodin sodina edininge nay	6+135	.o weqou	noda side	contact near year, in	-	.y/.	.47.		insert reference drawing number	
36	Wall Mounted Enclosure, ENC-77	WME/001/KUN/6135	0	K Underpass North Bound Carriageway		To East Industrial	Hard shoulder	Contact Relay - TCP/IP	1	N/A	N/A	0	from MEP and ITS designs insert reference drawing number	drawing edition er insert reference
37	Wall Mounted Enclosure, ENC-60	WME/002/KUS/6240	0	K Underpass South Bound Carriageway	6+240	To Woqod	Hard shoulder	Contact Relay - TCP/IP	1	N/A	N/A	0	from MEP and ITS designs	drawing edition
38	Dynamic Message Sign, DMS 73	DMS/001/KUN/5090	0	K Underpass North Bound Carriageway	5+090	To East Industrial	Lane	Contact Relay - TCP/IP	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
- 56	opnomic message sign, ome /s	5 N 3 00 1 N 0 N 1 3 0 3 0	0	n onderpass north bound carriageway	7+230	10 East muustiidi	Lutte	Contact nelay - TCF/IP	1	IVA	19/5	U	insert reference drawing number	
39	Dynamic Message Sign, DMS 66	DMS/002/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Lane	Contact Relay - TCP/IP	1	N/A	N/A	0	from MEP and ITS designs	drawing edition
40	Lane Control Sign, LCS 73-1	LCS/001/KUN/5090	0	K Underpass North Bound Carriageway	5+090	To East Industrial	Hard shoulder	Contact Relay - TCP/IP (*)	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert reference drawing edition



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41	Lane Control Sign, LCS 73-2	LCS/002/KUN/5090		0	K Underpass North Bound Carriageway	5+090	To East Industrial	Lane	Contact Relay - TCP/IP (*)	2	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert referen drawing editio
42	Lane Control Sign, LCS 73-3	LCS/003/KUN/5090		0	K Underpass North Bound Carriageway	5+090	To East Industrial	Lane	Contact Relay - TCP/IP (*)	3	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert referen drawing editio
43	Lane Control Sign, LCS 73-4	LCS/004/KUN/5090		0	K Underpass North Bound Carriageway	5+090	To East Industrial	Lane	Contact Relay - TCP/IP (*)	4	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert referen drawing editi
44	Lane Control Sign, LCS 77-1	LCS/005/KUN/6148		0	K Underpass North Bound Carriageway	6+148	To East Industrial	Hard shoulder	Contact Relay - TCP/IP	5	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert referen drawing editio
45	Lane Control Sign, LCS 77-2	LCS/006/KUN/6147		0	K Underpass North Bound Carriageway	6+147	To East Industrial	Lane	Contact Relay - TCP/IP	6	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert referen drawing editio
46	Lane Control Sign, LCS 77-3	LCS/007/KUN/6145		0	K Underpass North Bound Carriageway	6+145	To East Industrial	Lane	Contact Relay - TCP/IP	7	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
47	Lane Control Sign, LCS 77-4	LCS/008/KUN/6142		0	K Underpass North Bound Carriageway	6+142	To East Industrial	Lane	Contact Relay - TCP/IP	8	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
48	Lane Control Sign, LCS 60-1	LCS/009/KUS/6234		0	K Underpass South Bound Carriageway	6+234	To Woqod	Hard shoulder	Contact Relay - TCP/IP	9	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
49	Lane Control Sign, LCS 60-2	LCS/010/KUS/6231		0	K Underpass South Bound Carriageway	6+231	To Woqod	Lane	Contact Relay - TCP/IP	10	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
50	Lane Control Sign, LCS 60-3	LCS/011/KUS/6229		0	K Underpass South Bound Carriageway	6+229	To Woqod	Lane	Contact Relay - TCP/IP	11	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert referend drawing edition
51	Lane Control Sign, LCS 60-4	LCS/012/KUS/6227		0	K Underpass South Bound Carriageway	6+227	To Woqod	Lane	Contact Relay - TCP/IP	12	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert referend drawing edition
52	Lane Control Sign, LCS 66-1	LCS/013/KUS/7230		0	K Underpass South Bound Carriageway	7+230	To Woqod	Lane	Contact Relay - TCP/IP (*)	13	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
53	Lane Control Sign, LCS 66-2	LCS/014/KUS/7230		0	K Underpass South Bound Carriageway	7+230	To Woqod	Lane	Contact Relay - TCP/IP (*)	14	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
54	Lane Control Sign, LCS 66-3	LCS/015/KUS/7230		0	K Underpass South Bound Carriageway	7+230	To Woqod	Lane	Contact Relay - TCP/IP (*)	15	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
55	Lane Control Sign, LCS 66-4	LCS/016/KUS/7230		0	K Underpass South Bound Carriageway	7+230	To Woqod	Lane	Contact Relay - TCP/IP (*)	16	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
56	Lane Control Sign, LCS 66-5	LCS/017/KUS/7230		0	K Underpass South Bound Carriageway	7+230	To Woqod	Hard shoulder	Contact Relay - TCP/IP (*)	17	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
57	Access Point, AP 73-1	DZA/001/KUN/5090		0	K Underpass North Bound Carriageway	5+090	To East Industrial	Lane	TCP/IP (*)	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
58	Access Point, AP 77-1	DZA/002/KUN/6132		0	K Underpass North Bound Carriageway	6+132	To East Industrial	Lane	TCP/IP	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
59	Access Point, AP 60-1	DZA/003/KUS/6246		0	K Underpass South Bound Carriageway	6+246	To Woqod	Lane	TCP/IP	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	drawing edition
60	Access Point, AP 66-1	DZA/004/KUS/7230		0	K Underpass South Bound Carriageway	7+230	To Woqod	Lane	TCP/IP (*)	1	N/A	N/A	0	insert reference drawing number from MEP and ITS designs insert reference drawing number	drawing edition
61	License Plate Reader, LPR 73-1	LPR/001/KUN/5090		0	K Underpass North Bound Carriageway	5+090	To East Industrial	Hard shoulder	TCP/IP (*)	1	N/A	N/A	0	from MEP and ITS designs	drawing edition
62	License Plate Reader, LPR 73-2	LPR/002/KUN/5090		0	K Underpass North Bound Carriageway	5+090	To East Industrial	Lane	TCP/IP (*)	2	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	er insert referend drawing edition



Document	Control Panel					
Project Name:	NSERT PROJECT NAME HERE	•				Ref. Number: INSERT DOCUMENT REFERENCE NUMBER
Document Nan	e: PXXX K Underpass Plant Control & Monitoring, Equipment List					
Version	Date	Status	Written by	Checked by	QA Approver	Notes
0	INSERT DATE	First Edition	INSERT NAME	INSERT NAME	INSERT NAME	Draft for Ashghal review
						(*) Not used for Tunnel management operations
HLD Issued By:						

Signature	NameName	NAMEDate	INSERT DATE												
EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	LOCATION:	LOCATION:	LOCATION:	LOCATION:	EQUIPMENT:	EQUIPMENT:		CAMERA:	CAMERA:	4 V	DRAW
NUMBER	DESCRIPTION	ID	ALIAS	REV.	ROAD/BUILDING	CH/ROOM	TRAFFIC DIRECTION	LANE / HS	COMMS TYPE	UNIT NO	ASSOCIATED CAMERA	DESCRIPTION	REV.	DRAWING NUMBER	VERSI
															1

NUMBER	DESCRIPTION	עו	ALIAS KEV.	KOAD/BUILDING	CH/ROUW	TRAFFIC DIRECTION	LANE / HS	COIVINIS TYPE	UNITINU	ASSOCIATED CAMERA	DESCRIPTION	KEV.	DRAWING NUMBER	VERSION
					5+090								insert reference drawing number	
63	License Plate Reader, LPR 73-3	LPR/003/KUN/5090	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP (*)	3	N/A	N/A	0	from MEP and ITS designs	drawing edition
				,	-		1		-	1				+
					5+090								insert reference drawing number	
64	License Plate Reader, LPR 73-4	LPR/004/KUN/5090	0	K Underpass North Bound Carriageway	3.030	To East Industrial	Lane	TCP/IP (*)	4	N/A	N/A	0	from MEP and ITS designs	drawing edition
	Electrise Flate Reddell, El N 75 T	2.11/001/1011/3030		it onderpass North Board carriageway		To East maastridi			+ -	1,1,1				+
					5+090								insert reference drawing number	insert reference
65	License Plate Reader, LPR 73-5	LPR/005/KUN/5090	0	K Underpass North Bound Carriageway	3+050	To East Industrial	Hard shoulder	TCP/IP (*)	5	N/A	N/A	0	from MEP and ITS designs	drawing edition
05	License Place Reduct, LPR 75-5	LPR/003/R0IN/3090	0	k Onderpass North Bound Carriageway		TO East Illuustriai	Hard Silouider	TCP/IP (*)		IN/A	IN/A			
					7.000								insert reference drawing number	insert reference
			_		7+230				_			_	from MEP and ITS designs	drawing edition
66	License Plate Reader, LPR 66-1	LPR/006/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Lane	TCP/IP (*)	6	N/A	N/A	0		
													insert reference drawing number	insert reference
					7+230								from MEP and ITS designs	drawing edition
67	License Plate Reader, LPR 66-2	LPR/007/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Lane	TCP/IP (*)	7	N/A	N/A	0	,	
													insert reference drawing number	insert reference
					7+230								from MEP and ITS designs	drawing edition
68	License Plate Reader, LPR 66-3	LPR/008/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Lane	TCP/IP (*)	8	N/A	N/A	0	Jioni Wei and 113 designs	drawing caldon
					7+230								insert reference drawing number	
69	License Plate Reader, LPR 66-4	LPR/009/KUS/7230	0	K Underpass South Bound Carriageway		To Wogod	Lane	TCP/IP (*)	9	N/A	N/A	0	from MEP and ITS designs	drawing edition
				,	-		1		-	1				+
					7+230								insert reference drawing number	
70	License Plate Reader, LPR 66-5	LPR/0010/KUS/7230	0	K Underpass South Bound Carriageway	7.250	To Wogod	Lane	TCP/IP (*)	10	N/A	N/A	0	from MEP and ITS designs	drawing edition
,,,	Electrice Flate Redder, El Roo 5	21 11/0020/1003/7250		K Onderpass south Sound carriage way		10 Wedge	+			1,77			+	+
					7+230								insert reference drawing number	
74	Linear Dieta Deedee LDD CC C	1.00/0044/9/15/72220	0	K Hardamana Cauth Bassad Caminansus	7+230	T- 14/d	Head shoulder	TCP/IP (*)	4.4	21/2	N/A	0	from MEP and ITS designs	drawing edition
71	License Plate Reader, LPR 66-6	LPR/0011/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Hard shoulder	TCP/IP (*)	11	N/A	N/A			
													insert reference drawing number	insert reference
			_		7+230							_	from MEP and ITS designs	drawing edition
72	License Plate Reader, LPR 66-7	LPR/0012/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Lane	TCP/IP (*)	12	N/A	N/A	0		
													insert reference drawing number	insert reference
					7+230								from MEP and ITS designs	drawing edition
73	License Plate Reader, LPR 66-8	LPR/0013/KUS/7230	0	K Underpass South Bound Carriageway		To Woqod	Hard shoulder	TCP/IP (*)	13	N/A	N/A	0	jioni ine: ana ris designs	arawing cardon
					6+150								insert reference drawing number	
74	Pan tilt zoom CCTV camera, PTZ 77	PTZ/001/KUN/6150	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP	1	N/A	N/A	0	from MEP and ITS designs	drawing edition
														1
					6+226								insert reference drawing number	
75	Pan tilt zoom CCTV camera, PTZ 60	PTZ/002/KUS/6226	0	K Underpass South Bound Carriageway		To Wogod	Lane	TCP/IP	2	N/A	N/A	0	from MEP and ITS designs	drawing edition
		, , , , , , , ,								'				1
					6+124								insert reference drawing number	
76	Magnetometer 1, Detection zone 77-1	DZM/001/KUN/6124	0	K Underpass North Bound Carriageway	0.121	To East Industrial	Lane	TCP/IP	1	N/A	N/A	0	from MEP and ITS designs	drawing edition
- 70	magnetonicte 1, beteeton zone // 1	52.11/001/1011/0121		it onderpass voici sound carrageway	·	To East maastridi				- 14/11			+	-
					6+124								insert reference drawing number	
77	Magnetometer 2, Detection zone 77-1	DZM/002/KUN/6124	0	K Underpass North Bound Carriageway	0+124	To East Industrial	Lane	TCP/IP	2	N/A	N/A	0	from MEP and ITS designs	drawing edition
- //	Wagnetometer 2, Detection zone 77-1	DZW/002/KUN/6124	0	k Onderpass North Bound Carriageway		TO East Illuustriai	Latte	TCP/IP		IN/A	IN/A		+	+
					6.404								insert reference drawing number	insert reference
			_		6+124				_			_	from MEP and ITS designs	drawing edition
78	Magnetometer 3, Detection zone 77-1	DZM/003/KUN/6124	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP	3	N/A	N/A	0		
													insert reference drawing number	insert reference
					6+124								from MEP and ITS designs	drawing edition
79	Magnetometer 4, Detection zone 77-1	DZM/004/KUN/6124	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP	4	N/A	N/A	0	,,	
											T		insert reference drawing number	insert reference
					6+124									
80	Magnetometer 5, Detection zone 77-1	DZM/005/KUN/6124	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP	5	N/A	N/A	0	from MEP and ITS designs	drawing edition
					-									
		1			6+129								insert reference drawing number	
81	Magnetometer 6, Detection zone 77-1	DZM/006/KUN/6129	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP	6	N/A	N/A	0	from MEP and ITS designs	drawing edition
	<u> </u>		-							+ ···			+	1
					6+129								insert reference drawing number	
82	Magnetometer 7, Detection zone 77-1	DZM/007/KUN/6129	0	K Underpass North Bound Carriageway	0.123	To East Industrial	Lane	TCP/IP	7	N/A	N/A	0	from MEP and ITS designs	drawing edition
02	Magnetonicie 7, Detection zone 77-1	D2141/007/K014/6129		k Onderpass North Bound Carriageway		TO Last muustiidi	Latic	TCF/IF	+	IN/M	11//4		+	+
1		1			6.420								insert reference drawing number	insert reference
	Manager of the state of the sta	D74 4/000 /// 14/1-1		Killedowen North Dr. 100	6+129	F- 5	1	TCD/ID	_	11/1	N1/2	•	from MEP and ITS designs	drawing edition
83	Magnetometer 8, Detection zone 77-1	DZM/008/KUN/6129	0	K Underpass North Bound Carriageway		To East Industrial	Lane	TCP/IP	8	N/A	N/A	0	+	+
0.5		1				1	1		1				1	1
- 65											J		insert reference drawing number	insert reterence
	Magnetometer 9, Detection zone 77-1	DZM/009/KUN/6129	0	K Underpass North Bound Carriageway	6+129	To East Industrial	Lane	TCP/IP	9	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



Document	Control Panel					
Project Name:	NSERT PROJECT NAME HERE	•				Ref. Number: INSERT DOCUMENT REFERENCE NUMBER
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Version	Date	Status	Written by	Checked by	QA Approver	Notes
0	INSERT DATE	First Edition	INSERT NAME	INSERT NAME	INSERT NAME	Draft for Ashghal review
						(*) Not used for Tunnel management operations
HLD Issued By:						

SignatureINSERT SIGNATURE	Name	INSERT NAME	Date	INSERT DATE
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UIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	LOCATION:	LOCATION:	LOCATION:	LOCATION:	EQUIPMENT:	EQUIPMENT:		CAMERA:	CAMERA:		DRAWING
NUMBER	DESCRIPTION	ID	ALIAS	REV.	ROAD/BUILDING	CH/ROOM	TRAFFIC DIRECTION	LANE / HS	COMMS TYPE	UNIT NO	ASSOCIATED CAMERA	DESCRIPTION	REV.	DRAWING NUMBER	VERSION
														insert reference drawing number	insert refere
85	Magnetometer 10, Detection zone 77-1	DZM/010/KUN/6129		0	K Underpass North Bound Carriageway	6+129	To East Industrial	Lane	TCP/IP	10	N/A	N/A	0	from MEP and ITS designs	drawing edit
86	Magnetometer 1, Detection zone 60-1	DZM/011/KUS/6251		0	K Underpass South Bound Carriageway	6+251	To Woqod	Lane	TCP/IP	11	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edi
87	Magnetometer 2, Detection zone 60-1	DZM/012/KUS/6251		0	K Underpass South Bound Carriageway	6+251	To Wogod	Lane	TCP/IP	12	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
	Magnetometer 3, Detection zone 60-1	DZM/013/KUS/6251		0	K Underpass South Bound Carriageway	6+251	To Wogod	Lane	TCP/IP	13	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert referei drawing edit
	Magnetometer 4. Detection zone 60-1	DZM/014/KUS/6251		0	K Underpass South Bound Carriageway	6+251	To Wogod	Lane	TCP/IP	14	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert referei drawing edit
90	Magnetometer 5, Detection zone 60-1	DZM/015/KUS/6251		0	K Underpass South Bound Carriageway	6+251	To Wogod	Lane	TCP/IP	15	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
91	Magnetometer 6, Detection zone 60-1	DZM/016/KUS/6256		0	K Underpass South Bound Carriageway	6+256	To Wogod	Lane	TCP/IP	16	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
92	Magnetometer 7, Detection zone 60-1	DZM/017/KUS/6256		0	K Underpass South Bound Carriageway	6+256	To Woqod	Lane	TCP/IP	17	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
93	Magnetometer 8, Detection zone 60-1	DZM/018/KUS/6256		0	K Underpass South Bound Carriageway	6+256	To Wogod	Lane	TCP/IP	18	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
94	Magnetometer 9, Detection zone 60-1	DZM/019/KUS/6256		0	K Underpass South Bound Carriageway	6+256	To Wogod	Lane	TCP/IP	19	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert referer drawing edit
95	Magnetometer 10, Detection zone 60-1	DZM/020/KUS/6256		0	K Underpass South Bound Carriageway	6+256	To Wogod	Lane	TCP/IP	20	N/A	N/A	0	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
	(REMOTE IOU)	52111/020/1003/0230		Ü	K Onderpass South Board curringerray		To Wodou	Lunc	10.7.1	20	14/1	1477			
	SCADA Marshalling Remote I/O Unit (SMROIU) KU- Pump Station	CP-/002/KU-/K01		0	K Underpass	K Underpassstorm water pump room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referen drawing editi



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Document Control Panel Project Name: MSERT PROJECT NAME HERE Document Name: PXXX Tunnel E Area EFA pump station plant control & monitoring, Equipment List Version Date Status Written by Checked by CA Approver Notes ON INSERT DATE PINSER DATE

EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	LOCATION:	LOCATION:	LOCATION:	LOCATION:	EQUIPMENT:	EQUIPMENT:		CAMERA:	CAMERA:		DRAWING
NUMBER	DESCRIPTION	ID	ALIAS	REV.	ROAD/BUILDING	CH/ROOM	TRAFFIC DIRECTION	LANE / HS	COMMS TYPE		ASSOCIATED CAMERA		REV.	DRAWING NUMBER	VERSION
FA SW PUMPING S MCC ROOM	SIATION														
0	Motor Control Center, MCC-IAT-SP-02	MCC/002/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	8	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CONTROL PANELS															
1	Instrumentation control panel	CP-/001/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Mod-bus TCP/IP	13	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
unnel E Area EFA I	PUMP STATION														
2	Distribution Board, DB-IAT-SP-02	DB-/027/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	27	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	Distribution Board, DB-UPS	DB-/028/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	28	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
FIRE ALARM PANEL															
4	Fire alarm control panel, FACP	FCP/002/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay - Serial comm	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
PUMPS AND PIPING	3														
5	Electrical activated Pen-stock open/close	PN-/001/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
6	Pump-01	PSW/003/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	Pump-02	PSW/004/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	Pump-03	PSW/005/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	Pressure transmitter PIT	PIT/003/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Analog 4-20mA	3	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	Pressure transmitter PIT	PIT/004/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Analog 4-20mA	4	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	Pressure transmitter PIT	PIT/005/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Analog 4-20mA	5	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
11	Storm water tank level element	LEL/002/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	2	N/A	N/A	N/A	insert reference drawing number	insert reference
12					·	·								from MEP and ITS designs	drawing edition
13	Gate valve	VAL/022/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	22	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
14	Gate valve	VAL/023/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	23	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
15	Gate valve	VAL/024/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	24	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CIRCUIT BREAKERS															
16	800A TP MCCB incomer CB in MCC-IAT-SP-02 fed from LV PANEL-IAT-PG2	CBR/314/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	314	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
17	150A TP MCCB in MCC-IAT-SP-2 for APFC 75 KVAR	CBR/315/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	315	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
	ACCO TO MCCO IN MCC LAT CD 2 for your and a	CBR/316/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	316	N/A	N/A	N/A	insert reference drawing number	insert reference drawing edition
18	400A TP MCCB in MCC-IAT-SP-2 for sump pump	CBR/S10/EFA/FUI		_		· ·	·	•	,		, i		,	from MEP and ITS designs	uruwing edition



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QUIPMENT	EQUIPMENT:	EQUIPMENT:	EQUIPMENT: EQUIPMENT:	LOCATION:	LOCATION:	LOCATION:	LOCATION:	EQUIPMENT:	EQUIPMENT:	CAMERA:	CAMERA:		DRAWING
NUMBER	DESCRIPTION	ID	ALIAS REV.	ROAD/BUILDING	CH/ROOM	TRAFFIC DIRECTION	LANE / HS	COMMS TYPE	UNIT NO	ASSOCIATED CAMERA DESCRIPTION	REV.	DRAWING NUMBER	VERSION
	400A TP MCCB in MCC-IAT-SP-2 for sump pump	CBR/318/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	318	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referen drawing editie
20													
21	40A TP MCCB in MCC-IAT-SP-2 for DB-IAT-SP-02	CBR/319/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	319	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referen drawing editio
	20A CDN MCCD II MCC IAT CD 2 families	CDD /220/FFA /F04	0	Turnel 5 Area 550 Duran Sheking	FFA Shares Wishes During Design	21/2	N1/A	Contact Bolow	220	N/A N/A	N/A	insert reference drawing number	insert referen
22	20A SPN MCCB in MCC-IAT-SP-2 for UPS	CBR/320/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	320	N/A N/A	N/A	from MEP and ITS designs	drawing editi
	16A SPN fixed MCCB in MCC-IAT-SP-2 for socket outlet	CBR/321/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	321	N/A N/A	N/A	insert reference drawing number	
23				·	· ·							from MEP and ITS designs	drawing edit
	16A SPN fixed MCCB in MCC-IAT-SP-2 for socket outlet	CBR/322/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	322	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referen
24												insert reference drawing number	insert referei
25	40A TP MCCB incomer in DB-IAT-SP-02 fed from MCC-IAT-SP-2	CBR/323/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	323	N/A N/A	N/A	from MEP and ITS designs	drawing edit
	400 AACD in DD IAT CD 2 for FFA annual annual links	CBR/324/EFA/F01		Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	324	N/A N/A	N/A	insert reference drawing number	insert referer
26	10A MCB in DB-IAT-SP-2 for EFA pump room lighting	CBR/324/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	324	N/A N/A	N/A	from MEP and ITS designs	drawing editi
	10A MCB in DB-IAT-SP-2 for EFA pump room lighting	CBR/325/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	325	N/A N/A	N/A	insert reference drawing number	
27					· ·							from MEP and ITS designs	drawing editi
	10A MCB in DB-IAT-SP-2 for EFA pump and control room lighting	CBR/326/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	326	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referen drawing editi
28													
29	10A MCB in DB-IAT-SP-2 Spare 1	CBR/327/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	327	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	drawing edit
	201112	opp /222 /554 /524	0		FF1.5: W	21/2		2	222			insert reference drawing number	insert referei
30	20A MCB in DB-IAT-SP-2 for spur unit at APFC	CBR/328/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	328	N/A N/A	N/A	from MEP and ITS designs	drawing edit
	20A MCB in DB-IAT-SP-2 Spare 1	CBR/329/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	329	N/A N/A	N/A	insert reference drawing number	insert refere
31				·								from MEP and ITS designs	drawing edit
	20A MCB in DB-IAT-SP-2 Spare 2	CBR/330/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	330	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referen drawing edit
32												insert reference drawing number	
33	32A MCB in DB-IAT-SP-2 Spare 1	CBR/331/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	331	N/A N/A	N/A	from MEP and ITS designs	drawing edit
	32A MCB in DB-IAT-SP-2 for EFA Control room sockets	CBR/332/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	332	N/A N/A	N/A	insert reference drawing number	insert refere
34	SZA WICE III DB-IAT-SF-2 TOLEFA CUITION TOUTH SUCKELS	CBN/332/EFA/FUI	0	Tunner E Area EFA Fullip Station	EFA Storiii Water Punip Room	N/A	N/A	Contact Relay	332	N/A N/A	IN/A	from MEP and ITS designs	drawing editi
	20A MCB in DB-IAT-SP-2 Spare 3	CBR/333/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	333	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert referei
35													
36	20A MCB in DB-IAT-SP-2 Spare 4	CBR/334/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	334	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
30												insert reference drawing number	insert refere
37	20A MCB in DB-IAT-SP-2 Spare 5	CBR/335/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	335	N/A N/A	N/A	from MEP and ITS designs	drawing edit
LATORS													
	16A,SP isolator for UPS fed from MCC-IAT-SP-2	ISO/038/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	38	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
38													
39	16A,SP isolator for UPS-DB fed from UPS	ISO/039/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	39	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
- 33		100/5									***	insert reference drawing number	insert refere
40	150A TPN isolator for APFC fed from MCC-IAT-SP-2	ISO/040/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	40	N/A N/A	N/A	from MEP and ITS designs	drawing editi
WER FACTOR	CORRECTION PANELS												
	Automatic power factor correction panel, 75 KVAR	PFC/004/EFA/F01	0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	N/A	4	N/A N/A	N/A	insert reference drawing number from MEP and ITS designs	insert refere drawing edit
41												John WEI and 113 designs	ar awing ear



				TUNNEL MANAGEMENT SYSTEM EXAMPLE EQUIPMENT LIS	ST .	
Document (Control Panel					
Project Name: I	NSERT PROJECT NAME HERE					Ref. Number: INSERT DOCUMENT REFERENCE NUMBER
Document Nam	e: PXXX Tunnel E Area EFA pump station plant control & monitoring, Equipmen	t List				
Version	Date	Status	Written by	Checked by	QA Approver	Notes
0	INSERT DATE	First Edition	INSERT NAME	INSERT NAME	INSERT NAME	Draft for Ashghal review
						(*) Not used for Tunnel management operations
HLD Issued By:	•			•	•	
1						
Signature	NameINSERT SIGNATURENameName	r NAMEDateINSERT DATE				

EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	EQUIPMENT:	LOCATION:	LOCATION:	LOCATION:	LOCATION:	EQUIPMENT:	EQUIPMENT:		CAMERA:	CAMERA:		DRAWING
NUMBER	DESCRIPTION	ID	ALIAS	REV.	ROAD/BUILDING	CH/ROOM	TRAFFIC DIRECTION	LANE / HS	COMMS TYPE	UNIT NO	ASSOCIATED CAMERA	DESCRIPTION	REV.	DRAWING NUMBER	VERSION
SPOT DETECTION	N DEVICES														
42	Smoke detector, S1/1	SDR/018/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	N/A	18	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
43	Smoke detector, S1/2	SDR/019/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	N/A	19	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
44	Smoke detector, S1/3	SDR/020/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	N/A	20	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
45	Break glass type Manual call point, BG1/1	MBG/022/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	N/A	22	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
46	Fire alarm sounder,B1/1	ESU/010/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	N/A	10	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
UPS															
47	Uninterruptable Power Supply, UPS	UPS/002/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Mod-bus TCP/IP - Contact Relay	2	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition
CONTROL PANEL	LS (REMOTE IOU)														
48	SCADA Marshalling Remote I/O Unit (SMROIU) EIU Pump Station	CP-/002/EFA/F01		0	Tunnel E Area EFA Pump Station	EFA Storm Water Pump Room	N/A	N/A	Contact Relay	1	N/A	N/A	N/A	insert reference drawing number from MEP and ITS designs	insert reference drawing edition



IA

INFRASTRUCTURE AFFAIRS DESIGN DEPARTMENT-ROADS

SPECIMEN DESIGN FOR TUNNEL MANAGEMENT SYSTEM I/O LISTS EXAMPLE

THIS SPECIMEN IS PROVIDED FOR GUIDANCE ONLY

THIS PACKAGE CONTAINS SPECIMEN LISTS OF VARIOUS CRITICAL INFRASTRUCTURES FOR A TYPICAL TUNNEL MANAGEMENT SYSTEM. THE INDIVIDUAL LISTS MAY NOT CORRELATE TO OTHER LISTS AND THEIR PURPOSE IS TO PROVIDE PRESENTATIONAL GUIDANCE ONLY.



							TUN	NEL MANAGE	MENT SYSTEM EXAMPLE I	/O LIST						
		VAME						Ref. Number:	INSERT DOCUMENT REFERENCE NUM	BER						
		Plant Control & M	lonitoring, IO signals list	·				Written by	Checked by		QA Approver Notes	es				
								Insert name	Insert name		Insert name Draft)	ft for Ashghal review				
HLD Issued By:																
Signature	i	nsert signature	Nar	meDateinsert da	te											
Simul Simul	Part															
		Read Write	I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name		laster PLC ID	Master PLC Name	Rack ID	Field Signal Rack Name Conductors	Comments
1600kVA Generator I	AT-01															
0	DIN	R	BUS/COMM	Emergency Generator Available/Unavailable	Emergency Generator	Discrete IO	Tunnel E Service Compound	Available/Unavailable	GEN/001/ESC/E01 RIO/008/ESC/E01		PLC/O	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	UnderFreq, GEN OverFreq, GEN UnderVolt, GEN OverVolt, GEN ReversePower, GE LossOfField, GEN Over Excitation, GEN Removed, etc.
1	DIN	R	DB	Emergency Generator Duty/Stand-by							PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
2																
2		К								Tunnel E Service Compound Plant						
		К								Tunnel E Service Compound Plant						
		R		Emergency Generator Engine Low Oil Pressure						Tunnel E Service Compound Plant						
		R	BUS/COMM	Normal/Alarm	Emergency Generator Low Oil	Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/001/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
6	DIN	R	BUS/COMM			Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
7	DIN	R	BUS/COMM	Normal/Alarm	Level	Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/O	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
8	DIN	R	BUS/COMM		Temperature	Discrete IO	Tunnel E Service Compound	Normal/High	GEN/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
9	DIN	R	BUS/COMM	Emergency Generator Engine Over Crank Normal/Alarm	Emergency Generator Over Crank	Discrete IO	Tunnel E Service Compound	Normal/High	GEN/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
10	DIN	R	BUS/COMM	Emergency Generator Engine Over Speed Normal/Alarm	Emergency Generator Over Speed	Discrete IO	Tunnel E Service Compound	Normal/High	GEN/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
11	DIN	R	BUS/COMM	Emergency Generator Auto C/O Enabled/Disabled	Emergency Generator Auto C/O	Discrete IO	Tunnel E Service Compound	Enabled/Disabled	GEN/001/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
12	DIN	R	BUS/COMM	Emergency Generator CB Fail to Open	Emergency Generator Auto C/O	Discrete IO	Tunnel E Service Compound	Normal/Failure	GEN/001/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
13	DIN	R	BUS/COMM	Emergency Generator CB Fail to Close	Emergency Generator Auto C/O	Discrete IO	Tunnel E Service Compound	Normal/Failure	GEN/001/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
	DIN	w	DB	Emergency Generator Duty/Stand-by		Discrete IO	Tunnel E Service Compound	Duty/Standby	GEN/001/ESC/E01		PLC/O	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
	DOLIT	w	PLC/RIO								PLC/00				2-G 2.08 mm^2	
		W.								Tunnel E Service Compound Plant					2.C 2.08 mm/s2	
			PECINIO	Lineigency denerator no Load Kun op Test	Effergency deficiation	Discrete 10	Tullier E Service Compound	Start/Stop	GEN/001/ESC/E01 MO/000/ESC/E01	CONTROL & WORKONING - SWINGOO-8	PECOG	1002/130/100	mer c service compound swinco		20230111112	
										Tunnel E Service Compound Plant						UnderFreq, GEN OverFreq, GEN UnderVolt, GEN OverVolt, GEN ReversePower, GE
		R								Control & Monitoring - SMRIOU-8						LossOfField, GEN Over Excitation, GEN Removed, etc.
Conting																
	DIN	R	BUS/COMM	Emergency Generator Running/Stop	Emergency Generator	Discrete IO	Tunnel E Service Compound	Running/Stop	GEN/002/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
20	DIN	R	BUS/COMM	Emergency Generator Operating Condition	Emergency Generator	Discrete IO	Tunnel E Service Compound	Normal/Failure	GEN/002/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
21	DIN	R	BUS/COMM		Emergency Generator Low Fuel	Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
22	DIN	R	BUS/COMM		Emergency Generator Low Oil	Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
23	DIN	R	BUS/COMM			Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
24	DIN	R	BUS/COMM	Normal/Alarm	Level	Discrete IO	Tunnel E Service Compound	Normal/Low	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
25	DIN	R	BUS/COMM			Discrete IO	Tunnel E Service Compound	Normal/High	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
26	DIN	R	BUS/COMM	Emergency Generator Engine Over Crank Normal/Alarm	Emergency Generator Over Crank	Discrete IO	Tunnel E Service Compound	Normal/High	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
27	DIN	R	BUS/COMM	Emergency Generator Engine Over Speed Normal/Alarm	Emergency Generator Over Speed	Discrete IO	Tunnel E Service Compound	Normal/High	GEN/002/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
28	DIN	R	BUS/COMM	Emergency Generator Auto C/O Enabled/Disabled	Emergency Generator Auto C/O	Discrete IO	Tunnel E Service Compound	Enabled/Disabled	GEN/002/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM							Tunnel E Service Compound Plant	PLC/00				N/A	
		R	·							Tunnel E Service Compound Plant						
		w								3,111000						
		147														
										Tunnel E Service Compound Plant						
		W	PLC/RIO	Emergency Generator No Load Run Up Test	Emergency Generator	Discrete IO	Tunnel E Service Compound	Start/Stop	GEN/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	7002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.06 mm·2	
										Tunnel E Service Compound Plant						
		R			Control Panel JWI-01 Operating					Tunnel E Service Compound Plant						
		R	PLC/RIO	Control Panel Operating Condition Power Supply	Condition Status	Relay		Normal/Failure		Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay Hardwired to control relay: Monitor undervoltages, overvoltages in singlephase,
36	DIN	R	PLC/RIO	Control Panel Operating Condition Temperature		Relay	Tunnel E Service Compound	Normal/Failure	CP-/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	
37	DIN	R	PLC/RIO	Control Panel Manual Over-Ride On/Off	Control Panel Manual Over-Ride	Relay	Tunnel E Service Compound	On/Off	CP-/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	
38	DOUT	w	PLC/RIO	Control Panel Manual Over-Ride On/Off	Control Panel Manual Over-Ride	Relay	Tunnel E Service Compound	On/Off	CP-/001/ESC/E01 RIO/008/ESC/E01		PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	
1600kVA Generator r	oom control pan	el PG1			formation and the second		Г		T	Empleon 1 2 1 1					Т	
39	DIN	R	PLC/RIO	Control Panel Door Access	Status		Tunnel E Service Compound	Open/Closed	CP-/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to limit switch
40	DIN	R	PLC/RIO	Control Panel Operating Condition Power Supply	Status	Relay	Tunnel E Service Compound	Normal/Failure	CP-/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	
41	DIN	R	PLC/RIO	Control Panel Operating Condition Temperature			Tunnel E Service Compound	Normal/Failure	CP-/001/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/00	/002/ESC/E08 Tur	nnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to control relay: Monitor undervoltages, overvoltages in singlephase, two-wire circuits



