Panel for Historical Engineering Works, Scottish Social Section

Summer Visit 2019 4th to 7th July, to East Sutherland.

And the train that stopped for a PHEW.

We gathered in Inverness in early afternoon and, almost immediately after setting off, the coach used the Kessock Bridge, HEW 2536. In rapid succession we then saw four more HEWs, 2546 Chanonry Lighthouse, 2534 Inverness Harbour, 0084 Caledonian Canal, and 0084/01 the Clachnaharry Sea-lock. But in East Sutherland there are not so many HEWs, only two, 0258 Helmsdale Bridge and 0132 the Fleet Mound, are totally in the historic County and two, 2551 Oykell Viaduct and 2550 the Bonar Bridge, are half in Ross & Cromarty. In PHEW Newsletter Number 157, March 2018, Mike Clarke commented in his article about "Canal building, civil engineering and the role of the craftsman" that in England (and Holland) the difficulties of construction could easily be handled by local millwrights and stonemasons. A similar comment could be made about the infrastructure of East Sutherland.

But there is one particular influence that had affected the construction of much of what we would see – the application of an enormous English fortune on a huge Scottish estate. In 1785 George Granville Leveson-Gower, with the courtesy title of Viscount Trentham, had married Elizabeth Sutherland, Countess of Sutherland in her own right. In 1803, on the death of his father, he became the 2nd Marquis of Stafford and inherited the enormous Leveson fortune. Earlier in that same year he had inherited from his maternal uncle, the 3rd Duke of Bridgewater, the even more enormous Bridgewater fortune. That Marquis was created a Duke in 1833 and took the title of Duke of Sutherland, and it is he who is commemorated in the enormous statue on Ben Bhraggie above Golspie.

The acquisition of those fortunes appears to have initiated the construction of a lot of infrastructure on his wife's estates in Sutherland :

1805	The Sutherland Road Act
1808	Bridge over the Big Burn at Golspie
1810-14	Faskally coal-mine at Brora.
1810	Culmailly Canal - the Marquis' money may not have been involved, but his influence certainly was.
1810-11	Helmsdale Bridge
1812	Bonar Bridge
1813-16	Fleet Mound
Undated	many wayside hospices for travellers of which the Trentham Hotel, in the parish of Dornoch, is the most prominent.
Undated	I believe that there are others, which I will explain later.

The four great sea-inlets in the North of Scotland, the Inner Moray Firth, the Cromarty Firth, the Kyle of Sutherland, and Loch Fleet, make difficulties for land travellers between Caithness and Moray, and in mediaeval times they used the Chanonry Ferry, Innerbreakey Ferry, Meikle Ferry and Little Ferry to cross those inlets. Mostly it would have been religious personnel travelling between the Cathedrals at Elgin, Fortrose and Dornoch, the Abbeys at Kinloss and Fearn, and St Duthac's Chapel and Sanctuary at Tain.

The national development of an industrial economy made Inverness into the cross-roads of the Highlands. In 1812 and 1816 the construction of Bonar Bridge and the Fleet Mound with the building of Lovat Bridge, Beauly, 1811-14, HEW 2544, Conon Bridge, and at Alness (HEW ?) and Easter Fearn, HEW 0322, in 1817, (on the Struie Road, formerly known as the Fearn Road) provided a land route around the inlets of about 72 miles from Inverness to Golspie, about a day's journey by horse, but the ferries all remained in use. And this route remained in use by motor traffic until the three 20th Century bridges were built. It was only in 1868 that the Highland Railway, HEW 0601, was built – in stages – on the long route round, except to cross the Kyle on the Oykell Viaduct, and getting from Golspie to Inverness could be achieved in about 3 hours. Now the Fleet Mound of 1816 with the three bridges of the 20th century provide a vehicular route across all four of about 52 miles from Golspie to Inverness, usually a journey of about an hour.

