HISTORIC ENVIRONMENT SCOTLAND | ÀRAINNEACHD EACHDRAIDHEIL ALBA

Scheduled Monument Consent
Report on Handling

Case Information

Reference/Case ID	300045386

Scheduled Monument	Catrine, water works for Catrine Mill 30m S of 9 St Cuthbert's Street		
Index no	SM5670	**Grid ref**	NS 53314 26019

Date application validated	05 August 2020
Summary of proposed works	Automation of the sluice gates

1. Summary recommendation

This report recommends that consent for automation of the sluice gates at Catrine Water Works be granted with conditions.

2. Background

The application is for the automation of sluice gates leading from the River Ayr into the Catrine water system. It is being proposed to provide a safe means of controlling the water levels in the water system when the river is in spate. It follows pre-application advice. It has been submitted by Catrine Community Trust.

It is accompanied by: DHD drawing showing proposed sluice gate automation proposals, Inlet Gate-New Ram V3.1; DHD drawings showing proposals for securely housing electro-hydraulic power unit and associated components, Catrine -HPU Enclosure v2.1; Catrine Community Renewables Plan showing location of incoming mains electricity cabling and distribution wiring, Catrine – New smolt pass with CCR coloured annotations; Catrine Community Renewables sections "A" & "B" through east lade wall showing proposed duct for electricity cabling, Catrine Weir Proposals July 2020; Derwent Hydro Drawing, Catrine Inlet Gate – new ram V3.1 18-6-20; Derwent Hydro Drawing, Catrine – HPU enclosure 2.1 dated 24-7-20; Rathmell Archaeology WSI dated 20.7.20; CCT Goals and Methodology Document, dated 30.7.20; JBA Catrine Flood Report 2009; Catrine Voes Optimisation Report, November 2019; Community

Energy remote Survey, May 2020; and an exchange of emails dated 10 August 2020 relating to otters on the River Ayr.

The monument is a water management system that was built and developed to supply water power to Catrine's cotton mills and bleaching works. The main elements are a weir on the River Ayr, five large ponds known as 'voes', and a series of open and covered lades. There are also the remains of sluices and the foundations of a short aqueduct that carried water from the end of the lade to the wheelhouse. The water management system lies on the north side of Catrine, beginning at the River Ayr to the north-east of the town and extending westwards for almost 1km to terminate about 85m north-north-west of Mill Square. The first parts of the system were built in 1787, but it was adapted several times before its eventual disuse in the 1970s. The system now runs a small, commercial, community owned hydro electric plant.

The monument is of national importance because it has an inherent potential to make a significant addition to the understanding of the past, in particular the Industrial Revolution and the development of cotton spinning in Scotland and worldwide. It also has the potential to enhance our knowledge of the development of the Catrine industrial village, which was important in Scotland and may have influenced the design of North American mill villages.

The application relates to the sluice gates and supporting penstock walls at the north-eastern end of the open lade, at the upstream end of the system drawing water from the River Ayr.

3. Proposals

- Dewater the lade
- Dismantle the existing gates, followed by re-assembly to a modified design to reduce friction.
- Install of hydraulic actuators to the sluice gates with automated remote controls.
- Increase the height of the moving gates to allow more water to pass through with less turbulence.
- Install electro-hydraulic machinery to provide motive power to the hydraulic actuators.
- Install underwater gate valves to the scour pipes in the penstock.
- Install a mains electricity supply from St Cuthbert St and fix underwater distribution wires to the east lade wall.
- Archaeological research and recording of the fabric of the historic penstock.
- Refill the lade

The lade would be dewatered, using coffer dams to either side of the penstock.

The existing sluice gates, which were constructed in 2011 as copies of the then extant gates, would be carefully dismantled, and reassembled with a layer of stainless steel between the timber leaves, to reduce operational friction by minimising wood to wood contact. The height of the gates would be increased, and hydraulic rams with remote controls would be installed, as per drawing Catrine Inlet Gate – new ram V3.1 18-6-20. These would allow smooth remote operation of the gates, particularly during spate and storm conditions, when manual operation of the gates is dangerous, but when it is also particularly important to control water levels in the system to reduce the risk of flooding.

