

Environment Agency permitting decisions

Surrender

We have decided to accept the surrender of the permit for Siddick Acetone Recovery operated by Eastman Chemicals Workington Limited.

The permit number is EPR/AP3435XB

The facility is located at Siddick, Workington, Cumbria CA14 1LG

The surrender number is EPR/AP3435XB/S004

The decision was effective from 11/11/2015

Summary of the decision

We have decided to accept the surrender of the permit.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements.

The site is permitted for the following activities listed in Part 1 of Schedule 1 to the EPR Regulations:

- Section 1.1 A(1)(a): Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts.
- Section 5.3 A (1)(a)(v): Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving one or more of the following activities— solvent reclamation or regeneration

and the following directly associated activities:

- Operation of an acetone scrubber to remove acetone from acetone laden air prior to the reuse of recovered acetone in the acetone tow production process.

The main features of the Installation when operational were as follows:-

The principal activity for the Installation operated by Eastman Chemicals Workington Limited was the recovery of acetone from several wastewater streams on a cellulose acetate tow production plant for reuse as a raw material (the cellulose-acetone tow production is not included within the permit). This installation was within a larger site operated by Eastman Chemicals Workington Limited for other purposes that are not regulated under the Environmental Permitting Regulations.

Several acetone laden wastewater streams are generated in the cellulose-acetone tow production process (collectively called crude) and these were combined into a single crude storage tank prior to recovery. The recovery was achieved through use of a distillation column. The process involved the distillation of more than 100 tonnes (input) per day. The recovered acetone was sent to one of the tow bulk acetone storage vessels on site via a reflux tank. The wastewater (called slops) was directed to a separate tank for subsequent discharge to sewer or where possible for reuse in the onsite scrubber.

The steam for the recovery process was provided by two on site boilers. Both boilers had a dual fuel capability with natural gas as the prime fuel and gas oil as standby. However, the site moved to an uninterruptible gas supply in late 2014 so gas oil was no longer held on site after October 2014. Both boilers used flue gas recirculation and low NO_x burners to control combustion and emissions. High pressure steam was used to drive the scrubber for the tow production process with the linked turbine also generating low pressure steam for use across the rest of the site.

Atmospheric emissions

Acetone recovery - Fugitive emissions of acetone vapours from the distillation plant

Combustion process – oxides of Nitrogen, oxides of carbon, oxides of sulphur and particulate

Emissions to water (sewer)

Boiler blow down, slops from the distillation process, floor drainage and potentially contaminated rainwater. These are likely to contain acetone and traces of oil

Waste streams accepted

Waste acetone with impurities that could not be reused on other areas of the wider site and waste generated during the wider site plant shut down which took place every two years.

All emissions to water were identified as insignificant. Emissions to air were not likely to affect the surrounding area and identified habitats. These were assessed as unlikely to lead to any breaches of the relevant Environmental Assessment Levels (EAL), Environmental Quality Standards (EQS) or National Air Quality Standards (NAQS).

The Operator has applied to surrender the whole installation permit due to site closure. The activities carried out by Eastman Chemicals Workington Limited have now been fully decommissioned as of 20th July 2015.

We are satisfied that the necessary measures have been taken to avoid any pollution risk and to return the site to a satisfactory state.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements.

Purpose of this document

This decision document:

- explains how the operator's application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account

Structure of this document

- Key issues of the decision
- Annex 1 the decision checklist

Key issues of the decision

Pollution Risk

The principal activity for the Installation operated by Eastman Chemicals Workington Limited was the recovery of acetone from several wastewater streams on a cellulose acetate low production plant for reuse as a raw material.

The history of the site dates back to 1960's. The Envirocheck reports show that a factory has been on site since the 1960s.

When the application was submitted the applicant assessed their infrastructure in terms of whether there was a "little likelihood" or "reasonable possibility" of pollution. The assessment identified that the transfer from the scrubber to the interceptor during site shut down, the storage within the interceptor and the transfer to the road tanker of the acetone water mix posed a "reasonable possibility" of pollution.