So our first stop was at Dornoch Bridge, the splendid, modern road entrance to Sutherland, where Don Fraser, who had been the RE for the construction, joined us and explained the development of the concept of "cast and push" and the location of the factory. A visit to Meikle Ferry North pier showed us clearly the constant vertical curve of the Dornoch Bridge. After refreshments in Platform 1864, the cafe in the Tain Station buildings of the Highland Railway, we checked in to our accommodation in the Dornoch Hotel, the former railway hotel built in 1904 following the construction of the branch line. But we were soon on the road again, on the day of the Spring Tides, to get to Little Ferry to see the tidal stream at its strongest so that we could appreciate how dangerous a crossing it could be at times – although at 150m it was the shortest of the four major crossings. An original 1855 Chart of Little Ferry, now in private ownership, surveyed by D & T Stevenson for the 2nd Duke of Sutherland, for development of the port was on display for the group to see. The ferry is on the shortest route from Golspie to Dornoch, or Golspie to Meikle Ferry for horse and pedestrian travellers, and it is significant that it remained in use until the 1920s when motor transport became generally available and the longer route via The Mound became easier for more people.

At the Culmailly Burn outlet, the Culmailly Canal exit to the sea, after viewing and discussion with Angus McCall, owner and farmer of Culmailly Farm, John Howat stunned us all by stating that he believed that the structure was now unique in the UK, its existence previously overlooked and not appreciated, the only surviving remains of a Flash Lock in Britain.


Photo: John Howat

Friday 5th started with a visit to Torboll fish-ladder, built of unmortared stonework in a natural valley it allows salmon and sea-trout to bypass the 20 m high waterfall on the River Carnaig and to inhabit several miles of the river above the falls and the 1 mile long Loch Buidhe. Built about 1864 it is believed to be the first in the world. The sides are now heavily overgrown which made access and viewing difficult but it is still functioning, and as a vital link in the valuable fishings of the upper Carnaig and Loch Buidhe we can expect that it will be kept functioning.


Photo: Tony Jervis

We travelled via the Mound, Rogart and Lairg to view the principal elements of the Shin Scheme, the most northerly of the major Scottish Hydro-Electricity Schemes, the Upper Loch Shin Dam, the River Tirry augmented by flows diverted from the River Brora and from three burns at the head of the Naver, and the Lower Loch Shin Dam. Later, after Rosehall, we saw the main Shin Power Station at Inveran.

Near Rosehall House we saw part of the Rosehall Canal, the most northerly freight-carrying canal in the UK, built about 1810 by Lord Ashburton to get the building stone from Moray for his new mansion across the marshy verges of the River Oykell to firm ground. About 100 years ago the mansion-house was owned by the Duke of Westminster whose mistress was Coco Chanel and for her it is believed a bidet was installed – the first in any house in Scotland. Now it is sadly dilapidated but we peered in the windows. We lunched at the Achness Hotel where Lily Byron had put on a display of some of the local archive. She and her husband, Charlie, then led some of the group to see the Cassley Falls, one of the hidden gems of Sutherland, while some went to see the flower festival in the Parish Church.

The coach slowed for us to get a view of the triple arched Old Shin road bridge at Inveran. Parked at Invershin Station we walked over the footbridge attached to the upstream side of the Oykell Railway Viaduct, and at Bonar Bridge we visited the bridge and the 3-sided monument. At Spinningdale we stopped to see the intake in the burn and the lade for the water supply to the ruined mill. Until about 50 years ago that supply had been used to generate a private electricity supply for Spinningdale House.

For the group's visit I wanted to ensure that I prepared myself for all reasonable questions about the area's infrastructure. So I was looking carefully at the countryside in which I grew up and had previously just accepted what was there without thinking about it. And it became obvious to me that the provenance of one piece of infrastructure had not previously been understood by me. Before the