Electro-hydraulic machinery to drive the gates would be installed in the eastern wing of the penstock. The height of the wall here is lower than the original level shown on photographs from the early 20th century. In order to accommodate the machinery, the level would be raised as per drawing Catrine HPU 2.1, creating secure, closed spaces where the machinery would be installed. These works would be visible and could be reversed if required. This would reinstate the historic height of the penstock. A mains electricity supply from St Cuthbert Street would be installed, and underwater distribution wires would be attached to the eastern lade wall. The electricity supply would be largely outwith the scheduled area, but conduits would be formed through the historic fabric at two points as per drawings 'Plan showing location of incoming mains electricity cabling and distribution wiring' and 'sections "A" & "B" through east lade wall showing proposed duct for electricity cabling'.

Underwater gate valves would be installed in the scour pipes in the penstock.

During the works, archaeological monitoring and recording of the historic fabric and any changes to it would be undertaken.

The coffer dams would then be removed and the lade rewatered.

4. Representations received

No third party representations were received.

5. Report

a) Policy considerations

The application should be considered with the following legislative and policy considerations in mind:

Ancient Monuments and Archaeological Areas Act 1979

Part 1 Section 2: Control of works affecting scheduled monuments.

Scheduled Monument Consents Policy

Scheduled Monument Policy Aim

A monument is included in the schedule to secure its long-term protection in the national interest, in situ and as far as possible in the form it has come down to us. The aim of this policy is to ensure this long-term protection wherever possible.

Scheduled Monuments Principles

- Scheduled monuments have an intrinsic value as monuments, not related to any concept of active use. It is the value of the monument to the nation's heritage that is the primary consideration in determining applications for consent at scheduled monuments.
- The principle of preserving scheduled monuments will only be set aside in circumstances where wider considerations are deemed, on balance, to be of greater importance to the national Interest.
- The more important particular features are to the monument's cultural significance, the greater will be the case against interventions which modify those features.
- Each monument will require treatment specific to its individual nature, characteristics, significance and needs. Any proposed change to it should be fully and explicitly justified.
- The management of scheduled monuments should be informed by current policy and guidance, up-to-date professional and academic research and, where appropriate, relevant consultation.

Scheduled Monument Policy 1

When undertaking works to scheduled monuments, their significance should be maintained.

Scheduled Monuments can have meaning and value beyond their physical remains. Many have important historical, cultural or emotional associations that give them a particular significance in the life of the nation, or of the local community within which they are set. Many also have outstanding landscape or picturesque values. When undertaking works to them, it is therefore essential their significance is maintained and not reduced.

Scheduled Monument Policy 2

Conservation and research works should always be aimed at the lowest level of intervention that is consistent with achieving a monument's preservation.

Monuments are subject to decay and the threat of destruction from natural and human causes. Conservation work may be needed to prolong the life of a monument, but there is a risk that this can be so invasive that it irreversibly modifies the monument's cultural significance and affects the features that made the monument important in the first place. These might include its character, value, evidence for construction and use, or any other factor that contributes to a monument's cultural significance.

Research projects can deliver important public benefits, improving understanding of our most important monuments. However, they can also affect a monument's cultural significance and result in irreversible loss of information for future generations. Research project works should therefore be carefully considered to ensure they are fully justified and any impact is minimised. They should be well targeted, properly researched and undertaken to high professional standards.

Scheduled Monument Consent Policy Aim

Works on scheduled monuments should normally be the minimum level of intervention that is consistent with conserving what is culturally significant in a monument.

Scheduled Monument Consent Policy 3

Extensive intervention to a scheduled monument will only be allowed where:

- it has minimal effect on the cultural significance of the monument.
- it is clearly necessary to secure the long-term preservation of the monument.
- it will clearly generate public benefits of national importance which outweigh the impact on the nationally important cultural significance of the monument. Such public benefits could come from, for example, interventions which improve public access to a scheduled monument (where appropriate), or assist public understanding once the works are completed, or provide economic benefits of national importance once completed.
- unavoidable circumstances, such as coastal erosion, threaten the survival of a scheduled monument, it should, where possible, be excavated and/or recorded in detail before its destruction.