							TUN	NEL MANAGEI	MENT SYSTEM EXAMPLE I	O LIST					
Document Contr Project Name: INS		NAME						Ref. Number:	INSERT DOCUMENT REFERENCE NUM	BER					
	XXX Tunnel I		Ionitoring, IO signals list					Written by	Checked by		QA Approver Notes				
0 INSERT DATE	First Edition							Insert name	Insert name		Insert name Draft for Ashghal rev	iew			
HLD Issued By:									<u>'</u>						
Signature		insert signature	Nar	neDateinsert dat	te										
Signal Signal count Tag	Data Type	Read Write	I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	Outstation PLC ID Outstation PLC Name Master PLC ID	Master PLC Name	Rack ID	Field Signal Rack Name Conductors	Comments
	,,	Redu Wille								Tunnel E Service Compound Plant					commend
42	DIN	R	PLC/RIO	Control Panel Manual Over-Ride On/Off	Control Panel Manual Over-Ride	Relay	Tunnel E Service Compound	On/Off	CP-/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
43	DOUT	W	PLC/RIO	Control Panel Manual Over-Ride On/Off	Control Panel Manual Over-Ride	Relay	Tunnel E Service Compound	On/Off	CP-/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
30VDC battery + batte	ry charger for I	LV panel- JWI-01								Tunnel E Service Compound Plant				Hardwir	ired to control relay: Monitor undervoltages, overvoltages in singlephase,
44	DIN	R	PLC/RIO	Battery Operating Condition	Battery	Relay	Tunnel E Service Compound	Normal/Failure	BAT/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			re circuits
45	DIN	R	PLC/RIO	Battery On Load On/Off	Battery On Load	Relay	Tunnel E Service Compound	On/Off	BAT/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
46	DIN	R	PLC/RIO	Battery Charger On/Off	Battery Charger	Relay	Tunnel E Service Compound	On/Off	BAT/001/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
47	DOUT	w	PLC/RIO	Battery On Load On/Off	Battery On Load	Relay	Tunnel E Service Compound	On/Off	BAT/001/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
48	DOUT	w	PLC/RIO	Battery Charger On/Off	Battery Charger	Relay	Tunnel E Service Compound	On/Off	BAT/001/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
30VDC battery + batte	ry charger for I	LV panel- PG-1													
49	DIN	R	PLC/RIO	Battery Operating Condition	Battery	Relay	Tunnel E Service Compound	Normal/Failure	BAT/002/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		Hardwir 2-C 2.08 mm^2 two-wir	ired to control relay: Monitor undervoltages, overvoltages in singlephase, re circuits
50	DIN	R	PLC/RIO	Battery On Load On/Off	Battery On Load	Relay	Tunnel E Service Compound	On/Off	BAT/002/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
51	DIN		PLC/RIO	Battery Charger On/Off	Battery Charger	Relay	Tunnel E Service Compound	On/Off	BAT/002/ESC/E01 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
										Tunnel E Service Compound Plant					
52	DOUT	W	PLC/RIO	Battery On Load On/Off	Battery On Load	Relay	Tunnel E Service Compound	On/Off	BAT/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
53	DOUT	W	PLC/RIO	Battery Charger On/Off	Battery Charger	Relay	Tunnel E Service Compound	On/Off	BAT/002/ESC/E01 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
Level switch for diese	oil day Tank D	T-00-01		Fire Main Booster Pumps Water Storage Reservoir Level						Tunnel E Service Compound Plant					
54	DIN	R	PLC/RIO	Normal/High Fire Main Booster Pumps Water Storage Reservoir Level	Diesel Oil Day Tank Level	Sensor	Tunnel E Service Compound	Normal/High	LSW/001/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
55	DIN	R	PLC/RIO	Normal/Low	Diesel Oil Day Tank Level	Sensor	Tunnel E Service Compound	Normal/Low	LSW/001/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
Level switch for diese	oil day Tank D	T-00-02	T	Territoria (1971)				1		L			ı		
56	DIN	R	PLC/RIO	Fire Main Booster Pumps Water Storage Reservoir Level Normal/High	Diesel Oil Day Tank Level	Sensor	Tunnel E Service Compound	Normal/High	LSW/002/ESC/E20 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
57	DIN	R	PLC/RIO	Fire Main Booster Pumps Water Storage Reservoir Level Normal/Low	Diesel Oil Day Tank Level	Sensor	Tunnel E Service Compound	Normal/Low	LSW/002/ESC/E20 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
Level switch for diese	oil storage Tan	ık													
58	DIN	R	PLC/RIO	Fire Main Booster Pumps Water Storage Reservoir Level Normal/High	Diesel Oil Storage Tank Level	Sensor	Tunnel E Service Compound	Normal/High	LSW/004/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
59	DIN	R	PLC/RIO	Fire Main Booster Pumps Water Storage Reservoir Level Normal/Low	Diesel Oil Storage Tank Level	Sensor	Tunnel E Service Compound	Normal/Low	LSW/004/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
Level switch for diese	l	ıb										1			
60	DIN	R	PLC/RIO	Fire Main Booster Pumps Water Storage Reservoir Level Normal/High	Diesel Oil Storage Tank Level	Sensor	Tunnel E Service Compound	Normal/High	LSW/005/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
61		-		Fire Main Booster Pumps Water Storage Reservoir Level	_					Tunnel E Service Compound Plant				2-C 2.08 mm^2	
61	DIN	R	PLC/RIO	Normal/Low	Diesel Oil Storage Tank Level	Sensor	Tunnel E Service Compound	Normal/Low	LSW/005/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
Sensors					Pressure sensor for fuel line 1 Level					Tunnel E Service Compound Plant					
62	DIN	R	PLC/RIO	Pressure sensor for fuel line 1 Level Normal/Low	Normal/Low Pressure sensor for fuel line 2 Level	Sensor	Tunnel E Service Compound	Normal/Low	PID/001/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
63	DIN	R	PLC/RIO	Pressure sensor for fuel line 2 Level Normal/Low	Normal/Low Flow sensor for day Tank DT-00-01	Sensor	Tunnel E Service Compound	Normal/Low	PID/002/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
64	DIN	R	PLC/RIO	Flow sensor for day Tank DT-00-01 Level Normal/Low	Level Normal/Low Flow sensor for day Tank DT-00-02	Sensor	Tunnel E Service Compound	Normal/Low	FLS/001/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
65	DIN	R	PLC/RIO	Flow sensor for day Tank DT-00-02 Level Normal/Low	Level Normal/Low Flow sensor for fuel line 1 Level	Sensor	Tunnel E Service Compound	Normal/Low	FLS/002/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
66	DIN	R	PLC/RIO	Flow sensor for fuel line 1 Level Normal/Low	Normal/Low	Sensor	Tunnel E Service Compound	Normal/Low	FLS/004/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
67	DIN	R	PLC/RIO	Flow sensor for fuel line 2 Level Normal/Low	Flow sensor for fuel line 2 Level Normal/Low	Sensor	Tunnel E Service Compound	Normal/Low	FLS/005/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
Fuel Pump 1, 2															
68	DIN	R	DB	Fuel Pump 1 Available/Unavailable	Fuel Drainage Pump 1	Discrete IO	Tunnel E Service Compound	Available/Unavailable	POT/001/ESC/E21		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
69	DIN	R	PLC/RIO	Fuel Pump 1 Auto/Manual	Fuel Pump 1	Relay	Tunnel E Service Compound	Auto/Manual	POT/001/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
70	DIN	R	DB	Fuel Pump 1 Duty/Standby	Fuel Pump 1 Duty/Standby	Discrete IO	Tunnel E Service Compound	Duty/Standby	POT/001/ESC/E21		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
71	DIN	R	PLC/RIO	Fuel Pump 1 Running/Stop			Tunnel E Service Compound		POT/001/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant	PLC/002/ESC/E08			Hardwir	ired to control relay used for operating status control: or overcurrent and undercurrent (2 relay contacts)
72		R			Fuel Pump 1	Relay		Running/Stop		Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Control & Monitoring - CMRIOU-8		Tunnel E Service Compound SMRCU		-Monito	or motor temperature probe, generally a PT100 (! Relay contact)
	DIN	к	PLC/RIO	Fuel Pump 1 Operating Condition	Fuel Pump 1	Relay	Tunnel E Service Compound	Normal/Failure		Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			or overcurrent and undercurrent (2 relay contacts)
73	DIN	R	DB	Fuel Pump 2 Available/Unavailable	Fuel Pump 2	Discrete IO	Tunnel E Service Compound	Available/Unavailable		Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
74	DIN	R	PLC/RIO	Fuel Pump 2 Auto/Manual	Fuel Pump 2	Relay	Tunnel E Service Compound	Auto/Manual	POT/002/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
75	DIN	R	DB	Fuel Pump 2 Duty/Standby	Fuel Pump 2 Duty/Standby	Discrete IO	Tunnel E Service Compound	Duty/Standby	POT/002/ESC/E21	Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A Hardwir	ired to control relay used for operating status control:
76	DIN	R	PLC/RIO	Fuel Pump 2 Running/Stop	Fuel Pump 2	Relay	Tunnel E Service Compound	Running/Stop	POT/002/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2 -Monito	or overcurrent and undercurrent (2 relay contacts) or motor temperature probe, generally a PT100 (! Relay contact)
77	DIN	R	PLC/RIO	Fuel Pump 2 Operating Condition	Fuel Pump 2	Relay	Tunnel E Service Compound	Normal/Failure	POT/002/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		-Monito 2-C 2.08 mm^2 -Monito	or motor temperature probe, generally a P1100 (! Relay contact) or overcurrent and undercurrent (2 relay contacts)
78	DOUT	w	PLC/RIO	Fuel Pump 1 Auto/Manual	Fuel Pump 1	Relay	Tunnel E Service Compound	Auto/Manual	POT/001/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm^2	
79	DOUT	w	DB	Fuel Pump 1 Duty/Standby	Fuel Pump 1 Duty/Standby	Discrete IO	Tunnel E Service Compound	Duty/Standby	POT/001/ESC/E21		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	



							TUNI	NEL MANAGE	MENT SYSTEM EXAMPLE I	/O LIST							
Document Contr	al Danal																
Project Name: INSI	RT PROJECT I							Ref. Number:	INSERT DOCUMENT REFERENCE NUM	BER							
Version Date	Status	Plant Control & N	Monitoring, IO signals list					Written by	Checked by		QA Approver		Notes				
0 INSERT DATE	First Edition							Insert name	Insert name		Insert name		Draft for Ashghal revi	2W			
HLD Issued By:																	
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Signal Signal count Tag	Data Type	Read Write	I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	Outstation PLC ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name Field	I Signal ductors Comments
80	DOUT	w	PLC/RIO	Fuel Pump 1 Start/Stop	Fuel Pump 1	Relay	Tunnel E Service Compound	Start/Stop	POT/001/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2
81	DOUT	w	PLC/RIO	Fuel Pump 2 Auto/Manual	Fuel Pump 2	Relay	Tunnel E Service Compound	Auto/Manual	POT/002/ESC/E21 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.1	08 mm^2
82	DOUT	w	DB	Fuel Pump 2 Duty/Standby	Fuel Pump 2 Duty/Standby	Discrete IO	Tunnel E Service Compound	Duty/Standby	POT/002/ESC/E21				PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
83	DOUT					Relay		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Tunnel E Service Compound Plant			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				08 mm^2
	DOUT	W	PLC/RIO	Fuel Pump 2 Start/Stop	Fuel Pump 2	Relay	Tunnel E Service Compound	Start/Stop	POT/002/ESC/E21 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2021	ue mm·2
Motorized Valve					Motorised valve for day Tank DT-00-01					Tunnel E Service Compound Plant							
84	DIN	R	PLC/RIO	Motorised valve for day Tank DT-00-01 Open/Closed	Open/Closedd Position Motorised valve for day Tank DT-00-02	Relay	Tunnel E Service Compound	Open/Closed	VAL/001/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2
85	DIN	R	PLC/RIO	Motorised valve for day Tank DT-00-02 Open/Closed	Open/Closedd Position	Relay	Tunnel E Service Compound	Open/Closed	VAL/002/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.6	08 mm^2
Solenoid valve				Solenoid valve for day Tank DT-00-01 Open/Closed	Solenoid valve for day Tank DT-00-01					Tunnel E Service Compound Plant			1				
86	DIN	R	PLC/RIO	Position	Open/Closedd Position	Relay	Tunnel E Service Compound	Open/Closed	VAL/004/ESC/E20 RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2
87	DIN	R	PLC/RIO	Solenoid valve for day Tank DT-00-02 Open/Closed Position	Solenoid valve for day Tank DT-00-02 Open/Closedd Position	Relay	Tunnel E Service Compound	Open/Closed	VAL/005/ESC/E20 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2
fuel fill point valve																	
88	DIN	R	PLC/RIO	Fuel fill point valve with lock Open/Closed Position	Fuel fill point valve with lock Open/Closedd Position	Relay	Tunnel E Service Compound	Open/Closed	VAL/007/ESC/E22 RIO/008/ESC/E01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.1	08 mm^2
Motor control center,	l l	-	1	,	1-1	1		.,.,	,,				.,,,				1
		R		Motor control center, MCC-IAT-SP-01 Mains Supply						Tunnel E Plant Control & Monitoring -		Tunnel E Plant Control & Monitoring -					Hardwired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage
89	DIN	R	PLC/RIO	Operating Condition Motor control center, MCC-IAT-SP-01 Operating Condition	MCC Mains Supply	Relay	Tunnel E Service Compound	Normal/Failure	MCC/001/ESC/E18 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			08 mm^2 assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
90	DIN	R	PLC/RIO	Power Supply Motor control center, MCC-IAT-SP-01 Operating Condition	MCC Operating Condition	Relay	Tunnel E Service Compound	On/Off	MCC/001/ESC/E18 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
91	DIN	R	PLC/RIO	Temperature	MCC Operating Condition	Relay	Tunnel E Service Compound	On/Off	MCC/001/ESC/E18 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
92	DIN	R	PLC/RIO	Motor control center, MCC-IAT-SP-01 Door Open/Closed Motor control center, MCC-IAT-SP-01 Manual Over-Ride		Relay	Tunnel E Service Compound	On/Off	MCC/001/ESC/E18 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2 Hardwired to limit switch
93	DIN	R	PLC/RIO	On/Off	MCC Manual Over-Ride	Relay	Tunnel E Service Compound	On/Off	MCC/001/ESC/E18 RIO/001/EU-/E19	SMRIOU	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2
94	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A from ESMD IAT-EL1 Incoming CB Open/Closed Position	EL1 Incoming CB Open/Closed P	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/056/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
95	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A from ESMD IAT-EL1 Incoming CB Trip Status	DB- MCC-IAT-SP-010A from ESMDB-IAT- EL1 Incoming CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/056/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	N/A
96	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A Duty Pump CB Open/Closed Position	MCC-IAT-SP-01 DB 40A Duty Pump CB Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/057/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	N/A
97	DIN	p	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A Duty Pump CB Trip Status		Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/057/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	N/A
98	DIN	_		Motor control center, MCC-IAT-SP-01 DB 40A Stand-by	MCC-IAT-SP-01 DB 40A Stand-by					Tunnel E Plant Control & Monitoring -		Tunnel E Plant Control & Monitoring -	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				N/A
		K	BUS/COMM	Pump CB Open/Closed Position Motor control center, MCC-IAT-SP-01 DB 40A Stand-by	Pump CB Open/Clos MCC-IAT-SP-01 DB 40A Stand-by	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/058/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			
99	DIN	R	BUS/COMM	Pump CB Trip Status Motor control center, MCC-IAT-SP-01 DB 20A UPS CB	Pump CB Trip Status MCC-IAT-SP-0120A UPS CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/058/EI-/E19 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
100	DIN	R	BUS/COMM	Open/Closed Position Motor control center, MCC-IAT-SP-01 DB 20A UPS CB Trip	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/059/EI-/E19 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		1	N/A
101	DIN	R	BUS/COMM	Status Motor control center, MCC-IAT-SP-01 DB 16A Socket	MCC-IAT-SP-0120A UPS CB Trip Status MCC-IAT-SP-0116A Socket Outlet 1 CB		Tunnel E Service Compound	Normal/Trip	CBR/059/EI-/E19 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		1	N/A
102	DIN	R	BUS/COMM	Outlet 1 CB Open/Closed Position	Open/Clos	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/060/EI-/E19 RIO/001/EU-/E19	SMRIOU	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	N/A
103	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 16A Socket Outlet 1 CB Trip Status	MCC-IAT-SP-0116A Socket Outlet 1 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/060/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		·	N/A
104	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 16A Socket Outlet 2 CB Open/Closed Position	MCC-IAT-SP-0116A Socket Outlet 2 CB Open/Clos	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/061/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	N/A
105	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 16A Socket Outlet 2 CB Trip Status	MCC-IAT-SP-0116A Socket Outlet 2 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/061/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	NIA
106	DOUT	w	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A from ESMD IAT-EL1 Incoming CB Normal/Trip Command		Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/056/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
107	DOUT	187	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A Duty Pump CB Normal/Trip Command		Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/057/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
		w		Motor control center, MCC-IAT-SP-01 DB 40A Stand-by	MCC-IAT-SP-0140A Stand-by Pump CB					Tunnel E Plant Control & Monitoring -		Tunnel E Plant Control & Monitoring -	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
108	DOUT	W	BUS/COMM	Pump CB Normal/Trip Command Motor control center, MCC-IAT-SP-01 DB 20A UPS CB	Normal/Trip Command MCC-IAT-SP-01 20A UPS CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/058/EI-/E19 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
109	DOUT	W	BUS/COMM	Normal/Trip Command Motor control center, MCC-IAT-SP-01 DB 16A Socket	Normal/Trip Command MCC-IAT-SP-01 16A Socket Outlet 1	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/059/EI-/E19 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	N/A
110	DOUT	W	BUS/COMM	Outlet 1 CB Normal/Trip Command Motor control center, MCC-IAT-SP-01 DB 16A Socket	CB Normal/Trip Command MCC-IAT-SP-01 16A Socket Outlet 2	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/060/EI-/E19 RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/001/EU-/E19	PLC Tunnel E Plant Control & Monitoring -	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
111	DOUT	w	BUS/COMM	Outlet 2 CB Normal/Trip Command	CB Normal/Trip Command	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/061/EI-/E19 RIO/001/EU-/E19	SMRIOU	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
112	AIN	R	PLC/RIO	Motor control center, MCC-IAT-SP-01 Incomer CB Voltage	e MCC-IAT-SP-01 Incomer CB	Signal Converter	Tunnel E Service Compound	Voltage	CBR/056/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CSC 1	1.31 mm^2
113	AIN	R	PLC/RIO	Motor control center, MCC-IAT-SP-01 Incomer CB Current	nt MCC-IAT-SP-01 Incomer CB	Signal Converter	Tunnel E Service Compound	Current	CBR/056/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CSC 1	1.31 mm ²
114	AIN	R	PLC/RIO	Motor control center, MCC-IAT-SP-01 Incomer CB Power	MCC-IAT-SP-01 Incomer CB	Signal Converter	Tunnel E Service Compound	Power	CBR/056/EI-/E19 RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CSC 1	1.31 mm^2
Motor control center,			-						·							•	
115	DIN	R	PLC/RIO	Motor control center, MCC-JWI-03 Mains Supply Operatin	ng MCC Mains Supply	Relay	Tunnel E Service Compound	Normal/Failure	MCC/003/ESC/E18 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		202	Hardwired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
				Motor control center, MCC-JWI-03 Operating Condition						Tunnel E Service Compound Plant							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
116	DIN	К	PLC/RIO	Power Supply Motor control center, MCC-JWI-03 Operating Condition	MCC Operating Condition	Relay	Tunnel E Service Compound	On/Off	MCC/003/ESC/E18 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
117	DIN	R	PLC/RIO	Temperature	MCC Operating Condition	Relay	Tunnel E Service Compound	On/Off	MCC/003/ESC/E18 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
118	DIN	R	PLC/RIO	Motor control center, MCC-JWI-03 Door Open/Closed Motor control center, MCC-JWI-03 Manual Over-Ride	MCC Door	Relay	Tunnel E Service Compound	On/Off	MCC/003/ESC/E18 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2 Hardwired to limit switch
119	DIN	R	PLC/RIO	On/Off Motor control center, MCC-JWI-03 DB 250A from LV	MCC Manual Over-Ride MCC-JWI-03 DB0A from LV PANEL-PG-	Relay	Tunnel E Service Compound	On/Off	MCC/003/ESC/E18 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.0	08 mm^2
120	DIN	R	BUS/COMM	PANEL-PG-2 Incoming CB Open/Closed Position	2 Incoming CB Open/Closed Position		Tunnel E Service Compound	Open/Closed	CBR/082/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		,	NIA



......insert signatureName..........Insert nameDate......insert date

•		. TUNNEL MANAGEMENT SYST	EM EXAMPLE I/O LIST		
	iment Control Panel				
Project	ct Name: INSERT PROJECT NAME ment Name: PXXX Tunnel E Plant Control & Monitoring, IO signals list	Ref. Number: INSERT DOCUM	MENT REFERENCE NUMBER		
Docum	ment Name: PXXX Tunnel E Plant Control & Monitoring, IO signals list				
Version	IN Date Status INSERT DATE First Edition	Written by	Checked by	QA Approver	Notes
0	INSERT DATE First Edition	Insert name	Insert name	Insert name	Draft for Ashghal review
HLD Issu	sued By:				

1		Read Wr	ite I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID	Outstation ID	Outstation Name	Outstation PLC ID Ou	utstation PLC Name M	laster PLC ID	Master PLC Name	Rack ID	Rack Name	Field Signal Conductors	Comments
		В		Motor control center, MCC-JWI-03 DB 250A from LV														N/A	
		N.		Motor control center, MCC-JWI-03 25A MCCB+ELR for C	OU- MCC-JWI-03 25A for OU-HV-001 CB						Tunnel E Service Compound Plant								
March Marc	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/083/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
Column C	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/083/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
March Marc	DIN	R	BUS/COMM	HV-002 CB Open/Closed Position	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/084/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
A	DIN	R	BUS/COMM	HV-002 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/084/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
The content of the	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/085/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/085/ESC/E02	RIO/005/ESC/E02			PLC	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
1		ь	BUS/COMM	Motor control center, MCC-JWI-03 25A MCCB+ELR for C	OU- MCC-JWI-03 25A for OU-HV-004 CB	Circuit Breaker		Open/Closed	CBB/006/ESC/E03	PIO/ODE/ESC/ED3	Tunnel E Service Compound Plant		BIC	/nn3/ESC/Ene				N/A	
		-		Motor control center, MCC-JWI-03 25A MCCB+ELR for C	U- MCC-JWI-03 25A for OU-HV-004 CB						Tunnel E Service Compound Plant		,						
Part		К	.,,					Normal/Trip			Tunnel E Service Compound Plant		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU				
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/087/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
1	DIN	R	BUS/COMM	LV-001 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/087/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM	LV-002 CB Open/Closed Position	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/088/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM	LV-002 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/088/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/089/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Normal/Trin	CBR/089/FSC/F02	RIO/005/FSC/F02			PIC	/002/ESC/F08	Tunnel E Service Compound SMRCII			N/A	
Part		 D		Motor control center, MCC-JWI-03 20A MCCB+ELR for C	U- MCC-JWI-03 20A for OU-LV-004 CB						Tunnel E Service Compound Plant		PLC.	/nn2/ESC/Enn				N/A	
		К		Motor control center, MCC-JWI-03 20A MCCB+ELR for C	U- MCC-JWI-03 20A for OU-LV-004 CB						Tunnel E Service Compound Plant								
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/090/ESC/E02	RIO/005/ESC/E02	-		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU				
No. Column Colu	DIN	R	BUS/COMM	EL-001 CB Open/Closed Position	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/091/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM	EL-001 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/091/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/092/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/092/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/093/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant		PLC	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Motor control center, MCC-JWI-03 20A MCCB+ELR for C	U- MCC-JWI-03 20A for OU-CR-001 CB						Tunnel E Service Compound Plant							N/A	
Part		N.		Motor control center, MCC-JWI-03 20A MCCB+ELR for C	U- MCC-JWI-03 20A for OU-CR-002 CB						Tunnel E Service Compound Plant								
		R	234,000	Motor control center, MCC-JWI-03 20A MCCB+ELR for C							Tunnel E Service Compound Plant		,						
Control Cont	DIN	R	BUS/COMM		P	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/094/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
Part	DIN	R	BUS/COMM	1 CB Open/Closed Position	CB Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/095/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
1	DIN	R	BUS/COMM	1 CB Trip Status	CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/095/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
No. Cont. Proc.	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/096/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
1	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/096/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	R	BUS/COMM	Motor control center, MCC-JWI-03 25A for fan VF-TR-00		Circuit Breaker	Tunnel F Service Compound	Onen/Closed	CBR/097/FSC/F02	RIO/005/ESC/E02			PLC	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
	DIN	ь	BUS/COMM	Motor control center, MCC-JWI-03 25A for fan VF-TR-00	1- MCC-JWI-03 25A for fan VF-TR-001-1	Circuit Breaker		Normal/Trip	CDD/007/FFC/F03	PIO/ODE/ESC/ED3	Tunnel E Service Compound Plant		BIC	/nn3/ESC/Ene	·			N/A	
Dec B				Motor control center, MCC-JWI-03 25A for fan VF-TR-00	11- MCC-JWI-03 25A for fan VF-TR-001-2				, , , , , , ,		Tunnel E Service Compound Plant				· ·				
		К		Motor control center, MCC-JWI-03 25A for fan VF-TR-00	11- MCC-JWI-03 25A for fan VF-TR-001-2						Tunnel E Service Compound Plant								
Second Continue	DIN	R	BUS/COMM				Tunnel E Service Compound	Normal/Trip	CBR/098/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
S	DIN	R	BUS/COMM	CB Open/Closed Position	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/099/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
Society Control of Montal Control	DIN	R	BUS/COMM	CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/099/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
Part	DIN	R	BUS/COMM	CB Open/Closed Position	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/100/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
No. R	DIN	R	BUS/COMM				Tunnel E Service Compound	Normal/Trip	CBR/100/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
BUSICOMM Get From From From From From From From From	DIN	R	BUS/COMM	Motor control center, MCC-JWI-03 63A for fan VF-GE-00	MCC-JWI-03 63A for fan VF-GE-003 CB						Tunnel E Service Compound Plant							N/A	
Motor control center, MCC-IWI-03 40A for fuel pump CB Open/Closed Position Open/Closed Positi				Motor control center, MCC-JWI-03 63A for fan VF-GE-00	MCC-JWI-03 63A for fan VF-GE-003 CB					.,,	Tunnel E Service Compound Plant								
Motor control center, MCC-JWi-03 40A for fuel pump B MCC-JWi-03 20A for fuel pump B MC-JWi-03 20A for		К	.,,	Motor control center, MCC-JWI-03 40A for fuel pump CE	MCC-JWI-03 40A for fuel pump CB						Tunnel E Service Compound Plant			, , , , ,	· ·				
1 DIN R BUS/COMM Trip Status T	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/102/ESC/E02	RIO/005/ESC/E02			PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
2 DIN R BUS/COMM Open/Closed Position Open/Closed P	DIN	R	BUS/COMM	Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/102/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
3 DIN R BUS/COMM Status Control center, MCC-JWI-03 30A Spare 2 CB Den/Closed Position Open/Closed Position Normal/Trip CBR/103/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E08 Tunnel E Service Compound SMRCU NA Open/Closed Position NA Open/Closed	DIN	R	BUS/COMM	Open/Closed Position	Open/Closed Position	Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/103/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
4 DIN R BUS/COMM Open/Closed Position Open/Closed Position Open/Closed Position Open/Closed Position Circuit Breaker Tunnel E Service Compound Open/Closed CBR/104/ESC/E02 RIO/005/ESC/E02 Control & Monitoring - SMRIOU-5 PLC/002/ESC/E08 Tunnel E Service Compound SMRCU NA Motor control center, MCC-JWI-03 30A Spare 2 CB Trip MCC-JWI-03 30A Spare 2 CB Trip Status Status Status Ricuit-1 Service Compound SMRCU Normal/Trip CIRCUIT Breaker Tunnel E Service Compound Normal/Trip CBR/104/ESC/E02 RIO/005/ESC/E02 Control & Monitoring - SMRIOU-5 PLC/002/ESC/E08 Tunnel E Service Compound SMRCU Normal/Trip Tunnel E Service Compound SMRCU Normal/Trip CBR/104/ESC/E02 RIO/005/ESC/E02 Control & Monitoring - SMRIOU-5 PLC/002/ESC/E08 Tunnel E Service Compound SMRCU Normal/Trip	DIN	R	BUS/COMM	Status	Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/103/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5		PLC/	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
Motor control center, MCC-JWI-03 30A Spare 2 CB Trip Status MCC-JWI-03 30A Spare 2 CB Trip Status MCC-JWI-03 30A Spare 2 CB Trip Status Tunnel E Service Compound Plant CBR/104/ESC/E02 RIO/005/ESC/E02 Control & Monitoring - SMRIOU-5 Tunnel E Service Compound SMRCU Normal/Trip CBR/104/ESC/E02 RIO/005/ESC/E02 NA	DIN	R	BUS/COMM			Circuit Breaker	Tunnel E Service Compound	Open/Closed	CBR/104/ESC/E02	RIO/005/ESC/E02			PLC,	/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
5 On 1 Output State Company St	DIN	R	BUS/COMM	Motor control center, MCC-JWI-03 30A Spare 2 CB Trip Status	MCC-JWI-03 30A Spare 2 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trin			Tunnel E Service Compound Plant		PIC	/002/ESC/F08	Tunnel E Service Compound SMRCII			N/A	
Motor control center, MCC-JWI-03 DB 250A from LV MCC-JWI-03 250A from LV PANEL-PG- DOUT W BUS/COMM PANEL-PG-2 Incoming CB Normal/Trip Command 2 Incoming CB Normal/Trip Circuit Breaker Tunnel E Service Compound Normal/Trip CBR/082/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E02 RIO/005/ESC/E08 Tunnel E Service Compound SMRCU					MCC-JWI-03 250A from LV PANEL-PG-						Tunnel E Service Compound Plant								



Document Cont																	
	ERT PROJECT NAMI PXXX Tunnel E Plan		onitoring, IO signals list					Ref. Number:	INSERT DOCUMENT REFERENCE NUM	BER							
Version Date	Status							Written by	Checked by		QA Approver		Notes				
U INSERT DATE	First Edition							Insert name	Insert name		Insert name		Draft for Ashghal revi	ew			
HLD Issued By:											1						
Signature	insert	signature	Nan	neDateinsert dat	re												
-8																	
Cianal Cianal	Data										Outstation PLC						
Signal Signal count Tag	Data Type Read	d Write	I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name Co	ld Signal Inductors Comments
167	DOUT		BUS/COMM	Motor control center, MCC-JWI-03 25A MCCB+ELR for OU						Tunnel E Service Compound Plant			PLC/002/ESC/E08				N/A
		w	BUS/COMM	HV-001 CB Normal/Trip Motor control center, MCC-JWI-03 25A MCCB+ELR for OU-	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/083/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			
168	DOUT	W	BUS/COMM	HV-002 CB Normal/Trip Motor control center, MCC-JWI-03 25A MCCB+ELR for OU-	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/084/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
169	DOUT	W	BUS/COMM	HV-003 CB Normal/Trip	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/085/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
170	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 25A MCCB+ELR for OU- HV-004 CB Normal/Trip	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/086/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
171	DOUT		BUS/COMM	Motor control center, MCC-JWI-03 20A MCCB+ELR for OU- LV-001 CB Normal/Trip	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/087/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
		vv		Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-	1-					Tunnel E Service Compound Plant			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
172	DOUT	W	BUS/COMM	LV-002 CB Normal/Trip Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/088/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
173	DOUT	W	BUS/COMM	LV-003 CB Normal/Trip	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/089/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
174	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 20A MCCB+ELR for OU- LV-004 CB Normal/Trip	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/090/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
175	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 20A MCCB+ELR for OU- EL-001 CB Normal/Trio	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/091/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
				Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-	-				, , , , , , , , , , , , , , , , , , , ,	Tunnel E Service Compound Plant							
176	DOUT	W	BUS/COMM	EL-002 CB Normal/Trip Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/092/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
177	DOUT	W	BUS/COMM	CR-001 CB Normal/Trip	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/093/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
178	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 20A MCCB+ELR for OU- CR-002 CB Normal/Trip	MCC-JWI-03 20A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/094/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
179	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 25A for fan VF-TR-002- 1 CB Normal/Trip	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/095/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
				Motor control center, MCC-JWI-03 25A for fan VF-TR-002-	-					Tunnel E Service Compound Plant							
180	DOUT	W	BUS/COMM	2 CB Normal/Trip Motor control center, MCC-JWI-03 25A for fan VF-TR-001-	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/096/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
181	DOUT	W	BUS/COMM	CB Normal/Trip Motor control center, MCC-JWI-03 25A for fan VF-TR-001-	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/097/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
182	DOUT	W	BUS/COMM	2 CB Normal/Trip	MCC-JWI-03 25A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/098/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
183	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 63A for fan VF-GE-001 CB Normal/Trip	MCC-JWI-03 63A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/099/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
184	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 63A for fan VF-GE-002 CB Normal/Trip	MCC-JWI-03 63A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/100/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
	DOUT			Motor control center, MCC-JWI-03 63A for fan VF-GE-003						Tunnel E Service Compound Plant							
185	DOUT	W	BUS/COMM	CB Normal/Trip Motor control center, MCC-JWI-03 40A for fuel pump CB	MCC-JWI-03 63A CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/101/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
186	DOUT	W	BUS/COMM	Normal/Trip Motor control center, MCC-JWI-03 20A Spare 1 CB	MCC-JWI-03 40A CB Normal/Trip MCC-JWI-03 20A Spare 1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/102/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
187	DOUT	W	BUS/COMM	Normal/Trip	Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/103/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
188	DOUT	w	BUS/COMM	Motor control center, MCC-JWI-03 30A Spare 2 CB Normal/Trip	MCC-JWI-03 30A Spare 2 CB Normal/Trip	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/104/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A
189	AIN R		PLC/RIO	250A MCC-JWI-03 Incoming CB Voltage	MCC-JWI-03 Incomer CB	Signal Converter	Tunnel E Service Compound	Voltage	CBR/082/ESC/E02 RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CS0	: 1.31 mm^2
190	AIN R							C		Tunnel E Service Compound Plant						0.000	: 1.31 mm/2
			PLC/RIO	250A MCC-JWI-03 Incoming CB Current	MCC-JWI-03 Incomer CB	Signal Converter	Tunnel E Service Compound	Current	CBR/082/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			
191	AIN R		PLC/RIO	250A MCC-JWI-03 Incoming CB Power	MCC-JWI-03 Incomer CB	Signal Converter	Tunnel E Service Compound	Power	CBR/082/ESC/E02 RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CS0	1.31 mm^2
Light control panel, I	T-EL-LCP1				T			_		I					I		
192	DIN R		PLC/RIO	Panel Door Access	Light Control Panel IAT-EL-LCP1 Door Open/Closed Status	Limit Switch	Tunnel E Service Compound	Open/Closed	CP-/004/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	2.08 mm^2 Hardwired to limit switch
193	DIN R		PLC/RIO	Panel Operating Condition Power Supply	Light Control Panel IAT-EL-LCP1 Operating Condition	Relav	Tunnel E Service Compound	Normal/Failure	CP-/004/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	Hardwired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage 2.08 mm ² assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
					Light Control Panel IAT-EL-LCP1					Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					Hardwired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage
194	DIN R		PLC/RIO	Panel Operating Condition Temperature	Operating Condition Light Control Panel IAT-EL-LCP1	Relay	Tunnel E Service Compound	Normal/Failure	CP-/004/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		20	assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
195	DIN R		PLC/RIO	Manual Over-Ride Panel Control On/Off	Manual Over-Ride Panel Control 40A TP MCCB (C1.1) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	On/Off	CP-/004/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	2.08 mm^2
196	DIN R		PLC/RIO	40A TP MCCB (C1.1) in IAT-EL-LCP1 CB On/Off	On/Off	Relay	Tunnel E Service Compound	On/Off	CBR/251/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	2.08 mm^2
197	DIN R		PLC/RIO	40A TP MCCB (C1.1) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C1.1) in IAT-EL-LCP1 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/251/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2·C	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
198	DIN R		PLC/RIO	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB On/Off	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	On/Off	CBR/252//ESC/18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-0	2.08 mm^2
				40A TP MCCB (C2.1) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB					Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					Hardwired to control relay:
199	DIN R		PLC/RIO	Condition	On/Off 40A TP MCCB (C2.2) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/252//ESC/18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	-Monitor undercurrent (1 contact relay)
200	DIN R		PLC/RIO	40A TP MCCB (C2.2) in IAT-EL-LCP1 CB On/Off 40A TP MCCB (C2.2) in IAT-EL-LCP1 CB Operating	On/Off 40A TP MCCB (C2.2) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	On/Off	CBR/253/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	2.08 mm^2 Hardwired to control relay:
201	DIN R		PLC/RIO	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/253/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	-Monitor undercurrent (1 contact relay)
202	DIN R		PLC/RIO	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB On/Off	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	On/Off	CBR/254/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2·C	2.08 mm^2
203	DIN R		PLC/RIO	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/254/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-0	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
	DIN R			40A TP MCCB (C3.2) in IAT-EL-LCP1 CB On/Off	40A TP MCCB (C3.2) in IAT-EL-LCP1 CB					Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					
204	DIN R		PLC/RIO	40A TP MCCB (C3.2) in IAT-EL-LCP1 CB On/Off 40A TP MCCB (C3.2) in IAT-EL-LCP1 CB Operating	On/Off 40A TP MCCB (C3.2) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	On/Off	CBR/255/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	. 10, 110, 110, 110	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		20	2.08 mm^2 Hardwired to control relay:
205	DIN R		PLC/RIO	Condition	On/Off 40A TP MCCB (C3.3) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/255/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	-Monitor undercurrent (1 contact relay)
206	DIN R		PLC/RIO	40A TP MCCB (C3.3) in IAT-EL-LCP1 CB On/Off	On/Off	Relay	Tunnel E Service Compound	On/Off	CBR/256/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	2.08 mm^2
207	DIN R		PLC/RIO	40A TP MCCB (C3.3) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C3.3) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/256/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
208	DIN R		PLC/RIO	40A TP MCCB (C4.1) in IAT-EL-LCP1 CB On/Off	40A TP MCCB (C4.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	On/Off	CBR/257/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C	2.08 mm^2
209				40A TP MCCB (C4.1) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C4.1) in IAT-EL-LCP1 CB On/Off					Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					Hardwired to control relay:
	DIN R		PLC/RIO	Condition	40A TP MCCB (C4.2) in IAT-EL-LCP1 CB		Tunnel E Service Compound	Normal/Failure	CBR/257/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Control - PLC Tunnel E Service Compound Lighting		Tunnel E Service Compound SMRCU			-Monitor undercurrent (1 contact relay)
210	DIN R		PLC/RIO	40A TP MCCB (C4.2) in IAT-EL-LCP1 CB On/Off 40A TP MCCB (C4.2) in IAT-EL-LCP1 CB Operating	On/Off 40A TP MCCB (C4.2) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	On/Off	CBR/258/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2·C	2.08 mm^2 Hardwired to control relay:
211	DIN R		PLC/RIO	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/258/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC		Tunnel E Service Compound SMRCU		2-C	-Monitor undercurrent (1 contact relay)



