



# Barr River hydro scheme

## Monthly report – February 2022

### 1 Summary

February was a relatively wet month and the scheme responded well. The replacement SCADA PC has been more stable, but not perfect, with one reboot required in the middle of the month.

### 2 Monthly generation & revenue

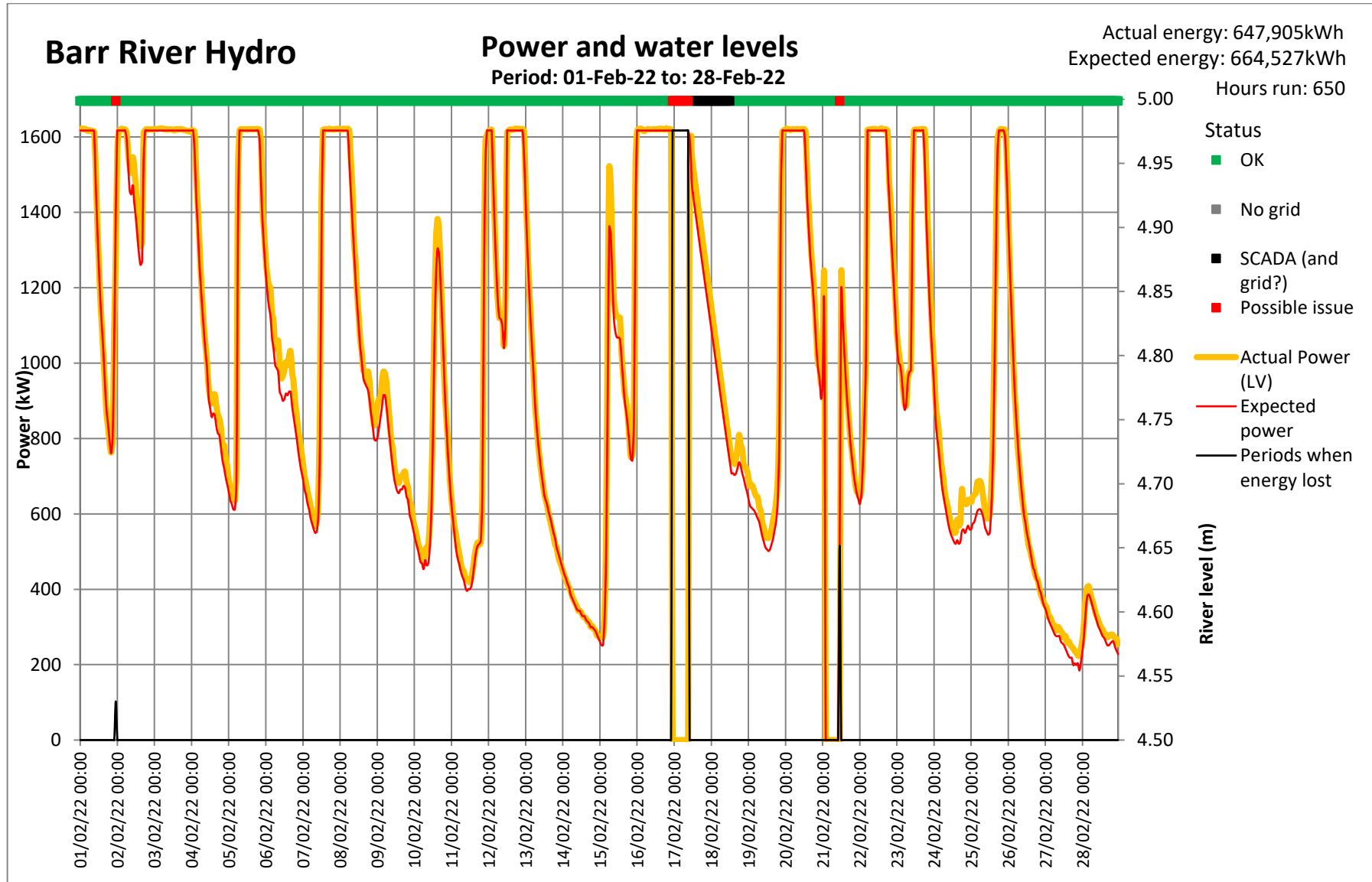
Parameter	Value
Actual generation (FIT meter), kWh	647,905
Average generation in month, kWh	647,905
Forecast generation in month (P50), kWh	554,678
Actual relative to forecast	116.8%
Rainfall relative to 1991-2020 average by month	163%
Calculated generation <sup>1</sup> kWh	664,527
Actual relative to calculated generation, kWh	-16,622
Actual relative to calculated generation, %	-2.5%
Approximate revenue in month <sup>2</sup>	£84,255

<sup>1</sup> Calculated generation is based on river level data and seeks to establish the expected generation with no performance issues. The expected power and energy calculations are being calibrated and will be refined over the coming months as more data is gathered.

<sup>2</sup> Export revenue based on generated output and estimated export rate.

