

BESPOKE PERMIT APPLICATION – DISCHARGE QUALITY ASSESSMENT

Project:	London Southend Airport
Purpose:	Surface De-icer Drainage Discharge Permit Application
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Author:	Mark Barrell, Engineer, Capita Symonds
Checked:	David Sullivan, Director, Capita Symonds

DISCHARGE QUALITY STATEMENT FOR PROPOSED SURFACE DE-ICING OPERATIONS AT LONDON SOUTHEND AIRPORT (LSA)

The proposal outlined in this bespoke permit application is that drained runoff containing surface de-icing chemicals (potassium acetate based) will be discharged without treatment to Eastwood Brook and Prittle Brook. This document summarises the assessed and anticipated quality of discharge to these watercourses.

Existing Water Course Quality

An ecological survey was commissioned by LSA for Eastwood Brook and Prittle Brook to determine the baseline quality of the watercourse prior to implementation of de-icing operations. The survey was undertaken by Penny Anderson Associates (PAA). The outline statement and progress report dated 27 June 2012 stated *“Biotic scores calculated on both the Eastwood and Prittle Brook indicates poor biological water quality with a macro-invertebrate community dominated by pollution tolerant taxa. Both watercourses reflect their urban context with associated surface water discharges which limit ecological potential.”*. Put simply, these watercourses are dominated by species that are able to survive in polluted waters. PAA also state that *“though dominated by pollution tolerant taxa, macro-invertebrate communities remain relatively diverse and also support more pollution sensitive taxa such as freshwater shrimp and cased caddisfly which may prove to be sensitive and suitable indicators of pollution.”*. A limited number of pollution sensitive species were found during the survey.

Runoff Water Quality

De-icing chemical (potassium acetate) is applied to the runway and taxiway surfaces before or after an ice, snow or frost event. The resulting melt water drains into the positive drainage system. The rate of application of the de-icing chemical depends on the severity of the ice, snow or frost¹. An operational procedure will be produced by LSA for the application of the de-icing chemical in accordance with the manufacturer’s recommendations.

Runway and taxiway collection filter drains are lined to prevent contamination of the sub-soil and groundwater as per EA guidance². Where runoff enters the drainage system through filter drains it will do so more slowly than conventional gully or linear drainage systems. This allows the process of biodegradation to begin prior to the runoff reaching the discharge watercourse.

¹ Refer to CS044190-BPA-009 for application rates.

² Reference to letter from Environment Agency dated 16th April 2009.

An interim report produced by PAA comparing sampling results from November 2012 with those from February 2013, ie before and after de-icing chemicals were used at the airport.

In relation to Eastwood Brook, the report states that *“Discharges from the North Outfall appear to have had little negative effect”* and *“Similarly, any discharges from the South Outfall appear to have had little negative effect”*.

When discussing Prittle Brook the sampling showed a drop in BMWP level³ that suggested *“a minor impact upon the receiving watercourse”*. This impact is attributed to the discharges from the Sutton Court Road Outfall.

Concurrent to the PAA ecological survey, a separate study was carried out by the National Water Quality Information Service (NWQIS). This involved the deployment of two high resolution monitoring systems at the airport. The first sampled water passing through a manhole immediately upstream of outfall EB2 and the second sampled Eastwood Brook downstream of the outfall. The results obtained were correlated with the airport's records of de-icing, giving a clear understanding of the effect of discharge from the airport on the brook.

The NWQIS report concluded that *“observed changes in water chemistry within the Eastwood Brook are caused by inputs unrelated to discharges from within the airport and are in fact correlated to the introduction of sodium salts to the watercourse as a result of gritting and de-icing of highways by third parties.”*

Given that Prittle Brook appears to have a similar catchment to that of Eastwood Brook, it would be fair to consider that the minor negative impact highlighted in the PAA report could be attributed to gritting and de-icing of highways by third parties and not discharges from London Southend Airport.

Conclusion

Monitoring of watercourses on behalf of LSA indicates there has been no negative impact as a consequence of de-icing activity on the airfield.

³ Biological Monitoring Working Party – A procedure for measuring water quality based on scoring the species found, scores relate to their tolerance of pollution.