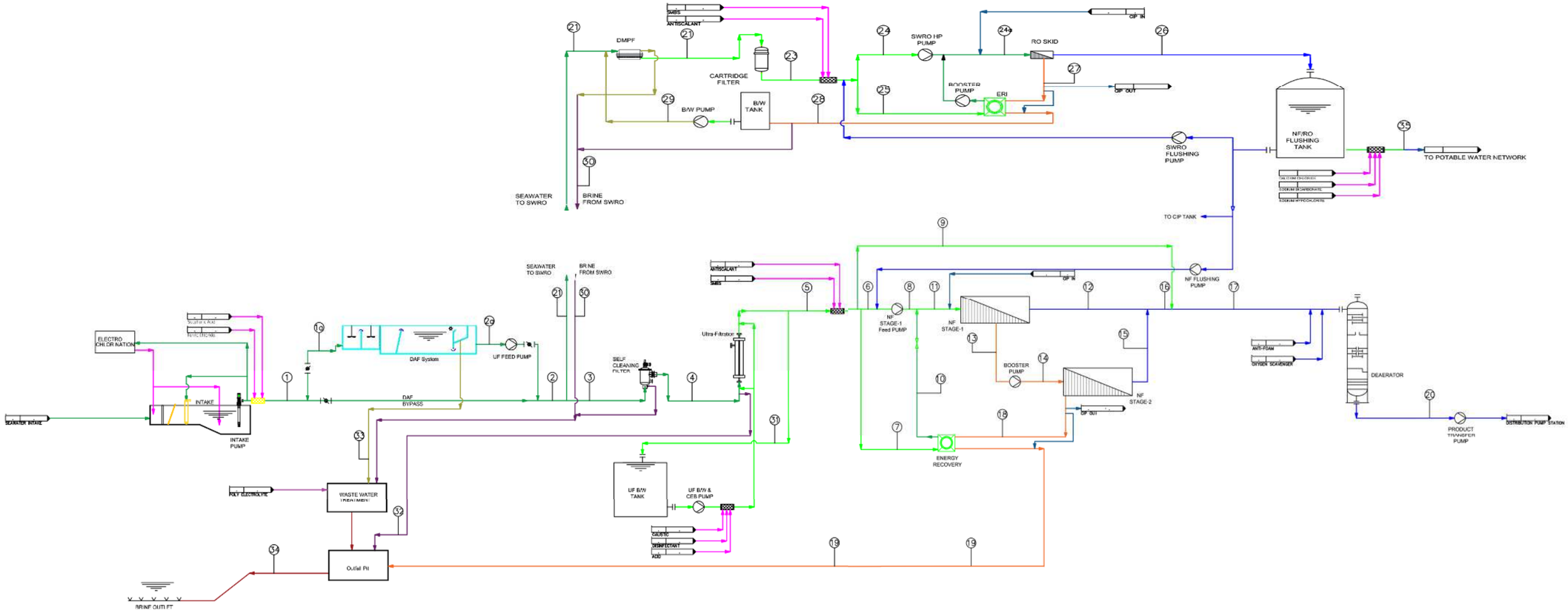
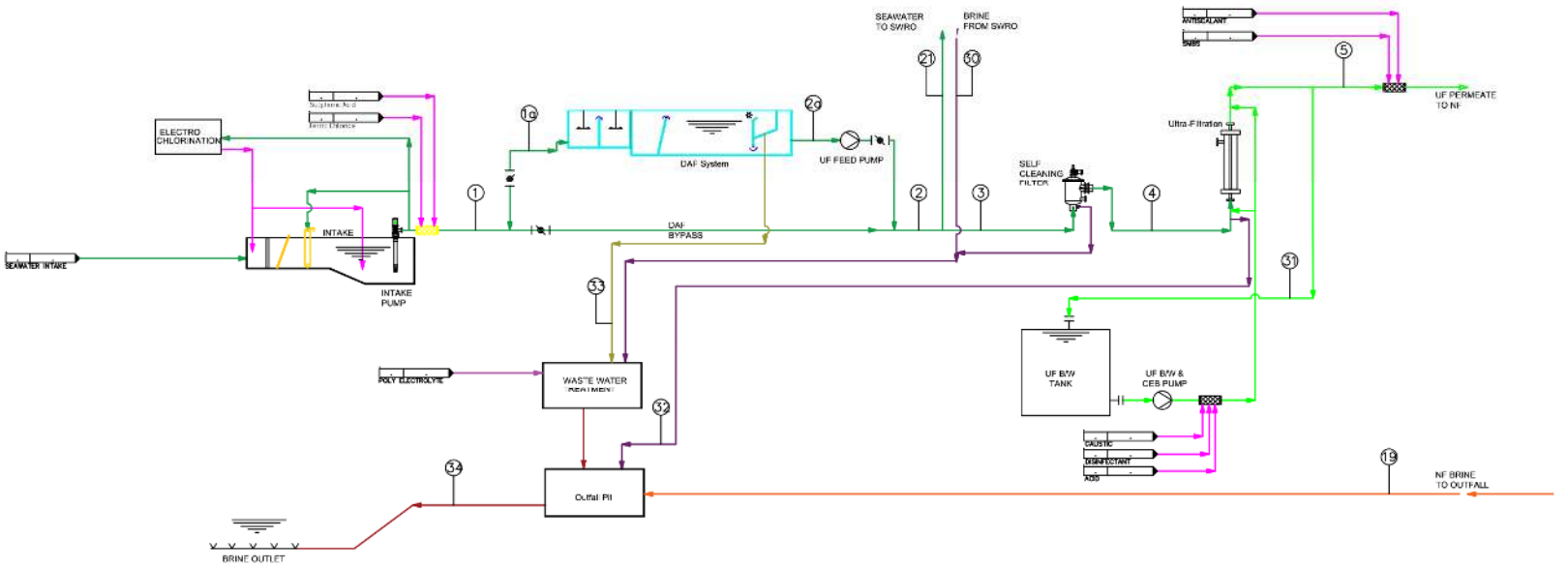

SEAWATER INTAKE
ELECTRO CHLORINATION
SODIUM HYPOCHLORITE
FERRIC CHLORIDE
INTAKE
INTAKE PUMP
DAF System
DAF BYPASS
UF FEED PUMP
SEAWATER TO SWRO
BRINE FROM SWRO
SELF CLEANING FILTER
Ultra-Filtration
ANTISCALANT
SMBS
DMPF
CARTRIDGE FILTER
B/W PUMP
B/W TANK
SWRO HP PUMP
RO SKID
BOOSTER PUMP
ERI
OP IN
OP OUT
SWRO FLUSHING PUMP
NF/RO FLUSHING TANK
TO POTABLE WATER NETWORK
TO CIP TANK
NF FLUSHING PUMP
NF STAGE-1 Feed PUMP
NF STAGE-1
BOOSTER PUMP
NF STAGE-2
ENERGY RECOVERY
ANTI-FOAM
OXYGEN SCAVENGER
DEAERATOR
PRODUCT TRANSFER PUMP
DISTRIBUTION PUMP STATION
POLY ELECTROLYTE
WASTE WATER TREATMENT
Outfall Pit
BRINE OUTFALL
UF B/W TANK
UF B/W & CEB PUMP
CAUSTIC
DISINFECTANT
ACID