development of the motor car most tracks followed the land form, rose and fell with the land, and twisted and turned around obstacles. Horses and carts took the easiest route. For cars those tracks were just tarred over and in country areas and byways are still widely in use with some minor adjustments. But the 4 miles of the present A9 from the Mound summit to Golspie are different. The road is aligned as essentially 6 long straights, with long gentle gradients, and it varies from the land form, much of it on a ledge cut into the slope above the formerly marshy hollow, and with a continuous line of mature beech trees on the uphill side. The mature trees show that it dates from about the time of the construction of the Fleet Mound. And this style also applies to the road north of Golspie, from about the Review Park until it meets the route of the former drove road at Strathsteven, about a mile north of Dunrobin Castle. I believe that the Marquis was the only person who could afford such a construction (on the advice of Telford?) on the shortest route from his Fleet Mound to Golspie, and the semi-avenue enhancement of the road demonstrates the importance of the castle at Dunrobin. We can now see that these semi-avenues were created as new highways on the two diversions from the drove road, from the Mound summit to Golspie, and from the north side of Golspie to Strathsteven, the latter effectively a bypass of the Castle's sea view amenity, and are significant pieces of modern infrastructure created long before the motor car and modern highways were invented. I cannot think of any other public highway in Scotland with these modern attributes created long before the motor car.

At Clyne Heritage Centre, Brora, Nick Lindsay welcomed us with refreshments and explained the industrial development of the village brought about by the exploitation of the coal deposits over the last 500 years or so. It was used for domestic heating, for a salt industry, at the loco works which became the wool mill, and the brickworks, and a harbour was developed for the export of coal and of salt. And the narrow-gauge tramway linked them all with the mine at Faskally and the goods yard at Brora Station. We viewed the Heritage Centre's displays before going to Sid's Spice on Brora Station Square, where Nick and Ellen Lindsay joined us for the evening meal.

Saturday 6th started in the lower part of Brora where the coal had first been mined in bellpits at its outcrop near the sea, and the salt pans were built in close proximity. And here the Brora Radio Station, a listening outpost of GCHQ, had been built in the 20th century. The masts and aerials are long gone but the buildings remain and Don McIntyre, who had worked in the Station, gave us some idea of how it had functioned. Nick Lindsay joined us again and we went on to view the harbour, dried out at low tide, constructed by joining a small island at its upstream end to the south bank of the river,

the narrow railway arch, built only to accommodate the tramway, and visited Faskally where had been the brickworks and the mineshaft first sunk in 1814. At the Station Square Nick led the group around the sites of the Station Buildings, the Highland Railway shed, the sidings to transfer the coal to standard gauge railway wagons, the tramway crossing of the A9, the loco works which later were the Wool Mill, the tramway slope up from the line on Coal Pit Road, the terrace of houses, in Staffordshire style, built for workers at the Works, and the three bridges.

As the coach took us north out of Brora we observed Clynelish Distillery. Does it say something about our modern society that, of all the industries in Brora, this is the only one still in existence! Ahead we could see the high sea cliff of The Ord, the county boundary between Sutherland and Caithness which causes the railway line to have to turn inland at Helmsdale using the river valley to gain the height needed to get in to Caithness. The trunk road, the A9, twists and turns as it climbs to achieve the shorter route to Wick and Thurso.

Just before Portgower we observed, on the top of the escarpment, the former Observation Post No 18 of the Golspie Naval Gunnery Calibration Range. At Helmsdale we visited the harbour, and in Timespan we viewed the displays, had lunch, and Jacqui Aitken gave us an illustrated talk on how the village had developed from its earliest days.

We crossed Helmsdale Bridge to Helmsdale Station and courtesy of Lisa MacDonald, Michael Willmot and John Yellowlees saw its concrete construction and its conversion to a comfortable house for letting for community benefit. We also saw the displays and plaque commemorating the Naval Special trains of both World Wars, the Jellicoes.

By the 14.21 departure from Helmsdale we travelled the full length of the Duke of Sutherland's railway from Helmsdale to Golspie, and carried on to Rogart and I provided a script so that all could observe the significant views during the journey.

At Rogart we were welcomed by Frank Roach who took us first to the bridge over the River Fleet about 100 m from the Station where the setts of the ford are still in place vertically below the bridge, the lowest ford on the river that could be used by a horse and cart before the Mound embankment was built. Then he showed us the Rogart Mill and the eclectic collection in his own railway heritage centre at Rogart Station.

At the former Mound Station we were able to look all over the now privately owned station, the start of the route of the Light Railway branch line to Dornoch, and saw the two platforms, base of the water tower, sheds, station buildings, and location of sidings. And we looked at the sluices in the embankment and the overgrown remains of the road and rail bridge abutments.

