

Ref 5.8B.2

Schedule of Works Anticipated for AMP7

September 2018

Dam Safety - AMP7 / PR19 Forward Capital Programme

Methodology

Background

In light of adopted the PRA / RARS methodology, and moving to a more proactive investment plan we have pulled together all available information and sought to;

Firstly - identify the quantum of works required at each site; using S10 Reports, Output from AMP6 Pipes in Dams studies, hydraulic studies and anecdotal / reference information from the Area Engineers

Secondly - review the sequence of works based on when the S10 was either carried out, placing a statutory timeframe for works to be undertaken, or forthcoming date of the next S10

Thirdly - sequence of works based on water resource availability and supply resilience whereby if work is being undertaken on a reservoir that source of water will not be fully available

This approach addresses requirements for works on our Impounding Reservoirs. There is a smaller element of works needed on our Service Reservoirs which also fall under the Reservoir Act requirements. However, the scale and scope is far less.

The overall Activity Matrix will be a live document used to inform strategic planning and scheduling of capital works. It will be regularly reviewed as more information comes available.

Unit costs have been assumed for main elements of work, based on reference to recent works, and benchmarking back with our UCD system

Delivery Programme

The delivery programme is based on the following assumptions

Investigations - will occur 1 year before construction works commence, allowing for an intervening design period prior to mobilisation.

Construction works - are split across 2 construction seasons. Costs are split evenly across the 2 years. (It is appreciated that some aspects will be delivered within 1 season, however, across the portfolio it is assumed these costs average out.)

Discontinuance - There are some sites where we (Dam Safety) are suggesting "discontinuance" due to the level of maintenance required.

These are typically small sites which provide a limited amount of storage potential. Further discussions and investigations will be needed with the wider Business to determine if this is a viable option. For investment planning purposes we have assumed that not all sites will be discontinued and that works will therefore be needed.

Using the output of the matrix, the proposed PR19 / AMP7 delivery programme has been determined and transferred across to the investment case.

Dam Safety - Impounding Reservoirs Capital Plan

(filtered to AMP7 delivery)

Dam / Reservoir	SPILLWAYS		PIPEWORK			VALVES		TOWERS		TUNNELS	DIS-CONTINUE	DAM STABILITY			ACCESS ROADS
	Spillway Replacement	Spillway Refurbishment	Pipework Replacement-Same size	Pipework Replacement-Upsized to increase drawdown	Pipework Refurbishment	Valve replacement Same size	Valve Replacement-Upsized to increase drawdown	Tower Accesss	Tower refurbishment	Tunnel Rehabilitation	Discontinuance	Grouting	Ground/rock anchoring	Additional bulk on downstream	Repair and refurbishment of the dam safety access routes to the dam and reservoir.
Alaw	No	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No
Alwen	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Anafon	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No
Blaen-Y-Cwm	Yes	No	Yes	No	No	Yes	No	No	Yes	No	No	No	No	No	No
Canaston Bridge	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Cantref	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No
Castell Nos	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No	No	No	Yes	No
Celyn	Yes	No	No	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No
Cilcain 1	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No
Clydach	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No	No
Cwm Dulyn	No	No	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No
Cwmwrnderi	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Grwyne Fawr	No	Yes	Yes	No	No	Yes	No	No	No	No	No	No	No	No	No
Llandegfedd	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	Yes	No
Lluest Wen	Yes	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No
Llwyn-On	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

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Llyn Aled Isaf	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	No	No	No
Llyn y Fan Fach	No	Yes	Yes	No	No	Yes	No	Yes	Yes	No	No	No	No	No	No
Llys y Fran	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Lower Neuadd	Yes	No	Yes	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Yes	No
Marchlyn Bach	No	Yes	No	No	No	No	No	No	No	No	No	Yes	No	No	No
Pond y Gwaith	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Rhymney Bridge No 1	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No
Rosebush	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No
Upper Lliw	Yes	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Upper Neuadd	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Wentwood	Yes	No	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	No
Ynys y Fro Upper	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No
Ystradfellte	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	No	No

Dam Safety - Impounding Reservoirs Capital Plan

(filtered to AMP7 delivery)

