



Barr River hydro scheme

Monthly report – May 2024

1 Summary

Generation behind the long term average on the back of low local rainfall.

2 Monthly generation & revenue

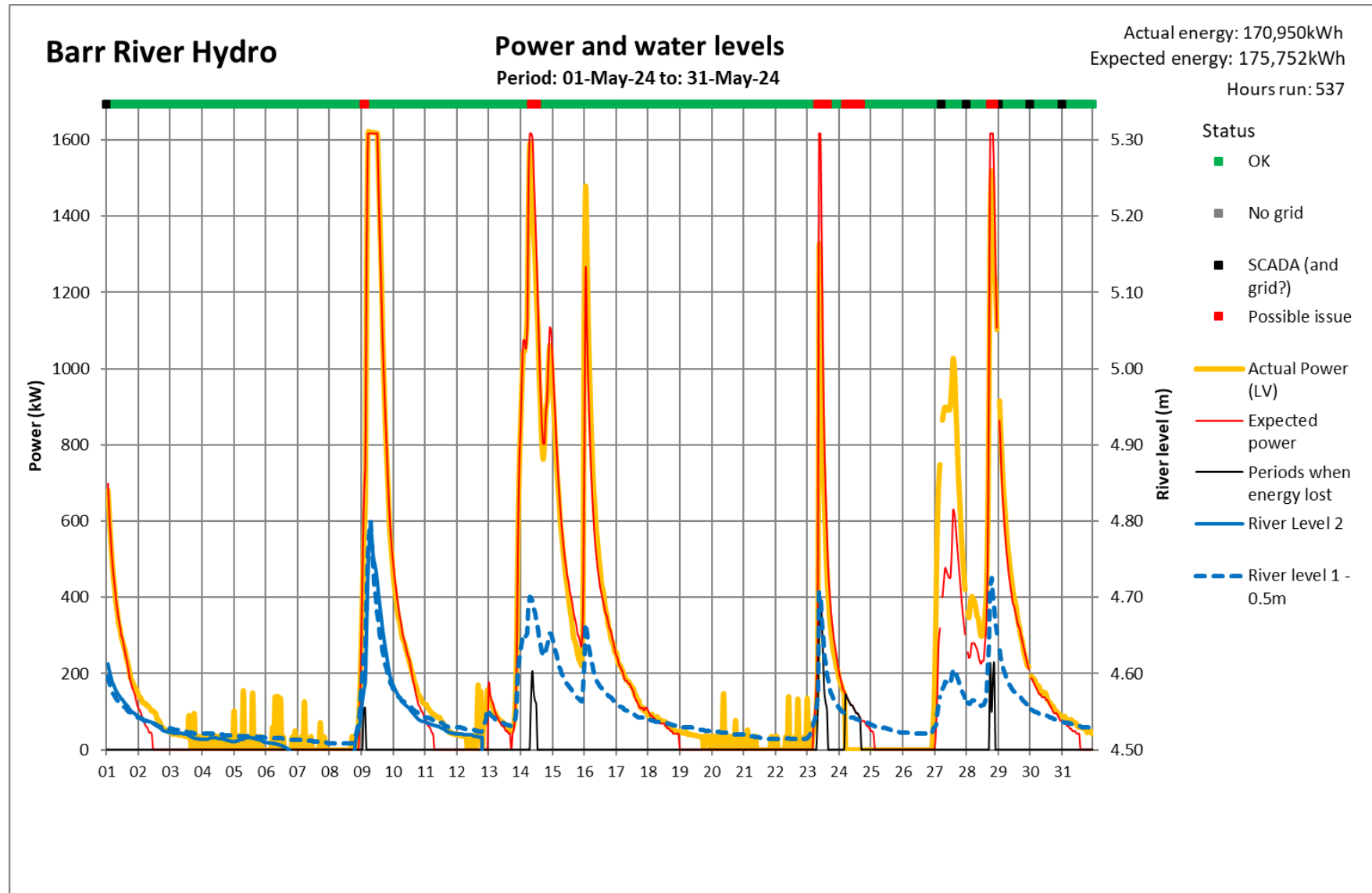
Parameter	Value
Actual generation (FIT meter), kWh	170,950
Average generation in month, kWh	240,920
Forecast generation in month (P50), kWh	226,766
Actual relative to forecast	75.4%
Rainfall relative to 1991-2020 average by month	102%
Calculated generation ¹ kWh	175,752
Actual relative to calculated generation, kWh	-4,802
Actual relative to calculated generation, %	-2.7%
Approximate revenue in month ²	£40,444

