

HIE's decision to close the Cairngorm funicular – again!

Description

In June HIE claimed the funicular was perfectly safe

On 09/06/2023, after being contacted by several Parkswatch readers, I wrote a letter ([see here](#)) raising safety concerns about the Cairn Gorm funicular to Stuart Black, Chief Executive Officer of Highlands and Islands Enterprise (HIE), who own it.

On 21/06/2023, I received a reply not from Mr Black but from Customer Services, as follows:

“The design and implementation of the strengthening programme for the funicular viaduct was implemented and checked repeatedly by COWI and independent design checker Mott MacDonald – both of them world leading specialist bridge engineers.

Following completion of reinstatement works towards the end of 2022, a senior official from the authorised technical body for the Department for Transport conducted both a rigorous document review and physical inspection of the Cairngorm funicular viaduct and control system.

The inspector's conclusions were positive and enabled the Department, through the UK Secretary of State for Transport, to authorise the safety cases, providing clearance and assurance for the funicular service to resume safe operations in January 2023.

This failed to address the issues I had raised.

In August HIE closed the funicular because it was unsafe

Just two months after making these claims, on 25/08/2023, HIE and CM(S)L took the decision to close the funicular **ON THE GROUNDS OF PUBLIC SAFETY:**

“At a board meeting today, Cairngorm Mountain (Scotland) Ltd (CMSL) agreed with the HIE decision to temporarily withdraw the funicular on the grounds of public safety.”

The only reasonable conclusion to draw from this is that the safety checks conducted before the funicular were re-opened were inadequate. Moreover, the funicular had already been closed every Tuesday from the end of May for further work, with no online ticketing on Wednesdays and Thursdays, and workmen were seen working in the evenings as well! That suggests that HIE were well aware of safety concerns when I wrote but rather than responding to my points their Chief Executive decided to deny anything was wrong.

HIE's explanation for the closure

The news release issued by HIE ([see here](#)) claimed that:

“A 12-month snagging period and inspection programme has been ongoing since the funicular began carrying passengers again in January, following a two-year programme of works to strengthen the 1.7km viaduct that supports the track. Snagging and inspection are usual practice for major civil engineering projects.

This week, inspectors identified that some of the ‘scarf joint assemblies’ that link the beams at the top of the piers did not meet the required tension.”

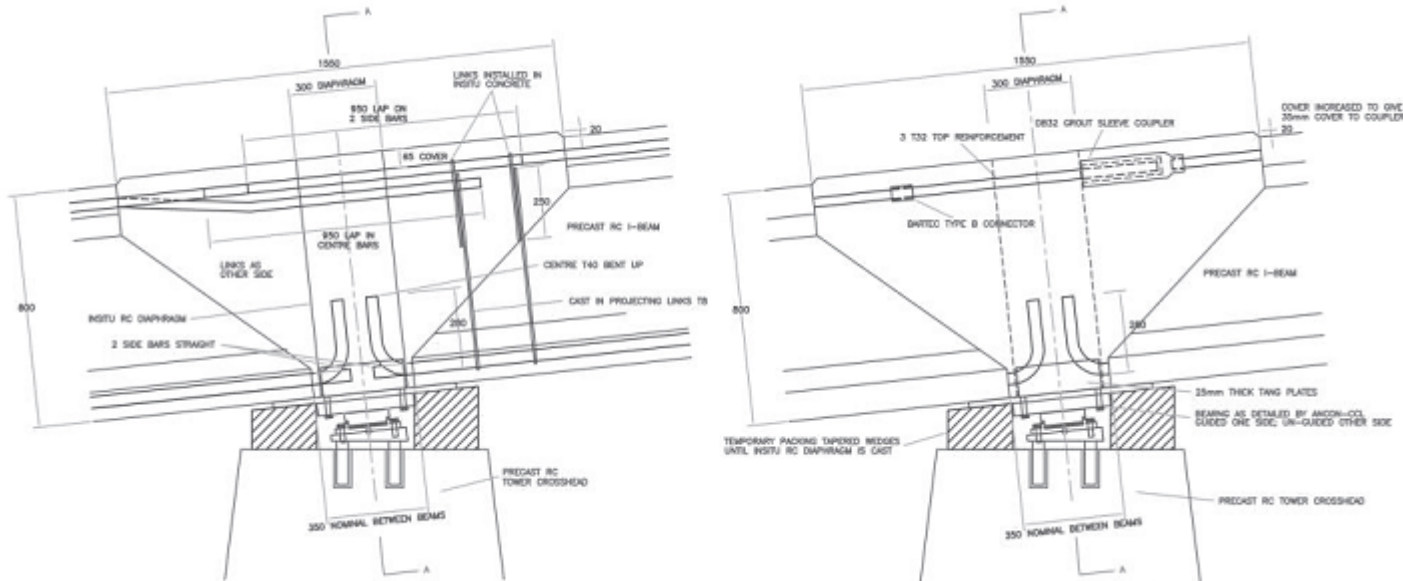
This contained the usual disinformation. The programme of works may have been two years but the original plans were for them to be completed in one and the funicular was closed from August 2018 until 26th January 2023, i.e four and a half years. More importantly snagging and inspection are normal practice in ALL civil engineering projects and should have been completed **BEFORE** the funicular WAS re-opened, although obviously inspection programmes are an ongoing Health & Safety requirement! There are lots of definitions of snagging that illustrate this, for example ([see here](#)):

“[Snagging](#) does not have an agreed meaning, and is not a [contractual term](#). It is a slang expression widely used in the [construction industry](#) to define the process of [inspection](#) necessary to compile a list of minor [defects](#) or omissions in [building works](#) for the [contractor](#) to [rectify](#).

