

2 Jan 2020

City and Guilds Association

Dear Trustees,

RE: SPONSORSHIP APPLICATION 191104 – IC Rail and Transport Society

I am pleased to report on the successful use of funding for the Annual Wales tracklaying and hands-on engineering experience. We had a total of 9 Imperial College students, with 8 being in the CGCU. Please see attached a trip report produced by our Secretary, Patawee Jintana, and comments from the attendees.

Below is the detail breakdown of how we spent the £450 in partial funding of our Annual Wales tracklaying and hands-on engineering experience.

Item	Actual	Budget
Travel	£ 541.40	£ 544.50
Accommodation	£ 94.50	£ 105.00
Food	£ 275.20	£ 279.00
Safety Equipment	£ 24.99	-
Total	£ 936.09	£ 928.50

CGCA Contribution	£ 450.00
Attendees Contribution	£ 410.00
ICRTS Contribution	£ 76.09

I would like to give my heartfelt thank you to Kim for liaising this and Ian for his tremendous support on site. In the coming year, we plan to further increase number of events by looking for mutual interests with other transport-related societies and other universities, we aim to have more impact on our members and benefit our knowledge. However, the Wales Tracklaying Trip remains at the centre of society's events and hope you will continue provide the needed financial support.

Yours faithfully,

Jade Low
Chair 2019/20

ICRTS Wales Trip Report: December 2019

Friday 13th December

On the last day of the Autumn term, we headed to Euston railway station with a festive spirit. Catching the 14:03 Avanti West Coast train to Birmingham New Street, we were able to see 'naked train' as a result of change of train operating company. At Birmingham, we suffered from delays due to trespassing. We also suffered from unexpected change of trainset at Shrewsbury. To recover the situation, dwell time at one station along the route was reduced from ten to three minutes. That helped us to get to the destination on time.

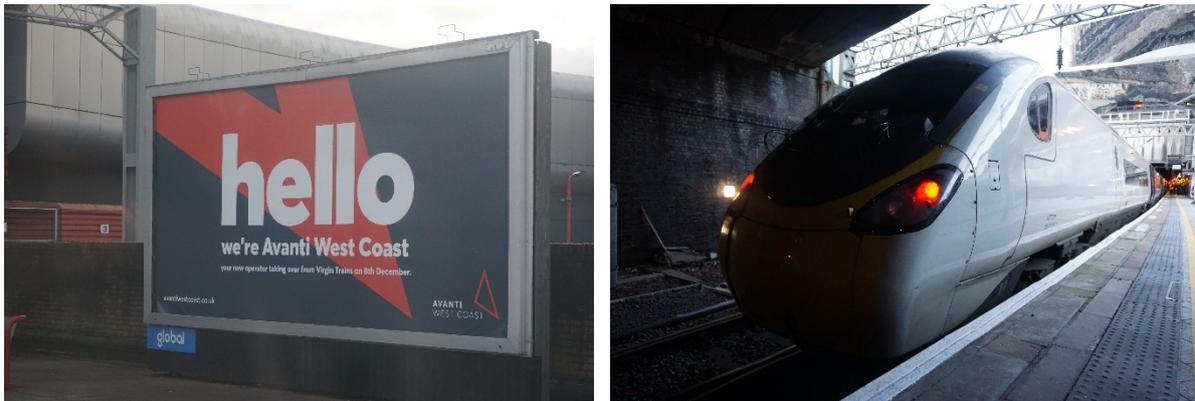


Fig. 1 Images showing Avanti West Coast trains

We were welcomed warmly by Kim Winter, who has been helped coordinating ICRTS Wales Trips for years. After settling down at Penrhyn hostel, we went to local Kebab shop and local pub to enjoy food and drinks. After fully charged, we were ready for volunteer weekend starting tomorrow.