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	XXX K Underpass Pla	ant Control & Monitoring, IO signals	list			-	Vritten by	<u> </u>	Checked by		QA Approver		Notes				
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Signal Signal	Data										Outstation PLC						Field Signal
count Tag	Type Read	Write I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID	Outstation ID	Outstation Name	ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Conductors Comments
Motor Control Center,	MCC-KP-SP											1					Hardwired to 3-phase control relay: Monitor undervoltages,
0	DIN R	PLC/RIO	Motor control center, MCC-KP-SP Mains Supply Operatin Condition	MCC Mains Supply	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			overvoltages, voltage assymetry, phase-loss and phase-sequence in 2-C 2.08 mm^2 threephase, three-wire circuits
1	DIN R	PLC/RIO		MCC Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
2	DIN R	PLC/RIO	Motor control center, MCC-KP-SP Operating Condition Temperature	MCC Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure		RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
3	DIN R	PLC/RIO	Motor control center, MCC-KP-SP Door Open/Closed	MCC Door Door	Limit Switch	K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired to limit switch
4	DIN R	PLC/RIO	Motor control center, MCC-KP-SP Manual Over-Ride On/Off	MCC Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off		RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
5	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 100A Substation Supply Incoming CB Opened/Closed Position	MCC-KP-SP DB Substation Supply Incoming CB Opened/Closed	Circuit Breaker	K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
6	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 100A Substation Supply Incoming CB Trip Status	MCC-KP-SP DB Substation Supply Incoming CB Trip Status	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
7	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 100A Generator Supply Incoming CB Opened/Closed Position	MCC-KP-SP DB Generator Supply Incoming CB Opened/Closed P	Circuit Breaker	K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
8	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 100A Generator Supply Incoming CB Trip Status	MCC-KP-SP DB Generator Supply Incoming CB Trip Status	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
9	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Duty Pump CB Opened/Closed Position	MCC-KP-SP DB 40A Duty Pump CB Opened/Closed Position	Circuit Breaker	K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
10	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Duty Pump CB Trip Status		Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
11	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Duty Pump CB Opened/Closed Position	MCC-KP-SP DB 40A Duty Pump CB Opened/Closed Position	Circuit Breaker	K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
12	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Duty Pump CB Trip Status		Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip		RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
13	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Stand-by Pump CB Opened/Closed Position			K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
14	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Stand-by Pump CB Trip Status			K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01	.,,	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
15	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 16A UPS CB	MCC-KP-SP DB UPS CB Opened/Closed Position		K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control &		K Underpass Plant Control &	PLC/002/ESC/B08	·			N/A
16	DIN R	BUS/COMM	Opened/Closed Position Motor control center, MCC-KP-SP DB 16A UPS CB Trip Status	MCC-KP-SP DB UPS CB Trip Status		K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01	.,,	Monitoring SMRIOU K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control &		Tunnel E Service Compound SMRCU Tunnel E Service Compound SMRCU			N/A
17	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 16A Socket Outlet 1	•	Circuit Breaker	K Underpass-Storm Water Pump Room	Open/Closed		RIO/005/KU-/K01	K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	·			N/A
17	DIN R	BUS/COMM	CB Opened/Closed Position Motor control center, MCC-KP-SP DB 16A Socket Outlet 1	MCC-KP-SP DB Socket Outlet 1 CB Trip	Circuit Breaker			MCC/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &		K Underpass Plant Control &		Tunnel E Service Compound SMRCU			N/A
10	DIN R	BUS/COMM	Motor control center, MCC-KP-SP DB 16A Socket Outlet 2	Status MCC-KP-SP DB Socket Outlet 2 CB Opened/Closed	Circuit Breaker	K Underpass-Storm Water Pump Room K Underpass-Storm Water Pump Room	Normal/Trip		.,,	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08 PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
19		.,,	CB Opened/Closed Position Motor control center, MCC-KP-SP DB 16A Socket Outlet 2	.,,			Open/Closed	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &		Tunnel E Service Compound SMRCU			,
20	DIN R	BUS/COMM	CB Trip Status Motor control center, MCC-KP-SP DB 100A Substation	MCC-KP-SP DB Substation Supply	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
21	DOUT	W BUS/COMM	Supply Incoming CB Normal/Trip Command Motor control center, MCC-KP-SP DB 100A Generator	Incoming CB Normal/Trip Command MCC-KP-SP DB Generator Supply	Circuit Breaker	K Underpass-Storm Water Pump Room K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
22		W BUS/COMM	Supply Incoming CB Normal/Trip Command Motor control center, MCC-KP-SP DB 40A Duty Pump CB		Circuit Breaker		Open/Closed	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			1977
23	DOUT	W BUS/COMM	Normal/Trip Command Motor control center, MCC-KP-SP DB 40A Duty Pump CB		Circuit Breaker	K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &		Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
24	DOUT	W BUS/COMM	Trip Command Reset Status Motor control center, MCC-KP-SP DB 40A Stand-by Pump			K Underpass-Storm Water Pump Room	On/Off	MCC/001/KU-/K01	.,,	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound SMRCU			N/A
25	DOUT	W BUS/COMM	CB Normal/Trip Command Motor control center, MCC-KP-SP DB 16A UPS CB	Normal/Trip Command MCC-KP-SP DB UPS CB Normal/Trip		K Underpass-Storm Water Pump Room				Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &		Tunnel E Service Compound SMRCU			N/A
26	DOUT	W BUS/COMM	Normal/Trip Command Motor control center, MCC-KP-SP DB 16A Socket Outlet 1			K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &		Tunnel E Service Compound SMRCU			N/A
27	DOUT	W BUS/COMM	CB Normal/Trip Command Motor control center, MCC-KP-SP DB 16A Socket Outlet 2			K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &		K Underpass Plant Control &		Tunnel E Service Compound SMRCU			N/A
28	DOUT	W BUS/COMM	CB Normal/Trip Command	Normal/Trip Command		K Underpass-Storm Water Pump Room	Open/Closed	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A
29	AIN R	PLC/RIO	Motor control center, MCC-KP-SP Incomer CB Voltage			K Underpass-Storm Water Pump Room	Voltage	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-CSC 1.31 mm^2
30	AIN R	PLC/RIO				K Underpass-Storm Water Pump Room	Current	MCC/001/KU-/K01		Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-CSC 1.31 mm^2
31	AIN R	PLC/RIO	Motor control center, MCC-KP-SP Incomer CB Power	MCC-KP-SP Incomer CB	Signal Converter	K Underpass-Storm Water Pump Room	Power	MCC/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-CSC 1.31 mm^2
Control panel for suppl	y fan for K Underpass p	pump room								K Underpass Plant Control &		K Underpass Plant Control &					
32	DIN R	PLC/RIO	Control Panel Door Access	Control Panel Door Open/Closed Status	Limit Switch	K Underpass-Storm Water Pump Room	Open/Closed	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01		PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired to limit switch Hardwired to control relay: Monitor undervoltages, overvoltages in singlephase,
33	DIN R	PLC/RIO	Control Panel Operating Condition Power Supply	Control Panel Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 two-wire circuits
34	DIN R	PLC/RIO	Control Panel Operating Condition Temperature	Control Panel Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay
35	DIN R	PLC/RIO	Control Panel Manual Over-Ride On/Off	Control Panel Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
36	DIN R	PLC/RIO	Control Panel Fan 1 Manual On/Off Status	Control Panel Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
37	DIN R	PLC/RIO	Control Panel Fan 2 Manual On/Off Status	Control Panel Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
38	DOUT	W PLC/RIO	Control Panel Manual Over-Ride On/Off	Control Panel Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
39	DOUT	W PLC/RIO	Control Panel Fan 1 Manual On/Off Status	Control Panel Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
40	DOUT	W PLC/RIO	Control Panel Fan 2 Manual On/Off Status	Control Panel Manual Over-Ride	Relay	K Underpass-Storm Water Pump Room	On/Off	VCP/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2
Instrumentation contro	ol panel-01									K Underpass Plant Control &		K Lindarnass Blant Control 9					
41	DIN R	PLC/RIO	Control Panel Door Access	Panel Door Open/Closed Status	Limit Switch	K Underpass-Storm Water Pump Room	Open/Closed	CP-/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control & Moneyass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm ² Hardwired to limit switch Hardwired to control relay Monitor undervoltages overvoltages in singlephase
42	DIN R	PLC/RIO	Control Panel Operating Condition Power Supply	Panel Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	CP-/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control & Moneyass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control & K Underpass Plant Control &	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			Hardwired to control relay: Monitor undervoltages, overvoltages in singlephase, 2-C 2.08 mm^22 two-wire circuits
43	DIN R	PLC/RIO	Control Panel Operating Condition Temperature	Panel Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	CP-/001/KU-/K01	RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay



TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST Document Control Panel roject Name: INSERT PROJECT NAME Ref. Number: #N/A ent Name: PXXX K Underpass Plant Control & Monitoring, IO signals list Notes Draft for Ashghal review insert signatureInsert nameDate.....insert date Signal Data Field Signa **Outstation PLC** I/O Assis ID Outstation PLC Nam Master PLC ID Master DI C Nan Ways TPN Distribution Board, DB-KP K Underpass Pump Plant Control & DIN PLC/RIO Panel Door Access Panel DB-KP Door Open/Closed Status Limit Switch K Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC .C/002/ESC/B08 Funnel E Service Compound SMRCU 2-C 2.08 mm^2 Hardwired to limit switch PLC/005/KU-/K01 K Underpass Pu Monitoring PLC DIN Panel DB-KP Operating Condition PLC/RIO Panel Operating Condition Power Supply Relay Normal/Failure DB-/001/KU-/K01 RIO/005/KU-/K01 C/002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC 2-C 2.08 mm/ Distribution Board, DB-KP 40A Incoming CB PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DIN K Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU R BUS/COMM Opened/Closed DB-KP 40A Incoming CB .C/002/ESC/B08 Circuit Breaker unnel E Service Compound SMRCU N/A K Underpass Pump Plant Control & 48 DIN PLC/005/KU-/K01 Monitoring PLC BUS/COMM Distribution Board, DB-KP 40A Incoming CB Normal/Trip DB-KP 40A Incoming CB Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU C/002/ESC/B08 nnel E Service Compound SMRCU N/A ution Board, DB-KP 10A Exit Lights at Sump Pump R DIN BUS/COMM Room CB Opened/Closed Circuit Breaker Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOL PLC/005/KU-/K01 Monitoring PLC /002/ESC/B08 nel E Service Compound SMRCU N/A K Underpass Pump Plant Control & Monitoring PLC K Underpass Pump Plant Control & Monitoring PLC K Underpass Pump Plant Control & Monitoring PLC PLC/005/KU-/K01 Distribution Board, DB-KP 10A Exit Lights at Sump Pump Room CB Normal/Trip Distribution Board, DB-KP10A Exit Lights at Vent Access RoomCB Opened/Closed DIN R BUS/COMM Circuit Breake Inderpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Ionitoring SMRIOL /002/ESC/B08 nel E Service Compound SMRCU N/A DB-KP 10A Exit Lights at Vent Access DIN R DB-/001/KU-/K01 R RIO/005/KU-/K01 002/ESC/B08 N/A Distribution Board, DB-KP 10A Exit Lights at Vent Access Room CB Normal/Trip DB-KP 10A Exit Lights at Vent Access Room CB K Underpass Plant Control & PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DB-/001/KU-/K01 RIO/005/KU-/K01 N/A BUS/COMM Circuit Breaker Normal/Trip /002/ESC/B08 nnel E Service Compound SMRCU Underpass-Storm Water Pump Roon nitoring SMRIOU K Underpass Plant Control & K Underpass Pump Plant Control & DIN R Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC BUS/COMM Distribution Board, DB-KP10A Spare CB Opened/Closed DB-KP 10A Spare CB Circuit Breaker .C/002/ESC/B08 Tunnel E Service Compound SMRCU N/A K Underpass-Storm Water Pump Room s Plant Control & ass Pump Plant Control & DIN R Distribution Board, DB-KP 10A Spare CB Normal/Trip DB-KP 10A Spare CB PLC/005/KU-/K01 Monitoring PLC N/A BUS/COMM Circuit Breaker K Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU C/002/ESC/B08 Funnel E Service Compound SMRCU Distribution Board, DB-KP 32A Socket at Vent Access Room CB-KP 32A Socket at Vent Access Room CB Opened/Closed ump Plant Control & PLC/005/KU-/K01 Monitoring PLC DIN R unnel E Service Compound SMRCU BUS/COMM Circuit Breaker Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOL C/002/ESC/B08 N/A PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC K Underpass Pump Plant Control & Monitoring PLC Underpass Plant Co Monitoring SMRIOU R DB-/001/KU-/K01 RIO/005/KU-/K01 unnel E Service Compound SMRCU K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC BUS/COMM DB-/001/KU-/K01 RIO/005/KU-/K01 C/002/ESC/B08 unnel E Service Compound SMRCU CB Opened/Closed ircuit Breake Underpass-Storm Water Pump Room Open/Closed Monitoring SMRIOU N/A K Underpass Plant Control & bution Board, DB-KP32A Socket at Sump Pump DB-KP32A Socket at Sump Pump Ro K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC BUS/COMM DB-/001/KU-/K01 RIO/005/KU-/K01 N/A RoomCB Normal/Trip Circuit Breake Underpass-Storm Water Pump Room Normal/Trip Monitoring SMRIOU /002/ESC/B08 unnel E Service Compound SMRCU PLC/005/KU-/K01 K Underpass Pun Monitoring PLC DIN R N/A BUS/COMM Distribution Board, DB-KP 32A Spare 1 CB Opened/Closed DB-KP 32A Spare 1 CB Circuit Breake Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU /002/ESC/B08 unnel E Service Compound SMRCU DIN R BUS/COMM Distribution Board, DB-KP 32A Spare 1 CB Normal/Trip DB-KP 32A Spare 1 CB Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC C/002/ESC/B08 nnel E Service Compound SMRCU N/A PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DIN R tribution Board, DB-KP32A Spare 2 CB Opened/Closed DB-KP 32A Spare 2 CB DB-/001/KU-/K01 RIO/005/KU-/K01 002/ESC/B08 N/A BUS/COMM Circuit Breake Open/Closed nel E Service Compound SMRCU PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DIN R istribution Board, DB-KP 32A Spare 2 CB Normal/Trip DB-KP 32A Spare 2 CB Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 002/ESC/B08 nel E Service Compound SMRCU N/A BUS/COMM Circuit Breake Underpass-Storm Water Pump Room K Underpass Plant Control & K Underpass Pump Plant Control & DIN PLC/005/KU-/K01 Monitoring PLC BUS/COMM Distribution Board, DB-KP32A Spare3 CB Opened/Closed DB-KP 32A Spare 3 CB Circuit Breaker K Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU unnel E Service Compound SMRCU C/002/ESC/B08 N/A K Underpass Plant Control & K Underpass Pump Plant Control & DIN PLC/005/KU-/K01 Monitoring PLC K Underpass Pun N/A BUS/COMM Distribution Board, DB-KP32A Spare 3 CB Normal/Trip DB-KP 32A Spare 3 CB Circuit Breaker K Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU /002/ESC/B08 unnel E Service Compound SMRCU Pump Plant Control & DIN BUS/COMM Distribution Board, DB-KP32A Spare4 CB Opened/Closed DB-KP 32A Spare 4 CB Circuit Breaker K Underpass-Storm Water Pump Room Open/Closed DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC C/002/ESC/B08 unnel E Service Compound SMRCU N/A PLC/005/KU-/K01 Monitoring PLC BUS/COMM Distribution Board, DB-KP32A Spare 4 CB Normal/Trip DB-KP 32A Spare 4 CB Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 C/002/ESC/B08 nnel E Service Compound SMRCU PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC Distribution Board, DB-KP 40A Incoming CB Normal/Trip DB-KP 40A Incoming CB DB-/001/KU-/K01 RIO/005/KU-/K01 Distribution Board, DB-KP 10A Exit Lights at Sump Pump Room CB Normal/Trip Room CB Normal/Trip PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DOUT Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU N/A BUS/COMM C/002/ESC/B08 nnel E Service Compound SMRCU Circuit Breaker Underpass-Storm Water Pump Room Distribution Board, DB-KP 10A Exit Lights at Vent Access Room CB Normal/Trip DB-KP 10A Exit Lights at Vent AccessRoom CB s Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC DOUT BUS/COMM Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU C/002/ESC/B08 unnel E Service Compound SMRCU N/A ss Pump Plant Control & Distribution Board, DB-KP 32A Socket at Vent Access Room De-KP 32A Socket at Vent Access CB Normal/Trip Distribution Board, DB-KP 32A Socket at Vent Access Room De-KP 32A Socket at Vent Access Room CB Distribution Board, DB-KP32A Socket at Sump Pump Room CB Normal/Trip DB-KP32A Socket at Sump Pump Room CB Normal/Trip DOUT BUS/COMM Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC /002/ESC/B08 nnel E Service Compound SMRCU N/A PLC/005/KU-/K01 Mo PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control & Holderpass Plant Control & Hol DOUT BUS/COMM Circuit Breake Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 002/ESC/B08 nel E Service Compound SMRCU N/A Underpass Plant Control & lonitoring SMRIOU DOUT BUS/COMM Circuit Breake derpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 /002/ESC/B08 nel E Service Compound SMRCU N/A K Underpass Pump Plant Control & Monitoring PLC K Underpass Plant Control & Monitoring SMRIOU BUS/COMM Distribution Board, DB-KP32A Spare 1 CB Normal/Trip DB-KP32A Spare 1 CB Circuit Breake nderpass-Storm Water Pump Roc Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 002/ESC/B08 nnel E Service Compound SMRCU K Underpass Plant Control & K Underpass Pump Plant Control & DOUT DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC N/A BUS/COMM Distribution Board, DB-KP32A Spare 2 CB Normal/Trip DB-KP 32A Spare 2 CB Circuit Breake Normal/Trip C/002/ESC/B08 nnel E Service Compound SMRCU Inderpass-Storm Water Pump Room ass Pump Plant Control & DB-/001/KU-/K01 RIO/005/KU-/K01 PLC/005/KU-/K01 Monitoring PLC N/A BUS/COMM Distribution Board, DB-KP32A Spare 3 CB Normal/Trip DB-KP 32A Spare 3 CB Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip Monitoring SMRIOU /002/ESC/B08 unnel E Service Compound SMRCU Pump Plant Control & DOUT BUS/COMM Distribution Board, DB-KP32A Spare 4 CB Normal/Trip DB-KP 32A Spare 4 CB Circuit Breaker Underpass-Storm Water Pump Room Normal/Trip DB-/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOL PLC/005/KU-/K01 Monitoring PLC C/002/ESC/B08 nnel E Service Compound SMRCU N/A PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC K Underpass 7 DB-/001/KU-/K01 RIO/005/KU-/K01 Voltage 2-CSC 1.31 mm² K Underpass Pump Plant Control & Monitoring PLC PLC/005/KU-/K01 K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC | Current | DB-/001/KU-/K01 | RIO/005/KU-/K01 | K Underpass Plant Control & Monitoring \$MRIOU | Power | DB-/001/KU-/K01 | RIO/005/KU-/K01 | Monitoring \$MRIOU | Monito AIN Distribution Board, DB-KP 40AIncoming CB Current Tunnel E Service Compound SMRCU PLC/002/ESC/B08 2-CSC 1.31 mm^ Distribution Board, DB-KP 40AIncoming CB Power DB-KP 40A Incoming CB AIN Signal Converter K Underpass-Storm Water Pump Room PLC/002/ESC/B08 Tunnel E Service Compound SMRCU PLC/RIO 2-CSC 1.31 mm^2 tribution Board, DB-UPS K Underpass Pump Plant Control & Monitoring PLC Panel DB-UPS Door Open/Closed K Underpass-Storm Water Pump Room Open/Closed DB-/002/KU-/K01 RIO/005/KU-/K01 K Underpass Plant Control & Monitoring SMRIOU 2-C 2.08 mm²2 Hardwired to control relay: Monitor undervoltages, overvoltages in singleph two-wire circuits DIN R PLC/RIO Panel Door Access Limit Switch LC/002/ESC/B08 Tunnel E Service Compound SMRCU K Underpass Plant Co Monitoring SMRIOU K Underpass Pump Plant Control & Monitoring PLC DIN PLC/RIO anel DB-UPS Operating Condition Relay Underpass-Storm Water Pump Room Normal/Failure DB-/002/KU-/K01 RIO/005/KU-/K01 /002/ESC/B08 nel E Service Compound SMRCU anel Operating Condition Power Supply PLC/005/KU-/K01 Monitoring PLC K Underpass Plant Control & Monitoring SMRIOU PLC/RIO Panel DB-UPS Operating Condition Relay K Underpass-Storm Water Pump Room Normal/Failure DB-/002/KU-/K01 RIO/005/KU-/K01 /002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 anel Operating Condition Temperature dwired to temperature sensor and/or enclosure fan control relay Distribution Board, DB-UPS 16A Incoming CB Opened/Closed PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DB-/002/KU-/K01 RIO/005/KU-/K01 K Underpass Plant Control & Monitoring SMRIOU DIN BUS/COMM DB-UPS 16A Incoming CB Circuit Breaker K Underpass-Storm Water Pump Room Open/Closed /002/ESC/B08 unnel E Service Compound SMRCU N/A K Underpass Plant Control & K Underpass Pump Plant Control & DIN BUS/COMM Distribution Board, DB-UPS 16A Incoming CB Normal/Trip DB-UPS 16A Incoming CB Circuit Breaker Normal/Trip DB-/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC unnel E Service Compound SMRCU N/A K Underpass-Storm Water Pump Room C/002/ESC/B08 s Plant Control & ss Pump Plant Control & DIN BUS/COMM Distribution Board, DB-UPS 16A CB Opened/Closed Distribution Board, DB-UPS 16A CB Circuit Breaker K Underpass-Storm Water Pump Room Open/Closed DB-/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC /002/ESC/B08 unnel E Service Compound SMRCU N/A BUS/COMM Circuit Breake DB-/002/KU-/K01 PLC/005/KU-/K01 nnel E Service Compound SMRCU N/A Distribution Board, DB-UPS 16A Incoming CB Normal/Trip DB-UPS 16A Incoming CB PLC/005/KU-/K01 Monitoring PLC unnel E Service Compound SMRCU Monitoring SMRIOU K Underpass-Storm Water Pump Room Normal/Trip DB-/002/KU-/KD1 RIO/005/KU-/KD1 Monitoring SMRIOU PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DOUT BUS/COMM Distribution Board, DB-UPS 16A CB Normal/Trip DB-UPS 16AField Equipment CB .C/002/ESC/B08 Funnel E Service Compound SMRCU N/A Circuit Breaker K Underpass Pum PLC/005/KU-/K01 Monitoring PLC pass Pump Plant Control & AIN DB-/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU 2-CSC 1.31 mm^2 PLC/RIO Distribution Board, DB-UPS 16A Incoming CB Voltage DB-UPS 16A Incoming CB Signal Converter K Underpass-Storm Water Pump Room Voltage PLC/002/ESC/B08 Tunnel E Service Compound SMRCU



. TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST

Document Control Panel														
Project Name: INSERT PROJECT NAME	Ref. Number: #N/A													
Document Name: PXXX K Underpass Plant Control & Monitoring, IO signals list														
	Written by	Checked by		Notes										
0 INSERT DATE First Edition	Insert name	Insert name	Insert name	Draft for Ashghal review										
D Issued By:														

	SERT DATE FIRST Edit	.1011				Insert name	Insert name		Insert name	Draft for Asnghal review		
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Signal	Signal Data	,							Outstation PLC			Field Signal
count	Tag Type		Write I/O Assignment	Signal Description Major	Minor Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	ID Outstation PLC Name	Master PLC ID Master PLC Name Rack ID	Rack Name	Conductors Comments
	1-8 1761	11000	y conseguence		- g	2.8		K Underpass Plant Control &	K Underpass Pump Plant Control &			
90	AIN	R	PLC/RIO	Distribution Board, DB-UPS 16A Incoming CB Current DB-UPS 16A Incoming CB Sign	nal Converter K Underpass-Storm Water Pump Room	Current	DB-/002/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		2-CSC 1.31 mm^2
01	AIN		PLC/RIO	Distribution Board, DB-UPS 16A Incoming CB Power DB-UPS 16A Incoming CB Sign	nal Converter K Underpass-Storm Water Pump Room	Power	DB-/002/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		2-CSC 1.31 mm^2
31	Ally	I.	PECINIO	Distribution board, DB-073 Tox incoming CB Fower	k oliderpass-storiii water rump koolii	rowei	DB-7002/K0-7K01 MIO/003/K0-7K01	Monitoring Switter	PEC/003/RO-7RO1 WORKONING FEC	recyoo2/e3c/abb Tunner E Service Compound Switco		2-C3C 1.31 mm 2
Uninterrup	ed Power Supply, UI	PS-01										
						- 1-11		K Underpass Plant Control &	K Underpass Pump Plant Control &			
92	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 on Battery UPS 1 On Battery I	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
93	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Operating Condition UPS 1 Operating Condition	Discrete IO K Underpass-Storm Water Pump Room	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
				Uninterrupted Power Supply, UPS 1 Output Overload				K Underpass Plant Control &	K Underpass Pump Plant Control &			
94	DIN	R	BUS/COMM		Discrete IO K Underpass-Storm Water Pump Room	Normal/Alarm	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
95	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Battery Operating Condition UPS 1 Battery Operating Condition	Discrete IO K Underpass-Storm Water Pump Room	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
		- "						K Underpass Plant Control &	K Underpass Pump Plant Control &	1 - 2/3		, i
96	DIN	R	BUS/COMM		Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
97	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Charging Battery On/Off UPS 1 Charging Battery	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
	Silv	- "	203/ COMM	Uninterrupted Power Supply, UPS 1 Battery Charger	2 Storin Francis amp Room	2.40	2.3/304/10/101	K Underpass Plant Control &	K Underpass Pump Plant Control &	, , ,		,
98	DIN	R	BUS/COMM		Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
90	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 on Battery UPS 2 On Battery I	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIQU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
39	DIN	n	BUS/CUIVIIVI	Uninterrupted Power Supply, UPS 1 on Battery UPS 2 On Battery UPS 2 On Battery	Discrete IO K Underpass-Storm Water Pump Room	Gillon	5. 3/001/K0-/K01 KIO/003/K0-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		oyo .
100	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Operating Condition UPS 2 Operating Condition	Discrete IO K Underpass-Storm Water Pump Room	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
Ţ.,Ţ				Uninterrupted Power Supply, UPS 2 Output Overload	N		LUDG TODA TIVIL TIVOS	K Underpass Plant Control &	K Underpass Pump Plant Control &	DISCOSTISSION THE STATE OF THE		1/4
101	DIN	R	BUS/COMM	Normal/Alarm UPS 2 Output Overload I Uninterrupted Power Supply, UPS 2 Battery Operating	Discrete IO K Underpass-Storm Water Pump Room	Normal/Alarm	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU	<u> </u>	N/A
102	DIN	R	BUS/COMM		Discrete IO K Underpass-Storm Water Pump Room	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
								K Underpass Plant Control &	K Underpass Pump Plant Control &			
103	DIN	R	BUS/COMM		Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
104	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Charging Battery On/Off UPS 2 Charging Battery	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
204			DOS/ COMM	Uninterrupted Power Supply, UPS 2 Battery Charger		5.4011	7-2-7-2-7-2-7-2-7-2-7-2-7-2-7-2-7-2-7-2	K Underpass Plant Control &	K Underpass Pump Plant Control &	, , , , , , , , , , , , , , , , , , ,		
105	DIN	R	BUS/COMM	On/Off UPS 2 Battery Charger	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
106	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS-01 16A Duty UPS CB Open/Closed Position UPS-01 16ADuty UPS CB Cir	cuit Breaker K Underpass-Storm Water Pump Room	Open/Closed	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIQU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
100	DIN	n	BUS/CUIVIIVI	Uninterrupted Power Supply, UPS-01 16A Duty UPS CB Trip	k onderpass-storm water rump Room	Open/Closed	5. 3/001/KO-/KO1 KIO/003/KO-/K01	Monitoring SMRIOU K Underpass Plant Control &	K Underpass Pump Plant Control &	Turner E Service Compound SwinCo		oyo .
107	DIN	R	BUS/COMM	Status UPS-01 16A Duty UPS CB Cir	cuit Breaker K Underpass-Storm Water Pump Room	Normal/Trip	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
108	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS-01 16A Standby UPS CB Open/Closed Position UPS-01 16A Standby UPS CB Circ	cuit Broaker K Undernage Steem Water Burn - S	Onen/Classed	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control &	K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
108	DIN	R	BUS/COMM	Open/Closed Position UPS-01 16AStandby UPS CB Cir Uninterrupted Power Supply, UPS-01 16A Standby UPS CB	cuit Breaker K Underpass-Storm Water Pump Room	Open/Closed	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/M
109	DIN	R	BUS/COMM		cuit Breaker K Underpass-Storm Water Pump Room	Normal/Trip	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
								K Underpass Plant Control &	Barwa Underpass Substation Plan	t		
110	DOUT		W BUS/COMM	Uninterrupted Power Supply, UPS 1 On Battery UPS 1 On Battery I	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Control & Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
111	DOUT	.	W BUS/COMM	Uninterrupted Power Supply, UPS 1 in Bypass On/Off UPS 1 in Bypass I	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
								K Underpass Plant Control &	K Underpass Pump Plant Control &			
112	DOUT	-	W BUS/COMM		Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
113	DOUT	.	W BUS/COMM	Uninterrupted Power Supply, UPS 1 Battery Charger On/Off UPS 1 Battery Charger	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
113			BOJ/COIVIN	or 3 1 battery charges 1	is onderpost-storm water rump Room	5.4011	5.3/001/R0-7R01 MO/003/R0-7R01	K Underpass Plant Control &	K Underpass Pump Plant Control &	,,,, remer a service compound signed		1977
114	DOUT	-	W BUS/COMM	Uninterrupted Power Supply, UPS 2 On Battery UPS 2 On Battery I	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
115	DOUT	.	W 2005/201414	Heinters rated Device Cumply, LIDS 3 in Divines On 10ff	Nesseta IO K Hadasaasa Street Water Street	0= 1011	LIBE (001 /VLL /VO1	K Underpass Plant Control &	K Underpass Pump Plant Control &	DIC/003/ESC/DOS		N/A
115	וטטט		W BUS/COMM	Uninterrupted Power Supply, UPS 2 in Bypass On/Off UPS 2 in Bypass I	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
116	DOUT	<u>. </u>	W BUS/COMM	Uninterrupted Power Supply, UPS 2 Charge Battery On/Off UPS 2 Charging Battery	Discrete IO K Underpass-Storm Water Pump Room	On/Off	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
				Uninterrupted Power Supply, UPS 2 Battery Charger								
117	DOUT	-	W BUS/COMM		Discrete IO	On/Off	+ -	K Hadasaasa Blant Control 0	Kilada a sana nianta a sana	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU	-	N/A
118	DOUT	. [W BUS/COMM	Uninterrupted Power Supply, UPS-01 16A Duty UPS CB Normal/Trip UPS-01 16A Duty UPS CB Cir	cuit Breaker K Underpass-Storm Water Pump Room	Normal/Trip	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
				Uninterrupted Power Supply, UPS-01 16A Standby UPS CB	·			K Underpass Plant Control &	K Underpass Pump Plant Control &			
119	DOUT	•	W BUS/COMM	Normal/Trip UPS-01 16AStandby UPS CB Cir	cuit Breaker K Underpass-Storm Water Pump Room	Normal/Trip	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU	-	N/A
120	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Input dc Voltage UPS 1 Input dc Sign	nal Converter K Underpass-Storm Water Pump Room	Voltage	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
		- "						K Underpass Plant Control &	K Underpass Pump Plant Control &	7,3,7,3,		
121	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Input dc Current UPS 1 Input dc Sign	nal Converter K Underpass-Storm Water Pump Room	Current	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
122	AIN		BUS/COMM	Unintersunted Power Supply LIBS 1 Input de Power	Convertor K Undergage Steem Water Burn - S	Power	LIPS/001/VIII/V01 PIO/005/VII//V04	K Underpass Plant Control &	K Underpass Pump Plant Control &	DIC/003/ESC/D09 Tunnel E Senice Comment SMDCU		N/A
122	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Input dc Power UPS 1 Input dc Sign	nal Converter K Underpass-Storm Water Pump Room	rower	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
123	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Output ac Voltage UPS 1 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Voltage	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
								K Underpass Plant Control &	K Underpass Pump Plant Control &			
124	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Output ac Current UPS 1 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Current	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU	-	N/A
125	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Output ac Power UPS 1 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Power	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
								K Underpass Plant Control &	K Underpass Pump Plant Control &			
126	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Output ac Frequency UPS 1 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Frequency	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
127	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Input dc Voltage UPS 2 Input dc Sign	nal Converter K Underpass-Storm Water Pump Room	Voltage	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
127	Ally	IS.	BO3/CONIN	Signature Supply, of Siz input or Folloge OF Sizinput or Signature	a chacipos-storii water rump Room	* Gitage	5. 3/001/R0-7R01 MO/003/R0-7R01	K Underpass Plant Control &	K Underpass Pump Plant Control &	- 1-y 10-y 10-y 10-y 10-y 10-y 10-y 10-y		1921
128	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Input dc Current UPS 2 Input dc Sign	nal Converter K Underpass-Storm Water Pump Room	Current	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
I T							LUDG TODA TIVIL TIVOS	K Underpass Plant Control &	K Underpass Pump Plant Control &	DISCOSTISSION THE STATE		1/4
129	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Input dc Power UPS 2 Input dc Sign	nal Converter K Underpass-Storm Water Pump Room	Power	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU	<u> </u>	N/A
130	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Output ac Voltage UPS 2 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Voltage	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
								K Underpass Plant Control &	K Underpass Pump Plant Control &			
131	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Output ac Current UPS 2 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Current	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU	-	N/A
132	AIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Output ac Power UPS 2 Output ac Sign	nal Converter K Underpass-Storm Water Pump Room	Power	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC	PLC/002/ESC/B08 Tunnel E Service Compound SMRCU		N/A
-32	Aut	- "	203/ COMM	36		. 54461	2.3/304/10/102 110/303/10/101	K Underpass Plant Control &	K Underpass Pump Plant Control &			· ·

133 AN R BUS/COMM Uninterrupted Power Supply, UPS 2 Output a C Frequency UPS 2 Output a C Frequency UPS 2 Output a C Signal Converter V UPS/001/KU-/K01 RIO/005/KU-/K01 RIO/00



TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST **Document Control Panel** Project Name: INSERT PROJECT NAME Ref. Number: #N/A ent Name: PXXX K Underpass Plant Control & Monitoring, IO signals list Notes Draft for Ashghal review insert signatureInsert nameDate......insert date Signal Data **Outstation PLC** Field Signa ID Outstation PLC Name Master PLC ID Signal Description K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC Isolator 16ASP ISOL for DB-UPS fed from UPS Incoming CB Opened/Closed Position SP ISOL for DB-UPS fed from UPSIncoming CB Circuit Breaker K Underpass-Storm Water Pump Room Open/Closed ISO/002/KU-/K01 RIO/005/KU-/K01 K Underpass Plant Control & Monitoring SMRIOU DIN R BUS/COMM PLC/002/ESC/B08 Tunnel E Service Compound SMRCU mp-01, 02, 03 Sump Drainage Pump 1 nnel E Service Compound SMRCU Sump Drainage Pump 1 Available/Unavailable Discrete IO K Underpass-Storm Water Pump Roon vailable/Unavailable PSW/001/KU-/K01 C/002/ESC/B08 N/A PLC/005/KU-/K01 2-C 2.08 mm^2 138 DIN R K Underpass-Storm Water Pump Room Duty/Standby PSW/001/KU-/K01 N/A Sump Drainage Pump 1 Duty/Standby Sump Drainage Pump 1 Duty/Standby Discrete IO C/002/ESC/B08 nnel E Service Compound SMRCU K Underpass Pump Plant Control & 139 DIN PLC/005/KU-/K01 Monitoring PLC PLC/RIO Sump Drainage Pump 1 Running/Stop Sump Drainage Pump 1 Relay Underpass-Storm Water Pump Room Running/Stop PSW/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU /002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 Hardwired to a current limit relay R DIN PLC/RIO Sump Drainage Pump 1 Operating Condition Sump Drainage Pump 1 Relay Underpass-Storm Water Pump Room Normal/Failure PSW/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC nel E Service Compound SMRCU 2-C 2.08 mm^2 thermistors DIN R Sump Drainage Pump 2 Available/Unavailable Discrete IO nderpass-Storm Water Pump Room | Available/Unavailable | PSW/002/KU-/K01 N/A K Underpass Pump Plant Control & Monitoring PLC DIN R PLC/RIO Sump Drainage Pump 2 Auto/Manua PSW/002/KU-/K01 IO/005/KU-/K01 PLC/005/KU-/K01 2-C 2.08 mm^2 PSW/002/KU-/K01 N/A Discrete IO Duty/Standby Sump Drainage Pump 2 Duty/Standby Sump Drainage Pump 2 Duty/Standi Inderpass-Storm Water Pump Room 002/ESC/B08 nnel E Service Compound SMRCU K Underpass Pump Plant Control & DIN R K Underpass-Storm Water Pump Room Running/Stop PSW/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC 2-C 2.08 mm^2 Hardwired to a current limit relay PLC/RIO Sump Drainage Pump 2 Running/Stop Relay Sump Drainage Pump 2 C/002/ESC/B08 unnel E Service Compound SMRCU K Underpass Pump Plant Control & Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 DIN PLC/005/KU-/K01 Monitoring PLC 2-C 2.08 mm^2 thermistors PLC/RIO Sump Drainage Pump 2 Operating Condition Sump Drainage Pump 2 Relay K Underpass-Storm Water Pump Room Normal/Failure PSW/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU /002/ESC/B08 unnel E Service Compound SMRCU C Underpass-Storm Water Pump Room Available/Unavailable PSW/003/KU-/K01 DIN R Sump Drainage Pump 3 nnel E Service Compound SMRCU Sump Drainage Pump 3 Available/Unavailable Discrete IO C/002/ESC/B08 N/A PLC/005/KU-/K01 Monitoring PLC Auto/Manual PSW/003/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 Sump Drainage Pump 3 Auto/Manua Discrete IO K Underpass-Storm Water Pump Room Duty/Standby PSW/003/KU-/K01 N/A Sump Drainage Pump 3 Duty/Standby Sump Drainage Pump 3 Duty/Standby C/002/ESC/B08 nnel E Service Compound SMRCU K Underpass Pump Plant Control & Monitoring PLC DIN PLC/RIO PSW/003/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 Hardwired to a current limit relay Sump Drainage Pump 3 Running/Stop Sump Drainage Pump 3 Relay Underpass-Storm Water Pump Room Running/Stop Monitoring SMRIOU /002/ESC/B08 nnel E Service Compound SMRCU PLC/005/KU-/K01 K Underpass Pun Monitoring PLC oass Pump Plant Control & DIN R 2-C 2.08 mm^2 thermistors PLC/RIO Sump Drainage Pump 3 Operating Condition Sump Drainage Pump 3 Relay Underpass-Storm Water Pump Room Normal/Failure PSW/003/KU-/K01 RIO/005/KU-/K01 /002/ESC/B08 nnel E Service Compound SMRCU PLC/005/KU-/K01 K Underpass Pun Monitoring PLC DIN R PLC/RIO Drainage Pumps Sump Level Normal/High Underpass-Storm Water Pump Room Normal/High LID/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU /002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 Operations Drainage PumpsSump Sensor PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC K Underpass 2 DIN R PLC/RIO GD-/001/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 Sump Gas Detector Level High Normal/Alar Normal/High 002/ESC/B08 PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DIN R Sump Ventilation Fan 1 Running/Stop Running/Stop PFN/001/KU-/K01 RIO/005/KU-/K01 002/ESC/B08 nel E Service Compound SMRCU 2-C 2.08 mm^2 PLC/RIO Relay Underpass-Storm Water Pump Room K Underpass Plant Control & PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC lardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 DIN K Underpass-Storm Water Pump Room Normal/Failure PFN/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU 2-C 2.08 mm^2 Relay Funnel E Service Compound SMRCU PLC/RIO Sump Ventilation Fan 1 Operating Condition Sump Ventilation Fan 1 C/002/ESC/B08 DIN DB Sump Ventilation Fans Duty 1 Discrete IO K Underpass-Storm Water Pump Room On/Off PFN/001/KU-/K01 /002/ESC/B08 unnel E Service Compound SMRCU N/A K Underpass Pump Plant Control & DIN PLC/RIO Plant Control & Monitoring PLC Monitoring PLC Discrete IO Underpass-Storm Water Pump Room Normal/Failure PLC/005/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC .C/002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 PLC/005/KU-/K01 K Underpass Purr Monitoring PLC DOLLT PLC/RIO Sump Drainage Pump 1 Auto/Manu Discrete IO Auto/Manual PSW/001/KU-/K01 RIO/005/KU-/K01 C/002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 Sump Drainage Pump 1 PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC Sump Drainage Pump 1 Duty/Standby 2-C 2.08 mm^ PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC PSW/001/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU DOUT 2-C 2.08 mm^2 Sump Drainage Pump 1 Start/Stop Discrete IO Start/Stop C/002/ESC/B08 Sump Drainage Pump 1 Underpass-Storm Water Pump Room nnel E Service Compound SMRCU ss Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC 2-C 2.08 mm^2 DOUT PLC/RIO Sump Drainage Pump 2 Auto/Manual Sump Drainage Pump 2 Discrete IO K Underpass-Storm Water Pump Room Auto/Manual PSW/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU C/002/ESC/B08 nnel E Service Compound SMRCU ass Pump Plant Control & DOUT PLC/RIO Sump Drainage Pump 2 Duty/Standby Sump Drainage Pump 2 Duty/Standb Discrete IO Underpass-Storm Water Pump Room Duty/Standby PSW/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU PLC/005/KU-/K01 Monitoring PLC /002/ESC/B08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 PLC/005/KU-/K01 K Und Monito PLC/005/KU-/K01 Monitoring PLC K Underpass Pump Plant Control & Holderpass Plant Control & Hol DOU Sump Drainage Pump 2 Start/Stop Discrete IO Start/Stop PSW/002/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 C Underpass Plant Control & Monitoring SMRIOU DOUT Sump Drainage Pump 3 Auto/Manua Discrete IO derpass-Storm Water Pump Room Auto/Manual PSW/003/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC K Underpass Plant Control & Monitoring SMRIOU Sump Drainage Pump 3 Duty/Standby Sump Drainage Pump 3 Duty/Standi Discrete IO nderpass-Storm Water Pump Roon Duty/Standby PSW/003/KU-/K01 RIO/005/KU-/K01 nnel E Service Compound SMRCU 2-C 2.08 mm^2 K Underpass Plant Control & PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC DOUT PSW/003/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU 2-C 2.08 mm^2 PLC/RIO Discrete IO Start/Stop Sump Drainage Pump 3 Start/Stop Sump Drainage Pump 3 Inderpass-Storm Water Pump Room /002/ESC/B08 nnel E Service Compound SMRCU ass Pump Plant Control & K Underpass Plant Control & PLC/005/KU-/K01 Monitoring PLC PFN/001/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 PLC/RIO Sump Ventilation Fan 1 Start/Stop Discrete IO Underpass-Storm Water Pump Roon Start/Stop Monitoring SMRIOU /002/ESC/B08 unnel E Service Compound SMRCU DOUT Sump Ventilation Fan Duty 1 Discrete IO On/Off PFN/001/KU-/K01 C/002/ESC/B08 nnel E Service Compound SMRCU N/A iump Ventilation Fans Duty 1 Underpass-Storm Water Pump Roon K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC 2-C 2.08 mm^ K Underpass Pump Plant Control & PLC/005/KU-/K01 Monitoring PLC Relay PFN/001/KU-/K01 RIO/005/KU-/K01 2-C 2.08 mm^2 R Underpass Pump Plant Control & Monitoring PLC 170 AIN Pressure PIT/001/KU-/K01 RIO/005/KU-/K01 C/002/ESC/B08 2-CSC 1.31 mm^2 PLC/RIO Pressure transmitter PIT-01 ressure transmitter PIT-01 Sensor K Underpass-Storm Water Pump Room Monitoring SMRIOU unnel E Service Compound SMRCU PLC/005/KU-/K01 K Underpass Pump Plant Control & Monitoring PLC AIN PLC/RIO Pressure transmitter PIT-02 Sensor Pressure PIT/002/KU-/K01 RIO/005/KU-/K01 Monitoring SMRIOU C/002/ESC/B08 unnel E Service Compound SMRCU 2-CSC 1.31 mm^2 s Pump Plant Control & K Underpass Pun PLC/005/KU-/K01 Monitoring PLC AIN Pressure PIT/003/KU-/K01 RIO/005/KU-/K01 2-CSC 1.31 mm^2 PLC/RIO Pressure transmitter PIT-03 Sensor K Underpass-Storm Water Pump Room Monitoring SMRIOU LC/002/ESC/B08 Tunnel E Service Compound SMRCU Not available through a hardwired I/O, interface happens at Traffic Management NTCIP Access Point, AP-77-1, Operating Condition 6+132 Normal/Failure DZA/002/KUN/6132 .C/002/ESC/B08 Funnel E Service Compound SMRCU AP Operating Condition Detection Zone, DZ 77-1, Magnetometer 1 Operating Condition Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm. DIN Normal/Failure DZM/001/KUN/6124 Discrete IO 6+124 nnel E Service Compound SMRCU N/A Z Operating Condition /002/ESC/B08 Detection Zone, DZ 77-1, Magnetometer 2 Operating DIN DB N/A Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Z Operating Condition Discrete IO 6+124 Normal/Failure DZM/002/KUN/6124 .C/002/ESC/B08 unnel E Service Compound SMRCU Detection Zone, DZ 77-1, Magnetometer 3 Operating DIN N/A Discrete IO 6+124 Normal/Failure DZM/003/KUN/6124 nnel E Service Compound SMRCU Failure to successfully retrieve the Magnetometer information shall trigger alarm. tion Zone, DZ 77-1, Magnetometer 4 Operating Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Discrete IO 6+124 Normal/Failure DZM/004/KUN/61 N/A Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Detection Zone, DZ 77-1, Magnetometer 6 Operating Access Point N/A Failure to succesfully retrieve the Magnetometer information shall trigger alarm. DIN Discrete IO Normal/Failure DZM/006/KUN/6129 6+129 PLC/002/ESC/B08 Funnel E Service Compound SMRCU DZ Operating Condition Detection Zone, DZ 77-1, Magnetometer 7 Operating DIN R N/A Failure to successfully retrieve the Magnetometer information shall trigger alarm. Discrete IO 6+129 Normal/Failure DZM/007/KUN/6129 PLC/002/ESC/B08 Tunnel E Service Compound SMRCU



. TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST

Document Cont	trol Panel												
Project Name: IN:	SERT PROJECT NAME	Ref. Number: #N/A											
Document Name:	Document Name: PXXX K Underpass Plant Control & Monitoring, IO signals list												
Version Date	Status	Written by	Checked by	QA Approver	Notes								
0 INSERT DAT	TE First Edition	Insert name	Insert name	Insert name	Draft for Ashghal review								
		i											

Issued		

Signature		insert sigi	natureNan	neDateinsert nameDateinsert d	late															
	Signal Data										Outstation PLC						Field Sign			
count	Tag Type	Read	Write I/O Assignment	Signal Description Detection Zone, DZ 77-1, Magnetometer 8 Operating	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Conductor	Access Point	Comments	
181	DIN	R	DB	Condition Detection Zone, DZ 77-1, Magnetometer 9 Operating	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/008/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Failure to succesfu Access Point	ly retrieve the Magnetometer info	ormation shall trigger alarm.
182	DIN	R	DB	Condition Detection Zone, DZ 77-1, Magnetometer 10 Operating	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/009/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Failure to succesfu Access Point	ly retrieve the Magnetometer info	ormation shall trigger alarm.
183	DIN	R	DB	Condition Detection Zone, DZ 77-1, Magnetometer 1 Vehicle	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/010/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Failure to succesfu	ly retrieve the Magnetometer info gh a hardwired I/O, the magneton	
184	DIN	R	DB	Detected	DZ Vehicle Detected	Discrete IO	6+124	True/False	DZM/001/KUN/6124				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point		
185	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 2 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+124	True/False	DZM/002/KUN/6124				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	
186	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 3 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+124	True/False	DZM/003/KUN/6124				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	
187	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 4 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+124	True/False	DZM/004/KUN/6124				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	
188	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 5 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+124	True/False	DZM/005/KUN/6124				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magnetor	
189	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 6 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+129	True/False	DZM/006/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneto	
190	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 7 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+129	True/False	DZM/007/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Not available throu Access Point	gh a hardwired I/O, the magneto	meter interfaces with the
191	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 8 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+129	True/False	DZM/008/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Not available throu Access Point	gh a hardwired I/O, the magneto	meter interfaces with the
192	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 9 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+129	True/False	DZM/009/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Not available throu Access Point	gh a hardwired I/O, the magneto	meter interfaces with the
193	DIN	R	DB	Detection Zone, DZ 77-1, Magnetometer 10 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+129	True/False	DZM/010/KUN/6129				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Not available throu Access Point	gh a hardwired I/O, the magneton	meter interfaces with the
194	DIN	R	DB	Access Point, AP-60-1, Operating Condition	AP Operating Condition	NTCIP	6+246	Normal/Failure	DZA/003/KUS/6246				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Not available throuserver level	gh a hardwired I/O, interface hap	opens at Traffic Management
195	DIN	R	DB	Detection Zone, DZ 60-1, Magnetometer 1 Operating Condition	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/011/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	formation shall trigger alarm.
196	DIN	R	DB	Detection Zone, DZ 60-1, Magnetometer 2 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/012/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	
197	DIN	R	DB	Detection Zone, DZ 60-1, Magnetometer 3 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/013/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	
100	DIN		DB	Detection Zone, DZ 60-1, Magnetometer 4 Operating		Discrete IO	6+251	Normal/Failure	DZM/014/KUS/6251				PLC/002/ESC/B08				N/A	Access Point		
190	DIN		DB	Detection Zone, DZ 60-1, Magnetometer 5 Operating	DZ Operating Condition								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound SMRCU				Access Point	ly retrieve the Magnetometer info	
199		R	DB	Condition Detection Zone, DZ 60-1, Magnetometer 6 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/015/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	
200	DIN	K	DB	Condition Detection Zone, DZ 60-1, Magnetometer 7 Operating	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/016/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	
201	DIN	R	DB	Condition Detection Zone, DZ 60-1, Magnetometer 8 Operating	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/017/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	
202	DIN	R	DB	Condition Detection Zone, DZ 60-1, Magnetometer 9 Operating	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/018/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	ly retrieve the Magnetometer info	
203	DIN	R	DB	Condition Detection Zone, DZ 60-1, Magnetometer 10 Operating	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/019/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Failure to succesfu Access Point	ly retrieve the Magnetometer info	ormation shall trigger alarm.
204	DIN	R	DB	Condition Detection Zone, DZ 60-1, Magnetometer 1 Vehicle	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/020/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A		ly retrieve the Magnetometer info gh a hardwired I/O, the magneto	
205	DIN	R	DB	Detected Detection Zone, DZ 60-1, Magnetometer 2 Vehicle	DZ Vehicle Detected	Discrete IO	6+251	True/False	DZM/011/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneto	
206	DIN	R	DB	Detected Detection Zone, DZ 60-1, Magnetometer 3 Vehicle	DZ Vehicle Detected	Discrete IO	6+251	True/False	DZM/012/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneto	
207	DIN	R	DB	Detected Detection Zone, DZ 60-1, Magnetometer 4 Vehicle	DZ Vehicle Detected	Discrete IO	6+251	True/False	DZM/013/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneto	
208	DIN	R	DB	Detected Detection Zone, DZ 60-1, Magnetometer 5 Vehicle	DZ Vehicle Detected	Discrete IO	6+251	True/False	DZM/014/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	
209	DIN	R	DB	Detected Detection Zone, DZ 60-1, Magnetometer 6 Vehicle	DZ Vehicle Detected	Discrete IO	6+251	True/False	DZM/015/KUS/6251				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	
210	DIN	R	DB	Detected Detection Zone, DZ 60-1, Magnetometer 7 Vehicle	DZ Vehicle Detected	Discrete IO	6+256	True/False	DZM/016/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneto	
211	DIN	R	DB	Detected	DZ Vehicle Detected	Discrete IO	6+256	True/False	DZM/017/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point		
212	DIN	R	DB	Detection Zone, DZ 60-1, Magnetometer 8 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+256	True/False	DZM/018/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	
213	DIN	R	DB	Detection Zone, DZ 60-1, Magnetometer 9 Vehicle Detected Detection Zone, DZ 60-1, Magnetometer 10 Vehicle	DZ Vehicle Detected	Discrete IO	6+256	True/False	DZM/019/KUS/6256				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneto	
214	DIN	R	DB	Detection Zone, DZ 60-1, Magnetometer 10 Vehicle Detected	DZ Vehicle Detected	Discrete IO	6+256	True/False	DZM/020/KUS/6256			and the second s	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			N/A	Access Point	gh a hardwired I/O, the magneton	meter interraces with the
215	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 73 - Door Access	Sign Door Open/Closed Status	Limit Switch	5+090	Open/Closed	DMS/001/KUN/5090		PLC/001/KUN/5079 PLC	ound Mounted Enclosure, ENC-73 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	12 Hardwired to limit	switch	
216	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 73, Operating Condition Temperature	Sign Operating Condition	Relay	5+090	Normal/Failure	DMS/001/KUN/5090		PLC/001/KUN/5079 PLC		PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	12 Hardwired to temp	erature sensor and/or enclosure f	fan control relay
217	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 73, Operating Condition Power Supply	Sign Operating Condition	Relay	5+090	Normal/Failure	DMS/001/KUN/5090		PLC/001/KUN/5079 PLC	ound Mounted Enclosure, ENC-73 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	12 Hardwired to contr	ol relay: Monitor undervoltages, o	overvoltages
218	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 73, Normal operation/Emergency override	DMS Normal operation/Emergency override	Relay	5+090	Normal/Emergency	DMS/001/KUN/5090		PLC/001/KUN/5079 PLC	ound Mounted Enclosure, ENC-73 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	12 Hardwired to DMS		
219	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 73, Message 1 display che	eck DMS Emergency override	Relay	5+090	On/Off	DMS/001/KUN/5090		PLC/001/KUN/5079 PLC	ound Mounted Enclosure, ENC-73 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	Message 1: TUNN Hardwired to DMS		
220	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 73, Message 2 display che	eck DMS Emergency override	Relay	5+090	On/Off	DMS/001/KUN/5090		PLC/001/KUN/5079 PLC	ound Mounted Enclosure, ENC-73 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	Message 2: TUNN Hardwired to DMS		
221	DIN	R	DB	Dynamic Message Sign, DMS 73, No message display ch		Discrete IO	5+090	On/Off	DMS/001/KUN/5090					Tunnel E Service Compound SMRCU			N/A			
222	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 66 - Door Access	Sign Door Open/Closed Status	Limit Switch	7+230	Open/Closed	DMS/002/KUS/7230		PLC/002/KUS/7238 PLC	ound Mounted Enclosure, ENC-66 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	2 Hardwired to limit	switch	
223	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 66, Operating Condition Temperature	Sign Operating Condition	Relay	7+230	Normal/Failure	DMS/002/KUS/7230			ound Mounted Enclosure, ENC-66 -	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	2 Hardwired to temp	erature sensor and/or enclosure f	fan control relay
224	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 66, Operating Condition Power Supply	Sign Operating Condition	Relay	7+230	Normal/Failure				ound Mounted Enclosure, ENC-66 -		Tunnel E Service Compound SMRCU					ol relay: Monitor undervoltages, o	
225	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 66, Normal operation/Emergency override	DMS Normal operation/Emergency override	Relay	7+230	Normal/Emergency			.,,,	ound Mounted Enclosure, ENC-66 -		Tunnel E Service Compound SMRCU				2 Hardwired to DMS		
226	DIN	R	PLC/RIO	Dynamic Message Sign, DMS 66, Message 1 display che	eck DMS Normal operation	Relay	7+230	On/Off	DMS/002/KUS/7230			ound Mounted Enclosure, ENC-66 -		Tunnel E Service Compound SMRCU				Message 1: TUNN '2 Hardwired to DMS	L CLOSED;	
227	DIN	R	PLC/RIO PLC/RIO			Relay	7+230	On/Off	DMS/002/KUS/7230			ound Mounted Enclosure, ENC-66 -						Message 2: TUNN Hardwired to DMS	L OPEN;	
22/				Dynamic Message Sign, DMS 66, Message 2 display che							PLC/002/KUS//238 PLC	-		Tunnel E Service Compound SMRCU				2 Indiumired to DMS	y 0	
228	DIN	R	DB	Dynamic Message Sign, DMS 66, No message display ch	neck DMS Normal operation	Discrete IO	7+230	On/Off	DMS/002/KUS/7230				PLC/002/ESC/B08	Tunnel E Service Compound SMRCU	1		N/A			



DIN

DIN R

R DIN

BUS/COMM

BUS/COMM

BUS/COMM

BUS/COMM

Opened/Closed

lightingCB Opened/Closed

bution Board, DB-IAT-SP-02 40A Incoming CB Trip

ution Board, DB-IAT-SP-02 10A for EFA pump roo

Distribution Board, DB-IAT-SP-02 10A for EFA pump room lightingCB Trip Status

DB-IAT-SP-02 40A Incoming CB

DB-IAT-SP-02 40A Incoming CB

oution Board, DB-IAT-SP-02 10A

Tunnel E EFA Pump Station

Normal/Trip

Opened/Closed

Normal/Trip

Circuit Breaker

Circuit Breaker

Circuit Breake

TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST ent Name: PXXX Tunnel E Area EFA pump station plant control & monitoring, IO signals lisName.......Insert nameDate.....insert date ...insert signature .. Signal Signal Data count Tag Type Read Write I/O Assignment Signal pick up location Outstation PLC Name Master PLC ID Master PLC Name Signal Description Rack ID EFA Pump Station Control & LC/002/EFA/F01 MCC Mains Supply Tunnel E EFA Pump Station unnel E Service Compound SMRCU 2-C 2.08 mm^2 Motor control center, MCC-IAT-SP-02 Operating Cond EFA Pump Station Control 8 PLC/002/EFA/F01 Monitoring - PLC MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Mon DIN R Power Supply 2-C 2.08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay PLC/RIO MCC Operating Condition Relay Tunnel E EFA Pump Station On/Off C/002/ESC/E08 unnel E Service Compound SMRCU Motor control center, MCC-IAT-SP-02 Operating Condition EFA Pump Station Control & C/002/EFA/F01 Monitoring - PLC DIN R MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/RIO Temperature MCC Operating Condition Relay Tunnel E EFA Pump Station On/Off C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 Hardwired to temperature sensor and/or enclosure fan control relay EFA Pump Station PLC/002/EFA/F01 Monitoring - PLC R DIN MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/RIO Motor control center, MCC-IAT-SP-02 Door Open/Closed MCC Door Relay Tunnel E EFA Pump Station On/Off C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 ardwired to limit switch EFA Pump Station C Monitoring - PLC Motor control center, MCC-IATS-PQ-2 Manual Over-Ride On/Off Motor control center, MCC-IATS-PQ-2 Manual Over-Ride On/Off Motor control center, MCC-IATS-PQ-2 DB 800A from LV PANEL-PG-2 Incoming CB Opened/Closed Motor control center, MCC-IATS-PQ-2 DB 800A from LV PANEL-PG-2 Incoming CB Trip Status DIN R PLC/RIO Relay On/Off MCC/002/EFA/F01 RIO/002/EFA/F01 C/002/EFA/F01 2-C 2.08 mm^2 Tunnel E EFA Pump Station nel E Service Compound SMRCU CBR/314/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & Monitoring - PLC MCC-IAT-SP-02 800A from LV PANE PG-2 Incoming CB Opened/Close ircuit Breaker Tunnel E EFA Pump Station /002/EFA/F01 nel E Service Compound SMRCU MCC-IAT-SP-02 800A from LV PANE PG-2 Incoming CB Trip Status Tunnel E Plant Control & Monitoring - SMRIOU RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DIN BUS/COMM Circuit Breake Tunnel E EFA Pump Station C/002/ESC/E08 nnel E Service Compound SMRCU N/A Normal/Trip Motor control center, MCC-IAT-SP-02 DB 150A TP MCCB MCC-IAT-SP-2 for APFC 75 KVAR CB Tunnel E Plant Control & Monitoring -EFA Pump Station Control & DIN R BUS/COMM in MCC-IAT-SP-2 for APFC 75 KVAR CB Opened/Closed Circuit Breaker Tunnel E EFA Pump Station Opened/Closed CBR/315/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC .C/002/ESC/E08 unnel E Service Compound SMRCU N/A DB 150A TP MCCB in MCC-IAT-SP-2 for APFC 75 KVAR CB 150A TP MCCB in MCC-IAT-SP-2 for unnel E Plant Control & Monitoring -DIN BUS/COMM APFC 75 KVAR CB Trip Status ntrol center. MCC-IAT-SP-02 DB 400A Duty Pump MCC-IAT-SP-02 DB 400A Duty Pump Circuit Breaker Tunnel E EFA Pump Station Normal/Trip CBR/315/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC EFA Pump Station C/002/ESC/E08 nnel E Service Compound SMRCU N/A LB Opened/Closed Motor control center, MCC-IAT-SP-02 DB 400A Duty Pump (B Tip Status CB Tip Status CB Tip Status Monitoring - PLC EFA Pump Station DIN BUS/COMM Tunnel E EFA Pump Station CBR/316/EFA/F01 RIO/002/EFA/F01 N/A C/002/ESC/E08 EFA Pump Station Co Monitoring - PLC Motor control center, MCC-IAT-SP-02 D8 400A Duty Pump CB Opened/Closed CB Trip Status MCC-IAT-SP-02 D8 400A Duty Pump CR Opened/Closed Tunnel E EFA Pump Station EFA Pump Station Control & Monitoring - PLC BUS/COMM Tunnel E EFA Pump Station CBR/317/EFA/F01 RIO/002/EFA/F01 C/002/ESC/E08 Opened/Closed Motor control center, MCC-IAT-SP-02 DB 400A Duty Pump MCC-IAT-SP-02 DB 400A Duty Pump Tunnel E Plant Control & Monitoring -CBR/317/EFA/F01 RIO/002/EFA/F01 SMRIOU DIN BUS/COMM CB Trip Status Circuit Breaker Tunnel E EFA Pump Station Normal/Trip C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nel E Service Compound SMRCU N/A trol center, MCC-IAT-SP-02 DB 400A Stand-by MCC-IAT-SP-02 DB 400A Stand-by R DIN BUS/COMM Pump CB Opened/Closed Pump CB Opened/Closed Circuit Breaker Tunnel E EFA Pump Station Opened/Closed CBR/318/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU N/A CBR/318/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring SMRIOU enter, MCC-IAT-SP-02 DB 400A Stand-by atus MCC-IAT-SP-02 DB 400A Stand-by Pump CB Trip Status EFA Pump Station PLC/002/EFA/F01 Monitoring - PLC Motor control center, MCC-IAT-SP-02 DB 40A DB-IAT-SP-02 CB Opened/Closed DIN R BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip C/002/ESC/E08 nel E Service Compound SMRCU N/A Tunnel E Plant Control & Monitoring -SMRIOU -MCC-IAT-SP-02 DB 40A DB-IAT-SP-02 CB Opened/Closed EFA Pump Station Control & Monitoring - PLC R Motor control center, MCC-IAT-SP-02 DB 40A DB-IAT-SP-02 CB Trip Status ircuit Breaker Tunnel E EFA Pump Station Tunnel E Plant Control & Monitoring - SMRIOU MCC-IAT-SP-02 DB 40A DB-IAT-SP-02 CB Trip Status EFA Pump Station Control & Monitoring - PLC BUS/COMM Circuit Breaker Tunnel E EFA Pump Station C/002/EFA/F01 N/A Normal/Trip C/002/ESC/E08 nnel E Service Compound SMRCU Motor control center, MCC-IAT-SP-02 DB 20A UPS CB Opened/Closed MCC-IAT-SP-02 20A UPS CB Opened/Closed Tunnel E Plant Control & Monitoring -CBR/320/EFA/F01 RIO/002/EFA/F01 SMRIOU EFA Pump Station Control & PLC/002/EFA/F01 Monitoring - PLC Circuit Breaker Tunnel E EFA Pump Station N/A BUS/COMM Opened/Closed C/002/ESC/E08 nnel E Service Compound SMRCU Tunnel E Plant Control & Monitoring -SMRIOU Tunnel E Plant Control & Monitoring -Motor control center, MCC-IAT-SP-02 DB 20A UPS CB Trip MCC-IAT-SP-02 20A UPS CB Trip EFA Pump Station Control & DIN N/A BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip CBR/320/EFA/F01 RIO/002/EFA/F01 C/002/EFA/F01 Monitoring - PLC EFA Pump Station C/002/ESC/E08 nel E Service Compound SMRCU MCC-IAT-SP-02 16A Socket Outlet : CB Opened/Closed control center, MCC-IAT-SP-02 DB 16A Socket CBR/321/EFA/F01 RIO/002/EFA/F01 SMRIOU DIN R BUS/COMM Outlet 1 CB Opened/Closed Circuit Breaker Tunnel E EFA Pump Station Opened/Closed PLC/002/EFA/F01 .C/002/ESC/E08 nnel E Service Compound SMRCU N/A center, MCC-IAT-SP-02 DB 16A Socket MCC-IAT-SP-02 16A Socket Outle CB Trip Status Motor control center, McC-IAI-3F-02 DB 16A Socket Outlet 1 CB Trip Status Motor control center, MCC-IAT-SP-02 DB 16A Socket Outlet 2 CB Opened/Close Tunnel E EFA Pump Station CBR/321/EFA/F01 RIO/002/EFA/F01 SMRIOU LC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 MCC-IAT-SP-02 16A Socket Outlet Tunnel E EFA Pump Station Monitoring - PLC Motor control center, MCC-IAT-SP-02 DB 16A Socket Outlet 2 CB Trip Status CBR/322/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU MCC-IAT-SP-02 16A Socket Outlet 2 CB Trip Status EFA Pump Station Control & DIN Circuit Breaker Tunnel E EFA Pump Station Normal/Trip LC/002/EFA/F01 Monitoring - PLC .C/002/ESC/E08 nnel E Service Compound SMRCU N/A Motor control center, MCC-IAT-SP-02 DB 800A from LV MCC-IAT-SP-02 800A from LV PAN EFA Pump Station Control & PANEL-PG-2 Incoming CB Normal/Trip PG-2 Incoming CB Normal/Trip Motor control center, MCC-IAT-SP-02 DB 150A TP MCCB MCC-IAT-SP-2 for APFC 75 KVAR CB DOUT BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU N/A DOUT BUS/COMM Circuit Breake Tunnel E EFA Pump Station Opened/Closed CBR/315/EFA/F01 RIO/002/EFA/F01 C/002/EFA/F01 C/002/ESC/E08 nnel E Service Compound SMRCU N/A DOUT BUS/COMM Circuit Breake Tunnel E EFA Pump Station Normal/Trip RIO/002/EFA/F01 C/002/EFA/F01 C/002/ESC/E08 nel E Service Compound SMRCU N/A Motor control center, MCC-IAT-SP-02 DB 40A Duty Pump CB Normal/Trip Command MCC-IAT-SP-020A Duty Pump CB Normal/Trip Command EFA Pump Station Control & Monitoring - PLC Tunnel E Plant Control & Monitoring - CBR/317/EFA/F01 RIO/002/EFA/F01 SMRIOU BUS/COMM Circuit Breake Tunnel E EFA Pump Station Normal/Trip C/002/EFA/F01 C/002/ESC/E08 nnel E Service Compound SMRCU Motor control center, MCC-IAT-SP-02 DB 40A Stand-by Pump CB Normal/Trip Tunnel E Plant Control & Monitoring - SMRIOU MCC-IAT-SP-0240A Stand-by Pump C EFA Pump Station Control & Monitoring - PLC Tunnel E EFA Pump Station PLC/002/EFA/F01 N/A BUS/COMM Circuit Breaker C/002/ESC/E08 nnel E Service Compound SMRCU Normal/Trip Motor control center, MCC-IAT-SP-02 DB 40A DB-IAT-SP MCC-IAT-SP-02 DB 40A DB-IAT-SP-02 EFA Pump Station Control & N/A DOUT BUS/COMM 02 CB Normal/Trip Circuit Breake Tunnel E EFA Pump Station Normal/Trip CBR/319/EFA/F01 RIO/002/EFA/F01 SMRIOU C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU Motor control center, MCC-IAT-SP-02 DB 20A UPS CB MCC-IAT-SP-02 20A UPS CB Normal/Trip EFA Pump Sta DOUT BUS/COMM Normal/Trip Circuit Breaker Tunnel E EFA Pump Station Normal/Trip CBR/320/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC EFA Pump Station C/002/ESC/E08 nnel E Service Compound SMRCU N/A enter, MCC-IAT-SP-02 DB 16A Socket DOUT BUS/COMM Outlet 1 CB Normal/Trip Circuit Breake Tunnel E EFA Pump Station Normal/Trip CBR/321/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 C/002/ESC/E08 N/A nel E Service Compound SMRCU Motor control center, MCC-IAT-SP-02 DB 16A Socket Outlet 2 CB Normal/Trip Tunnel E EFA Pump Station lormal/Trip itoring - PLC MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 .C/002/ESC/E08 Motor control center, MCC-IAT-SP-02 Incomer CB Voltage MCC-IAT-SP-02 Incomer CB Tunnel E EFA Pump Station Voltage nnel E Service Compound SMRCU 2-CSC 1.31 mm² Signal Converte Monitoring - PLC Tunnel E Plant Control & Monitoring - SMRIOU MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC AIN Motor control center, MCC-IAT-SP-02 Incomer CB Current MCC-IAT-SP-02 Incomer CB Tunnel E EFA Pump Station Current LC/002/ESC/E08 2-CSC 1.31 mm^2 PLC/RIO Signal Converte unnel E Service Compound SMRCU MCC/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC Motor control center, MCC-IAT-SP-02 Incomer CB Power MCC-IAT-SP-02 Incomer CB Tunnel E EFA Pump Station Power PLC/002/ESC/E08 2-CSC 1.31 mm^2 PLC/RIO Tunnel E Service Compound SMRCU Tunnel E Plant Control & Monitoring CP-/013/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC Tunnel E EFA Pump Station Instrumentation Control Panel 01 Door Access Control Panel Door Open/Close Status Limit Switch Open/Close C/002/ESC/E08 Funnel E Service Compound SMRCU 2-C 2.08 mm^2 Hardwired to limit switch Normal/Failure CP-/013/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC EFA Pump Station Control & Monitoring - PLC PLC/002/EFA/F01 Monitoring - PLC Hardwired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits Hardwired to 3-phase control relay: Monitor undervoltages, coveroltages, voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits Instrumentation Control Panel 01 Operating Condition Power Supply PLC/RIO Control Panel Operating Condition Relay Tunnel E EFA Pump Station C/002/ESC/E08 unnel E Service Compound SMRCU tation Control Panel 01 Operating Condition DIN Control Panel Operating Condition Relay CP-/013/EFA/F01 RIO/002/EFA/F01 stribution Board, DB-IAT-SP-02 Tunnel E Plant Control & Monitoring -SMRIOU Tunnel E Plant Control & Monitoring -SMRIOU Panel DB-IAT-SP-02 Door Open/Close EFA Pump Station Control & PLC/RIO Panel Door Access imit Switch Tunnel E EFA Pump Station Open/Close DB-/027/EFA/F01 RIO/002/EFA/F01 PLC/002/FFA/F01 C/002/FSC/F08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 Status Panel DB-IAT-SP-02 Operating DIN PLC/RIO Relay Tunnel E EFA Pump Station I C /002 /FFA /F01 2.C 2 08 mm^2 Tunnel E Plar SMRIOU Panel Operating Condition Temperature Normal/Failure DB-/027/EFA/F01 RIO/002/EFA/F01 2-C 2.08 mm^2 assymetry, phase-loss and phase-sequence in threephase, three-wire circuits Relay Tunnel E EFA Pump Station C/002/ESC/E08 nnel E Service Compound SMRCU Condition Monitoring - PLC Opened/Closed CBR/323/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - MRIOU Distribution Board, DB-IAT-SP-02 40A Incoming CB EFA Pump Station Control 8

Tunnel E Plant Control & Monitoring -CBR/323/EFA/F01 RIO/002/EFA/F01 SMRIOU

| CBR/324/EFA/F01 RIO/002/EFA/F01 SMRIOU | Tunnel E | CBR/324/EFA/F01 RIO/002/EFA/F01 SMRIOU | SMRIOU | CBR/324/EFA/F01 RIO/002/EFA/F01 RIO/002/EFA/F

PLC/002/EFA/F01 Monitoring - PLC

PLC/002/EFA/F01 Monitoring - PLC

PLC/002/EFA/F01 PLC/002/EFA/F01 Monitoring - PLC

Monitoring - PLC

PLC/002/EFA/F01

C/002/ESC/E08

C/002/ESC/E08

C/002/ESC/E08

nnel E Service Compound SMRCU

innel E Service Compound SMRCU

nnel E Service Compound SMRCU

N/A

N/A

N/A



Tunnel E Fire Alarm Panel Zone Loop 1 Operating Condition Fire Alarm Panel Zone Loop 1

