Warwick International Group Limited
Mostyn Manufacturing Site
Holywell
Flintshire
CH8 9HE

Report for Natural Resources Wales on the companies' progress against the annual improvement targets for 2020

INTRODUCTION

This report has been drafted in order to comply with clause 4.1.5 of the company's PPC permit, number BU 2357 (as varied):
"where the operator has a formal environmental management system applying to the permitted installation which encompasses annual improvement targets the Operator shall, not later than 31 January in each year, provide a summary report of the previous year's progress against such targets".

BACKGROUND

Warwick Chemicals is certificated to ISO 14001:2015 Environmental Management standard. As such Warwick is required to have documented Objectives and Targets according to clause 4.3.3 of this standard.

DISCUSSION

The usual list of items (see bullet points below) that the Company strives to improve each year has been combined with an additional list that had been compiled to try to focus attempts on some specific issues. Some of these items had been included again in the list as a result of on-going challenges for the Company over the past year, see "additional targets".

- Improve Acetic Acid recovery
- Reduce usage of Ethylene Diamine
- Reduce usage of Acetic Anhydride
- Improve chemical yield
- Reduce process cycle time
- Reduce quantity of material for Luwa processing

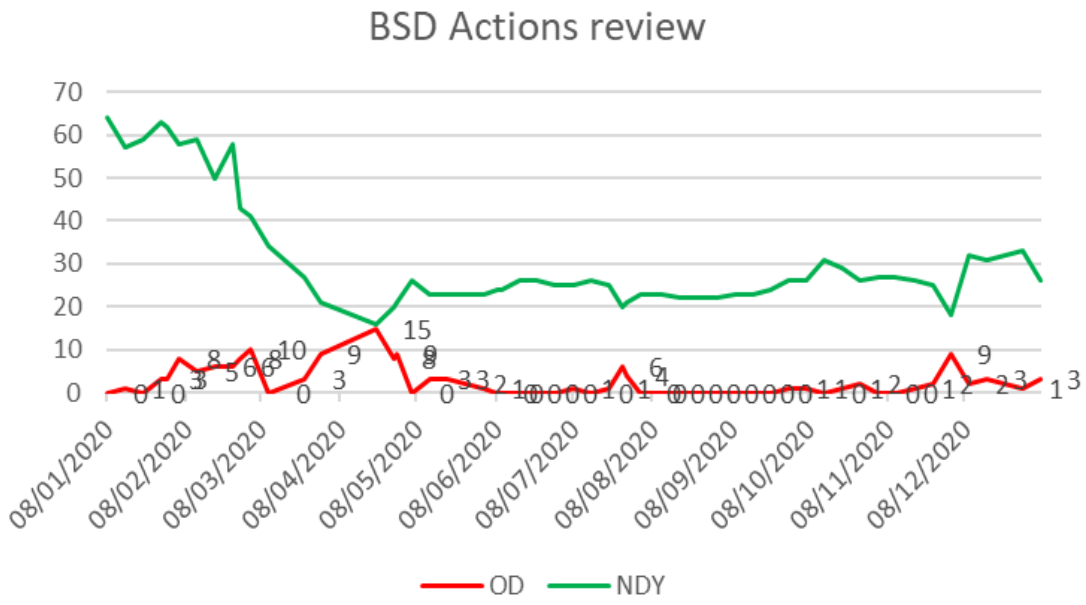
Targets from the previous year have been progressed:

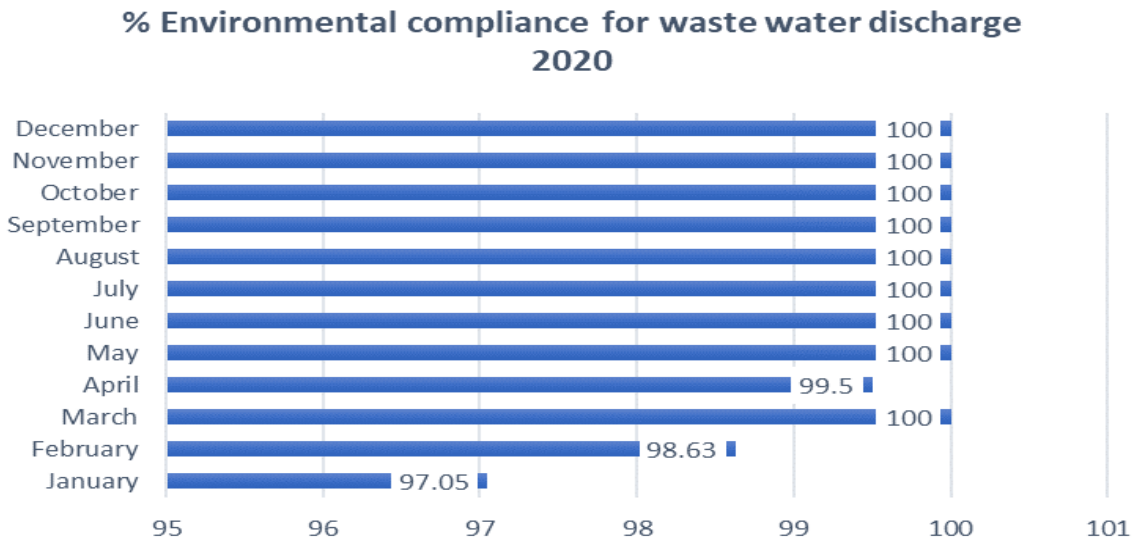
1. Regulatory Compliance to be a managed key performance indicator (KPI)
2. Action Management Accountability (BSD incident reporting system Improved)
3. Pollution Prevention suggestions:
    a) Improved labelling and reduction of the quantity of the drums on site
    b) The setting up of environmental (housekeeping) audits
    c) Product Failures
4. Improved Environmental Monitoring in a number of areas:
    d) Mains and Mostyn water management
    e) Review the situation with the fungal solids in the waste water
    f) Raw Material Utilisation – Business/Environmental KPI