Fig. 2 Picture of attendees

ICRTS Wales Trip Report: December 2019

Saturday 14th December

It seemed like Welsh weather was nice to us, the temperature was warmer thanks to earlier rain. After finish first breakfast of the trip, we rode the special steam work train from Penrhyn hostel to Boston Lodge workshop.



Fig. 3 Images showing the special work train

After safety induction and handing in form, we were assigned the first task of the volunteering weekend, which was pulling in the new main power supply and earth cables to the new carriage shed. Once rolls of power and earth cable were set in the correct position, we were split in to two groups: sending group and receiving group.

ICRTS Wales Trip Report: December 2019

Saturday 14th December

Sending group responsible for sending cables through flexible pipe, applying lubricant and stop the cable feeding if they moved too fast. On the other hand, receiving group responsible for pulling the pilot rope, which connected to the front end of the cables. Both teams needed to constantly communicate to get sending and pulling synchronised.



Fig. 4 Images from the power cable pulling task

From existing power access point to the new shed, cables needed to go through two manholes for 90 degrees turn. At each manhole, extra length of cables was pulled out for getting to the new shed. The pilot rope was also untangled to allow reusing. Three hours later, power and earth cable finally reached the new shed. Soon after that, the manholes were closed to mark the end of our first task.

We enjoyed railway related magazines during lunch break in the common room. Then, we finally got to work the task we were waiting for, tracklaying. As the new shed was constructed to safeguard thousands pound carriages from harsh Welsh weather, three tracks would be laid so that the carriages could be pulled in. We were honoured to lay the first pair of rails in this shed with our own hands.

ICRTS Wales Trip Report: December 2019

Saturday 14th December



Fig. 5 Images of the railway shed

During task briefing, we learned that not high spec rails were required for the shed as the carriages were moved at low speed and most part of the rails would be buried in concrete anyway. As most of the parts, especially rails, were reused. It was important to get the less-cornered more-squared edge outside so that the concrete will not overflow to the area between rails.



Fig. 6 Images of a locomotive

While the rails were dragged by the loader, we got the chance to see heritage vehicle storage. The vehicles inside were enriched with history and devotion of railway people from many generations. We also discussed about how turnout, crossing and token signaling system work. The discussion went smoothly as the clear examples were in front of our eyes.

ICRTS Wales Trip Report: December 2019

Saturday 14th December

We did not wait long until the first pair of rails were dragged. We then fixed the rail in x-axis using the starting position of straight track section, then y-axis using the shed wall and gauge width as a reference. As the rail was heavy, all attendee needed to act as one unit and move each rail to desired position. Due to cold weather, it was not suitable to drill holes to fix the rail permanently, but we could leave that for the next gang joining upcoming volunteer weekend. At this point, we focused on using our manpower to lay the track as much as we could.



Fig. 7 Images from the track-laying task

We finished off this day by taking group photo of ICRTS trip attendees. Then, we headed back to Penrhyn hostel to have dinner.



Fig. 8 Image of all the attendees

ICRTS Wales Trip Report: December 2019

Sunday 15th December

In the morning, the Welsh weather was still kind to us. No rain in the morning. We continued tracklaying task. We began with fixing the first pair of rails in z-axis by putting metal plate under each rail at approximately 1.3 m interval. Once completed, second and third pair of rails were dragged and fixed in all axes. We could not continue further tracklaying as concrete layer supporting the curved section was not fully poured.

We then focus on connecting each pair of rails together using mechanical fasteners. After we founded out that the plates were not fit, the work was suspended until the correct plates were acquired from the storage.



Fig. 8 Images from the track-laying task

While we were waiting for the correct plates, we were given workshop tour by the staff working on the restoration project. We also given a quick lecture about steam locomotive and narrow-gauge railway.



Fig. 9 Images of current works of the Ffestiniog Railway

ICRTS Wales Trip Report: December 2019

Sunday 15th December

After the correct plate arrived, we got back to work. We cleaned the rusted surfaces of bolts and plates, then applied the grease on surfaces in contact. Finally, we mechanically connected two pieces of rails together using spanner.