We followed the route of the Dornoch branch line over the Mound embankment, past Cambusavie Halt and Skelbo Station viewing on the way the tidal basin of Loch Fleet, the ruins of Skelbo Castle, and Little Ferry from the south. We continued to Dornoch where some used a little free time to visit the Cathedral and some of the town. Peter, who had helped us at Torboll fish-ladder only the previous morning, and Sally Wild joined us for dinner at the Hotel, and later in the Carnegie Library they showed us two films from the Historylinks Museum collection – of the construction of the Dornoch Bridge, and of the Dornoch Light Railway.

The quarry, from which the stone for the 6 sluices at The Mound was obtained, was pointed out on the Sunday morning beside the A9 between The Mound and Golspie. Perhaps the need for building the haul road for the stone promoted the idea of carrying that road on to Golspie, becoming the Marquis' semi-avenue. Also indicated was the approximate location of a WW2 airfield on Kirkton Farm.

At the north end of Golspie we visited the two bridges over the Big Burn, that of 1808 with Telford connections, and that of the 1930s. The first carries on its keystone on the north side the much weathered Gathering Stone of the Sutherland Clan. This obelisk has obviously been moved from its original site and we discussed the significance of the carvings, the inscription and its translation.

We crossed Colin's Bridge over the Big Burn and under the railway arch to see the mill lade, and observed the mill. The railway arch is the largest single structure on the railway wholly in the County and was one of the bridges guarded in WW2.

We looked at the outside of Golspie Drill Hall, the largest single enclosed space in the County, now becoming very dilapidated, in private ownership and not accessible to us. The post box on the wall of the Golspie Inn is claimed to be the oldest post-box in use in Scotland still in its original position.

We visited Dunrobin Station, then Duke Street, Golspie, and the ford and drove road, and saw the headquarters of the Golspie Naval Gunnery Range now converted to be a private house. Some took the option to walk via the beach path and sea wall, and some via the Main Street, to the Hotel. We visited the beach and the sea wall before lunch in the Stag's Head Hotel where Shirley Sutherland, of Golspie Heritage Society, joined us and put on a display of some of the Society's archive. We walked past the location of the Barometer House to Golspie Pier and the site of the gasworks, and most walked to Golspie Station. With Shirley Sutherland we discussed the station layout involving goods sidings and sheds and the shed and turntable for the Duke's private engine; we looked at the station building and the 1871 plaque.

We joined the 14.08 Wick to Inverness train and again I provided a script for the sights on the way. There was no request for a stop at Rogart but Frank Roach was on the other platform waving farewell as we passed. On this journey we travelled the full length of the Sutherland Railway opened in April 1868, Golspie to Bonar Bridge (now Ardgay), and we crossed four HEWs Oykell Viaduct, 2549 Alness Viaduct, 2543 Conon Railway Bridge, and 1759 Clachnaharry Swing Bridge over the Caledonian Canal. The distinctive clack-clack, clack-clack, as we crossed this last heralded our imminent arrival in Inverness Station, on time. Then it was farewells and dispersal until next year.

And the train that stopped for a PHEW?

With the realisation that the present A9 from The Mound to Golspie, the Marquis' semi-avenue, had only been constructed after 1816 I asked myself, "What, then, had been the way around Loch Fleet – before the marshy hollow of Culmailly and Kirkton had been drained, and before the Mound causeway was built, i.e. before about 1810?"

The principal route south was via Little Ferry, on the route of the present road from Golspie to Little Ferry, along the low gravel ridge. There was no track along the marshy hollow. Any track north of the marshy hollow would have had to negotiate steep slopes, cross precipitous burns, and avoid the rock face of the Mound Rock, and no such generally used track developed.

