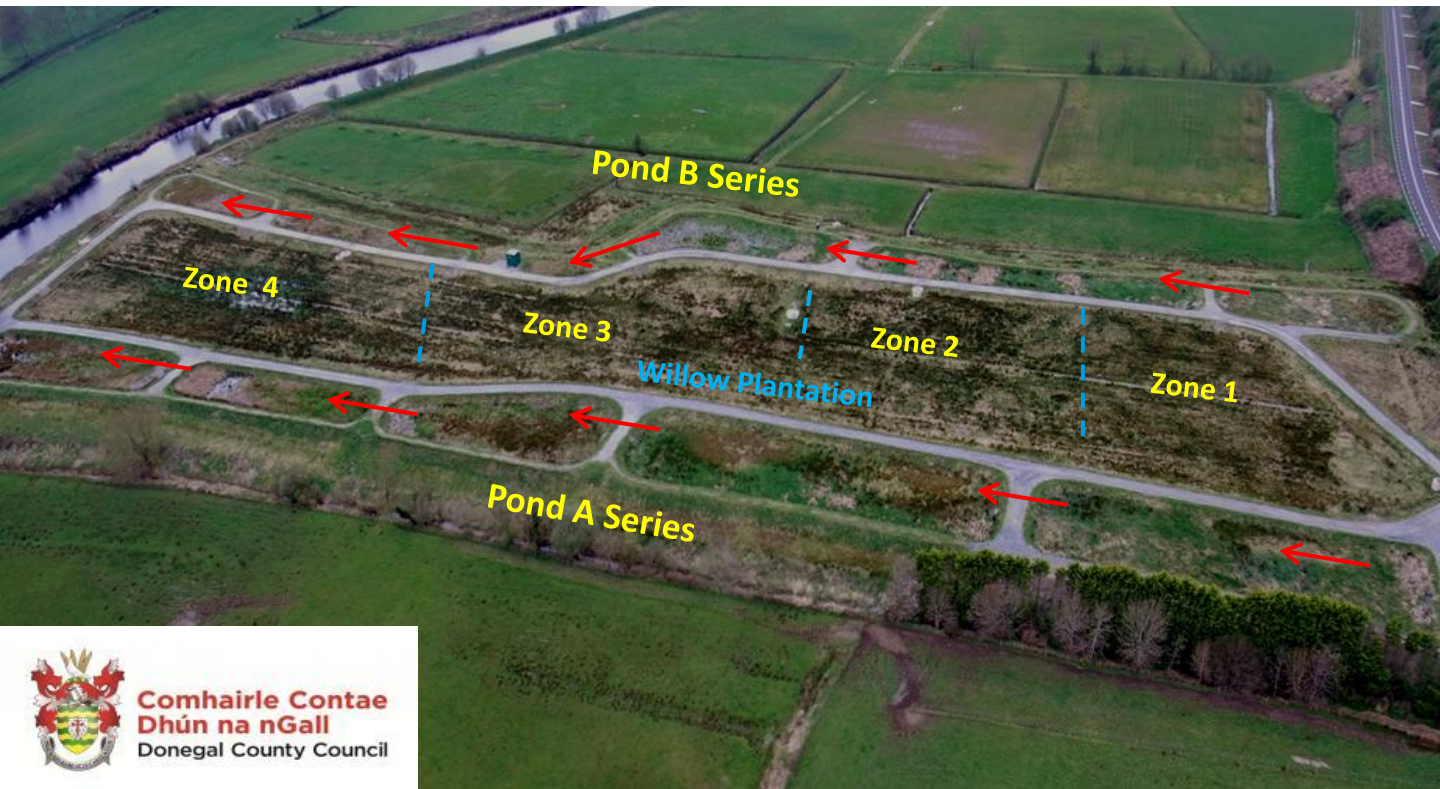


Runoff Monitoring pilot site at Churchtown Landfill



Previous site management 2000

- Donegal County council submitted an application to the Environmental Protection agency (EPA) for a waste license for the former Landfill site.
- On the 19th of May 2000 the EPA granted a waste License with conditions, including restoration works required.