Works to scheduled monuments should be considered in terms of the cultural significance of the monument and the impact that the proposals would have upon its cultural significance. The more important particular features are to the monument's cultural significance, the greater will be the case against interventions which modify those features.

Scheduled Monument Consent Policy 4

Proposals for change should be carefully considered, based on good authority, sensitively designed, and properly planned and executed. The level of information provided should be in proportion to the sensitivity of the monument or feature and the level of change proposed.

For all applications where change is proposed, the following factors will be taken into account when considering if works meet this policy:

a. the use of appropriate assessment methodologies to determine the full impact of any proposed management, use or development on a monument's fabric and/or cultural significance.
b. the avoidance of irreversible change particularly wherever its effects cannot be adequately assessed.
c. that where change is necessary, strategies should be adopted to mitigate its impact and limit intervention.
d. that the management and execution of alteration, including remedial work, is sympathetic to the historic character and wider cultural significance .
e. that appropriate skills and techniques, materials and construction techniques are specified where appropriate.
f. that an appropriate level of record is made before, during and after any work and deposited in local and national archives, and, where appropriate, published.
g. that it is possible, on close inspection, to differentiate new work from old particularly on masonry structures.
h. that any archaeological excavation or other intrusive investigation should be based upon a detailed research strategy, with adequate resources, using appropriately skilled and competent archaeologists with a satisfactory record of the completion and publication of projects.
i. that the design, planning and execution of works on scheduled monuments are undertaken by people with appropriate professional and craft qualifications, skills and experience.

b) Assessment

The physical impact of the proposed works on the monument and its cultural significance would be the removal and modification of sluice gates installed in 2011 as copies of the then extant gates, the addition of new mortared stonework to the eastern wing wall of the penstock, the installation of an electricity supply involving the creation of a conduit along the eastern wall of the lade and the creation of two conduits through the fabric of the eastern wall of the lade, and the installation of concealed machinery to move the sluice gates. The works would affect the north-eastern end of the water system, where the lade joins and takes water from the River Ayr. At this point, extensive repairs to the system in 2011 involved the removal of the sluice gates and their

replacement with copies, and repairs to the penstock. The works would remove small areas of the historic fabric, to create conduits for the electrical supply, and would involve additions to the historic fabric to create the machinery enclosures which would return the eastern wing of the penstock to a symmetrical appearance similar to its historic appearance. These works would be visible and could be reversed. However, the bulk of the works would affect the fabric of the gates installed in 2011. There are relatively minor impacts on original historic fabric, but the works are assessed as extensive.

The works are required because the water system is still in active use to run a small, community owned, commercial hydro-electric scheme. Water levels within this scheme have to be controlled both for the efficient running of the turbines, and in order to protect the fabric of the water system and the houses and warehouses to the south of the water system from flooding. At present, the sluices are manually controlled. Machinery in the blocked tunnel adjacent to the sluices, possibly dating to the early 19th century, suggests that the sluices originally had an automatic control system, but it is unclear how this worked and the fact that it did not continue in use suggests that it may not have been effective. It is particularly important to control water input into the system when the river is in spate or in storm conditions, in order to protect the historic fabric of the water system from damage, to prevent overflow and flooding, and to ensure that the hydro-electric turbines do not have to be shut down, and these are also the times when it is most dangerous to operate the sluices manually. The proposed works are therefore justified to protect the fabric of the system, to protect the health and safety of workers on the hydro-electric scheme and occupants of the buildings downslope of the waterworks, and on the grounds of community economic benefit, in allowing the continued working of the hydro-electric scheme.

The proposed works would have a minor residual aesthetic impact on the monument. The works would return the penstock to an appearance which would closely approximate its historic appearance as recorded in the 19th century.

It is, therefore, concluded that the works would have a minimal impact on the monument's cultural significance.