Generally [snagging](#) refers to a process that takes [place](#) a fortnight or so prior to [practical completion](#) when an [area](#) is considered [complete](#) by a [contractor](#) and is offered ready for [inspection](#).

A [snagging list](#) (occasionally referred to as a [punch list](#)) is prepared and issued by the appropriate [certifying](#) authority, [typically](#) this will be the [architect](#), [contract administrator](#) or [employer's agent](#). The faults that are identified should be rectified prior to a [certificate of practical completion](#) being issued.

Where the news release was correct was in stating that there were problems with the “scarf joint assemblies” and the pairs of stainless steel brackets which have been used to strengthen the connection between the in situ blocks and the concrete beams supporting the railway.



Technical drawing of a scarf joint. Screenshot courtesy of the COWI report April 2019

The cause of the problem and HIE's solution

The concrete support beams are very heavy ([see here](#)) and were supported by a small metal plate at the base of the insitu block between them:



The red lines shows how little metal was supporting these enormous beams.

In a post I wrote two and a half years ago asking [Will the repair of the Cairngorm Funicular Railway work \(4\)?](#) I argued that, in order to support the ends of the “I” beams, the bearing plate should, at the very minimum, extend to the point vertically below the top of the scarf joint (i.e. where the beam reaches its full height) making each plate 1.55m long and probably at least 25mm deep. The problem

was not the strength of the metal in the plates, it was the forces that were exerted on the thin ends of the concrete beams. As a consequence, these started to crack. HIE appears to have decided to address the issue not by inserting larger metal plates but by strapping pairs of brackets to the end of each beam to hold them together



The red arrow shows how the original supporting plate has been retained although the bearing and support below it have been replaced.

HIE's news release claimed that the closure follows:

“an inspection showing that some of the ‘scarf joint assemblies’ that link the beams at the top of the piers did not meet the required tension” but that “work to increase the tension of these assemblies is progressing well.”

What HIE did not say was that in at least one case the tension of the new support brackets appears to have been responsible for breaking up the concrete!





Close up – note the layer of grout on the outside face of the broken concrete

And that despite the fact that there is a layer of grout to cushion the pressure between the concrete and the bracket.

While it is clear the tension of the brackets was wrong, the reasons for this have not been explained by HIE. Generally stainless steel expands and contracts very little but if the brackets were put round the concrete in some of the very hot weather earlier this year, that might explain why the concrete shattered in the photo above. Other possible explanations is that brackets are not fit to do the job they were supposed to do or that the original people working on them were trained properly

In the medium terms it also appears quite likely that the brackets may move the stresses to another part of the concrete “I” beam. This reinforces my argument that the decision to build the funicular out of concrete rather than steel is at the root of the construction disaster.

When will the funicular be safe to re-open?

HIE’s news release went on to claim:

“Further inspection work has been completed and a series of trials using specialist equipment proved successful. Testing will be done continually as the tensioning work progresses.

A spokesperson for HIE said: “Every effort is being made to complete these works quickly so that the funicular can be brought back into safe use as early as possible.

“Our current expectation is that the job can be completed and the train back in service again before the end of September. The timescale will be kept under close review and we’ll take every opportunity to move at pace, while maintaining safety as the top priority.”

However, testing and adjusting all the brackets by the scarf joint assemblies is a time-consuming job which requires specialist teams. Initially ticket sales for the funicular were supposed to restart on 02/09/2023. This was then extended to 09/09/2023, then again to 16/09/2023 and again until 25/09/2023! We will see!



Photo showing how different additional brackets have been placed on each beam, in addition to the pairs around the scarf joints, and how the number of these brackets vary.

If the additional brackets that have been placed around some of the beams, as illustrated above, also

need to be checked that raises questions whether the funicular will be repaired in time for the forthcoming winter season? The most that HIE will now commit too is the funicular COULD be back in service at the end of the month ([see here](#)).

Meantime the other safety issues I raised in my letter to Stuart Black, including the absence of an escape walkway should the funicular break down or have to stop in an emergency, remain unaddressed.

The cost of the funicular to the public purse

The unscheduled closure of the funicular means the funicular will lose yet more income adding to the projected £73m loss over 30 years as set out in the business case that Fergus Ewing approved. Judging by the state of the concrete, which I will consider further in my next post, it is likely that further repairs will be needed year after year.

Throughout Europe it has been found that there comes a point in the economic operational life of a Funicular, even when constructed out of steel, that the repairs and maintenance costs start to outweigh the financial benefits! Politicians should have appreciated that point actually occurred on Cairn Gorm in 2004 when the rent charged by HIE to the Cairngorm Mountain Trust (C.M.T.) and their subsidiary Cairngorm Mountain Ltd was reduced from £500k to just £100k!

In March 2004, the Bank of Scotland agreed to a reduction in the interest charge on all debt until 30 April 2005. At this time the bank would require any profits generated before non cash items to be lodged in permanent reduction of their debt, net of any essential capital expenditure agreed by the bank. Highlands and Islands Enterprise have also agreed to reduce their base rent for the Cairngorm Ski Area from £513,500 to £100,000 per year over the same period.

Screenshot "Group of Companies accounts (C.M.T.) made up to 30/04/2004" courtesy of Companies House.

It's about time a full public inquiry was carried out into the whole sorry state of affairs. The snow sports, the wider community and the public, who are funding this farce, deserve better.

Category

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Tags

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