Previous site management 2000 to 2014

- Management of the closed landfill, including ongoing monitoring and reporting
- Restoration works constructed 2014 – 2015, including capping and development of on- site treatment through a sustainable, low cost, low energy approach
- On – site Leachate treatment (Bioremediation) incorporating
 - Integrated constructed wetlands (ICW's)
 - Irrigated Willows Plantations

Current use 2016 to 2019 - Waterpro

- Treatment of Leachate by two different but integrated systems (ICW's & Willows)
- Full commissioning of the automated controls on site
- Ongoing monitoring and reporting to prove the treatment systems and obtain optimum treatment performance.
- Compliance with waste management Act 1996
- Facilitate Biodiversity and reanimation of Habitats

All of the nutrient load which is treated on site is collected in the toe drains and returned to the treatment via the pumping stations .

The phytoremediation supported by the ICW's reduces nutrients as it slowly gravitates through the systems.

The Waterpro project is building on the platform created during the restoration of the site, i.e. monitoring the performance of the on- site treatment developed (ICW's and irrigated willow plantation) for the management of nutrients prior to discharge to receiving waters .

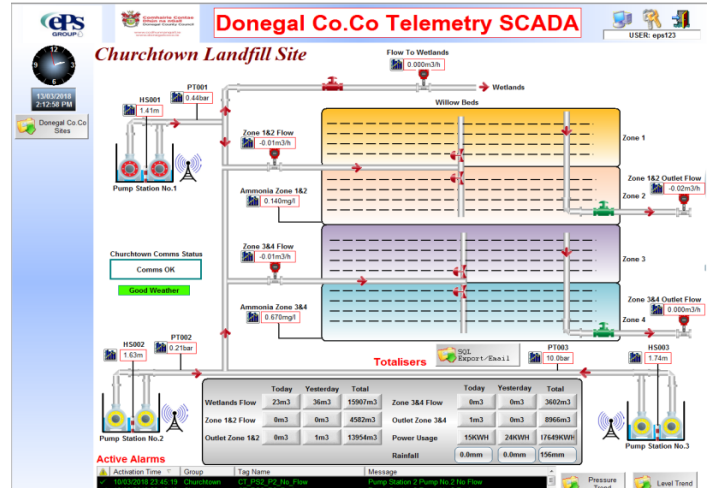
Runoff Monitoring pilot site at Churchtown Landfill



Photos: Fionnuala Bonner

Measurement.

- The monitoring network consists of 2 No. Online ammonia analysers, weather station and 16 monitoring (grab sample) locations, four of which discharge to adjacent drainage channels which lead to the river Finn a designated SAC
- The primary Treatment of Leachate on site is through the over ground irrigation of the willows plantation. The Leachate loading applied is controlled via an irrigation system (Rainbird) which allows the user to control the application for specific timeframes on a daily basis.
- The weather station also prevents irrigation during high rainfall or freezing conditions to prevent over ground flow. Leachate is applied through an over ground distribution pipe network across the four zones within the site.
- The secondary treatment on site are the integrated constructed wetlands (ICW's). Leachate is applied to the ICW's when the willows have reached their hydraulic capacity and there remains excess amount or in winter months when the willow plants are dormant and their uptake is less.
- The flow rate for the willows plantation is governed by suitable weather conditions. Normally 25-30m³/day is applied but can be increased as the willows mature.
- The ICW's are currently receiving 50m³ daily.



- Samples are taken weekly, from all sample locations which include during treatment stage and at the discharge points. This is to verify that the treatment systems are working correctly, and also to foresee any issues which may occur.
- Effluent sample weekly analysis: Ph, and Ammonia.
- Effluent samples quarterly analysis: Ph, Ammonia DO, temperature, BOD, COD, suspended solids, Chloride, TOC, and TON.

Remote Monitoring

- The site is monitored remotely by SCADA (Supervisory control and data acquisition) a control system used to provide off site information on the operation of the site.
- The SCADA system details the flow which has been treated for both the ICW's and the willow plantation on a daily and cumulative basis.
- The SCADA system relays information on ammonia levels from the willows prior to discharge. Ammonia levels above 3mg/l set point are recycled back to the head of the works for further treatment until the set point is achieved.

MORE INFORMATION

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