The proposed conservation works are the lowest level of intervention that is consistent with achieving the monument's preservation, in that they would protect the historic fabric from damage by flooding and overflowing.

The works would result in a significant change to the physical fabric of the scheduled monument, which would be visible and reversible. However, while the works are assessed as extensive, they would have minimal change on the cultural significance of the scheduled monument and they are in response to an unavoidable threat to the monument and to human life.

The application has been accompanied by a detailed Project Design and WSI that sets out a well-considered, appropriate and careful methodology. However, further information is required to ensure that the proposed works are appropriate. To ensure this it is recommended that conditions are applied requiring information about the source of the stone and the lime mortar mix to be used for the penstock wall, and the details of the coffer dams and how they will be attached to the historic fabric. These conditions would enable the application to be considered compliant with Scheduled Monument Consent Policy 4.

c) Other material considerations, including impact of the works on Protected Species and Places

There is an otter holt 400m upriver on the River Ayr. SNH staff have confirmed that the works would not have an impact on otters moving through the area.

d) Conclusion

The application should be viewed as works as set out in both Part 1 Section 2 of the AMAA Act 1979 and Section 15 of the Scheduled Monument Consent Policy.

The proposed works would have minimal impact on the cultural significance of the monument and therefore do not conflict with Scheduled Monument Policy 1 and are compliant with Scheduled Monument Consent Policy 1.

The proposed works are the lowest level of intervention consistent with achieving the monument's preservation so are compliant with Scheduled Monument Policy 2.

The proposed works are assessed as extensive but would have minimal impact upon the monument's cultural significance. Consequently, the proposed works are compliant with Scheduled Monument Consent Policy 3.

The application is, on the whole, carefully considered, based on good authority, sensitively designed, and properly planned. However, further information would be required in advance of the works to enable the application to be fully compliant with Scheduled Monument Consent Policy 4. Consequently, conditions are required.

6. Recommended decision

Subject to compliance with the schedule of conditions, the works proposed are considered acceptable in meeting the terms of national policy for scheduled monuments, and also accounting for other material considerations.

I recommend consent is **granted, subject to the conditions detailed below**.

7. Conditions

1. No works requiring scheduled monument consent shall commence on site until a specification of the lime mortar mix and the stone to be used for construction on the penstock wall has been approved in writing by Historic Environment Scotland.

   Reason: to ensure that work will be carried out to a standard acceptable to Historic Environment Scotland and impacts on the monument are minimised.

2. No works requiring scheduled monument consent shall commence on site until a specification for the details of the coffer dams and their attachment to the historic fabric of the lade has been approved in writing by Historic Environment Scotland.

   Reason: to ensure that work will be carried out to a standard acceptable to Historic Environment Scotland and impacts on the monument are minimised.

8. Approval

Case officer	Mary MacLeod Rivett	**Date**	11 August 2020
Approved by	James Bruhn	**Date**	12 August 2020

Annex A – list of supporting documents

- DHD drawing showing proposed sluice gate automation proposals, Inlet Gate-New Ram V3.1
- DHD drawings showing proposals for securely housing electro-hydraulic power unit and associated components, Catrine -HPU Enclosure v2.1
- Catrine Community Renewables Plan showing location of incoming mains electricity cabling and distribution wiring, Catrine – New smolt pass with CCR coloured annotations
- Catrine Community Renewables sections "A" & "B" through east lade wall showing proposed duct for electricity cabling, Catrine Weir Proposals July 2020
- Derwent Hydro Drawing, Catrine Inlet Gate – new ram V3.1 18-6-20
- Derwent Hydro Drawing, Catrine – HPU enclosure 2.1 dated 24-7-20
- Rathmell Archaeology WSI dated 20.7.20
- CCT Goals and Methodology Document, dated 30.7.20
- JBA Catrine Flood Report 2009
- Catrine Voes Optimisation Report, November 2019
- Community Energy remote Survey, May 2020
- exchange of emails dated 10 August 2020 in re. otters on the River Ayr