Dam / Reservoir	STUDIES / INVESTIGATIONS					OTHER		Site Totals £M	Investigation needed	Expected Delivery Date	Cost per year						
	Flood Study	Leakage investgations	Emergency Drawdown study	Structural Stability, including geotechnical investigations	Other	Under Drainage Clearance /Refurbishment	Building Refurbishment				AMP6 YR5	AMP7 YR1	AMP7 Yr2	AMP7 YR3	AMP7 YR4	AMP7 YR5	AMP8 Yr1
Alaw	Yes	No	Yes	Yes	No	No	No	£2.0	Yes	2022	0.00	0.06	0.96	0.96	0.00	0.00	0.00
Alwen	No	No	No	No	Yes	No	No	£4.4	Yes	2021	0.05	2.15	2.15	0.00	0.00	0.00	0.00
Anafon	No	No	No	No	No	No	No	£3.2		2024	0.00	0.00	0.00	0.00	1.59	1.59	0.00
Blaen-Y-Cwm	No	No	No	Yes	Yes	No	No	£5.6	Yes	2022	0.00	0.08	2.76	2.76	0.00	0.00	0.00
Canaston Bridge	No	No	Yes	Yes	Yes	No	No	£0.1	Yes	2023	0.00	0.00	0.10	0.00	0.00	0.00	0.00
Cantref	No	No	No	Yes	No	No	No	£1.6	Yes	2025	0.00	0.00	0.00	0.00	0.03	0.80	0.80
Castell Nos	No	No	No	No	No	No	No	£3.5		2021	0.00	1.75	1.75	0.00	0.00	0.00	0.00
Celyn	No	No	No	No	Yes	No	No	£15.4	Yes	2023	0.00	0.00	0.05	7.68	7.68	0.00	0.00
Cilcain 1	Yes	Yes	Yes	Yes	No	No	No	£1.7	Yes	2024	0.00	0.00	0.00	0.12	0.80	0.80	0.00
Clydach	No	No	No	No	No	No	No	£2.1		2025	0.00	0.00	0.00	0.00	0.00	1.06	1.06
Cwm Dulyn	No	No	Yes	No	No	No	No	£1.1	Yes	2025	0.00	0.00	0.00	0.00	0.02	0.56	0.56
Cwmwernderi	Yes	Yes	No	Yes	No	No	No	£9.2	Yes	2021	0.10	4.54	4.54	0.00	0.00	0.00	0.00
Grwyne Fawr	Yes	No	No	Yes	Yes	No	No	£2.4	Yes	2024	0.00	0.00	0.00	0.10	1.17	1.17	0.00
Llandegfedd	No	No	No	Yes	No	No	No	£4.3	Yes	2024	0.00	0.00	0.00	0.03	2.15	2.15	0.00
Lluest Wen	No	No	No	Yes	Yes	No	No	£4.6	Yes	2021	0.08	2.26	2.26	0.00	0.00	0.00	0.00
Llwyn-On	No	No	No	Yes	No	No	No	£0.0	Yes	2024	0.00	0.00	0.00	0.03	0.00	0.00	0.00

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	Flood Study	Leakage investgations	Emergency Drawdown study	Structural Stability, including geotechnical investigations	Other	Under Drainage Clearance /Refurbishment	Building Refurbishment				2019	2020	2021	2022	2023	2024	2025
											AMP6 YR5	AMP7 YR1	AMP7 Yr2	AMP7 YR3	AMP7 YR4	AMP7 YR5	AMP8 Yr1
Llyn Aled Isaf	No	No	No	No	No	No	No	£3.5		2023	0.00	0.00	0.00	1.75	1.75	0.00	0.00
Llyn y Fan Fach	No	No	No	Yes	No	No	No	£4.0	Yes	2022	0.00	0.03	1.96	1.96	0.00	0.00	0.00
Llys y Fran	Yes	No	No	No	No	No	No	£0.0	Yes	2022	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Lower Neaudd	No	Yes	No	Yes	Yes	No	No	£7.8	Yes	2021	0.14	3.82	3.82	0.00	0.00	0.00	0.00
Marchlyn Bach	Yes	No	No	No	No	No	No	£2.4	Yes	2024	0.00	0.00	0.00	0.02	1.19	1.19	0.00
Pond y Gwaith	No	Yes	Yes	Yes	Yes	No	No	£0.2	Yes	2024	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Rhymney Bridge No 1	Yes	No	No	No	No	No	No	£1.6	Yes	2022	0.00	0.02	0.80	0.80	0.00	0.00	0.00
Rosebush	No	No	No	Yes	No	No	No	£0.8	Yes	2024	0.00	0.00	0.00	0.03	0.40	0.40	0.00
Upper Lliw	No	No	No	No	No	No	No	£5.3		2023	0.00	0.00	0.00	2.63	2.63	0.00	0.00
Upper Neuadd	No	No	No	No	Yes	No	No	£0.1	Yes	2024	0.00	0.00	0.00	0.05	0.00	0.00	0.00
Wentwood	Yes	Yes	No	No	No	No	No	£6.2	Yes	2021	0.07	3.05	3.05	0.00	0.00	0.00	0.00
Ynys y Fro Upper	No	No	No	No	No	No	No	£1.1		2021	0.00	0.53	0.53	0.00	0.00	0.00	0.00
Ystradfelte	No	No	No	No	No	No	No	£2.1		2021	0.00	1.06	1.06	0.00	0.00	0.00	0.00