Export meter	Value
Export, kWh	622,477
Variance to generation, kWh	- 25,428
Variance to generation, %	-3.9%

### 3 System reporting



### 3.1 Scheme anomalies to calculated generation

Date/time	Details	Action required
1/2/2022 23:00	River 2 level increased much faster than river 1, chamber 2 spilling as a result for approximately 1 hour until full power reached.	None.
16/02/2022	Grid trip, generator breaker tripped.	Breaker reset by Nick. John to engage with SSEN re: power quality monitoring.
17/02/2022	SCADA crash, reset by NT on 18/2	Restarted by Nick on 18/2/22.
21/02/2022	Intake 1 and 2 sensors failed at 01:02, intake 3 at 01:51. Big thunderstorm overnight. Fuses blown, replaced, plant restarted at 11:00.	Angus and Nick attended to replace fuses. Angus/Nick to order more fuses.
24/02/2022	Grid trip, automatically restarted	None

### 3.2 Other system events

Date/time	Details	Action required
16/02/2022	High reactive energy alarm, generator automatically reconnected.	None

### 3.3 Head loss

Target head loss at full power	Current head loss at full power	Status
14.5m	13.00m	Marginal increase from previous month. Better than specified (as expected for a new pipeline).

### 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	33	85	Generator winding 1	62	145
Generator NDE bearing 1	37	85	Generator winding 2	60	145
Generator NDE bearing 2	40	85	Generator winding 3	64	145
Turbine room	19	30	Power cabinet (RG1)	31	42

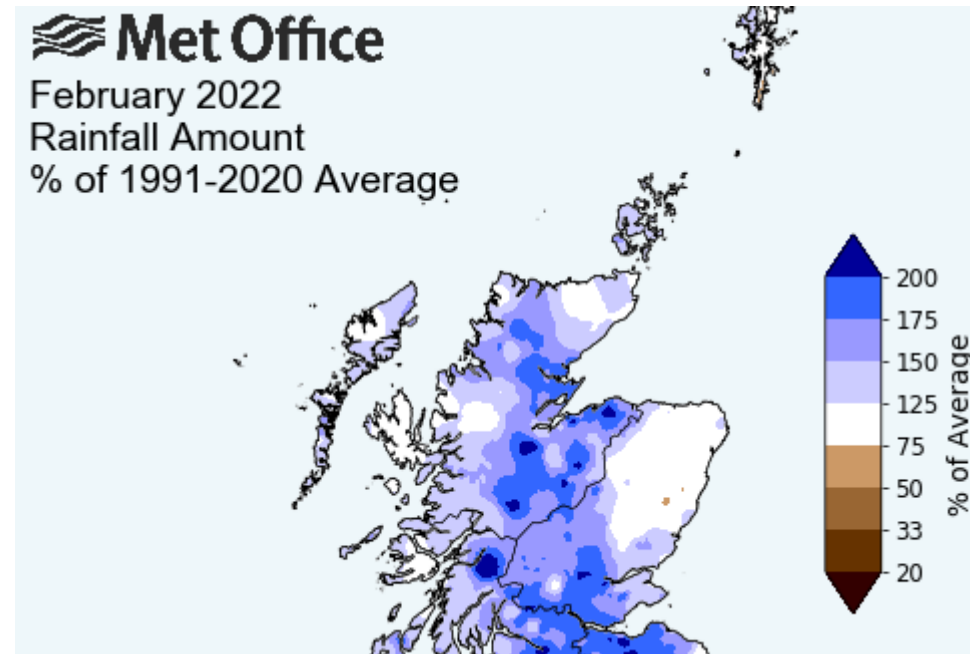
### 3.5 Vibration

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	0.41	3.0	Generator NDE	1.20	3.0

#### 4 Recommended and ongoing actions

Action	Responsibility	Status
Fuses to be labelled clearly in X91 (signal cable junction box in powerhouse)	MorVolts	Ongoing
Check chamber 2 level sensor calibration to confirm spill level	GHC	As built survey data received from DAM. Intake levels confirmed to be very close to design levels. Spill levels observed on SCADA are therefore correct.
More fuses to be ordered	MorVolts	Ongoing

## 5 Rainfall



Rainfall this month (rain gauge), mm	239
Western Scotland rainfall in month with respect to 1991-2020 long term average	163%

## 6 Scheme annual performance summary

2022	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Actual generation kWh	555,764	647,905											555,764
Average generation since commissioning	555,764	647,905					1,463	91,714	356,893	652,190	676,213	514,099	555,764
Forecast generation (P50)	695,941	554,678	611,047	369,360	226,766	188,561	195,146	280,601	387,431	582,631	618,214	620,057	695,941
Actual relative to forecast	79.9%	116.8%											79.9%
Rainfall relative to 1991-2020 average	58.0%	163%											8.3%
Calculated generation kWh	494,286	664,527											494,286
Variance to calculated generation kWh	61,478	-16,622	-	-	-	-	-	-	-	-	-	-	61,478
Variance to calculated generation %	+12.4%	-2.5%											+12.4%
Approximate revenue	£72,273	£84,255											£72,273
Capacity factor (monthly)	46.1%	59.5%											46.1%
Industry wide RoR capacity factor	52.2%												#DIV/0!