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	167,790
Variance to generation, kWh	-3,160
Variance to generation, %	-1.8%

3 System reporting



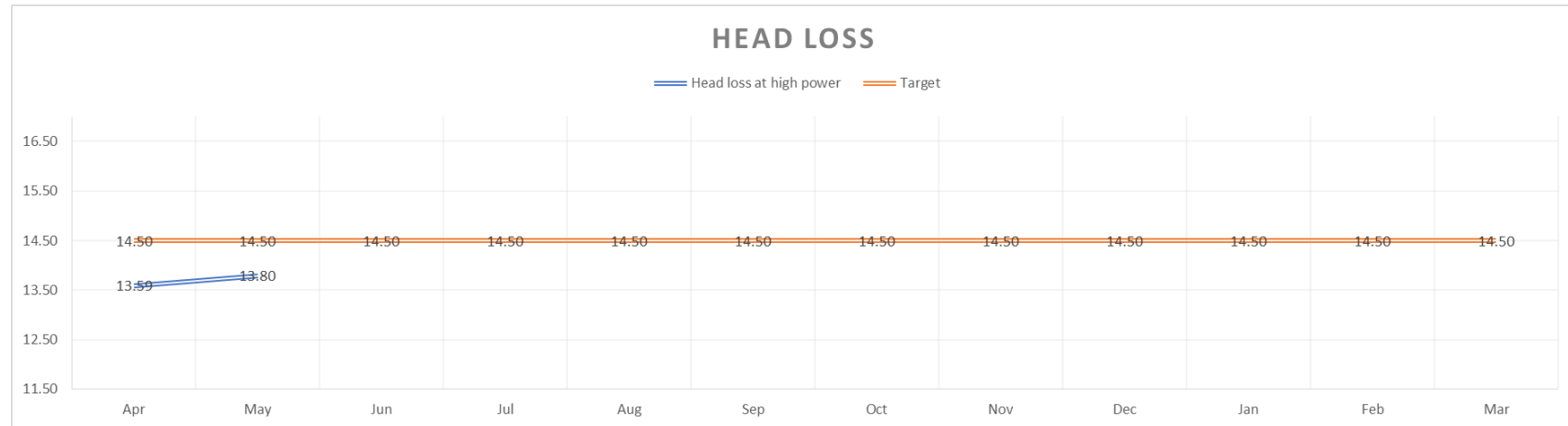
3.1 Scheme anomalies to calculated generation

Date/time	Details	Action required
12/5/24 19:30	Intake 2 river level sensor (RLS) lost due to lightning strike. Both RLSs are used in the calculation of expected power. The calculation is switched to RLS1 only from 13/5/24.	Recommend changing 0.5A fuses for intake 2 river & chamber sensor. Douglas did this, but the sensor requires replacement. Revert to dual RLS calculation once RLS2 restored.