Unfortunately, we encountered problem due to misalignment when we tried to connect second and third pair of rails. This problem would take hours to solve. Unfortunately, we did not have much time left. As we could not continue tracklaying any further and, we were assigned to move steel structures which would be used for future extension of the current carriage shed. We also removed dirt from the floor.



Fig. 10 Images of other general tasks

It was this moment that Welsh weather showed its true form. We were hit by sudden gust and hail shower. After harsh weather went away, we started packing equipment and cleaning. The moment we thrown our working gloves away marked the end of our volunteering weekend.

ICRTS Wales Trip Report: December 2019

Sunday 15th December

After we got changed and cleaned up at Penrhyn hostel, we went to have dinner at Spooner's with Kim. We discussed the enriched history of narrow-gauge railways and continuation plan for next year trip and beyond.



Fig. 10 Image showing attendees at Spooner's Dinner

Monday 16th December

There was no work assigned to us this morning. We spent our morning to enjoy the last breakfast of the trip and packed up.

As UK train timetable changed yesterday, we need to check twice before we travelled to make sure that we would not miss a train nor connection. At Penrhyndeudraeth railway station, we saw railway staff pulling cable using the same pilot rope as we did. This reminded us how relatable our tasks were. Since we had worked on narrow-gauge railways for the whole weekend, we felt standard gauge railway was too wide on the way back.

ICRTS Wales Trip Report: December 2019

Monday 16th December



Fig. 11 Images of the Welsh Coastline

Although it was rained, amazing Welsh coastline and scenery always captured our attention, especially for someone who has been here for the first time. This could be considered as a reward of our hard work. The other highlight of the journey was observing train coupling closely. These were indeed priceless memories difficult to forget.



Fig. 9 Images of the joining of trains

We changed at Shrewsbury to secure the table seats on the 1524 Avanti West Coast direct to Euston with enough room for our luggage. We enjoyed the last section of the trip by playing card, reading novel or sleeping until we arrived Euston railway station safely just before 18:00.

Comments from Attendees

“This was my second time on volunteering weekend with ICRTS. Once again, I learned something new about railway and got hands-on experience from working alongside railway people. I realised that there was something that you need to experience yourself in order to master it. It was indeed a hard work but completion itself was a reward. Apart from technical point of view, I also appreciated enriched history of this heritage railway. Being small part of continuation process to keep history alive made me proud. In addition, working and sharing views with people who share the same love for railway was inspiring and fulfilling. “

“This was my first ICRTS trip to Wales and it did bring me joy and unforgettable memories. First of all, I would like to express my sincere gratitude to all the folks who travelled along with me, especially for the first day, when I encountered some problems to travel there. I was glad that I could see the real-world engineering practices and compare those to what I have learnt in class. For example, I could now understand the different types of steel beams used and details of joints in a portal frame structure which was used for the carriage shelter. Lifting and aligning the rail is not an easy job and the level of precision surprised me, considering a tonne of steel and shift it in millimetres.”

“Although we managed to finish all the assigned tasks ahead of the schedule, I still want to provide some suggestions for areas of improvement. We could team up in pairs or trios so that nobody works alone on site at any time to ensure the safety of everyone and to maximise the working efficiency. Moreover, we can appoint some specific roles (e.g. tools distributor/collector, site safety monitor, coordinator etc.) within ourselves to be more organised, even though we are already very efficient and diligent.

This trip is indeed a memorable one and I will strongly recommend it to all the engineers and scientists to come and experience it yourself.”

Comments from Attendees

"This is now my 3rd time going on the Wales Trip, where we trek up to North Wales, volunteering to maintain the Ffestiniog Railway. This piece of railway actually pre-dates the steam locomotive. It was built to transport slate from mines at Blaenau Ffestiniog down to the port at Porthmadog. Now, the slate mines are long gone, and the railway is a heritage line, passing through some beautiful landscapes. Volunteer groups from all over Britain help maintain this line, including the Imperial College Rail Society.

