



# Barr River hydro scheme

## Monthly report – June 2023

### 1 Summary

Another very dry month with no generation until the 23rd. No significant operational issues.

### 2 Monthly generation & revenue

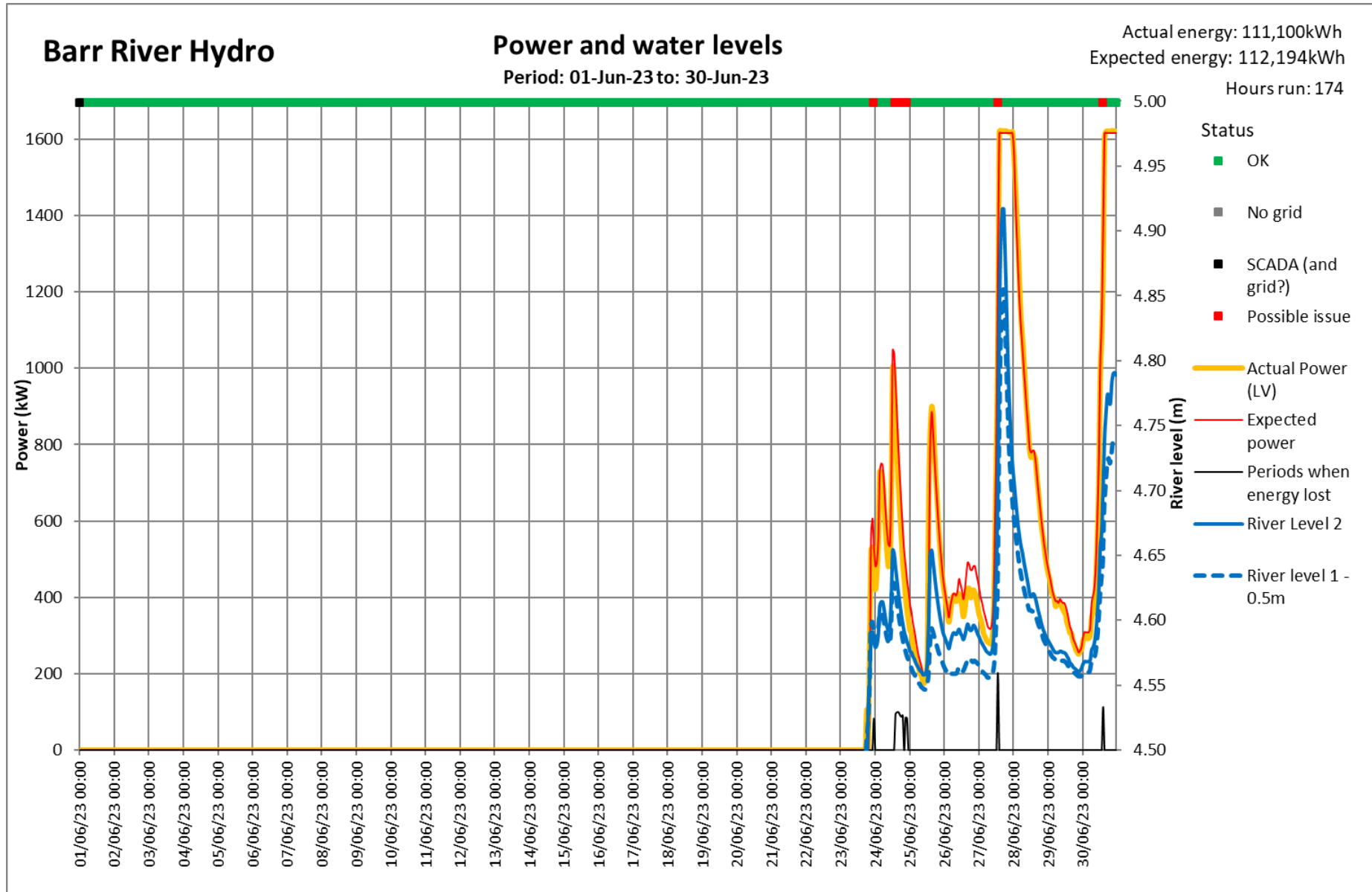
Parameter	Value
Actual generation (FIT meter), kWh	111,100
Average generation in month, kWh	286,501
Forecast generation in month (P50), kWh	188,561
Actual relative to forecast	58.9%
Rainfall relative to 1991-2020 average by month	81%
Calculated generation <sup>1</sup> kWh	112,194
Actual relative to calculated generation, kWh	-1,094
Actual relative to calculated generation, %	-1.0%
Approximate revenue in month <sup>2</sup>	£14,941