A review of the Application Site Report dated 12th May 2006 summarised that for the majority of the site the risk of pollution was "little likelihood" but there was a "reasonable possibility" for the scrubber, drainage and interceptor.

To ensure the continued effectiveness of the pollution prevention measures, the Operator was required to implement and operate under a site protection and monitoring programme (SPMP). An Improvement Programme (IP) was included in the permit (reference EPR/PP3136SG/A001) and we have reproduced the improvement conditions which are relevant to ensuring that the land and groundwater beneath the site was protected:

- IP1: requested the production of an assessment of the Best Available Techniques in relation to collection of shut down drainings from the interceptor. The deadline for this work was set as 1st February 2007.
- IP2: requested that a site drainage survey should be undertaken to demonstrate the condition and integrity of the drainage system and a

written report produced. The deadline for this work was set as 1st April 2007.

- IP7: requested that a Site Closure Plan should be produced. The deadline for this work was set as 1st April 2008.

Information relating to Improvement Programme 1 was submitted on 20th March 2007. The report indicated that the interceptor collects water, Fabricol emulsion, hydraulic and lubricating oils and acetone and that some of the pollution prevention measures were not best practice. In particular:

- there was no fixed and bunded remote connection point for the tanker hose so there is the potential for spillage during transfer; and
- there is no fixed connection point to the interceptor, with a dip leg to ensure complete draining there is the potential for minor spillage.

The report recommended that a borehole should be installed in this area to ensure that pollution of the land and groundwater do not occur during the life of the permit.

A letter dated 29th March 2007 was submitted to the Environment Agency in relation to IP2. The letter stated that “preliminary observations indicate that there are few, if any problems with the condition of the sewer”. However, the company were still waiting for a report from the contractor. The letter also stated that “the condition of the interceptor will be checked before the start of planned maintenance shutdown in April 2007”.

A Site Closure Plan, reference 49306506/LERP0001 dated 8th May 2008 and prepared by URS was submitted in relation to IP7. This plan has subsequently been updated in January 2014 (Site Closure Plan Report, Issue no 4, reference 49306506/LERP0001 prepared by URS).

Variation EPR/AP3435XB/V002 included an Improvement Programme requirement (IP8) for the operator to review the SPMP with a deadline of 31st January 2009. A revised SPMP was submitted in January 2009.

The revised SPMP included an assessment of the pollution potential from the new activities undertaken at the site and re-evaluated the improved pollution prevention measures associated with the transfer and storage of waste scrubber liquor during plant shut down. The assessment concluded that the risk associated with these activities had “little likelihood” of causing pollution of the land. Consequently, no further environmental monitoring was proposed at the site, although ongoing borehole monitoring would be undertaken as part of the operator’s internal procedures.

The revised SPMP states that the CCTV survey conducted in March 2007 identified no integrity issues and that further surveys would be undertaken every 5 years.

A revised SPMP dated January 2014 was submitted in support of the permit

surrender (Appendix C). No environmental monitoring was included in the report. The report indicates that no further CCTV surveys have been undertaken at the site since 2007.

Site Condition Report

The operator has submitted a Site Condition Report (SCR) dated July 2015, the main elements of which are summarised below:

Environmental Setting

A satisfactory description of the environmental setting of the installation has been provided.

Changes to Activities

Permit PP3136SG was determined on 29/09/2006 (Eastman Chemical England Limited). This superseded the original authorisation reference AW5085 18/12/96 and variation reference BY4599 10/01/05 (Voridian England Limited).

A full transfer application (reference EPR/AP3435XB/T001) from Eastman Chemical England Limited to Eastman Chemical Workington Limited was determined on 29/02/08.

Variation reference EPR/AP3435XB/V002 was determined on 14/11/08. This variation covered the addition of two scrubbing units, incorporation of water cooling towers and chilling systems, addition of a drum storage compound, upgrading of the acetone distillation column to allow additional throughput and associated minor installation boundary changes as a consequence of these changes. The installation boundary increased following this variation to include the drum compound, vertical scrubber area and cooling towers.