CASE
SEAWATER TEMPERATURE **15** °C
TDS **42,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall Pit	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29794	29794	29794	29686	29686	29611	29463	28078	6220.2	76	41	1385	1385	107	7646
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	42042	80226	42042	78220	42042	42042	42042	200488
DENSITY	kg/m^3	1032	1032	1032	1032	1032	1032	1032	1032	1061	1032	1059	1032	1032	1032	3152
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	4
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19874	5000	5700	5000	5000	5000	30574
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **15** °C
TDS **42,000** ppm
OLD NF MEMBRANES **FF=0.7**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29790	29790	29790	29683	29683	29608	29460	28075	6300	76	41	1385	1385	107	7726
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	42042	80349	42042	78220	42042	42042	42042	73472
DENSITY	kg/m^3	1032	1032	1032	1032	1032	1032	1032	1032	1061	1032	1059	1032	1032	1032	1056
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19880	5000	5700	5000	5000	5000	17138
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **15** °C
TDS **39,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29725	29725	29725	29618	29618	29542	29395	28013	6235	76	41	1382	1382	107	7658
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	39090	75574	39090	72878	39090	39090	39090	68977
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1030	1057	1030	1055	1030	1030	1030	1052
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19876	5000	5700	5000	5000	5000	17116
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **15** °C
TDS **39,000** ppm
OLD NF MEMBRANES **FF=0.7**

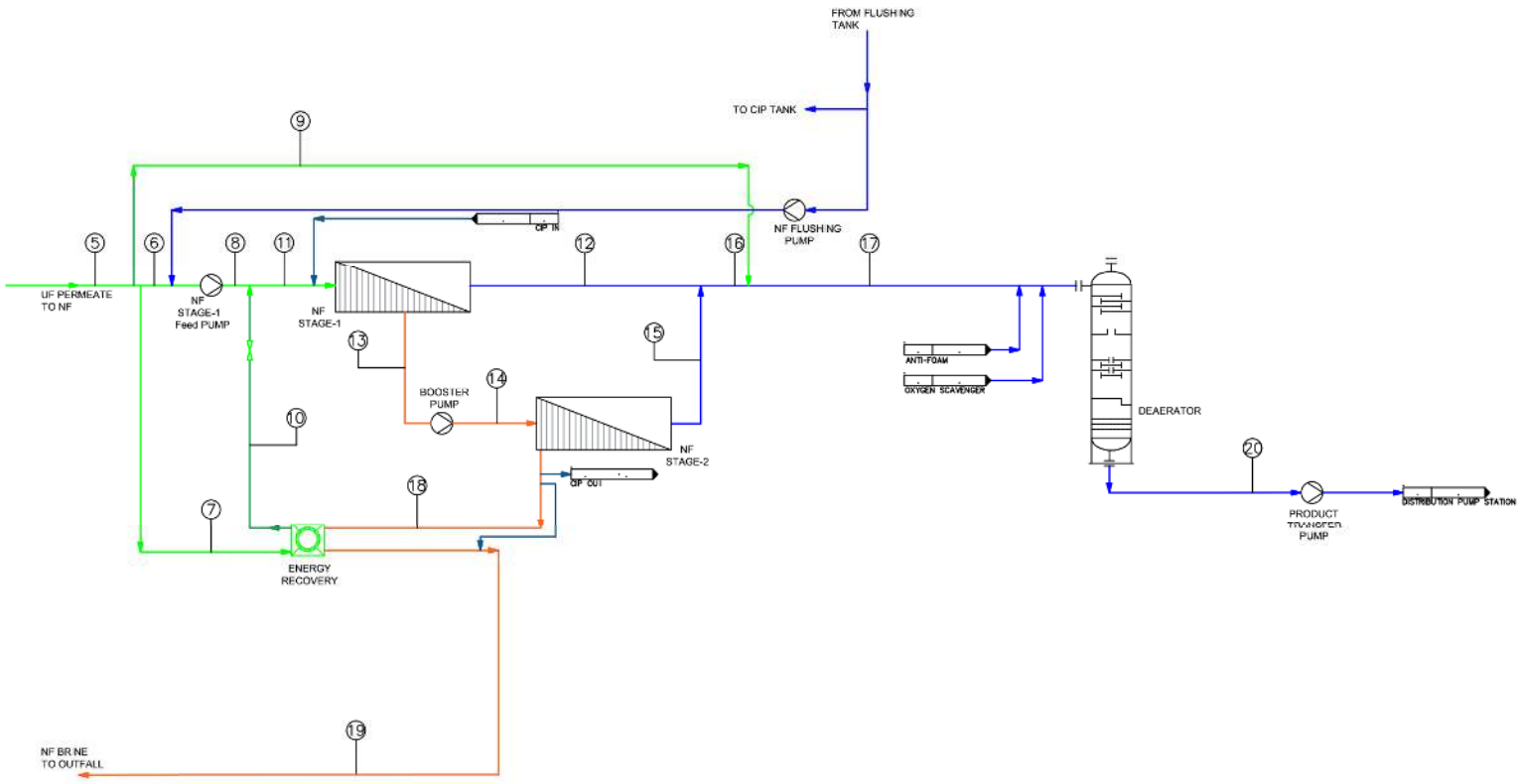
		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29724	29724	29724	29617	29617	29541	29393	28012	6235	76	41	1381	1381	107	7657
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	39090	75619	39090	72878	39090	39090	39090	69014
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1030	1057	1030	1055	1030	1030	1030	1052
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19890	5000	5700	5000	5000	5000	17128
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

DESIGN CASE
SEAWATER TEMPERATURE **15** °C
TDS **55,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29718	29718	29718	29611	29611	29536	29388	28007	6235	76	41	1381	1381	107	7657
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	55094	100885	55094	101785	55094	55094	55094	92630
DENSITY	kg/m^3	1042	1042	1042	1042	1042	1042	1042	1042	1076	1042	1077	1042	1042	1042	1070
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19879	5000	5700	5000	5000	5000	17119
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **15** °C
TDS **55,000** ppm
OLD NF MEMBRANES **FF=0.7**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29714	29714	29714	29607	29607	29532	29384	28003	6234	76	41	1381	1381	107	7656
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	55094	100896	55094	101785	55094	55094	55094	92639
DENSITY	kg/m^3	1042	1042	1042	1042	1042	1042	1042	1042	1076	1042	1077	1042	1042	1042	1070
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19880	5000	5700	5000	5000	5000	17120
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1



CASE
SEAWATER TEMPERATURE **15**
TDS **42,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall Pit	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28078	18920.3	6257.7	18920.3	2900	6257.7	25178	13850	11345	11342	5049	18699	21599	6220.2	6220.2	21599
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	27317	60036	60036	34656	29278	30977	80226	80226	30977
DENSITY	kg/m^3	1032	1032	1032	1032	1032	1032	1032	1021	1045	1045	1026	1022	1023	1061	1061	1023
PRESSURE	barg	2.5	2.5	2.5	21.1	2	20.4	20.8	1.5	18.2	24.4	1.5	1.5	1.5	22.1	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	29.59	11070	11070	65.86	39.28	699.2	19874	19874	699.2
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **42,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28075	18920	6255	18920	2900	6255	25175	13776	11417	11414	5123	18899	21799	6300	6300	21783
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	27323	59824	59824	34508	29270	30970	80349	80349	30970
DENSITY	kg/m^3	1032	1032	1032	1032	1032	1032	1032	1021	1045	1045	1026	1022	1023	1061	1061	1023
PRESSURE	barg	2.5	2.5	2.5	22.5	2	22.7	22.2	1.5	19.5	25.3	1.5	1.5	1.5	22.8	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	29.53	11000	11000	64.9	39.19	699.1	19880	19880	699.1
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **39,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28013	18719	6194	18719	3100	6194	24913	13325	11603	11599	5373	18698	21798	6235	6235	21783
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	25199	55060	55060	31198	26923	28653	75574	75574	28653
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1019	1042	1042	1024	1020	1022	1057	1057	1022
PRESSURE	barg	2.5	2.5	2.5	19.2	2	19.6	18.9	1.5	16.3	23.1	1.5	1.5	1.5	20.5	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	30.04	10710	10710	62.94	39.49	744.9	19876	19876	744.9
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **39,000**
OLD NF MEMBRANES **FF=0.7**