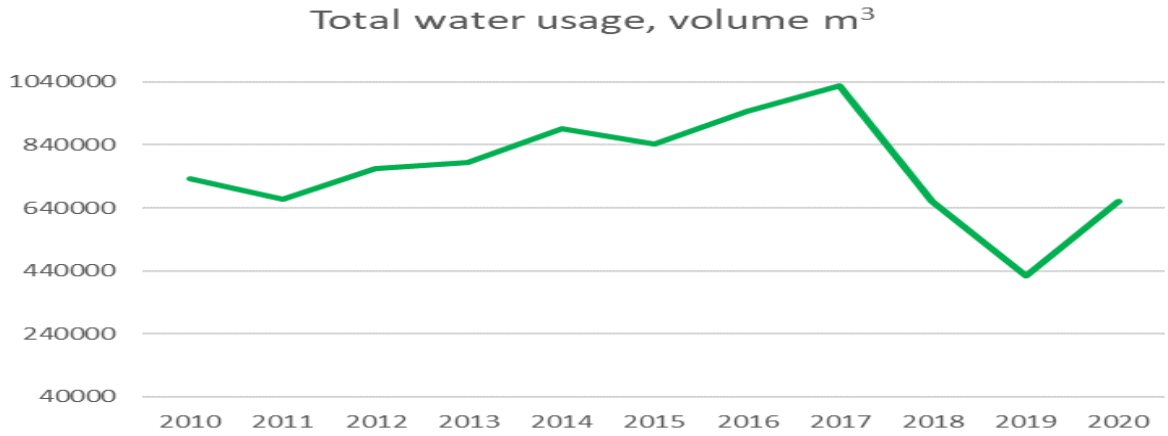
g) Reportable Environmental Incidents – Environmental/Business KPI
h) Energy Utilisation
i) Waste Generated (Rework management)
j) European Union Emissions Trading System (EUETS) and Climate Change Levy (CCL)
k) Shelf life of finished product (Stock Longevity)

It was identified that there were a number of on-going activities that would provide additional benefits as they progressed. These were small projects or activities, some of which were carried out as a result of investigations:

- Root Cause Analysis Programs
  - Delivering factual information on failures
  - Providing data for maintenance programmes
  - Delivering more reliable equipment, potential reduction in 'loss of containment' (LOC)
- Management Review Processes
  - Providing focused and aligned actions for improvement
- BSD incident reporting system
  - Providing failure records/frequencies
  - Providing accurate data for the root cause analysis process
  - Initiating the investigation process to reduce repeat failures







CONCLUSION

When looking at how the Company have performed against the usual metrics in the years 2019 and 2020, the improvement has not been as great as was expected. Water usage, and that of other utilities has risen slightly due to the extended commissioning work being carried out during the year being carried out alongside the normal site operations. Once the new plant is fully operational it is expected that the utilities usage will drop off.

The comparison for the water usage for 2019 and 2020 indicates that, although there had been a response to the water use programme the year before, the water usage in 2020 had actually increased, with an increase of over 232000m^3 over the year.

In 2020 the waste water discharge has predominantly been once every 24 hours instead of every tide. A comparison of the volume of water discharged cannot be easily made as there has been no direct measurement of the rainwater collected by the drains across the site. It can be seen from the graph of solid content in the discharged water that there was an increase early in Q2 which, having been identified, was then

communicated and action taken to reduce the solid content. The average has marginally increased at the back end of the year.
The pH and chemical oxygen demand (COD) levels in the waste water have been much more consistent in 2020, demonstrating a better control of the waste water system.

A recent internal audit that, although improvements could be identified, there were still no specific targets set, e.g., reduce XXX by 20%.
The Mostyn site will be joining with the other UK sites to achieve some common environmental improvement targets. These have not yet been formally rolled out to all sites.
With the list of targets there have been a number of successes and some work which is still on-going.

Successful projects have been:
Point 1 – regulatory compliance is now a KPI, with a target of 100%
Point 2 – the Company is now certificated to the new standard ISO 14001:2015
Point 3a – As the operation of the Luwa and its equipment becomes more reliable the requirement to drum-off material following a failure has reduced.
Point 3b – the environmental housekeeping audits are now being carried out by the shift supervisors. This is also backed up by Management walk- abouts
Point 3c – product failures have reduced by 0.7% reducing the need for re-work
Point 4g – now a reportable KPI and managed through the department's monthly reports
Point 4k – the shelf life of the finished product is now 24 months, reducing the need for any reworking. Additional work is progressing to see if this shelf life can be extended

Some of the projects have again been held over to the following year as the focus and financial support has been realigned.

PETER BRYANT
HSE MANAGER