Variation EPR/AP3435XB/V003 was determined on 09/01/14, this was an Agency led variation to implement the changes introduced by the Industrial Emissions Directive (IED).

Measures Taken to Protect Land

See Pollution Risk section above

Pollution Incidents

A Part A Notification was sent to the Environment Agency on 4th August 2008 reporting the failure of the process sewer line. During the repair of the underground fire water pipes the associated excavation uncovered the process sewer line from the main 4000 building to the underground interceptor. Whilst the pipe was uncovered heavy rains cause the pipe to fail and a maximum of 10m³ of water was lost.

The Part B Notification dated 5th December 2008 proposed the following activities to demonstrate that the incident had not impacted the ground/groundwater and that a similar incident could not happen in the future:

- 3 monthly borehole sampling on BHs 401, 402 and 201 will be carried out.

- an inspection pit to be dug downstream of the affected area near to a junction with another process sewer line. This is to allow CCTV integrity checking on sections of the process sewer line that were not previously accessible. This work is to be carried out by the end of February 2009.

A response from the inspector on 12th December 2008 stated that no further action was required.

The Site Surrender Report identifies a number of reportable and non-reportable environmental events in Appendix A2 of the surrender application.

Soil Gas and Water Quality Monitoring

A Design SPMP was submitted to the Environment Agency in November 2006. The report proposed to install two boreholes (BH4012 and BH402) and utilise one that was already installed (BH201).

- BH201: down inferred hydraulic gradient of the interceptor
- BH401: down inferred hydraulic gradient of the pipeline linking the scrubber to the interceptor
- BH402: down inferred hydraulic gradient and adjacent to the interceptor

The following sampling regime was proposed: soil samples from the two new boreholes and groundwater samples from all boreholes and all samples to be analysed for acetone. Additional groundwater sampling was proposed for every two years.

A review of the Design SPMP by an Environment Agency Contaminated Land Officer noted that the proposed soil testing was not MCERTS accredited. The memo recommended that the groundwater sampling should be undertaken more frequently than proposed. In addition, the memo noted that tables 2A and 2B (Appendix D2 of the Application Site Report) identified a number of single skin overhead pipelines which crossed areas of permeable ground.

A meeting was held on site on 16th January 2007 between the operator, the inspector and the Contaminated Land Officer. At this meeting the Environment Agency raised its concerns over the frequency of groundwater monitoring, the acetone analysis and the pipelines crossing over permeable ground.

Clarification on acetone analysis was submitted by email on 29th January 2007 confirming that precision and bias was within those detailed for Volatile Organic Compounds within the Environment Agency document entitled "performance standard for laboratories undertaking chemical testing of soils".

The First Phase Report was submitted to the Environment Agency in March 2007. Borehole logs for BH201 were included with the borehole logs of the newly installed boreholes which were installed in February 2007. The baseline reference data was reported as follows in Table 1 below.

Table 1- Baseline reference data

Soils	BH401 1.5m	BH401 4.1m	BH402 2.0m	BH402 4.0m
Acetone (mg/kg)	0.03	0.02	<0.01	<0.01

Groundwater samples were collected on 26th February 2007 and analysed for acetone and is shown in Table 2 below

Table 2 – Groundwater samples

Groundwater	BH201	BH401	BH402
Acetone (ug/l)	<10 10 (duplicate sampled)	<10	<10

The First Phase Report stated that groundwater sampling will be undertaken every 2 years within 1 week of the scrubber cleaning liquids being discharged into the interceptor.

Letter dated 18th February 2008 from Eastman provides a revised borehole sampling proposal. The letter includes graphs of COD results for boreholes BH205, BH302 and BH305: which appear to be decreasing. The letter indicates that groundwater analysis for acetone in BH401 and BH402 will be undertaken every 3 months

Variation EPR/AP3435XB/V002 included an Improvement Programme requirement (IP8) for the operator to review the SPMP with a deadline of 31st January 2009. A revised SPMP was submitted in January 2009.

