ROMNEY HYDRO ELECTRIC PROJECT – COMMISSIONING REPORT AMENDED TO REFLECT COMPLIANCE VISIT 20.6.2013

Compliance with Impoundment Licence no. TH/039/0027/004 dated 02.02.2012

The table below addresses all of the licence conditions with an outline of the condition, how it is satisfied, any necessary actions and space for EA comments.

Clause or paragraph ref.	Requirement/effect	RHPC comment	Action required	EA comment	Site visit notes	Compliant
3.1	Impounding works to be constructed in accordance with "Layout of Equipment Romney Weir Hydro Electric Project [redacted]"	Scheme has been constructed in accordance with the referenced document.	None			Yes
4.2 (i) & (ii)	Maximum flow through hydro system to be 25 cumecs. Flow to be measured by control panel and made available to EA via telemetry system	The flow through each screw is computed by measurement of head and tail water levels, trough inclination and rotation speed. The results are reported to the EA via the telemetry system. A real time reading of the flow value is available on the "Lock Keeper Page" [redacted]	None	What is the actual flow through the turbine, is it 12.5 cumecs or some figure below this?	Maximum achievable flow through each turbine is 11.2 cumecs. Display page shown in control room.	Yes Yes
4.2 (iii) & (iv):	RHPC to agree method of connection to telemetry system with EA. No generation until connection to telemetry	Connection to EA telemetry has been agreed and is active. Operating data is reported at 2 hour intervals with 15 minutes resolution. The metrics	None	Data being received and is viewable on SETEL. Minor work required on SETEL to finalise display and publish to users.	Demonstrated on site. Data being received at 2 hour intervals for 15 minute readings.	Yes

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	system made to EA satisfaction	reported are: Date Time Upstream level (mAOD) Downstream level (mAOD) Turbine 1 flow (cumecs) Turbine 2 flow (cumecs) Total flow (cumecs) Control gate angle (°)				
4.3 (i)	No generation to take place until a 300mm aperture screen has been installed.	300mm aperture screen has been installed.	None		Apertures more like 290mm due to welding and installation but average 300mm.	Yes
4.4(i)	No generation to take place until bumpers have been fitted to leading edges.	Bumpers have been fitted to leading edges.	None	Please could specification of the bumpers be sent in to the EA for our records.	Bumpers in place.	Yes
4.5	Leading edges of blades not to overhang trough by more than 3mm	The blades do not overhang the trough (incl. trough extensions)	None	Trough extensions were required to satisfy this condition. Now accepted.	Shown on site. Danni took photos and Tim Spring/Mann Power to forward further photos as evidence.	Yes
4.6	Maximum blade tip speed to be 4.65m/s (equates to 22.2rpm with screw dia. 4.0m)	Maximum permitted rotation speed has been programmed and can be demonstrated. Screw rotation speed is reported on the lock keeper page	Add screw rotation speed to lock keeper page		Rotation speed is fixed and cannot be breached. Not viewable with main data but will be added so that is it can be demonstrated on control system.	Yes
4.7	System must shut down automatically on electrical or mechanical failure.	Programmed and can be demonstrated (G59/2 test certificate was issued 06.02.2013)	None		Tried and tested as part of commissioning. Steve Naylor has witnessed on site.	Yes

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4.8	Stipulates that licence will expire on 28.10.11 if Operating Agreement is not in place.	To be amended/deleted	EA to accept/acknowledge		Operating agreement yet to be signed. Some slight amendments recommended in commissioning report. Agreed with Steve Naylor that pragmatic approach can be taken and the scheme can begin generating according to conditions set out in the draft OA.	Yes
4.9	Minimum head water level for operation 18.30m AOD	This condition is programmed in the control system and can be demonstrated.	None		Demonstrated on control system. Fixed so cannot be breached.	Yes
4.10	Minimum head water level 18.30m to be maintained	This condition is programmed in the control system and can be demonstrated.	None		Demonstrated on control system. Fixed so cannot be breached.	Yes
4.11(i) (ii) & (iii)	Levels required by paras 4.9 and 4.10 will be measured by a level sensor and a gauge post.	Level sensor and gauge board have been installed.	None		Demonstrated on site. Both present. Number '18' needs to be put on gauge board as recently stolen by children playing in river. Level sensor in locked stilling well on lock side of island.	Yes
4.11(iv)	(a) Requires sensor and gauge post to measure "Standard Head Water Level". (b) calibration certificate to be available	To be amended to "water level" Calibration certificate is available	EA to accept/acknowledge		Change to reflect mAOD rather than SHWL as this is what is measured and reported. Minor variation required; forms WR2 sent. Calibration certificate to be sent through as proof.	Yes
4.12	Specifies the elements	It is noted that the	EA to initiate action	EA has no control on Castle	KS & DGR recommend that	Yes

