Utility Reduction Tracker

	CEF (kgCO2e/kWh)	0.207	0.183	0.247	0	DEFRA Factors 2023		
	Water Imports (m3)	Elect (kWh)	Gas (kWh)	Oil (kWh)	Biomass (kWh)	Total (kWh)	CO2e (tonnes - Location)	CO2e (tonnes - Market)
Utilities FY23	336,290	40,462,009	-	31,121,620	69,151,102	140,734,731	14,982	7,680

Initiatives	Description	Comments	Full Year Benefit							Project Costs/ Savings		
			Water Imports (m3)	Elect (kWh)	Gas (kWh)	Oil (kWh)	Biomass (kWh)	Total (kWh)	CO2 (tonnes)	Cost (Capital or Revenue) (£)	Annual Saving (£)	Simple Payback (years)
1	Evap solids project	Sustainability Fund Year 4	13,871	287,925			3,039,447	3,341,243	60	300,000	432,839	0.7
2	Spray dryer 'Eco Mode'	Reduction in fan speed during routine drier outages (35% fan speed)		80,000			1,148,333	1,228,333	17	5,000	130,000	0.0
3	Evaporative acid clean frequency	Previously reduced acid clean frequency from 1 to 2 days saving ~2,650 m/yr. Target further reduction to every 3 days. Effect on micro TBC	875								1,313	
4	Compressed Air Survey	Annual Survey. Assume savings as per 2022		5,639				5,639	1	3,463	1,297	2.7
5	Insulation Survey	Results of internal survey Assume 50% of savings realised				600,667	600,667	1,201,333	148	28,500	136,000	0.2
6	Steam System Improvements	Spirax recommendations 2022 (traps & losses). Assume 50% of savings realised				477,000	477,000	954,000	118	28,000	108,000	0.3
7	AHU Probe re-calibaration and re-commisioning	Discussed during BMS ESOS review				33,125	33,125	66,250	8	15,000	7,500	2.0
8	WPF - VSD on AT1a,b & AT2 blowers	[ESOS audit recommendation] Changes to current fixed speed linked to DO. 4 blowers on each of 3 tanks, 7.5 kW each		86,957				86,957	18	60,000	20,000	3.0
9	WPF - VSD on MBR pumps	[ESOS audit recommendation] Changes to current fixed speed drives. 4 X 75 kW Motors, control on permeate flow		75,362				75,362	16	52,000	17,333	3.0
10	LED lights - Evaporator Building	[ESOS audit recommendation] Evaporator Building has a blend of compact flourescents and LED. Cost estimate only (needs further details)		43,478				43,478	9	30,000	10,000	3.0
	Total Annualised Benefit (not including Development Projects)		14,746	579,361	-	1,110,792	5,298,572	7,002,596	394	521,963	864,282	0.6
	Annualised % savings		4.4%	1.4%	N/A	3.6%	7.7%	5.0%	2.6%			
Strategic Projects - Currently In Development									-			-
A	Electrification of Drier stage 3	Replace stage 3 HX with element. Drop site steam pressure to 10 barg		Increase TBC			Reduction TBC			TBC	TBC	
B	Drier exhaust heat recovery	Exhaust gas heat recovery. Powder quality technical issues (micro) TBC					TBC			TBC	TBC	
C	Milk intake/ pastueriser heat pump	3P workshop recommendation		Increase TBC			Reduction TBC			TBC	TBC	
D	Additional on-site renewables e.g. wind	Feasibility assessment with energy company. Planning, NATS and export restrictions TBC							-	TBC	TBC	
E	Fuel switching (kero)	Feasibility study funded by 3P							6,144	TBC	TBC	
F	Compressed air pressure reduction & cooling	[ESOS audit recommendation] Current 7 barg - target 5-6 barg. Use air to water heat pump to cool the room, recovered hot water to be used in the process/ boiler		434,783				434,783	90	200,000	100,000	2.0
G	Rainwater Harvesting	Rainwater collection from roof areas	TBC							TBC	TBC	
H	Segregated Evaporators (Hot and Cold Well)	[ESOS audit recommendation] Chilled water plant has SS falling film plates mounted over an open tank. The chilled water is pumped out to the process and returned back into the open tank with no segregation. This results in the mass of water in the tank operating 1 or 2 degrees lower than it should. If the tank was partitioned with a warm an cold section, the ammonia plant would operate at a higher evaporation temperature and therefore more efficiently. This would also help reduce the impact of debris coming back into the tank and blocking the distribution holes above the plates.		140,000				140,000	29	300,000	32,200	9.3