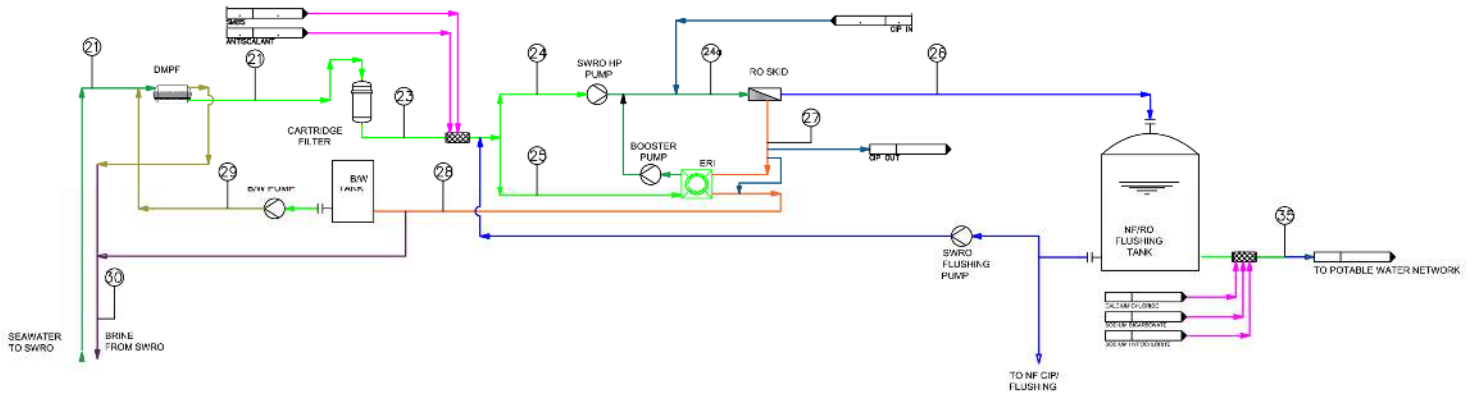
		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28012	18728.5	6183.5	18728.5	3100	6183.5	24912	13286	11639	11639	5417	18703	21803	6235	6235	21783
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	25203	54955	54955	31129	26920	28651	75619	75619	28651
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1019	1042	1042	1023	1020	1022	1057	1057	1022
PRESSURE	barg	2.5	2.5	2.5	20.6	2	20.9	20.3	1.5	17.6	24.4	1.5	1.5	1.5	21.8	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	29.97	10674	10674	62.39	39.36	744.7	19890	19890	744.7
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

DESIGN CASE
SEAWATER TEMPERATURE **15**
TDS **55,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28007	18725	6182	18725	3100	6182	24907	13587	11341	11337	5113	18700	21800	6235	6235	21783
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	37278	76470	76470	46594	39826	41998	100885	100885	41998
DENSITY	kg/m^3	1042	1042	1042	1042	1042	1042	1042	1028	1058	1058	1035	1030	1032	1076	1076	1032
PRESSURE	barg	2.5	2.5	2.5	26.1	2	28	25.8	1.5	23.2	31.5	1.5	1.5	1.5	28.9	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	29.55	10958	10958	63.4	38.8	744.3	19879	19879	744.3
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **55,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28003	18721	6182	18721	3100	6182	24903	13553	11370	11366	5144	18697	21797	6234	6234	21783
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	37283	76361	76361	46517	39823	41996	100896	100896	41996
DENSITY	kg/m^3	1042	1042	1042	1042	1042	1042	1042	1028	1058	1058	1035	1030	1032	1076	1076	1032
PRESSURE	barg	2.5	2.5	2.5	27.7	2	29.5	27.3	1.5	24.7	33	1.5	1.5	1.5	30.4	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	29.5	10928	10928	62.91	38.71	744.3	19880	19880	744.3
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A



CASE
SEAWATER TEMPERATURE **15**
TDS **42,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	42042	42042	42042	42042	42042	42042	60	78220	78220	78220	78220	60
DENSITY	kg/m^3	1032	1032	1032	1032	1032	1032	1000	1059	1059	1059	1059	1000
PRESSURE	barg	3	3	2.5	2	2	69	1	67	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	0.5	5700	5700	5700	5700	0.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **42,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	42042	42042	42042	42042	42042	42042	60	78220	78220	78220	78220	60
DENSITY	kg/m^3	1032	1032	1032	1032	1032	1032	1000	1059	1059	1059	1059	1000
PRESSURE	barg	3	3	2.5	2	2	69	1	67	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	0.5	5700	5700	5700	5700	0.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **39,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	39090	39090	39090	39090	39090	39090	55	72878	72878	72878	72878	55
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1000	1055	1055	1055	1055	1000
PRESSURE	barg	3	3	2.5	2	2	64	1	62	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	0.5	5700	5700	5700	5700	0.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **39,000**
OLD NF MEMBRANES **FF=0.7**

