

Update on Progress regarding Treatment of Ammoniated Wastewater September 2017

This report has been compiled in accordance with Improvement Condition IC 7 of Permit HP3737UE and Compliance Assessment Report CAR_NRW0031719

Following discussions with Calon Energy, our customer and the station owner, our review of progress to date on the proposed installation of an ammoniated wastewater treatment facility on site is as follows.

Although at present collection by road tankers continues, in April of 2015 following the submission of the January update report, discussions were held with a company that produces skid mounted treatment facilities that would reduce the ammonia in the two waste streams by breaking the N-H chemical bonds. This quickly became the main focus area and over the last two years there has been a series of meetings and exchanges of correspondence. These discussions widened to include Siemens O&M and NRW along with the company, Power and Water and Calon Energy.

In brief the main steps taken so far are as follows

1. A meeting was attended to check over the process technology.
2. Information was exchanged regarding volumes and concentrations.
3. An initial design was detailed and a cost estimate was received.
4. The electricity market changed substantially which meant that the Power station which had been running very infrequently and for only short periods started to run more in base load. This had the effect of increasing the volume of ammoniated waste water produced significantly.
5. A meeting was held to present the scheme and the details to NRW who were satisfied that if the process performed as described the output could be discharged directly to the River Usk.
6. New estimates of volumes and concentrations were communicated to the process manufacturers.
7. A redesign of the skid was made to increase the throughput capacity
8. A meeting between Calon and SOM determined that project management of this would not sit easily with either company
9. Other requirements were included that would need to be interfaced with the process skid, these included; feedstock pipework and pumping, end product pipework and pumping, electrical supplies, instrument and control supplies.
10. Buffer storage tanks were to be included.
11. Original capability to allow tanker collections was to be left intact should this be required
12. Maintainability and operational intervention requirements were discussed.
13. A meeting was held to discuss whether or not the process manufacturer could deliver the solution as a turnkey project including all tie-ins.
14. It became necessary to control waste delivery to the process to allow blending of the separate streams prior to processing which caused a change in design.
15. It became apparent during discussions regarding a separate project that the implementation of this solution may have a significant effect on the effectiveness of the

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other project. This may yet cause further delays until it can be established what effect if any this will be. The details are given below.

16. Discussions are taking place with an external Engineering consultancy who may be able to provide engineering support and project management.

All of these events added some delay to the progress of the project

Separate project that may be impacted by the implementation of the IC7 solution being progressed.

Originally the discharge to river point for outputs at TP8 and TP13 were further upstream. However the flow from these discharges caused a degree of erosion in the river foreshore which was having an impact on the operations of the Newport Yacht club who shared this stretch of the river bank.

In consultation with NRW and an Environmental Consultancy company, the discharge point was relocated to further downstream and included a "Dragon's teeth" arrangement at the outflow point to spread the discharge over a wider area to prevent foreshore erosion caused by a concentrated flow over a narrow path to the river.

It has since been realised that erosion of the foreshore is still taking place due to the additional flow in the existing natural rills which is having the effect of concentrating the outfall flow.

NRW have insisted that measures be taken to reduce the effect of the outflows and Calon have once again engaged the Environmental Consultancy to design a set of remedial measures. The Easements and leases to allow this are with the solicitors and it is expected that the legalities will be completed soon

When arranging the Easements with the crown Estates, it was necessary to estimate the flow of water that would cross the foreshore.

Based on recent operations the flow of this discharge would increase significantly when combined with the new process outflow. This additional flow may make the designed remedial measures inadequate for this volume.

Update schedule;

31 st March 2013 Improvement Project	Update on the progress of the de-gassed conductivity analyser
30 th June 2013	Update on the collection and assessment of sample analysis. Land purchase developments and review of technological innovations not previously considered.
30 th September 2013	Review of status and statement of intent.
31 st January 2014	Review of implemented initiatives and a summary of further measures under review.
30 th April 2014	Review of on-going discussions with Welsh Water and progress with Water chemistry tests
31 st July 2014	Further progress on the proposal to deliver to the local water treatment plant is being made with dates for the cleaning and inspection of the collection tank set for mid-August.
31 st October 2014	Further progress with Welsh Water has been made and this includes the cleaning and surveying of their holding tank. There are further tests to determine acceptable flow rates to be completed. There have been discussions with local organisations for the transfer of waste between the power station and the treatment works. A number of quotes for this service have been received.
	Other initiatives have been discounted including the reverse osmosis of the MAJ waste. There has been no further information resulting from the Carry over tests which were hope would mean the requirement for condensate polishing was no longer necessary.
30 th January 2015	Delivery to the local treatment site at Nash by road tanker is now not available and further studies are required in order to determine the most appropriate strategy. New initiatives are being followed that will hopefully have been fully evaluated by the end of April 2015. At this time it is hoped the final most appropriate solution will have been determined.
April 2015	A new process has come to our attention which could potentially provide the solution without the energy use or chemical use of the previously considered engineered solutions.
2015- 2016	Depth and breadth of project expands to include site tie-ins.
2017	Turn-key solution explored and contractual arrangements discussed. Possible clash with on-going river discharge project identified. Final solution may have to address both of these issues as a single solution. Still not completely discounted are the initiatives to pipe off-site or to come to some arrangement with SIMEC Uskmouth Power to use their water system to dispose of the waste streams.

The project is still being progressed and we hope to have finalised the project scope later this year.

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