

Permits	EPR/DP3127XB (issued 1/12/2011)		PR2TS/E1076 (issued 7/7/2006, varied 29/11/2013)	
Effluent discharges (activities) permitted	FED (radioactive)		ADAP (Aqueous Discharge Abatement Plant) (radioactive)	Site Drainages and Sewage effluent (non radioactive)
Current permit limits	<p>Maximum 30 m3 a day, 16.7 litres per second. Must have minimum 50:1 dilution in seawater prior to discharge. pH 6-9, No visible oil or grease</p> <p>No direct numeric limits for metals but Schedule 3 B has 'General Standards' of 0.4 ug/l Cd, 14.4 ug/l Pb, 0.1 ug/l Hg and 40 ug/l Ni as a back up.</p> <p>Discharge limited to 12 months period 1st discharge made July 2014.</p>		<p>Maximum daily volume - 504,900 m3 a day Total residual oxidant (expressed as chlorine) 500 ug/l No visible oil or grease. pH 6-9</p> <p>(Note – The volume and limits of the current permit reflect the old use of the discharge which was cooling water when the power station was active. They don't fit the current or future circumstances)</p>	
Source and nature of the effluents	<p>The FED plant is where magnesium alloy pieces that are 'intermediate radioactive waste' are dissolved in nitric acid. The resulting acidic magnesium nitrate liquid is treated to reduce radionuclides and metals concentrations to make it fit for discharge.</p> <p>Metals in the discharge include, Cadmium, Copper, Chromium, Iron, Lead, Mercury, Nickel, Silver and Zinc.</p> <p>The Nitrates are in relatively high concentrations.</p>		<p>The ADAP plant treats site drainage from areas of the site that have slight radioactive contamination. It has residual traces of metals including, Cadmium, Copper, Chromium, Iron, Lead, Mercury, Nickel, and Zinc.</p> <p>The concentrations of the metals were not high enough to require limits on the permit.</p>	<p>A mixture of (1) treated sewage effluent from an STP serving the workers toilets (2) rainfall runoff (3) 'void waters' The runoff and STP effluent collect in the main drain pit by gravity. The void waters are alkaline and contain metal traces. They are pumped to the 'siltbusters' for treatment and then drain into the main pit by gravity.</p> <p>The effluent contains traces of metals including Arsenic,, Copper, Chromium, Lead, Nickel, and Zinc</p> <p>The concentrations of the metals</p>

			were not high enough to require limits on the permit.
Current discharge arrangements as on current permits	Diluted up to 75:1 in abstracted seawater (permit stipulates minimum 50:1) and is pumped over 30 minutes each day during the first 90 minutes of the ebb tide. Discharge made through the old cooling water outlet pipe 5.8 metres below Chart Datum (lowest astronomical tide level)	ADAP effluent is pumped into the east siphon recovery chamber where it is mixed with abstracted water achieving a dilution of 75:1 before being discharged.	Site drainage in the main drain pit enters the discharge tunnel by gravity on the ebbing tide. Discharges are said to last less than one hour until the tidewater comes back up the tunnel to block them.
Treatment Processes (no change)	pH adjustment, settlement, ultra filtration, GAC adsorption and ion exchange	settlement, ultra filtration, ion exchange pH adjustment if necessary	Rotating bio-contactors package sewage treatment plant providing secondary treatment for the sewage. The void waters are pH adjusted and settled to remove suspended solids in a 'Siltbuster' unit. No treatment necessary for the surface runoff.
Potential pollutants in the effluent (no change)	Nitrates, metals, pH, above ambient Temperatures	Metals, pH	Metals, pH and suspended solids
CHANGES PROPOSED IN THE VARIATION APPLICATIONS			
Small addition to influents	(1) No change	. No change	No change. Maximum daily discharge reduced to 50,000m ³ as no longer abstracted water
Future discharge arrangements (after old pipes silt up)	Maximum 20 m ³ a day discharged at 11.1 litres per second allowing the discharge to be made in 30 minutes on the ebb tide within a window between 1 and 2.5 hours after high water.	30m ³ a day pumped from the final monitoring delay tank chamber. Pumped on the ebb tide over 45 minutes between 1 and 2.5 hours after high water <i>On a different tide to the FED. ?</i>	Will be discharged when a float switch registers the water level in the main drain tank has reached 1.2 metres. The volume in dry weather of 130 m ³ can be discharged within 20 minutes at a maximum rate of 303 litres per second. There is no co-ordination with the tides.

Patrick J Haley September 01, 2015: 75:1 is the dilution in the East Siphon pit prior to discharge. 500:1 is the initial dilution of the effluent from the point of discharge to 50m away in the estuary excluding the on site dilution.

Patrick J Haley September 01, 2015: The proposal to re-use scrubber liquor residues in the dissolution reaction has already been submitted to the EA as a change to the operating procedures ENREP 123

Patrick J Haley September 01, 2015: The RO units were already included in the permit as waster treatment and described in the previous application

Patrick J Haley September 01, 2015: 30m³ is the tank volume

Patrick J Haley September 01, 2015: Yes

New outlet structure	One pipe 180 mm diameter with a 65 mm outlet nozzle situated 5.5 metres above the estuary bed) and just below the lowest tide level. It is angled offshore perpendicular to the currents. The effluent is denser than seawater and will get 'initial dilution' as it sinks.	180 mm diameter pipe with 65 mm outlet nozzles	three-pipe array situated close to the estuary bed to allow maximum initial dilution upwards to the surface because the effluent is buoyant. 180 mm diameter
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Patrick J Haley September 01, 2015: No the active effluent whether FED or non-FED goes out through the same line but it is optimised for FED