Most of the time, volunteering involves replacing old ballast, tracks, rails etc. with new ones (quite an experience in themselves), but this time we were tasked with a new project; the new train shed. Up to this point, much of the heritage steam locomotives and carriages have to be stored out in the open as there is not enough space inside the current depots, leaving them exposed to the elements outside. The new train shed should be able to accommodate the current fleet.

Our work initially involved laying down the cable for the new shed which actually involved a lot of manpower (i.e. all of us plus the people there). But the bigger task after that was to lay down some rail track inside the shed. This involved quite a lot of lifting and moving around of pieces of rail, each weighing close to a ton. We had to line up the rails to the right gauge and fastened them using fishplates. The next volunteer group will fix these rails permanently in place.

Overall, this was an exhausting but rewarding trip, especially as we had contributed to basically new infrastructure to this already historical railway. It is nice that something we worked on will be used by generations to come. I highly recommend anyone to come on this trip in future years."

ICRTS Wales Trip Report: December 2019

Comments from Attendees

“During the ICRTS trip to Wales in 2019, the club members went on a journey together from London to Penrhyndeveaeth. Upon arrival, we ate dinner together and started preparations for the following days. On both working days, a steam train picked us up from the volunteers’ hostel and took us to the railway shed, where we’ve had a tour with learning some technical and historical background of the iconic railway, and did some practical work. We’ve helped pull new underground electric cables to the new part of the shed, moved structural steel beams before assembly, and laid a section of tracks. All these activities were performed under supervision and with very helpful instructions from the project manager – not only did we help the railway, but also learned valuable engineering and teamwork skills. Upon completion of the required tasks, we went on a social dinner and went on a journey home the following day.”

“As it was my first time attending this trip, I was extremely excited to get some hands-on engineering experience. I was exposed to the works of the Ffestiniog Railways and delighted to provide genuine support to the railway shed at Boston Lodge, which is planned to contain precious carriages. The trip is such a useful and beneficial experience, and I strongly recommend it to all the engineers and scientists to come and experience it yourself.”

Comments from Attendees

“As a rail enthusiast, I enjoy being on trains and observing their operations. Having spent most of my life in Hong Kong, I do not have a necessarily strong attachment to railways elsewhere in the world. That said, I have always looked forward to witnessing the grandeur of steam railways in the UK, as I see it as an integral part of the country’s heritage and culture. I have never went beyond outer London, let alone Penrhyndeudraeth in Wales. Indeed, it was a delight volunteering in the Welsh Highlands, seeing the gorgeous mountains day and night.

It was a joy to see so many steam train locomotives, but the hands-on engineering experience was undeniably the best part of the trip. We got the chance to lay a couple tracks in the shed and to install a few underground electrical cables. The work was laborious, but it was a pleasure to learn basic practical skills using relatively primitive tools. While most of the work we performed was not directly related to my electrical and electronic engineering studies, it was the first time where I experienced engineering in a work-place environment. I also saw how different volunteers utilise knowledge from different disciplines to optimise and to increase the efficiency of maintenance within the shed.

Down time was fulfilling as well. During tea time, we had a wonderful time conversing with experienced volunteers; they talked quite a bit about the history of the country’s railway as well as their volunteering experience at the Ffestiniog Railway. A fun down game that we played a few times was the GWR game; we learnt more about the history of the Great Western Railway, and it sparked many funny and insightful discussions throughout!”

“This was an experience beyond an enthusiast activity. Working alongside my passionate peers from the Rail Society as well as experienced volunteers from the Ffestiniog Railway was satisfying. We developed a closer bond with the country’s railways, and strengthened our cross-generational ties with experienced veterans of the rail industry. I found the trip very rewarding, and if given the opportunity, I look forward to participating in this again in the near future.”