Discrete IO

Tunnel E EFA Pump Station

TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST ent Name: PXXX Tunnel E Area EFA pump station plant control & monitoring, IO signals lis ...insert signatureName.......Insert nameDate.....insert date ... Signal Signal Data count Tag Type Read Write Field Signal I/O Assignment Major Outstation Name Outstation PLC Name Master PLC Name Signal Description Equipment ID Outstation ID Master PLC ID Rack ID Signal pick up location Signal ID Distribution Board, DB-IAT-SP-02 10A for EFA pump room lighting CB Opened/Closed CB R Tunnel E EFA Pump Station bution Board, DB-IAT-SP-02 10A for EFA pump room Distribution Board, DB-IAT-SP-02 10 EFA Pump Station Control & BUS/COMM Tunnel E EFA Pump Station CBR/325/EFA/F01 RIO/002/EFA/F01 lighting CB Trip Status Circuit Breake Normal/Trip Ionitoring - PLC ition Board, DB-IAT-SP-02 10A for EFA pump and Tunnel E Plant Control & Mo CBR/326/EFA/F01 RIO/002/EFA/F01 SMRIOU DIN R BUS/COMM control room lighting CB Opened/Closed Distribution Board, DB-IAT-SP-02 10A for EFA pump and Tunnel E EFA Pump Station /002/EFA/F01 N/A Circuit Breake Monitoring - PLC nel E Service Compound SMRCU Control room lighting CB Trip Status Distribution Board, DB-IAT-SP-02 10A Spare 1 CB Opened/Closed DIN R BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip CBR/326/EFA/F01 RIO/002/EFA/F01 SMRIOU C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU N/A CBR/327/EFA/F01 RIO/002/EFA/F01 SMRIOU DIN R BUS/COMM Circuit Breake Tunnel E EFA Pump Station Opened/Closed C/002/EFA/F01 C/002/ESC/E08 nel E Service Compound SMRCU N/A bution Board, DB-IAT-SP-02 10A Spare 1 CB Trip R CBR/327/EFA/F01 RIO/002/EFA/F01 DIN BUS/COMM Circuit Breaker Tunnel E EFA Pump Station /002/EFA/F01 002/ESC/E08 N/A Normal/Trip Distribution Board, DB-IAT-SP-02 10A for spur unit at APFC CB Opened/Closed CB CBR/328/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring -SMRIOU EFA Pump Station Control & LC/002/EFA/F01 Monitoring - PLC DIN BUS/COMM Tunnel E EFA Pump Station Opened/Closed ircuit Breaker C/002/ESC/E08 unnel E Service Compound SMRCU N/A Distribution Board, DB-IAT-SP-02 10A for spur unit at APFCCB Trip Status Distribution Board, DB-IAT-SP-02 10A CB CBR/328/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & PLC/002/EFA/F01 Monitoring - PLC DIN BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip C/002/ESC/E08 nnel E Service Compound SMRCU N/A Distribution Board, DB-IAT-SP-02 20A CB bution Board, DB-IAT-SP-02 20A Spare 1 CB EFA Pump Station Control & DIN N/A BUS/COMM Circuit Breake Tunnel E EFA Pump Station CBR/329/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU ution Board, DB-IAT-SP-02 20A Spare 1 CB Trin DIN R BUS/COMM Circuit Breake Tunnel E EFA Pump Station Normal/Trip CBR/329/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 .C/002/ESC/E08 nnel E Service Compound SMRCU N/A EFA Pump Station Con Monitoring - PLC EFA Pump Station Con Monitoring - PLC DIN BUS/COMM Tunnel E EFA Pump Station CBR/330/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 C/002/ESC/E08 CBR/330/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Tunnel E EFA Pump Station Normal/Trip BUS/COMM N/A C/002/ESC/E08 bution Board, DB-IAT-SP-02 32A Spare 1 CB ution Board, DB-IAT-SP-02 32A Opened/Closed CBR/331/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU R DIN BUS/COMM PLC/002/EFA/F01 .C/002/ESC/E08 Opened/Closed Circuit Breaker Tunnel E EFA Pump Station Monitoring - PLC nnel E Service Compound SMRCU N/A Distribution Board, DB-IAT-SP-02 32A Spare 1 CB Trip Distribution Board, DB-IAT-SP-02 32A Tunnel E Plant Control & Monitoring CBR/331/EFA/F01 RIO/002/EFA/F01 SMRIOU DIN BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nel E Service Compound SMRCU N/A ution Board, DB-IAT-SP-02 32A for EFA Control roo Distribution Board, DB-IAT-SP-02 32A for EFA Control roo sockets CB Opened/Closed Distribution Board, DB-IAT-SP-02 32A for EFA Control roo sockets CB Trip Status Distribution Board, DB-IAT-SP-02 20A Spare 3 CB Opened/Closed DIN R BUS/COMM Circuit Breake Tunnel E EFA Pump Station Opened/Closed CBR/332/EFA/F01 RIO/002/EFA/F01 C/002/EFA/F01 C/002/ESC/E08 N/A A Pump Statior onitoring - PLC DIN R BUS/COMM Circuit Breake Tunnel E EFA Pump Station Normal/Trip CBR/332/EFA/F01 RIO/002/EFA/F01 SMRIOU LC/002/EFA/F01 C/002/ESC/E08 nel E Service Compound SMRCU N/A CBR/333/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & Monitoring - PLC R ircuit Breaker Tunnel E EFA Pump Station /002/ESC/E08 Distribution Board, DB-IAT-SP-02 20A CB Distribution Board, DB-IAT-SP-02 20A Spare 3 CB Trip Tunnel E Plant Control & Monitoring -CBR/333/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC N/A BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip Distribution Board, DB-IAT-SP-02 20A CB C/002/ESC/E08 nnel E Service Compound SMRCU CBR/334/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Distribution Board, DB-IAT-SP-02 20A Spare 4 CB EFA Pump Station Control & DIN R PLC/002/EFA/F01 Monitoring - PLC BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Opened/Closed N/A Opened/Closed .C/002/ESC/E08 unnel E Service Compound SMRCU Distribution Board, DB-IAT-SP-02 20A CB bution Board, DB-IAT-SP-02 20A Spare 4 CB Trip EFA Pump Station Control & DIN CBR/334/EFA/F01 RIO/002/EFA/F01 SMRIOU BUS/COMM Circuit Breaker Tunnel E EFA Pump Station Normal/Trip C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU N/A EFA Pump Station Co Monitoring - PLC EFA Pump Station Co Monitoring - PLC CBR/335/EFA/F01 RIO/002/EFA/F01 SMRIOU BUS/COMM Tunnel E EFA Pump Station LC/002/EFA/F01 nel E Service Compound SMRCU CBR/335/EFA/F01 RIO/002/EFA/F01 R BUS/COMM Tunnel E EFA Pump Station LC/002/EFA/F01 C/002/ESC/E08 bution Board, DB-IAT-SP-02 40A Incoming CB Normal/Trip CBR/323/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Mon EFA Pump Station Control Normal/Trip PLC/002/EFA/F01 Monitoring - PLC DOUT BUS/COMM DB-IAT-SP-02 40A Incoming CB Tunnel E EFA Pump Station LC/002/ESC/E08 unnel E Service Compound SMRCU N/A Circuit Breaker CBR/324/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Distribution Board, DB-IAT-SP-02 10A for for EFA pump PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DOUT DB-IAT-SP-02 10A CB N/A BUS/COMM room lightingCB Normal/Trip Circuit Breaker Tunnel E EFA Pump Station Normal/Trip .C/002/ESC/E08 nnel E Service Compound SMRCU CBR/325/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU ion Board, DB-IAT-SP-02 10A for EFA pump room DOUT W BUS/COMM lighting CB Normal/Trip DB-IAT-SP-02 10A CB Circuit Breaker Tunnel E EFA Pump Station Normal/Trip PLC/002/EFA/F01 Monitoring - PLC .C/002/ESC/E08 nnel E Service Compound SMRCU N/A Ingiting CS NOTHING THE Distribution Board, DB-IAT-SP-02 10A for EFA pump and control room lighting CB Normal/Trip Distribution Board, DB-IAT-SP-02 10A Spare 1 CB CBR/326/EFA/F01 RIO/002/EFA/F01 SMRIOU DOUT BUS/COMM DB-IAT-SP-02 10A CB Circuit Breaker Tunnel E EFA Pump Station Normal/Trip C/002/EFA/F01 C/002/ESC/E08 nel E Service Compound SMRCU N/A CBR/327/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU DB-IAT-SP-02 10A CB Circuit Breake Tunnel E EFA Pump Station Normal/Trip C/002/EFA/F01 N nel E Service Compound SMRCU Normal/Trip Distribution Board, DB-IAT-SP-02 10A for spur unit at APF CB Normal/Trip CBR/328/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & Monitoring - PLC DB-IAT-SP-02 10A CB N/A Circuit Breake Tunnel E EFA Pump Station Normal/Trip PLC/002/EFA/F01 /002/ESC/E08 nel E Service Compound SMRCU Distribution Board, DB-IAT-SP-02 20A Spare 1 CB Normal/Trip CBR/329/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & DOUT DB-IAT-SP-02 20A CB Circuit Breaker Tunnel E EFA Pump Station PLC/002/EFA/F01 Monitoring - PLC BUS/COMM Normal/Trip LC/002/ESC/E08 unnel E Service Compound SMRCU N/A Distribution Board, DB-IAT-SP-02 20A Spare 2 CB Tunnel E Plant Control & Monitoring -EFA Pump Station Control & DOUT BUS/COMM DB-IAT-SP-02 20A CB Circuit Breake Tunnel E EFA Pump Station Normal/Trip CBR/330/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU N/A bution Board, DB-IAT-SP-02 32A Spare 1 CB unnel E Plant Control & Monitoring -BUS/COMM DB-IAT-SP-02 32A CB Circuit Breake Tunnel E EFA Pump Station Normal/Trip CBR/331/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel F PLC/002/FFA/F01 C/002/FSC/F08 inel E Service Compound SMRCU N/A Tunnel E EFA Pump Station CBR/332/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC BUS/COMM DB-IAT-SP-02 32A CE Circuit Breake C/002/ESC/E08 nnel E Service Compound SMRCU ribution Board, DB-IAT-SP-02 20A Spare 3 CB CBR/333/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Tunnel E EFA Pump Station Normal/Trip unnel E Service Compound SMRCU Monitoring - PLC Normal/Trip CBR/334/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU Distribution Board, DB-IAT-SP-02 20A Spare 4 CB PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DOUT DB-IAT-SP-02 20A CB Tunnel E EFA Pump Station PLC/002/ESC/E08 N/A BUS/COMM Normal/Trip Circuit Breaker Funnel E Service Compound SMRCU Distribution Board, DB-IAT-SP-02 20A Spare 5 CB Normal/Trip Normal/Trip CBR/335/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC Tunnel E EFA Pump Station N/A BUS/COMM DB-IAT-SP-02 20A CB Circuit Breaker PLC/002/ESC/E08 Tunnel E Service Compound SMRCU Tunnel E Plant Control & Monitoring -SMRIOU DIN PLC/RIO Panel Door Access Limit Switch Tunnel E EFA Pump Station DB-/028/EFA/F01 LC/002/EFA/F01 anel DB-UPS Door Open/Close State Open/Close RIO/002/EFA/F01 C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DB-/028/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Hardwired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits Panel Operating Condition Power Supply Panel DB-UPS Operating Condition Relay Tunnel E EFA Pump Station Normal/Failure .C/002/ESC/E08 unnel E Service Compound SMRCU DB-/028/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & rired to 3-phase control relay: Monitor undervoltages, overvoltages, voltage PLC/RIO Panel Operating Condition Temperature Panel DB-UPS Operating Condition Relay Tunnel E EFA Pump Station Normal/Failure PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 metry, phase-loss and phase-sequence in threephase, three-wire circuits Distribution Board, DB-UPS 20A Incoming CB EFA Pump Station Control & DIN DB-/028/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC N/A BUS/COMM Opened/Closed DB-UPS 20A Incoming CB Circuit Breake Tunnel E EFA Pump Station Opened/Closed C/002/ESC/E08 nnel E Service Compound SMRCU unnel E Plant Control & Monitoring tion Control & DIN PLC/002/EFA/F01 Monitoring - PLC N/A BUS/COMM Distribution Board, DB-UPS 20A Incoming CB Trip Status DB-UPS 20A Incoming CB Circuit Breaker Tunnel E EFA Pump Station Normal/Trip DB-/028/EFA/F01 RIO/002/EFA/F01 SMRIOU C/002/ESC/E08 unnel E Service Compound SMRCU BUS/COMM Circuit Breaker Tunnel E EFA Pump Station DB-/028/EFA/F01 RIO/002/EFA/F01 LC/002/EFA/F01 C/002/ESC/E08 Distribution Board, DB-UPS 20A CB Opened/Closed Distribution Board, DB-UPS 20A CB nel E Service Compound SMRCU N/A Tunnel E EFA Pump Station | Normal/Trip | DB-/028/EFA/F01 | RIO/002/EFA/F01 | Tunnel E Plant Control & Monitoring - SMRIDU | Tunnel E Plant Control & Monitoring - SMRIDU | Tunnel E Plant Control & Monitoring - SMRIDU | Distribution Board, DB-UPS 20A Incoming CB Normal/Trip DB-UPS 20A Incoming CB Tunnel E EFA Pump Station Distribution Board, DB-UPS 20A CB Normal/Trip Tunnel E EFA Pump Station PLC/002/ESC/E08 Tunnel E Service Compound SMRCU N/A panel, FACP Normal/Alarm FCP/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - MRIOU DIN BUS/COMM Tunnel E Fire Alarm Panel Zone Loop 1 Fire Normal/Alarm Fire Alarm Panel Zone Loop 1 Fire Discrete IO Tunnel E EFA Pump Station PLC/002/EFA/F01 Monitoring - PLC PLC/002/ESC/E08 Tunnel E Service Compound SMRCU N/A PLC/002/EFA/F01 Monitoring - FLC EFA Pump Station Control & Monitoring - PLC Normal/Failure FCP/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU

LC/002/ESC/E08

Tunnel E Service Compound SMRCU



DIN R

16A.SP isolator for UPS-DB fed from UPS

Opened/Closed

BUS/COMM

Circuit Breaker

TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST nent Name: PXXX Tunnel E Area EFA pump station plant control & monitoring, IO signals lis ...insert signatureName......insert nameDate.....insert date ... Outstation PLC Name Outstation PLC Name Signal Signal Data count Tag Type Read Write Field Signal I/O Assignment Signal Equipment ID Outstation ID Outstation Name Master PLC Name Signal pick up location Master PLC ID Rack ID Signal Description R Tunnel E EFA Pump Station EFA Pump Station Control & Monitoring - PLC BUS/COMM Tunnel E EFA Pump Station Discrete IO N/A FCP/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Mor EFA Pump Station Control & Monitoring - PLC 88 DIN R BUS/COMM Discrete IO Tunnel E EFA Pump Station N/A DIN R BUS/COMM Discrete IO Tunnel E EFA Pump Station Normal/Failure FCP/002/EFA/F01 RIO/002/EFA/F01 SMRIOU C/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nel E Service Compound SMRCU N/A EFA Pump Station C/002/EFA/F01 Monitoring - PLC FCP/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control Tunnel E Plant Control Tunnel E Plant Control SMRIOU SMRIOU SMRIOU SMRIOU Tunnel E Plant Control SMRIOU SM DIN R BUS/COMM nnel E Fire Alarm Panel Zone Loop 4 Fire Normal/Alarm Fire Alarm Panel Zone Loop 4 Fire Discrete IO Tunnel E EFA Pump Station Normal/Alarm C/002/ESC/E08 N/A nel E Service Compound SMRCU DIN R BUS/COMM Discrete IO Tunnel E EFA Pump Station FCP/002/EFA/F01 RIO/002/EFA/F01 /002/EFA/F01 /002/ESC/E08 N/A Tunnel E Fire Alarm Panel Operating Condition DIN R BUS/COMM Discrete IO Tunnel E EFA Pump Station Normal/Failure FCP/002/EFA/F01 RIO/002/EFA/F01 PLC/002/ESC/E08 N/A mp Pump-01, 02, 03 DIN Sump Drainage Pump 1 Available/Unavailable Sump Drainage Pump 1 Discrete IO Tunnel E EFA Pump Station PSW/003/EFA/F01 .C/002/ESC/E08 unnel E Service Compound SMRCU N/A DIN R PLC/RIO Sump Drainage Pump 1 Auto/Manual Sump Drainage Pump 1 Relay Tunnel E EFA Pump Station Auto/Manual PSW/003/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 Monitoring - PLC .C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 DIN R Tunnel E EFA Pump Station PSW/003/EFA/F0 N/A Duty/Standby PLC/002/EFA/F01 EFA Pump Station Control 8 Monitoring - PLC Tunnel E EFA Pump Station Running/Stopped 2-C 2.08 mm^2 Hardwired to a current limit relay Sump Drainage Pump 1 Running/Stopped Relay Normal/Failure PSW/003/EFA/F01 RIO/002/EFA/F01 SMRIOU EFA Pump Station Control & PLC/002/EFA/F01 Monitoring - PLC DIN R 2-C 2.08 mm^2 thermistors PLC/RIO Tunnel E EFA Pump Station Sump Drainage Pump 1 Operating Condition Sump Drainage Pump 1 Relay C/002/ESC/E08 nnel E Service Compound SMRCU DIN N/A Sump Drainage Pump 2 Available/Unavailable Sump Drainage Pump 2 Discrete IO Tunnel E EFA Pump Station Available/Unavailable PSW/004/EFA/F01 C/002/ESC/E08 unnel E Plant Control & Monitoring PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC PSW/004/EFA/F01 RIO/002/EFA/F01 SMRIOU DIN R PLC/RIO Sump Drainage Pump 2 Auto/Manual Sump Drainage Pump 2 Relay Tunnel E EFA Pump Station Auto/Manual 2-C 2.08 mm^2 DIN R Sump Drainage Pump 2 Duty/Standby Discrete IO Tunnel E EFA Pump Station Duty/Standby PSW/004/EFA/F01 N/A EFA Pump Station Control & Monitoring - PLC Tunnel E Plant Control & Monitoring -IO/002/EFA/F01 SMRIOU R Sump Drainage Pump 2 Running/Stopped Relay Tunnel E EFA Pump Station Running/Stopped PSW/004/EFA/F01 R 2-C 2.08 mm^2 Sump Drainage Pump 2 PSW/004/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC ardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 Normal/Failure 2-C 2.08 mm^2 PLC/RIO Relay Tunnel E EFA Pump Station Sump Drainage Pump 2 Operating Condition Sump Drainage Pump 2 C/002/ESC/E08 nnel E Service Compound SMRCU DIN R DB Sump Drainage Pump 3 Available/Unavailable Discrete IO Tunnel E EFA Pump Station Available/Unavailable PSW/005/EFA/F01 N/A Sump Drainage Pump 3 C/002/ESC/E08 unnel E Service Compound SMRCU Tunnel E Plant Control & Monitoring -PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DIN PLC/RIO Sump Drainage Pump 3 Auto/Manual Sump Drainage Pump 3 Relay Tunnel E EFA Pump Station Auto/Manual PSW/005/EFA/F01 RIO/002/EFA/F01 C/002/ESC/E08 2-C 2.08 mm^2 Sump Drainage Pump 3 Duty/Standby Sump Drainage Pump 3 Duty/Star Tunnel E EFA Pump Station Duty/Standby PSW/005/EFA/F0 N/A PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC EFA Pump Station Control & Monitoring - PLC PLC/002/EFA/F01 Monitoring - PLC R Sump Drainage Pump 3 Running/Stopped Tunnel E EFA Pump Station 2-C 2.08 mm^2 Hardwired to a current limit relay rired to a Thermistor Motor Protection Relay or RIO ready for Pt10 Normal/Failure PSW/005/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU PLC/RIO Sump Drainage Pump 3 Operating Condition Sump Drainage Pump 3 Relay Tunnel E EFA Pump Station LC/002/ESC/E08 2-C 2.08 mm^2 thermistors nnel E Service Compound SMRCU Normal/High LEL/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring-MRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DIN R Tunnel E EFA Pump Station 2-C 2.08 mm^2 PLC/RIO Drainage Pumps Sump Level Normal/High Sensor .C/002/ESC/E08 nel E Service Compound SMRCU Tunnel E Plant Control & Monitoring -RIO/002/EFA/F01 SMRIOU DIN R PLC/002/EFA/F01 Monitoring - PLC 2-C 2.08 mm^2 PLC/RIO Sump Gas Detector Level High Normal/Alarm Sump Gas Detector Level High Sensor Tunnel E EFA Pump Station Normal/High .C/002/ESC/E08 nnel E Service Compound SMRCU EFA Pump Station Control & Monitoring - PLC Running/Stopped PN-/001/EFA/F01 RIO/002/EFA/F01 SMRIOU Hardwired to a current limit relay Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 DIN R PLC/RIO Sump Ventilation Fan 1 Running/Stopped Relay Tunnel E EFA Pump Station C/002/ESC/E08 nel E Service Compound SMRCU 2-C 2.08 mm^2 H PN-/001/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & Monitoring - PLC 2-C 2.08 mm^2 Sump Ventilation Fan 1 Operating Condition Relay Tunnel E EFA Pump Station nel E Service Compound SMRCU DIN N/A Sump Ventilation Fans Duty 1 Tunnel E EFA Pump Station PN-/001/EFA/F01 Tunnel E Plant Control & Monitoring Normal/Failure PN-/005/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & DIN PLC/002/EFA/F01 Monitoring - PLC PLC/RIO Tunnel E EFA Pump Station 2-C 2.08 mm^2 Plant Control & Monitoring PLC atchdog Relay LC/002/ESC/E08 unnel E Service Compound SMRCU EFA Pump Station Control & PLC/002/EFA/F01 Monitoring - PLC PSW/003/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU DOUT PLC/RIO Sump Drainage Pump 1 Auto/Manua Sump Drainage Pump 1 Relay Tunnel E EFA Pump Station Auto/Manual .C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 DOUT Sump Drainage Pump 1 Duty/Standby Sump Drainage Pump 1 Duty/Standi Discrete IO Tunnel E EFA Pump Station Duty/Standby PSW/003/FFA/F01 C/002/FSC/F08 N/A Tunnel E EFA Pump Station PSW/003/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC 2-C 2.08 mm^2 Sump Drainage Pump 1 Start/Stop Start/Stop PSW/004/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC Sump Drainage Pump 2 Auto/Manual Relay Tunnel E EFA Pump Station 2-C 2.08 mm^ Sump Drainage Pump 2 DOUT Tunnel E EFA Pump Station Duty/Standby PSW/004/EFA/F01 N/A Sump Drainage Pump 2 Duty/Standby Sump Drainage Pump 2 Duty/Standby Discrete IO .C/002/ESC/E08 nel E Service Compound SMRCU Tunnel E Plant Control & Monitoring -EFA Pump Station Control & DOUT Start/Stop PSW/004/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC W PLC/RIO Sump Drainage Pump 2 Start/Stop Sump Drainage Pump 2 Relay Tunnel E EFA Pump Station .C/002/ESC/E08 nel E Service Compound SMRCU 2-C 2.08 mm^2 PSW/005/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DOUT PLC/RIO Sump Drainage Pump 3 Auto/Manua Sump Drainage Pump 3 Relay Tunnel E EFA Pump Station Auto/Manual C/002/ESC/E08 2-C 2.08 mm^2 DOUT Tunnel E EFA Pump Station PSW/005/EFA/F01 N/A Sump Drainage Pump 3 Duty/Standb Discrete IO PSW/005/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PN-/001/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC EFA Pump Station Control & Monitoring - PLC PLC/RIO Sump Drainage Pump 3 Start/Stop Sump Drainage Pump 3 Relay Tunnel E EFA Pump Station Start/Stop C/002/ESC/E08 nnel E Service Compound SMRCU 2-C 2.08 mm^2 PLC/RIO Sump Ventilation Fan 1 Start/Stop Relay Tunnel E EFA Pump Station Start/Stop 2-C 2.08 mm^2 C/002/ESC/E08 nel E Service Compound SMRCU DOUT Discrete IO On/Off PN-/001/EFA/F01 N/A DB Sump Ventilation Fan Duty 1 Tunnel E EFA Pump Station C/002/ESC/E08 nnel E Service Compound SMRCU Tunnel E Plant Control & Monitoring -PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DOUT Relay PN-/001/EFA/F01 RIO/002/EFA/F01 SMRIOU 2-C 2.08 mm^2 PLC/RIO Ventilation Fan Auto/Manual Tunnel E EFA Pump Station Auto/Manual C/002/ESC/E08 Ventilation Fan Reset Status Discrete IO Tunnel E EFA Pump Station Reset PN-/001/EFA/F01 N/A C/002/ESC/E08 2-CSC 1.31 mm PIT/004/EFA/F01 RIO/002/EFA/F01 SMRIOU PIT/005/EFA/F01 RIO/002/EFA/F01 SMRIOU PIT/005/EFA/F01 RIO/002/EFA/F01 SMRIOU AIN Tunnel E EFA Pump Station AIN 2-CSC 1.31 mm^2 Signal Converter Tunnel E EFA Pump Station PLC/002/ESC/E08 6A,SP isolator for UPS fed from MCC-IAT-SP-2 Isolator 16A SP ISOL for UPS fed from MCC-IAT-SP-2 SP ISOL for UPS fed from MCC-IAT-SP Tunnel E EFA Pump Station Opened/Closed ISO/038/EFA/F01 RIO/002/EFA/F01 SMRIOU FLC/002/EFA/F01 Monitoring - PLC/002/EFA/F01 Monitoring - PLC

PLC/002/ESC/E08 Tunnel E Service Compound SMRCU

N/A



TUNNEL MANAGEMENT SYSTEM EXAMPLE I/O LIST nent Name: PXXX Tunnel E Area EFA pump station plant control & monitoring, IO signals lis ...insert signature .. Signal Signal Data punt Tag Type Read Write I/O Assignment Outstation Name Outstation PLC Name Master PLC ID Master PLC Name Signal Description Signal pick up location Signal Equipment ID Outstation ID Rack ID ID DIN R BUS/COMM SP ISOL for DB-UPS fed from UPS Circuit Breaker Tunnel E EFA Pump Station Opened/Closed ISO/039/FFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 PLC/002/ESC/E08 Tunnel E Service Compound SMRCL 50A TPN isolator for APFC fed from MCC-IAT-SP-2 Tunnel E EFA Pump Station Opened/Closed ISO/040/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E FA Pump Station Opened/Closed ISO/040/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC BUS/COMM Circuit Breaker PLC/002/ESC/E08 Tunnel E Service Compound SMRCU interrupted Power Supply, UPS-01 UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC EFA Pump Station Control & Monitoring - PLC Monitoring - PLC DIN BUS/COMM Uninterrupted Power Supply, UPS 1 on Battery UPS 1 On Battery Discrete IO Tunnel E EFA Pump Station On/Off .C/002/ESC/E08 Funnel E Service Compound SMRCU N/A R ninterrupted Power Supply, UPS 1 Operating Condition DIN Discrete IO Tunnel E EFA Pump Station Normal/Failure C/002/ESC/E08 N/A UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Uninterrupted Power Supply, UPS 1 Output Overload Normal/Alarm EFA Pump Station Control & LC/002/EFA/F01 Monitoring - PLC DIN Discrete IO Tunnel E EFA Pump Station BUS/COMM UPS 1 Output Overload Normal/Alarm C/002/ESC/E08 unnel E Service Compound SMRCU N/A UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Uninterrupted Power Supply, UPS 1 Battery Operating PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DIN BUS/COMM Condition UPS 1 Battery Operating Condition Discrete IO Tunnel E EFA Pump Station Normal/Failure C/002/ESC/E08 nnel E Service Compound SMRCU N/A EFA Pump Station Control & DIN N/A BUS/COMM Uninterrupted Power Supply, UPS 1 in Bypass UPS 1 in Bypass Discrete IO Tunnel E EFA Pump Station On/Off UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU DIN R BUS/COMM On/Off UPS 1 Charging Batte Discrete IO Tunnel E EFA Pump Station On/Off UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 .C/002/ESC/E08 nnel E Service Compound SMRCU N/A EFA Pump Station Cont Monitoring - PLC EFA Pump Station Cont Monitoring - PLC DIN R BUS/COMM Tunnel E EFA Pump Station On/Off UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 C/002/ESC/E08 UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU BUS/COMM Tunnel E EFA Pump Station On/Off N/A Uninterrupted Power Supply, UPS 1 on Battery UPS 2 On Battery Discrete IO LC/002/ESC/E08 Normal/Failure UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - SMRIOU DIN R Uninterrupted Power Supply, UPS 2 Operating Condition UPS 2 Operating Condition Tunnel E EFA Pump Station PLC/002/EFA/F01 Monitoring - PLC LC/002/ESC/E08 BUS/COMM Discrete IO nnel E Service Compound SMRCU N/A Uninterrupted Power Supply, UPS 2 Output Overload Normal/Alarm UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU DIN BUS/COMM UPS 2 Output Overload Discrete IO Tunnel E EFA Pump Station Normal/Alarm PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 nnel E Service Compound SMRCU N/A rupted Power Supply, UPS 2 Battery Operating DIN R BUS/COMM UPS 2 Battery Operating Condition Discrete IO Tunnel E EFA Pump Station Normal/Failure UPS/002/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 C/002/ESC/E08 N/A A Pump Station onitoring - PLC DIN R BUS/COMM Uninterrupted Power Supply, UPS 2 in Bypass UPS 2 in Bypass Discrete IO Tunnel E EFA Pump Station On/Off UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 C/002/ESC/E08 nel E Service Compound SMRCU N/A UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU Uninterrupted Power Supply, UPS 2 Charging Battery On/Off LC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC R UPS 2 Charging Battery Discrete IO Tunnel E EFA Pump Station C/002/ESC/E08 Uninterrupted Power Supply, UPS 2 Battery Charger On/Off Tunnel E Plant Control & Monitoring - UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC N/A BUS/COMM UPS 2 Battery Charger Tunnel E EFA Pump Station On/Off Discrete IO .C/002/ESC/E08 nnel E Service Compound SMRCU Uninterrupted Power Supply, UPS-01 16A Duty UPS CB Tunnel E Plant Control & Monitoring - UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU EFA Pump Station Control & DIN R PLC/002/EFA/F01 Monitoring - PLC BUS/COMM UPS-01 16ADuty UPS CB Circuit Breaker Tunnel E EFA Pump Station N/A Open/Closed Position Open/Closed LC/002/ESC/E08 unnel E Service Compound SMRCU errupted Power Supply, UPS-01 16A Duty UPS CB Trip Tunnel E Plant Control & Monitoring ion Control & EFA Pump Station Cc Monitoring - PLC EFA Pump Station Cor Monitoring - PLC EFA Pump Station Con Monitoring - PLC DIN SMRIOU BUS/COMM UPS-01 16A Duty UPS CE Circuit Breaker Tunnel E EFA Pump Station Normal/Trip UPS/002/EFA/F01 RIO/002/EFA/F01 C/002/EFA/F01 C/002/ESC/E08 nnel E Service Compound SMRCU N/A Uninterrupted Power Supply, UPS-01 16A Standby UPS CB Open/Closed Position BUS/COMM UPS-01 16AStandby UPS CB Tunnel E EFA Pump Station UPS/002/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 Tunnel E EFA Pump Station UPS/002/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 R BUS/COMM UPS-01 16A Standby UPS CB .C/002/ESC/E08 Tunnel E Plant Control & Monitoring - UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DOUT BUS/COMM Uninterrupted Power Supply, UPS 1 On Battery UPS 1 On Battery Discrete IO Tunnel E EFA Pump Station On/Off PLC/002/ESC/E08 unnel E Service Compound SMRCU N/A UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC DOUT On/Off N/A BUS/COMM Uninterrupted Power Supply, UPS 1 in Bypass On/Off UPS 1 in Bypass Discrete IO Tunnel E EFA Pump Station LC/002/ESC/E08 nnel E Service Compound SMRCU UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU DOUT Uninterrupted Power Supply, UPS 1 Charge Battery On/Off UPS 1 Charging Battery W BUS/COMM Discrete IO Tunnel E EFA Pump Station On/Off PLC/002/EFA/F01 Monitoring - PLC LC/002/ESC/E08 unnel E Service Compound SMRCU N/A Uninterrupted Power Supply, UPS 1 Battery Charger On/Off EFA Pump Station PLC/002/EFA/F01 Monitoring - PLC UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU DOUT BUS/COMM UPS 1 Battery Charger Discrete IO Tunnel E EFA Pump Station On/Off C/002/ESC/E08 N/A nel E Service Compound SMRCU EFA Pump Station Control & Monitoring - PLC Uninterrupted Power Supply, UPS 2 On Battery UPS 2 On Battery Discrete IO Tunnel E EFA Pump Station C/002/EFA/F01 M C/002/ESC/E08 nel E Service Compound SMRCU UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC N/A Uninterrupted Power Supply, UPS 2 in Bypass On/Off UPS 2 in Bypass Tunnel E EFA Pump Station On/Off C/002/ESC/E08 nel E Service Compound SMRCU Tunnel E Plant Control & Monitoring - UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU EFA Pump Station Control & DOUT PLC/002/EFA/F01 Monitoring - PLC Uninterrupted Power Supply, UPS 2 Charge Battery On/Off UPS 2 Charging Battery Discrete IO Tunnel E EFA Pump Station On/Off BUS/COMM PLC/002/ESC/E08 Tunnel E Service Compound SMRCU N/A Uninterrupted Power Supply, UPS 2 Battery Charger On/Off Tunnel E Plant Control & Monitoring -EFA Pump Station Control & DOUT PLC/002/EFA/F01 Monitoring - PLC EFA Pump Station Control & BUS/COMM UPS 2 Battery Charge Discrete IO On/Off RIO/002/EFA/F01 SMRIOU .C/002/ESC/E08 nnel E Service Compound SMRCU N/A Uninterrupted Power Supply, UPS-01 16A Duty UPS CB unnel E Plant Control & Monitoring -DOUT BUS/COMM UPS-01 16ADuty UPS CB Circuit Breake Tunnel E EFA Pump Station Normal/Trip UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel F PLC/002/FFA/F01 C/002/FSC/F08 N/A Uninterrupted Powe Normal/Trip BUS/COMM Tunnel E EFA Pump Station UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC Circuit Breake .C/002/ESC/E08 UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU BUS/COMM Tunnel E EFA Pump Station Voltage Uninterrupted Power Supply, UPS 1 Input dc Voltage UPS 1 Input dc Signal Converte Monitoring - PLC UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU EFA Pump Station Control & AIN PLC/002/EFA/F01 Monitoring - PLC N/A BUS/COMM Uninterrupted Power Supply, UPS 1 Input dc Current UPS 1 Input dc Signal Converter Tunnel E EFA Pump Station Current PLC/002/ESC/E08 nnel E Service Compound SMRCU AIN R PLC/002/EFA/F01 Monitoring - PLC BUS/COMM Uninterrupted Power Supply, UPS 1 Input dc Power UPS 1 Input dc Signal Converter Tunnel E EFA Pump Station Power UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/ESC/E08 nnel E Service Compound SMRCU N/A Tunnel E Plant Control & Monitoring -AIN R BUS/COMM Uninterrupted Power Supply, UPS 1 Output ac Voltage UPS 1 Output ac Signal Converte Tunnel E EFA Pump Station Voltage UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC C/002/ESC/E08 N/A AIN R Current UPS/002/EFA/F01 IO/002/EFA/F01 PLC/002/EFA/F01 N/A BUS/COMM ninterrupted Power Supply, UPS 1 Output ac Current Tunnel E EFA Pump Station UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC BUS/COMM Uninterrupted Power Supply, UPS 1 Output ac Power UPS 1 Output ac Signal Converter Tunnel E EFA Pump Station LC/002/ESC/E08 nnel E Service Compound SMRCU UPS/002/EFA/F01 RIO/002/EFA/F01 Tunnel E Plant Control & Monitoring - SMRIOU PLC/002/EFA/F01 EFA Pump Station Control & Monitoring - PLC BUS/COMM Uninterrupted Power Supply, UPS 1 Output ac Frequency UPS 1 Output ac Tunnel E EFA Pump Station Frequency .C/002/ESC/E08 nnel E Service Compound SMRCU N/A Signal Converter EFA Pump Station Control & AIN PLC/002/EFA/F01 Monitoring - PLC UPS/002/EFA/F01 RIO/002/EFA/F01 N/A BUS/COMM Uninterrupted Power Supply, UPS 2 Input dc Voltage UPS 2 Input dc Signal Converte Tunnel E EFA Pump Station Voltage SMRIOU .C/002/ESC/E08 nnel E Service Compound SMRCU Tunnel E Plant Control & Monitoring on Control & AIN R PLC/002/EFA/F01 N/A BUS/COMM Uninterrupted Power Supply, UPS 2 Input dc Current UPS 2 Input dc Signal Converte Tunnel E EFA Pump Station Current UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Monitoring - PLC .C/002/ESC/E08 unnel E Service Compound SMRCU BUS/COMM onitoring - PLC Tunnel E EFA Pump Station Power UPS/002/EFA/F01 RIO/002/EFA/F01 PLC/002/EFA/F01 Uninterrupted Power Supply, UPS 2 Input dc Power UPS 2 Input dc C/002/ESC/E08 Uninterrupted Power Supply, UPS 2 Output ac Voltage Tunnel E EFA Pump Station Voltage Signal Convert EFA Pump Station Control Monitoring - PLC UPS/002/EFA/F01 RIO/002/EFA/F01 Uninterrupted Power Supply, UPS 2 Output ac Current Tunnel E Plant Control & Monitoring -173 AIN R UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU PLC/002/EFA/F01 Monitoring - PLC LC/002/ESC/E08 BUS/COMM Uninterrupted Power Supply, UPS 2 Output ac Power UPS 2 Output ac Signal Converte Tunnel E EFA Pump Station Power unnel E Service Compound SMRCU N/A Tunnel E Plant Control & Monitoring -PLC/002/EFA/F01 EFA Pump Station Monitoring - PLC AIN R UPS/002/EFA/F01 RIO/002/EFA/F01 SMRIOU N/A BUS/COMM Uninterrupted Power Supply, UPS 2 Output ac Frequency UPS 2 Output ac Signal Converter Tunnel E EFA Pump Station Frequency PLC/002/ESC/E08 Tunnel E Service Compound SMRCU ADA Marshalling Remote I/O Unit (SMROIU) Pump Station Open/Closed CP-/002/EFA/F01 RIO/002/EFA/F01 SMRIOU Tunnel E Plant Control & Monitoring - PLC/002/EFA/F01 Monitoring - PLC Monitoring - PLC DIN R PLC/RIO Control Panel Door Access Panel Door Open/Closed Status Limit Switch EFA Pump Station PLC/002/ESC/B08 Tunnel E Service Compound SMRCU 2-C 2.08 mm^2 Ha



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Docume	nt Contro	nl Panel		1																
		PROJECT NA	AME							Ref. Number:	#N/A									
Document	Name: PXX	(X Tunnel E	Area EFA pur	mp station plan	nt control & monitoring, IO	signals list														
Version I	Date	Status								Written by	Checked by		QA Approver		Notes					
0 /	INSERT DATE	First Edition								Insert name	Insert name		Insert name		Draft for Ashghal rev	ew				
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J.B.I.O.C.			scrt sigi																	
Signal	Signal	Data											Outstation PLC						Field Signal	
count	Tag	Type	Read	Write	I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Conductors	Comments
												Tunnel E Plant Control & Monitoring -		EFA Pump Station Control &						
176		DIN	R		PLC/RIO	Control Panel Operating Condition Primary Power Supply	Panel Operating Condition	Relay	EFA Pump Station	Normal/Failure	CP-/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired	
								·				Tunnel E Plant Control & Monitoring -		EFA Pump Station Control &						
177		DIN	R		PLC/RIO	Control Panel Operating Condition Backup Power Supply	Panel Operating Condition	Relay	EFA Pump Station	Normal/Failure	CP-/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 Hardwired	

2-C 2.08 mm^2 Hardwired

2-C 2.08 mm^2 Hardwired

PLC/002/ESC/B08 Tunnel E Service Compound SMRCU



I A

INFRASTRUCTURE AFFAIRS DESIGN DEPARTMENT-ROADS

SPECIMEN DESIGN FOR TUNNEL MANAGEMENT SYSTEM ALARM LISTS EXAMPLE

THIS SPECIMEN IS PROVIDED FOR GUIDANCE ONLY

THIS PACKAGE CONTAINS SPECIMEN LISTS OF VARIOUS CRITICAL INFRASTRUCTURES FOR A TYPICAL TUNNEL MANAGEMENT SYSTEM. THE INDIVIDUAL LISTS MAY NOT CORRELATE TO OTHER LISTS AND THEIR PURPOSE IS TO PROVIDE PRESENTATIONAL GUIDANCE ONLY.