The revised SPMP included an assessment of the pollution potential from the new activities undertaken at the site and re-evaluated the improved pollution prevention measures associated with the transfer and storage of waste scrubber liquor during plant shut down. The assessment concluded that the risk associated with these activities had a “little likelihood” of causing pollution of the land. Consequently, no further environmental monitoring was proposed at the site, although ongoing borehole monitoring will be undertaken as part of the operators internal procedures.

A revised SPMP dated January 2014 was submitted in support of the permit surrender (Appendix C). No environmental monitoring was included in the report. The report indicates that no further CCTV survey has been undertaken at the site since 2007.

Decommissioning and Removal of Pollution Risk

All permitted activities have ceased and all sources of pollution risk have been removed.

The site has now been fully decommissioned as of 20/07/15.

The findings of our inspections are as follows:

- Gas Oil Tank / Bund – this was clean and empty as of 17/07/15
- Interceptor – waste documentation relating to the removal of interceptor contents from site has been submitted as of 17/07/15.
- Boiler House – some contamination was noted on the final inspection on 17/07/15. Waste documentation and photographic evidence demonstrating disposal of these contaminants was submitted on 20/07/15. All areas look clean and uncontaminated.
- Above ground storage tanks – the vessel decontamination master list was submitted showing the relevant items signed off. The external areas were inspected and all looked clean and uncontaminated.

Reference Data

The relevant sections of the Site Surrender Report containing information on soil and groundwater quality are discussed below:

Appendix E contains a summary table of quarterly groundwater monitoring undertaken at the site between 2007-2015 for boreholes BH201, BH401 and BH402. No laboratory data sheets have been provided.

The summary indicates that in the main acetone concentrations are at the limit of detection with the following exceptions:

- BH401: Feb 2009 10ug/l; Dec 2010 14ug/l & Feb 2011 19ug/l
- BH201: Feb 2009 13ug/l & Feb 2011 18ug/l

The elevated levels identified in February 2009 and December 2010 could be due to the failure of the process sewer line, though no interpretation has been provided in the report.

None of the concentrations are significantly elevated above the limit of detection and therefore the site activities do not appear to have impacted the groundwater.

Appendix F contains a comparison of groundwater monitoring data collected from 1991 with those collected in 2015 for BH201, BH204, BH205, BH207, BH301, BH302 and BH305. The 2015 samples were collected on the 3rd June 2015 following the removal of all chemicals from the installation.

We have compared the 2007 baseline data and the 2015 surrender data for boreholes BH201, BH401 and BH402 in Table 3 below.

Table 3 – Comparison of 2007 baseline data and 2015 surrender data

Groundwater		BH201	BH401	BH402
Acetone (ug/l)	2007	<10 10 (duplicate sampled)	<10	<10
	2015	<1	<1	<1

Appendix G contains a copy of a "Trial Pit Excavation and Analysis" Report, reference 191-01-10-15 prepared by ExCaL dated July 2015. The report details the excavation of 3 trial pits across the site from which soil samples were collected. These results are compared with soil samples collected at similar locations in 1991 as follows: TP1 & BH205, TP2 & BH203 and TP3 & BH204.

Unfortunately, none of these locations are in the areas of concern identified in the Application Site Report and additionally the analytical suite does not include acetone.

A schedule 5 was issued on 14th October 2015 requesting the following information:

- There was an incident relating to a fracture in the process sewer line in 2008. One of the actions proposed by Eastman Chemical Workington was to undertake a CCTV survey. Please can you confirm if this survey was carried out and what the results of the survey were?
- Groundwater monitoring has been undertaken at the site quarterly since 2007, as part of the surrender application this was only provided as summary information. Please could you submit the laboratory datasheets to support this data?