I had recently learned of the existence of the "two-eyed culvert" on the outlet of the Kirkton Burn (which now I am naming Kirkton Bridge) and I suddenly realised that here was the answer. To bypass Little Ferry an easy route for travellers would be to turn west and cross Culmailly Burn on a bridge at the narrowest point between the two gravel banks and go forward for about 2 miles along the gravel ridge now covered by Balblair Woods. The one difficulty would be the crossing of the small estuary of the Kirkton Burn to reach the firm ground below the present Mound saddle. It is my belief that Kirkton Bridge with its causeways was built for that purpose. On Google Earth the west causeway can be seen turning to ascend to the saddle. And from there to the Pittentrail Ford the track had gentle slopes on firm ground and only small burns to be forded, at Morvich and elsewhere.

That route would only ever have been used by those avoiding the dangers of the Little Ferry, and those with heavy loads for local destinations. When the Marquis' semi-avenue was created after 1816, which provided a shorter and easier route from Golspie to The Mound, the route via Kirkton Bridge became redundant and ignored, and the track would have soon disappeared under tree growth.

Its location remote from a population centre prevented raiding of the structure for its building material and it remains intact. When the railway was built in 1868 at a level a few feet higher it disappeared from view and as the years passed it slipped from the local memory. Generally trains pass it at speeds of about 50 mph and it can only be glimpsed for moments, and it is generally overlooked and forgotten.

But for me its very existence in that location proves that that was the route of the inland track around Loch Fleet. This was the second "discovery" of my preparations.

An image in Dornoch Historylinks collection, Ref 2001_122_002 No 449, is a rough drawing "Sketch of the Mound under construction", seen from the Dornoch end and with the Mound Rock in the background. At the top it is labelled "A vile drawing" and the drawing has all the style and lettering the same as other drawings I have seen made by the Countess-Marchioness. It is an early item in the Historylinks collection and at the time of its acquisition no record was made of its provenance. It would have been the equivalent of a modern photograph for the Countess-Marchioness to send to her husband in England to show the progress on a major piece of construction work. Near the top on the Golspie side is a line running from side to side labelled "road to Morvich" and at the east end of that line are two small circles on the track. A representation of Kirkton Bridge? In my view, certainly! And proving that it was there before 1816.

I obtained photos of the Bridge by courtesy of Scottish Natural Heritage. In June 2018 I made the return journey by train from Golspie to Rogart so as to glimpse it for myself twice from a service train, as I had never previously noticed it.

How could I see it properly and could I get the group to see it? At more than 2 miles each way walking from the road to Little Ferry that was not possible for me or for the group. Service trains running

at usual speeds allow only a glimpse and only if you are looking in the right place and at the right moment. Would it be possible to get the train to slow to, say, 5 mph so that in passing we might get more than just a glimpse? With a few months to go I asked John Yellowlees for his advice; who should I ask for the necessary permissions? And John took my quest on board and he did get the permissions needed - provided that the train was running on time.

On Saturday 6th at Helmsdale the rostered driver was Lilian, a student of history, and at her window she told us that she was planning to stop the train for a few moments. Among ScotRail staff word had got around about the unusual request, and in earlier journeys she had seen Kirkton Bridge and knew exactly where it was. At Golspie the train was on time, and then we knew that it was actually going to happen! She did stop the train for a few moments just before reaching the Bridge so that we could all see the North side, drove forward to just past it, and stopped again for a few moments so that we could all see the South side. Heavy vegetation prevented clear views; but we did see it! The other passengers slept on!

At Rogart it was a pleasure and an honour to thank the driver - just as we always used to do. The train did indeed stop so that the PHEW group could see a remote bridge, and for the permissions for that I have pleasure in thanking our own John Yellowlees, Mark Ilderton, Head of Integrated Control, David Simpson, Operations Director, and Kenny Barclay, Driver Team Manager, Inverness, and of course Lilian the driver.

I remain convinced that Kirkton Bridge was built to allow travellers on the drove road around Loch Fleet to cross the Kirkton Burn and it became redundant soon after 1816 with the construction of the semi-avenue from the Mound summit to Golspie.

Acknowledgements: I am indebted to Jenny Bruce for help and hard work in reconnoitring and preparations for the visit, and in consideration and suggestions for the timetables, and to her and Sandra Purves for help with domestic arrangements, and control of the finances, and for their continuous support and help during the whole visit.

Robin Sutherland, Turriff.

29th August 2019