



# Barr River hydro scheme

## Monthly report – January 2024

### 1 Summary

Slightly under the long-term average. Grid issues forced a shutdown for just over one day late in the month.

### 2 Monthly generation & revenue

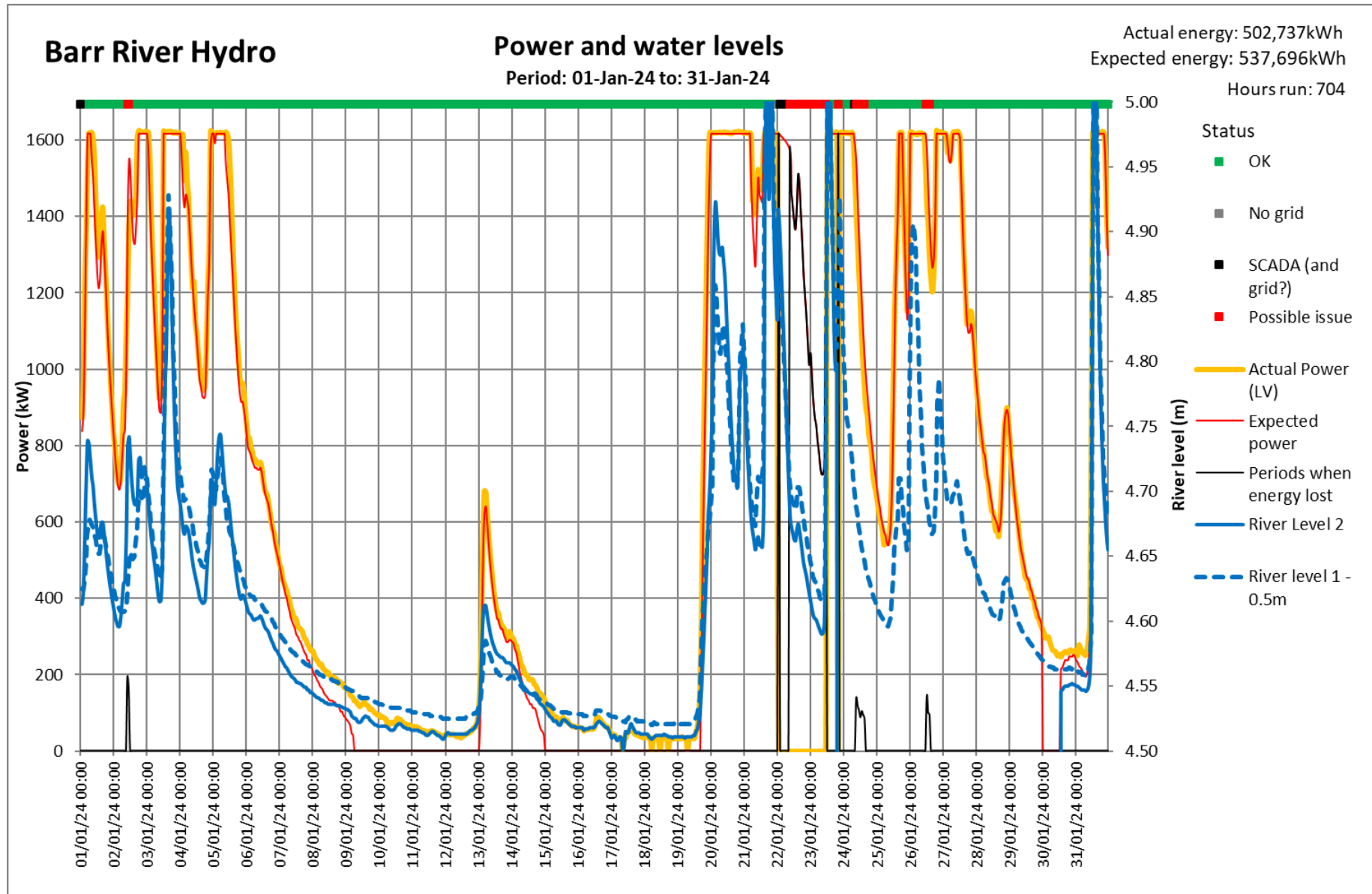
Parameter	Value
Actual generation (FIT meter), kWh	502,737
Average generation in month, kWh	594,556
Forecast generation in month (P50), kWh	695,941
Actual relative to forecast	72.2%
Rainfall relative to 1991-2020 average by month	81%
Calculated generation <sup>1</sup> kWh	536,047
Actual relative to calculated generation, kWh	-33,310
Actual relative to calculated generation, %	-6.2%
Approximate revenue in month <sup>2</sup>	£170,888

<sup>1</sup> Calculated generation is based on river level data and seeks to establish the expected generation with no performance issues.