The operator responded on 20th and 21st October with copies of all the laboratory datasheets (with the exception of December 2007). In addition the operator confirmed that a CCTV survey was not completed following the process sewer pipe fracture in 2008 and that it was agreed with the inspector that boreholes (BH401, BH402) located adjacent to the equipment where the failure occurred would be sampled and tested routinely.

Condition of the Site at Closure

The Operator has confirmed in the Site Condition Report that:-

- the permitted activities have stopped;
- decommissioning is complete, and the pollution risk has been removed; and
- the land is in a satisfactory state

The SCR submitted with the application states that the permitted activities have stopped; decommissioning is complete and any pollution risk has been removed; and the land is in a satisfactory condition.

We have carried out 3 site visits on 21/05/2015, 02/06/2015 and 17/07/2015.

On 2nd June 2015 pollutants remaining in the bunds (slight film) were not able to reach ground/groundwater as the bunds were not leaking. The remaining contaminants in the building were contained and thus also not able to reach ground/groundwater. The heating and ventilation units which only contained R407C (gas) were removed by 5th June 2015. The applicant has provided evidence of final removal of contaminants from the permitted site on 20/07/15.

Sufficient information has been supplied to show that pollution risk has been removed and that the site is in a satisfactory state.

The following summarises the key points from the site condition report:

- The ASR identified that activities associated with the two yearly site shut down relating to the transfer and storage of scrubber drainings posed a 'reasonable possibility' of pollution to the land. By 2009 improvements had been made to these activities and at this time an assessment of the pollution prevention measures indicated that there would be "little likelihood" of pollution to the ground or groundwater.
- Regardless of this assessment quarterly groundwater monitoring has been undertaken at the site from boreholes BH201, BH401 and BH402 during the life of the permit.
- During the permit there has been one incident which could have caused contamination of the ground, associated with the failure of a process sewer line. The site proposed to undertake 3-monthly groundwater monitoring within the area and to commission a CCTV survey. The inspecting officer agreed that only groundwater monitoring was required and a CCTV survey was not necessary.
- The Site Surrender Report provides a summary table of the quarterly groundwater monitoring undertaken at the site since 2007. Laboratory data sheets have been provided in response to a Schedule 5. This data indicates that the site has not significantly impacted the groundwater. There are a couple of occasions where acetone has been identified above the laboratory limit of detection (LOD) in the groundwater but the levels are still low (just above the LOD).
- Soil samples have been collected for the site but these are not within the area of concern (around the interceptor, scrubber and associated pipelines) and have not included acetone in the analytical suite. Consequently, these do not provide any evidence as to whether the activities undertaken at the site have impacted the ground.
- Given the frequency of the "reasonable possibility" of pollution activities identified in the ASR (i.e. that shut down occurs approximately every two years), that only one spill (occurring in 2008) may have caused an impact to the land, that improvements were made to the area identified as having a "reasonable possibility" of pollution by 2009 and the groundwater monitoring data we conclude that the land and waters at the site are in a satisfactory state.

Conclusion

Based on our analysis and consideration of the application to surrender the permit, the Environment Agency is satisfied that the necessary measures to avoid a pollution risk during the operation of the regulated facility were undertaken and that all potential polluting activities associated with the chemical works have been removed. The Environment Agency therefore concludes that the pollution risk has been removed and that the measures put in place by the operator during the life of the permit have protected the site from deterioration.

Annex 1: decision checklist

This document should be read in conjunction with the Duly Making checklist, the application and supporting information and permit/ notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
The site		
Extent of the surrender application	The operator has provided a plan showing the extent of the site of the facility that is to be surrendered. We consider this plan to be satisfactory.	✓
Pollution risk	We are satisfied that the necessary measures have been taken to avoid a pollution risk resulting from the operation of the regulated facility.	✓
Satisfactory state	We are satisfied that the necessary measures have been taken to return the site of the regulated facility to a satisfactory state. In coming to this decision we have had regard to the state of the site before the facility was put into operation.	✓