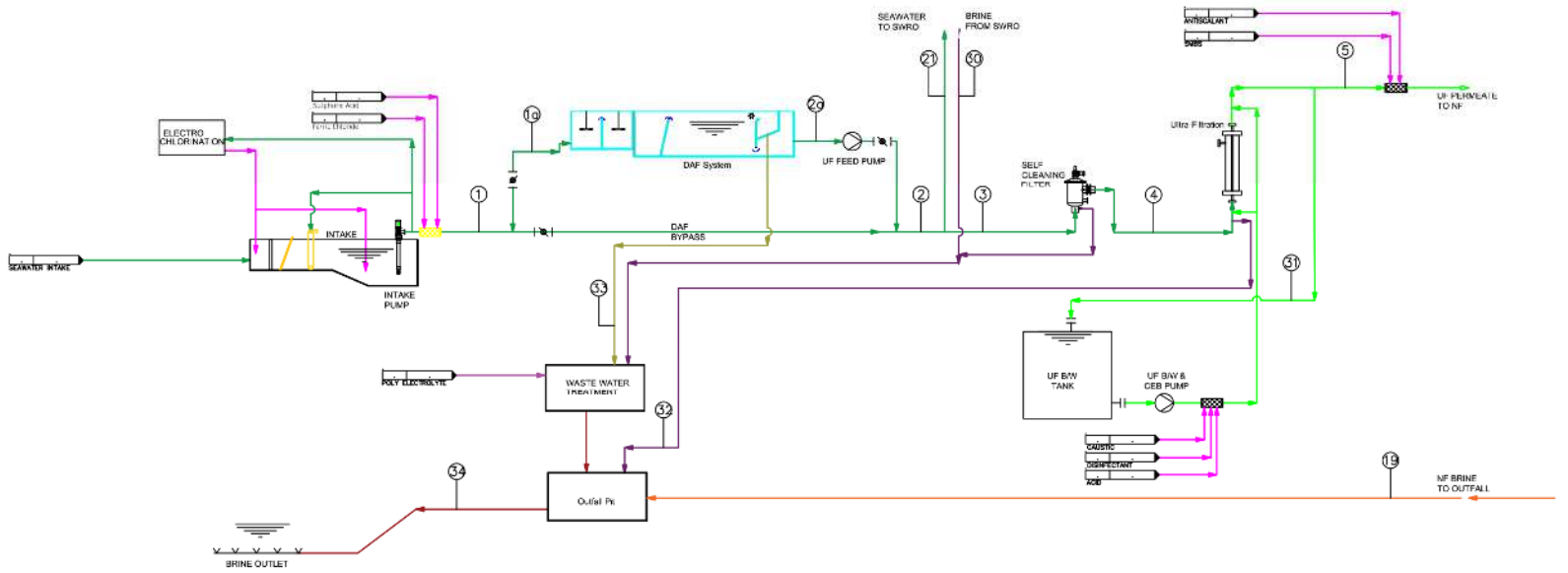
		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	39090	39090	39090	39090	39090	39090	55	72878	72878	72878	72878	55
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1000	1055	1055	1055	1055	1000
PRESSURE	barg	3	3	2.5	2	2	64	1	62	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	0.5	5700	5700	5700	5700	0.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

DESIGN CASE
SEAWATER TEMPERATURE **15**
TDS **55,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	55094	55094	55094	55094	55094	55094	80	101785	101785	101785	101785	80
DENSITY	kg/m^3	1042	1042	1042	1042	1042	1042	1000	1077	1077	1077	1077	1000
PRESSURE	barg	3	3	2.5	2	2	92	1	91	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	0.5	5700	5700	5700	5700	0.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **15**
TDS **55,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	55094	55094	55094	55094	55094	55094	80	101785	101785	101785	101785	80
DENSITY	kg/m^3	1042	1042	1042	1042	1042	1042	1000	1077	1077	1077	1077	1000
PRESSURE	barg	3	3	2.5	2	2	92	1	91	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	0.5	5700	5700	5700	5700	0.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A



CASE
SEAWATER TEMPERATURE **30** °C
TDS **42,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29799	29799	29799	29692	29692	29616	29468	28083	6296	76	41	1385	1385	107	7722
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	42042	71317	42042	78207	42042	42042	42042	66103
DENSITY	kg/m^3	1027	1027	1027	1027	1027	1027	1027	1027	1049	1027	1054	1027	1027	1027	1045
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.6	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19777	5000	5700	5000	5000	5000	17052
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **30** °C
TDS **42,000** ppm
OLD NF MEMBRANES **FF=0.7**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29799	29799	29799	29692	29692	29616	29468	28083	6300	76	41	1385	1385	107	7726
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	42042	71295	42042	78207	42042	42042	42042	66088
DENSITY	kg/m^3	1027	1027	1027	1027	1027	1027	1027	1027	1049	1027	1054	1027	1027	1027	1045
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19767	5000	5700	5000	5000	5000	17045
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **30** °C
TDS **39,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29801	29801	29801	29694	29694	29618	29470	28085	6300	76	41	1385	1385	107	7726
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	39090	67374	39090	72770	39090	39090	39090	62332
DENSITY	kg/m^3	1024	1024	1024	1024	1024	1024	1024	1024	1046	1024	1050	1024	1024	1024	1042
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19768	5000	5700	5000	5000	5000	17046
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **30** °C
TDS **39,000** ppm
OLD NF MEMBRANES **FF=0.7**

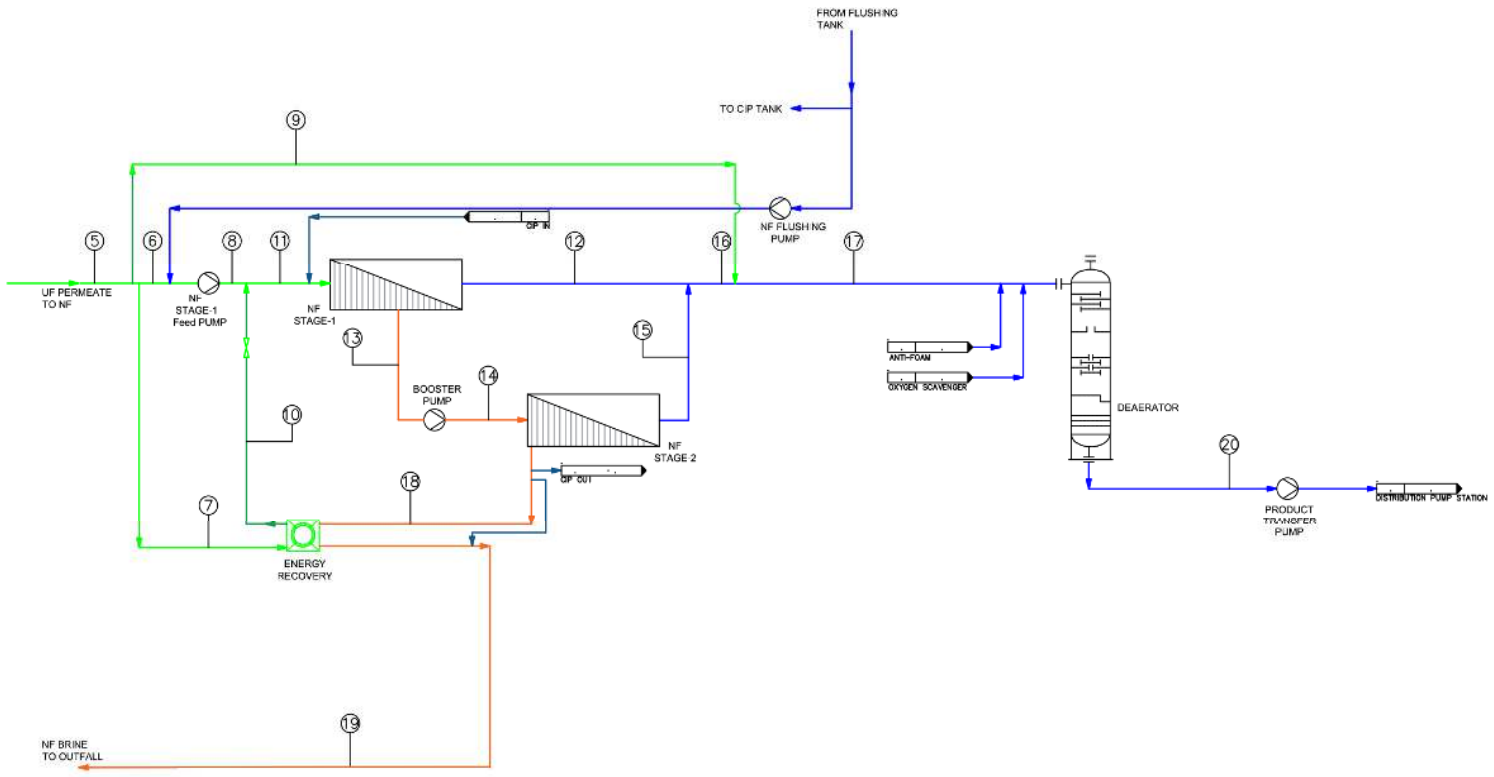
		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29801	29801	29801	29694	29694	29618	29470	28085	6300	76	41	1385	1385	107	7726
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	39090	67374	39090	72770	39090	39090	39090	62332
DENSITY	kg/m^3	1024	1024	1024	1024	1024	1024	1024	1024	1046	1024	1050	1024	1024	1024	1042
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19768	5000	5700	5000	5000	5000	17046
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