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	of “Reserve Flow” as: flow over weir gate flow down fish pass, eel pass and spill way flow through Eton Penstocks flow through Castle Waterworks Penstocks	current flow through the Castle Waterworks Penstock is substantial and in some conditions may limit generation capacity.	to reduce the Castle Waterworks flow.	Waterworks flow. Assumption made on flow through channel to calculate HoF. Flow has been reduced by operator due to complaints from boat yard.	dialogue with parties d/s of Castle works is kept open and situation is monitored. Undesired high flows may be due to high flows over last year. One year of monitoring advised.	
4.13 & 4.14	Minimum "Reserve Flow" of 7.25 cumecs determined “as a rolling average over a period specified in the Operating Agreement specified in Condition 4.8”	Readings from the Windsor Park and Taplow gauges are not available in real time. The level sensor required by para 4.11 provides the decisive input that regulates system start-up and shut-down. The starting level of 18.30m AOD (7” above SHWL) is a reliable proxy for minimum flow condition – i.e. it is not possible in practice to maintain upstream level of 18.30m AOD without also maintaining at least 7.25 cumecs reserve flow.	EA to accept/acknowledge	Flow readings are provided every 2 hours. RHPC will include reserve flow calculation in monthly reports.	Demonstrated on control system. Controlled by level sensor which operates by using a proxy to ensure reserve flow is met. The reserve is then verified using the telemetry data received every 2 hours.	Yes
4.15(i)	Reserve flow will be measured as: river flow at Windsor Gauging Station minus River Flow at Taplow Gauging Station minus total turbine flow".	River flow data for Windsor and Taplow is being sent by EA via telemetry link and hydro flow data is being returned.	EA to advise email address for		Telemetry data send/receive demonstrated on control system. Report should be in simple format to demonstrate compliance with HOL and HOF.	Yes

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		RHPC will produce reserve flow analysis in the monthly report (see para. 4.19)	recipient(s)		Graphs with appended data. Generation spreadsheet to be forwarded. [redacted]	
4.15 (ii), (iii) & (iv)	RHPC to take a feed from EA telemetry system to obtain the river flow data. Method of connection to be agreed. No generation until connection is made	Connection to EA telemetry has been agreed and is active.	None		Demonstrated on site. Automatic back dating of data if connection lost.	Yes
4.16	Fish pass to be installed to EA satisfaction	EA approved fish pass has been installed. EA comments/reservations arising from previous inspection have been addressed	None	Improvements have been made to reach the design. However, visit by DCD noted that there was a leak. If not done so already, this requires mending to achieve full compliance.	Darryl Clifton-Dey confirmed happy with site visit.	Yes
4.17	Eel pass to be installed to EA satisfaction	EA approved type of eel pass has been installed	None		Darryl Clifton-Dey confirmed happy with site visit.	Yes
4.18 (ii)	On site log book to be provided	Log book has been provided	None		Log book not present but ordered. Due for delivery in next week.	Yes
4.19	RHPC to collect water level and reserve flow data and report monthly	Control system will record level and flow data with one minute resolution. The computer files will be stored on site media for >3 months and also	EA to advise email address for recipient(s)		See Condition 4.15 above	Yes

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		downloaded at least weekly for remote storage.				
4.21	Hydropower scheme construction to be in accordance with various EA standards.	Scheme design was reviewed and approved by EA's independent design check engineer	None		Steve Naylor confirmed completed by Halcrow. Copy of certificate requested for file.	Yes
4.22	Boom must be installed before generation commences	Boom has been installed	None		Boom of good quality and in place.	Yes
4.24	RHPC to confirm that hydropower scheme has been constructed in accordance with submitted specifications and plans	RHPC so confirms. See certificate/letter issued by Cobalt PM	None		Certificates received prior to site visit.	Yes