



Loch Etive Hydro Development
Allt Easach Causeway
Licence Application Supporting Information
February 2019

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Client: SIMEC GHR Ltd

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1. Introduction

The Loch Etive Hydro Development consists of 3 run-of-river Hydro schemes:

- South side of Loch Etive:
 - Allt Hallater
 - Glenkinglass Lodge
- North side of Loch Etive:
 - Allt Easach

Whilst there are existing roads that provide access to each site, these roads would need to be upgraded to facilitate the movement of the required plant and materials. To reduce the burden on these existing roads and therefore minimise the extent of upgrades required, it is proposed that a combination of road and marine access is used. It is likely that the larger materials, such as pipes and the mechanical and electrical infrastructure would be taken in via the marine route, whilst smaller deliveries and vehicles would gain access via the road route. To approach the site, materials would be loaded onto boats using existing slipways/loading points around Bonawe, Taynuilt, and possibly the Fort William area. Boats would travel through the Falls of Lora and into Loch Etive, approaching the site from the southwest. A temporary causeway is required at Rubha Barr at approximate NGR NN 0705 3912. This would extend from the MHWS to the MLWS, and would allow vehicles to load and unload boats that arrive on site. All land-based infrastructure required to access the causeway is being addressed through either the Hydro planning application or the FCS Land Management Plan.

At the same time as the Hydro scheme is being constructed, FCS will fell the Cadderlie and Rubha Bharr blocks which are to be restocked with native woodland (providing a significant net ecological benefit for the area). The felled timber will be extracted via the marine route, with FCS and SIMEC GHR sharing the infrastructure. Once both operations (Hydro and felling/restocking) are completed, the causeway would be removed therefore this is only a temporary structure. The plan attached, referenced 10033_AE Landing_GHR_JD_20190218, shows the position of the proposed causeway relative to the FCS blocks and Taynuilt.

This document provides the details necessary to support the application for a Marine Licence for the temporary causeway.

1.1. Licencing background

To connect the Allt Easach scheme to the national grid on the north side of Loch Etive (to allow export to the grid), a cable will be lain on the bed of Loch Etive. A licence has been secured for that, referenced 06760/19/0.

During discussions with Marine Scotland regarding this cable, the proposed causeway was discussed. The key trigger in the application process is the land take of the proposed structure, in this instance anything in excess of 1000m² would trigger pre-application consultation. It can be seen from the associated drawings that the land take is around 998m², therefore no pre-application consultation is required.

The Allt Easach project was considered an EIA development, and as such the planning application was accompanied by an EIA Report (EIAR). This scheme is about to receive the necessary consent from Argyll and Bute Council, having been validated in August 2018. The reference for the planning application is 18/01257/PP, and can be viewed on the Argyll and Bute Council's planning website. No Screening was carried out for this project as, after consultation with ABC, it was agreed that there was no doubt the projects were an EIA development. As a result, SIMEC GHR cannot provide the Screening opinion as requested in section 13 of the application form. Other correspondence (e.g. the Scoping response) is available and SIMEC GHR can provide these on request should they be required.

2. The Loch Etive Hydro Schemes

Table 1 provides information on the identified schemes, including an initial power output and location of the powerhouse.



Table 1 – Development details

Site Number	Name	Capacity	Powerhouse Grid Ref	Location
1	Allt Hallater	2000kW	NN 1534 3757	Approximately 7.5km east of Loch Etive
2	Glenkinglass Lodge	1800kW	NN 1695 3817	Around 500m east of Glenkinglass Lodge
3	Allt Easach	2000kW	NN 0666 4002	West side of Loch Etive, approximately 8.5km northeast of Bonawe.

The schemes are of the “run of river” type, without storage reservoirs or large dams. A weir, incorporating an intake screen, is constructed on each burn to remove a proportion of the water. This water is conveyed by an underground pressurised pipeline down to an appropriately designed power house containing the mechanical and electrical equipment where the energy in the water is converted to electricity. The power houses are connected to the electrical grid via an underground HV cable. This type of construction minimises the visual impact of the schemes which is an important consideration at these locations. The 3 sites would have a combined rating of approximately 5.8MW. Each scheme would be connected to the National Grid in order to export the generated electricity.