Written by	TREFERENCE NUMBER Checked by	QA Approver Insert name	Notes
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		msert nume	Draft for Ashqhal review

Signal Data Count Tag Vype Read Write Assignment Signal Description Major Minor Signal pick up location Signal Equipment to Outstation ID Outstation No. Outstation No. Outstation PLC Name Master PLC Name Name PLC N	Undid SMRCU	Comments erFreq, GEN OverFreq, GEN Undervolt, GEN ReversePower, LossOfField, GEN Over Excitation, GEN Removed, etc.
DN R BUSCOMM Emergency Generator Available/ (Invasorbable Emergency Generator Compound Normal/Tablus GEN/000/ESC/T01) 80/000/ESC/T01 80/0000/ESC/T01 80/000/ESC/T01 80/000/ESC/T01 80/000/ESC/T01 80/000/ESC/T01 80/000/ESC/T01 80/000/	Undid SMRCU	erFreq, GEN OverFreq, GEN UnderVolt, GEN OverVolt, GEN ReversePower,
Description	MA GEN NA GEN NA GEN G	
DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Alarm Emergency Generator Low Fuel Power Low Fuel Normal/Alarm Emergency Generator Cover Canal Discrete IO Tunnel Eservice Compound Normal/Normal/Alarm Emergency Generator Low Fuel Normal/Alarm Emergency Generator Cover Canal Discrete IO Tunnel Eservice Compound Normal/Normal/Alarm Emergency Generator Cover Canal Discrete IO Tunnel Eservice Compound Normal/Normal/Alarm Emergency Generator Cover Canal Discrete IO Tunnel Eservice Compound Normal/Normal/Alarm Emergency Generator Cover Canal Discrete IO Tunnel Eservice Compound Normal/Norma	SMRCU	
## DNN R BUS/CDMM Regency Generator Engine Low Fuel Normal/Alam Emergency Generator Engine Low Fuel Normal/Alam Emergency Generator Engine Low Color Resource Emergency Generator Low Boltzer Normal/Alam Emergency Generator Engine Low Color Resource Emergency Generator Low Boltzer Normal/Alam Emergency Generator Engine Low Color Resource Emergency Generator Low Boltzer Normal/Alam Emergency Generator Color Crash Normal/Alam Emergency Generator Low Boltzer Normal/Alam Emergency Generator Lo	MA MA MA MA MA MA MA MA	
## DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Alarm Emergency Generator Low Fuel Discrete N	SMRCU	
S DIN R BUS/COMM Normal/Alarm Emergency Generator Low Bill by Compound Femologic Compound	MA	
Energency Generator Engine Low Battery Normal/Alarm Energency Generator Low Battery Normal/Alarm Energency Generator Engine Low Colant Level Energency Generator Engine Low Colant Level Evel Compound Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Low Colant Level Evel Compound Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Low Tunnel E Service Compound Plant Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Low Tunnel E Service Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Low Tunnel E Service Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Cover Temperature Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Cover Temperature Evel Compound Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Cover Temperature Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Cover Temperature Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Over Temperature Evel Compound Evel Control & Mortholoring - SMRIOU-8 Energency Generator Engine Over Temperature Evel Compound Evel Control & Mortholoring - SMRIOU-8 Evel Control & Mortholoring - SMRIOU-8 Evel Compound Plant Control & Mortholoring - SMRIOU-8 Evel Compound Plant Control & Mortholoring - SMRIOU-8 Evel	MA	
Timel E Service Compound Plant Current & Service Compound Plant Cu	MA	
Emergency Generator Engine Over Temperature Bully COMM R Bully COMM Bully COMM Bully Bully Command Hant Control & Monitoring - SMRIOU-8 Bully COMM Bully Bully Command Hant Bully COMM Bully	MA	
B DIN R BUS/COMM Normal/Alarm Femperature Discrete IO Tunnel E Service Compound Normal/High GEN/001/ESC/E01 RIO/008/ESC/E01 RI	MA	
9 DIN R BUS/COMM Emergency Generator Engine Over Crank Normal/Alarm Emergency Generator Over Crank Discrete IO Tunnel E Service Compound Normal/High GEN/001/ESC/E01 RIO/008/ESC/E01 RIO/008/E	N/A N/A	
DIN R BUS/COMM Emergency Generator Engine Over Speed Normal/Alarm Emergency Generator Over Speed Discrete IO Tunnel E Service Compound Normal/Failure GEN/001/ESC/E01 RIO/008/ESC/E01 RIO/008/	d SMRCU NA Undu	
12 DIN R BUS/COMM Emergency Generator CB Fail to Open Emergency Generator CB Fail to Close Emergency Generator Auto C/O Discrete IO Tunnel E Service Compound Normal/Failure GEN/001/ESC/E01 RIO/008/ESC/E01 RIO/008/ESC/E	d SMRCU N/A Undu	
13 DIN R BUS/COMM Emergency Generator CB Fail to Close Emergency Generator Auto C/O Discrete IO Tunnel E Service Compound Normal/Failure GEN/001/ESC/E01 RIO/008/ESC/E01 RIO/0	d SMRCU NA Undu	
17 DIN R BUS/COMM Emergency Generator Available/Unavailable Emergency Generator Discrete ID Tunnel E Service Compound Available/Unavailable GEN/002/ESC/E01 RIO/008/ESC/E01 RIO/008/ESC/E01 RIO/008/ESC/E01 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Discrete ID Tunnel E Service Comp	Unde	
17 DIN R BUS/COMM Emergency Generator Available/Unavailable Emergency Generator Available/Unavailable Emergency Generator Discrete IO Tunnel E Service Compound Available/Unavailable GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Operating Condition Emergency Generator Discrete IO Tunnel E Service Compound Normal/Failure GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Alarm Emergency Generator Low Fuel Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 RIO/008/		
20 DIN R BUS/COMM Emergency Generator Operating Condition Emergency Generator Discrete IO Tunnel E Service Compound Normal/Failure GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Alarm Emergency Generator Low Fuel Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Alarm Emergency Generator Low Fuel Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8		erFreq, GEN OverFreq, GEN UnderVolt, GEN OverVolt, GEN ReversePower, LossOfField, GEN Over Excitation, GEN Removed, etc.
21 DIN R BUS/COMM Emergency Generator Engine Low Fuel Normal/Alarm Emergency Generator Low Fuel Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant	d SMRCU NA	
Training Contractor Engine 2011 (Contractor Compound Fight	d SMRCU N/A	
22 DIN R BUS/COMM Normal/Alarm Emergency Generator Low Oil Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU N/A	
23 DIN R BUS/COMM Emergency Generator Engine Low Battery Normal/Alarm Emergency Generator Low Battery Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant	d SMRCU N/A	
Emergency Generator Engine Low Coolant Level Emergency Generator Engine Low Coolant Level Emergency Generator Low Coolant Level Emergency Generator Low Coolant Level Discrete IO Tunnel E Service Compound Normal/Low GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant PLC/002/ESC/E08 Tunnel E Se	d SMRCII N/A	
Emergency Generator Engine Over Temperature Emergency Generator Over Tunnel E Service Compound Plant		
25 DIN R BUS/COMM Normal/Alarm Temperature Discrete IO Tunnel E Service Compound Normal/High GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Tunnel E Service Compound Plant	d SMRCU N/A	
26 DIN R BUS/COMM Emergency Generator Engine Over Crank Normal/Alarm Emergency Generator Over Crank Discrete IO Tunnel E Service Compound Normal/High GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU N/A	
27 DIN R BUS/COMM Emergency Generator Engine Over Speed Normal/Alarm Emergency Generator Over Speed Discrete IO Tunnel E Service Compound Normal/High GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant	d SMRCU N/A	
29 DIN R BUS/COMM Emergency Generator CB Fail to Open Emergency Generator Auto C/O Discrete IO Tunnel E Service Compound Normal/Failure GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU N/A	
Tunnel E Service Compound Plant		
30 DIN R BUS/COMM Emergency Generator CB Fail to Close Emergency Generator Auto C/O Discrete IO Tunnel E Service Compound Normal/Failure GEN/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Compound Plant	d SMRCU N/A	
41 DIN R PLC/RIO Control Panel Operating Condition Power Supply Condition Status Relay Tunnel E Service Compound Normal/Failure CP-/001/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound		wired to temperature sensor and/or enclosure fan control relay
42 DIN R PLC/RIO Control Panel Operating Condition Temperature Condition Status Relay Tunnel E Service Compound Normal/Failure CP-/001/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound		wired to control relay: Monitor undervoltages, overvoltages in singlephase, wire circuits
Control Panel PG1 Operating Control Power Supply Condition Power Supply Condition Power Supply Control Panel PG1 Operating Control Power Supply Condition Power Supply Control Panel PG1 Operating Control Power Supply Control Power Sup	d SMRCII 2-C 2.08 mm/2 Hard	wired to temperature sensor and/or enclosure fan control relay
Control Panel PG1 Operating Tunnel E Service Compound Plant	Hard	wired to control relay: Monitor undervoltages, overvoltages in singlephase,
47 DIN R PLC/RIO Control Panel Operating Condition Temperature Condition Status Relay Tunnel E Service Compound Normal/Failure CP-/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant	a sinite of the	wire circuits wired to control relay: Monitor undervoltages, overvoltages in singlephase,
53 DIN R PLC/RIO Battery Operating Condition Battery Relay Tunnel E Service Compound Normal/Failure BAT/001/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU 2-C 2.08 mm/2 two-	wire circuits
58 DIN R PLC/RIO Battery Operating Condition Battery Relay Tunnel E Service Compound Normal/Failure BAT/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound		wired to control relay: Monitor undervoltages, overvoltages in singlephase, wire circuits
Fire Main Booster Pumps Water Storage Reservoir Level Fire Main Booster Fire Water Storage Reservoir Level Fire Main Booster Fire Water Storage Reservoir Level Fire Water Storage Reservoir Level Fire Water Storage Reservoir Level Fire Water Stora	d SMRCI 2-C 2.08 mm/2	
Fire Main Booster Pumps Water Storage Reservoir Level Tunnel E Service Compound Plant		
68 DIN R PLC/RIO Normal/Low Diesel Oil Day Tank Level Sensor Tunnel E Service Compound Normal/Low LSW/001/ESC/E20 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Fire Main Booster Pumps Water Storage Reservoir Level Tunnel E Service Compound Plant	d SMRCU 2-C 2.08 mm ² 2	
69 DIN R PLC/RIO Normal/High Diesel Oil Day Tank Level Sensor Tunnel E Service Compound Normal/High LSW/002/ESC/E20 RIO/008/ESC/E30 Control & Monitoring - SMR10U-8 PLC/002/ESC/E08 Tunnel E Service Compound Fire Main Booster Pumps Water Storage Reservoir Level Tunnel E Service Compound Plant	d SMRCU 2-C 2.08 mm/2	
70 DIN R PLC/RIO Normal/Low Diesel Oil Day Tank Level Sensor Tunnel E Service Compound Normal/Low LSW/002/ESC/E20 RIO/008/ESC/E20 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU 2-C 2.08 mm/2	
Fire Main Booster Pumps Water Storage Reservoir Level 71 DIN R PLC/RIO Normal/High Diesel Oil Storage Tank Level Sensor Tunnel E Service Compound Normal/High LSW/004/ESC/E21 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant	d SMRCU 2-C 2.08 mm ² 2	
Fire Main Booster Pumps Water Storage Reservoir Level Tunnel E Service Compound Plant		
Fire Main Booster Pumps Water Storage Reservoir Level Tunnel E Service Compound Plant Tunnel E Service Compound Plant		
73 DIN R PLC/RIO Normal/High Diesel Oil Storage Tank Level Sensor Tunnel E Service Compound Normal/High LSW/005/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Fire Main Booster Pumps Water Storage Reservoir Level Tunnel E Service Compound Plant	d SMRCU 2-C 2.08 mm/2	
74 DIN R PLC/RIO Normal/Low Diesel Oil Storage Tank Level Sensor Tunnel E Service Compound Normal/Low LSW/005/ESC/E21 RIO/008/ESC/E21 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU 2-C 2.08 mm/2	
Pressure sensor for fuel line 1 Level Normal/Low Normal/Low Sensor Tunnel E Service Compound Normal/Low PID/001/ESC/E21 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Normal/Low PID/001/ESC/E01 Control & Monitoring - SMRIOU-8	d SMRCU 2-C 2.08 mm ² 2	
Pressure sensor for fuel line 2 Level Tunnel E Service Compound Plant		
Flow sepsor for day Tank DT-00-01 Tunnel E Service Compound Plant		
77 DIN R PLC/RIO Flow sensor for day Tank DT-00-01 Level Normal/Low Level Normal/Low Sensor Tunnel E Service Compound Normal/Low FLS/001/ESC/E20 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU 2-C 2.08 mm/2	
Flow sensor for day Tank DT-00-02 Level Normal/Low Flow sensor for day Tank DT-00-02 Level Normal/Low Sensor Tunnel E Service Compound Normal/Low FLS/002/ESC/E20 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant PLC/002/ESC/E08 Tunnel E Service Compound Normal/Low FLS/002/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Plant PLC/002	d SMRCU 2-C 2.08 mm/2	
Flow sensor for fuel line 1 Level 79 DIN R PLC/RIO Flow sensor for fuel line 1 Level Normal/Low Flow sensor for fuel line 1 Level Normal/Low Sensor Tunnel E Service Compound Normal/Low FLS/004/ESC/E21 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU 2-C 2.08 mm ² 2	
Flow sensor for fuel line 2 Level Tunnel E Service Compound Plant		
80 DIN R PLC/RIO Flow sensor for fuel line 2 Level Normal/Low Normal/Low Sensor Tunnel E Service Compound Normal/Low FLS/005/ESC/E21 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCU 2-C 2.08 mm ² 2	
81 DIN R DB Fuel Pump 1 Available/Unavailable Fuel Drainage Pump 1 Discrete IO Tunnel E Service Compound Available/Unavailable P07/001/ESC/E21 PLC/002/ESC/E08 Tunnel E Service Compound		
85 DIN R PLC/RIO Fuel Pump 1 Operating Condition Fuel Pump 1 Relay Tunnel E Service Compound Normal/Failure POT/001/ESC/E21 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound	-Mor d SMRCU 2-C 2.08 mm/2 -Mor	nitor motor temperature probe, generally a PT100 (! Relay contact) nitor overcurrent and undercurrent (2 relay contacts)
86 DIN R DB Fuel Pump 2 Available/Unavailable Fuel Pump 2 Discrete ID Tunnel E Service Compound Available/Unavailable POT/002/ESC/E21 PLC/002/ESC/E08 Tunnel E Service Compound	d SMRCII	
Tunnel E Service Compound Plant	-Mor	nitor motor temperature probe, generally a PT100 (! Relay contact)
90 DIN R PLC/RIO Fuel Pump 2 Operating Condition Fuel Pump 2 Relay Tunnel E Service Compound Normal/Failure POT/002/ESC/E21 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Normal/Failure POT/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Normal/Failure POT/002/ESC/E01 RIO/008/ESC/E01 Control & Monitoring - SMRIOU-8 PLC/002/ESC/E08 Tunnel E Service Compound Normal/Failure POT/002/ESC/E01 RIO/008/ESC/E01 Tunnel E Plant Control & Monitoring - Tunnel E Plant Control		nitor overcurrent and undercurrent (2 relay contacts) ge assymetry, phase-loss and phase-sequence in threephase, three-wire
104 DIN R PLC/RIO Operating Condition MCC Malns Supply Relay Tunnel E Service Compound Normal/Failure MCC/001/ESC/E18 RIO/001/EU-/E19 SMRIOU PLC/001/EU-/E19 P		its



Document Control Panel					
Project Name: INSERT PROJECT NAME	Ref. Number: INSE	RT DOCUMENT REFERENCE NUMBER			
Document Name: PXXX Tunnel E Plant Control & Monitoring, Alarm signals list					
Version Date Status	Written by	Checked by	QA Approver	Notes	
0 INSERT First Edition	Insert name	Insert name	Insert name	Draft for Ashqhal review	
HLD Issued By:					

Signature				NameDate															
Signal Signal	Data		1/0									Outstation PLC						Field Signal	
count Tag	Type	Read Write	Assignment	Signal Description Motor control center, MCC-IAT-SP-01 DB 40A from	Major MCC-IAT-SP-010A from ESMDB-IAT-	Minor	Signal pick up location	Signal	Equipment ID	Outstation ID	Outstation Name Tunnel E Plant Control & Monitoring	ID	Outstation PLC Name Tunnel E Plant Control & Monitoring	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Conductors	Comments
110	DIN	R		ESMDB-IAT-EL1 Incoming CB Trip Status	EL1 Incoming CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/056/EI-/E19	RIO/001/EU-/E19	SMRIOU	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
		R		Motor control center, MCC-IAT-SP-01 DB 40A Duty Pump	MCC-IAT-SP-01 DB 40A Duty Pump						Tunnel E Plant Control & Monitoring		Tunnel E Plant Control & Monitoring					N/A	
113	DIN	К	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 40A Stand-by	CB Trip Status MCC-IAT-SP-01 DB 40A Stand-by	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/057/EI-/E19	RIO/001/EU-/E19	SMRIOU Tunnel E Plant Control & Monitoring	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
116	DIN	R		Pump CB Trip Status	Pump CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/058/EI-/E19	RIO/001/EU-/E19	SMRIOU	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
119	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 20A UPS CB	MCC-IAT-SP-0120A UPS CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/059/EI-/E19	RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring SMRIOU	- PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring	- PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
119	DIN	K	BO3/COIVIIVI	Motor control center, MCC-IAT-SP-01 DB 16A Socket	MCC-IAT-SP-0116A Socket Outlet 1	Circuit breaker	runner E Service Compound	Worlday 111p	CBR/033/EI-/E13	1110/001/20-/213	Tunnel E Plant Control & Monitoring		Tunnel E Plant Control & Monitoring		Tunner E Service Compound Switco				
122	DIN	R	BUS/COMM	Outlet 1 CB Trip Status	CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/060/EI-/E19	RIO/001/EU-/E19	SMRIOU	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
125	DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-01 DB 16A Socket Outlet 2 CB Trip Status	MCC-IAT-SP-0116A Socket Outlet 2 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/061/EI-/E19	RIO/001/EU-/E19	Tunnel E Plant Control & Monitoring SMRIOU	PLC/001/EU-/E19	Tunnel E Plant Control & Monitoring PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
		_		Motor control center, MCC-IAT-SP-01 Incomer CB							Tunnel E Plant Control & Monitoring		Tunnel E Plant Control & Monitoring					2-CSC 1.31 mm^2	
140	AIN	К	PLC/RIO	Current Motor control center, MCC-JWI-03 Mains Supply	MCC-IAT-SP-01 Incomer CB	Signal Converter	Tunnel E Service Compound	Current	CBR/056/EI-/E19	RIO/001/EU-/E19	SMRIOU Tunnel E Service Compound Plant	PLC/001/EU-/E19	PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				age assymetry, phase-loss and phase-sequence in threephase, three-wire
142	DIN	R	PLC/RIO	Operating Condition	MCC Mains Supply	Relay	Tunnel E Service Compound	Normal/Failure	MCC/003/ESC/E18	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 circu	its
148	DIN	R	BUS/COMM	Motor control center, MCC-JWI-03 DB 250A from LV PANEL-PG-2 Incoming CB Trip Status	MCC-JWI-03 DB0A from LV PANEL-PG 2 Incoming CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/082/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Motor control center, MCC-JWI-03 25A MCCB+ELR for	MCC-JWI-03 25A for OU-HV-001 CB						Tunnel E Service Compound Plant								
151	DIN	R		OU-HV-001 CB Trip Status Motor control center, MCC-JWI-03 25A MCCB+ELR for	Trip Status MCC-JWI-03 25A for OU-HV-002 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/083/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
154	DIN	R		OU-HV-002 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/084/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
157	DIN			Motor control center, MCC-JWI-03 25A MCCB+ELR for OU-HV-003 CB Trip Status	MCC-JWI-03 25A for OU-HV-003 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/085/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant			PLC/002/ESC/E08	Turnel F Combre Comment of CMDCU			N/A	
157	DIN	К		Motor control center, MCC-JWI-03 25A MCCB+ELR for	Trip Status MCC-JWI-03 25A for OU-HV-004 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/085/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
160	DIN	R		OU-HV-004 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/086/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
163	DIN	R		Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-LV-001 CB Trip Status	MCC-JWI-03 20A for OU-LV-001 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/087/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Motor control center, MCC-JWI-03 20A MCCB+ELR for	MCC-JWI-03 20A for OU-LV-002 CB						Tunnel E Service Compound Plant								
166	DIN	R	BUS/COMM	OU-LV-002 CB Trip Status Motor control center, MCC-JWI-03 20A MCCB+ELR for	Trip Status MCC-JWI-03 20A for OU-LV-003 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/088/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	-
169	DIN	R		OU-LV-003 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/089/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
172	DIN	p		Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-LV-004 CB Trip Status	MCC-JWI-03 20A for OU-LV-004 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/090/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
1/2		K		Motor control center, MCC-JWI-03 20A MCCB+ELR for	MCC-JWI-03 20A for OU-EL-001 CB	Circuit breaker					Tunnel E Service Compound Plant			FEC/002/E3C/E00	Tunner E Service Compound Switco				
175	DIN	R		OU-EL-001 CB Trip Status	Trip Status MCC-IWI-03 20A for OU-FI -002 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/091/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
178	DIN	R		Motor control center, MCC-JWI-03 20A MCCB+ELR for OU-EL-002 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/092/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
181	DIN	R		Motor control center, MCC-JWI-03 20A MCCB+ELR for	MCC-JWI-03 20A for OU-CR-001 CB	Classit Baseline	Towns I Commission Commission	Name of Tale	CDD (002 /FCC /F02	DIO (005 (555 (503	Tunnel E Service Compound Plant			DI C (002 (FCC (F00	Turnel F Combre Comment of CMDCU			N/A	
181	DIN	К		OU-CR-001 CB Trip Status Motor control center, MCC-JWI-03 20A MCCB+ELR for	Trip Status MCC-JWI-03 20A for OU-CR-002 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/093/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
184	DIN	R		OU-CR-002 CB Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/094/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
187	DIN	R		Motor control center, MCC-JWI-03 25A for fan VF-TR-002 1 CB Trip Status	2- MCC-JWI-03 25A for fan VF-TR-002-1 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/095/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Motor control center, MCC-JWI-03 25A for fan VF-TR-002	2- MCC-JWI-03 25A for fan VF-TR-002-2				, , , , , , , , ,		Tunnel E Service Compound Plant								
190	DIN	R		2 CB Trip Status Motor control center, MCC-JWI-03 25A for fan VF-TR-003	CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/096/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
193	DIN	R	BUS/COMM		CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/097/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
196	DIN	R	BUS/COMM	Motor control center, MCC-JWI-03 25A for fan VF-TR-003 2 CR Trip Status	1- MCC-JWI-03 25A for fan VF-TR-001-2 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/098/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Motor control center, MCC-JWI-03 63A for fan VF-GE-	MCC-JWI-03 63A for fan VF-GE-001						Tunnel E Service Compound Plant								
199	DIN	R		001 CB Trip Status Motor control center, MCC-JWI-03 63A for fan VF-GE-	CB Trip Status MCC-JWI-03 63A for fan VF-GE-002	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/099/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
202	DIN	R		002 CB Trip Status	CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/100/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
205	DIN	R	DUC/COMMA	Motor control center, MCC-JWI-03 63A for fan VF-GE- 003 CB Trip Status	MCC-JWI-03 63A for fan VF-GE-003 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/101/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant			PLC/002/ESC/E08	Turnel F Combre Comment of CMDCU			N/A	
203	DIN	Α	BU3/CUIVIIVI	Motor control center, MCC-JWI-03 40A for fuel pump CB		Circuit Breaker	Tulliler E Service Compound	Normal/mp	CBR/101/E3C/E02	RIO/003/E3C/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PEC/002/E3C/E08	Tunnel E Service Compound SMRCU			N/A	
208	DIN	R	BUS/COMM	Trip Status	Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/102/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
211	DIN	R	BUS/COMM	Motor control center, MCC-JWI-03 20A Spare 1 CB Trip Status	MCC-JWI-03 20A Spare 1 CB Trip Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/103/ESC/E02	RIO/005/ESC/E02	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Motor control center, MCC-JWI-03 30A Spare 2 CB Trip	MCC-JWI-03 30A Spare 2 CB Trip						Tunnel E Service Compound Plant								
214	DIN	R	BUS/COMM	Status	Status	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/104/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
263	AIN	R	PLC/RIO	250A MCC-JWI-03 Incoming CB Current	MCC-JWI-03 Incomer CB	Signal Converter	Tunnel E Service Compound	Current	CBR/082/ESC/E02	RIO/005/ESC/E02	Control & Monitoring - SMRIOU-5			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-CSC 1.31 mm^2	
266	DIN	R	PLC/RIO	Panel Operating Condition Power Supply	Light Control Panel IAT-EL-LCP1 Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CP-/004/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 circi	age assymetry, phase-loss and phase-sequence in threephase, three-wire uits
		_			Light Control Panel IAT-EL-LCP1						Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting						age assymetry, phase-loss and phase-sequence in threephase, three-wire
267	DIN	R	PLC/RIO	Panel Operating Condition Temperature 40A TP MCCB (C1.1) in IAT-EL-LCP1 CB Operating	Operating Condition 40A TP MCCB (C1.1) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	Normal/Failure	CP-/004/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm/2 circl	dwired to control relay:
270	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/251/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 -Mo	nitor undercurrent (1 contact relay)
272	DIN	R	PLC/RIO	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/252//FSC/18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC		Tunnel E Service Compound SMRCU				dwired to control relay: initor undercurrent (1 contact relay)
				40A TP MCCB (C2.2) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C2.2) in IAT-EL-LCP1 CB						Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					Hari	dwired to control relay:
274	DIN	R	,	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/253/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				nitor undercurrent (1 contact relay)
276	DIN	R		40A TP MCCB (C3.1) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/254/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				dwired to control relay: initor undercurrent (1 contact relay)
				40A TP MCCB (C3.2) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C3.2) in IAT-EL-LCP1 CB						Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting						dwired to control relay:
278	DIN	К	-, -	Condition 40A TP MCCB (C3.3) in IAT-EL-LCP1 CB Operating	On/Off 40A TP MCCB (C3.3) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	Normal/Failure	LBK/255/E5C/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				nitor undercurrent (1 contact relay) dwired to control relay:
280	DIN	R	PLC/RIO	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/256/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm/2 -Mo	nitor undercurrent (1 contact relay)
282	DIN	R		40A TP MCCB (C4.1) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C4.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/257/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				dwired to control relay: initor undercurrent (1 contact relay)
				40A TP MCCB (C4.2) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C4.2) in IAT-EL-LCP1 CB	1					Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					Har	dwired to control relay:
284	DIN	R	,	Condition 40A TP MCCB (C4.3) in IAT-EL-LCP1 CB Operating	On/Off 40A TP MCCB (C4.3) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/258/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU	+			nitor undercurrent (1 contact relay) dwired to control relay:
286	DIN	R		Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/259/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				nitor undercurrent (1 contact relay)
288	DIN	P		40A TP MCCB (C4.4) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C4.4) in IAT-EL-LCP1 CB On/Off	Relav		Normal/Failure	CBR/260/ESC/E18	PIO/002/ESC/E10	Tunnel E Service Compound Plant	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08				Hare	dwired to control relay:
		n l		40A TP MCCB (C4.5) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C4.5) in IAT-EL-LCP1 CB		Tunnel E Service Compound	ivoi mai/ Fallure	CDN/200/E3C/E18	MO/UUS/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	r LC/UUS/ESC/E18	Tunnel E Service Compound Lighting		Tunnel E Service Compound SMRCU				nitor undercurrent (1 contact relay) dwired to control relay:
290	DIN	R	PLC/RIO	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/261/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 -Mo	nitor undercurrent (1 contact relay)
292	DIN	R		40A TP MCCB (C5.1) in IAT-EL-LCP1 CB Operating Condition	40A TP MCCB (C5.1) in IAT-EL-LCP1 CB On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/262/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				dwired to control relay: initor undercurrent (1 contact relay)
204				40A TP MCCB (CS.2) in IAT-EL-LCP1 CB Operating	40A TP MCCB (C5.2) in IAT-EL-LCP1 CB			Name of the state of	con lace less le	DIO (002 /=== /==	Tunnel E Service Compound Plant	DI C/002/202/202	Tunnel E Service Compound Lighting					Harr	dwired to control relay:
294	DIN	К	PLC/RIO	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/263/ESC/E18	KIO/UU3/ESC/E18	Control & Monitoring - SMRIOU	PLC/UU3/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2 -Mc	nitor undercurrent (1 contact relay)



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Signal	Data	Daniel Ministra	1/0	Signal Bassainking	Maia	N 4:	Cianal aide un la antian	Cianal	Faurina and ID	Outstation ID	Outstation Name	Outstation PLC	Outstation DLC Name	Mantas DI C ID	Mantau DI C Nama	ck ID Rack Name	Field Signal	C
Tag	Туре	Read Write	Assignment	t Signal Description 40A TP MCCB (C5.3) in IAT-EL-LCP1 CB Operating	Major 40A TP MCCB (C5.3) in IAT-EL-LCP1 CB	Minor	Signal pick up location	Signal	Equipment ID	Outstation ID	Tunnel E Service Compound Plant	ID	Outstation PLC Name Tunnel E Service Compound Lighting	Master PLC ID	Master PLC Name Ra	CK ID RACK Name	Conductors	Comments Hardwired to control relay:
	DIN	R	PLC/RIO	Condition 40A TP MCCB (C5.4) in IAT-EL-LCP1 CB Operating	On/Off 40A TP MCCB (C5.4) in IAT-EL-LCP1 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/264/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
	DIN	R	PLC/RIO	Condition	On/Off	Relay	Tunnel E Service Compound	Normal/Failure	CBR/265/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay)
	DIN	R	BUS/COMM	400A TP MCCB incomer CB in IAT-EL-LCP1 fed from SMDB-IAT-EL1 Trip Status	400A IAT-EL-LCP1 Incoming CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/250/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C1.1) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C1.1) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/251/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C2.1) in IAT-EL-LCP1 CB			Normal/Trip	CBR/252//ESC/18	RIO/003/ESC/E18	Tunnel E Service Compound Plant	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Condes Compound SMDCII		N/A	
							Tunnel E Service Compound				Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1	unnel E Service Compound SMRCU			
	DIN	R	BUS/COMM	40A TP MCCB (C2.2) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C2.2) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/253/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C3.1) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/254/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C3.2) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C3.2) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/255/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C3.3) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C3.3) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/256/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C4.1) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C4.1) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/257/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C4.2) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C4.2) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CDD/259/ESC/E19	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
											Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1				
	DIN	R	BUS/COMM	40A TP MCCB (C4.3) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C4.3) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/259/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C4.4) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C4.4) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/260/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C4.5) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C4.5) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/261/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C5.1) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C5.1) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/262/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C5.2) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C5.2) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/263/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R		40A TP MCCB (C5.3) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C5.3) in IAT-EL-LCP1 CB			Normal/Trip		RIO/003/ESC/E18	Tunnel E Service Compound Plant	PLC/003/ESC/E18	Tunnel E Service Compound Lighting				N/A	
				, , , , , , , , , , , , , , , , , , , ,			Tunnel E Service Compound				Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1	unnel E Service Compound SMRCU			
	DIN	R	BUS/COMM	40A TP MCCB (C5.4) in IAT-EL-LCP1 CB Trip Status	40A TP MCCB (C5.4) in IAT-EL-LCP1 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/265/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	AIN	R	PLC/RIO	400A IAT-EL-LCP1 Incoming CB Current	400A IAT-EL-LCP1 Incoming CB	Signal Converter	Tunnel E Service Compound	Current	CBR/250/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-CSC 1.31 mm^2	
	DIN	R	PLC/RIO	Panel Operating Condition Power Supply	Light Control Panel IAT-EL-LCP2 Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CP-/005/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	voltage assymetry, phase-loss and phase-sequence in threephase, thre circuits
	DIN	R	PLC/RIO	Panel Operating Condition Temperature	Light Control Panel IAT-EL-LCP2 Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CP-/005/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	voltage assymetry, phase-loss and phase-sequence in threephase, thre- circuits
	DIN	R	PLC/RIO	40A TP MCCB (C1.1) in IAT-EL-LCP2 CB Operating Condition	40A TP MCCB (C1.1) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBB/367/ESC/E19	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C2.1) in IAT-EL-LCP2 CB Operating	40A TP MCCB (C2.1) in IAT-EL-LCP2 CB						Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1				Hardwired to control relay:
	DIN	R	PLC/RIO	40A TP MCCB (C2.2) in IAT-EL-LCP2 CB Operating	Operating Condition 40A TP MCCB (C2.2) in IAT-EL-LCP2 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/268/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
	DIN	R	PLC/RIO	Condition 40A TP MCCB (C3.1) in IAT-EL-LCP2 CB Operating	Operating Condition 40A TP MCCB (C3.1) in IAT-EL-LCP2 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/269/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/270/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay)
	DIN	R	PLC/RIO	40A TP MCCB (C3.2) in IAT-EL-LCP2 CB Operating Condition	40A TP MCCB (C3.2) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/271/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
	DIN	R	PLC/RIO	40A TP MCCB (C3.3) in IAT-EL-LCP2 CB Operating Condition	40A TP MCCB (C3.3) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/272/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
	DIN	R	PLC/RIO	40A TP MCCB (C4.1) in IAT-EL-LCP2 CB Operating	40A TP MCCB (C4.1) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/273/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2 08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
		R		40A TP MCCB (C4.2) in IAT-EL-LCP2 CB Operating	40A TP MCCB (C4.2) in IAT-EL-LCP2 CB					.,,	Tunnel E Service Compound Plant	,,,	Tunnel E Service Compound Lighting	1				Hardwired to control relay:
	DIN		PLC/RIO	40A TP MCCB (C4.3) in IAT-EL-LCP2 CB Operating	Operating Condition 40A TP MCCB (C4.3) in IAT-EL-LCP2 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/274/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
	DIN	R	PLC/RIO	Condition 40A TP MCCB (C4.4) in IAT-EL-LCP2 CB Operating	Operating Condition 40A TP MCCB (C4.4) in IAT-EL-LCP2 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/275/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/276/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm ² 2	-Monitor undercurrent (1 contact relay)
	DIN	R	PLC/RIO	40A TP MCCB (C5.1) in IAT-EL-LCP2 CB Operating Condition	40A TP MCCB (C5.1) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/277/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
	DIN	R	PLC/RIO	40A TP MCCB (C5.2) in IAT-EL-LCP2 CB Operating Condition	40A TP MCCB (C5.2) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/278/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
	DIN	R	PLC/RIO	40A TP MCCB (C5.3) in IAT-EL-LCP2 CB Operating Condition	40A TP MCCB (C5.3) in IAT-EL-LCP2 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/279/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting		unnel E Service Compound SMRCU		2-C 2 08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C5.4) in IAT-EL-LCP2 CB Operating	40A TP MCCB (C5.4) in IAT-EL-LCP2 CB						Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1				Hardwired to control relay:
	DIN	R	PLC/RIO	Condition 40A TP MCCB (C5.5) in IAT-EL-LCP2 CB Operating	Operating Condition 40A TP MCCB (C5.5) in IAT-EL-LCP2 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/280/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting		unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
	DIN	R	PLC/RIO		Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/281/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting		unnel E Service Compound SMRCU		2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay)
	DIN	R	BUS/COMM	SMDB-IAT-EL1 Trip Status	400A IAT-EL-LCP2 Incoming CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/266/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C1.1) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C1.1) in IAT-EL-LCP2 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/267/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R		40A TP MCCB (C2.1) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C2.1) in IAT-EL-LCP2 CB		Tunnel E Service Compound	Normal/Trip		RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC		unnel E Service Compound SMRCU		N/A	
		R									Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1				
	DIN			40A TP MCCB (C2.2) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C2.2) in IAT-EL-LCP2 CB		Tunnel E Service Compound	Normal/Trip	CBR/269/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C3.1) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C3.1) in IAT-EL-LCP2 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/270/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C3.2) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C3.2) in IAT-EL-LCP2 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/271/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C3.3) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C3.3) in IAT-EL-LCP2 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/272/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
	DIN	R	BUS/COMM	40A TP MCCB (C4.1) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C4.1) in IAT-EL-LCP2 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/273/FSC/F18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC		unnel E Service Compound SMRCU		N/A	
		R									Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	1			N/A	
	DIN			40A TP MCCB (C4.2) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C4.2) in IAT-EL-LCP2 CB		Tunnel E Service Compound	Normal/Trip		RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	1	unnel E Service Compound SMRCU			
	DIN	R	BUS/COMM	40A TP MCCB (C4.3) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C4.3) in IAT-EL-LCP2 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/275/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	unnel E Service Compound SMRCU		N/A	
			1	40A TP MCCB (C4.4) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C4.4) in IAT-EL-LCP2 CB		Tunnel E Service Compound	Normal/Trip			Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC		unnel E Service Compound SMRCU		N/A	1



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ument Name: PXXX Tunnel E Plant Control & Monitoring, Alarm signals list					
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Issued By:	·	·	·		