<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	109,733
Variance to generation, kWh	-1,367
Variance to generation, %	-1.2%

### 3 System reporting



### 3.1 Scheme anomalies to calculated generation

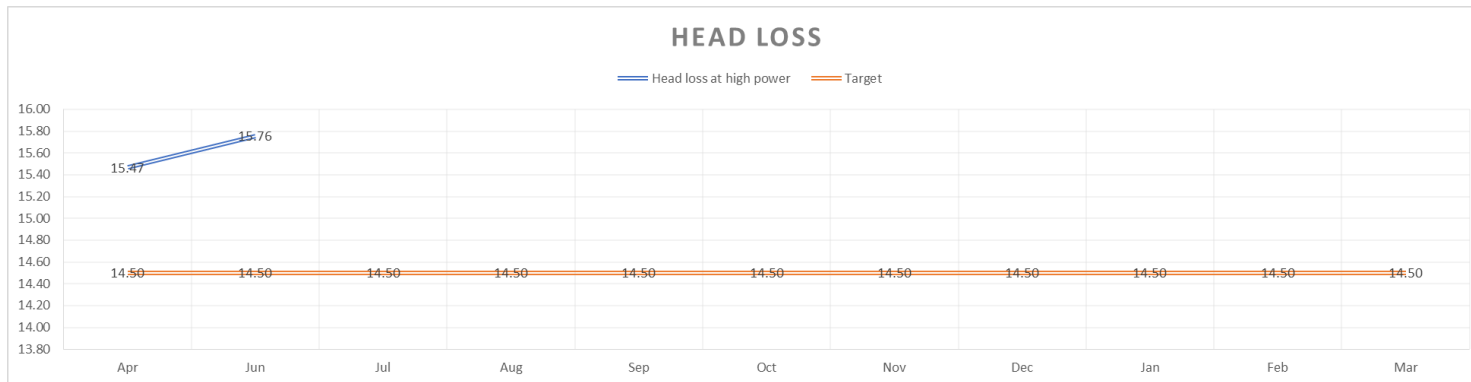
Date/time	Details	Action required
Throughout month	Nil generation until 23 <sup>rd</sup> then operation matching expectations.	

### 3.2 Other system events

Date/time	Details	Action required
None		

### 3.3 Head loss

Target head loss at full power	Current head loss at full power	Status
14.5m	15.76m	Limited data points due to limited operation.



### 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	39	85	Generator winding 1	68	145
Generator NDE bearing 1	46	85	Generator winding 2	65	145
Generator NDE bearing 2	50	85	Generator winding 3	69	145
Turbine room	24	30	Power cabinet (RG1)	31	42