DESIGN CASE
SEAWATER TEMPERATURE **30** °C
TDS **55,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29799	29799	29799	29692	29692	29616	29468	28083	6300	76	41	1385	1385	107	7726
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	55094	89076	55094	101684	55094	55094	55094	83051
DENSITY	kg/m^3	1036	1036	1036	1036	1036	1036	1036	1036	1062	1036	1071	1036	1036	1036	1057
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19770	5000	5700	5000	5000	5000	17048
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **30** °C
TDS **55,000** ppm
OLD NF MEMBRANES **FF=0.7**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29798	29798	29798	29691	29691	29615	29467	28082	6297	76	41	1385	1385	107	7723
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	55094	89089	55094	101684	55094	55094	55094	83060
DENSITY	kg/m^3	1036	1036	1036	1036	1036	1036	1036	1036	1062	1036	1071	1036	1036	1036	1057
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19779	5000	5700	5000	5000	5000	17054
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1



CASE

SEAWATER TEMPERATURE **30**
TDS **42,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28083	18908	6275	18908	2900	6275	25183	13332	11861	11859	5569	18901	21801	6296	6296	21783
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	31185	54256	54256	34932	32289	33587	71317	71317	33587
DENSITY	kg/m^3	1027	1027	1027	1027	1027	1027	1027	1019	1036	1036	1021	1019	1020	1049	1049	1020
PRESSURE	barg	2.5	2.5	2.5	13.4	2	13.6	13.1	1.5	10.9	16.7	1.5	1.5	1.5	14.7	1.6	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	59.69	10554	10554	120.5	77.61	732.3	19777	19777	732.3
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **30**
TDS **42,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28083	18916.2	6266.8	18916.2	2900	6266.8	25183	13301	11893	11890	5597	18898	21798	6300	6300	21783
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	31191	54189	54189	34901	32290	33588	71295	71295	33588
DENSITY	kg/m^3	1027	1027	1027	1027	1027	1027	1027	1019	1036	1036	1021	1019	1020	1049	1049	1020
PRESSURE	barg	2.5	2.5	2.5	14.1	2	14.4	13.8	1.5	11.7	17.5	1.5	1.5	1.5	15.4	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	59.57	10527	10527	119.6	77.36	732.2	19767	19767	732.2
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **30**
TDS **39,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28085	18974.6	6210.4	18974.6	2900	6210.4	25185	12754	12440	12437	6144	18898	21798	6300	6300	21783
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	28738	49713	49713	31576	29661	30915	67374	67374	30915
DENSITY	kg/m^3	1024	1024	1024	1024	1024	1024	1024	1017	1032	1032	1019	1017	1018	1046	1046	1018
PRESSURE	barg	2.5	2.5	2.5	12.2	2	13.3	11.9	1.5	9.7	16.5	1.5	1.5	1.5	14.3	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	60.63	10065	10065	111.5	77.16	732	19768	19768	732
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **30**
TDS **39,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28085	18916	6269	18916	2900	6269	25185	12754	12440	12437	6144	18898	21798	6300	6300	21783
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	28738	49713	49713	31576	29661	30915	67374	67374	30915
DENSITY	kg/m^3	1024	1024	1024	1024	1024	1024	1024	1017	1032	1032	1019	1017	1018	1046	1046	1018
PRESSURE	barg	2.5	2.5	2.5	12.2	2	13.3	11.9	1.5	9.7	16.5	1.5	1.5	1.5	14.3	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	60.63	10065	10065	111.5	77.16	732	19768	19768	732
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

DESIGN CASE

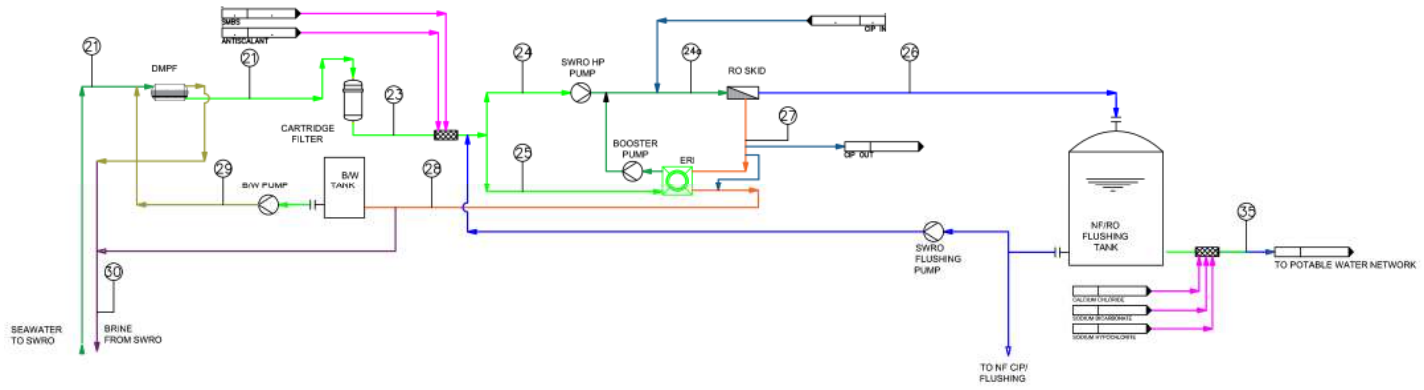
SEAWATER TEMPERATURE **30**
TDS **55,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28083	18949	6234	18949	2900	6234	25183	13505	11690	11687	5394	18899	21799	6300	6300	21783
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	42289	69906	69906	47464	43766	45274	89076	89076	45274
DENSITY	kg/m^3	1036	1036	1036	1036	1036	1036	1036	1027	1048	1048	1031	1028	1029	1062	1062	1029
PRESSURE	barg	2.5	2.5	2.5	16.5	2	17.8	16.2	1.5	14.1	20.9	1.5	1.5	1.5	18.8	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	58.87	10710	10710	120.2	76.37	731.4	19770	19770	731.4
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **30**
TDS **55,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28082	18921	6261	18921	2900	6261	25182	13481	11713	11710	5420	18901	21801	6297	6297	21783
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	42296	69846	69846	47432	43769	45276	89089	89089	45276
DENSITY	kg/m^3	1036	1036	1036	1036	1036	1036	1036	1027	1047	1047	1031	1028	1029	1062	1062	1029
PRESSURE	barg	2.5	2.5	2.5	17.7	2	18.9	17.4	1.5	15.2	22	1.5	1.5	1.5	19.9	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	58.73	10689	10689	119.4	76.13	731.1	19779	19779	731.1
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A