Signal Signal	Data		1/0								Outstation PLC						Field Signal Conductors	
count Tag	Туре	Read	Write Assignmen	t Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID		ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Conductors	Comments
465	DIN	R	BUS/COMM	40A TP MCCB (CS.1) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C5.1) in IAT-EL-LCP2 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/277/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
468	DIN	R	BUS/COMM	40A TP MCCB (C5.2) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C5.2) in IAT-EL-LCP2 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/278/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
471	DIN									Tunnel E Service Compound Plant	T	Tunnel E Service Compound Lighting					N/A	
4/1	DIN	R	BUS/COMM	40A TP MCCB (C5.3) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C5.3) in IAT-EL-LCP2 CE		Tunnel E Service Compound	Normal/Trip	CBR/279/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
474	DIN	R	BUS/COMM	40A TP MCCB (C5.4) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C5.4) in IAT-EL-LCP2 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/280/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
477	DIN	R	BUS/COMM	40A TP MCCB (C5.5) in IAT-EL-LCP2 CB Trip Status	40A TP MCCB (C5.5) in IAT-EL-LCP2 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/281/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
527	AIN	R	PLC/RIO	400A IAT-EL-LCP2 Incoming CB Current	400A IAT-EL-LCP2 Incoming CB	Signal Converter	Tunnel E Service Compound	Current	CBR/266/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-CSC 1.31 mm^2	
530	DIN	R	PLC/RIO	Panel Operating Condition Power Supply	Light Control Panel IAT-EL-LCP3 Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CP-/006/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting	PLC/002/FSC/F08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
					Light Control Panel IAT-EL-LCP3					Tunnel E Service Compound Plant	T	Tunnel E Service Compound Lighting		·				voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
531	DIN	R	PLC/RIO	Panel Operating Condition Temperature 40A TP MCCB (C1.1) in IAT-EL-LCP3 CB Operating	Operating Condition 40A TP MCCB (C1.1) in IAT-EL-LCP3 CE	Relay	Tunnel E Service Compound	Normal/Failure	CP-/006/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay:
534	DIN	R	PLC/RIO	Condition 40A TP MCCB (C2.1) in IAT-EL-LCP3 CB Operating	Operating Condition 40A TP MCCB (C2.1) in IAT-EL-LCP3 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/283/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
536	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/284/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm ² 2	-Monitor undercurrent (1 contact relay)
538	DIN	R	PLC/RIO	40A TP MCCB (C2.2) in IAT-EL-LCP3 CB Operating Condition	40A TP MCCB (C2.2) in IAT-EL-LCP3 CE Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/285/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
540	DIN	R	PLC/RIO	40A TP MCCB (C3.1) in IAT-EL-LCP3 CB Operating	40A TP MCCB (C3.1) in IAT-EL-LCP3 CE Operating Condition	Relav	Tunnel E Service Compound	Normal/Failure	CBR/286/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU		Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C3.2) in IAT-EL-LCP3 CB Operating	40A TP MCCB (C3.2) in IAT-EL-LCP3 CE	3				Tunnel E Service Compound Plant	T	Tunnel E Service Compound Lighting						Hardwired to control relay:
542	DIN	К	PLC/RIO	Condition 40A TP MCCB (C3.3) in IAT-EL-LCP3 CB Operating	Operating Condition 40A TP MCCB (C3.3) in IAT-EL-LCP3 CE	Relay	Tunnel E Service Compound	Normal/Failure	CBR/287/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	.,,, .	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
544	DIN	R	PLC/RIO	Condition 40A TP MCCB (C4.1) in IAT-EL-LCP3 CB Operating	Operating Condition 40A TP MCCB (C4.1) in IAT-EL-LCP3 CE	Relay	Tunnel E Service Compound	Normal/Failure	CBR/288/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
546	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/289/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay)
548	DIN	R	PLC/RIO	40A TP MCCB (C4.2) in IAT-EL-LCP3 CB Operating Condition	40A TP MCCB (C4.2) in IAT-EL-LCP3 CE Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/290/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
550	DIN	R	PLC/RIO	40A TP MCCB (C4.3) in IAT-EL-LCP3 CB Operating	40A TP MCCB (C4.3) in IAT-EL-LCP3 CE Operating Condition	Relav	Tunnel E Service Compound	Normal/Failure	CBR/291/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C4.4) in IAT-EL-LCP3 CB Operating	40A TP MCCB (C4.4) in IAT-EL-LCP3 CE	3				Tunnel E Service Compound Plant	T	Tunnel E Service Compound Lighting						Hardwired to control relay:
552	DIN	R	PLC/RIO	40A TP MCCB (C4.5) in IAT-EL-LCP3 CB Operating	Operating Condition 40A TP MCCB (C4.5) in IAT-EL-LCP3 CE	Relay	Tunnel E Service Compound	Normal/Failure	CBR/292/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
554	DIN	R	PLC/RIO	Condition 40A TP MCCB (C5.1) in IAT-EL-LCP3 CB Operating	Operating Condition 40A TP MCCB (C5.1) in IAT-EL-LCP3 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/293/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
556	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/294/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay)
558	DIN	R	PLC/RIO	40A TP MCCB (C5.2) in IAT-EL-LCP3 CB Operating Condition	40A TP MCCB (C5.2) in IAT-EL-LCP3 CE Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/295/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
560	DIN	R	PLC/RIO	40A TP MCCB (C5.3) in IAT-EL-LCP3 CB Operating	40A TP MCCB (C5.3) in IAT-EL-LCP3 CE Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/296/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
562	DIN	_	PLC/RIO	40A TP MCCB (C5.4) in IAT-EL-LCP3 CB Operating	40A TP MCCB (C5.4) in IAT-EL-LCP3 CE		Tunnel E Service Compound	Normal/Failure	CBR/297/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	T	Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
		n.		400A TP MCCB incomer CB in IAT-EL-LCP3 fed from	Operating Condition					Tunnel E Service Compound Plant	T	Funnel E Service Compound Lighting		Tutiller E Service Compound SivikCo				-Monitor undercurrent (1 contact relay)
564	DIN	R	BUS/COMM	SMDB-IAT-EL1 Trip Status	400A IAT-EL-LCP3 Incoming CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/282/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	.,,, .	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
567	DIN	R	BUS/COMM	40A TP MCCB (C1.1) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C1.1) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/283/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
570	DIN	R	BUS/COMM	40A TP MCCB (C2.1) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C2.1) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/284/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
573	DIN	R	BUS/COMM	40A TP MCCB (C2.2) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C2.2) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/285/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
576	DIN	R	BUS/COMM	40A TP MCCB (C3.1) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C3.1) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/286/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
579	DIN			40A TP MCCB (C3.2) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C3.2) in IAT-EL-LCP3 CE		Tunnel E Service Compound	Normal/Trip	CBR/287/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
		n.								Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	T	Funnel E Service Compound Lighting		Tutiller E Service Compound SivikCo				
582	DIN	R	BUS/COMM	40A TP MCCB (C3.3) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C3.3) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/288/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
585	DIN	R	BUS/COMM	40A TP MCCB (C4.1) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C4.1) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/289/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
588	DIN	R	BUS/COMM	40A TP MCCB (C4.2) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C4.2) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/290/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
591	DIN	R	BUS/COMM	40A TP MCCB (C4.3) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C4.3) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/291/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
594	DIN	R	BUS/COMM	40A TP MCCB (C4.4) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C4.4) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/292/FSC/F18 RIO/003/FSC/F18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Funnel E Service Compound Lighting	PLC/002/FSC/F08	Tunnel E Service Compound SMRCU			N/A	
597		R								Tunnel E Service Compound Plant	Ti-	Tunnel E Service Compound Lighting					N/A	
597	DIN	К		40A TP MCCB (C4.5) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C4.5) in IAT-EL-LCP3 CE		Tunnel E Service Compound	Normal/Trip	CBR/293/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	. 10, 000, 100, 110	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			IVA	
600	DIN	R	BUS/COMM	40A TP MCCB (CS.1) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C5.1) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/294/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
603	DIN	R	BUS/COMM	40A TP MCCB (C5.2) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C5.2) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/295/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
606	DIN	R	BUS/COMM	40A TP MCCB (C5.3) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C5.3) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/296/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
609	DIN	R	BUS/COMM	40A TP MCCB (C5.4) in IAT-EL-LCP3 CB Trip Status	40A TP MCCB (C5.4) in IAT-EL-LCP3 CE	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/297/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU		Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
659	AIN	R	PLC/RIO	400A IAT-EL-LCP3 Incoming CB Current	400A IAT-EL-LCP3 Incoming CB	Signal Converter	Tunnel E Service Compound	Current	CBR/282/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU		Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-CSC 1.31 mm^2	
	DIN	R			Light Control Panel IAT-EL-LCP4					Tunnel E Service Compound Plant	T	Funnel E Service Compound Lighting					2-C 2.08 mm^2	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
662		к		Panel Operating Condition Power Supply	Operating Condition Light Control Panel IAT-EL-LCP4	Relay	Tunnel E Service Compound	Normal/Failure	CP-/007/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU				circuits voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
663	DIN	R	PLC/RIO	Panel Operating Condition Temperature 40A TP MCCB (C1.1) in IAT-EL-LCP4 CB Operating	Operating Condition 40A TP MCCB (C1.1) in IAT-EL-LCP4 CE	Relay	Tunnel E Service Compound	Normal/Failure	CP-/007/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant		Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	circuits Hardwired to control relay:
666	DIN	R	PLC/RIO	Condition 40A TP MCCB (C2.1) in IAT-EL-LCP4 CB Operating	Operating Condition 40A TP MCCB (C2.1) in IAT-EL-LCP4 CE	Relay	Tunnel E Service Compound	Normal/Failure	CBR/299/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18 C	Control - PLC Funnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
668	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/300/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm ²	-Monitor undercurrent (1 contact relay)
670	DIN	R	PLC/RIO	40A TP MCCB (C2.2) in IAT-EL-LCP4 CB Operating Condition	40A TP MCCB (C2.2) in IAT-EL-LCP4 CE Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/301/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU		Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
672	DIN	R	PLC/RIO	40A TP MCCB (C3.1) in IAT-EL-LCP4 CB Operating Condition	40A TP MCCB (C3.1) in IAT-EL-LCP4 CE Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/302/ESC/E18 RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU		Funnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			2-C 2.08 mm/2	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
		R		40A TP MCCB (C3.2) in IAT-EL-LCP4 CB Operating	40A TP MCCB (C3.2) in IAT-EL-LCP4 CE	3				Tunnel E Service Compound Plant	T	Tunnel E Service Compound Lighting						Hardwired to control relay:
674	DIN	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/303/ESC/E18 RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18 C	Lontrol - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		1	2-C 2.08 mm^2	-Monitor undercurrent (1 contact relay)



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Signal	Signal Data		1/0			•••	Charlet along the contract	C'anal	5	0.1.1.1.1.1.10	0.1.1.1	Outstation PLC ID	Outstation PLC Name	**************************************			Field Signs Rack Name Conductor	0
count	Tag Type Re	ad Write	Assignmen	t Signal Description 40A TP MCCB (C3.3) in IAT-EL-LCP4 CB Operating	Major 40A TP MCCB (C3.3) in IAT-EL-LCP4 CB	Minor	Signal pick up location	Signal	Equipment ID	Outstation ID	Outstation Name Tunnel E Service Compound Plant	ID	Tunnel E Service Compound Lighting	Master PLC ID	Master PLC Name	Rack ID	Rack Name Conductor	Comments Hardwired to control relay:
676	DIN I	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/304/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	
678	DIN I	R	PLC/RIO	40A TP MCCB (C4.1) in IAT-EL-LCP4 CB Operating Condition	40A TP MCCB (C4.1) in IAT-EL-LCP4 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/305/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C4.2) in IAT-EL-LCP4 CB Operating	40A TP MCCB (C4.2) in IAT-EL-LCP4 CB						Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting		·			Hardwired to control relay:
680	DIN I	R	PLC/RIO	Condition 40A TP MCCB (C4.3) in IAT-EL-LCP4 CB Operating	Operating Condition 40A TP MCCB (C4.3) in IAT-EL-LCP4 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/306/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	2 -Monitor undercurrent (1 contact relay) Hardwired to control relay:
682	DIN I	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/307/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	
684	DIN I	R	PLC/RIO	40A TP MCCB (C4.4) in IAT-EL-LCP4 CB Operating Condition	40A TP MCCB (C4.4) in IAT-EL-LCP4 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CRR/308/FSC/F18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C5.1) in IAT-EL-LCP4 CB Operating	40A TP MCCB (C5.1) in IAT-EL-LCP4 CB						Tunnel E Service Compound Plant	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound Lighting					Hardwired to control relay:
686	DIN I	R	PLC/RIO	Condition 40A TP MCCB (C5.2) in IAT-EL-LCP4 CB Operating	Operating Condition 40A TP MCCB (C5.2) in IAT-EL-LCP4 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/309/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
688	DIN I	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/310/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	
690	DIN I		PLC/RIO	40A TP MCCB (C5.3) in IAT-EL-LCP4 CB Operating Condition	40A TP MCCB (C5.3) in IAT-EL-LCP4 CB Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CDD/211/ESC/E19	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	Hardwired to control relay: -Monitor undercurrent (1 contact relay)
				40A TP MCCB (C5.4) in IAT-EL-LCP4 CB Operating	40A TP MCCB (C5.4) in IAT-EL-LCP4 CB						Tunnel E Service Compound Plant	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound Lighting					Hardwired to control relay:
692	DIN I	R	PLC/RIO	Condition 40A TP MCCB (C5.5) in IAT-EL-LCP4 CB Operating	Operating Condition 40A TP MCCB (C5.5) in IAT-EL-LCP4 CB	Relay	Tunnel E Service Compound	Normal/Failure	CBR/312/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	-Monitor undercurrent (1 contact relay) Hardwired to control relay:
694	DIN I	R	PLC/RIO	Condition	Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CBR/313/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	
696	DIN I	R	BUS/COMM	400A TP MCCB incomer CB in IAT-EL-LCP4 fed from SMDB-IAT-EL1 Trip Status	400A IAT-EL-LCP4 Incoming CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/298/ESC/E18	RIO/003/FSC/F18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
											Tunnel E Service Compound Plant	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound Lighting					
699	DIN I	R	BUS/COMM	40A TP MCCB (C1.1) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C1.1) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/299/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
702	DIN I	R	BUS/COMM	40A TP MCCB (C2.1) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C2.1) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/300/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
705	DIN I	R	BUS/COMM	40A TP MCCB (C2.2) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C2.2) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/301/ESC/E18	RIO/003/FSC/F18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
											Tunnel E Service Compound Plant	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound Lighting					
708	DIN I	R	BUS/COMM	40A TP MCCB (C3.1) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C3.1) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/302/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
711	DIN I	R	BUS/COMM	40A TP MCCB (C3.2) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C3.2) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/303/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
714	DIN I	R	BUS/COMM	40A TP MCCB (C3.3) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C3.3) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/304/ESC/E18	RIO/003/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
											Tunnel E Service Compound Plant		Tunnel E Service Compound Lighting					
717	DIN I	R	BUS/COMM	40A TP MCCB (C4.1) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C4.1) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/305/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
720	DIN I	R	BUS/COMM	40A TP MCCB (C4.2) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C4.2) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/306/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
723	DIN	R	BUS/COMM	40A TP MCCB (C4.3) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C4.3) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/307/ESC/E18	RIO/003/FSC/F18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
									, , , , , ,	1110/003/230/210	Tunnel E Service Compound Plant	1 20,003,230,210	Tunnel E Service Compound Lighting	, , ,				
726	DIN I	R	BUS/COMM	40A TP MCCB (C4.4) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C4.4) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/308/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
729	DIN I	R	BUS/COMM	40A TP MCCB (C5.1) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C5.1) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/309/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
732	DIN	R	BUS/COMM	40A TP MCCB (C5.2) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C5.2) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/310/ESC/E18	RIO/003/FSC/F18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
									, , , , , ,	, 200, 200, 210	Tunnel E Service Compound Plant	120,003,230,210	Tunnel E Service Compound Lighting		rumer z service compound sinneo			
735	DIN I	R	BUS/COMM	40A TP MCCB (C5.3) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C5.3) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/311/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC Tunnel E Service Compound Lighting	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
738	DIN I	R	BUS/COMM	40A TP MCCB (C5.4) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C5.4) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/312/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
741	DIN I	R	BUS/COMM	40A TP MCCB (C5.5) in IAT-EL-LCP4 CB Trip Status	40A TP MCCB (C5.5) in IAT-EL-LCP4 CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/313/ESC/E18	RIO/003/FSC/F18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU	PLC/003/ESC/E18	Tunnel E Service Compound Lighting Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
									, , , , , ,	.,,	Tunnel E Service Compound Plant	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Tunnel E Service Compound Lighting	,,,				
791	AIN I	R	PLC/RIO	400A IAT-EL-LCP4 Incoming CB Current Mechanical Control Panel MSB-00-01 Operating	400A IAT-EL-LCP4 Incoming CB	Signal Converter	Tunnel E Service Compound	Current	CBR/298/ESC/E18	RIO/003/ESC/E18	Control & Monitoring - SMRIOU Tunnel E Service Compound Plant	PLC/003/ESC/E18	Control - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CSC 1.31 mi	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
794	DIN I	R	PLC/RIO	Condition Power Supply	Control Panel Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CP-/012/ESC/E01	RIO/008/ESC/E01	Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	2 circuits
795	DIN	R	PLC/RIO	Mechanical Control Panel MSB-00-01 Operating Condition Temperature	Control Panel Operating Condition	Relay	Tunnel E Service Compound	Normal/Failure	CP-/012/ESC/E01	RIO/008/FSC/F01	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-8			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
					Panel LV PANEL-IAT-01 Operating				, , , , , , , ,		Tunnel E Service Compound Plant			,,,				voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
797	DIN I	R	PLC/RIO	Panel Operating Condition Power Supply	Condition Panel LV PANEL-IAT-01 Operating	Relay	Tunnel E Service Compound	Normal/Failure	DB-/001/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	2 circuits voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
798	DIN I	R	PLC/RIO	Panel Operating Condition Temperature	Condition	Relay	Tunnel E Service Compound	Normal/Failure	DB-/001/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	circuits
800	DIN	R	BUS/COMM	Distribution Board, 2500A TP ACB from transformer for LV PANEL-JWI-1 Incoming CB Trip Status	LV PANEL-IAT-01 2500A from transformer Incoming CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/001/FSC/F03	RIO/007/ESC/E03	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
			2007000000	Generator Main Auto C/O for LV PANEL-JWI-1 Incoming	LV PANEL-IAT-01 2500A from						Tunnel E Service Compound Plant				·			
803	DIN	R	BUS/COMM	CB Trip Status Distribution Board,630A TP MCCB in LV PANEL- IAT-1 for	emergency Generator Incoming CB Distribution Board, LV PANEL-IAT-01	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/002/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
806	DIN I	R	BUS/COMM	incomer at SMDB-IAT-EL1 CB Trip Status	630A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/003/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
809	DIN I	R	BUS/COMM	Distribution Board, 630A TP MCCB in LV PANEL- IAT-1 fo incomer at SMDB-IAT-EL2 CB Trip Status	or Distribution Board, LV PANEL-IAT-01 630A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/004/ESC/E03	RIO/007/ESC/E03	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
			200700	Distribution Board, 630A TP MCCB in LV PANEL- IAT-1 fo	or Distribution Board, LV PANEL-IAT-01						Tunnel E Service Compound Plant							
812	DIN	R	BUS/COMM	incomer at MCC-IAT-1 CB Trip Status Distribution Board, 630A TP MCCB in LV PANEL- IAT-1 fo	630A CB or Distribution Board, LV PANEL-IAT-01	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/005/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
815	DIN I	R	BUS/COMM	incomer at MCC-IAT-2 CB Trip Status	630A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/006/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
818	DIN I	R	BUS/COMM	Distribution Board, 63A TP MCCB in LV PANEL- IAT-1 for incomer at ESMDB-IAT-EL1 CB Trip Status	Distribution Board, LV PANEL-IAT-01 63A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CRR/007/FSC/F03	RIO/007/ESC/E03	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
				Distribution Board, 250A TP MCCB in LV PANEL- IAT-1 fo	or Distribution Board, LV PANEL-IAT-01						Tunnel E Service Compound Plant							
821	DIN I	R	BUS/COMM	incomer at SMDB-IAT-FP CB Trip Status Distribution Board, 100A TP MCCR in LV PANEL, IAT-1	250A CB Distribution Board, LV PANEL-IAT-01	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/008/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
824	DIN I	R	BUS/COMM	Distribution Board, 100A TP MCCB in LV PANEL- IAT-1 Spare 1 CB Trip Status	100A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/009/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
827	DIN	,	RUS/COMMA	Distribution Board, 250A TP MCCB in LV PANEL- IAT-1 Spare 2 CB Trip Status	Distribution Board, LV PANEL-IAT-01 250A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBB/010/ESC/E03	RIO/007/ESC/Ena	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
	- Dill			Distribution Board, 1000A TP ACB in LV PANEL IAT-1 for	Distribution Board, LV PANEL-IAT-01						Tunnel E Service Compound Plant							
830	DIN I	R	BUS/COMM	incomer at APFC-2 CB Trip Status	1000A CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBR/011/ESC/E03	RIO/007/ESC/E03	Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		N/A	
855	AIN I	R	PLC/RIO		LV PANEL-IAT-01 2500A Incoming CB	Signal Converter	Tunnel E Service Compound	Current	CBR/001/ESC/E03	RIO/007/ESC/E03	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-7			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-CSC 1.31 m	1/12
858	AIN	R	PLC/RIO	Distribution Board, LV PANEL-IAT-01 2500A Incoming CB Current			Tunnel E Service Compound	Current	CBR/002/ESC/E03	RIO/007/ESC/E03	Tunnel E Service Compound Plant			PLC/002/ESC/E08			2-CSC 1.31 m	1/2
					Panel SMDB-IAT-EL1 Operating				, , , , , , , ,		Control & Monitoring - SMRIOU-7 Tunnel E Service Compound Plant				Tunnel E Service Compound SMRCU			voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
861	DIN I	R	PLC/RIO	Panel Operating Condition Power Supply	Condition Panel SMDB-IAT-EL1 Operating	Relay	Tunnel E Service Compound	Normal/Failure	DB-/002/ESC/E18	RIO/006/ESC/E18	Control & Monitoring - SMRIOU-6 Tunnel E Service Compound Plant			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	2 circuits
862	DIN I	R	PLC/RIO	Panel Operating Condition Temperature	Condition	Relay	Tunnel E Service Compound	Normal/Failure	DB-/002/ESC/E18	RIO/006/ESC/E18	Control & Monitoring - SMRIOU-6			PLC/002/ESC/E08	Tunnel E Service Compound SMRCU		2-C 2.08 mm	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
864	DIN I	R	BUS/COMM	Distribution Board, SMDB-IAT-EL1 630A Incoming CB Tri	SMDB-IAT-EL1 630A Incoming CB	Circuit Breaker	Tunnel E Service Compound	Normal/Trip	CBB/041/ESC/E10	RIO/006/ESC/E18	Tunnel E Service Compound Plant Control & Monitoring - SMRIOU-6			PI C/002/ESC/E00	Tunnel E Service Compound SMRCU		N/A	
004	UIN I	n I	BU3/CUMM	Juanus	PINING-IWI-EFT 020W IUCOMIUB CR	CITCUIT BLEAKEL	runner c service compound	ivorinal/Trip	CDR/U41/E3C/E18	MO/000/E3C/E18	CONTROL & INTOLLICOTING - SMIKIOU-6		l .	r LC/UU2/E3C/EU8	runner E service compound SiviRCU		N/A	



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ignal Signal count Tag	Data Type	Read	I/O Write Assignmen	t Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	Outstation PLC ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Field Signal Rack Name Conductors	
0	DIN	n	PLC/RIO	Motor control center, MCC-KP-SP Mains Supply	MCC Mains Supply	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	MCC/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound		2-C 2.08 mm^2	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
		К		Operating Condition Motor control center, MCC-KP-SP Operating Condition	мес мана зиррну	ivelay	K Underpass-Storm Water Pump			K Underpass Plant Control &		K Underpass Plant Control &		East Industrial Service Compound			
1	DIN	R	PLC/RIO	Power Supplu Motor control center, MCC-KP-SP Operating Condition	MCC Operating Condition	Relay	Room K Underpass-Storm Water Pump	Normal/Failure	MCC/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &		Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2	DIN	R	PLC/RIO	Temperature Motor control center, MCC-KP-SP DB 100A Substation	MCC Operating Condition	Relay	Room	Normal/Failure	MCC/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
6	DIN	R	BUS/COMM	Supply Incoming CB Trip Status	Incoming CB Trip Status	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	
9	DIN	R	BUS/COMM	Motor control center, MCC-KP-SP DB 100A Generator Supply Incoming CB Trip Status	MCC-KP-SP DB Generator Supply Incoming CB Trip Status	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
12	DIN	R	BUS/COMM	Motor control center, MCC-KP-SP DB 40A Duty Pump CB Trip Status	MCC-KP-SP DB 40A Duty Pump CB Trip Status	Circuit Breaker	K Underpass-Storm Water Pump	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Plant Control & Monitoring PLC	PLC/002/FSC/B08	East Industrial Service Compound		N/A	
				Motor control center, MCC-KP-SP DB 40A Duty Pump CB	MCC-KP-SP DB 40A Duty Pump CB		K Underpass-Storm Water Pump	Horman Trip		K Underpass Plant Control &	P.	K Underpass Plant Control &	1 20,002,230,000	East Industrial Service Compound		14/1	
15	DIN	R	BUS/COMM	Trip Status Motor control center, MCC-KP-SP DB 40A Stand-by	Trip Status MCC-KP-SP DB 40A Stand-by Pump	Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &		Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
18	DIN	R	BUS/COMM	Pump CB Trip Status Motor control center, MCC-KP-SP DB 16A UPS CB Trip	CB Trip Status	Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &		Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
21	DIN	R	BUS/COMM	Status	MCC-KP-SP DB UPS CB Trip Status	Circuit Breaker	Room	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	
24	DIN	R	BUS/COMM	Motor control center, MCC-KP-SP DB 16A Socket Outlet 1 CB Trip Status	Trip Status	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
27	DIN	R	BUS/COMM	Motor control center, MCC-KP-SP DB 16A Socket Outlet 2 CB Trip Status	MCC-KP-SP DB Socket Outlet 2 CB Trip Status	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	MCC/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
40	DIN	n					K Underpass-Storm Water Pump		VCD/001/VII /V01	K Underpass Plant Control &	l l	K Underpass Plant Control &	DI C/003/ESC/D08	East Industrial Service Compound		N/A	Hardwired to control relay: Monitor undervoltages, overvoltages in singleph
49	DIN	К	BUS/COMM	Control Panel Operating Condition Power Supply	Control Panel Operating Condition	Relay	Room K Underpass-Storm Water Pump	Normal/Failure	VCP/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	two-wire circuits
50	DIN	R	BUS/COMM	Control Panel Operating Condition Temperature	Control Panel Operating Condition	Relay	Room K Underpass-Storm Water Pump	Normal/Failure	VCP/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	Hardwired to temperature sensor and/or enclosure fan control relay Hardwired to control relay: Monitor undervoltages, overvoltages in singleph
58	DIN	R	BUS/COMM	Control Panel Operating Condition Power Supply	Panel Operating Condition	Relay	Room	Normal/Failure	CP-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	two-wire circuits
59	DIN	R	BUS/COMM	Control Panel Operating Condition Temperature	Panel Operating Condition	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	CP-/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	Hardwired to temperature sensor and/or enclosure fan control relay
61	DIN	R	BUS/COMM	Panel Operating Condition Power Supply	Panel DB-KP Operating Condition	Relav	K Underpass-Storm Water Pump Room	Normal/Failure	DB-/001/KU-/K01 BIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound		N/A	Hardwired to control relay: Monitor undervoltages, overvoltages in singleph two-wire circuits
	DIN						K Underpass-Storm Water Pump		DB-/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control &		K Underpass Pump Plant Control &		East Industrial Service Compound		N/A	
62		К	BUS/COMM		Panel DB-KP Operating Condition	Relay	Room K Underpass-Storm Water Pump	Normal/Failure	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Pump Plant Control &	PLC/002/ESC/B08	East Industrial Service Compound		N/A	Hardwired to temperature sensor and/or enclosure fan control relay
64	DIN	R	BUS/COMM	Distribution Board, DB-KP 40A Incoming CB Normal/Trip Distribution Board, DB-KP 10A Exit Lights at Sump Pump		Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
67	DIN	R	BUS/COMM	Room CB Normal/Trip	RoomCB	Circuit Breaker	Room	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	
70	DIN	R	BUS/COMM	Distribution Board, DB-KP 10A Exit Lights at Vent Access Room CB Normal/Trip	DB-KP 10A Exit Lights at Vent Access Room CB	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
73	DIN	R	BUS/COMM	Distribution Board, DB-KP 10A Spare CB Normal/Trip	DB-KP 10A Spare CB	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound		N/A	
	DIN			Distribution Board, DB-KP 32A Socket at Vent Access Boom CB Normal/Trip	DB-KP32A Socket at Vent Access		K Underpass-Storm Water Pump			K Underpass Plant Control &	j.	K Underpass Pump Plant Control &		East Industrial Service Compound		N/A	
/6	DIN	К	BUS/COMM	Distribution Board, DB-KP32A Socket at Sump Pump	Room CB DB-KP32A Socket at Sump Pump	Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
79	DIN	R	BUS/COMM	RoomCB Normal/Trip	Room CB	Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
82	DIN	R	BUS/COMM	Distribution Board, DB-KP 32A Spare 1 CB Normal/Trip	DB-KP 32A Spare 1 CB	Circuit Breaker	Room	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	
85	DIN	R	BUS/COMM	Distribution Board, DB-KP 32A Spare 2 CB Normal/Trip	DB-KP 32A Spare 2 CB	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
88	DIN	R	BUS/COMM	Distribution Board, DB-KP32A Spare 3 CB Normal/Trip	DB-KP 32A Spare 3 CB	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
	DIN	R					K Underpass-Storm Water Pump			K Underpass Plant Control &	P.	K Underpass Pump Plant Control &		East Industrial Service Compound		N/A	
91	DIN	К			DB-KP 32A Spare 4 CB	Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	DB-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		14.1	Hardwired to control relay: Monitor undervoltages, overvoltages in singleph
117	DIN	R	BUS/COMM	Panel Operating Condition Power Supply	Panel DB-UPS Operating Condition	Relay	Room K Underpass-Storm Water Pump	Normal/Failure	DB-/002/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &		Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	two-wire circuits
118	DIN	R	BUS/COMM	Panel Operating Condition Temperature	Panel DB-UPS Operating Condition	Relay	Room	Normal/Failure	DB-/002/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	Hardwired to temperature sensor and/or enclosure fan control relay
120	DIN	R	BUS/COMM	Distribution Board, DB-UPS 16A Incoming CB Normal/Trip	DB-UPS 16A Incoming CB	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	DB-/002/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
123	DIN	R	BUS/COMM	Distribution Board, DB-UPS 16A CB Normal/Trip	Distribution Board, DB-UPS 16A CB	Circuit Breaker	K Underpass-Storm Water Pump Room	Normal/Trip	DB-/002/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound		N/A	
							K Underpass-Storm Water Pump			K Underpass Plant Control &	k	C Underpass Pump Plant Control &		East Industrial Service Compound		.,,,	
133	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Operating Condition Uninterrupted Power Supply, UPS 1 Output Overload	UPS 1 Operating Condition	Discrete IO	Room K Underpass-Storm Water Pump	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 N	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
134	DIN	R	BUS/COMM	Normal/Alarm Uninterrupted Power Supply, UPS 1 Battery Operating	UPS 1 Output Overload	Discrete IO	Room K Underpass-Storm Water Pump	Normal/Alarm	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 N	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
135	DIN	R	BUS/COMM		UPS 1 Battery Operating Condition	Discrete IO	Room	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU		Monitoring PLC	PLC/002/ESC/B08	SMRCU		N/A	
140	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Operating Condition	UPS 2 Operating Condition	Discrete IO	K Underpass-Storm Water Pump Room	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU		C Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
141	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Output Overload Normal/Alarm	UPS 2 Output Overload	Discrete IO	K Underpass-Storm Water Pump Room	Normal/Alarm	UPS/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	C Underpass Pump Plant Control &	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
272			,	Uninterrupted Power Supply, UPS 2 Battery Operating			K Underpass-Storm Water Pump			K Underpass Plant Control &	k	K Underpass Pump Plant Control &		East Industrial Service Compound			
142	DIN	R	BUS/COMM	Condition Uninterrupted Power Supply, UPS-01 16A Duty UPS CB	UPS 2 Battery Operating Condition	Discrete IO	Room K Underpass-Storm Water Pump	Normal/Failure	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 N	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
147	DIN	R	BUS/COMM	Trip Status Uninterrupted Power Supply, UPS-01 16A Standby UPS	UPS-01 16A Duty UPS CB	Circuit Breaker	Room K Underpass-Storm Water Pump	Normal/Trip	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01	Monitoring PLC K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	
150	DIN	R	BUS/COMM	CB Trip Status	UPS-01 16A Standby UPS CB	Circuit Breaker	Room	Normal/Trip	UPS/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01		PLC/002/ESC/B08	SMRCU		N/A	
180	DIN	R	DB	Sump Drainage Pump 1 Available/Unavailable	Sump Drainage Pump 1	Discrete IO	K Underpass-Storm Water Pump Room	Available/Unavailable	PSW/001/KU-/K01				PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
184	DIN	D	PLC/RIO	Sump Drainage Pump 1 Operating Condition		Relay	K Underpass-Storm Water Pump Room	Normal/Failure	PSW/001/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control &	PLC/005/KU-/K01 N	C Underpass Pump Plant Control &	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		2-C 2-09 mmA2	Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 thermistors
		n	PLC/RIO		Sump Drainage Pump 1		K Underpass-Storm Water Pump			Monitoring SMRIOU	. 55,003/10-/101			East Industrial Service Compound			
185	DIN	R	DB	Sump Drainage Pump 2 Available/Unavailable	Sump Drainage Pump 2	Discrete IO	Room K Underpass-Storm Water Pump	Available/Unavailable	PSW/002/KU-/K01	K Underpass Plant Control &	k	K Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		N/A	Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100
189	DIN	R	PLC/RIO	Sump Drainage Pump 2 Operating Condition	Sump Drainage Pump 2	Relay	Room	Normal/Failure	PSW/002/KU-/K01 RIO/005/KU-/K01		PLC/005/KU-/K01		PLC/002/ESC/B08	SMRCU		2-C 2.08 mm^2	
190	DIN	R	DB	Sump Drainage Pump 3 Available/Unavailable	Sump Drainage Pump 3	Discrete IO	K Underpass-Storm Water Pump Room	Available/Unavailable	PSW/003/KU-/K01				PLC/002/ESC/B08	East Industrial Service Compound SMRCU		N/A	
194	DIN	R	PLC/RIO	Sump Drainage Pump 3 Operating Condition	Sump Drainage Pump 3	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	PSW/003/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01 N	C Underpass Pump Plant Control &	PLC/002/ESC/B08	East Industrial Service Compound SMRCU		2-C 2.08 mm^2	Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 thermistors
					Operations Drainage PumpsSump		K Underpass-Storm Water Pump			K Underpass Plant Control &	k	C Underpass Pump Plant Control &		East Industrial Service Compound			
195	DIN	R	PLC/RIO	Drainage Pumps Sump Level Normal/High	Level	Sensor	Room K Underpass-Storm Water Pump	Normal/High	LID/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU K Underpass Plant Control &	PLC/005/KU-/K01 N	C Underpass Pump Plant Control &	PLC/002/ESC/B08	SMRCU East Industrial Service Compound		2-C 2.08 mm^2	
196	DIN	R	PLC/RIO	Sump Gas Detector Level High Normal/Alarm	Sump Gas Detector Level High	Sensor	Room	Normal/High	GD-/001/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU	PLC/005/KU-/K01	Monitoring PLC	PLC/002/ESC/B08	SMRCU		2-C 2.08 mm^2	



