



DERWENT HYDROELECTRIC POWER LIMITED

Issued by	D Needle
Date	06/04/2022
Version	2.1

Scour Valve Operation: Management Plan

Site: Cynwyd Reservoir
Operator: Dopower Limited
Site address: Waterfall Road, Cynwyd, Denbighshire LL21 0LN
Grid Reference: SJ 06676 40491
What3Words: entrusted.eats.riverbank

Introduction

Derwent Hydroelectric Power Limited (DHPL) is appointed by DoPower Limited to provide Operation and Maintenance (O&M) services to Cynwyd Reservoir.

This document details management of the reservoir scour valve for that site.

The scour valve is not to be opened under normal operating scenarios, except for annual testing.

This Management Plan also provides comment on emergency use and provision for other planned operation of the scour valve.

A Risk Assessment, Location Plan and Contact List are provided in the appendices.

Operation of the scour valve, under any circumstances, will be recorded in the site's Prescribed Form of Record.



Management Plan

1. Annual testing

The reservoir Inspecting Engineer recommends that the scour valve is tested annually¹. This means that the valve should be fully opened at least once per year and allowed to run clear before being closed again.

In DHPL's operational experience of this site, a 'plug' of silt forms over time that is washed downstream when the valve is first opened. Visible water discoloration has usually cleared shortly after the valve has reached the fully open position. The valve hand wheel takes twenty-three full rotations (anti-clockwise) to fully open the scour valve, and another twenty-three full rotations (clockwise) to return the valve to the fully closed position. Scour valve testing is anticipated to take two minutes.

The sediment transfer that occurs during this small time period is thought to be negligible: no environmental impact is anticipated. Nonetheless, annual testing is scheduled for the Autumn months when river flows are typically higher, and the dam is likely to be spilling. This reduces any impact of sediment transfer to the Afon Trystion. Similarly, there is no tangible effect to the reservoir water level.

The following steps will be observed for annual testing of the valve:

- i. Advise NRW of the planned test at least 48 hours in advance, using the following e-mail addresses:
 - o reservoirs@cyfoethnaturiolcymru.gov.uk
 - o denbighshireenvironmentteam@cyfoethnaturiolcymru.gov.uk
- ii. Ensure that the reservoir is spilling during testing. Valve testing is to be postponed if the reservoir is not spilling.
- iii. Operation of the scour valve will only be carried out by a competent person who is appropriately inducted to the site.

A Risk Assessment for this action is provided in appendix 1.

¹ REPORT ON AN INSPECTION UNDER SECTION 10(2) OF THE RESERVOIRS ACT 1975, November 2021



2. During emergency scenarios

A Flood Plan is in place to manage scenarios where a breach occurs to the dam, or where damage may be anticipated. That plan sets out emergency operation practices for the scour valve.

Cynwyd Reservoir is subject to regular maintenance and monitoring. No flooding scenarios are anticipated that might require operation of the scour valve.

A link to the Flood Plan is provided in Appendix 2.

3. Other pre-planned and licensed works

Should the operator desire to draw down reservoir water level using the scour valve for any other purpose, this must be subject to task-specific planning and licensing. It is anticipated that a Water Discharge Permit would be required prior to any planned operation of the scour valve.

Summary

Planned operation of the scour valve is limited to a very brief period of annual testing. Any other movements of the scour valve will be as an emergency response, or subject to task-specific planning and licensing processes.

Operation of the scour valve, under any circumstances, must be recorded in the site's Prescribed Form of Record.