CASE
SEAWATER TEMPERATURE **30**
TDS **42,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	42042	42042	42042	42042	42042	42042	175	78207	78207	78207	78207	175
DENSITY	kg/m^3	1027	1027	1027	1027	1027	1027	995	1054	1054	1054	1054	995
PRESSURE	barg	3	3	2.5	2	2	64	1	62	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	1.4	5700	5700	5700	5700	1.4
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **30**
TDS **42,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	42042	42042	42042	42042	42042	42042	175	78207	78207	78207	78207	175
DENSITY	kg/m^3	1027	1027	1027	1027	1027	1027	995	1054	1054	1054	1054	995
PRESSURE	barg	3	3	2.5	2	2	64	1	62	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	1.4	5700	5700	5700	5700	1.4
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **30**
TDS **39,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	39090	39090	39090	39090	39090	39090	162	72770	72770	72770	72770	162
DENSITY	kg/m^3	1024	1024	1024	1024	1024	1024	995	1050	1050	1050	1050	995
PRESSURE	barg	3	3	2.5	2	2	59	1	58	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	1.4	5700	5700	5700	5700	1.4
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **30**
TDS **39,000**
OLD NF MEMBRANES **FF=0.7**

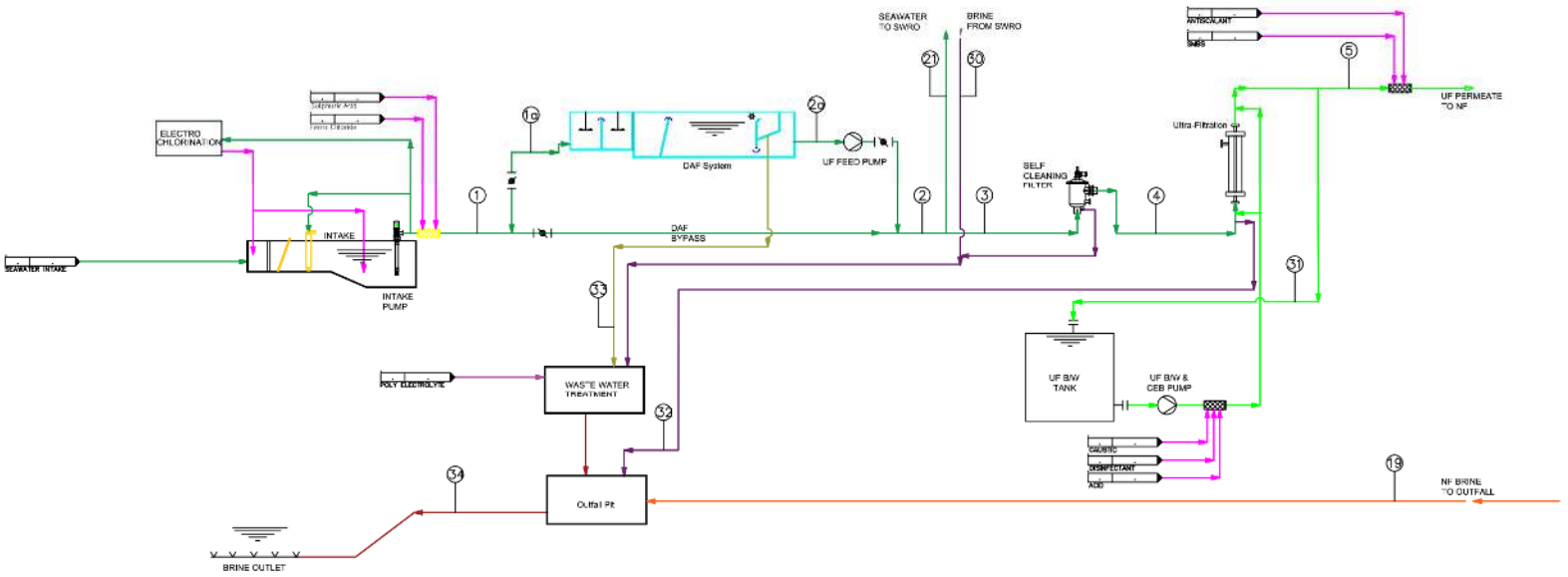
		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	39090	39090	39090	39090	39090	39090	162	72770	72770	72770	72770	162
DENSITY	kg/m^3	1024	1024	1024	1024	1024	1024	995	1050	1050	1050	1050	995
PRESSURE	barg	3	3	2.5	2	2	59	1	58	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	1.4	5700	5700	5700	5700	1.4
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

DESIGN CASE
SEAWATER TEMPERATURE **30**
TDS **55,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	55094	55094	55094	55094	55094	55094	234	101684	101684	101684	101684	234
DENSITY	kg/m^3	1036	1036	1036	1036	1036	1036	995	1071	1071	1071	1071	995
PRESSURE	barg	3	3	2.5	2	2	86	1	85	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	1.4	5700	5700	5700	5700	1.4
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **30**
TDS **55,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	55094	55094	55094	55094	55094	55094	234	101684	101684	101684	101684	234
DENSITY	kg/m^3	1036	1036	1036	1036	1036	1036	995	1071	1071	1071	1071	995
PRESSURE	barg	3	3	2.5	2	2	86	1	85	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	1.4	5700	5700	5700	5700	1.4
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A



CASE
SEAWATER TEMPERATURE **45** °C
TDS **42,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29842	29842	29842	29735	29735	29659	29511	28124	6334	76	41	1387	1387	107	7762
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	42042	66208	42042	77980	42042	42042	42042	61952
DENSITY	kg/m^3	1021	1021	1021	1021	1021	1021	1021	1021	1039	1021	1047	1021	1021	1021	1035
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19551	5000	9058	5000	5000	5000	16895
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **45** °C
TDS **42,000** ppm
OLD NF MEMBRANES **FF=0.7**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29857	29857	29857	29750	29750	29674	29526	28138	6351	76	41	1388	1388	107	7780
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	42042	66201	42042	77980	42042	42042	42042	61954
DENSITY	kg/m^3	1021	1021	1021	1021	1021	1021	1021	1021	1039	1021	1047	1021	1021	1021	1035
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19550	5000	9058	5000	5000	5000	16899
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **45** °C
TDS **39,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29861	29861	29861	29754	29754	29678	29530	28142	6351	76	41	1388	1388	108	7780
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	39090	62489	39090	72556	39090	39090	39090	58368
DENSITY	kg/m^3	1018	1018	1018	1018	1018	1018	1018	1018	1036	1018	1043	1018	1018	1018	1033
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19547	5000	9058	5000	5000	5000	16897
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **45** °C
TDS **39,000** ppm
OLD NF MEMBRANES **FF=0.7**