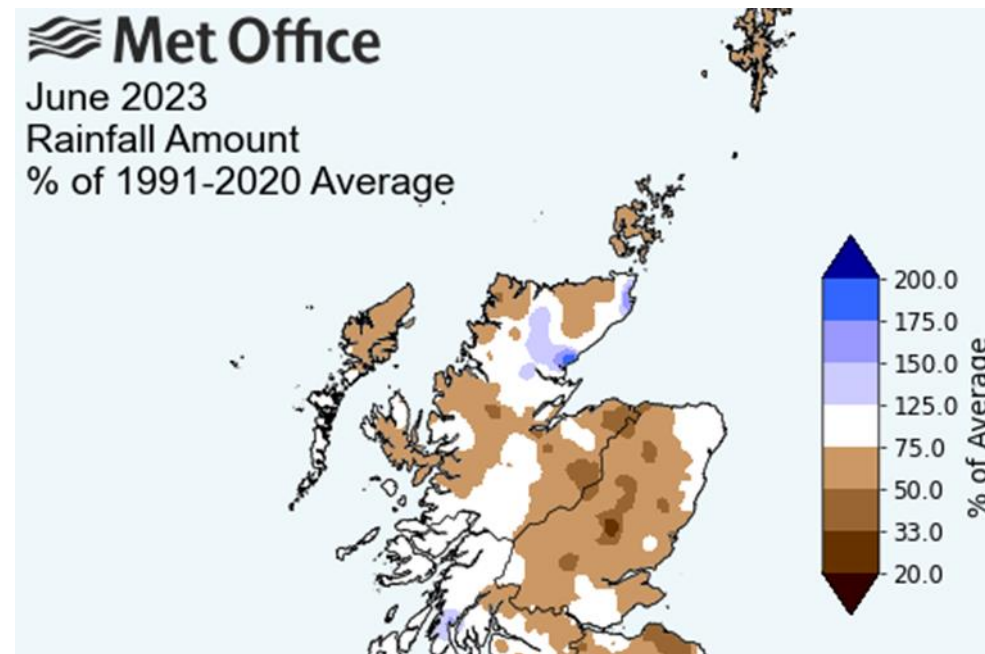
### 3.5 Vibration

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	1.22	3.0

### 3.6 Recommended and ongoing actions

Action	Responsibility	Status
Install power quality monitoring equipment at grid connection to address grid trips affecting the generator breaker and requiring a site visit.	GHC	SSEN have confirmed that the logging period has concluded. After much chasing, SSEN have retrieved the data logger. However, it does not include all of the required data. GHC are still in discussion with SSEN regarding what can be learned from the data available and obtaining more data. It seems that they can only capture 2 weeks of data at a time...
Fire extinguisher testing	MorVolts	This has been completed.
Chase SSE for details of planned outage in 2024	GHC	RH has had one high level meeting with SSE regarding this. GHC continue to keep up the pressure on SSEN to try to reduce this outage.
Housekeeping in turbine house	MorVolts	Spares to be arranged on shelves/in cupboard. Underway.
Spares stock to be reviewed	Morvolts/GHC	CINK asked to review spares list and advise if any other spares recommended – CINK chased, no response yet. Morvolts to check current spares inventory. Transformer breaker spares requirement to be checked by RB Switchgear on next attendance (note – will require HV isolation and therefore AP attendance).
Maintenance schedule and training to be reviewed	GHC	GHC have propose a simplified maintenance schedule. This will be discussed with Morvolts on site at the annual visit.
Arrangements to be established with Colin Thwaites for HV switching/isolation	Morvolts	MorVolts to confirm that Colin has been appointed as AP. Padlocks to be changed to Colin's locks.
Chase up export payment for late January and early February when scheme was generating but no export recorded.	Morvolts	Raised with EDF and SCADA data provided. Chased again by GHC 21/6/23 and followed up 19/7/23.
Missing data from March export statement	GHC	Should be automatically updated but raised with EDF and SCADA supplied. Chased 31/6/2023.

## 4 Rainfall



Rainfall this month (rain gauge), mm	98
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										409,095
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	958,492
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	784,687
Actual relative to forecast	65.1%	25.3%	58.9%										52.1%
Rainfall relative to 1991-2020 average	83%	45%	81%										70%
Calculated generation kWh	243,307	59,162	112,194										414,663
Variance to calculated generation kWh	-2,765	-1,709	-1,094	-	-	-	-	-	-	-	-	-	-5,568
Variance to calculated generation %	-1.1%	-2.9%	-1.0%										-1.3%
Approximate revenue	£18,747	£7,087	£14,675										£55,224
Capacity factor (monthly)	20.6%	4.8%	9.5%										11.6%
Industry wide RoR capacity factor													
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.