<sup>2</sup> Export revenue based on reported export and estimated GDUoS charges.

Export meter	Value
Export, kWh	494,813
Variance to generation, kWh	-7,924
Variance to generation, %	-1.6%

### 3 System reporting



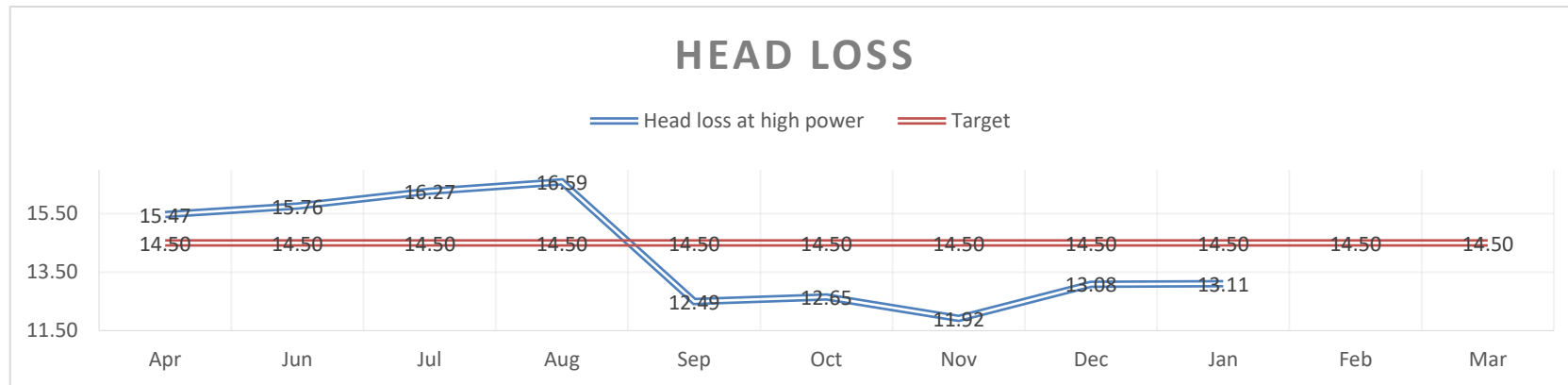
### 3.1 Scheme anomalies to calculated generation

Date/time	Details	Action required
22-23/01/2024	Grid failure. SSE requested turbine off to prevent auto restart before they have fully repaired the grid.	Turbine set to "automate off" to prevent auto restart, as per SSE request. Nick attended to reset generator breaker to allow restart once permitted by SSEN. 8.35am - John spoke to SEE, they are waiting approval from National Grid as they have had to reconfigure the distribution network to overcome the fault. 11am - SSE called to say the turbine can start. No issues noted on start-up. Turbine reached 1600kW.
23/1/2024	8pm - Nick noticed chamber 1 sensor had blown. But internet connection was poor so was unable to switch to river level 2 sensors & restart the turbine.	GHC logged in on-line, switched to sensor two and restarted the turbine.

### 3.2 Other system events

Date/time	Details	Action required
22/1/24	Douglas asked to swap out the data logger and send to Charlie. and to take photos of the trip alarms	
30/1/2024	Water level 2 river sensor appears to also be inoperable.	Contacted caretaker. Fuses replaced by Douglass on the afternoon of the 30th. All sensors back up and running.