3.2 Other system events

Date/time	Details	Action required
10/5/24	F156 Network Protection alarm. Turbine running well, did not shut down.	Discussed failure to shut down with Charlie Robb. Could be due to a fault causing the alarm but not persisting long enough to cause a trip. Monitor for further occurrences.
26/5/24	Generator breaker trip when the turbine was not running.	Required reset by Douglas.
27/5/24 05:00 & 00:00 subsequent days	Blank data return	It was noticed that there were periods of missing data at 0500 on 27/05 and then 0000 each day after this. This is thought to be in relation to some of the grid anomalies that we have seen and will be monitored for any further issues.
29/5/24	Alarms F156 Network protection (F1): dU F155 Network protection (F1): LOM F153 Network protection (F1): U	Email alert received for protection fault. Turbine did not shutdown. Possible cause of G99 alarm but no shutdown - Mainspro will signal when there is a fault condition but doesn't send a trip signal until the delay time has elapsed, so perhaps it was just a very short blip

3.3 Head loss



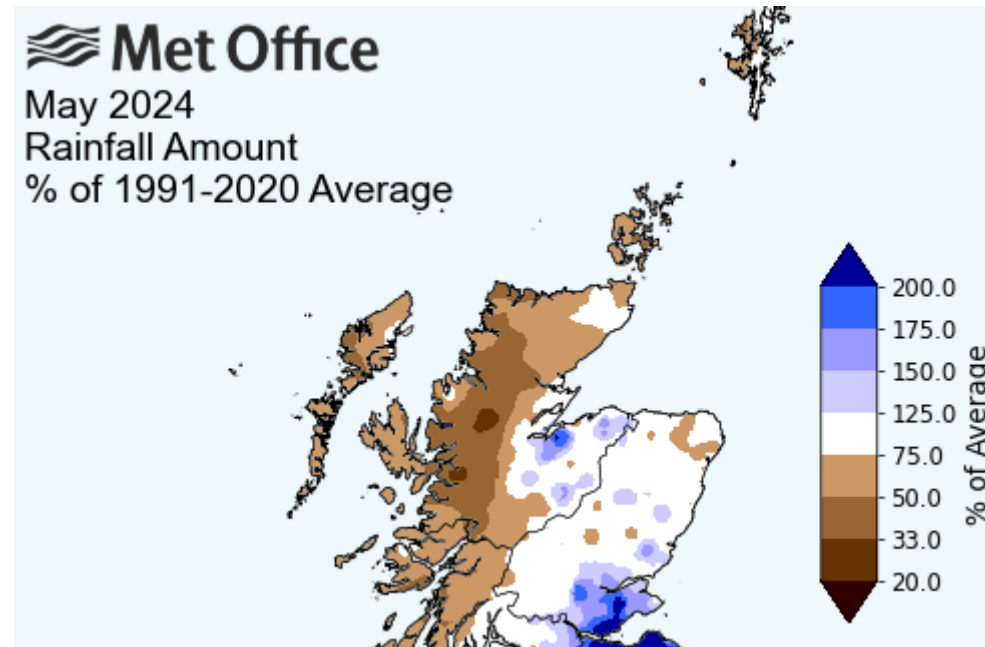
3.4 Temperatures

Parameter	Temperature at or near full power, °C	Alert level, °C	Parameter	Temperature at or near full power, °C	Alert level, °C
Generator DE bearing	35	85	Generator winding 1	64	145
Generator NDE bearing 1	42	85	Generator winding 2	61	145
Generator NDE bearing 2	44	85	Generator winding 3	65	145
Turbine room	20	30	Power cabinet (RG1)	29	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	0.43	3.0	Generator NDE	1.21	3.0

4 Rainfall



Rainfall this month (rain gauge), mm	82
Western Scotland rainfall in month with respect to 1991-2020 long term average	102%

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											298,851
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	244,074
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	369,360
Actual relative to forecast	80.9%	75.4%											80.9%
Rainfall relative to 1991-2020 average by month	174%	102%											174%
Calculated generation kWh	301,701	175,752											301,701
Variance to calculated generation kWh	-2,850	-4,802	-	-	-	-	-	-	-	-	-	-	-2,850
Variance to calculated generation %	-0.9%	-2.7%											-0.9%
Approximate revenue	£72,485	£40,444											£72,485
Capacity factor (monthly)	25.6%	14.2%											25.6%
Industry wide RoR capacity factor	43.5%												36.8%
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%