3. Access Proposal

3.1. On the public road

All construction access to the scheme would be from the A828 Connel to South Ballachulish road. Large vehicles, including articulated lorries, would use the road from Barcaldine to Bonawe, while light goods vehicles may use the road from North Connel. At Bonawe, large loads – for example large excavators, bulk supplies or large components, including pipes – would be unloaded into a temporary laydown before being transferred to barges to be taken onwards by sea to a new temporary concrete landing-craft pad at Rubha Bharr, close to the Allt Easach powerhouse site. Other vehicles, including those which carry out required road and track improvements, would use the existing road which runs along the north shore of Loch Etive from Bonawe to Barrs, as described below.

Speed limits would be enforced on all public and private roads: the Principal Contractor has an automated key fob system which tracks individual drivers, and thus deters them from exceeding speed limits. Articulated lorries making deliveries to Bonawe would be escorted between Barcaldine and Bonawe. The additional traffic would be more noticeable on the quieter roads from Barcaldine and North Connel to Bonawe, but these are roads which are already used by quarry traffic from the Breedon Aggregates quarry at Bonawe.

3.2. Bonawe to Barrs by road

All road access from Bonawe to the Allt Easach construction site, which is in the Barrs FCS plantation forest, would be along an existing road on the north-west shore of Loch Etive. The road is used by local people (for example users of the properties at Barrs and Cadderlie) and by walkers and cyclists heading north up Loch Etive. FCS intends to bring felling machinery in to Barrs and Cadderlie along this route, under its own power, for the imminent felling operations, and felling operatives would also commute on this route. The road would require some minor and mostly localised upgrading to allow movement of the traffic associated with the hydro scheme. This would be carried out by two tracked excavators and one Moxy dumper which would then stay on site for the duration of the hydro construction works (i.e. the “Enabling Works”).

No articulated lorries would be used off the public road. The scheme has been designed so that all the required materials and equipment required for the hydro construction works can be delivered either by boat or by using 26-tonne rigid-bodied three- or four-axle lorries, typical of those used by



builders' merchants. Smaller vehicles, including tractors and trailers, would be used as appropriate. Two small turbines would be used in the powerhouse, rather than one large one, to avoid having to use bigger vehicles to deliver the equipment. Using the smaller vehicles means that less road strengthening and widening would be needed, especially at corners and over structures such as culverts and bridges. Smaller deliveries of materials and equipment for onward movement by road would be stored and consolidated at a layby at Bonawe, at grid reference NN 01152 33390. They would be stockpiled here and moved to the site in bulk loads, to minimise the number of journeys required. The road has been used in the past by FCS for forest operations and is capable of accommodating fully-laden timber wagons along most of its length. Road upgrading would consist of:

- **Widening and capping:** The road would need to be widened by up to about 50cm along straights, but there are a few places, particularly at sharp corners, where the road would need to be widened by up to 1m. In all cases this would be achieved by scraping the verges where the vegetation has encroached over the existing running width, and capping the exposed verge and the existing running surface, but only where necessary, with crushed stone. No works would be needed outside the width of the road, the verges and the roadside ditch. Passing places which have become blocked would also be reinstated, to help avoid lengthy reversing manoeuvres. Drainage would be improved as necessary.
- **Strengthening:** With FCS, GHR has identified places where structures such as culverts, bridge and embankments would need to be strengthened to support the weight of the proposed traffic. Near Cadderlie, immediately south of the Gortan Cherin FCS plantation, the road has previously been known to subside under the weight of "moderate" sized FCS vehicles. This stretch of the road would be assessed in more detail in collaboration with FCS engineers, and strengthened appropriately, but still within the extent of the pre-disturbed width.
- **Pruning and topping:** In many places the roadside vegetation overhangs the road, or is so close alongside that it may be damaged by passing large vehicles. The vegetation would be pruned or cut back (outside the bird breeding season, and with ECoW approval) to avoid more extensive damage to the trees and shrubs. This may otherwise occur if vegetation became tangled in moving vehicles and the plants were dragged or ripped. Some immature birch scrub would be cleared, but no mature trees would be felled.

Only local rock would be used for road capping to avoid leaving bright or un-natural looking linear features in the landscape. The stone would, of course, be somewhat different in appearance from the older stone on the surface until it weathers and settles down. A construction crew would be dedicated to ensuring that the road remains in good condition throughout the construction period, so that visitors and residents at Barrs are not inconvenienced. Once in the Barrs plantation, construction traffic arriving by road would cross the existing bridge over the Allt Easach and then turn north, uphill, for the intakes, or south, downhill, for the powerhouse.