### 3.3 Head loss



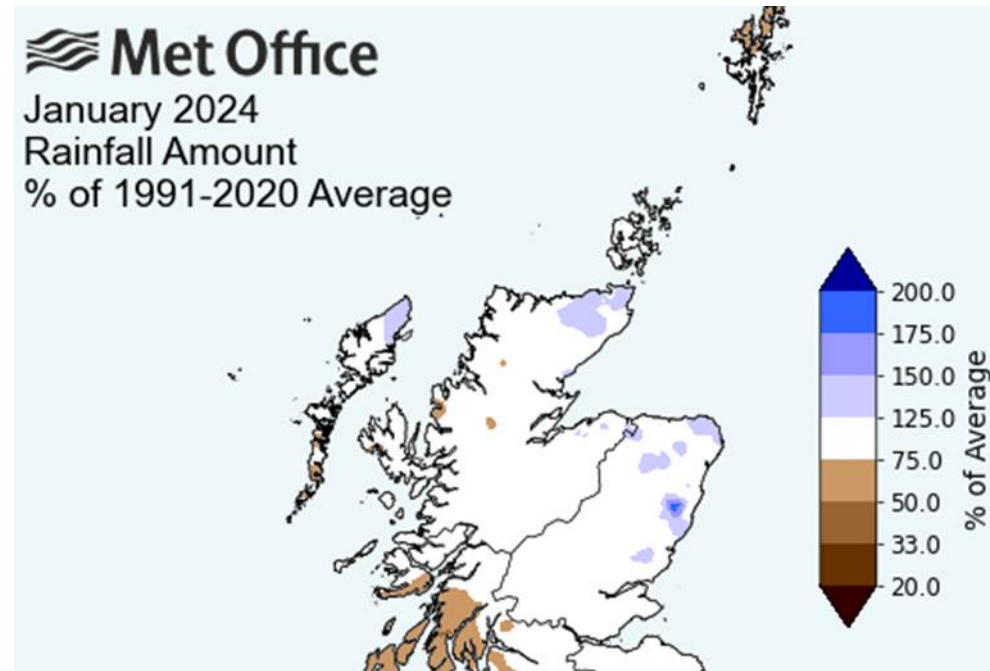
### 3.4 Temperatures

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	34	85	Generator winding 1	63	145
Generator NDE bearing 1	41	85	Generator winding 2	60	145
Generator NDE bearing 2	44	85	Generator winding 3	64	145
Turbine room	19	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	0.42	3.0	Generator NDE	1.21	3.0

## 4 Rainfall



Rainfall this month (rain gauge), mm	229
Western Scotland rainfall in month with respect to 1991-2020 long term average	81%

## 5 Scheme annual performance summary

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			3,586,476
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	3,924,364
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	4,164,708
Actual relative to forecast	65.1%	25.3%	58.9%	191.7%	128.4%	111.4%	74.6%	65.8%	107.6%	72.2%			86.1%
Rainfall relative to 1991-2020 average	83%	45%	81%	152%	73%	145%	83%	74%	137%	81%			95%
Calculated generation kWh	243,307	59,162	112,194	377,850	418,162	438,789	445,408	428,068	672,901	536,047			3,731,888
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	-	-	-145,412
Variance to calculated generation %	-1.1%	-2.9%	-1.0%	-1.0%	-13.8%	-1.6%	-2.4%	-5.0%	-0.8%	-6.2%			-3.9%
Approximate revenue	£18,747	£7,087	£14,675	£52,099	£50,104	£60,181	£148,850	£137,974	£227,701	£170,888			£895,383
Capacity factor (monthly)	20.6%	4.8%	9.5%	31.0%	29.9%	37.0%	36.1%	34.9%	55.4%	41.7%			30.1%
Industry wide RoR capacity factor	20.7%	5.7%	6.0%	27.5%	25.0%	36.0%	40.0%	45.0%					25.7%
FY 2022/3	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	YTD
Actual generation kWh	247,605	424,386	286,501	329,058	257,505	238,578	692,787	709,873	223,709	633,347	447,449	356,352	4,847,150
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	67.0%	187.1%	151.9%	168.6%	91.8%	61.6%	118.9%	114.8%	36.1%	91.0%	80.7%	58.3%	90.9%
Rainfall relative to 1991-2020 average	77%	126%	104%	74%	65%	93%	134%	112%	89%	104%	56%	118%	96%
Calculated generation kWh	253,540	432,296	294,437	330,341	257,587	239,724	700,013	748,966	295,507	639,670	459,640	358,262	5,009,984
Variance to calculated generation kWh	-5,935	-7,910	-7,936	-1,283	-82	-1,146	-7,226	-39,093	-71,798	-6,323	-12,191	-1,910	-162,834
Variance to calculated generation %	-2.3%	-1.8%	-2.7%	-0.4%	-0.0%	-0.5%	-1.0%	-5.2%	-24.3%	-1.0%	-2.7%	-0.5%	-3.3%
Approximate revenue <sup>1</sup>	£28,994	£50,244	£33,677	£38,789	£30,177	£27,894	£108,061	£111,476	£34,832	£44,660	£31,298	£52,804	£669,447
Capacity factor (monthly)	20.5%	39.0%	23.8%	28.2%	21.4%	20.5%	57.5%	60.9%	18.6%	52.5%	41.1%	29.6%	34.2%
Industry wide RoR capacity factor	19.4%	34.6%	18.3%	15.5%	15.5%	11.9%	55.8%	59.0%	32.6%	58.8%	50.2%	30.9%	33.5%

<sup>1</sup>Export element of revenue updated to reflect actual export and rate.

