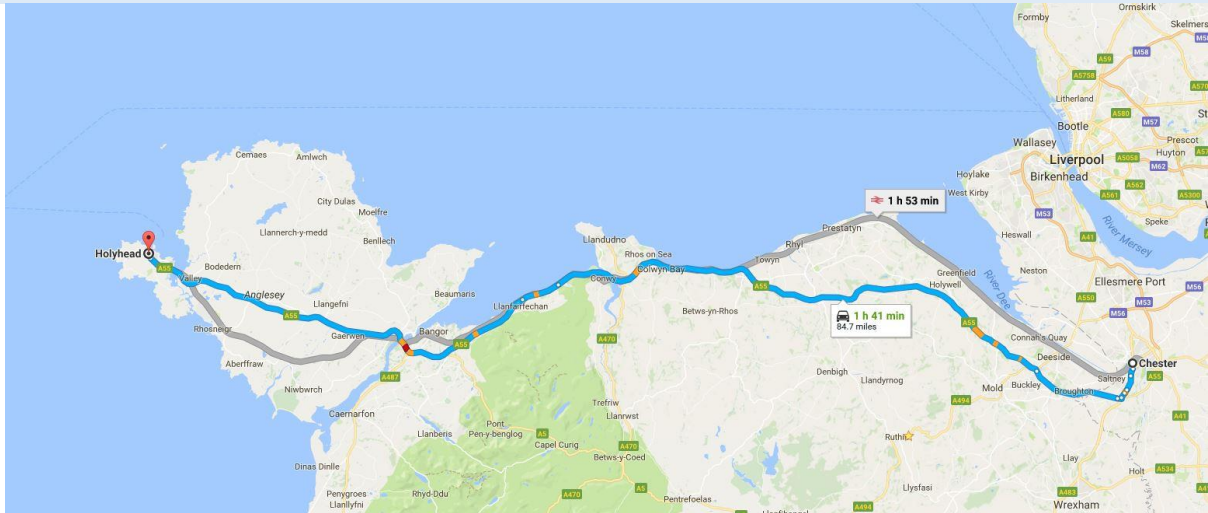


May 2018

IMPROVING CONNECTIVITY



I wrote back in October last year how important connectivity between urban areas is if we are to improve our productivity in the UK. Poor connectivity leads to patchy prosperity which Ed Conway described in The Times as a very British disease. But poor connectivity has wider implications for the quality of our environment and our working lives too.

RML are very pleased to be involved in working on improvement to the A55 across North Wales from Ynys Mon all the way to the river Dee. We have completed our work on the route selection of a major scheme to improve the traffic system in and around Deeside; we have just begun the design of a new river crossing over the River Dee on the A494, where the notorious chicane marks the entry to North Wales; we are designing a project that will result in the removal of the 2 roundabouts on the A55, the only two between Holyhead and St Petersburg we are told; and a new crossing over the Menai Strait which improves the connection between Ynys Mon and the mainland. In each case RML is part of a team of engineers and environmental specialists. We are focussing on many of the environmental aspects that these significant construction projects involve.

We worked for more than 15 years on the dualling of the A55 across Ynys Mon.

Here in the office Robert Jones has reminded me that connectivity is also important for the successful exploitation of parcels of land by both fauna and flora. This figures to a large extent in our thinking about areas of new grassland and woodlands and the disruption of flight lines of bats and owls across new highways for example. Habitat creation is an important feature of our current work. 'Working with nature' was especially important to us when we were heavily involved in land reclamation and the rehabilitation of old industrial areas. One of our main objectives in those days was to re-connect people with habitats that had been lost.

Connectivity is also important at a personal level with our clients and colleagues, and to this end we have improved our conferencing facilities to reduce the need for travel. Connectivity is multi-faceted and it is this feature that has surprised me when thinking and writing about the topic.

Kind regards

Ivor

Managing Director
Richards, Moorehead & Laing Ltd

THE LAW OF UNINTENDED CONSEQUENCES



I can relate at least two examples of how in civil engineering clouds have silver linings on account of the law of unintended consequences.

Parc mine, an abandoned lead mine, was situated in a side valley above the Conwy valley just to the west of Llanrwst. The waste from the mineral processing was composed of fine-grained tailings that contained 4.8% of lead and 9.4% of zinc as well as smaller percentages of copper and cadmium. The tailing had been deposited in a lagoon that had been contained by brushwood with side-slopes as steep as 800 in places. As the lagoon filled with a slurry of fine tailings the sides were raised using extra layers of brushwood. The brushwood disintegrated with time and the mass of waste was totally unsupported and prone to erosion. The heap was totally devoid of vegetation and stood many metres above the surrounding land. In 1977 a severe thunderstorm cut a huge gully into the waste and several thousand tonnes of the material passed down the Nant Gwydir which ran through the site. The flood entered the main river, the river Conwy, and created a serious pollution event in a river of high quality.

It was immediately apparent that the waste had to be stabilised and protected from further erosion by wind and water.

A reclamation scheme was set in motion and within about 12 weeks a contract for the regrading and stabilisation of the waste heap had been let, yes all was arranged in just 12 weeks. The works were completed at a cost of £400,000 and produced a stable landform of waste which was capped by imported quarry waste and seeded with metal tolerant grasses. The intention was that the grasses would root through the rock waste and penetrate the lead waste and thus stabilise the surface and prevent further loss of the waste by erosion. This has worked extremely well. The grass has been grazed by sheep. Within 12 months the tolerant grasses had rooted through the capping and into the spoil to a depth of 50mm.