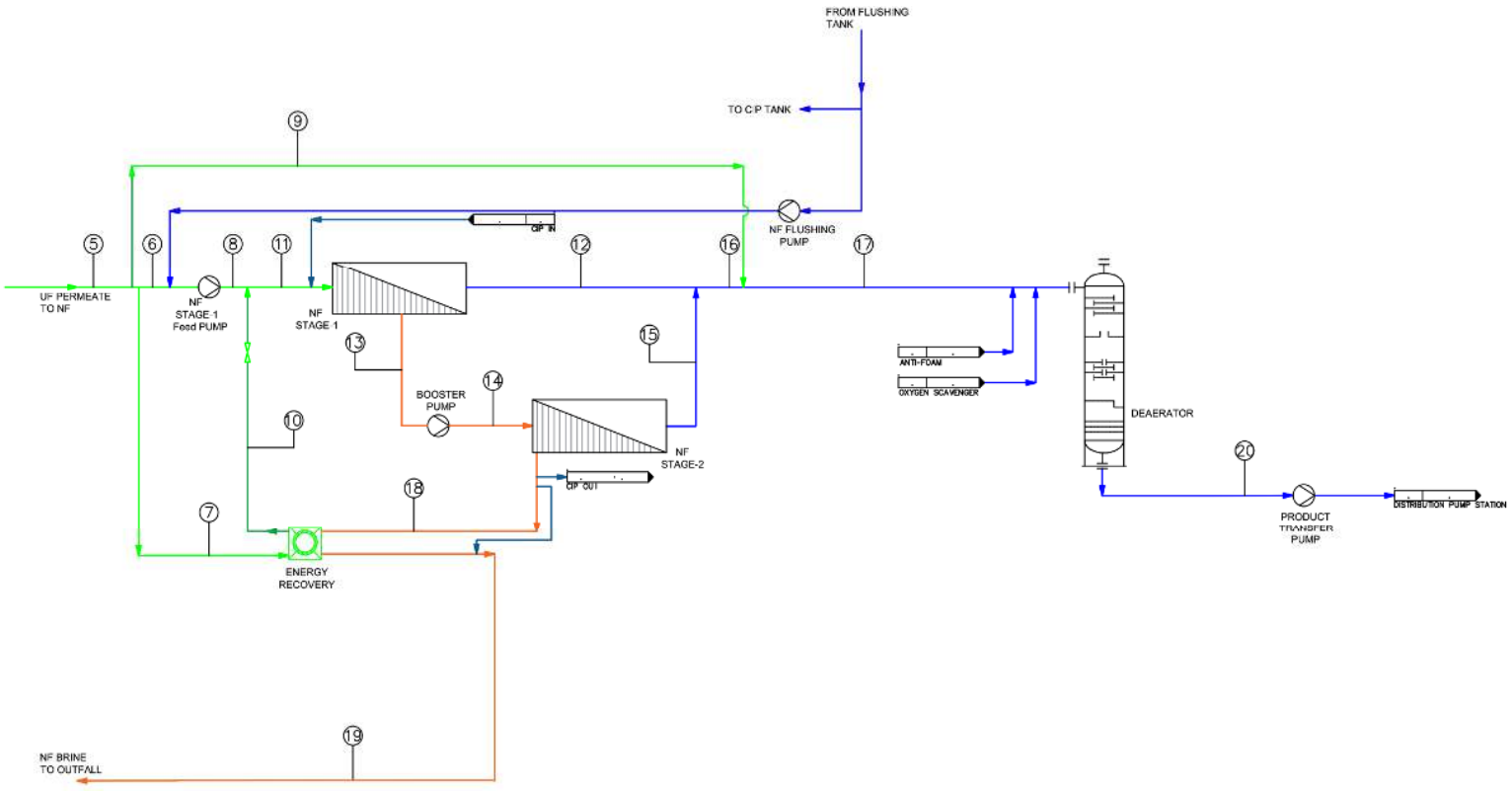
		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29860	29860	29860	29753	29753	29677	29529	28141	6352	76	41	1388	1388	107	7781
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	39090	62469	39090	72556	39090	39090	39090	58352
DENSITY	kg/m^3	1018	1018	1018	1018	1018	1018	1018	1018	1036	1018	1043	1018	1018	1018	1033
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19545	5000	9058	5000	5000	5000	16895
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

DESIGN CASE
SEAWATER TEMPERATURE **45** °C
TDS **55,000** ppm
NEW NF MEMBRANES **FF=1**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29874	29874	29874	29766	29766	29691	29542	28154	6367	76	41	1388	1388	108	7796
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	55094	82556	55094	101357	55094	55094	55094	77764
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1030	1051	1030	1065	1030	1030	1030	1047
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19564	5000	9058	5000	5000	5000	16915
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1

CASE
SEAWATER TEMPERATURE **45** °C
TDS **55,000** ppm
OLD NF MEMBRANES **FF=0.7**

		INTAKE	INTAKE PUMPS	DAF INLET	DAF OUTLET	SEAWATER	SCF INLET	UF INLET	UF Filtrate	Brine to Outfall	DMF Feed	Total discharge from SWRO	UF Filtrate to BW tank	UF Backwash to Outfall pit	Sludge from DAF	Brine to Sea
STREAM		**SW**	**1**	**1a**	**2a**	**2**	**3**	**4**	**5**	**19**	**21**	**30**	**31**	**32**	**33**	**34**
VOLUMETRIC FLOW	m^3/hr	29873	29873	29873	29765	29765	29690	29541	28153	6363	76	41	1388	1388	108	7792
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	55094	82550	55094	101357	55094	55094	55094	77757
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1030	1051	1030	1065	1030	1030	1030	1047
PRESSURE	barg	0	4.5	1	1	4.5	4	3	2.5	1.5	3	1	1	1	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	5000	19577	5000	9058	5000	5000	5000	16924
TSS	mg/L	50	50	50	10	10	10	10	≤ 0.1	≤ 0.1	10	≤ 0.1	≤ 0.1	≤ 0.1	15000	≤ 0.1



CASE

SEAWATER TEMPERATURE **45**
TDS **42,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28124	19018	6306	19018	2800	6306	25324	12773	12558	12555	6226	18999	21799	6334	6334	21783
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	33361	50878	50878	35260	33984	35019	66208	66208	35019
DENSITY	kg/m^3	1021	1021	1021	1021	1021	1021	1021	1014	1027	1027	1016	1015	1015	1039	1039	1015
PRESSURE	barg	2.5	2.5	2.5	9.2	2	10.1	8.9	1.5	7.1	12.9	1	1	1	11.2	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	117.7	9967	9967	213	148.9	772	19551	19551	772
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **45**
TDS **42,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28138	19067	6321	19067	2750	6321	25388	12825	12571	12568	6222	19047	21797	6351	6351	21783
TDS	mg/L	42042	42042	42042	42042	42042	42042	42042	33359	50907	50907	35275	33985	35002	66201	66201	35002
DENSITY	kg/m^3	1021	1021	1021	1021	1021	1021	1021	1014	1027	1027	1016	1015	1015	1039	1039	1015
PRESSURE	barg	2.5	2.5	2.5	9.7	2	10.6	9.4	1.5	7.6	13.4	1.5	1.5	1.5	11.6	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	117.1	9983	9983	212.6	148.3	760.3	19550	19550	760.3
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **45**
TDS **39,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28142	19068	6324	19068	2750	6324	25392	12758	12640	12638	6292	19050	21800	6351	6351	21783
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	30712	47552	47552	32455	31287	32272	62489	62489	32272
DENSITY	kg/m^3	1018	1018	1018	1018	1018	1018	1018	1012	1025	1025	1014	1013	1013	1036	1036	1013
PRESSURE	barg	2.5	2.5	2.5	8.8	2	9.5	8.5	1.5	6.7	12.3	1.5	1.5	1.5	10.5	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	118.5	9928	9928	214.4	150.1	761.9	19547	19547	761.9
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **45**
TDS **39,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28141	19066	6325	19066	2750	6325	25391	12772	12626	12623	6276	19048	21798	6352	6352	21783
TDS	mg/L	39090	39090	39090	39090	39090	39090	39090	30715	47568	47568	32468	31293	32277	62469	62469	32277
DENSITY	kg/m^3	1018	1018	1018	1018	1018	1018	1018	1012	1025	1025	1014	1013	1013	1036	1036	1013
PRESSURE	barg	2.5	2.5	2.5	9.2	2	9.9	8.9	1.5	7.1	12.7	1.5	1.5	1.5	10.9	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	118.1	9939	9939	214.2	149.8	761.7	19545	19545	761.7
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

