Barr River hydro scheme

Monthly report – December 2024

1 Summary

A very strong month, getting towards double the long-term average on the back of strong rainfall. No significant operational issues.

2 Monthly generation & revenue

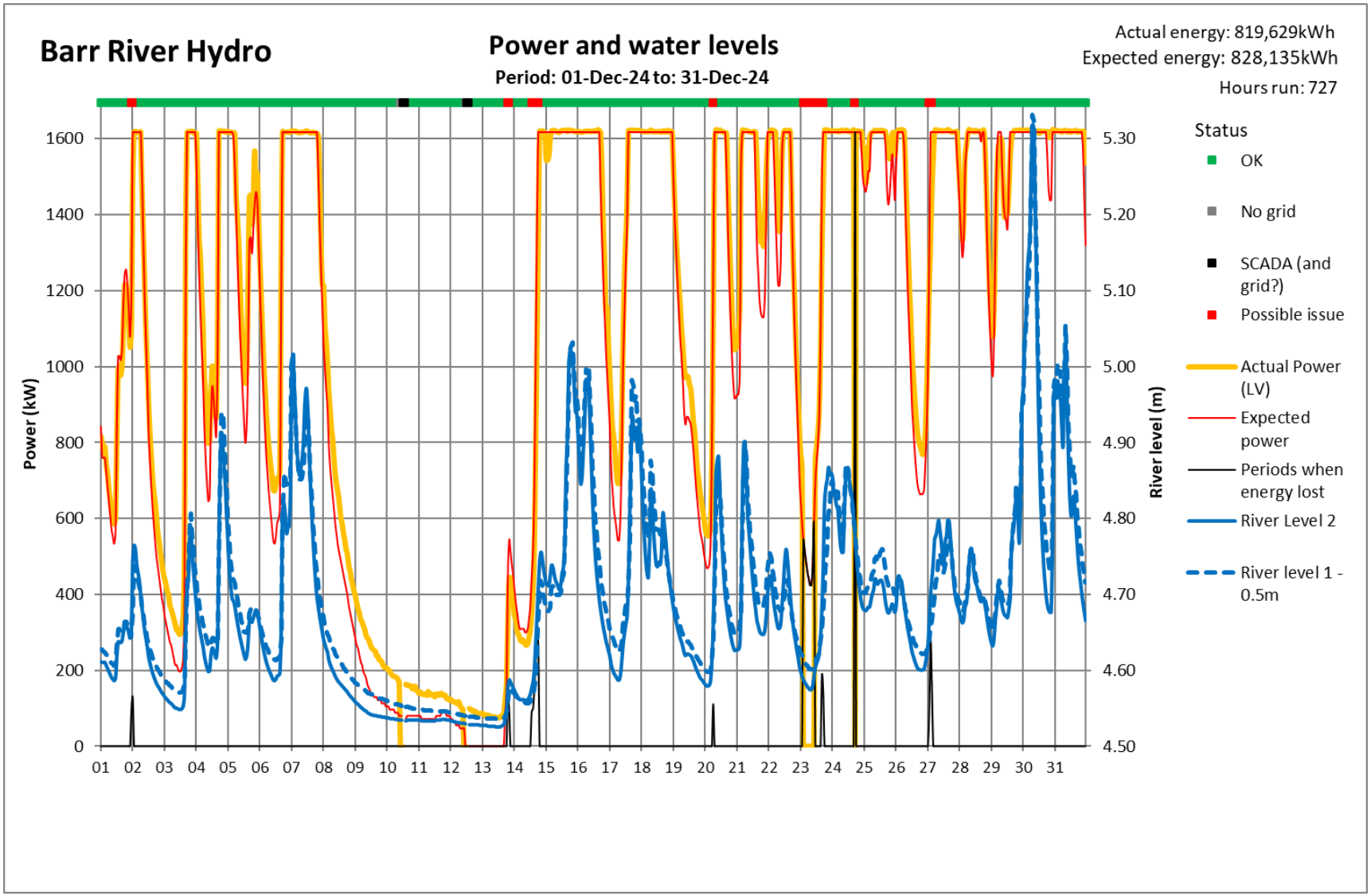
Parameter	Value
Actual generation (FIT meter), kWh	819,629
Average generation in month, kWh	467,890
Forecast generation in month (P50), kWh	620,057
Actual relative to forecast	132.2%
Rainfall relative to 1991-2020 average by month	108%
Calculated generation[1] kWh	828,135
Actual relative to calculated generation, kWh	-8,506
Actual relative to calculated generation, %	-1.0%
Approximate revenue in month[2]	£212,560

[1] Calculated generation is based on river level data and seeks to establish the expected generation with no performance issues.

[2] Export revenue based on reported export and estimated GDUoS charges.