The lead waste that was washed down onto the flood plain was never removed. Some had been deposited on grassland close to the junction of the Nant Gwydir and the river Conwy. The meadows were affected by the toxicity in the waste. In places the original grasses have long disappeared due to the toxicity and been replaced by a mixture of metal-tolerant and non-tolerant plants. The site is now a 'Site of Special Scientific Interest' (SSSI) on account of the special plant community that has established itself there. Quite some silver lining that is visited by students on numerous occasions.



Bwlch and Cwmerfyn lead mines lie inland just to the east of Aberystwyth. As at Parc, the mines were the sources of lead and zinc pollutants that were entering the local river system. In the late 1990s a reclamation scheme was put in hand which involved encapsulating the fine grained wastes and covering them with coarse grained, uncontaminated country rock which was also on site. 12 open mine shafts were capped and made safe too. At a very early stage in the works it was discovered that an existing rock scree had been colonised by an extremely rare lichen. Lichenologists expressed grave concern that the reclamation works would disturb the lichens and their concern lead to several weeks of acrimony between them and RML as the site works progressed. Our clerk of the works was threatened with legal action because he thought 'out loud' that they were being unhelpful in questioning our working methods. Most of the lichens were unaffected, some were carefully relocated. When the work was finished the lichenologists realised that they now had an adjacent, new scree of country rock on which they could plot the progress of the lichens colonising it, a bonus and an unintended consequence

Kind regards

Ivor

Managing Director
Richards, Moorehead & Laing Ltd

SOFT ENGINEERING – ARE YOU A SOFTIE?

We are having some fine spring-like weather and I am feeling just a little nostalgic for the time that I spent on site as a resident engineer in the 1960s. They were indeed sunshine days. Life was a lot simpler too. I was 'king' of my own little kingdom though to me it seemed large. I was responsible for the construction of a large water treatment plant in the Brecon Beacons that would augment the supply of water to the City of Cardiff. I had also been responsible for much of the design of the works which included a new access road, a bridge over the river Taff as well as deep excavations and acres and acres of reinforced concrete. I wrote the specification and bills of quantities, they make me smile when I read them today. I had included a few clauses dealing with infectious disease, personal

cleanliness and the requirement for medical examinations of people engaged on site. I also included a small clause that required the contractor 'to cause the least possible interference to existing amenities whether to natural or man-made. No trees were to be felled except on the instruction of the engineer'. That was it, just a couple of lines so far as 'the environment' was concerned in respect of a 3 year-long project that was to be built in a sensitive area alongside the headwaters of the River Taff. That document was part of my submission to the ICE to be considered for membership. I passed without comment. So this kind of attitude was, let's say, prevalent throughout the industry.

In those days the civil engineering world was simple and hard. Hard in the sense that clear lines of demarcation had been drawn up. Top soil was 'unsuitable' and therefore anything related to top soil, such as vegetation, was of no real consequence to an engineer. This closed mind approach obviously extended to fauna as well.



The disaster at Aberfan had occurred in 1966 and as a consequence, along with other engineers, I had the opportunity to do something different, this was 'the reclamation of derelict land' as we called it. Actually it was more than 'reclaiming land' we were interested in rehabilitating degraded communities as well as landscapes. This called for a new approach.

During his time as President of the ICE in 1994 Professor Edmund Hambly said 'Civil engineering is as broad as the infrastructure and the environment in which engineers serve'. Clearly the professor thought that the message about being mindful and caring for the environment needed some reinforcement 'from the top down'. He warned that engineers' workload would suffer if they did not heed his warning. This was in 1994 and on reflection the date surprises me since along with some engineers I had been preaching about the merits of being 'soft' on the environment for a couple of decades. It is another 20 years on and I am told that even today there are people involved in construction who have yet to be convinced that the 'prof.' was right.

For certain civil engineering is a broad church and provides a career that is immensely satisfying even if on times frustrating on account of the capriciousness of nature, including the weather as well as fauna and flora. So now there are many 'softie' civil engineers who have important tasks to perform with environmental specialists working alongside of them, so many that they all need coordinating!

The complexities of actually doing something have changed beyond recognition since my days in the Brecon Beacons but the sun is still shining

Kind regards

Ivor

Managing Director

Richards, Moorehead & Laing Ltd

No vampires allowed!



Excitement in the office (almost as much as generated by a selection of cream cakes) as our new Anabat Walkabouts and Anabat Swift bat detectors arrived, ready to test out on this evening's bat survey.

Pictured above left, the Walkabout is the latest handheld bat detector from the Australian manufacturer Titley Scientific, and displays calls in real time, enabling us to monitor and review sonograms in the field. The camouflaged unit is a static Anabat Swift model, a relatively new addition which allows passive detection of bats over many days or weeks, without the need for human interaction. This model brings full spectrum recording to passive models which is becoming increasingly useful for submissions to statutory consultees on development projects.

To power our Swifts we have Panasonic Eneloop rechargeable batteries as part of our efforts for tech sustainability. From Panasonic - "It is estimated that over 40 billion dry-cells were disposed worldwide last year. Eneloop rechargeable batteries represent renewable energy and can be charged up to 2100 times!"..... "Let's keep batteries out of our landfill." After many years service in flashlights we can attest to the Eneloop battery being the best we have come across.

We have a busy season of bat surveys ahead of us, it's a good job we're not afraid of the dark!

Kind regards

Louise

Graduate Ecologist

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