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Appendix 1: Risk Assessment

Site Risk Management Record				Site		Cynwyd Hydro		Date Inspected		S = Severity		L = Likelihood		Risk = Likelihood x Severity	
Revision Control: Originator: D Needle Reason: Annual Scour Valve Testing Revision: 1				Date: 13/12/2021											
Likelihood Rating 0 = Zero to very low Rating 1 = Very unlikely Rating 2 = Unlikely Rating 3 = Moderately likely Rating 4 = Very likely Rating 5 = Almost certain				Severity Rating 0 = No injury or illness Rating 1 = First aid injury or illness Rating 2 = Minor injury or illness Rating 3 = Moderate injury or illness Rating 4 = Major injury or illness Rating 5 = Fatality, disabling injury etc.											
Task				Hazard		Risk		Immediate Action / Control Measures		Residual Risk		Residual Action		Comment	
Ref.	Task	Hazard	L	S	Risk	L	S	Risk	L	S	Risk	Residual Action	Comment		
Health and Safety Aspects															
1.0	Access	Slips and trips	2	5	10	1	2	2							
1.1	Access	Public use of the downstream reach of the Afon Trysion	3	5	15	1	5	5					Natural and man-made ponds in the immediate downstream reach will attenuate the flow variation to lower reached of the Afon Trysion.		
1.2	Access	High water level over dam crest	4	5	20	0	5	0					The safe wading depth should be assessed on site. As a guide, it is anticipated that maximum safe wading depth will be around 150mm.		
2.0	Manual Handling	Muscular damage.	2	3	6	1	1	1					Consider the impact of weather conditions. For example, wet or icy conditions could increase the risk of slipping when operating the valve.		
3.0	Environmental	COVID-19	3	5	15	1	5	5					Anyone displaying symptoms of COVID-19 is requested to self-isolate and avoid attending site.		
Environmental Risks															
1.0	Reservoir Drawdown	Sediment transfer	1	3	3	2	2	4					Possible occurrence if the scour valve fails during testing		
1.1	Reservoir Drawdown	Release of stratified water	3	4	12	2	1	2					If the drive shaft or handwheel fail it may still be possible to operate the valve itself. The disused scour valve is also retained in the open position. It may be possible to close the disused valve in an emergency scenario.		
1.2	Reservoir Drawdown	Scouring, damage to structures or risk to animals caused by increased flows in the downstream watercourse	0	0	0	0	0	0					The water course is ordinarily subjected to low fluctuations of 234lps in relation to hydro operation.		
1.3	Reservoir Drawdown	Release of fish	2	2	4	1	2	2					Coarse fish (the general population of the reservoir) are not expected to be drawn unintentionally through the scour valve during testing.		
1.5	Reservoir Drawdown	Affect on downstream environmental or other protected designations	3	3	9	1	2	2					River Dee at the confluence with the Afon Trysion is designated SAC and SSSI. There are no designations on the Afon Trysion.		