DESIGN CASE

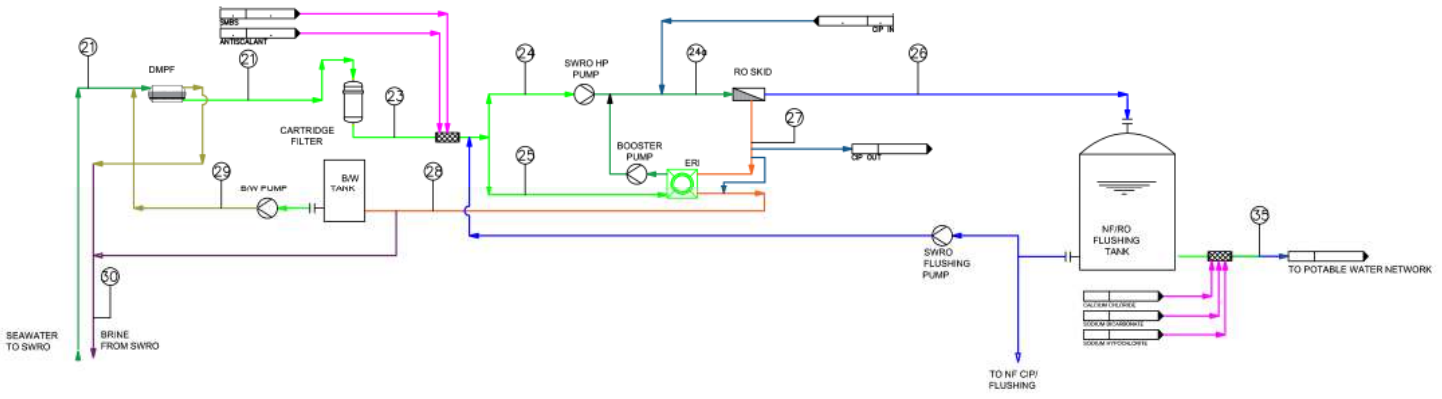
SEAWATER TEMPERATURE **45**
TDS **55,000**
NEW NF MEMBRANES **FF=1**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28154	19116	6338	19116	2700	6338	25454	12878	12584	12581	6220	19098	21798	6367	6367	21783
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	45135	65299	65299	47603	45939	47073	82556	82556	47073
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1023	1038	1038	1025	1024	1024	1051	1051	1024
PRESSURE	barg	2.5	2.5	2.5	11.2	2	13.4	10.9	1.5	9.1	16.2	1.5	1.5	1.5	14.4	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	115.5	10000	10000	205.7	144.9	746.2	19564	19564	746.2
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A

CASE

SEAWATER TEMPERATURE **45**
TDS **55,000**
OLD NF MEMBRANES **FF=0.7**

		UF Filtrate	1st Stage Feed low pressure	UF Filtrate to ERD	HPP to NF	By Pass	ERD to NF	1st Stage Feed	1st Stage Permeate	1st Stage Brine	2nd Stage Feed	2nd Stage Permeate	NF Permeate	Total Permeate	NF Brine to ERD	Brine to Outfall	Product water
STREAM		**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
VOLUMETRIC FLOW	m^3/hr	28153	19119	6334	19119	2700	6334	25453	12918	12544	12540	6185	19103	21803	6363	6363	21783
TDS	mg/L	55094	55094	55094	55094	55094	55094	55094	45139	65360	65360	47641	45949	47082	82550	82550	47082
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	1030	1023	1038	1038	1025	1024	1024	1051	1051	1024
PRESSURE	barg	2.5	2.5	2.5	11.9	2	14.1	11.6	1.5	9.8	16.9	1.5	1.5	1.5	15.1	1.5	0
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	5000	115.1	10032	10032	206.4	144.6	745.9	19577	19577	745.9
TSS	mg/L	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	≤ 0.1	≤ 0.1	≤ 0.1	N/A



CASE
SEAWATER TEMPERATURE **45**
TDS **42,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	42042	42042	42042	42042	42042	42042	460	77980	77980	77980	77980	460
DENSITY	kg/m^3	1021	1021	1021	1021	1021	1021	990	1047	1047	1047	1047	990
PRESSURE	barg	3	3	2.5	2	2	62	1	61	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	3.6	9058	9058	9058	9058	3.6
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **45**
TDS **42,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	42042	42042	42042	42042	42042	42042	460	77980	77980	77980	77980	460
DENSITY	kg/m^3	1021	1021	1021	1021	1021	1021	990	1047	1047	1047	1047	990
PRESSURE	barg	3	3	2.5	2	2	62	1	61	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	3.6	9058	9058	9058	9058	3.6
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **45**
TDS **39,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	39090	39090	39090	39090	39090	39090	426	72556	72556	72556	72556	426
DENSITY	kg/m^3	1018	1018	1018	1018	1018	1018	990	1043	1043	1043	1043	990
PRESSURE	barg	3	3	2.5	2	2	57	1	56	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	3.5	9058	9058	9058	9058	3.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **45**
TDS **39,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	39090	39090	39090	39090	39090	39090	426	72556	72556	72556	72556	426
DENSITY	kg/m^3	1018	1018	1018	1018	1018	1018	990	1043	1043	1043	1043	990
PRESSURE	barg	3	3	2.5	2	2	57	1	56	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	3.5	9058	9058	9058	9058	3.5
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

DESIGN CASE
SEAWATER TEMPERATURE **45**
TDS **55,000**
NEW NF MEMBRANES **FF=1**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	55094	55094	55094	55094	55094	55094	613	101357	101357	101357	101357	613
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	990	1065	1065	1065	1065	990
PRESSURE	barg	3	3	2.5	2	2	84	1	83	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	3.6	9058	9058	9058	9058	3.6
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A

CASE
SEAWATER TEMPERATURE **45**
TDS **55,000**
OLD NF MEMBRANES **FF=0.7**

		DMF Feed	DMF FILTRATE	Cartridge Filter Outlet	RO HPP Suction	ERD Feed	RO Skid Feed	RO PERMEATE	RO BRINE	Brine from ERD	DMPF Backwash	Total discharge from SWRO	Potable Water
STREAM		**21**	**22**	**23**	**24**	**25**	**24a**	**26**	**27**	**28**	**29**	**30**	**35**
VOLUMETRIC FLOW	m^3/hr	76	74	74	33	41	74	33	41	41	120	41	0.33
TDS	mg/L	55094	55094	55094	55094	55094	55094	613	101357	101357	101357	101357	613
DENSITY	kg/m^3	1030	1030	1030	1030	1030	1030	990	1065	1065	1065	1065	990
PRESSURE	barg	3	3	2.5	2	2	84	1	83	1	2	1	1
SO_4^{2-} CONTENT	mg/L	5000	5000	5000	5000	5000	5000	3.6	9058	9058	9058	9058	3.6
TSS	mg/L	10	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	N/A	N/A	N/A	N/A	≤ 0.1	N/A