3.3. Bonawe to Barrs by sea

Large components and plant would be taken from Bonawe to Barrs by sea, to avoid having to make significant upgrades to the road. They would be loaded onto landing craft at an existing slipway and offloaded at the proposed new temporary causeway on the beach south of the powerhouse. Pipe sections are typically around 12m long if plastic, and 6m long if ductile iron. Handling and moving the pipe sections requires similar equipment and techniques to handling cut lengths of timber, and this arrangement could make use of the empty leg of the timber vessels' round trips, resulting in no additional movements. The number of trips required for exporting felled timber from Allt Easach is very much greater than the number required for pipe import, and the felling would start before, and continue after hydro construction was finished, so plenty of shipping capacity could be available at the right time. This detail is yet to be confirmed with the felling contractor, however, so the current arrangement would see smaller landing craft used by the main contractor.

4. Location of causeway

Table 2 shows the position of each corner of the proposed causeway. The co-ordinates would not fit into the table in the application form.



Table 2 – Causeway Location		
Corner	Lat	Long
North (left side)	56° 30' 16.038"	5° 8' 13.9524"
North (right side)	56° 30' 15.9474"	-5° 8' 13.6536"
South (left side)	56° 30' 12.6282"	-5° 8' 16.9476"
South (right side)	56° 30' 12.5424"	-5° 8' 16.5906"

5. Design

The drawings attached to this application demonstrate the proposed design, referenced:

- 600377-DG-3006-P2
- 600377-DG-3007-P3

The causeway would be constructed from a rockfill core with armour stone protection on the sides. A concrete platform would be formed at either end to ensure ease of access, and the southern end would have fixed anchor points to secure the ships whilst materials and timber are being offloaded and loaded.

6. Construction Process

To facilitate the marine access, which is to be shared by GHR and FCS for material/plant delivery and extraction, and timber extraction respectively, a new landing pad, and access to it, will be created on the Rubha Barr beach using the following methods:

- Create a running surface that extends above the water mark from the MHWS to the MLWS. This will be around 2m from the existing bed at its deepest.
- Isolate the northern concrete pad area using one tonne bags filled with clean gravels.
- Erect shuttering, and pour concrete allowing to cure before the one tonne bags are removed.
- Working from the beach outwards, lay large diameter clean boulders along the line of the access track. This will create the stable, strong base of the track.
- Using clean smaller diameter crushed rock, fill between the boulders and create the running surface ensuring it remains above the MHWS elevation.
- Lay large diameter boulders along the edge of the track from the bed to the running surface. This will provide protection from wave/wind erosion during the associated works.
- The above is to be an iterative process until the southern (deepest) end of the causeway is reached.
- Working from the causeway, form cofferdam using one tonne bags filled with cleaned gravels to create an area isolated from the water environment.
- Overpump any isolated water away from the working area.
- During the next phase it is imperative that pumps are kept to hand to address any seepage into the working area.
- Form concrete pad by excavating down below the natural bed of Loch Etive.
- Lay blinding concrete.
- Mass pour concrete to provide the landing point to the required gradient, ensuring the northern end of the concrete is at the same elevation as the running surface of the causeway.
- Install anchors to ensure landing craft can tie off safely.



7. Decommissioning

Once the construction of the Hydro scheme has been completed and all harvesting activities have finished, the causeway would be removed. The concrete would be broken up and taken off site and, reversing the construction procedure, the causeway rock would be removed and returned to its original location for reinstatement. The concrete pads would be broken up and disposed of off site by the contractor.

8. Project Schedule

The decision notice for the Hydro scheme is expected by the end of February 2019. Upon receipt of this notice, the enabling conditions and works (consisting of upgrades to existing access and creation of new access requirements, excluding the causeway until the necessary licence has been received) will be addressed followed on closely by the construction of the Hydro scheme. It is expected that the enabling conditions and works would be completed within 2 months to 3 months. The construction of the causeway would follow these enabling works, starting in June/July 2019. It would take 2 weeks to 3 weeks to complete the construction of the causeway.

The Hydro construction works would be completed by the end of March 2021, with the completion of forestry works following shortly thereafter. It is anticipated that the temporary causeway would be removed during the summer of 2022 when water levels and weather permits the decommissioning works, however this depends on the progress of the forestry programme which is out with SIMEC GHRs control.

9. Contacts for the Application

For clarification on this application, please contact:

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Image 1 – Rubha Bharr Shore End on West Side of Loch Etive. The image was used for the cable licence application, however it demonstrates well the position of the causeway which would be just to the left of the cable, avoiding the small cluster of gorse bushes immediately adjacent to the cable line





Image 2 – the causeway location from the shore