Export meter	Value
Export, kWh	807,688
Variance to generation, kWh	-11,941
Variance to generation, %	-1.5%

3 System reporting



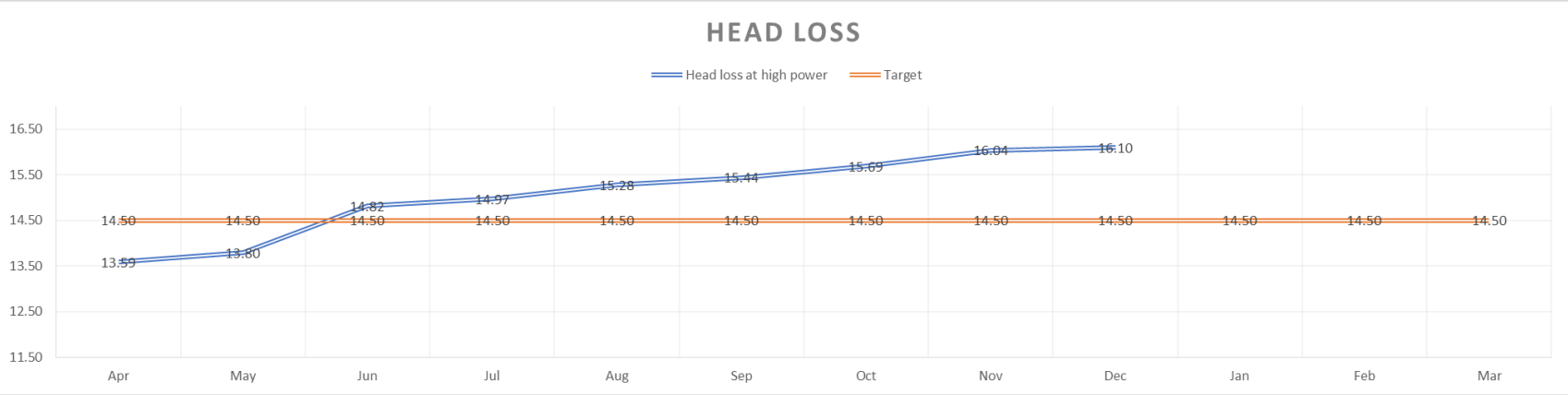
3.1 Scheme anomalies to calculated generation

Date/time	Details	Action required
10/12/24 10:00-13:30	Planned grid outage	Machine started automatically once power was restored.
12/12/24	Brief outage during Quartzelec visit	n/a
23/12/24 01:00	Turbine shutdown due to QF1 trip	Douglas reset approx. 11am. Grid instability was probably caused by high winds.

3.2 Other system events

Date/time	Details	Action required
	None	

3.3 **Head loss** – Head loss increasing. Both DA MacDonald and Chris Henshaw have quoted. We recommend that the pipelines are pigged in the drier months and will send a separate mail with the details for approval. After reviewing the data from the last time the pipelines were pigged, we have calculated a revenue uplift of £8500 following pigging.



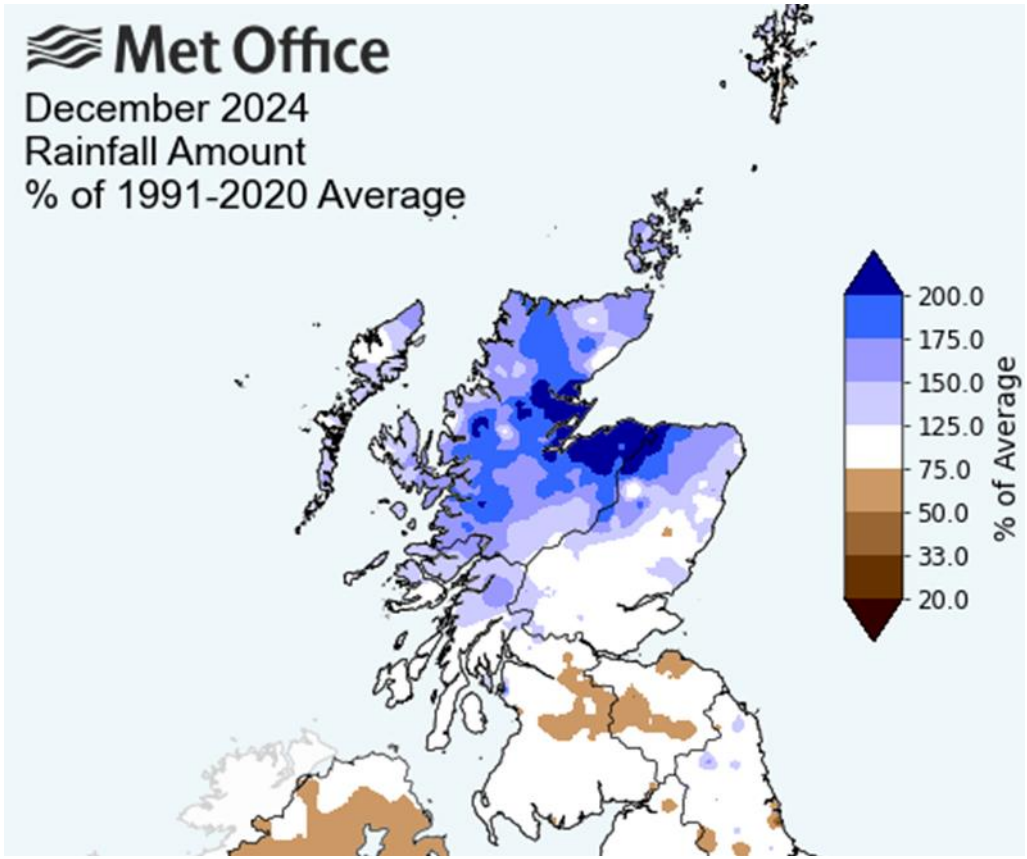
3.4 **Temperatures –** limited data points