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Name: INSERT PROJECT NAME	Ref. Number: IA1011D0	027G_EXW_Pxx_XXX_Y_Z - ALARM K UNDE	ERPASS.xlsx		
ment Name: PXXX K Underpass Plant Control & Monitoring, Alarm signals list					
sion Date Status	Written by	Checked by	QA Approver	Notes	
INSERT First Edition	Insert name	Insert name	Insert name	Draft for Ashqhal review	
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Signal Signa count Tag		Read Write Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID	Outstation ID	Outstation Name	Outstation PLC ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Field Signal Conductors	Comments
198	DIN	R PLC/RIO	Sump Ventilation Fan 1 Operating Condition	Sump Ventilation Fan 1	Relay	K Underpass-Storm Water Pump Room	Normal/Failure	PFN/001/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 thermistors
200	DIN	R PLC/RIO	Plant Control & Monitoring PLC	K Underpass Plant Control & Monitoring PLC	Discrete IO	K Underpass-Storm Water Pump Room	Normal/Failure	PLC/005/KU-/K01	RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU	PLC/005/KU-/K01	K Underpass Pump Plant Control & Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	
2496	DIN	R DB	Access Point, AP-77-1, Operating Condition	AP Operating Condition	NTCIP	6+132	Normal/Failure	DZA/002/KUN/6132	2				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Not available through a hardwired I/O, interface happens at Traffic Management server level
2497	DIN		Detection Zone, DZ 77-1, Magnetometer 1 Operating Condition	DZ Operating Condition	Discrete IO	6+124	Normal/Failure	DZM/001/KUN/6124	4				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2498	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 2 Operating Condition	DZ Operating Condition	Discrete IO	6+124	Normal/Failure	DZM/002/KUN/6124	4				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2499	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 3 Operating Condition	DZ Operating Condition	Discrete IO	6+124	Normal/Failure	DZM/003/KUN/6124	4				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2500	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 4 Operating	DZ Operating Condition	Discrete IO	6+124	Normal/Failure	DZM/004/KUN/6124	4				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2501	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 5 Operating Condition	DZ Operating Condition	Discrete IO	6+124	Normal/Failure	DZM/005/KUN/6124	4				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2502	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 6 Operating		Discrete IO	6+129	Normal/Failure	DZM/006/KUN/6129	0				PLC/002/ESC/B08	East Industrial Service Compound			N/A	Access Point Failure to successfully retrieve the Magnetometer information shall trigger alarm.
2503	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 7 Operating	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/007/KUN/6129	0				PLC/002/ESC/B08	East Industrial Service Compound			N/A	Access Point
	DIN	R DB	Detection Zone, DZ 77-1, Magnetometer 8 Operating	DZ Operating Condition										East Industrial Service Compound			,	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Access Point
2504		R DB	Condition Detection Zone, DZ 77-1, Magnetometer 9 Operating	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/008/KUN/6129	9				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Access Point
2505	DIN		Condition Detection Zone, DZ 77-1, Magnetometer 10 Operating	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/009/KUN/6129	9				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Access Point
2506	DIN	R DB	Condition	DZ Operating Condition	Discrete IO	6+129	Normal/Failure	DZM/010/KUN/6129	9				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Not available through a hardwired I/O, interface happens at Traffic Management
2496	DIN	R DB	Access Point, AP-60-1, Operating Condition Detection Zone, DZ 60-1, Magnetometer 1 Operating	AP Operating Condition	NTCIP	6+246	Normal/Failure	DZA/003/KUS/6246	5				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	server level Access Point
2497	DIN	R DB	Condition Detection Zone, DZ 60-1, Magnetometer 2 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/011/KUS/6251	1				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to successfully retrieve the Magnetometer information shall trigger alarm. Access Point
2498	DIN	R DB	Condition Detection Zone, DZ 60-1, Magnetometer 3 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/012/KUS/6251	1				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Access Point
2499	DIN	R DB	Condition Detection Zone, DZ 60-1, Magnetometer 4 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/013/KUS/6251	1				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Access Point
2500	DIN	R DB	Condition Detection Zone, DZ 60-1, Magnetometer 5 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/014/KUS/6251	1				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm. Access Point
2501	DIN	R DB	Condition Detection Zone, DZ 60-1, Magnetometer 6 Operating	DZ Operating Condition	Discrete IO	6+251	Normal/Failure	DZM/015/KUS/6251	1				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Access Point Access Point
2502	DIN	R DB	Condition Detection Zone, DZ 60-1, Magnetometer 7 Operating	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/016/KUS/6256	5				PLC/002/ESC/B08	SMRCU East Industrial Service Compound			N/A	Access Point Access Point
2503	DIN	R DB	Condition	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/017/KUS/6256	6				PLC/002/ESC/B08	SMRCU			N/A	Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2504	DIN	R DB	Detection Zone, DZ 60-1, Magnetometer 8 Operating Condition	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/018/KUS/6256	5				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2505	DIN	R DB	Detection Zone, DZ 60-1, Magnetometer 9 Operating Condition	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/019/KUS/6256	5				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2506	DIN	R DB	Detection Zone, DZ 60-1, Magnetometer 10 Operating Condition	DZ Operating Condition	Discrete IO	6+256	Normal/Failure	DZM/020/KUS/6256	5				PLC/002/ESC/B08	East Industrial Service Compound SMRCU			N/A	Access Point Failure to succesfully retrieve the Magnetometer information shall trigger alarm.
2524	DIN	R PLC/RIO	Dynamic Message Sign, DMS 73, Operating Condition Temperature	Sign Operating Condition	Relay	5+090	Normal/Failure	DMS/001/KUN/5090	0		PLC/001/KUN/5079	Ground Mounted Enclosure, ENC-7: PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2525	DIN	R PLC/RIO	Dynamic Message Sign, DMS 73, Operating Condition Power Supply	Sign Operating Condition	Relay	5+090	Normal/Failure	DMS/001/KUN/5090	0		PLC/001/KUN/5079	Ground Mounted Enclosure, ENC-7: PLC	PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: Monitor undervoltages, overvoltages
2526	DIN	R PLC/RIO	Dynamic Message Sign, DMS 73, Normal operation/Emergency override	DMS Normal operation/Emergency override	Relay	5+090	Normal/Emergency	DMS/001/KUN/5090	0		PLC/001/KUN/5079	Ground Mounted Enclosure, ENC-7: PLC	3 - PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to DMS I/O
2531	DIN	R PLC/RIO	Dynamic Message Sign, DMS 66, Operating Condition Temperature	Sign Operating Condition	Relay	7+230	Normal/Failure	DMS/002/KUS/7230	0		PLC/002/KUS/7238	Ground Mounted Enclosure, ENC-60 PLC	6 - PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2532	DIN		Dynamic Message Sign, DMS 66, Operating Condition Power Supply	Sign Operating Condition	Relay	7+230	Normal/Failure	DMS/002/KUS/7230	0		PLC/002/KUS/7238	Ground Mounted Enclosure, ENC-6 PLC	6 - PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to control relay: Monitor undervoltages, overvoltages
2533	DIN	R PLC/RIO	Dynamic Message Sign, DMS 66, Normal operation/Emergency override	DMS Normal operation/Emergency override	Relay	7+230	Normal/Emergency	DMS/002/KUS/7230	0		PLC/002/KUS/7238	Ground Mounted Enclosure, ENC-60 PLC	6 - PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to DMS I/O
2538	DIN	R PLC/RIO	Ground Mounted Enclosure, ENC-73, Operating Condition Temperature	Enclosure Operating Condition	Relay	5+079	Normal/Failure	GME/001/KUN/5079			PLC/001/KUN/5079	Ground Mounted Enclosure, ENC-7: PLC	3 - PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2539	DIN		Ground Mounted Enclosure, ENC-73, Operating Condition Power Supply	Enclosure Operating Condition	Relay	5+079	Normal/Failure	GME/001/KUN/5079	9			Ground Mounted Enclosure, ENC-7: PLC	3 - PLC/002/ESC/B08	East Industrial Service Compound SMRCU				Hardwired to control relay: Monitor undervoltages, overvoltages
2541	DIN	R PLC/RIO	Ground Mounted Enclosure, ENC-66, Operating Condition Temperature	Enclosure Operating Condition	Relay	7+238	Normal/Failure	GME/002/KUS/7238	R		PLC/001/KUN/5079	Ground Mounted Enclosure, ENC-7:		East Industrial Service Compound SMRCU			2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2542	DIN	R PLC/RIO	Ground Mounted Enclosure, ENC-66, Operating Condition Power Supply	Enclosure Operating Condition	Relav	7+238	Normal/Failure	GME/002/KUS/7238			PLC/001/KUN/5079	Ground Mounted Enclosure, ENC-7:		East Industrial Service Compound			2-C 2.08 mm^2	Hardwired to control relay: Monitor undervoltages, overvoltages
2544	DIN	R PLC/RIO	Lane Control Sign, LCS 77-1, Operating Condition Temperature	Sign Operating Condition	Relay	6+148	Normal/Failure	LCS/005/KUN/6148			.,,	Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	East Industrial Service Compound				Hardwired to temperature sensor and/or enclosure fan control relay
2545	DIN		Lane Control Sign, LCS 77-1, Operating Condition Power	Sign Operating Condition	Relay	6+148	Normal/Failure	LCS/005/KUN/6148	,			Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	East Industrial Service Compound				Hardwired to control relay: Monitor undervoltages, overvoltages
		K FEGINO	Lane Control Sign, LCS 77-1, Normal	LCS Normal operation/Emergency					,			Wall Mounted Enclosure, ENC-77 -		East Industrial Service Compound				
2546	DIN		operation/Emergency override Lane Control Sign, LCS 77-2, Operating Condition	override	Relay	6+148		LCS/005/KUN/6148				Wall Mounted Enclosure, ENC-77 -		SMRCU East Industrial Service Compound				Hardwired to DMS I/O
2553	DIN		Temperature Lane Control Sign, LCS 77-2, Operating Condition Power	Sign Operating Condition	Relay	6+147	Normal/Failure	LCS/006/KUN/6147	'			PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound				Hardwired to temperature sensor and/or enclosure fan control relay
2554	DIN	R PLC/RIO	Supply Lane Control Sign, LCS 77-2, Normal	Sign Operating Condition LCS Normal operation/Emergency	Relay	6+147	Normal/Failure	LCS/006/KUN/6147				PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound				Hardwired to control relay: Monitor undervoltages, overvoltages
2555	DIN		operation/Emergency override Lane Control Sign, LCS 77-3, Operating Condition	override	Relay	6+147	Normal/Emergency					PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound				Hardwired to DMS I/O
2562	DIN	R PLC/RIO	Temperature Lane Control Sign, LCS 77-3, Operating Condition Power	Sign Operating Condition	Relay	6+145	Normal/Failure	LCS/007/KUN/6145	i .		PLC/003/KUN/6135	PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2563	DIN	R PLC/RIO	Supply Lane Control Sign, LCS 77-3, Normal	Sign Operating Condition LCS Normal operation/Emergency	Relay	6+145	Normal/Failure	LCS/007/KUN/6145	;		PLC/003/KUN/6135	PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	Hardwired to control relay: Monitor undervoltages, overvoltages
2564	DIN	R PLC/RIO	operation/Emergency override Lane Control Sign, LCS 77-4, Operating Condition	override	Relay	6+145	Normal/Emergency	LCS/007/KUN/6145	i		PLC/003/KUN/6135	PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	Hardwired to DMS I/O
2571	DIN	R PLC/RIO	Temperature Lane Control Sign, LCS 77-4, Operating Condition Power	Sign Operating Condition	Relay	6+142	Normal/Failure	LCS/008/KUN/6142	!		PLC/003/KUN/6135		PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	Hardwired to temperature sensor and/or enclosure fan control relay
2572	DIN	R PLC/RIO	Supply Lane Control Sign, LCS 77-4, Normal	Sign Operating Condition LCS Normal operation/Emergency	Relay	6+142	Normal/Failure	LCS/008/KUN/6142	!		PLC/003/KUN/6135	PLC Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	Hardwired to control relay: Monitor undervoltages, overvoltages
2573	DIN	R PLC/RIO	operation/Emergency override	override peration/Emergency	Relay	6+142	Normal/Emergency	LCS/008/KUN/6142	!		PLC/003/KUN/6135	PLC	PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	Hardwired to DMS I/O
3500	DIN.	D DIC/DIO	Lane Control Sign, LCS 60-1, Operating Condition	Sign Operating Condition	Dolou	6:224	Normal/Callura	100/000/8110/6334			DI C (00 4 (VI IC (C) 40	Wall Mounted Enclosure, ENC-60 -	DI C/003/ESC/D08	East Industrial Service Compound			2 C 2 00 mm42	



Document Control Panel Project Name: MSERT PROJECT NAME Document Management System Example Alarm UID876_EXW_PXx_XXX_Y_Z - ALARM K UNDERPASS.xisx Verial Date Status Witten by Sept Annual System Control & Monitoring, Alarm signals list Verial Date Status Status Status Sept Annual System Control & Monitoring, Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Control & Monitoring Alarm signals list Witten by Sept Annual System Contro

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count	Tag Type	Read	Write Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name ID	Outstation PLC Name Wall Mounted Enclosure, ENC-60 -	Master PLC ID		Rack ID	Rack Name	Conductors	s Comments
2581	DIN	R	PLC/RIO	Lane Control Sign, LCS 60-1, Operating Condition Power Supply	Sign Operating Condition	Relay	6+234	Normal/Failure	LCS/009/KUS/6234	PLC/004/KUS/62		PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	2 Hardwired to control relay: Monitor undervoltages, overvoltages
				Lane Control Sign, LCS 60-1, Normal	LCS Normal operation/Emergency	•					Wall Mounted Enclosure, ENC-60 -		East Industrial Service Compound				
2582	DIN	R	PLC/RIO	operation/Emergency override	override	Relay	6+234	Normal/Emergency	LCS/009/KUS/6234	PLC/004/KUS/62		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to DMS I/O
2589	DIN	D .	PLC/RIO	Lane Control Sign, LCS 60-2, Operating Condition Temperature	Sign Operating Condition	Relay	6+231	Normal/Failure	LCS/010/KUS/6231	PLC/004/KUS/62	Wall Mounted Enclosure, ENC-60 -	PLC/002/ESC/B08	East Industrial Service Compound			2-C 2.08 mm^2	2 Hardwired to temperature sensor and/or enclosure fan control relay
2309	DIN	n	PEC/RIO	Lane Control Sign, LCS 60-2, Operating Condition Power	Sign Operating Condition	Relay	07251	Normaly Fallure	LC3/010/K03/6251	PEC/004/K03/62	Wall Mounted Enclosure, ENC-60 -	PLC/002/E3C/B08	East Industrial Service Compound			2-C 2.08 IIIII11-2	: Hardwired to temperature sensor and/or enclosure rain control relay
2590	DIN	R	PLC/RIO	Supply	Sign Operating Condition	Relay	6+231	Normal/Failure	LCS/010/KUS/6231	PLC/004/KUS/62		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to control relay: Monitor undervoltages, overvoltages
				Lane Control Sign, LCS 60-2, Normal	LCS Normal operation/Emergency						Wall Mounted Enclosure, ENC-60 -		East Industrial Service Compound				
2591	DIN	R	PLC/RIO	operation/Emergency override Lane Control Sign, LCS 60-3, Operating Condition	override	Relay	6+231	Normal/Emergency	LCS/010/KUS/6231	PLC/004/KUS/62	40 PLC Wall Mounted Enclosure, ENC-60 -	PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	2 Hardwired to DMS I/O
2598	DIN	R	PLC/RIO	Temperature	Sign Operating Condition	Relay	6+229	Normal/Failure	LCS/011/KUS/6229	PLC/004/KUS/62		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to temperature sensor and/or enclosure fan control relay
				Lane Control Sign, LCS 60-3, Operating Condition Power	0 - 1					7.1.7.1.1	Wall Mounted Enclosure, ENC-60 -	7,	East Industrial Service Compound				
2599	DIN	R	PLC/RIO	Supply	Sign Operating Condition	Relay	6+229	Normal/Failure	LCS/011/KUS/6229	PLC/004/KUS/62		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to control relay: Monitor undervoltages, overvoltages
2600	DIN.		PLC/RIO	Lane Control Sign, LCS 60-3, Normal	LCS Normal operation/Emergency override	Relay	6+229	N	1 CC 1044 1/4 1/5 1/5 220	DI C IOOA IVI C ICC	Wall Mounted Enclosure, ENC-60 -	DI C/003/FCC/D00	East Industrial Service Compound SMRCU			2 6 2 00 42	2 Userbalandar DMC I/O
2600	DIN	К	PLC/RIO	operation/Emergency override Lane Control Sign, LCS 60-4, Operating Condition	override	кеіау	6+229	Normal/Emergency	LCS/011/KUS/6229	PLC/004/KUS/62	Wall Mounted Enclosure, ENC-60 -	PLC/002/ESC/B08	East Industrial Service Compound			2-C 2.08 mm^2	2 Hardwired to DMS I/O
2607	DIN	R	PLC/RIO	Temperature	Sign Operating Condition	Relay	6+227	Normal/Failure	LCS/012/KUS/6227	PLC/004/KUS/62		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to temperature sensor and/or enclosure fan control relay
				Lane Control Sign, LCS 60-4, Operating Condition Power							Wall Mounted Enclosure, ENC-60 -		East Industrial Service Compound				
2608	DIN	R	PLC/RIO	Supply	Sign Operating Condition	Relay	6+227	Normal/Failure	LCS/012/KUS/6227	PLC/004/KUS/62		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to control relay: Monitor undervoltages, overvoltages
2609	DIN	R	PLC/RIO	Lane Control Sign, LCS 60-4, Normal operation/Emergency override	LCS Normal operation/Emergency	Relav	6+227	Normal/Emergency	LCS/012/KUS/6227	PLC/004/KUS/62	Wall Mounted Enclosure, ENC-60 -	PLC/002/ESC/B08	East Industrial Service Compound			2-C 2.08 mm^2	2 Hardwired to DMS I/O
2003	5		1 20/110	operation Emergency override	Override	newy	0.227	Normaly Emergency	LES/OIL/NOS/OLL/	1 20/00-/ 103/02		1 20,002,230,000	East Industrial Service Compound			2 02:00 11111 2	Not available through a hardwired I/O, interface happens at Traffic Management
2615	DIN	R	BUS/COMM	Pan tilt zoom CCTV camera, PTZ 77 Operating Condition	PTZ Operating Condition	TCP/IP	6+150	Normal/Failure	PTZ/001/KUN/6150			PLC/002/ESC/B08	SMRCU			N/A	server level through video server
2622	DIN	_				TCP/IP	6+226	Normal/Failure	PTZ/002/KUS/6226			PLC/002/FSC/B08	East Industrial Service Compound			N/A	Not available through a hardwired I/O, interface happens at Traffic Management server level through video server
2622	DIN	K	BOS/COMM	Pan tilt zoom CCTV camera, PTZ 60 Operating Condition Wall Mounted Enclosure, ENC-77, Operating Condition	P12 Operating Condition	TCP/IP	b+22b	Normal/Failure	P1Z/002/KUS/6226		Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	East Industrial Service Compound			N/A	server level through video server
2630	DIN	R	PLC/RIO	Temperature	Enclosure Operating Condition	Relay	6+135	Normal/Failure	WME/001/KUN/6135	PLC/003/KUN/6:		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to temperature sensor and/or enclosure fan control relay
				Wall Mounted Enclosure, ENC-77, Operating Condition							Wall Mounted Enclosure, ENC-77 -		East Industrial Service Compound				
2631	DIN	R	PLC/RIO	Power Supply	Enclosure Operating Condition	Relay	6+135	Normal/Failure	WME/001/KUN/6135	PLC/003/KUN/6		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to control relay: Monitor undervoltages, overvoltages
2633	DIN		PLC/RIO	Wall Mounted Enclosure, ENC-60, Operating Condition Temperature	Enclosure Operating Condition	Relav	6+240	Normal/Failure	WME/002/KUS/6240	PLC/003/KUN/6:	Wall Mounted Enclosure, ENC-77 -	PLC/002/ESC/B08	East Industrial Service Compound SMRCIJ			2 C 2 00 mm42	2 Hardwired to temperature sensor and/or enclosure fan control relay
2033	DIN	, n	PLC/RIO	Wall Mounted Enclosure, ENC-60, Operating Condition	Enclosure Operacing Condition	Relay	6T24U	Normaly Fallure	WIVIE/002/KU3/6240	PEC/005/KON/6	Wall Mounted Enclosure, ENC-77 -	PLC/002/E3C/B08	East Industrial Service Compound			2-C 2.08 IIIII1-2	: Hardwired to temperature sensor and/or enclosure rain control relay
2634	DIN	R	PLC/RIO	Power Supply	Enclosure Operating Condition	Relay	6+240	Normal/Failure	WME/002/KUS/6240	PLC/003/KUN/6	135 PLC	PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired to control relay: Monitor undervoltages, overvoltages
				Panel Normal operation / Emergency override operation	EOP Normal operation/Emergency		East industrial interchange underpass			K Underpass SCADA Overrride Panel -			East Industrial Service Compound				
2697	DIN	К	PLC/RIO	Master Switch	EOP Normal operation/Emergency	Relay	service compound East industrial interchange underpass	Normal/Emergency	CP-/015/ESC/E09 RIO/003/ESC/E09	K Underpass SCADA Overrride Panel -		PLC/002/ESC/B08	East Industrial Service Compound			2-C 2.08 mm^2	2 KEYLOCK SWITCH SELECTOR
2698	DIN	R	PLC/RIO	Panel Door Switch	override	Relay	service compound	Normal/Emergency	CP-/015/ESC/E09 RIO/003/ESC/E09	RIO		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2
					EOP Normal operation/Emergency	•	East industrial interchange underpass			K Underpass SCADA Overrride Panel -			East Industrial Service Compound				
2699	DIN	R	PLC/RIO	Panel Power Supply Failure	override	Relay	service compound	Normal/Emergency	CP-/015/ESC/E09 RIO/003/ESC/E09	RIO		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2
2700	DIN	R	PLC/RIO	Storm Water Pump Normal operation / Emergency override operation	SWP Normal operation/Emergency override	Relay	East industrial interchange underpass service compound	Normal/Emergency	CP-/015/ESC/E09 RIO/003/ESC/E09	K Underpass SCADA Overrride Panel -		PLC/002/ESC/B08	East Industrial Service Compound SMRCU			2-C 2.08 mm^2	2
2,00	Silv	1 "	1 20,1110		ITS Normal operation/Emergency	newy	East industrial interchange underpass		- ,,, , mo,,			. 23/002/230/300	East Industrial Service Compound				
2716	DIN	R	PLC/RIO	ITS Normal operation / Emergency override operation	override	Relay	service compound	Normal/Emergency	CP-/016/ESC/E09 RIO/004/ESC/E09	K Underpass ITS Overrride Panel - RIO		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2
					ITS Normal operation/Emergency		East industrial interchange underpass						East Industrial Service Compound				
2719	DIN	К	PLC/RIO	ITS Panel Door Switch	override ITS Normal operation/Emergency	Relay	service compound East industrial interchange underpass	Normal/Emergency	CP-/016/ESC/E09 RIO/004/ESC/E09	k Underpass ITS Overrride Panel - RIU		PLC/002/ESC/B08	SMRCU East Industrial Service Compound			2-C 2.08 mm^2	*
2720	DIN	R	PLC/RIO	ITS Panel Power Supply Failure	override	Relay	service compound	Normal/Emergency	CP-/016/ESC/E09 RIO/004/ESC/E09	K Underpass ITS Overrride Panel - RIO		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2
							K Underpass-Storm Water Pump			K Underpass Plant Control &	K Underpass Plant Control &		East Industrial Service Compound				
2768	DIN	R	PLC/RIO	Control Panel Operating Condition Primary Power Supply	Panel Operating Condition	Relay	Room	Normal/Failure	CP-/002/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU PLC/005/KU-/		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired
2769	DIN	R	PLC/RIO	Control Panel Operating Condition Backup Power Supply	Panel Operating Condition	Relay	K Underpass-Storm Water Pump	Normal/Failure	CP-/002/KU-/K01 RIO/005/KU-/K01	K Underpass Plant Control & Monitoring SMRIOU PLC/005/KU-/	K Underpass Plant Control & KO1 Monitoring PLC	PLC/002/ESC/B08	East Industrial Service Compound			2-C 2.08 mm^2	2 Hardwired
2703	DIN	- N	r EC/MO	control operating condition backup Fower Supply	and operating condition	ivelay	K Underpass-Storm Water Pump	ormay railule	C. 7002/RO-7R01 MO/003/RO-7R01	K Underpass Plant Control &	K Underpass Plant Control &	. 20/002/230/300	East Industrial Service Compound			2-C 2.00 HIIII-2	
2770	DIN	R	PLC/RIO	Control Panel Operating Condition Loss of Power	Panel Operating Condition	Relay	Room	Normal/Failure	CP-/002/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU PLC/005/KU-/		PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired
I T							K Underpass-Storm Water Pump			K Underpass Plant Control &	K Underpass Plant Control &		East Industrial Service Compound				
2771	DIN	j R	PLC/RIO	Control Panel Operating Condition TVSS	Panel Operating Condition	Relay	Room	Normal/Failure	CP-/002/KU-/K01 RIO/005/KU-/K01	Monitoring SMRIOU PLC/005/KU-/	K01 Monitoring PLC	PLC/002/ESC/B08	SMRCU			2-C 2.08 mm^2	2 Hardwired



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	ent Contr	ol Panel	TNAME						Ref Number	IA1011D027G_EXW_Pxx_XXX_Y_Z	- ALARM FEA DS viev								
ocume	nt Name: F	XXX Tunnel		station plant co	ntrol & monitoring, Alarm signals list														
ersion	INSERT	Status First Edition							Written by Insert name	Checked by Insert name		QA Approver Insert name		Draft for Ashghal review	'				
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					I							Outstation PLO	<u> </u>					Field Signal	
	Signal Tag		Read Write	I/O Assignment	Signal Description	Major	Minor	Signal pick up location	Signal	Equipment ID Outstation ID	Outstation Name	ID	Outstation PLC Name	Master PLC ID	Master PLC Name	Rack ID	Rack Name	Conductors	Comments
0		DIN	R	PLC/RIO	Motor control center, MCC-IAT-SP-02 Mains Supply Operating Condition	MCC Mains Supply	Relay	Tunnel E EFA Pump Station	Normal/Failure	MCC/002/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			2-C 2.08 mm^2	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
,					Motor control center, MCC-IAT-SP-02 DB 800A from LV PANEL-PC	G- MCC-IAT-SP-02 800A from LV PANEL-	-	Tunnel E EFA Pump Station			Tunnel E Plant Control & Monitoring - SMRIOU		EFA Pump Station Control &					N/A	
5		DIN	К		2 Incoming CB Trip Status Motor control center, MCC-IAT-SP-02 DB MCC-IAT-SP-02 DB 150/		Circuit Breaker		Normal/Trip	CBR/314/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU				
8		DIN	R		TP MCCB in MCC-IAT-SP-2 for APFC 75 KVAR CB Trip Status Motor control center, MCC-IAT-SP-02 DB 400A Duty Pump CB Tri	for APFC 75 KVAR CB Trip Status MCC-IAT-SP-02 DB 400A Duty Pump	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/315/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU			N/A	
10		DIN	R	BUS/COMM	Status Motor control center, MCC-IAT-SP-02 DB 400A Duty Pump CB Tri	CB Trip Status MCC-IAT-SP-02 DB 400A Duty Pump	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/316/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
13		DIN	R	BUS/COMM	Status Motor control center, MCC-IAT-SP-02 DB 400A Stand-by Pump Ct	CB Trip Status MCC-IAT-SP-02 DB 400A Stand-by	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/317/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
16		DIN	R	BUS/COMM	Trip Status Motor control center. MCC-IAT-SP-02 DB 40A DB-IAT-SP-02 CB	Pump CB Trip Status MCC-IAT-SP-02 DB 40A DB-IAT-SP-02	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/318/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
18		DIN	R	BUS/COMM	Trip Status	CB Trip Status	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/319/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
21		DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-02 DB 20A UPS CB Trip Status		Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/320/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
23		DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-02 DB 16A Socket Outlet 1 CB Trip Status	MCC-IAT-SP-02 16A Socket Outlet 1 CB Trip Status	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/321/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
26		DIN	R	BUS/COMM	Motor control center, MCC-IAT-SP-02 DB 16A Socket Outlet 2 CB Trip Status	MCC-IAT-SP-02 16A Socket Outlet 2 CB Trip Status	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/322/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
47		DIN	R	BUS/COMM	Instrumentation Control Panel 01 Operating Condition Power	Control Panel Operating Condition	Relav	Tunnel E EFA Pump Station	Normal/Failure	CP-/013/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU		EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU				voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
48		DIN	D		Instrumentation Control Panel 01 Operating Condition Temperature	Control Panel Operating Condition	Relay	Tunnel E EFA Pump Station	Normal/Failure		Tunnel E Plant Control & Monitoring - SMRIOU		EFA Pump Station Control & Monitoring - PLC		nnel E Service Compound SMRCU			N/A	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
						Panel DB-IAT-SP-02 Operating					Tunnel E Plant Control & Monitoring -		EFA Pump Station Control &					,	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
50		DIN	К		Panel Operating Condition Power Supply	Condition Panel DB-IAT-SP-02 Operating	Relay	Tunnel E EFA Pump Station	Normal/Failure		SMRIOU Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU				voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
51		DIN	R	BUS/COMM	Panel Operating Condition Temperature	Condition	Relay	Tunnel E EFA Pump Station	Normal/Failure	DB-/027/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	circuits
53		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 40A Incoming CB Trip Status Distribution Board, DB-IAT-SP-02 10A for EFA pump room	DB-IAT-SP-02 40A Incoming CB Distribution Board, DB-IAT-SP-02 10A	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/323/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
56		DIN	R	BUS/COMM	lightingCB Trip Status Distribution Board, DB-IAT-SP-02 10A for EFA pump room lighting	СВ	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/324/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
59		DIN	R	BUS/COMM	CB Trip Status Distribution Board, DB-IAT-SP-02 10A for EFA pump room lighting	CB Distribution Board, DB-IAT-SP-02 10A	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/325/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
62		DIN	R	BUS/COMM	room lighting CB Trip Status	СВ	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/326/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
65		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 10A Spare 1 CB Trip Status	Distribution Board, DB-IAT-SP-02 10A CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/327/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
68		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 10A for spur unit at APFCCB Trip Status	Distribution Board, DB-IAT-SP-02 10A CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/328/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
71		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 20A Spare 1 CB Trip Status	Distribution Board, DB-IAT-SP-02 20A CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/329/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
74		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 20A Spare 2 CB Trip Status	Distribution Board, DB-IAT-SP-02 20A	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip		Tunnel E Plant Control & Monitoring -		EFA Pump Station Control & Monitoring - PLC		nnel E Service Compound SMRCU			N/A	
77		DIN	R	BUS/COMM		Distribution Board, DB-IAT-SP-02 32A				CBR/331/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring -		EFA Pump Station Control &					N/A	
			ĸ	200,00	Distribution Board, DB-IAT-SP-02 32A Spare 1 CB Trip Status Distribution Board, DB-IAT-SP-02 32A for EFA Control room	Distribution Board, DB-IAT-SP-02 32A		Tunnel E EFA Pump Station	Normal/Trip		Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU				
80		DIN	R		sockets CB Trip Status	CB Distribution Board, DB-IAT-SP-02 20A		Tunnel E EFA Pump Station	Normal/Trip	CBR/332/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU			N/A	
83		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 20A Spare 3 CB Trip Status	CB Distribution Board, DB-IAT-SP-02 20A	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/333/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
86		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 20A Spare 4 CB Trip Status	CB Distribution Board, DB-IAT-SP-02 20A	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/334/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
89		DIN	R	BUS/COMM	Distribution Board, DB-IAT-SP-02 20A Spare 5 CB Trip Status	СВ	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	CBR/335/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	voltage assymetry, phase-loss and phase-sequence in threephase, three-wire
118		DIN	R	BUS/COMM	Panel Operating Condition Power Supply	Panel DB-UPS Operating Condition	Relay	Tunnel E EFA Pump Station	Normal/Failure	DB-/028/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	circuits
119		DIN	R	BUS/COMM	Panel Operating Condition Temperature	Panel DB-UPS Operating Condition	Relay	Tunnel E EFA Pump Station	Normal/Failure	DB-/028/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU				voltage assymetry, phase-loss and phase-sequence in threephase, three-wire circuits
121		DIN	R	BUS/COMM	Distribution Board, DB-UPS 20A Incoming CB Trip Status	DB-UPS 20A Incoming CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	DB-/028/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
124		DIN	R	BUS/COMM	Distribution Board, DB-UPS 20A CB Trip Status	Distribution Board, DB-UPS 20A CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	DB-/028/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
130		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Zone Loop 1 Fire Normal/Alarm	Fire Alarm Panel Zone Loop 1 Fire	Discrete IO	Tunnel E EFA Pump Station	Normal/Alarm	FCP/002/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
131		DIN	R		Tunnel E Fire Alarm Panel Zone Loop 1 Operating Condition	Fire Alarm Panel Zone Loop 1	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	FCP/002/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU		EFA Pump Station Control & Monitoring - PLC		nnel E Service Compound SMRCU			N/A	
											Tunnel E Plant Control & Monitoring -		EFA Pump Station Control &					N/A	
132		DIN	ĸ		Tunnel E Fire Alarm Panel Zone Loop 2 Fire Normal/Alarm	Fire Alarm Panel Zone Loop 2 Fire	Discrete IO	Tunnel E EFA Pump Station	Normal/Alarm	FCP/002/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU				
133		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Zone Loop 2 Operating Condition	Fire Alarm Panel Zone Loop 2	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	FCP/002/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU			N/A	
134		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Zone Loop 3 Fire Normal/Alarm	Fire Alarm Panel Zone Loop 3 Fire	Discrete IO	Tunnel E EFA Pump Station	Normal/Alarm	FCP/002/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01	Monitoring - PLC EFA Pump Station Control &	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
135		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Zone Loop 3 Operating Condition	Fire Alarm Panel Zone Loop 3	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	FCP/002/EFA/F01 RIO/002/EFA/F01	SMRIOU Tunnel E Plant Control & Monitoring -	PLC/002/EFA/F01		PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
136		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Zone Loop 4 Fire Normal/Alarm	Fire Alarm Panel Zone Loop 4 Fire	Discrete IO	Tunnel E EFA Pump Station	Normal/Alarm	FCP/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
137		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Zone Loop 4 Operating Condition	Fire Alarm Panel Zone Loop 4	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	FCP/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
138		DIN	R	BUS/COMM	Tunnel E Fire Alarm Panel Operating Condition	Fire Alarm Panel	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure			PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
139		DIN	R	BUS/COMM	Sump Drainage Pump 1 Available/Unavailable	Sump Drainage Pump 1	Discrete IO	Tunnel E EFA Pump Station	Available/Unavaila ble	a PSW/003/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08 Tun	nnel E Service Compound SMRCU			N/A	
143		DIN	R		Sump Drainage Pump 1 Operating Condition	Sump Drainage Pump 1	Relay	Tunnel E EFA Pump Station	Normal/Failure	PSW/003/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU		EFA Pump Station Control & Monitoring - PLC		nnel E Service Compound SMRCU	T	-		Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 thermistors
144		DIN	R		Sump Drainage Pump 2 Available/Unavailable	Sump Drainage Pump 2	Discrete IO	Tunnel E EFA Pump Station	Available/Unavaila ble		Tunnel E Plant Control & Monitoring -		EFA Pump Station Control & Monitoring - PLC		nnel E Service Compound SMRCU			N/A	
		DIN	R		Sump Drainage Pump 2 Operating Condition		Relay	Tunnel E EFA Pump Station	Normal/Failure		Tunnel E Plant Control & Monitoring - SMRIOU		EFA Pump Station Control &		nnel E Service Compound SMRCU				Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100 thermistors
148						Sump Drainage Pump 2			Available/Unavaila	a	Tunnel E Plant Control & Monitoring -		EFA Pump Station Control &					,	and the second of
149		DIN	К		Sump Drainage Pump 3 Available/Unavailable	Sump Drainage Pump 3	Discrete IO	Tunnel E EFA Pump Station	ble	PSW/005/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU				Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100
153		DIN	R		Sump Drainage Pump 3 Operating Condition	Sump Drainage Pump 3 Operations Drainage Pumps Sump	Relay	Tunnel E EFA Pump Station	Normal/Failure		SMRIOU Tunnel E Plant Control & Monitoring -		Monitoring - PLC EFA Pump Station Control &		nnel E Service Compound SMRCU			N/A	thermistors
154	ì	DIN	R	BUS/COMM	Drainage Pumps Sump Level Normal/High	Lovel	Sancar	Tunnel E EFA Pump Station	Normal/High	LEL/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	DLC/003/FFA/F01	Monitoring - PLC	DIC/002/ESC/E09 Tun	nel E Service Compound SMRCU	1 1		NI/A	1



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Document Cor	trol Panel																	
Project Name: IN	ISERT PROJE	CT NAME																
Document Name	: PXXX Tunn	el E Area EFA pump	station plant co	ntrol & monitoring, Alarm signals list														
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	71				,				4.1	Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
155	DIN	R	BUS/COMM	Sump Gas Detector Level High Normal/Alarm	Sump Gas Detector Level High	Sensor	Tunnel E EFA Pump Station	Normal/High	RIO/002/EFA/F01		PLC/002/EFA/F01		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
										Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						Hardwired to a Thermistor Motor Protection Relay or RIO ready for Pt100
157	DIN	R	BUS/COMM	Sump Ventilation Fan 1 Operating Condition	Sump Ventilation Fan 1	Relay	Tunnel E EFA Pump Station	Normal/Failure	PN-/001/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	-	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	thermistors
					Tunnel E Plant Control & Monitoring					Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
159	DIN	R	BUS/COMM	Plant Control & Monitoring PLC	PLC	Watchdog Relay	Tunnel E EFA Pump Station	Normal/Failure	PN-/005/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
180	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Operating Condition	UPS 1 Operating Condition	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	UPS/002/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring	PLC/002/EFA/F01	EFA Pump Station Control &	DI C/003/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
100	DIN	I.	BO3/COIVIIVI	Uninterrupted Power Supply, UPS 1 Output Overload	or 31 Operating condition	Discrete 10	Tullier E ETA Fullip Station	Normal/railure	073/002/E174/101 NIO/002/E174/101	Tunnel E Plant Control & Monitoring	FEC/002/E17/101	EFA Pump Station Control &	F EC/002/E3C/E00	Turrier E Service Compound SivinCo			14/7	
181	DIN	R	BUS/COMM	Normal/Alarm	UPS 1 Output Overload	Discrete IO	Tunnel E EFA Pump Station	Normal/Alarm	UPS/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
										Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
182	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 1 Battery Operating Condition	UPS 1 Battery Operating Condition	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	UPS/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
		_								Tunnel E Plant Control & Monitoring	/ / /	EFA Pump Station Control &	/ / / /					
187	DIN	R	BUS/COMM		UPS 2 Operating Condition	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	UPS/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01	-	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
188	DIN	R	DUS/COMM	Uninterrupted Power Supply, UPS 2 Output Overload Normal/Alarm	UPS 2 Output Overload	Discrete IO	Tunnel E EFA Pump Station	Normal/Alarm	UPS/002/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring	DIC/003/EEA/E01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
100	DIN	I.	BO3/COIVIIVI	Normal/Alaim	or 3 2 Output Overload	Discrete 10	Tullier E ETA Fullip Station	NOTHIBIT AIBITH	073/002/E174/101 NIO/002/E174/101	Tunnel E Plant Control & Monitoring	FEC/002/E17/101	EFA Pump Station Control &	F EC/002/E3C/E00	Turrier E Service Compound SivinCo			14/7	
189	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS 2 Battery Operating Condition	UPS 2 Battery Operating Condition	Discrete IO	Tunnel E EFA Pump Station	Normal/Failure	UPS/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
										Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
194	DIN	R	BUS/COMM	Uninterrupted Power Supply, UPS-01 16A Duty UPS CB Trip Status	s UPS-01 16A Duty UPS CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	UPS/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01	-	PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
				Uninterrupted Power Supply, UPS-01 16A Standby UPS CB Trip						Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
197	DIN	R	BUS/COMM	Status	UPS-01 16A Standby UPS CB	Circuit Breaker	Tunnel E EFA Pump Station	Normal/Trip	UPS/002/EFA/F01 RIO/002/EFA/F01		PLC/002/EFA/F01		PLC/002/ESC/E08	Tunnel E Service Compound SMRCU			N/A	
226	DIN	R	PLC/RIO	Control Panel Operating Condition Primary Power Supply	Panel Operating Condition	Relay	EFA Pump Station	Normal/Failure	CP-/002/EFA/F01 RIO/002/EFA/F01	Tunnel E Plant Control & Monitoring - SMRIOU	PLC/002/EFA/F01	EFA Pump Station Control & Monitoring - PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2.C 2.08 mm^	12 Hardwired
	Dill		. 20/110	control of the operating condition rilliary rower supply	Tuner operating condition	cidy	E. A. Gillp Station		Ci /CCL/LINGICI MIC/CCL/LIA/ICI	Tunnel E Plant Control & Monitoring	1 20,002,217,101	EFA Pump Station Control &	. 20,002/230/000	Tamer E Service Compound Sivinco			2 0 2.00 11111	_ indicate
227	DIN	R	PLC/RIO	Control Panel Operating Condition Backup Power Supply	Panel Operating Condition	Relay	EFA Pump Station	Normal/Failure	CP-/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01		PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm [^]	2 Hardwired
										Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
228	DIN	R	PLC/RIO	Control Panel Operating Condition Loss of Power	Panel Operating Condition	Relay	EFA Pump Station	Normal/Failure	CP-/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01		PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	2 Hardwired
									l	Tunnel E Plant Control & Monitoring		EFA Pump Station Control &						
229	DIN	R	PLC/RIO	Control Panel Operating Condition TVSS	Panel Operating Condition	Relay	EFA Pump Station	Normal/Failure	CP-/002/EFA/F01 RIO/002/EFA/F01	SMRIOU	PLC/002/EFA/F01	Monitoring - PLC	PLC/002/ESC/B08	Tunnel E Service Compound SMRCU			2-C 2.08 mm^	2 Hardwired