

EPR/TP3639BH/V009 – IC7 Fixed suppression system & additional dust control measures

ASPHALT PLANT, CELSA STEEL WORKS, CARDIFF, CF24 5TH

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1. Purpose

In accordance with environmental permit EPR/TP3639BH/V009 (issued 05/05/2020) Harsco are required under Improvement Condition IC7 to *‘provide a written report to Natural Resources Wales providing details of the fixed dust suppression system for dust control within the asphalt plant’*. This report seeks to address the permit requirement by targeting potential sources of fugitive dust emissions and proposing additional control measures to eliminate or where not possible, to mitigate those risks.

2. Sources to be treated

Since the granting of the environmental permit in May 2020 the asphalt plant has successfully completed the commissioning and performance testing stages. It is now operational and producing asphalt.

Following formal commencement of operations, a review of the asphalt making process has been undertaken which has identified areas for potential fugitive dust emissions and additional control measures to eliminate or minimise the potential risk. Details are summarised in Table 1. below and the locations are illustrated on the site plan included as Appendix 1. to this report.

Table 1. Sources of Dust & Proposed Controls

Source	Control
Loading of Cold Feed Bins	1. Mounted water sprays
Transfer from cold feed bin conveyors to dryer feed conveyor	2. Additional covers to fully contain the drop point
Mixer discharge to skip during clean-off	3. 3-sided dust curtain
Material exiting reject chute	4. Additional chutes below skip 5. Sheeting above the skip at the reject chute position to contain any dust generated during discharge
Emptying of Reject chute hopper	6. Install a 4-sided rubber sock below reject chute hopper

3. Technical specification

The proposal for the fixed suppression system includes the installation of 8 mounted water spray nozzles directed at the cold feed bins fed via a pumped water supply. Quotations have now been obtained however the final supplier / manufacturers are to be determined.

3.1 Pump

The suppression system will include a pump - manufacturer Danfoss (or similar) see Appendix 2a. for example specification. It is anticipated that pressure range will be between 30 – 140 bar. A higher pressure provides the capability for producing a finer mist which enables dust to be suppressed without feed materials becoming too wet. The flow rate is expected to be in the region of 20 – 50 litres per minute.

3.2 Nozzles

The nozzles could be a mixture of full cone spirals or flat spray nozzles, both are considered capable of delivering the level of suppression required (see Appendix 2b. and 2c. for example specifications). Full cone spiral nozzles have an angle range of 90 - 170° with the spray reaching up to 5-6 metres (dependent on pressure, wind speed and cone adjustments). They have the advantage of producing fine droplets and can target hard to reach areas.

4. Performance & Maintenance

Harsco are considering reputable leading manufacturers such as Danfoss and Bete who are certified to ISO9001:2015 and offer quality products with low energy and maintenance requirements.

Harsco company procedure EM-P-014 'Routine Maintenance, Servicing & Inspection' requires a preventative maintenance programme to be implemented at all sites, to include all mobile, semi-mobile or fixed plant thus ensuring routine maintenance, servicing and inspection is carried out on all equipment at regular intervals. The fixed suppression system will be included within this maintenance programme and will be serviced in accordance with manufacturers guidelines. Nozzles will also be subjected to routine cleaning to ensure they do not become clogged and thus operate effectively.

The suppression system will also be subject to a daily pre-start check in accordance with company procedure: EM-P-026 'Equipment Pre-Start Checks' to ensure that any faults are identified and reported prior to activities commencing.

5. Time table for works

The proposed timetable for the implementation of the additional dust control measures is as presented in Table 2. below:

Table 2. Proposed Completion Dates

Control Measure	Target Date for Completion
Mount fixed sprays	30th September 2020
Install drop point/chute covers (cold feed bin to dryer feed)	30th September 2020
Hang 3-sided curtain (mixer discharge)	30th September 2020
Install Chutes below skip (reject chute)	30th September 2020
Position sheeting above skip (reject chute)	30th September 2020
Install rubber sock below chute (reject chute hopper)	30th September 2020

6. Summary

Harsco propose to install a pump fed targeted fixed suppression system to minimise the risk of fugitive dust emissions during the loading of the cold feed bins. Several other improvements have been identified to facilitate the control of fugitive dust from other potential sources forming part of the asphalt making process.

The extent and type of suppression required has been identified and quotes have been obtained. The final / manufacturer is to be determined – company certification / reputation and reliability; energy and maintenance requirements of the equipment will all factor into this decision-making process.