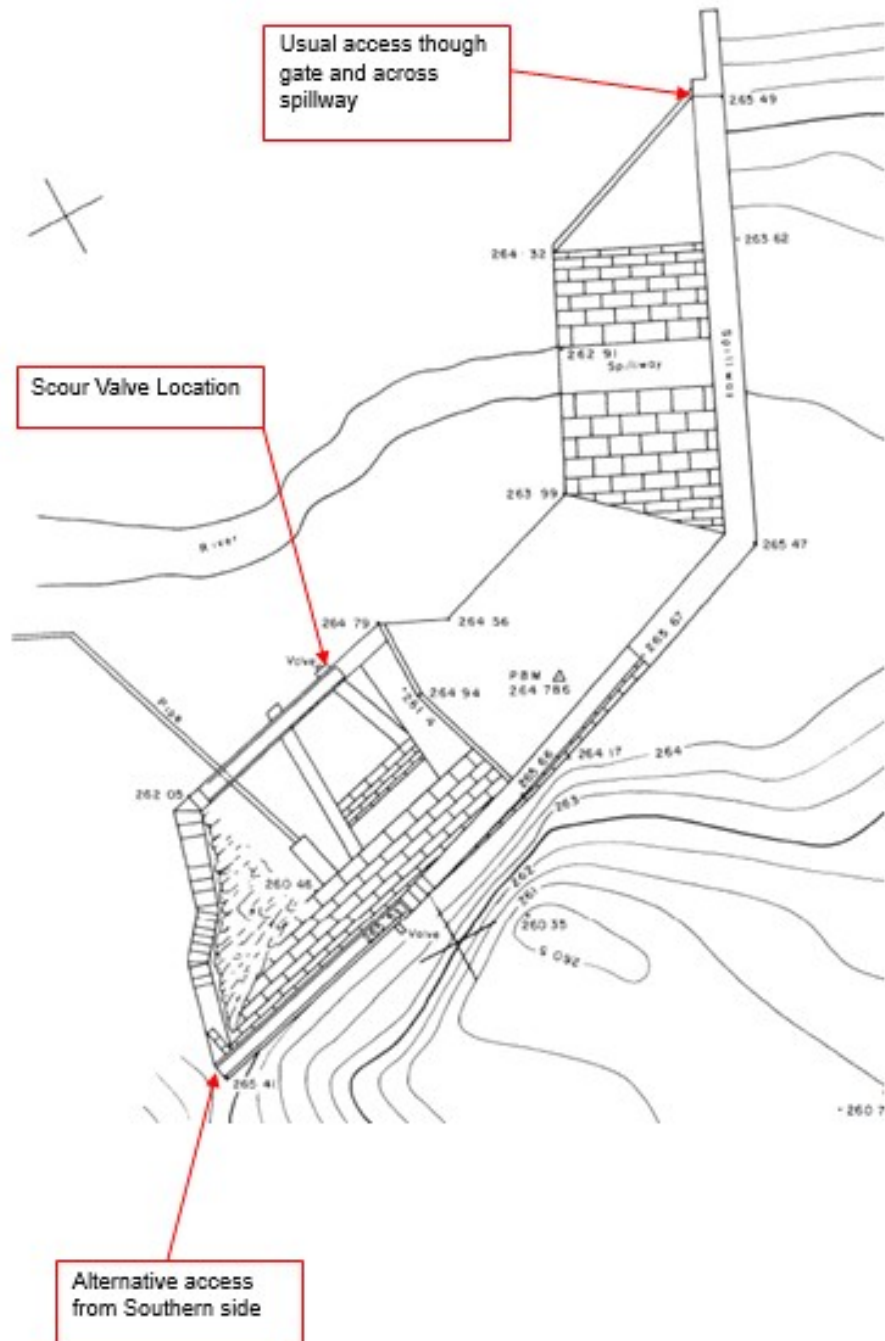
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Appendix 2: Scour Valve Location Map

The Flood Plan for Cynwyd Reservoir can be accessed using the following link:

http://link.derwent-hydro.co.uk/Cynwyd_Flood_Plan

Appendix 3: Scour Valve Location Map





DERWENT HYDROELECTRIC POWER LIMITED

Appendix 4: Contact Details

Key Personnel	
Responsible Person	Dean Needle Director Dopower Ltd 01773 821 944 / 0780 1234 993 dean@derwent-hydro.co.uk
Responsible Person 2	Jamie Needle Director Dopower Ltd 01943 875 527 / 07712 455 001 jamie.needle@derwent-hydro.co.uk
Appointed Engineers	
Supervising Engineer	Dr Andy Hughes Dams and Reservoirs Ltd 01777 228 644 / 07341 338 092 Andy.hughes@damsandreservoirs.co.uk
Inspecting Engineer	Dr Andy Hughes Dams and Reservoirs Ltd 01777 228 644 / 07341 338 092 Andy.hughes@damsandreservoirs.co.uk
Hydropower Engineer	Dean Needle Director Derwent Hydroelectric Power Limited 01773 821 944 / 0780 1234 993 dean@derwent-hydro.co.uk
Category 1 Responders	
Immediate assistance	999
Raise awareness with Police	101
Flood Risk Management Officer Denbighshire County Council	alex.bebbington@denbighshire.gov.uk 01824 706 758
Flood Risk Engineer Denbighshire County Council	wayne.hope@denbighshire.gov.uk 01824 706 901
Natural Resources Wales	Phone 03000 65 3000 (24-hrs) Provide the information of the Flood Incident Duty Officer.
NRW Notifications	
Local Environment Team	denbighshireenvironmentteam@cyfoethnaturiolcymru.gov.uk 0300 065 4299
Reservoirs Team	reservoirs@cyfoethnaturiolcymru.gov.uk