Parameter	Temperature at or near full power, ^{0}C	Alert level, ^{0}C		Parameter	Temperature at or near full power, ^{0}C	Alert level, ^{0}C
Generator DE bearing	40	85		Generator winding 1	66	145
Generator NDE bearing 1	43	85		Generator winding 2	63	145
Generator NDE bearing 2	46	85		Generator winding 3	68	145
Turbine room	22	30		Power cabinet (RG1)	33	42

3.5 **Vibration**

Parameter	Vibration at or near full power, mm/s	Alert level, mm/s		Parameter	Vibration at or near full power, mm/s	Alert level, mm/s
Generator DE	0.44	3.0		Generator NDE	1.21	3.0

4 Rainfall



Rainfall this month (rain gauge), mm	396
Western Scotland rainfall in month with respect to 1991-2020 long term average	106%

5 Scheme annual performance summary

FY 2024/5	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Actual generation kWh	298,851	170,950	236,233	302,216	636,431	181,760	318,014	366,415	819,629				3,330,499
Average generation since commissioning	244,074	240,920	198,801	351,584	308,927	342,342	593,249	597,546	467,890	563,949	559,368	279,361	3,345,330
Forecast generation (P50)	369,360	226,766	188,561	195,146	280,601	387,431	582,631	618,214	620,057	695,941	554,678	611,047	3,468,767
Actual relative to forecast	80.9%	75.4%	125.3%	154.9%	226.8%	46.9%	54.6%	59.3%	132.2%				96.0%
Rainfall relative to 1991-2020 average by month	174%	102%	81%	70%	201%	49%	67%	44%	108%				100%
Calculated generation kWh	301,701	175,752	236,233	302,398	728,169	189,926	361,864	367,128	828,135				3,491,306
Variance to calculated generation kWh	-2,850	-4,802	Nil	-182	-91,738	-8,166	-43,850	-713	-8,506	-	-	-	-160,807
Variance to calculated generation %	-0.9%	-2.7%	Nil	-0.1%	-12.6%	-4.3%	-12.1%	-0.2%	-1.0%				-4.6%
Approximate revenue	£73,237	£41,323	£57,663	£73,743	£157,116	£43,866	£81,703	£94,692	£212,560				£835,903
Capacity factor (monthly)	25.6%	14.2%	20.3%	25.1%	52.8%	15.6%	26.4%	31.4%	68.0%				31.0%
Industry wide RoR capacity factor	43.5%	11.4%	20.8%	16.5%	47.0%	22.0%	27.7%	20.8%	62.1%				30.2%
FY 2023/4	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Actual generation kWh	240,542	57,453	111,100	374,109	360,348	431,554	434,771	406,551	667,311	502,737	582,749	241,042	4,410,267
Average generation since commissioning	247,605	424,386	286,501	165,261	174,610	297,736	672,489	693,043	368,179	594,556	547,677	298,520	4,770,561
Forecast generation (P50)	369,360	226,766	188,561	195,146	280,601	387,431	582,631	618,214	620,057	695,941	554,678	611,047	5,330,433
Actual relative to forecast	65.1%	25.3%	58.9%	191.7%	128.4%	111.4%	74.6%	65.8%	107.6%	72.2%	105.1%	39.4%	82.7%
Rainfall relative to 1991-2020 average	83%	45%	81%	152%	73%	145%	83%	74%	137%	81%	106%	92%	96%
Calculated generation kWh	243,307	59,162	112,194	377,850	418,162	438,789	445,408	428,068	672,901	536,047	620,238	250,456	4,602,582
Variance to calculated generation kWh	-2,765	-1,709	-1,094	-3,741	-57,814	-7,235	-10,637	-21,517	-5,590	-33,310	-37,489	-9,414	-192,315
Variance to calculated generation %	-1.1%	-2.9%	-1.0%	-1.0%	-13.8%	-1.6%	-2.4%	-5.0%	-0.8%	-6.2%	-6.0%	-3.8%	-4.2%
Approximate revenue	£18,747	£7,087	£14,675	£52,099	£50,104	£60,181	£148,850	£137,974	£227,701	£170,888	£205,490	£81,339	£1,182,212
Capacity factor (monthly)	20.6%	4.8%	9.5%	31.0%	29.9%	37.0%	36.1%	34.9%	55.4%	41.7%	53.5%	20.0%	31.2%
Industry wide RoR capacity factor	20.7%	5.7%	6.0%	27.5%	25.0%	36.0%	40.0%	45.0%	46.0%	43.3%	59.8%	37.2%	32.7%